



**Kavala Institute of Technology**  
**Department of Accountancy**



**University of Pitesti**  
**Faculty of Economic Sciences**

## **3<sup>rd</sup> International Conference**

# **The Economics of Balkan and Eastern Europe countries in the changed world**



**5-8 May 2011**  
**Pitesti - Romania**

<http://ebeec.teikav.edu.gr>

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

## **Proceedings of the conference**

**Proceedings of the 3<sup>rd</sup> International Conference**

# **The Economies of Balkan and Eastern Europe Countries in the changed world**

**EBEEC 2011**

**Pitesti, Romania**

**May 5-8, 2011**

**Department of Accountancy**

**Kavala Institute of Technology**

**Kavala, Greece**

**ISBN: 978-960-363-038-8 - ISSN: 1792-4383**

## Contents

George Kyriazopoulos and Dimitrios Petropoulos, " <i>Does the cross border mergers and acquisitions of the Greek banks in the balkan area affect on the course of profitability efficiency and liquidity indexes of them?</i> " .....	6
Anastasios Konstantinidis and Androniki Katarachia, " <i>The effects of behavioral distortions in investing options</i> " .....	31
Iva Moneva, " <i>A short overview of the theoretical advantages and disadvantages of the financial statements prepared at fair value</i> " .....	39
Tak Isa, " <i>Impacts and losess caused by the fraudulent and manipulated financial information on economic decisions</i> " .....	44
Adrian Costea, " <i>A literature review on the use of data mining techniques for financial performance benchmarking</i> " .....	52
Kalliopi Kalampouka and Ilektra Simitsi, " <i>The necessity of changes in the legal framework of european company</i> " .....	62
Evangelia Zikou Katerina Sarri, " <i>Female entrepreneurship and its contribution to regional economic development</i> " .....	69
Ion Lucian Catrina, " <i>The limits of european economic convergence</i> " .....	80
Marius-Corneliu Marinaş, Cristian Socol and Aura-Gabriela Socol, " <i>Analysis Of shocks similarities between new EU member states and Euro area</i> " .....	86
Stilianos Alexiadis, Christos Ladias and Sotirios Milionis, " <i>Searching for a relation between regional growth and migration</i> " .....	98
Logica Banica, Viorel Paun and Liviu Cristian Stefan, " <i>Integrating Web 2.0 in the e-learning process</i> " .....	109
Gergely Ráthonyi and László Várallyai, " <i>Travel 2.0 and Hungarian turism</i> " .....	120
András Cseh, " <i>Information sources and services for farmers</i> " .....	128
Maria-Cecilia Ciocan (Simion), " <i>Business networking as digital ecosystem</i> " .....	134
Georgios Kountios, Anastasios Michailidis and Afroditi Papadaki-klavdianou, " <i>Educational needs of young farmers in Information and Communication Technologies</i> " .....	140
Emil Burtescu and Claudia Burtescu, " <i>Monte-Carlo simulation in security risk analysis</i> " .....	145
Virgil Nicula, Simona Spânu, " <i>The analysis of the eco-tourist potential from the perspective of eco-labeling of argo-tourist pensions in Romania</i> .....	154

Ioanna Apostolidou and Anastasios Michailidis, <i>"Evaluation of new technologies and farming methods in agriculture: A case study of an innovative greenhouse in Greece"</i> .....	163
Lazanas Alexis, Aggelopoulos Yiannis, <i>"Exploiting organisational knowledge through virtual communities"</i> .....	173
Marian Țaicu and Maria-Daniela Bondoc. <i>"Cost Analysis – A company performance management tool"</i> .....	185
Victoria Firescu and Marian Țaicu, <i>"Company performance measurement: conceptual and methodological approaches"</i> .....	193
Ioannis Kazanidis, Ioannis Petasakis, Stavros Valsamidis, Alexandros Karakos, <i>"LMS contribution to a better business education"</i> .....	201
Oksana Ruzha, <i>"Factors affecting the evaluation of market value in Riga"</i> .....	209
Diaconu Mihaela and Micu Ionela Cristina, <i>"Balkan tourism forecasts in the context of global economic crisis"</i> .....	217
Petia Tanova and John Violaris, <i>"Economic and Institutional Reflections on the Greek Crisis"</i>	226
Socol Cristian, Socol Aura and Marinas Marius, <i>"Romania post – crisis. Closer or farther away from the european model?"</i> .....	238
Hagiu Alina and Suciu Marta Christina, <i>"The competitiveness of the Romanian car industry on the European Union market"</i> .....	243
Stoika Radu, <i>"Education for sustainable development"</i> .....	253
Nikolina Grozeva, <i>"Reporting the investments of intangible assets in the annual financial statements of the companies"</i> .....	258
Radmila Jablan Stefanović, <i>"Cost accounting role in an environment without borders"</i> .....	265
Simona Spanu, <i>"Reducing the carbon footprint in the context of climate change – responsibility for preserving the biodiversity"</i> .....	274
Irene Moschou, Dimosthenis Pappas, Theodosiou Theodosios, Stavros Valsamidis, <i>"The impact of m-commerce in Northern Greece"</i> .....	280
Ljubinka Joksimovic, <i>"The interplay of infrastructure investment and fiscal adjustment: the Serbian case"</i> .....	290



# DOES THE CROSS BORDER MERGERS AND ACQUISITIONS OF THE GREEK BANKS IN THE BALKAN AREA AFFECT ON THE COURSE OF PROFITABILITY EFFICIENCY AND LIQUIDITY INDEXES OF THEM?

George Kyriazopoulos<sup>1</sup> and Dr Dimitrios Petropoulos<sup>2</sup>

<sup>1</sup>*Applications Professor at Finance Department, TEI of Western Macedonia Kozani GR-50100, Greece  
kyriazog@teikoz.gr, kyriazopoulosg@yahoo.com*

<sup>2</sup>*Assistant Professor of Agricultural Economy at TEI Kalamatas, Kalamata, Greece, d.petro@teikal.gr*

## ABSTRACT

In the past fifteen years, cross-border mergers and acquisitions have had an ever increasing role in the process of bank internationalization (Brakman S., Garretsen H., Marrewijk van C., 2008 "Cross-border Mergers and Acquisitions on revealed comparative advantage and merger waves" *TI 2008-013/2 Tinbergen Institute Discussion Paper*).

The Greek Banks with the accession of the Greek Economy to the Economic and Numismatic Union, but mainly with the introduction of the Euro into Greece, began to seek new sources of revenues in new markets, where costs were lower. In the present work a list is made of all the buyouts and mergers made by the Greek banks in the Balkan countries during the decade 2000-2009.

In the first chapter of the present work the Balkan macroeconomic environment is described, as well as the favorable conditions and the opportunities that were created, so that the Greek and foreign banks to be pushed to expand in the particular environment.

In the second chapter of this work are described in detail the expansions of the Greek banks and other European banks in each Balkan country separately. Thus, for example until 31/12/2008 there are four banks in Bulgaria that are controlled by Greek banks and are classified in the ten largest banks of this country with respect their market share. This is also the case with three banks in Serbia, two in Romania and one in Turkey.

Moreover, particular emphasis is paid for bank buyouts in Greece. Finally, the positive influence of the cross border mergers and acquisitions on deposits and loans and therefore on the ROAA and ROAE indexes of the Greek Banks are shown. The analysis of profitability, liquidity and efficiency with financial indexes takes place for the time period of 2003-2007 and is not expanding on the years 2008 and 2009 (period of the appearance of the financial crisis). The above distinction is made in order to show greater homogeneity and in order to obtain the estimation of the magnitudes under conditions of economic stability and progress. The behavior and the values of the financial indexes during the phase of the financial crisis it could become the object of further research in another paper.

The Greek banks since the year 2000 adopted aggressive policies of expansion with buyouts of local banks in the Balkan countries increasing the magnitudes of their balance sheets, especially with respect to the consumer and mortgage loans, in an effort to increase by any means the total profitability of their groups. Finally, it is noted that the cited bibliography was read and processed for the purpose to write a consolidated survey, the result of which is the present work.

## KEYWORDS

bank, banking sector, productivity, efficiency, liquidity, cross-border mergers and acquisitions.

## JEL CLASSIFICATION CODES

G2, G21

## **1. INTRODUCTION**

The mergers and acquisitions of banking organizations are a quite old phenomenon which always was at the center of interest of the business people as well as the academicians because of the banking system's importance to the economy (Athanasoglou, P. P., and Brisimis I. N. , 2004).

The banking sector during the last twenty years has experienced a significant trend for mergers and acquisitions. This trend is especially obvious in the developed countries, a fact that has attracted the interest of the international scientific community and of the relevant researchers (Berger A.N, DeYoung R., Genay H. & Udell G.F., 2000a)

The trend for mergers and acquisitions according to the banking theory is attributed to different reasons, as for example the optimization of cost, the increase of power in the market ,the capability of greater dispersion of risk, and reasons that have to do with corporate governance and the "creation of an empire" by the chief executive officers of each organization (Ayala A., 2005)

The European financial sector underwent tremendous change over the past decade. Banking concentration increased in all important banking markets. Thus, especially banks stemming from countries that reached a high level of concentration started to look abroad and engaged in first cross border mergers and acquisitions activities. Another important trigger for the internationalization of European banks in the last decade was the break down of the communist regimes in the Eastern European countries, which led to an opening of these markets and offered new opportunities for European banks. A number of Western European banks started to buy banks in the Central and Eastern European countries (CEE) in order to gain attractive new business in these markets. This trend proliferated when the first countries from this region applied for membership and finally joined the European Union in 2004 (Bos J.W.B. & Scmiedel H., 2006).

The aggressive policy of buyouts of the Greek banks in the Balkans was influenced substantially by the introduction of euro into the Greek economy, which acquired a strong currency and at the same time a reduction of the exchange rate risk. This way, actually it was left for the banks only the management of the credit risk, since the political risk of the Balkan countries had been eliminated with the restoration of democracy in these countries.

The increasing demand for consumer goods, homes and investment in capital goods, led to an increase in the demand for loans and at a high rate of credit expansion of the households and businesses, was another reason that the Greek banks entered into the Balkan market. A third and an equally important reason was the expansion of Greek businesses in the Balkan markets and the exploitation by them of the available opportunities in these countries. These Greek businesses, that begun their activity in the Balkan countries in the 90's, were clients of these banks. As a result the banks did not do much more than following their clients to the new markets.

Most observers have come to the conclusion that, while the money markets and the government bond markets were quick to incorporate the common currency, there is little indication that a similar procedure of integration takes place for the retail banking services

The banks offer differentiated products to their clients, which can be adapted to the particular conditions of life, preferences, risk characteristics and the needs of the population and the businesses of the Balkan countries.

## **2. THE ENGAGEMENT OF THE GREEK BANKS TO THE ECONOMIC ENVIRONMENT OF THE BALKANS**

After the fall of the communist regimes in 1989, much of the banking sector in the SEE countries was still underdeveloped and centrally planned, while money had only a limited role as a medium of exchange. In all countries there was need for immediate reform process of the banking system. The implementation of a reform process improved the banking sector in all the transition countries. This reform process usually consisted of the establishment of a two-tier banking system, the privatization of state-owned banks, the closure of insolvent banks, the write-off of non-performing loans, the establishment of a new regulatory regime according to the BIS standards, the entry of foreign banks, etc. Reforms and economic development are at a very different stage in these countries. In general the banking sector in SEE countries has developed

significantly in the past 6 years (period 1998-2003). However, there are still many challenges ahead for the banking sector in the SEE countries, while it is less developed relative to the Central Eastern European transition countries (Stubos G., Tsikripis I., 2004).

The following table exhibits the improvement of the SEE countries banking sector over the past 6 years, according to the EBRD Index of Banking System Reform:

SEE Countries' Banking System Reform Index

Country	Year	EBRD Index of Banking System Reform
Albania	1998-2003	2,0-2,3
Bosnia/Herzegovina	1998-2003	2,3
Bulgaria	1998-2003	2,7-3,3
Serbia/Montenegro	1998-2003	1,0-2,3
Fyrom	1998-2003	3,0
Romania	1998-2003	2,3-2,7

Source: European banking fro Reconstruction and Development (EBRD)

According to the EBRD index of the banking system reform, all SEE countries are classified around 3. This classification means “there has been progress in establishment of bank solvency and of a framework for prudential supervision and regulation, while there is significant lending to private enterprises and significant presence of private banks

## **2.1 The Macroeconomic Environment and the Financial Sector of the Greek and Foreign Banks in the Balkans**

The macroeconomic progress in the region of the Balkans is strong and economic activity increases steadily (2006: 4,5%-5% on the average) mainly due to the strong domestic demand. The private consumption constitutes the basic moving force of the economic advancement, while is reinforced among others by the increase of the credit expansion towards the households and the gradual decrease of the interest rates. In most of the Balkan countries the increased borrowing of the households has accelerated the rate at which the imports of consumer goods is rising, thus worsening significantly the trade balance. Something equivalent started in Greece towards the end of the decade of the 90's and lasted up to the middle of 2007 the fact that contributed to the present financial crisis (Papadakis V., 2002).

In most of the Balkan countries the continuing structural and economic reforms have contributed to the macroeconomic stability and to the de-escalation of the inflation rate to single numbers. Only in Serbia the inflation has remained close to 10% due to the strong domestic demand and to the inability of monetary policy to neutralize the effect of the inflow of foreign capital.

Private investment in Balkan countries remains relatively inadequate. Most of the foreign investment inflows are directed to the financial sector and they have to do with participation in the privatization of financial institutions.

The financial sector in the Balkans is generally healthy. The banks become active in a generally favorable entrepreneurial environment, with total macroeconomic activity on the rise and under conditions and perspectives of increasing profitability. The credit expansion, especially towards the households, is strong in all the countries of this region, with rates of increase higher than the European average. The quality of the loans made by the banks is satisfactory with acceptable indexes of loans that are not being paid back to total loans. However, the possibility of future deterioration of these indexes is visible, as the loan load assumed by the households is increasing at a fast rate.

The percentage of loans in foreign currency (mainly USA dollars and Euros) to total loans is quite high and in some instances exceeds the usual limits of safety (e.g. in Albania for 2005:73%). Because of the continuing preference of borrowing in foreign currency, even when it is about consumer or mortgage loans, raises issues of bank exposure to foreign exchange risk, the governments of these countries make efforts of reinforcing the supervisory frameworks by incorporating the relevant EC Directives.

## **2.2 The Expansion of Greek Banks in the Balkans**

The expansion of the large Greek banking groups in the Balkans began at the beginning of the decade of 1990 and it came about as a result of the gradual convergence of the Greek banking system and the Greek economy to the standards of the more developed European countries. The showing signs of coming to maturity Greek banking system created the need of expansion outside of the borders. The Balkans, due to the cultural and geographical proximity were creating conditions of competitive advantages, and thus defined the new field of Greek bank activity. The gradual adoption of the Balkan countries to free market conditions, the continuation of structural changes, the massive programs of privatizations and the perspectives of economic development constituted essential factors for the attraction of the Greek banks and the banks of other European countries to the region (Kyriazopoulos G., Petropoulos D., 2010).

Initially the expansion of the Greek banks in the Balkans aimed mainly at serving the Greek businesses that became active in the region seeking new opportunities. The Greek banks being familiar with the activity and the credit risk of the Greek enterprises accompanied them in their expansion in the Balkans. Later on, the Greek banks enlarged gradually their activities there taking advantage of the rising market in the sector of retail banking and by capitalizing on investment opportunities in sectors such as the buying of land and the development of commercial and private home zones. The source for numbers and percentages are from IMF and ECB

Nowadays, the presence of large Greek banks in the Balkans does not constitute a circumstantial financial exploitation, but is a long term plan of strategic investment, which expresses itself either through autonomous development or as development through buyouts of local banks. In 2005 the five largest Greek banking groups had created a network of 958 branches in total, they employed more than 15.000 people, they had acquired a share of 17% of the granting of loans market and their profits exceeded the amount of €138 million. Also in the year 2007 from this region came the 20% of their total profits. In some of the Balkan countries the Greek banks have at the present time a leading position (Pasiouras F., Tanna S., Zopounidis C., 2007).

The Greek banks, through their expansion in the Balkans, have as a goal to improve their profitability as the retail banking in Greece gradually approaches the levels of saturation of most of the countries in the Eurozone. Indicatively is reported that in 2005 the granting of loans to the households and businesses as a percentage of the Gross National Product (GNP) in the Balkan countries was fluctuating from 14,5% (Albania) to 44% (Bulgaria), as opposed to 76% in Greece and 104% in the Eurozone.

The most important competitors of the Greek banks in the region of Southwest Europe are:

- The Austrian Erste Bank holds the 1st position in Romania after the buyout of the BCR and it gathers in the region a market share 14%, based on the total of its assets.
- The Austrian Raiffeisen Zentral Bank holds the 1st position in Albania, the 1st in Serbia and the 3rd in Romania and it gathers in the region a market share 11%, based on the total of its assets.
- The French Societe Generale holds the 2nd position in Romania and it gathers in the region a market share of 9% based on the total of its assets.
- The Italian group of Uni Credito, holds the 1st position in Bulgaria, and it gathers in the region a market share of 8%, based on the total of its assets. Also the Italian Banca Intesa holds the 2nd position in Serbia.
- The Hungarian OPT Bank holds the 2nd position in Bulgaria and it gathers in the region a market share of 4%, based on the total of its assets.
- Among the 5 larger Greek banking groups the first position in Albania is held by the Piraeus bank, in Bulgaria by the National Bank, in FYROM by the National Bank, in Romania by the Alpha Bank and in Serbia by the National Bank.

The privatizations in the countries of Southwestern Europe are already at an advanced stage, as the 2/3 of the total assets of the banking system is controlled by foreign banks. The higher percentages of private banks are registered in Albania, Bulgaria, Romania and FYROM.

### 3. MERGERS AND ACQUISITIONS OF BANKS IN THE BALKANS

#### 3.1 Challenges and Perspectives of the Greek Banks in the Balkans

At the present time the Balkans offer significant margins of business development to the banks of European countries, because of the high rate of credit expansion and of the still low level of development of the financial markets. However, for as long as the upgrading of the systems and products being offered by the European banks expands, the Greek banks will have to adapt their strategies in an environment of increasing competition.

The expansion of the Greek banks to the developing neighboring markets of the Balkans and the Mediterranean remains the central axis of their strategy. However, at the present time more and more the valuations of the financial institutions in the region are getting larger in such a degree, that in some cases the total price of the buyout is prohibitive for the Greek banks. A typical example was the sale of the Romanian BCR, at the price of € 3,75 billions. The selling of this bank caused the competition of some of the bigger European banks, while excluded the Greek banks from participating.

The high valuations make more appropriate method for expansion in the region the organic development of the Greek financial institutions, as the remained for sale banks are lesser and more expensive. Even in less developed markets (e.g. in Serbia), at the present the buyouts take place at a price that is four times higher than the accounting value of the institutions that are being sold, while a few years back the buyouts took place at a price that was one and a half time higher than the accounting value.

In certain Balkan countries the privatizations have been almost completed (e.g. Romania, Bulgaria) and the degree of private control of the banking sector is at high levels (up to 90% of the total capital of the banking system). The entrance of foreign bank institutions and the establishment of new local banks it will further deteriorate the market share of the remaining large banking institutions under state control.

#### 3.2 Banking activity in the Balkans

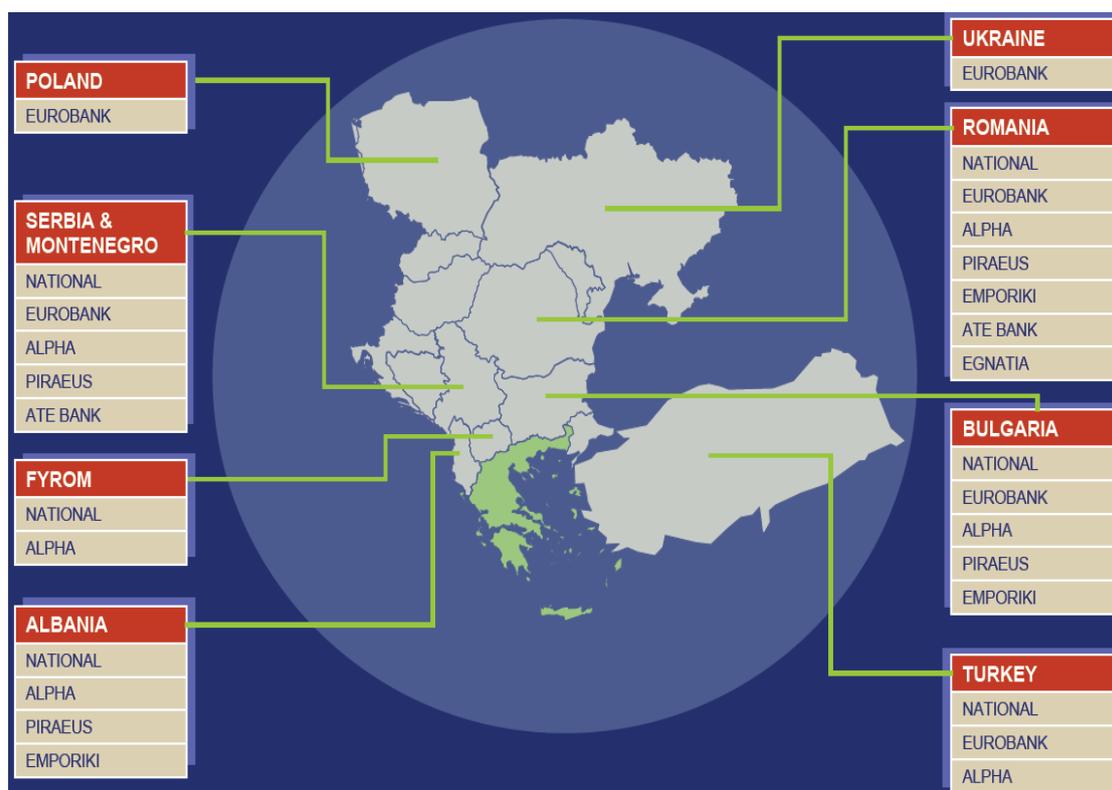
The banking activity in the regions of the Balkan countries refers to the countries of Serbia, FYROM, Romania, Bulgaria and Turkey. In these countries the banks that expanded are among the largest banks of Greece, regardless if their origin and the majority of their shareholders are from outside Greece. These banks are the National, Piraeus, Alpha Bank, Eurobank, ATE, Emporiki, and Egnatia Bank.

If we analyze the activity of banks in the Balkan countries we observe that in Poland and in Ukraine the only bank that expanded is the Eurobank, while in Turkey and in FYROM expanded the National, the Alpha Bank and the Eurobank, without being in force for Eurobank the case of FYROM but only of Turkey.

In Albania the interest for banking activity comes from the part of the banks National, Piraeus, Emporiki and Alpha Bank while in Serbia the banks that expanded are the National, the Eurobank, the Alpha Bank, the Piraeus and the ATE.

In Bulgaria the banking interest is expressed from the side of National Bank, Eurobank, Alpha Bank, Piraeus, and Emporiki. The greatest interest among the Balkan countries exhibits the case of Romania, where the banking activity is expressed from the side of National, Eurobank, Alpha Bank, Piraeus bank, Emporiki, ATE and Egnatia bank. The data for the development of banks in the Balkan countries were drawn from the European Central Bank

ILLUSTRATION 1. The Banking activity of the Greek banks in the Balkans



Source: Deloitte

### 3.3 ALBANIA

The banking sector in Albania holds a predominant position in the country's economy and it consists of 17 banks, from which 14 are controlled by foreign banks. The total capital of the commercial banks comes up to 61% of the GNP.

Although the high rate of credit expansion (48% on the average during the last 3 years) has pushed downward the indexes of capital adequacy, the banks exhibit satisfactory liquidity and profitability. The profits come mainly from the high interest rate spread, while the indexes of effectiveness are recording a decreasing trend. The high interest rates of borrowing (2005:9%-13%) reflect the important asymmetries in the flow of information, on the basis of which the loans are granted, and the problems that are observed in the implementation of the guaranties of the loans.

In 2005, the 9 largest banks in Albania (Raiffeisen Bank, American Bank of Albania, Tirana Bank, Alpha Bank, Procredit Bank, Popular Bank, National Bank of Greece, Credins Bank, and Emporiki Bank-Albania) gathered 74% of the total banking system's capital, 87% of the granting of loans to costumers and 88% of the deposits. The 14 foreign banks gathered 92% of the banking system's capital and 87% the granting of loans to individuals.

The Italian bank Sampaolo Imi bought out the 87,39% of the Albanian Bank in 2005 and it was renamed to Italian-Albanian Bank .The buyout amount was 155,40 millions USD. Also, the Austrian Bank Raiffeisen bought out 27,17% of the Albanian bank Savings Bank of Albania in 2003. The amount of the acquisition was 4,83 millions USD.

Table 1. Foreign Banks that were merged and they acquired Banks in Albania

<b>Greek Bank Buyer</b>	<b>Foreign Bank Target</b>	<b>Country Buyer</b>	<b>Percentage of Participation</b>	<b>Buyout Amount (USD millions)</b>
Sampaolo Imi	Italian Albanian Bank	Italy	87,39%	155,40
Raiffeisen	Savings Bank of Albania	Austria	100,00%	126,00
<b>Total</b>				<b>281,40</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

In the year 2005 the leading position in the Albanian banking market had the Raiffeisen Bank, with a share in the assets of 41% and a share in the deposits of 47%. The Raiffeisen is a bank of Austrian interests and it consolidated its position in Albania in 2004 after buying out for \$126 millions the largest Albanian bank, the Savings Bank. The Raiffeisen has the largest network of premises in Albania with 97 premises, while the Tirana Bank (a subsidiary of Piraeus) the second largest with 33 premises.

The market shares based on the granting of loans to customers are less concentrated than those of the assets and of the deposits, as the largest in capital bank (the Raiffeisen Bank) is second in the ordering with a share of only 13,98%. First in the ordering is the American Bank of Albania with a market share based on the granting of loans 16,7%. Third in the ordering is the Tirana Bank, a subsidiary of the Piraeus bank, with a market share based on the granting of loans 13,7% in 2005.

The country with the greater penetration in the Albanian banking market is Greece. The five big Greek banks have a strong presence and they concentrate 35,7% of the granting of loans to customers, the USA follows with 16,7% and Austria with 13,9%, through the American Bank of Albania and the Raiffeisen Bank respectively.

The competition in the banking sector of Albania is expected to intensify in the following years and among other it will express itself through the compression of the interest rate margin and of the commissions, as the new management of the previously state owned Savings Bank (presently Raiffeisen Bank) has an unambiguous orientation in the retail banking.

### 3.4 Bulgaria

The year 2007 was a milestone for Bulgaria since at the beginning of that year she became a member of the European Union. In Bulgaria, banking activities coming from the side of Greece and other foreign countries did not present considerable interest. The total amount of banking mergers and acquisitions in Bulgaria from 2004 to 2006 was \$265,97 for the Greek banks. More specifically the Greek banks that played a leading part in the buyouts and mergers were the Eurobank and the Piraeus Bank, which bought out the DZI Bank and the Eurobank (Bulgarian) respectively each one. The percentage of participation and the amounts of the buyouts are shown in table 2 below.

Table 2 The Greek banks that merged and bought out banks of Bulgaria

<b>Greek Bank Buyer</b>	<b>Bulgarian Bank Target</b>	<b>Percentage of Participation</b>	<b>Buyout AmountE (USD millions)</b>
Eurobank	DZI Bank	74,26%	200,20
Piraeus	Eurobank	99,70%	65,77
<b>Total</b>			<b>265,97</b>

Source: Mergerstat Intellinet Bloomberg Athens Stock Exchange

The total amount of the banking buyouts and mergers in Bulgaria from other countries besides Greece for the time period 2004 to 2006 was \$532,56 million. Precisely, the banks that played a leading part were the Novator Bank of the United Kingdom, the Austrian Bank of Austria and the Hungarian OTP Bank. The percentage of participation of the foreign banks as well as the amount of the banking mergers and acquisitions of banks in Bulgaria are shown in the following table 3.

Table 3. Banks of other countries that bought out and merged with banks in Bulgaria

<b>Foreign Bank Buyer</b>	<b>Bulgarian Bank Target</b>	<b>Buyer's Country</b>	<b>Percentage of Participation</b>	<b>Amount of Buyout (USD millions)</b>
Novator	EIBank	United Kingdom	<b>18,27%</b>	30,01
Bank Austria	Herbros Bank	Austria	<b>99,90%</b>	127,20
OTP Bank	DSK Bank	Hungary	<b>100,00%</b>	375,35
<b>Total</b>				<b>532,56</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

The Bulgarian banking system is dominated by foreign banks. The percentage of total capital that is controlled by foreign banks increased gradually from 38% in 1999 to 76% in 2005. The banks that were bought by foreigners proceeded to radical restructuring, but some of them in this process lost market share. For instance the Bulbank in 1999 before it was bought out by the UniCredito had a market share based on its assets 25%, while in 2005 it had a market share of approximately 10%. On the contrary, the local private banks were gradually strengthened increasing their market share based on the granting of loans to customers to 21% in 2005, from 15% in 1999.

In the year 2005, the eight local private banks that operate in the country controlled only the 24% of the banking system's capital and the two states owned only the 2% approximately. The Bulgarian banking system has already gotten into a new phase of developments, through domestic mergers and acquisitions, which will bring about new significant reclassifications. Mergers and co-operations between two or more financial institutions are expected to create banks of strategic importance with a leading position in the market. The merger of the Italian UniCredito with the German Hypo-Vereinsbank, (HVB), that have completed on June 15 of 2005, had as a result the creation of new equilibriums in the banking market of Bulgaria. The UniCredito and the HVB, control three banks in Bulgaria. The Burbank is controlled by the UniCredito and the HVB Bioochin (former Biochin Commercial Bank) and the Hebrosbank are controlled by the HVB. The merger between the Bulbank, HVB Bank Bioochin and Hebrosbank will create a large financial institution, which will concentrate market shares unattainable for the competitors.

Moreover, the merger of the premises of the Piraeus bank and its subsidiary Piraeus Eurobank AD during the first half of 2006 had as a result the creation of a larger bank, that holds the 8<sup>th</sup> position in the classification of banks, outdistancing the Economic Investment Bank, SG-Express Bank and DZI Bank, which were holding the 8<sup>th</sup>, 9<sup>th</sup> and 10<sup>th</sup> position in the classification of banks respectively in 2005.

Predominant position in the Bulgarian banking market in 2005 occupies the UniCredito group with a market share based on assets of 21,8% and a market share based on granting of loans of 21,9%. The Hungarian OPT Bank after the buyout of the DSK Bank, followed with a market share of 13,61% based on assets and 16,3% based on the granting of loans.

Overall, the country with the greatest penetration in the Bulgarian banking market is Greece, after the recent buyout of the DZI Bank by the EFG Eurobank-Ergasias. In June 2005 the five large Greek banking groups were concentrating 23,68% of the banking system's capital and 26,2% of the granting of loans to customers.

### **3.5 Former Yugoslavian Republic of Macedonia (FYROM)**

Besides the Greek banks the German bank International Micro INV which bought out the 27,17% of the bank ProCredit Bank of the Former Yugoslavian Republic of Macedonia at a buyout amount of \$4,83 millions.

Table 4. Banks that were merged and bought out banks in FYROM

Greek Bank Buyer	Foreign Bank Target	Buyer's Country	Percentage of Participation	Amount of Buyout (USD millions)
Internationale Micro Inv	ProCredit Bank	Germany	27,17%	4,83

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

The banking system consists of 20 banks, of which 8 are owned by foreigners, 1 is state owned and 11 are domestic private banks. The presence of foreign banks remains limited compared to other banking markets of Central and Southeastern Europe. The percentage of bank capital controlled by foreign banks increased from 11% in 1999 to 51,3% in 2005.

The privatization of banks in FYROM are at an adequately advanced stage (2005: 92% of assets of all banks), given that there exists only a small size bank that is owned by 100% by the state (Macedonian Bank for Development Promotion AD Skopje), from the 20 banks of the system. In 2005 the 47,1% of the total capital of the banking system belonged to domestic private investors and the 51,3% to foreign investors. Domestic private banks of small size are negotiating to merge, while for others interest has been expressed by foreign strategic investors. It is estimated that in the following years there will be large activity for mergers and buyouts in FYROM. The banking system of the FYROM is characterized by the significant concentration of the market shares. The three largest banks (Komericialna Banka Skopje, Stopanska Banka Skopje, and Tutunska Banka Skopje) gather the 66% of the total capital of the sector, the 68% of the total granting of loans and the 73% of the customer deposits.

Predominant position in the banking market of FYROM holds the National Bank after she bought out the 68,4% of the second largest bank of the country (Stopanska Banka Skopje) in April 2000 for €60 millions. Through the Stopanska Banka Skopje the National Bank has a 23,8% share of the market based on assets and a 27% market share based on the granting of loans. The Alpha Bank entered the banking market of FYROM in 1999 after buying out the Kredinta Banka, which later was renamed Alpha Bank Skopje. In 2005, the Alpha Bank Skopje had a market share based on the granting of loans 2,6%. The EFG-Eurobank-Ergasias, the Emporiki Bank and the Piraeus Bank do not have a presence in FYROM.

After the Austrian "Erste Bank" pulled out of the deal, "National Bank of Greece" (NBG) drove a hard bargain when it bought a controlling stake in "Stopanska Banka", Fyrom's leading banking establishment for less than \$50 million in cash and in kind. With well over 60% of all banking assets and liabilities in Fyrom and with holdings in virtually all significant firms in the country, "Stopanska Banka" is synonymous with the Fyrom's economy, or what's left of it. NBG bought a "clean" bank, its bad loans portfolio hived off to the state. NBG - like other Greek banks, such as Eurobank, has branches and owns brokerages in Albania, Bulgaria, and Romania. But nowhere is it as influential as in Fyrom. It was able to poach Gligor Bisev, the Deputy Governor of Fyrom's central Bank (NBM) to serve as its CEO. Another Greek bank, Alpha Bank, has bought a controlling stake in Kreditna Banka, a Macedonian bank with extensive operations in Kosovo and among NGO's.

### 3.6 Romania

In Romania at the beginning the banking activities on the part of Greece did not exhibit enough interest compared with the interest shown by other countries. The total amount of buyouts and mergers in Romania for the time period 2004 -2006 was \$81,07 millions for the Greek banks. More specifically the Greek banks that played a role in the mergers and acquisitions in Romania are the ATE and the National Bank of Greece, which bought out the banks Mindbank and Banka Romaneasca respectively each one. The percentages of participation and the amount of acquisitions are shown in the following table 5.

Table 5. The Greek banks that were merged and bought out banks of Romania

<b>Greek Bank Buyer</b>	<b>Romania Bank Target</b>	<b>Percentage of Participation</b>	<b>Amount of Buyout (USD millions)</b>
ATE	Mindbank	57,13%	41,07
National Bank of Greece	Banka Romaneasca	81,65%	40,00
<b>Total</b>			<b>81,07</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

The total amount of banking buyouts and mergers in Romania from countries outside Greece for the time period 2004-2006 reached the amount of \$4.853,17 millions. More specifically the banks that played a leading part in the buyouts and mergers in Romania were the Austrians Erste Bank and the Bank Austria the French Societe Generale and finally the Israeli Bank Leumi Le Israel. The percentage of participation and the amount of buyouts are shown in the following table 6.

Table 6. Banks of other countries that were merged and bought out banks of Romania.

<b>Foreign Bank Buyer</b>	<b>Romanian Bank Target</b>	<b>Buyer's Country</b>	<b>Percentage of Participation</b>	<b>Amount of Buyout (USD Millions)</b>
Erste Bank	Banka Comerciala Romana	Austria	61,90%	4.445,81
Bank Leumi Le Israel	Eurom Bank	Israel	95,00%	41,41
Bank Austria	Bank Tiriac	Austria	100,00%	311,25
Societe Generale	BRD	France	7,32%	54,70
<b>Total</b>				<b>4853,17</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

Romania became a full member of the European Union along with Bulgaria in January of 2007. The banking sector of Romania consists of 39 banks of which 30 are foreign and 1 is state owned. The concentration of the banking sector is not very high as the 5 of the largest banks control only 60% of the sector's total capital. At the present time the 90% of the total capital of the banking system is controlled by foreign banks. The European banks control the 80% of the banking system's capital.

In the middle time range and after the completion of the privatizations in Romania, significant reclassifications are expected in the banking system with respect the volume of competition, the market shares, the quality and the number of the products offered and the profitability of the banks. The expected intensification of competition will bring about a new wave of buyouts as the banking institutions will operate in an environment where the bank size play a decisive part.

The first quarter of 2006, predominant position in the banking market of Romania had the Austrian Erste Bank with a share on assets 25,9%. The French Societe Generale followed, with a share on assets 15,2% after she bought out the BRD Bank.

From the total of the 39 banks in Romania, the largest 15 concentrate the 89% of the total capital of the banking system. The countries with the greatest penetration in the banking market of Romania are Austria (1<sup>st</sup> quarter 2006: 33,9% share on assets), France (1<sup>st</sup> quarter 2006: share on assets 15,2%) and Holland (1<sup>st</sup> quarter 2006: share on assets 9,8%). The 5 large Greek banking groups were concentrating 11,9% of the banking system capital). In 2005, the Greek banks were concentrating in total 13,6% of the granting of loans to customers.

### 3.7 Serbia

In Serbia the banking activity on the part of Greece and on the part of the other countries exhibited sufficient interest. The total amount of mergers and buyouts in Serbia during the period 2004 -2006 reached the amount of \$973,68 millions for the Greek banks. More specifically the Greek banks that played a leading part in the buyouts and mergers in Serbia are the Alpha Bank, the Eurobank, the ATE, the National Bank of Greece and the Piraeus Bank which bought out the banks Jubanka, National Savings Bank, AIK Banka, Vojvodjanska Banka and Atlas Banka respectively each one. The percentage of participation and the amount of buyout are shown in the following table 7.

Table 7. The Greek banks that merged and acquired banks of Serbia

<b>Greek Bank Buyer</b>	<b>Serbian Bank Target</b>	<b>Percentage of Participation</b>	<b>Buyout Amount (USD Millions)</b>
Alpha	Jubanka	100,00%	206,69
Eurobank	National Savings Bank	90,20%	93,28
ATE	AIK Banka	20,00%	101,78
National Bank of Greece	Vojvodjanska Banka	100,00%	489,57
Piraeus	Atlas Banka	88,23%	34,45
Popular Bank	Centrobanka	76,00%	47,91
<b>Total</b>			<b>973,67</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

The total amount of the banking buyouts and merger sin Serbia by countries besides Greece during the period 2004 -2006 reached the amount of \$1.063,25. More specifically the banks that played a leading part in the buyouts and mergers in Serbia, the percentage of participation and the amount of buyouts are shown in the following table 8.

Table 8. Banks of other countries that merged and bought out banks of Serbia

<b>Foreign Bank Buyer</b>	<b>Serbian Bank Target</b>	<b>Country Buyer</b>	<b>Percentage of Participation</b>	<b>Buyout Amount (USD Millions)</b>
Banka Intesa	Delta Banka	Italy	90,00%	432,08
EBRD	Komercijalna Banka	United Kingdom	25,00%	84,21
Erste Bank	Novasdska Banka	Austria	100%	108,98
Findomestic Banca	Nova Bank	Italy	95,00%	26,12
Nova Ljubljanska banka	Continental Banka	Slovenia	98,97%	59,93
OTP Bank	Kulska Banka	Hungary	67,00%	152,23
OTP Bank	Zepeter Bank	Hungary	75,10%	44,31
Sampaolo Imi	Panonska	Italy	87,39%	155,4
<b>Total</b>				<b>1063,26</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

Since 2003 the banking sector of Serbia is developing at a fast rate. This was expected more or less, taking in to account the low base of starting out after the liquidation of the 4 larger local banks in January of 2002. During the time period 2001-2006 more than \$20 billion entered in to Serbia mainly from emigration remittances and revenues of businesses privatizations. The total capital of the banking sector more than doubled during the last 3 years and reached in June of 2006 the amount of \$11,7 billions. Contrary to all these, the ratio of total bank capital to the GNP still remains low (2005:43%).

The borrowing of the private sector, although it was been increasing at a fast rate (43% in 2005), as a percentage of GNP was also low (22,5% in 2005) underlying significant margins of increase.

The banking sector of Serbia does not exhibit particularly high concentration of shares. In 2005, the market share based on assets of the 5 largest banks amounted to 50% and that of the largest 10 banks amounted to 66%. From the total of 40 banks that operate in the country the 17 foreign ones concentrate the 66% of the banking system's capital, the 11 state owned the 23,9% and the domestic private ones the 10,1%.

The procedure of privatization in Serbia, which basically started at the beginning of 2005, is continuing to the present at a fast rate. The most recent important privatizations in the banking sector were of the Panonska Banka which was bought out by the Italian San Paolo IMI at the end of July 2006, and of the Vojvodjanska Banka which was bought out by the National Bank in September of 2006. The next banking institution that is about to be privatized in Serbia is the Credi Banka AD, Kragujevac.

For the near future it is expected significant activity of mergers and acquisitions in the country because there still are significant margins of further compressing of the sector and state owned banks for privatization.

In 2005, predominant position in the banking market of Serbia had the Austrian Raiffeisen Bank with share based on assets 15,4% and share based on the granting of loans 18,7%. The Italian Banka Intesa followed with share based on assets 10,6% and share based on the granting of loans 10,2%. The countries with the greatest penetration in the Serbian market are Italy (2005:18% share on assets), Austria and Greece (2005: 17% share on assets each one), if we include the recent buyout agreement of the Vojvodjanska Banka from the National Bank and the acquisition agreement of the AIK Banka from the Agricultural Bank of Greece (ATE).

In 2005, the large banks of Greece exhibited limited capability to penetrate the Serbian market. At the present however the total presence of the large Greek banks has been strengthened after the buyout of the 6<sup>th</sup> largest bank of the country by the National Bank. In 2005, the 5 large Greek banks were concentrating a market share based on the granting of loans 12,86%, from 8,66% before the buyout of Vojvodjanska Banka.

### 3.8 Turkey

In Turkey the banking activities on the part of Greece did not exhibit adequate interest as opposed to other countries. The total amount of banking mergers and buyouts in Turkey during the period 2004-2006 reached the amount of \$2.770,00 and it had to do with the buyout of a 46,00% shares in the Finansbank by the National Bank of Greece at the above mentioned amount.

Table 9. The Greek banks that merged and bought out banks of Turkey

Greek Bank Buyer	Turkish Bank Target	Buyer's country	Percentage of Participation	Amount of Buyout (USD Millions)
National Bank of Greece	Finansbank	Greece	46,00%	2.770,00
Alpha	altemnatibank	Turkey	47,00%	246,30
Eurobank Ergasias	Tekfenbank	Turkey	70,00%	182,00
<b>Total</b>				<b>3.198,30</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

The total amount of banking buyouts and mergers in Turkey from countries other than Greece during the time period 2004-2006 reached the amount of \$6.457,00. More specifically the banks that played a leading part in the mergers and acquisitions in Turkey the percentage of participation and the amount of buyout are shown in the following table 10.

Table 10. Banks of other countries that merged and acquired banks of Turkey

<b>Foreign Bank Buyer</b>	<b>Turkish Bank Target</b>	<b>Buyer's Country</b>	<b>Percentage of Participation</b>	<b>Buyout Amount (USD Millions)</b>
Citybank	Akbank	USA	20,00%	3.100,00
Turan Alem Bank	Sekerbank	Kazakistan	33,98%	283,20
Dexia Bank	Denizbank	Belgium	100,00%	809,56
General Electric	Garanti Bankasi	USA	74,70%	1.806,00
Fortis	Dis Ticaret Bankasi	Belgium	89,34%	1.051,00
BNP Panbas	TEB	France	50,00%	216,80
<b>Total</b>				<b>6457.00</b>

Source: Mergerstat. Intellinet. Bloomberg. Athens Stock Exchange

### 3.9 Data for Greece

In the following table are presented buyouts which concern banks based in Greece. For this reason in some instances the Greek banks are the target and in some other are the ones that buy out (it is shown in the table in the column target country). We observe in Illustration 2 that half of the announcements took place during 2006.

The data were drawn from the Deloitte "Highlights of the Greek Banking Sector", Deloitte Business Solutions S.A., December 2007, the Bank of Greece, the ASE and the Union of Greek Banks.

ILLUSTRATION 2. Mergers and Acquisitions in Greece during the years 2004-2006

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

#	Date Announced	Buyer	Buyer Country	Target	Target Country	% Sought	Deal Size (USD mn.)
1.	27-Nov-06 <sup>1</sup>	Alpha Bank	Greece	Alternatifbank	Turkey	47.00%	246.30
2.	12-Oct-06 <sup>1</sup>	EFG Eurobank Ergasias	Greece	Dominet Bank	Poland	100.00%	n/a
3.	29-Sep-06 <sup>1</sup>	EFG Eurobank	Greece	DZI Bank	Bulgaria	74.26%	200.20
4.	11-Sep-06	ATE Bank	Greece	AIK Banka	Serbia	20.00%	n/a
5.	10-Sep-06	National Bank of Greece	Greece	Vojvodjanska Banka	Serbia	99.40%	488.60
6.	18-Jul-06	EFG Eurobank Ergasias	Greece	Universal Bank	Ukraine	99.34%	n/a
7.	23-Jun-06	ATE Bank	Greece	Mindbank	Romania	57.13%	41.07
8.	13-Jun-06	Credit Agricole	France	Emporiki Bank	Greece	63.13%	2.670.10
9.	15-May-06	Dubai Financial Group	Dubai	Marfin Financial Group	Greece	31.50%	486.55
10.	08-May-06 <sup>1</sup>	EFG Eurobank Ergasias	Greece	Tekfenbank	Turkey	70.00%	182.00
11.	03-Apr-06	National Bank of Greece	Greece	Finansbank AS	Turkey	46.00%	2.770.00
12.	23-Mar-06	Marfin Financial Group	Greece	Egnatia Bank SA	Greece	19.49%	136.65
13.	17-Mar-06	EFG Eurobank Ergasias	Greece	National Savings Bank ad	Serbia & Montenegro	37.70%	42.30
14.	02-Feb-06	Marfin Financial Group	Greece	Laiki Bank	United Kingdom	9.98%	110.08
15.	04-Nov-05	Piraeus Bank	Greece	Atlas Banka	Serbia & Montenegro	8.23%	8.98
16.	11-Oct-05	New York Community Bancorp	United States	NBG / Atlantic Bank of New York	Greece	100.00%	400.00
17.	02-Sep-05	Marfin Financial Group	Greece	Egnatia Bank SA	Greece	10.07%	37.32
18.	25-Aug-05	EFG Eurobank Ergasias	Greece	National Savings Bank ad	Serbia	52.50%	50.88
19.	10-Aug-05	Alpha Bank	Greece	Jubanka AD	Serbia & Montenegro	11.36%	23.69
20.	18-Feb-05	Piraeus Bank	Greece	Atlas Banka	Serbia & Montenegro	80.00%	31.29
21.	25-Jan-05	Piraeus Bank	Greece	Eurobank AD	Bulgaria	99.70%	65.77
22.	25-Jan-05	Banco Comercial Português	Portugal	Novabank	Greece	50.00%	448.54
23.	12-Jan-05	Canadian Western Bank	Canada	National Bank of Greece (Canada)	Greece	100.00%	18.36
24.	31-Aug-04	Alpha Bank	Greece	Jubanka AD	Serbia & Montenegro	88.64%	183.00
25.	31-Mar-04	Societe Generale	France	Geniki	Greece	49.90%	105.44
26.	29-Feb-04	Societe Generale	France	Geniki	Greece	22.34%	44.72
27.	14-Jan-04	Societe Generale	France	Geniki	Greece	22.34%	48.02

Source: Mergerstat Intellinet Bloomberg Athens Stock Exchange.

In the following illustration 3 are presented the most important buyouts that took place in Greece the last 16 years. It is noted that after 2004 there appears real increase of the buyouts of Greek banking institutions from foreign ones (mainly French). The decade of 1990 is characterized to a large degree from the privatizations and buyouts of bank institutions, of which the control belonged directly or indirectly to the state (e.g. of the Macedonian Thrace Bank and of the ETBA bank by the Piraeus Bank which had been privatized in 1991 or of the Ionian bank by the Alpha Bank). Another buyout that had drawn a lot of attention was that of the private Ergasias Bank by the EFG Eurobank in 1999.

ILLUSTRATION 3. Mergers and Acquisitions in Greece the last 16 years

#	Year	Target	Buyer	Deal Size (€ mn.)	Price to Book Value	Price to PBT*
1	2006	Emporiki Bank	Credit Agricole	2,089.9	2.87	19.50
2	2006	Marfin Financial Group	Dubai Financial Group	401.6	2.03	30.24
3	2006	Egnatia	Marfin Financial Group	113.4	2.40	21.49
4	2005	Novabank	Millenium BCP Group	330.0	4.44	(19.55)
5	2005	Egnatia	Marfin Financial Group	30.6	1.42	13.85
6	2005	Panellinia	DZ Bank	8.5	2.81	65.53
7	2004	Geniki	Societe Generale	125.1	1.14	25.82
8	2002	ETBA	Piraeus	510.1	0.77	20.99
9	2002	Attica	Postal Savings	40.4	2.48	16.77
10	1999	Ergasias	Eurobank	1,821.7	15.93	27.55
11	1999	Ioniki	Alpha	798.2	5.59	42.24
12	1999	Doriki	Telesis	41.1	4.05	23.08
13	1999	Ergasias	Deutche Bank	19.7	0.95	1.76
14	1998	Xiosbank	Piraeus	243.8	15.15	51.52
15	1998	Bank of Crete	Eurobank	218.6	1.79	n/a
16	1998	Macedonian – Thrace Bank	Piraeus	80.0	3.54	n/a
17	1998	Geniki	Interamerican	51.7	3.66	34.94
18	1998	Bank of Central Greece	Egnatia	49.4	2.41	n/a
19	1998	Bank of Athens	Eurobank	26.2	3.01	n/a
20	1997	Attica	TSMED	27.6	2.31	107.08
21	1996	Interbank	Eurobank	47.0	1.78	n/a
22	1993	Bank of Athens	Hanwa First Investment Co.	14.2	1.21	n/a
23	1991	Piraeus	Privatisation	8.8	2.01	n/a

Source: Press Releases and Published Financial Statements,\* PBT= Earnings after taxes

Generally speaking in the banking area of Greece have developed 6 large financial institutions (National Bank, EFG Eurobank, Alpha Bank, Piraeus Bank, Emporiki Bank, Agricultural Bank), from which some are expected to play a leading part in the buyout of the Hellenic Post Bank, because of the significant amount of deposits it owns. Also buyouts and mergers of smaller banks are expected, without ruling out the possibility for another larger agreement. The Greek banks completed 16 buyouts of banking institutions in the Balkans region during the period 2004-2006 as it is shown in the following table 11.

Also in some instances the Greek banks were the banks that were bought out by the banks of other countries. During the period of 2004-2006 the Greek banks that were bought are shown in the following table 12.

To the question whether the buyouts and the mergers will continue in Greece nobody can answer with absolute certainty. Economic logic implies that these will continue mainly between the small banks. More specifically, the small banks in Greece operate with an average return on equity that fluctuates around 10% and the ratio of costs to revenues is above 70%, when these figures for the larger banks fluctuate around 20% and 50% respectively. Therefore, it follows that the smaller banks have not attained the size that will allow them to have such economies of scale so that to be able to offer to their owners returns that are analogous to the ones offered by their larger competitors.

Table 11. Mergers and Acquisitions between 2002 - 2006 in the Balkans

Greek Bank	Buying out Foreign Bank	Country	Buyout Percentage (%)
National Bank	Vojvodjanska Banka	Serbia	100,00
	Finansbank	Turkey	46,00
	Banca Romaneasca	Romania	98,88
	United Bulgarian Bank	Bulgaria	99,91
Eurobank	Dominet Bank	Poland	100,00
	DZI Bank	Bulgaria	74,26
	Universal Bank	Ukraine	99,34
	Tekfenbank	Turkey	70,00
	National Savings Bank	Serbia	100,00
	Bancpost	Romania	78,00
	Postbanka	Bulgaria	100,00
Alpha Bank	Alternatifbank	Turkey	47,00
	Jubanka	Serbia	99,99
Piraeus Bank	Atlas Banka	Serbia	100,00
	Eurobank	Bulgaria	99,85
	Egyptian Commercial Bank	Egypt	93,47
ATE Bank	AIK Banka	Serbia	20,00
	Midbank	Romania	74,00

Source: Deloitte

Table 12 Mergers and Acquisitions of Greek banks by Foreign banks during the period 2004-2006

Foreign Bank	Country	Greek bank being bought out	Acquire percentage (%)
Credit Agricole	France	Emporiki	63,13
Dubai Financial Group	Dubai	Marfin Financial Group	31,50
NewYork Community Bancorp	USA	NBG/Atlantic Bank Of New York	100,00
Canadian Western Bank	Canada	National Bank of Greece (Canada)	100,00
Societe Generale	France	General	94,58

Source: Deloitte

### 3.10 The more important facts

On August 9<sup>th</sup> 2006 the French Credit Agricole won the control of the Emporiki Bank. The economic prowess of the French bank could support the expansion of the Emporiki Bank through an aggressive pricing strategy, in order to increase its share in the market.

On September 20<sup>th</sup> 2006 the Cypriot Popular Bank made a public offer in order to acquire the one 100% of the Marfin Financial Services and of the Egnatia Bank for a triple merger. The control of the new bank (it was expected to be named Marfin Popular Bank) would had been in the hands of the Marfin shareholders mainly Dubai citizens. The Marfin Popular Bank was expected to be the 6<sup>th</sup> largest Greek Bank on the base of assets and moreover it could become a significant player with a large amount of capital, at the period of time the merger occurred. The mergers of the Greek that occurred during the period 1997-2007 are presented in the following table 13.

Table 13. Mergers and Acquisitions between Greek banks

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Greek Bank Buyer	Merged Greek Bank
MARFIN Popular Bank	Marfin Bank, Egnatia Bank, Popular Bank(Greece)
MARFIN Bank	10% of Egnatia Bank
Emporiki Bank	Bank of Investments
National Bank of Greece	ETEBA
EFG Eurobank	Unit Bank
Piraeus Bank	ETBA
EFG Eurobank	Telesis, Bank of Investments
Credit Agricole	6,7% of the Emporiki Bank of Greece
BCB	50% of NOVA Bank
Alpha Bank of Credit	Popular Bank
EFG Eurobank	Ergasias Bank
Deutsche Bank	10% of EFG Eurobank
Piraeus Bank	National Westminster Bank
Telesis AXE	Doriki Bank
National Bank of Greece	National Mortgage Bank of Greece
EFG Eurobank	Cretan Bank
EFG Eurobank	Bank of Athens
Piraeus Bank	Bank of Macedonia Thrace
Piraeus Bank	Chios Bank
Piraeus Bank	Credit Lyonnais
Egnatia Bank	Bank of Central Greece
National Mortgage Bank of Greece	National Homestead Bank
Piraeus Bank	Greek Network Chase Manhattan
EFG Eurobank	Interbank

Source: Greek Bank Union

The example of the buyout of Emporiki Bank by the Credit Agricole in 2006-the largest buyout of a Greek financial institution by another international one-, underlines the interest of the foreign financial institutions for the dynamically developing Greek market. All the large Greek banks followed their customers in their effort to expand in the region of Southeastern Europe. Given the rate at which the Greek market reaches the point of saturation, the timely discovery of new sources of revenues for further dynamic development of bank profitability constituted one way course for the Greek banks (Gratsonis F., 2008).

In this framework of analysis the expansion of the Greek banks is expected to be a significant source of profitability in the future, as the economies of these countries gradually acquire a dynamic of converge to the economies of Western Europe.

Indicative of the importance the Greek banks attribute to their activities abroad is the magnitude of investment in the region of Southeastern Europe. Up to date they have invested more than €6 billion and they operate 1.900 premises (that represents 1/3 of the total number of premises) (Bank of Greece and Union of Greek Banks, 2007).

Thus the «domestic banks attain by far the first position with respect the number of deals that took place in the region» (Georgas, 2009) as in a total of 40 across the border deals that were made in the last 4 years in Turkey, Bulgaria, Serbia, Albania, Romania and Fyrom, the 13 were made by Greek financial institutions and mainly by the National Bank, the Eurobank, the Piraeus Bank and the Alpha Bank.

Already in a four year time period of dynamic development the Greek banks have won significant shares in the markets of the countries where they have engaged, while they have as a target in the next 2-3 years these countries « to produce» 20-30 %of their revenues and about 10-15% of their profitability.

Today the National Bank has 700 premises in NE Europe, as many has the Eurobank, which in the last year has invested €1 billion in the region .The Alpha Bank owns a network of 220 premises in the region with a target to double them by 2008.The Piraeus bank owns almost 190 premises and the ATE Bank about 45 in Serbia and in Romania.

However, it should be noted that the Greek banks were very generous in the evaluation of the banks – targets that they chose to buyout in the past not so much with concern the absolute magnitudes in Euros that they paid out as with mainly the indexes of evaluation. This was so either because they were late to decide,

which resulted to increased evaluations, or because the number of acquisitions targets had decreased, which resulted to a higher price completion of the deals.

One of the most expensive buyouts that took place, as it is mentioned in the article, was the one of the Bulgarian bank DZI in September of 2006. Eurobank paid \$200,2 millions for 74% of the bank, evaluating 6,8 times its accounting value, when other buyouts in the country by foreign banks were completed at 2,5 times their equity value.

Equally expensive was the price paid by Eurobank for the National Savings Bank of Serbia, where it paid 6 times its accounting value, while among the most expensive were the two large buyouts made by the National Bank. The first one of the Vojvodjanska Banka for \$490 million, an amount equivalent to 5,3 times its accounting value and 150 times of the before taxes earnings and the second one of the Turkish Finansbank for \$2,77 billions an amount 4 times its accounting value.

In any case, for years the expectations that are promoted in the stock market are that the endowment of the Greek banks in Eastern Europe will constitute their strong negotiating point, provided that a cycle of concentrations will start in the banking sector of Greece, with the Greek banks this time being targets of buyouts and mergers by foreign banks of larger size.

### **3.11 Differences before and after the Acquisitions in the deposits and the loans of the Greek banks**

Most of the buyouts and mergers in the region of the Balkan countries were made between the year 2005 and the year 2006 a time period a lot after the euro was introduced. The initial target of the banks was to better consolidate their position in the global market, to sell more and of a better quality services and financial products, mainly in the region of Balkans, a region with particularly low competition and suitable for investments.

From the expansion policy of the banks that had as target the global consolidation of their position and the increase of their profitability, we can conclude after the mergers and acquisitions they undertook in the Balkans, that this policy was beneficial for them, since on the basis of the first data collected for the year 2006, we can observe that the deposits and the different type of loans increased for each bank premise.

In the following table 14 are shown the loans and the deposits of the banks that attempted to buyout or to merge with a bank in the Balkans.

Table 14. Results for banks after the mergers and acquisitions

Banks	After the mergers and acquisitions		Before the mergers and acquisitions		Difference of Loans	Difference of Deposits
	Loans per Premise	Deposits per Premise	Loans per Premise	Deposits per Premise		
National	44,9	57,8	38,9	50,1	6,0	7,7
Eurobank	43,4	30,9	31,4	22,4	12,0	8,5
Alpha	57,6	43,4	31,2	23,5	26,4	19,9
Piraeus	43,0	33,5	19,3	15,0	23,7	18,5
Emporiki	42,8	39,9	17,4	16,2	25,4	23,7
ATE	25,7	38,2	11,8	17,5	13,9	20,7
Post Bank	32,9	76,6	4,5	10,4	28,4	66,2
Marfin	41,1	47,0	3,4	3,9	37,7	43,1
General	23,6	20,9	2,8	2,5	20,8	18,4
Egnatia	35,7	37,1	2,5	2,6	33,2	34,5
Attica	35,7	39,1	2,1	2,3	33,6	36,8
Aspis	26,1	25,7	1,7	1,7	24,4	24,0
Proton	46,7	55,7	0,8	1,0	45,9	54,7

Source: Published & Consolidated Financial Statements under IFRS, Hellenic Banking Association

### 3.12 The impact of cross border buyouts and mergers of Greek banks on the indexes ROAE and ROAA

One more proof for the positive impact that had the mergers and acquisitions for each bank as a financial organization is shown by observing the following illustration 4, where the indexes ROAA and ROAE have been calculated. These indexes show that the return of the average of the assets, after the deduction of taxes, was positive and the banks used efficiently their claims to cover their liabilities and their profitability, while the return of the bank capital after the deduction of taxes, was positive and at a satisfactory level for the banks that bought out or merged with another one in the region of Balkans (Vrentzou E., and Nounis C., 2007).

ILLUSTRATION 4. Results of the indexes ROAA and ROAE from the buyouts and mergers

#	Bank Name	Equity / Assets (%) 30.09.2006	Loans / Deposits (%) 30.09.2006	Return on Average Assets (after tax) ROAA* (%)	Return on Average Equity (after tax) ROAE* (%)
1.	NATIONAL	8.7%	77.6%	1.6%	22.3%
2.	EUROBANK	5.3%	140.2%	1.4%	24.7%
3.	ALPHA	4.7%	132.8%	1.4%	28.3%
4.	PIRAEUS	5.0%	128.2%	1.7%	32.4%
5.	EMPORIKI	5.1%	107.2%	0.6%	11.3%
6.	ATE BANK	5.7%	67.3%	0.7%	12.8%
7.	POSTAL SAVINGS	6.5%	43.0%	1.0%	14.2%
8.	MARFIN	12.7%	87.4%	3.0%	16.3%
9.	GENIKI	4.4%	112.5%	(1.3%)	(25.5%)
10.	EGNATIA	7.2%	96.2%	0.5%	6.9%
11.	ATTICA	5.3%	91.3%	0.1%	1.5%
12.	ASPIS	5.5%	101.5%	0.5%	8.8%
13.	PROTON	24.6%	83.8%	3.9%	12.3%
14.	BANK OF CYRPUS	6.3%	68.9%	1.3%	21.2%
15.	CYPRUS POPULAR BANK	5.5%	69.6%	1.1%	20.6%

*Source: Published & Consolidated Financial Statements under IFRS. BANK OF CYPRUS & CYPRUS POPULAR BANK's Published & Consolidated Financial Statements under IFRS in €.*

*Notes: Loans are net of provisions. Deposits include all liabilities due to customers. No adjustments to the equity of the banks made on the basis of notes to the financial statements and auditors' qualifications.*

*\*. ROAA and ROAE have been calculated on annual basis.*

#### 4. PROFITABILITY, EFFICIENCY AND LIQUIDITY OF THE GREEK BANKS DURING THEIR EFFORT FOR CROSS BORDER MERGERS AND ACQUISITIONS IN THE BALKAN AREA.

The profitability of the SEE countries banking sector, has improved significantly over the last six years (Petroopoulos D., Kyriazopoulos G., 2010). This was a result of the general reform of the banking system (write off of non-performing loans, privatization of state-owned banks, introduction of modern banking techniques, credit expansion) and the high intermediation spread in these countries. The table below presents two indexes of the SEE countries' banks profitability, the Return on Assets and the Return on Equity (Stubos G., Tsikripis I., 2004).

Table 15. EE Countries' Bank Profitability

Country	Year	ROA	ROE
Albania	1998	-1,8%	-82,3%
	2002	1,2%	19,1%
Bosnia/Herzegovina	1998	n/a	n/a
	2002	n/a	n/a
Bulgaria	1998	1,7%	15,8%
	2002	2,1%	16,2%
Serbia/Montenegro	1998	n/a	n/a
	2002	n/a	n/a
Fyrom	1998	2,0%	8,2%
	2002	1,5%	6,9%
Romania	1998	0,1%	1,0%
	2002	2,6%	18,3%
Greece	2003	0,9%	12,8%
EU Large Banks	2003S	0,4%	11,4%

Source: National Central Banks, Bank of Greece, ECB

In the future, the financial institutions in the SEE countries should find different sources of profitability, since the intermediation spread is expected to fall as the economies stabilize, the interest rates fall and the competition among banks increase. The financial institutions should seek for these new sources of profitability in the retail banking and the asset management, while they should try to increase their market share. On the other hand they should control their operating expenses and expand their activities quite careful, in order to minimize their losses from bad loans.

The analysis of the financial statements of a business includes besides the selection of the appropriate index and the comparison, without which the resulting conclusions do not have any meaning and most probably they do not lead to the correct explanation. The comparison makes sense when it is done in relation to time and in relation to the similar businesses or the sector. This double comparison gives the capability of a more correct explanation of the indexes and consequently of the business condition (Papoulias, 2000). In order to achieve this we will use the following indexes. The above indexes are recorded in the bibliography as the most appropriate indexes for measuring economic magnitudes and characteristics (profitability, return, liquidity) of the banks.

#### **4.1 Profitability – Efficiency Indexes in Greek Banking Sector**

##### a. Return On Assets (ROA): $ROA = \text{Net Profits} / \text{Total Assets}$

This index reflects the administrations capability to use efficiently the financial resources (assets) that has at its disposition, in order to create profits. (Vasiliou D., 1999).

##### b Return On Investment (ROE): $ROE = \text{Net Profits} / \text{Total Equity}$

This index reflects the efficiency with which the bank uses the capital of its owners, as it shows the size of profits that were created by the capital that was invested by the shareholders (owners) of the bank- enterprise (Vasiliou D., 1999).

#### **4.2 Liquidity Indexes in Greek Banking Sector**

a Loans / Deposits This index shows the banks' needs in relation to loans and deposits. Without liquidity, a bank could fail. (Vasiliou D., 1999).

b Total Assets / Total Loans This index shows the proportion of loans that the bank retains. A high value means low efficiency and low risk. (Vasiliou D., 1999).

The comparative analysis of the above indexes to the banking sector as a whole for Greece, in essence includes the comparative analysis with the commercial banks that operate in Greece. The participation of the co-operative banks to the totals of the economic magnitudes of the banking sector in Greece is very limited. Consequently, the corresponding indexes referring to the whole banking sector, essentially are the indexes of the commercial banks.

### 4.3 Results in Greek Banking Sector

#### 4.3.1 Profitability – Efficiency in Greek Banking Sector

a. ROA = Net Profits / Total Assets

Analyzing the specific index we could:

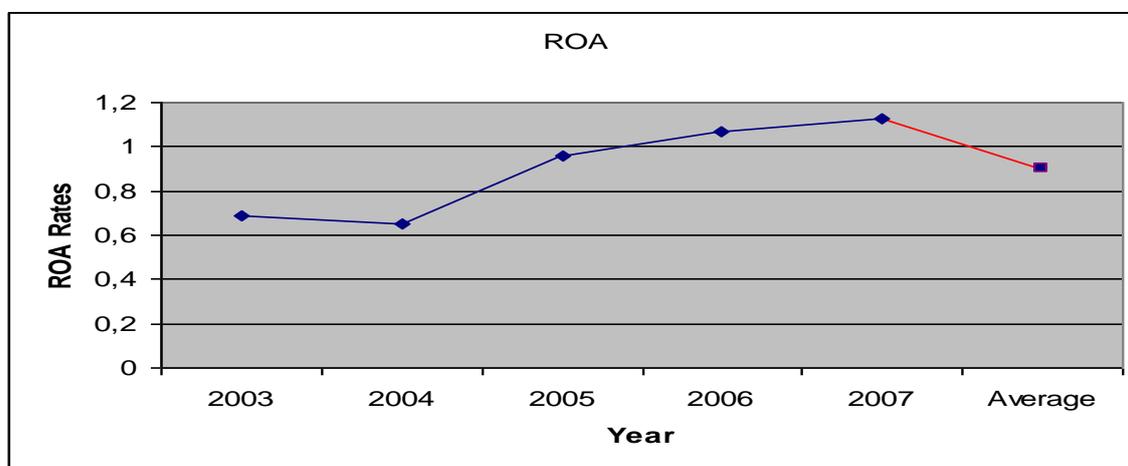
- compare the efficiency among the co-operative banks.
- observe the efficiency through time.
- compare efficiency of co-operative banks with the efficiency of the banking sector as a whole.
- investigate the reasons of the changes through time.

From the analysis of Table 1 we find out, that the efficiency increases 63,7%. Moreover the average of 5 year period (2003-2007) is 0,90 (Petropoulos D., Kyriazopoulos G., 2010).

Table 15. Return on Total Assets (ROA) – Index

Bank	2003	2004	2005	2006	2007	Percentage change	Average of five year period of time
Total of banks	0,69	0,65	0,96	1,07	1,13	63,77	0,90

Source: Union of co-operative banks of Greece (ESTE) / Bank of Greece / Self processing



b ROE = Net Profits / Total Equity

Analyzing the specific index of efficiency of the shareholders total equity, we can find out if the purpose of achieving a satisfactory result has succeeded. From the data presented in the Table 2 we suppose that the banks achieved their purpose, because we can see that the index has upper course. Finally, we observe that the change of the specific index for the total of the banking sector has an increase of 74,77%. As reasons for the above behavior of the efficiency of total shareholder equity index could be mentioned the following:

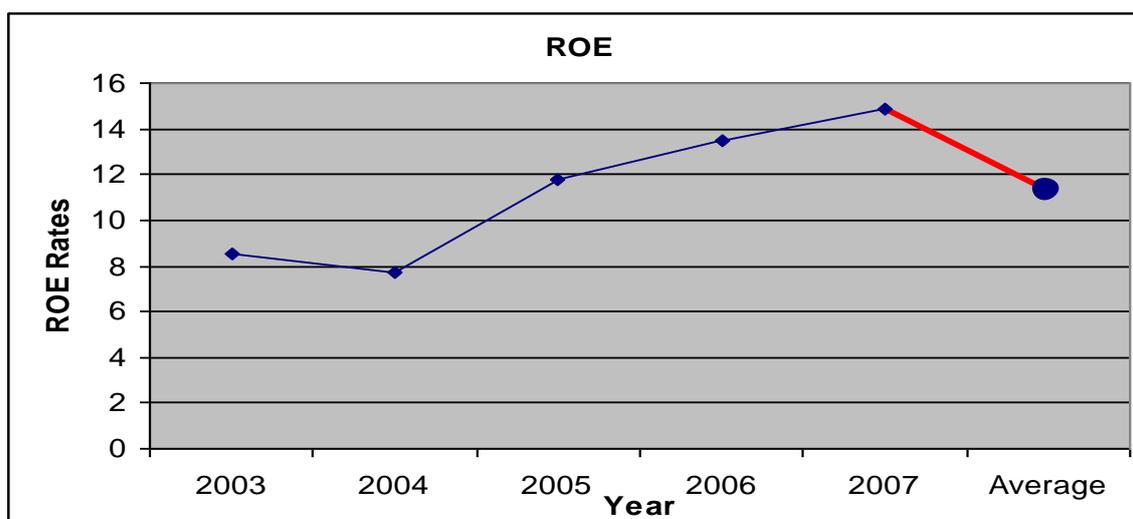
- The increase of the total banks premises, it was followed by improvement, except year 2004, of the way they are managed.

- Good management of total banks capital.
- High productivity of total banks (Petropoulos D., Kyriazopoulos G., 2010).

Table 16. Return of Total Equity (ROE) – Index

Bank	2003	2004	2005	2006	2007	Percentage change 2007-2003	Average of five year time period
Total of banks	8,52	7,70	11,80	13,47	14,89	74,77	11,28

Source: Union of co-operative banks of Greece (ESTE) / Bank of Greece / Self processing



#### 4.3.2. Liquidity Results in Greek Banking Sector

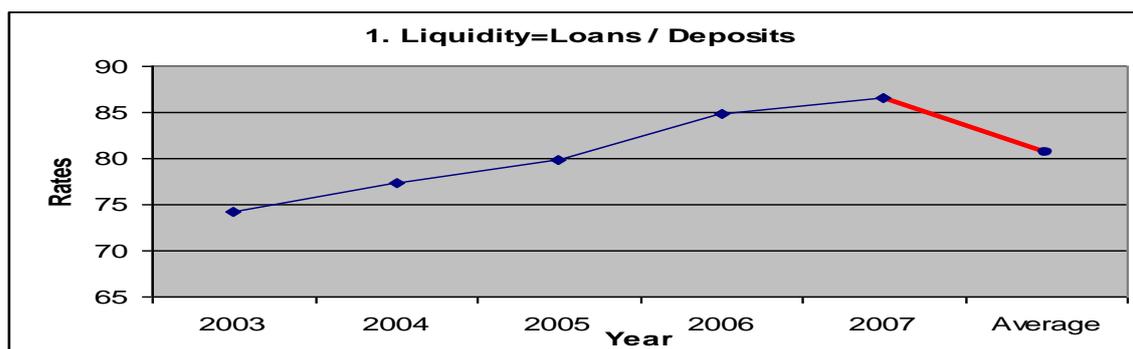
a Loans / Deposits

Analyzing the specific index of liquidity, we can find out the capability of a bank to fulfill its obligations. From Table 3, we find out that the deposits more than cover the loans, for the total of the banking sector. We, also, observe that the average for the time period under investigation for the total of the banks is 80,55% (Petropoulos D., Kyriazopoulos G., 2010).

Table 17. Liquidity (Loans / Deposits) – Index

Bank	2003	2004	2005	2006	2007	Percentage change 2007-2003	Average of five year time period
Total of banks	74,16	77,42	79,77	84,88	86,54	16,69	80,55

Source: Union of co-operative banks of Greece (ESTE) / Bank of Greece / Self processing



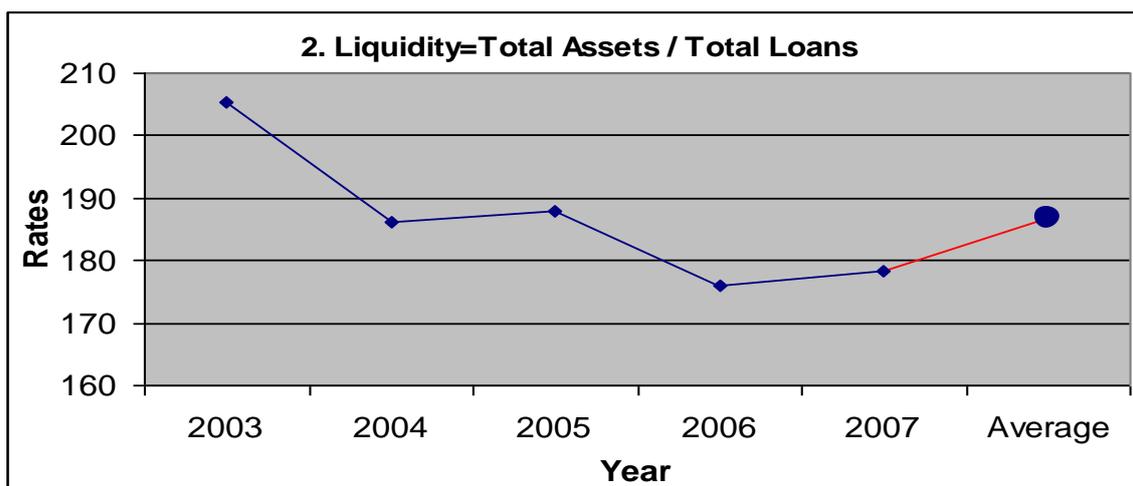
b Total Assets / Total Loans

Analyzing Table 4 we find out that the specific index it shows large differentiations and variations. We still observe that the percentage of the specific index for the total of the banks is negative. This negative result effect the average of 5 year time period (Petropoulos D., Kyriazopoulos G., 2010).

Table 4. Liquidity (Total Assets / Total Loans)\*100 – Index

Bank	2003	2004	2005	2006	2007	Percentage change 2007-2003	Average of five year time period
Total banks	205,27	186,22	187,83	175,87	178,20	-13,19	186,68

Source: Union of co-operative banks of Greece (ESTE) / Bank of Greece / Self processing



## 5. CONCLUSION

The Greek banks recognizing the opportunities for increasing their earnings, that arise in the market of the Balkan countries, after the entrance of some of them in the European Union, just as the gradual accession of the rest, they took care of expanding their magnitudes with bank buyouts in these countries. Important part for the decision of the Greek banks for buyouts in the Balkans played the investments of Greek businesses in Balkan countries since the beginning of the 90's. One more determining factor for this expansion in the Balkans, was the entrance of the country in the zone of the euro.

From the tables and the data of the present paper it is understood that the Greek banks have substantially benefited from the buyouts and mergers (within the country and across the borders), since they have increased significantly the amount of their deposits and their loans portfolio as well.

Also even though in some instances the cost of the buyout of a Balkan bank by a Greek one was significantly high, there are signs that this will gradually be depreciated since both banks have an adequately high ROAE index (e.g. Finance Bank by National Bank of Greece and DZI by EFG Eurobank).

The wave of cross border mergers and acquisitions in the Balkans caused some fears, mainly with regard to the stability of the system, the supply of adequate amount of capital through the granting of loans to small and medium size firms and to consumers, just as the loan pricing practices towards them. However, with «Basil II» there are already complete ways of control, while the granting and pricing of loans, shows not to be finally affected from the buyouts and mergers.

Of course it remains unknown whether the wave of cross-border buyouts and mergers in the banking sector of the Balkan countries will continue at the same rate, given the present economic crisis.

It is certain however that, acquisitions in the banking sector will not stop, even though their rate is very possible to be limited. On the other side, the cross-border agreements are on the rise, accelerating the unification of the global banking market. We believe that in a few years from today the banking map of the Balkans will include a much lesser number of banks, though of significantly larger size.

The Greek banks will need to expand quickly and to acquire the appropriate size, so as to have a leading part at the next stage of mergers and buyouts in the region after the crisis.

One basic result that comes out from this paper is that the banks in spite of the relatively short period of their business activity in the Balkans have achieved significant magnitudes and they tried well to cover basic needs of the local societies.

The estimation of the profitability and efficiency of the banks reaches satisfactory levels. However the course of liquidity indexes for the banks is going down. Overall, the banking sector of the SEE countries has developed significantly in the past six years period 1998-2003. However, there were many challenges because of the EU accession and the possibility for adopting the euro in the future. Those challenges have been recognized by the Greek Bank and they expand in the Balkan countries. The growing economic strength in the Balkan area, it is considered that will allow the Greek Banks to improve their performance and expand their activities.

The developments obligate the banks to proceed to the restructuring of their entrepreneurial framework and the revaluation of their strategy, by utilization of economies of scale and spectrum and the reduction of their operational cost. The dominant trend, that exists, is for buyouts and mergers for the creation of large financial groups, ready to compete efficiently at an international level. The target is the acquisition of strong capital structure, the large networks, and the capacity to supply packages of products at attractive prices (Kyriazopoulos G., Zissopoulos D., Sariannidis N., 2009).

Greeks are everywhere: banking (28% of their total investment in the country); energy (25%); telecommunications (17%); industry (15%); and food (10%).

## REFERENCES

- Athanasoglou, P. P. and Brisimis I. N., 2004. The impact of mergers and buyouts in the efficiency of banks in Greece. *Working paper Economic Bulletin*, Issue 22, Bank of Greece.
- Ayala A., 2005. Merger Performance in the European Banking Industry: An Integrated Approach Replicating the Larsson and Finkelstein (1999) Model Preliminary and incomplete draft of Chapter 5. *Phd thesis*
- Berger A.N. et al, 2000. Globalization of Financial Institutions: Evidence from Cross-Border Banking Performance. *Working paper*. Available at [www.federalreserve.gov](http://www.federalreserve.gov)
- Bos J.W.B. and Scmiedel H., 2006. Is there a Single Frontier in a Single European Banking Market?. *Working paper*, No. 701. Available at [www.ecb.int](http://www.ecb.int)
- Brakman S. et al, 2008. Cross-border Mergers and Acquisitions on revealed comparative advantage and merger waves. *TI 2008-013/2 Tinbergen Institute Discussion Paper*.
- Georgas, V., 2009. With advantage the Greek banks in the Balkans. *Eleftherotypia*, April 6, 2009
- Kyriazopoulos G. and Petropoulos D., 2010. What are the advantages and disadvantages from the banks mergers and acquisitions? Does Altman's z-score model for bankruptcy motivate banks for mergers and acquisitions? Evidence from the Greek banking system. *Proceedings of ICOAE*, Athens, August 2010

- Kyriazopoulos G. et al, 2009. The advantages and the disadvantages of mergers and acquisitions in the international and Greek economy. *Proceedings of ESDO*, Florina, September 2009.
- Papadakis V., 2002. *Strategy of Businesses. Greek & International Experience*. E. Benos, Athens
- Pasiouras F. et al, 2007. The identification of acquisition targets in the EU banking industry: An application of multicriteria approaches. *International Review of Financial Analysis*, Vol. 16, No. 3, pp 262-281
- Petropoulos D. and Kyriazopoulos G., 2010. Profitability, efficiency and liquidity of the co-operative banks in Greece. *Proceedings of ICOAE*, Athens, August 2010
- Stubos G. and Tsikripis I., 2004. Banking Sector Developments in South-eastern Europe. *Global Development Network Southeast Europe (GDN-SEE) Research Area: 'The path towards accession to the EU' working paper*, No. 4.4.)
- Topaloglou L., 2008. Interaction, Perceptions and Policies in the Boundaries of European Union: The Case of the Northern Greek. *Cross Border Zone Economic Alternatives*, No. 1.
- Vasiliou D., 1999. *Financial Management*, Open University Books, Patra, Greece.
- Vrentzou E. and Nounis C., 2007. Present developments in the Greek Financial system. *Bulletin of first quarter 2007 Union of Greek Banks*, Available at [www.hba.gr](http://www.hba.gr).

# THE EFFECTS OF BEHAVIORAL DISTORTIONS IN INVESTING OPTIONS

Anastasios Konstantinidis<sup>1</sup> and Androniki Katarachia<sup>2</sup>

<sup>1</sup>*Technological Education Institute of Western Macedonia, Greece, anastasioskonstantinidis@gmail.com*

<sup>2</sup>*Technological Education Institute of Western Macedonia, Greece, akatarac@pme.duth.gr*

## ABSTRACT

This paper analyzes the most infrequently occurring behavioral distortions (biases, heuristics and framing effects) in terms of Behavioral Finance. It discusses the manner in which this distortion, which is not in the forefront in the relevant bibliography, affects investors' options as well as the diversion of investment portfolios. It also demonstrates simple ways and procedures of identifying and managing such distortions with a view to enabling investors to avoid being victims of their own biases, emotions and framing effects, which may lead them to fallacies or wrong investing choices, and, therefore, to develop investing strategies which are bound to lead to potentially high-return portfolios.

## KEYWORDS

Behavioral finance, behavioral distortions, biases, investment portfolio

## JEL CLASSIFICATION CODES

G1, G11, D03

## 1. INTRODUCTION

Behavioral finance is a fairly new and increasingly growing discipline. By contradicting standard finance theory, which advocates that individuals and investors always act on the basis of rationality, it postulates that investors are greatly influenced by their own personality, emotions or biases, especially when they intend to make investing decisions, and also that these human attributes lead to anomalies, which make markets inefficient. The study of the relevant literature demonstrates a constant reference to specific common heuristics, biases and framing, such as overconfidence, herding, loss aversion, representativeness and mental accounting, which form and shape investors' behavior, and which should be explored and studied first, before one demonstrates an intensive interest in Behavioral Finance.

Nonetheless, it is worth highlighting that there are other biases, heuristics and framing, which are not sufficiently focused on or discussed and seem to be outshined by established distortions. The study of such distortions enables the understanding of their import and impact on the investing procedures adopted by investors (either individual investors or finance advisors).

The paper is organized on the basis of simple questions, which enable identifying the specific biases and framing, and also the extent to which the people involved in investing processes are capable of making rational decisions. In addition, the study suggests ways of averting such distortions in order to achieve the accomplishment of the most essential investing objective, that is, profit maximization.

## 2. BEHAVIORAL DISTORTIONS

### 2.1 The Endowment Effect

In Thaler's (1980) terms, "the fact that people often demand much more to give up an object than they would be willing to pay to acquire it is called the endowment effect".

Biases towards what one owns, which have been described as an investing behavioral anomaly, have contradicted the standard finance theory, which maintains that the value of investing products is the same, both for buyers and sellers. In detail, such biases involve the dissimilar approach of a perspective investor towards purchase and sale values of investing products. In other words, people seem to be reluctant to pay a high price to buy securities other people own. Instead, once they are the owners and wish to sell these securities, they want to receive as much as they used to be reluctant to pay before.

The issue is defined as willingness to pay (WTP) and willingness to accept (WTA), two concepts which are considered substantially different (Kahneman, et al, 1991). According to this tendency, a person who sells an investing product tends to overvalue a purchaser's WPT, and, conversely, a person who purchases undervalues a seller's WTA. In Nofsinger's (2001) terms, 'people often demand much more to sell an object than they would be willing to pay to buy it'. In other words, investors tend to place a higher value to commodities they own rather than those other people own.

In stock markets, the endowment effect is particularly observed in stock exchange electronic displays; selling investors appear to value their stocks higher than purchasers, which is likely to induce serious problems and lead to minimum or zero transactions.

Wrong securities valuation leads to a parallel reality and wrong investing decisions. Following the same investing approach for a long time generates losses in investment opportunities, and, consequently, losses in investing returns. Kahneman and Tversky (1979) defined this behavioral distortion as an 'asymmetry of value', whereas Nofsinger (2001) emphasized the phenomenon by stating that we 'have a bias toward keeping the securities we inherit instead of investing them in vehicles that are more appropriate to our needs.'

Empirical evidence is offered by Knetsch and Sinden (1984), who conducted an experiment-research to prove the impact of the endowment effect on people. 'The participants were endowed with either a lottery ticket, or with \$2.00. Sometime later, each subject was offered an opportunity to trade the lottery ticket for the money, or vice versa. Very few subjects chose to switch' (Kahneman et al, 1991).

Apart from the endowment effect, people's strong determination to keep securities in the financial market may also be explained by means of loss aversion, which was first introduced by Kahneman and Tversky (1979) and demonstrates the investors' unwillingness to sell their reduced-value portfolios. It becomes, therefore, evident that biases, such as the endowment effect and loss aversion, are interrelated and interact in investing behavior.

### 2.2 Time discounting

Time discounting is the phenomenon that 'a desired result in the future is perceived as less valuable than the same result now' (Dimitri and Van Eijck, 2007). It demonstrates the investors' preference for investments, the returns of which are exhibited earlier than expected. In this case, investors wish to have short term- rather than long term- returns, although long-term returns are higher and more positive.

Consider, for example, that one has to choose between two amounts of money:

100\$ to be paid in one year's time, or

68\$ to be paid at once

Empirical research has demonstrated that a \$100 payment in 12 months is just as attractive as \$68 right now for the average person. This means that on average, 'people will discount the value of a gain made in one year by 32% over how they would value the gain made immediately' (Koing and Kleinmann, 2006).

Time discounting is closely interrelated to discount rates. An acceptable such rate is directly related to the valuation of future gains and investment costs. High discounts tend to discourage investors from investment plans involving large initial outlay and high current cost depreciation (Julius, 1999).

The common perception that 'the present is what matters most' is likely to be harmful to investment returns. Investment plans organized on a long term basis are bound to receive higher returns than short-term options. If this psychological phenomenon-bias affects especially the professional portfolio and mutual funds holders, its outcomes will be harmful, not only to investors but also to the normal function of the stock market.

The effect of time preference appears to be greater in crisis and uncertainty periods. Questions such as 'what does the future have in store for us', or whether the future will be similar to the present or, finally, the question of whether there will be any stock markets in the future at all may lead to much higher discount rates.

### **2.3 Anti-market bias and anti-market foreign bias**

In Bryan Caplan's (2007) book, 'The Myth of the Rational Voter: Why Democracies Choose Bad Policies', anti-market bias is described as 'a tendency to underestimate the benefits of the market mechanism'.

To provide a more detailed insight of anti-market bias, and according to Pinker (1997), 'our minds have a built-in system of intuitive economics: It is based on the concept of reciprocal exchange, in which one party confers a benefit on another and is entitled to an equivalent benefit in return'. In general terms, anti-market bias involves encountering reality from our own point of view, which is closely related to our own vision. Scott (1966), emphasizes the argument by stating that 'it is not even true that he who hates a social system will form an objectively more correct vision of it than he who loves it. For love distorts indeed, but hate distorts still more'.

In financial terms, the investors' views about the current stock market situation determine their future investing behavior. Reality distortions result from the investors' ignorance or insufficient information. For a great number of investors (in particular old aged ones) the stock market is an unexplored domain with imminent risks looming over. For this reason, investors tend to adhere to familiar investing procedures, which, however, may turn them away from investing opportunities; money is invested in familiar investment plans with poor returns. Still, investing tools are developing, stock markets become more mature and safe. Codes of ethics, regulations, punitive measures and sanctions and supervisory bodies safeguard the normal function of the stock market as well as the investors' protection. The investors who are conscious of market laws and regulations will be able to realize that these work to their own benefit, and can, therefore, build trust relationships with the market or all those involved in the market.

Investment advisors, and, in general, individuals who are responsible for controlling the stock market, can adjust biases and fallacies. Their special qualifications as well as their attitude towards investing, which safeguards the investors' rather than their own personal interest, are employed with a view to gaining the investors' trust and reinforcing stock markets with new investments. According to Caplan (2010), 'more educated people are more libertarian and more pro-market than the general population'.

As far as anti-foreign bias is concerned, that is, the 'tendency to under-estimate the benefits of interacting with foreigners' (Caplan, 2007), the concept seems to contradict Adam Smith's (1776) conviction that "If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry'.

Based on Hiscox's (2002) formulation related to anti-foreign bias, one could ask:

"Do you favor or oppose increasing trade with other nations?" and

"Is that strongly favor or somewhat favor?"

In globalization terms, anti-foreign bias is associated with trade growth and elimination of trade borders; such practices are not conducive to competitiveness, price discount and production growth. In contrast, national economies appear to be threatened by the 'advent' of new products (at very low prices due to low cost of work), increase in unemployment rates (due to immigration flux and forced labor) or the total assimilation of language and cultural elements at the expense of the distinctive cultural traits of a nation. Krugman (1996), holds that 'the conflict among nations that so many policy intellectuals imagine is an illusion; but it is an illusion that can destroy the reality of mutual gains from trade. Trade deficits are self-correcting and the benefits of trade do not depend on a country having an absolute advantage over its rivals'.

Examining the specific phenomenon from a financial point of view, it is observed that people tend to be cautious of or even opposed to the global stock market. Markets have already become communicating vessels and, therefore, highly interactive. Ruthless speculation on countries and nations in favor of individual

speculators, and deliberate low ratings assigned by international credit rating agencies provide evidence that anti-foreign bias has been now more pertinent than ever. Greece and Ireland are typical examples of the war of markets against national economies. While many would agree that there are no boundaries established in stock markets, the question is: is it not possible that institutional investors, who speculate on countries in crisis, force markets to marginalization?

## **2.4 Hedonic framing**

Thaler's (1985) approach to mental accounting and prospect theory led to the concept of hedonic framing.

Mental accounting is a fundamental part of Prospect Theory. The central idea in mental accounting is that during decision making processes, individuals enter choices in different accounts. Mental accounting affects the way decisions are made, and the consequence for investment decisions is hedonic framing, a concept that demonstrates that it is possible to minimize the calm disposition effect to change one's mental approach. Disposition effect relates to the tendency of investors to sell shares the price of which has increased, while keeping assets that have dropped in value.

Thaler (1985), discussed hedonic framing in terms of the psychological costs and benefits which accrue to alternative frames of mental accounts. Hedonic framing involves people's tendency to opt for low profits every day rather than one equal size on the first day. One would rather earn 10€ ten times rather than 100€ for only once. Investors seem to be happier in the first case rather than in the second one, whereas, in terms of losses, investors would rather encounter a loss of 100€ just for once than 10€ every day for ten days. In this case, the feeling of loss is experienced on occasions of investment value depreciation, and is more painful than in cases it is experienced only for once, since 'each account is evaluated separately, and the total prospect theory value is computed as the sum of individual accounts' (Thaler, 1985).

Needless to say, hedonic framing also describes people's tendency to organize their investments. People tend to segregate returns from losses and they place them in different accounts.

To understand investment behavior affected by hedonic framing, we could ask:

Two separate gains are better than one large one?

One big loss is preferable to several smaller ones?

Would we prefer to win two lotteries rather than one? The amount to be earned is the same.

Finally, it is also worth pointing out that mental accounting as well as hedonic framing affect human behavior since they both aim at maximizing pleasure and averting pain caused by loss. By demonstrating such a behavior, one is likely to maintain one's own psychological balance in the short term; however, no balance can be maintained in one's own portfolio. Investors are concerned with the total and overall progress of their investments. By segregating returns from losses, they distort the way they encounter returns, and, thus, they finally make wrong investment decisions. Hedonic framing does not avert wrong decision-making, which occurs when, on specific occasions, prospective investors underestimate investment risks.

Reality distortion by means of hedonic effect is frequently employed by investment advisors with a view to justifying the wrong options they have offered their clients. When there is a great loss and a poor return, they tend to present returns as 'silver lining' and losses as short-term ones (Spector, 2005), thus, deceiving their clients, who seem to be unable to realize the fraud.

In sum, taking into account that investment advisors affect individual investors' decisions, we are able to appreciate the great significance and impact of the specific framing.

## **2.5 Hindsight bias**

Hindsight bias is defined as 'a documented psychological phenomenon, in which people exaggerate the predictability of an event after it has already happened. Some psychologists refer to hindsight bias as the "I knew that was going to happen" effect.

According to Fischhoff (1997), this common perception bias happens when 'new information is immediately incorporated with what is already known about the event. The purpose of this integration is to create a coherent whole out of all relevant knowledge'. Although hindsight bias demonstrates people's confidence of predicting events, this ability is emphasized after the specific event has already happened.

Thus, events that had happened in the past are considered predictable. In fact, the specific events cannot be reasonably predicted before they happen.

Psychologists attempt to interpret this bias on the basis of people's innate need to interpret the unknown, to provide explanations which would allow us to believe that events are predictable. Hindsight bias has a substantial impact on investment behavior as well as on investment decision-making.

It is worth pointing out, however, that 'finding erroneous links between the cause and effect of an event may result in incorrect oversimplifications' (Phung, 2008). These oversimplifications are, in effect, a distorting mirror for the stock market. Investment decisions that result from incorrect perceptions of financial facts are not the most favorable. However, the findings of a research conducted by Fischhoff, Slovic and Lichtenstein (1977), demonstrated that the better investors know the subject, the less accurate they are in their judgments. Indeed, investors tend to be overconfident and overreacting to new information (Camerer, et al., 1989).

In detail, overconfidence, which has been extensively researched, is defined as people's tendency to overestimate their abilities, that is, to be too confident of their abilities and knowledge, and overestimate their talents. Overconfident investors overestimate their investing skills, underrate risk and consider that financial information is valuable and exclusive; however, they are led to fallacies.

When investors overestimate their abilities, they are usually led to overreaction. Overconfident investors buy, sell and continuously adjust their portfolios by being risk averse. They develop overreaction as they consider that they have a better understanding of situations than others and when they believe that they are capable of predicting events and situations.

Needless to say, this cognitive fallacy forces investors to relate the old statistics, charts, and older securities rates to the progress of the market in the future. Despite the fact that past information can be employed as an investing tool for future research, they cannot safeguard a safe process, an accurate prediction. The future is always uncertain.

To illustrate hindsight bias, we could probably ask:

'Rewind the time 1,5 years, would you say that the financial crisis and the recession that we are now experiencing was predicted'?

### **3. HOW TO AVOID BEHAVIORAL DISTORTIONS**

#### **3.1 Getting to know yourself**

It might be ironical, but the reason for many wrong decisions, both in life and in trade, is the fact that we are not introduced to ourselves. Self-awareness or self-consciousness is defined as the ability to recognize our emotions, desires, fears, abilities, needs and also our weak and strong points. It is people's constant attention to their own inner state of mind (Goleman, 1995). Ancient Greeks used the term 'γνώθι σαυτόν' ('get to know yourself'). The construct does not only entail how well one knows oneself, but also to what extent one keeps learning about oneself.

In market contexts, investors should build an investment identity, describe their desires and expectations from investment choices, identify the investment considerations that will be typical of their investing behavior and decide (depending on personality or temperament) whether they are capable of becoming a component of the market, in particular, the stock market, which is extremely competitive and unpredictable.

If investors are not aware of their own biases and framing, they are incapable of controlling them. However, 'people tend to see oneself as less biased than other people (bias blind spot),' (Pronin, 2006). Before any investment decisions are made, investors should build an investing profile for themselves, and set specific investing goals, which should be strictly kept during the investment time. The investment time horizon (short- or long-term), the approach to market (conservative or speculative), as well as assessment of skills and knowledge are essential components of an investor's profile, which is not fixed, but is constantly adjusted by education, experience as well as stock market changes.

In conclusion, getting to know ourselves enables the accurate evaluation of the things we own and discourages underestimation of the investing options related to things that are not parts of our portfolio. We can overcome our fears and proceed to new investing ventures, either local or international.

Furthermore, getting to know our skills and abilities can prevent us from considering ourselves experts at forecasting the progress of investment markets and also from being overconfident. Instead, consistent and cautious behavior can insure profit maximization. According to Russo and Schoemaker (1992), 'we should be aware of the gap between what we think we know and what we do know'.

### **3.2 Getting to know the market**

Participation does not necessarily imply knowing about the rules of a game. Although being 'first time lucky' can allay the fear of the unknown, one can also learn by simply playing. In the case of stock markets, however, one does not play, but invests; not only in money, but also in effort, the future, one's own dreams and goals. Therefore, getting to know the market is claimed to be fundamental, as it implies that we get to learn the way the market operates, its stipulations, laws and codes. It also implies getting to know about investing tools and their utility as well as global developments and their potential impact on stock markets. Stock markets do not remain stable and unaffected by global changes. The rapid dissemination of information and the huge bulk of assets do affect international markets and make them extremely inconsistent and unstable.

If we get to know the market, we can act rationally; any fears, psychological approaches to finance and irrational decision-making can be, thus, sufficiently encountered or eliminated.

We should also get to know the behavior of the people involved in the market, both of those who work in the market and also those who simply invest. Investment advisors are the individuals who can guide, inform or advise. They are knowledgeable of market trends and willing to share their own experience and education with individual investors who seem to lack in time or knowledge. Needless to say, investment advisors are human beings, whose behavior may be affected by their own emotions and biases; they are not investing machines, but humans who may be as weak or susceptible to irrational behavior like all those involved in investing procedures, whose behavior is considered substantial.

Ignorance and insufficient education in stock market issues generate phenomena of sudden and arbitrary growth of markets. Stock market bubbles are encouraged by superficial knowledge. The investors' irrational behavior has a considerable effect on securities pricing. Emotions and biases upset the rational paradigm, on which economic theories have been based.

To conclude, acquiring knowledge and experience of investment processes is not an easy matter. The study of the theoretical background and the relevant developments in the field of investments can encourage confidence and self-assurance. As a result, irrationality caused by biases, framing or heuristics can be replaced by rational investing decisions.

## **4. CONCLUSION**

In the present paper the discussion and analysis of behavioral distortions, which are not common or familiar to the general public, demonstrated that biases and framing have a considerable impact on investing choices. Incorrect pricing of investment products, resulting from overestimating the things we own, forces portfolios to revert from profit maximization. Strong biases towards gains generated by market expansions and towards markets, in general, are assumed as constraints to investment prospects and merits.

The impact of time on investment choices is also significant. The decision over short-term or long-term investments is instrumental to investment returns. Opting for short-term returns is not always a recommended solution.

Preference for allocation portfolio returns rather than aggregate portfolios, or preference of aggregate loss to avert the pain caused by losses, is likely to avert rational investments and the consequent achievement of goals.

The investors' confidence in their ability to predict events that had already happened leads to the perception that stock market processes are predictable; it also generates oversimplifications and inaccurate evaluation of one's own investing potential.

Furthermore, it is worth noting that the rather uncommon biases and framing are not treated as fundamental distortions in the field of investments, as they are not demonstrated as frequently as

overconfidence or herding effects. Rather, they are generated in special and particular circumstances, or they seem to affect a small number of investors with distinctive personality traits and cultural backgrounds.

It is also observed that some of the specific biases are explicitly associated with other fundamental and familiar behavioral distortions, namely, loss aversion, which is associated with the endowment effect, and hindsight bias, which is associated with overconfidence and overreaction.

The present paper discusses common behavioral anomalies and does not attempt a thorough investigation into new and more particular types of irrational behavior. It is worth emphasizing that the impact of such biases is as significant as that of the frequently cited and more familiar distortions, and, therefore, a more detailed discussion and analysis of such distortions is required.

Finally, the methods of treating behavioral distortions are claimed to be comprehensive and rather vague. The solutions offered should satisfy all investors and, therefore, should involve generalizations rather than specific suggestions. Investors should be examined as single individuals. As each person's personality traits are distinctive, the demonstration and impact of such distortions reveal their individual and exceptional nature. Future research based on groups of investors (with common investing profiles) can generate more detailed solutions and methods of averting distortions.

To conclude, the discussion of behavioral distortions has enabled the understanding of the import of the framework of Behavioral Finance in helping investors, and, in general, all those involved in economy, to form strategic choices.

## REFERENCES

- Alexakis, Ch. And Xanthakis, M., 2008, Behavioral Finance, Stamoulis Publications, Greece
- Bellas, A. and Zerbe, R., 2003, A Primer for Benefit Cost Analysis, *Working Paper. Seattle*, 83, 263, pp 487-488.
- Camerer, C. et al, 2004. *Advances in Behavioral Economics*, Princeton University Press, New Jersey.
- Camerer, C. et al, 1989. The curse of knowledge in economic settings: An experimental analysis, *Journal of Political Economy*. 95, 5, pp. 1232-1254.
- Caplan B., 2007, *The Myth of the Rational Voter: Why Democracies Choose Bad Policies*, Princeton University Press, New Jersey.
- Caplan B., 2010, *Education and Anti-Market Bias: The illusion of Perversity*, Library Economics Liberty.
- Curran, C., 1999, The Endowment Effect, *Bibliography of Law and Economics*, 1, pp. 819-835.
- Dimitri, N., Van Eijck, J., 2007, Time discounting and time consistency, Available at <http://philpapers.org/rec/DIMTDA> (accessed 25/1/2011).
- Fischhoff, B., 1977. An early history of Hindsight Research, *Social Cognition*, 25, 1, pp. 10-13.
- Fischhoff, B. et al, 1977. Knowing with certainty: The appropriateness of extreme confidence, *Journal of Experimental Psychology: Human Perception and Performance*, Vol. 3, pp. 552-564.
- Goleman, D., 1995. *Emotional Intelligence*. Bantam Books, N.Y
- Heilmann, C., 2008. Measurement-theoretic foundations of time discounting in economics, *LSE Choice Group working paper series*, Vol. 4, No. 6, pp. 1-15.
- Hertwig, R. et al, 1997. The Reiteration Effect in Hindsight Bias, *Psychological Review*, Vol. 104, pp. 194-202.
- Hiscox, M., 2002. *International Trade and Political Conflict*, Princeton: Princeton University Press. New Jersey.
- Julius, B., 1999. Discounting and the Treatment of Uncertainty in Natural Resource Damage Assessment. *Technical Paper NOAA*. 99, No. 1, pp 5-16.
- Kahneman, D. et al, 1991. Anomalies: The Endowment Effect, Loss Aversion and Status Quo Bias. *The Journal of Economics Perspectives*, Vol. 5, No. 1, pp. 193-206.
- Kahneman, D., and Tversky, A., 1984. Choices, values and frames. *American Psychologist*, Vol. 39, No. 4, pp. 341-350.
- Knetsch, J., L., and Sinden J. A., 1984. Willingness to Pay and Compensation Demanded: Experimental Evidence of an Unexpected Disparity in Measures of Value. *Quarterly Journal of Economics*, Vol. 99, No. 3, pp. 507-521.
- Koing, C., J., and Kleinmann, M., 2006. Individual Differences in the Use of Time Management Mechanics and in Time Discounting. *Individual Differences Research*, Vol. 4, No. 3, pp. 194-207.
- Krugman, P., 1996. *Pop Internationalism*, M.I.T. Press. N.Y.
- Nofsinger R., J., 2001. *Behavioral Finance*, John Wiley & Sons. U.S.A.

- Phung, A., 2008. Behavioral Finance, Key Concepts- Confirmation and Hindsight Bias Retrieved. Available at [http://www.investopedia.com/university/behavioral\\_finance/behavioral6.asp](http://www.investopedia.com/university/behavioral_finance/behavioral6.asp) (accessed 8/02/2011).
- Pinker, S., 1997. *How the Mind Works*, W.W. Norton & Compan. New York.
- Redhead, K., 2010. Guaranteed Capital Funds: Behavioural and Option Pricing Perspectives, *Coventry University*, Vol. 1, pp. 1-11.
- Russo, E., and Scoemaker, P., 1992. Managing Overconfidence. *Sloan Management Review Reprint Series*, Vol. 33, No. 2, pp. 1-12.
- Scott, C., 1966. The Obsolete "Anti-Market" Mentality: A Critique of the Substantive Approach to Economic. *Anthropology. American Anthropological Association*, Vol. 68, No. 2, pp. 323-294.
- Shane, F. et al, 2002. Time Discounting and Time Preference: A Critical Review. *Journal of Economic Literature*, Vol. 40, No. 2, pp. 351-401.
- Shefrin, H., 2000. *Beyond greed and fear. Understanding behavioral finance and the psychology of investing*. Harvard Business School Press, U.S.A.
- Smith, A., 1776. *An inquiry into the nature and cause of the wealth of nations*. Methuen & Co., Ltd, London.
- Spector, L., 2005. Grasping the Strange and Irrational Ways Consumers Behave., *A Journal of Strategy & Business Transformation*, Vol. 1, No. 7, pp. 1-7.
- Spyrou, S., 2003. *Introduction to Behavioral Finance*. Benou Publishing Company, Athens, Greece.
- Testa, A., 2010. Theory and practice of creativity. Hindsight and overconfidence. Retrieved. Available at <http://www.nuovoutile.com/en-creativity-errors-of-judgment.htm> (accessed 17/1/2011)
- Thaler, R., 1985. Mental Accounting and Consumer Choice. *Marketing Science*, Vol. 4, No. 3, pp. 199-214.
- Thaler, R., 1999. *Mental Accounting Matters*, Journal of Behavioral Decision Making. University of Chicago, USA
- Tversky, A. and Kahneman, D., 1973. Availability: A heuristic for judging frequency and probability. *Cognitive Psychology*, Vol. 5, No. 2, pp. 207-232.
- Tversky, A. and Kahneman, D., 1974. Judgment under uncertainty: Heuristics and biases. *Science, New series*, Vol. 185, No. 4157, pp. 1124-1131.
- Tversky A .and Kahneman. D., 1981. The Framing of Decisions and the Psychology of Choice, *Science*, Vol. 211, No. 4481, pp. 453-458.

# A SHORT OVERVIEW OF THE THEORETICAL ADVANTAGES AND DISADVANTAGES OF THE FINANCIAL STATEMENTS PREPARED AT FAIR VALUE

Iva Moneva

*VFU Chernorizets Hrabar, Varna, Radost 4A str., Republic of Bulgaria, ivamoneva@abv.bg*

## ABSTRACT

Theoreticians of the financial statements offer some other forms of report based on value for more than 40 years. The first big push in this direction was made in the late 70's of last century, when inflation exceeded 15%. The reporting of such high inflation for several years makes accounting useless, based exclusively on the principle of "historical cost". The experience of countries with stable high inflation in this direction shows that it is necessary to make adjustments so that the current accounting reflects reality. So, for better or worse, the accounting standards require progressively requirements that the information in the financial statements must be at fair value. In the article the author examines the fair value as a new paradigm and the issues associated with it - how appropriate is the fair value, its importance, how exactly can it be fixed and ect. The fair value is a rather new practice in Bulgaria and it is still unsubstantiated theoretical approach.

## KEYWORDS

fair value; financial statements; IAS/IFRS; NFRS for SME; Bulgarian enterprises; Bulgarian

## JEL CLASSIFICATION CODES

M41

## 1. INTRODUCTION

Accounting applies with obligation the cash evaluator. Accounting gives of all items monetary evaluation legally established rules. There are different approaches for assessment of accounting objects and their presentation in the financial statements. The recognition of elements in the financial statements is a public responsibility of management of the enterprise. What the users is supposed to have is the focus of financial statements.

## 2. FINANCIAL STATEMENTS PREPARED AT FAIR VALUE

The framework of the preparation and presentation of financial statements of International Accounting Standards /International Financial Reporting Standards - IAS / IFRS does not provide a general concept of measurement basis. Evaluation is defined in each standard. Financial statements use different measurement bases in varying degrees and in different combinations. Recommended measurement basis in the framework is historical cost, current cost, realizable value, present value. The basic concept which is followed in accounting is the concept of "buy in the past", i.e. concept of historical cost. Currently, the evaluation should take into account of the concept of fair value, as well.

IAS/IFRS at present doesn't attempt to introduce a general approach for determining fair value in financial statements. Currently, IAS / IFRS regulate the use of fair value with several standards - IAS 16 - Property, plant and equipment, IAS 18 – Revenue, IAS 32 - Financial instruments, presentation, IAS 36 - Impairment of Assets IAS 38 - Intangible assets, IAS 40 - Investment Property, etc. The issue of using fair value in these standards is regulated differently.

Each IAS/IFRS, in which occurs fair value concept defines it on your own. In a sense, however, various definitions do not differ. Fair value is the amount of money for which an asset could be exchanged or a liability settled between knowledgeable, willing parties in an arm's length transaction. Best expression of fair value is the prices, which have established public recognition.

Theoreticians of the financial statements offer some other forms of the report, based on fair value. The first big push in this direction was made at the end of last century, when inflation is rather high. The reporting of higher inflation for several years makes useless accounting, based exclusively on "historical value" of assets. Depreciation charges based on primary value, are insufficient. The experience of countries with stable high inflation in this direction shows that it is necessary to make corrections in the financial statements so that the current accounting reflects reality. Inflation reduces the value of the currency. In case of inflation, the information in the financial statements is difficult to compare. So this is the first argument in favor of the financial statements at fair value. It concludes in the attempt to overcome the effects of inflation, and more specifically the devaluation of the currency.

Second, stronger argument in defense of the fair value is the argument that even in the complete absence of inflation, some prices have increased and others have decreased. This change may be the result of increased growth in production, shortages of raw materials, the appearance of a new product, political crises, and technological development and so on. The fair value reflects the real supply and demand.

In accordance with the approach to require from financial reporting to reflect fair value, previous traditional model, based on historical cost paid does not reflect economic realities. The fair value - it is presumed amount of money for which an asset could be exchanged. This is not the price of a deal already finished. However, the fair value is determined based on prices on an active market, and in case of absence of such, it is presumed market price and will always be presumable and hypothetical. This is the essence of fair value - to reflect the object in the financial statements by cost, which would be its market price on an active market at the valuation date. The following argument of the benefit of the financial statements at fair value comes from here. He concludes in an attempt that the information in the financial statement to be extremely relevant. Old historical cost is not important for decision-making now.

The fair value can be accorded to market value. Objective market price is limited to transactions that take place on an active market. Active market is a market which is often dealing with homogeneous objects. The absence of an active market reduces the level of usefulness of the concept of fair value. At all time, in a deal that is not a trivial task, identification of knowledgeable, willing buyer and seller is necessary. This is the disadvantage of the concept – the fair value for a part of the assets cannot be reliably found, and for others, it is even harder.

As it became clear for fair value based on real prices, in an active market are used current prices and they have to be current at the time of evaluation. When using others, indirect approaches the focus taken into account could be referred to use additional information which would be used by market participants at the time of evaluation. Practice shows that fair value is specific for each site. It takes its condition, location, and reported purpose of the asset in the future. If the asset at the time of the assessment is for sale, fair value should be based on the assumption of market prices of assets intended for sale. If the asset at the time of assessment is used as collateral for a loan, fair value should be based on the assumption of market prices of assets serving as collateral for a loan. Therefore, the same asset can have several fair values depending on the purpose of evaluation. In fact, no correct or incorrect fair value of the asset exists. Every time the term “fair value” is used, it should clearly indicate its purpose. This is the argument that we can say that the benefit, but we can say also that is not in favor of the financial statements prepared at fair value.

Originally, international standards develop rules for the use of fair value, having in mind the financial instruments. Attempts to impute these entitlements to the large spectrum tangible and intangible assets create serious problems for accountants, auditors, investors, appraisers and all those who are required to use accounting information, and legal issues for implementing the concept of fair value appears to be disputable. This is an argument that is not in favor of the financial statements at fair value.

Practice shows that the question of applying the concept of fair value referred to the financial instruments is less controversial than for other assets and liabilities. This problem does not exist for financial instruments traded in active markets. Stock price is fair value. This is an argument in favor of the financial statements at fair value. Hardly, however, the assumption is useful in cases where one of the participants in the transaction is non-professional. In such cases, one participant in the transaction will have a greater influence on price than the other.

Fair value is irrelevant for the assets that the entity does not intend to sell or the market is not effective for them. In the absence of an active market the evaluation techniques and the determination of future cash flows of any economic benefits are applicable. This process is subjective, it is possible to get errors, and it is also possible that the management of the enterprise itself affect the evaluations. The evaluation is unfair and unreliable. In most valuation models of fair value, when determining future cash flows the discount rate is used, which coincides with the value in use. The raw data, however, used for its calculation is based on market signals. For example, if the evaluation is done on the basis of the discounted flow rate, the rate of discount is the market rate, and is not specific to a particular enterprise.

The very essence of the concept of fair value accounting requires recognition of unrealized losses as of the change in value and the unrealized gains. This is the main difference between the two accounting models – a model of historical cost and the fair value model. Accounting model based on historical cost, allows recognition only of the reduction in value of assets and compliance with the concept of prudence, i.e. revenue is recognized when realized and costs wherever possible for their realization. Fair value model allows recognition of unrealized gains as well, which are caused by rising asset prices.

Attempts to determine the fair value for purposes of financial statements is complex, demanding and sometimes treadmill job. Interests to determine fair value are quite contradictory, subjective. However, fair value creates more relevant information in the financial statements, because External users are interested primarily in the real, market value of assets. At the same time, it must be recognized that ignoring the historical cost of revalued items and its absence in the records could negatively affect the relevance of the information.

The use of fair value increases the reliability of the information in the financial statements. In contrast to the accounts at historical cost in assessing the fair value is reported economic situation and status of the evaluated object is not only at the time of the report, but subsequently, which in turn increases the relevance and completeness of the information in the financial statements.

Moreover, fair value allows more comparable indicators in the financial statements of different enterprises. Historical cost of similar objects can be different due to different periods of acquisition, the conditions under which obtained the object. The use of fair value allows the value of similar objects to be one and the same, because is used as a base price in an active market, which is independent of the time and manner of the asset is acquired in the enterprise, but dependant by the situation at the time of objective evaluation set up for many presumed market participants rather than for a separate entity.

In addition to the influence of the qualitative characteristics of information in the financial statements should note another important factor that has always must be taken into account when the choice of valuation method has to be done - named the cost of conducting the assessment. Costs, when using the historical cost are practically zero, since it is already reflected in the report. Cost of fair value can be significant, especially if professional evaluators are attracted. The truth is that these additional costs to fair value affect the usage and, moreover, IAS / IFRS give that choice.

### **3. RESULTS**

Based on the definition of fair value, international practice for fair value and experience in Bulgaria, the advantages and disadvantages of the financial statements prepared in fair value are summarized in the table. The table made by the author is summarizing the advantages and disadvantages of the financial statements prepared at fair value, and present the attempt to derive results. This does not exclude the emergence of other opinions, thoughts, suggestions on the issue of fair value and its application in the financial statements.

Table 1 Advantages and disadvantages of the financial statements prepared using the fair value

<b>ADVANTAGES</b>	<ul style="list-style-type: none"> <li>- take into account the market situation, actually reflects supply and demand;</li> <li>- overcomes the effects of inflation;</li> <li>- the possibility of applying the conditions of unstable market;</li> <li>- adjusted historical price;</li> <li>- using objective sources of information - an active market, market openness, competition in the market; motivation of the parties involved in transactions, the absence of exceptional circumstances that affect the transaction; reasonable awareness and desire;</li> <li>- using the market approach - using financial, market, economic information to businesses or transactions analogs;</li> <li>- using a comparative approach - using transactions / sites, comparable to that which is assessed;</li> <li>- take into account the uniqueness of the object that is measured at fair value;</li> <li>- based on real transactions;</li> <li>- accessible information;</li> <li>- other advantages;</li> </ul>
	<b>RESULTS</b>
	<ul style="list-style-type: none"> <li>- create financial statements more relevant information, because fair value is determined in the market conditions at the time of evaluation;</li> <li>- create financial statements more reliable information, because fair value account the current state of the object and its purpose;</li> <li>- create financial statements more comparable information, because Fair value is determined irrespective of the circumstances specific to individual company or situation;</li> <li>- accounting and recognition of unrealized losses from the change in value and the unrealized gains;</li> <li>- other results;</li> </ul>
<b>DISADVANTAGES</b>	<ul style="list-style-type: none"> <li>- use requires prior financial, marketing, business information companies, comparables or transactions analogs;</li> <li>- much input information;</li> <li>- unavailable information, trade secrets;</li> <li>- objectivity is limited because there are no similar transactions;</li> <li>- incoming information can be manipulated;</li> <li>- value adjustments of accounting objects - possible site evaluations to overestimate or underestimate;</li> <li>- impose a set of corrections;</li> <li>- depending on the quality and completeness of accounting information;</li> <li>- subjective idea of the evaluator to fair value;</li> <li>- fair value different for different evaluators;</li> <li>- difficulties in choosing the evaluator - must have economic, technical and legal knowledge, experience and flair for marketing;</li> <li>- labor-intensive process;</li> <li>- costs in determining the fair value;</li> <li>- other disadvantages;</li> </ul>
	<b>RESULTS</b>

	<ul style="list-style-type: none"><li>- create financial statements less relevant information, because after the use of fair value is impossible to correlate cost with subsequent benefit from its use;</li><li>- create financial statements less reliable information, because Fair value is the result of professional opinion;</li><li>- accounting and recognition of unrealized losses from the change in value and the unrealized gains;</li><li>- other results;</li></ul>
--	---

Discussing the merits and shortcomings of the financial statements at fair value goes out of the present paperwork. Along the time, becomes more and more clear that to the accounting profession appears a case full of hard problematic mean. Reflected in the financial statements at historical cost items can be reliable, but not as significant as those at fair value. Fair value is substantial enough, but at the same time and not enough reliable, since the valuation is not an exact science.

#### **4. CONCLUSION**

Finally, a few words about the situation in Bulgaria. The peculiarity of the Bulgarian business culture and capital markets are not conducive to implementing the concept of fair value in our country. The Bulgarian accounting understanding is unlikely to be just contrary to law. National accounting legislation is being developed under the influence of the trend of IAS / IFRS. National accounting continuously faces still existing in the Bulgarian accountant believes that accounting is primarily accrual accounting and the importance of the financial statements is underestimated. Accounting in Bulgaria is under strong influence of tax laws. The lack of clear and specific written accounting rules bother practice. It is more difficult to clarify the fair value of an object than its market price. It is more difficult to determine, because the concept is clearly defined by the legislation, but because a lot of information has to be reworked to reach the conclusion of fair value of the object.

Difficult and major barrier for the application of IAS / IFRS in Bulgaria is the unpreparedness of accountants to express their professional opinion. Bulgarian accountant is unwilling to disclose in the report that requires thoughts. As a summary, the adoption of the principle of fair presentation of accounting information is considered difficult for the following reasons:

- accountants are afraid to go beyond its own competence;
- the definition of fair value is perceived more as a function of the evaluator rather than accounting;
- the concept of fair value is enough new for Bulgarian practice.

#### **REFERENCES**

- Law of accounting, 2011. Available at <http://www.vedomost.info/schetovodstvo-normativi/403-schetovodstvo-zakon/5892-zakon-za-schetovodstvoto-2011>
- IAS/IFRS, 2011. Available at <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:082:FULL:BG:PD>
- NFRS for SME, 2011. Available at <http://www.account-bg.info/e107/page.php?7>
- Conceptual framework of financial statements, 2011. Available at <http://www.iasplus.com/standard/framework.htm>

# IMPACTS AND LOSSES CAUSED BY THE FRAUDULENT AND MANIPULATED FINANCIAL INFORMATION ON ECONOMIC DECISIONS

Tak Isa

*The Bucharest Academy of Economic Studies (ASE) nr.11, Str.Tache Ionescu, Piata Romana, cod 010374,  
Institutul de Studii Doctorale, etaj 1, camera 8102, sector 1, Bucuresti, isatak23@gmail.com*

## ABSTRACT

Nowadays the effects of the fraudulent and manipulated financial information have been more controversial. We should take into consideration that the financial losses caused by fraudulent or manipulated financial information are remarkable. Preventing the fraud in the financial information has been an important issue by auditors all over the world. As the American economy is the dominant economy may cause and affect the capital market mostly all over the world. In the last decade we can see the financial losses caused by the fraudulent and manipulated financial information rather big. Today's world has been affected by frauds and manipulation of the financial information. An investment decision based on false financial information causes the investors to suffer losses as was experienced in Enron and WorldCom cases. Financial information has, certainly, an important positive or negative effect in economic decisions. Positive or negative effects of financial information on economic decisions depend on reliability of the financial information. This paper aims to show the impacts of fraudulent on the financial information, effects on economic decision and what we should do for preventing the fraudulent or manipulation on the financial information.

## KEYWORDS

Financial information, fraudulent, manipulation, decision

## JEL CLASSIFICATION CODES

M41, G14, G15

## 1. INTRODUCTION

Today's economy is rather fragile and sensitive. Especially any recession in developed countries lead the global economy to recession also like dominos as experienced in 2009. Investigations show that the effects of manipulated financial information are immense. Fraudulent financial information damages today's economy while leading users of financial information to make unhealthy decision on economy. Manipulators try to get maximum benefit with limited resources and this action cause to manipulate the financial information by senior managers. Louwers (2007) declares that the fraud consists of knowingly making material misrepresentation of fact, with the intent of inducing someone to believe the falsehood and act on it and suffer a loss or damage. The transparency, reliability and accurate information allow users of the financial information such as investors, creditors to make intelligent decisions. "Audited financial statements provide the foundation for securities markets. Audited financial statements allow investors to make decisions on whether to buy, hold, or sell a particular security" (SEC, 2002a). "Accurate information also improves the quality of markets by allowing markets to discover the true price at which specific securities trade" (SEC, 2002b).

The cost of losses on real economy caused by fraudulent or manipulated financial information cannot be calculated by economists. But according to some investigation we can have an idea on economic losses

caused by the fraudulent and the manipulated financial information. The causes of manipulation financial information are remarkable. We can classify some of the causes manipulating the financial information.

- Weakness Structure of the Company's Management
- Managers' Interests and the Partnership Structure of the Companies
- Inadequate Internal Control System
- Accrual Accounting and the Flexibility of the Accounting Standards

All the causes given above are very important and should be expressed separately in order to have an idea for manipulated financial information how the fraudulent is started in the financial information.

## **2. FINANCIAL INFORMATION AND ITS IMPORTANT**

Financial information is a touchstone of the economy. Lack of the financial information causes to take no decision on economy. The purpose of the financial information is to give an idea to users of the financial information to make a rational decision on economy. Any false information may lead the users to invest in unprofitable area in the economy.

There are different definitions of financial information manipulation. Financial information manipulation in this context is misreporting, in other words intentional fraudulent financial reporting. Fraudulent financial reporting is the violation of accounting standards, the omission of existing amounts or the inclusion of fictitious amounts (Arens & Loebbecke, 2000). Financial information may have few errors in financial statements. If these errors are significant important so they should be corrected otherwise errors may be called fraud. In our study we will focus on fraudulent in the financial statements and manipulated financial information. Manipulated financial information sends false signals to users of the financial information and results to make irrational decision on economy especially for investments. In order to prevent the fraudulent in the financial statement some measures should be taken. Fraud detection is very costly and is impossible to detect all frauds.

Fundamentally the financial information is produced for business but besides it is also used in other parts of the life. The main purpose of the financial information is to be understood and interpreted by everyone. But accounting standards differ from country to country so it makes difficult to be understood internationally. In order to talk on financial information, the financial information should meet some conditions. These are as follows:

- Should be provided on the basis of particular time
- Should be relevant and for purpose
- Should be objective, accurate and complete

Financial information is mainly an accounting function, but not only the accounting department or accountants collect and preparing the information, but also all units contributes to production of financial data. Nevertheless, analyzing and reporting of data, transforming this data to financial information is the responsibility of the accounting system or accountants (Tak, 2010).

IAS 1 describes financial statements as a structured representation of the financial position and financial performance of an entity. It states that the objective of financial statements is to provide information about the financial position, financial performance and cash flows of an entity that is useful to a wide range of users in making economic decisions. A focus on assisting decision making by the users of financial statements is seeking (at least in part) a forward looking or predictive quality.

IAS 1 also acknowledges a second important role of financial statements. That is, that they also show the results of management's stewardship of the resources entrusted to it. To meet this objective, IAS 1 requires financial statements provide information about an entity's:

- (a) assets;
- (b) liabilities;
- (c) equity;
- (d) income and expenses, including gains and losses;
- (e) contributions by owners and distributions to owners in their capacity as owners (owners being defined as holders of instruments classified as equity); and
- (f) cash flows.

The standard observes that this information, along with other information in the notes, assists users of financial statements in predicting the entity's future cash flows and, in particular, their timing and certainty.

## **2.1 Techniques of manipulation financial information**

The main purpose of financial information manipulation is to deceive the investors by publishing financial statements that do not present the financial position and the performance of a company fairly. Financial information manipulation prevents decision makers from making rational decisions. So, it is of utmost importance to detect financial information manipulation and prevent it before the financial statements are made public. Researchers have developed models to predict whether the financial information manipulation occurred or not (Öğüt et al, 2009).

Main techniques for manipulation financial information are earnings management, income smoothing and creative accounting practices but there also other techniques like aggressive accounting, big bath accounting, fraudulent financial reporting and accounting errors and irregularities. Applying some of the techniques determined in the accounting standards may be acceptable but if the manager of the company exceeds accounting standards so it is called fraud in the financial information or manipulated financial information.

According to Maydew (1997), because the companies that are by definition profitable pay lower taxes, they manipulate financial data by reducing the profit of the activities. According to Eilifsen et al. (1999), if the taxable income is related to the accounting profit, in this case we speak about an automatic security mechanism as response to the financial information's manipulation.

In order to manipulate the financial information, earning management technique is used mostly than other types to evade any sanction and not exceed the accounting standards. Beneish (2001) gives three different definitions of earnings management that he compiled from several studies.

a. Managing earnings is the process of taking deliberate steps within the constraints of generally accepted accounting principles to bring about a desired level of reported earnings.

b. Earnings management is a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain.

c. Earnings management occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers.

## **2.2 The incentives of the manipulation financial information**

For any action there should be reasons and conditions should be compatible for. What kinds of reasons trigger managers to manipulate the financial information? According to surveys incentives of the manipulation financial information are follows: Influencing the shares' prices, compliance with debt covenants clauses, managers' salaries and bonuses, minimizing of certain costs from political or organizational reasons, decrease of the due taxes quantum, providing the better performance in the future for company's financial pictures. The main benefit of the financial information is to reduce the financial cost of companies' projects. On the other hand one of the incentives of the manipulation financial information is to obtain resources with reduced financial cost. There is in literature no consensus on the incentives of the financial information manipulation.

When the Certified Fraud Examiners (CFEs) from the USA were asked to estimate the percentage loss of income to their employers or clients that were victims of occupational frauds the average suggested loss was approximately 7% of income. When this percentage is applied to the GDP of the USA it converts to almost \$1 trillion" in losses. Of course, nobody can determine the actual losses because there most certainly are frauds being perpetrated as you read this article that have yet to be discovered. However, if the 7% loss rate was applied to the Romanian GDP (since this paper was presented in Romania) it would represent annual losses in excess 15 billion US dollars. This would assume that Romanian organizations would be no more or no less susceptible to these frauds than organizations within the USA. Even if the estimate of 7% was three times greater than the actual losses, there would be more than \$325 billion dollars of losses in the USA and \$5 billion of losses to a country the size of Romania. We do know that the median loss for the reported frauds

in the ACFE study was \$175,000 and Fig. 1 shows that more than 25% of the frauds had losses in excess of \$1 million (Alan T. Lord, 2010).

### 3. FINANCIAL LOSSES STATISTICS

SAS No.99 (paragraphs. 5-12) focuses on two sources of risk of material misstatements. Material misstatement can arise from: (1) fraudulent financial reporting and (2) misappropriation of assets which result in nonconformity of the financial statements' presentation with generally accepted accounting principles (GAAP). Fraud is always intentional, intentional by appearance, or intentional by inference from the act (Vasiu et al., 2003). According to Brenner (2001), someone commits fraud if the following four elements are proved beyond a reasonable doubt:

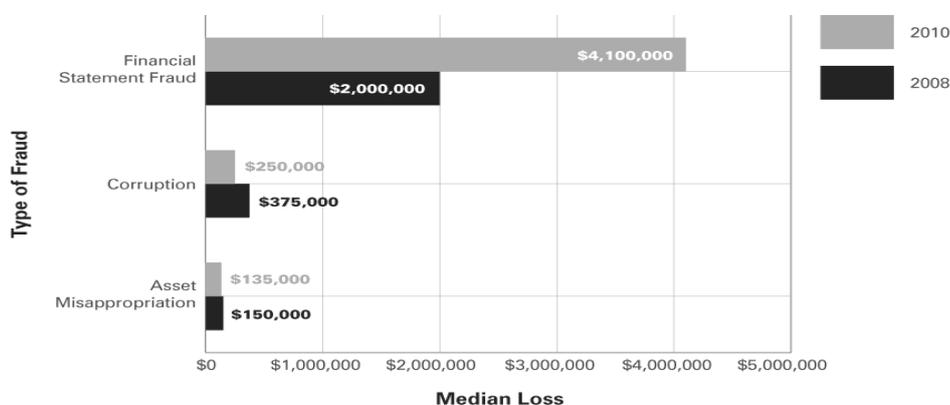
- Actus reus: The perpetrator communicates false statements to the victim;
- Mens rea: The perpetrator communicates what she knows are false statements with the purpose of defrauding the victim;
- Attendant circumstances: The perpetrator's statements are false; and
- Harm: The victim is defrauded out of property or something of value.

Any financial statement may have an error but they have to be corrected. If the error is done intentionally then it means an error is being converted to fraud. Companies' internal or external control systems must be durable. Otherwise errors cannot be detected so it leads the financial information to be incorrect.

There are three categories of occupational fraud which have been used to get benefit for interests. According to the ACFE (2010) occupational fraud categories are defined as follows: Asset misappropriations are those schemes in which the perpetrator steals or misuses an organization's resources. Corruption schemes involve the employee's use of his or her influence in business transactions in a way that violates his or her duty to the employer for the purpose of obtaining a benefit for him or herself or someone else. Financial statement fraud schemes are those involving the intentional misstatement or omission of material information in the organization's financial reports. Common methods of fraudulent financial statement manipulation include recording fictitious revenues, concealing liabilities or expenses and artificially inflating reported assets.

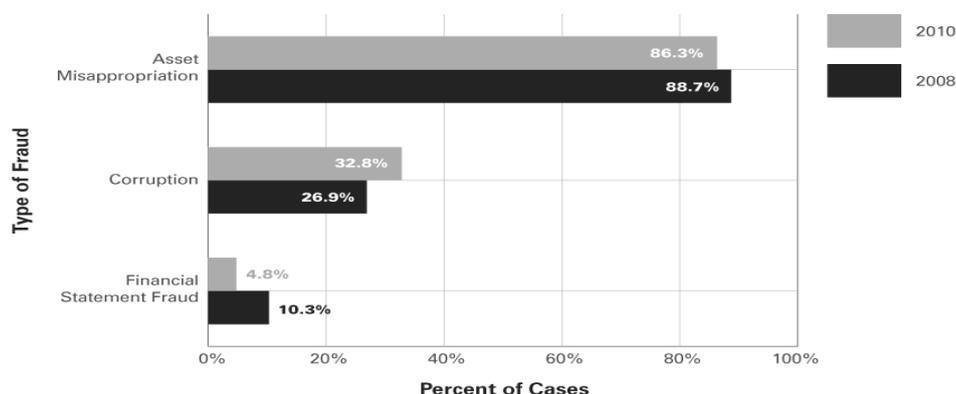
The information in Fig. 1 gives an overview of the median loss for the frauds. As seen in the Fig. 1 Financial Statement Fraud caused more losses than other categories of frauds. But in Fig. 2 we can get information that the mostly frequency category type is asset misappropriation but smallest amount loss. Financial statement fraud is committed by senior managers. So the damage on real economy is bigger than other categories. Detection of fraud is quite difficult so the loss number may not be flexible. Anyway as explained above loss rate is 7% of income. If this percentage is applied to GDP of the USA it converts to almost \$1 trillion in losses. Lord (2010) also argues that if this percentage is applied to GDP of the Romania it converts to almost 15 billion US dollars.

Figure 1. Distribution of Dollar Loss



Source: ACFE, 2010

Figure 2. Frequency of Frauds by Category



Source: ACFE, 2010

#### **4. IMPORTANT OF THE INTERNAL CONTROLS FOR PREVENTING THE FRAUD**

Actually the control term is a touchstone of detection of the frauds in the financial information. So if the internal control is done accurately for the financial statements expectations from financial information will be rather significantly especially for users of the financial information. Internal control process will contribute to decision taken by users of the financial information like investors, creditors to make rational decision on economy. Otherwise resources may be allocated in wrong area of the economy and this kind of irrational decision may lead users of the financial information to waste the recourses because of the incorrect financial information. In order to evade irrational decision by users of the financial information internal control plays very important role.

Besides, internal control protects any misappropriation asset, corruption or fraudulent financial information before the financial information disclosed to the public. The main purpose of the internal control is to make perpetrators to evade any irregular situation regarding financial information.

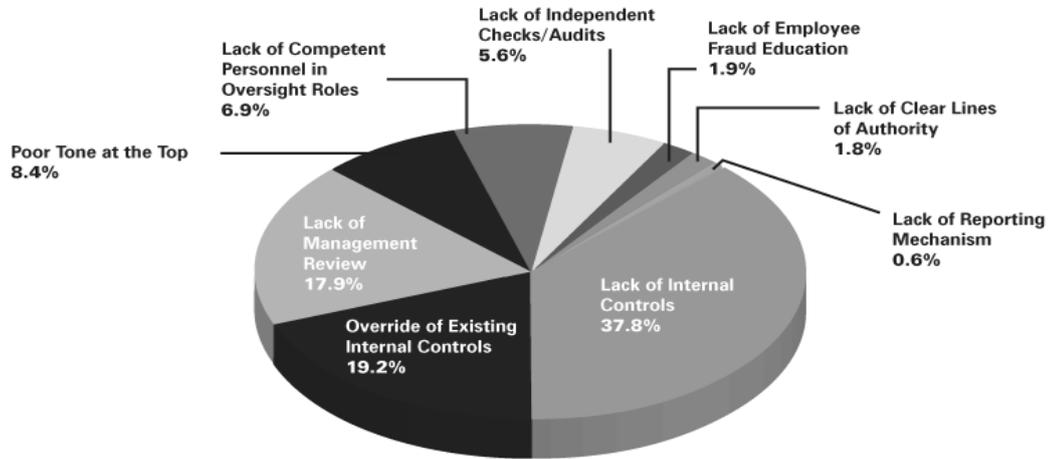
The literature on fraud consistently claims that an effective internal control system (ICS) is the primary means of preventing, detecting, and correcting fraud and errors. Yet, that which constitutes an effective ICS is largely conjecture established through ex post forensics (a form of induction) performed by practitioners (Barra, 2010). Internal controls alone are insufficient to fully prevent occupational fraud. Though it is important for organizations to have strategic and effective anti-fraud controls in place, internal controls will not prevent all fraud from occurring, nor will they detect most fraud once it begins (ACFE, 2010).

Lack of the internal control no company can compete with competitors from all over the world. First of all every company should control itself to produce reliable, accurate financial information to see financial picture of the company. In order to success internal control system plays vital role for companies. The main purpose of the internal control is to protect the active assets of the company and provide the reliability, accuracy of the financial information produced by the company. In the last decade, the investigations have been focused on internal control system mechanism. If the company`s structure is durable it cannot send false signal to users of the financial information. Of course any good internal control system cannot detect all frauds but at least can prevent most of the frauds in the financial statements.

Control weaknesses contribute to fraud. ACFE 2010 has investigated control weaknesses asking survey respondents to identify which of several common issues they considered to be the primary factor that allowed the fraud to occur. So according to this survey; a lack of internal controls, such as segregation of duties, was cited as the biggest deficiency in 38% of the cases. In more than 19% of the cases, internal controls were in place but were overridden by the perpetrator or perpetrators in order to commit and conceal the fraud. ACFE survey also declares that; interestingly, even though hotlines are consistently the most effective detective control mechanism, and even though less than half of the victim organizations had a hotline in place at the

time of the fraud, a lack of reporting mechanism was the control deficiency least commonly cited by the CFEs who participated in study.

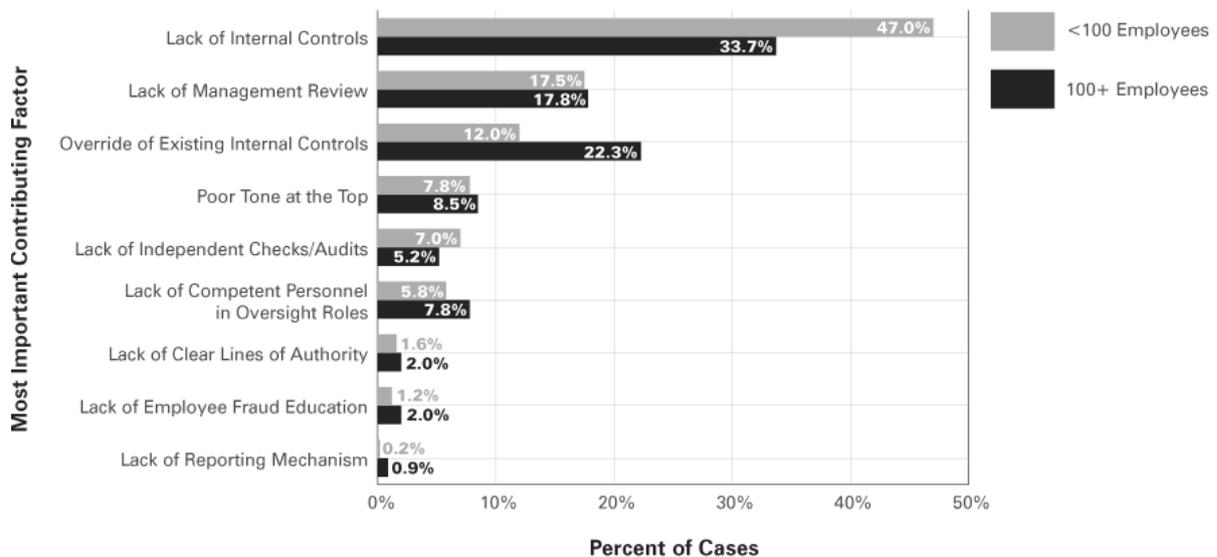
Figure 3. Primary Internal Control Weakness



Source: ACFE, 2010

In another study made by ACFE 2010 compared the internal control weaknesses at organizations with fewer than 100 employees to those at larger organizations. As we see in Fig. 4 small organizations had a noted deficiency in internal controls that allowed fraud to occur. At small companies, a lack of internal controls was cited as the factor that most contributed to the occurrence of the fraud. Control overrides were less common at small companies than at their larger counterparts, because the lack of controls in so many small organizations meant there was nothing to override.

Figure 4. Primary Internal Control Weakness by Size of Victim Organization



Source: ACFE, 2010

## 5. IMPACTS AND THE CONSEQUENCES OF THE FRAUDULENT IN THE FINANCIAL INFORMATION

Unless the control mechanism is weak and the accounting standards more flexible the fraudulent in the financial statements or manipulated financial information will be inevitable. As we leave in global village any positive or negative action effects all over the world. Especially these kinds of negative actions like manipulation financial information done in the developed countries. As the American economy is dominant economy trigger the financial crises as experienced in 2001 Enron energy sector giant. Unless the human interest s are reduced or stopped we as public will hear the fraud term in economy.

Measuring the cost of occupational fraud is an important, yet incredibly challenging, endeavor. Arguably, the true cost is incalculable. The inherently clandestine nature of fraud means that many cases will never be revealed, and, of those that are, the full amount of losses might not be uncovered, quantified or reported. Consequently, any measurement of occupational fraud costs will be, at best, an estimate. Nonetheless, determining such an approximation is critical to illustrate the pandemic and destructive nature of white-collar crime. (ACFE, 2010)

Collapses of the giant companies in USA as dominant economy in the world had effected all financial markets all over the world. Of course process before the financial crises lasted few years. May be the financial crises said that it is coming but lack of the preventing measurements caused the financial crises inevitable.

Financial statement fraud has cost investors more than \$500 billion during the past several years (Rezaee, 2002; Cotton, 2002). Financial statement fraud (FSF) has received considerable attention from the public, press, investors, the financial community, and regulators because of high profile reported fraud at large companies such as Lucent, Xerox, Rite Aid, Cendant, Sunbeam, Waste Management, Enron Corporation, Global Crossing, WorldCom, Adelphia, and Tyco. The top executives of these and other corporations were accused of cooking the books and, in many cases, were indicted and subsequently convicted. The collapse of Enron has caused about \$70 billion lost in market capitalization which is devastating for significant numbers of investors, employees and pensioners. The WorldCom collapse, caused by alleged financial statement fraud, is the biggest bankruptcy in the United States history. Loss of market capitalization resulting from the reported financial statement fraud committed by Enron, WorldCom, Qwest, Tyco, and Global Crossing is estimated about \$460 billion (Cotton, 2002).

The information above indicates that the market participants have been suffered by fraudulent financial information very much. And these frauds cost organizations and society a significant amount of capital. And it seems that the fraud in financial statement will continue to damage the real economy on different areas. Because of the fraudulent or manipulated financial information, while some people getting rich some are getting poor. This is caused by not allocating the resources in productive areas.

## 6. CONCLUSION

As indicated above we can achieve to the results that the fraud is a global problem. This study tried to show the impacts of the financial statement fraud on real economy. Financial losses are significant big and should be prevented as soon as possible. But preventing frauds in financial statements is costly. Companies avoid investing to set up detection system especially in small companies. Companies which manipulate their financial information benefit materially in short-term but in long-term companies are suffering also. Human interests are playing very important role in this case. A very negative or positive action is connected to human beings. Of course detecting or preventing all frauds in financial statements is rather difficult. At least control mechanism may reduce the number of fraud cases. Some detecting models have been developed by economists. But models are being used after disclosing the financial information to the public.

Regulators, lawmakers and accounting professions have considered new rules, regulations and standards but as we see these measurements have not been sufficient to prevent the fraudulent in the financial statements. We as academicians must focus on detection and preventing frauds and research the reasons, gaps in the accounting standards. Interest groups who are interested in companies require to see summary explanation on issues in the decision process, which have effect in the company and if it is based on real

documentations. Financial reports have to satisfy the interest groups necessities. Accuracy, transparency and reliability of financial information will give opportunity to the investors to make remarkable decision on their investments. Otherwise the allocation of resources will be transferred to wrong side.

## REFERENCES

- ACFE 2010. *Report to the Nation on Occupation Fraud and Abuse*.
- Lord, A. T., 2010. *Accounting and Management Information Systems the prevalence of fraud: what should we, as academics, be doing to address the problem?* Vol. 9, No. 1, pp. 4-21,2010
- American Institute of Certified Public Accountants (2002). Statement on auditing standards (SAS) no. 99. *Consideration of Fraud in a Financial statement audit*. New York, NY: AICPA
- Arens, Alvin A. and Loebbecke, J. K., 2000. *Auditing: An Integrated Approach*, Prentice Hall International, inc, New Jersey.
- Beneish, M., 2001. Earnings Management: A Perspective. *Managerial Finance*, Vol. 27, No. 12.
- Brenner, S.W., 2001. Is There Such a Thing as "Virtual Crime"?. in *California Criminal Law*, Vol. 4, No. 1.
- Cotton DL. 2002. Fixing CPA ethics can be an inside job . Available at <http://www.washingtonpost.com/ac2/wpdyn/A50649-2002Oct19?Language=pringter>
- Eilifsen, A. et al, 1999. *Earnings manipulation: cost of capital versus tax*. *European Accounting Review*, Vol: 8, No: 3, pp. 481-491.
- Öğüt, H. et al, 2009. Prediction of financial information manipulation by using support vector machine and probabilistic neural network. *Expert Systems with Applications*, Vol. 36, pp. 5419–5423
- Tak, I. 2010. Financial Information, Effects of Financial Information on Economic Decision. *Economics and Globalization*, Vol. 7, No. 4, pp. 217.
- Louwers, T. J. et al, 2007. *Auditing and Assurance Services*. McGraw-Hill/Irwin, New York.
- Vasiu, L. et al, 2003. 7th Pacific Asia Conference on Information Systems, 10-13 July 2003, Adelaide, South Australia
- Maydew, E.L., 1997. Tax-induced earnings management by firms with net operating losses. *Journal of Accounting Research*, Vol. 35, pp. 83-96.
- Barra R. A. 2010. University of Hawai'i at Hilo *Journal of Information Systems American Accounting Association* Vol.24, No.1, pp.1–21. DOI: 10.2308/jis.2010.24.1.1
- Securities and Exchange Commission (SEC), 2002 Speech by SEC Commissioner Hunt Jr Isaac C Remarks before the ABA Committee on Federal Regulation of Securities; 2002a April 6.
- Securities and Exchange Commission (SEC), 2002 Speech SEC Chairman Harvey L. Pitt. Remarks before the annual meeting of the Bond Market Association; 2002b April 25.
- Rezaee, Z., 2002. *Causes, consequences, and deterrence of financial statement fraud*. The University of Memphis, Memphis, USA

# A LITERATURE REVIEW ON THE USE OF DATA MINING TECHNIQUES FOR FINANCIAL PERFORMANCE BENCHMARKING

Adrian Costea

*Academy of Economic Studies, Virgil Madgearu Building, Calea Dorobantilor No. 15-17, sector 1, Bucharest, Romania,  
cod 010552, Adrian.Costea@csie.ase.ro*

## ABSTRACT

In a previous paper we formalized the process of assessing comparatively the performance of non-banking financial institutions (NFIs) by considering this real-world application as a knowledge discovery problem and by following the formal steps of a well-known discovery process called Knowledge Discovery in Databases (KDD) process. We argued that the current system used to evaluate the performance of credit institutions (e.g.: the CAAMPL system) is suboptimal when applied to assessing NFIs' performance and that the Knowledge Discovery in Databases (KDD) process could offer specific methods (Computational-Intelligence – CI – methods) that may be used to developing better systems.

In this paper we engage in a thorough literature review regarding the application of CI methods in assessing comparatively companies' financial performance. We include here companies' financial benchmarking, companies' failure prediction, companies' credit/bond rating, analysis of companies' financial statement, and analysis of companies' financial text data. Our goal is to present the state-of-art of using CI methods in addressing our type of research problem. We start by introducing the general process of benchmarking. We position our research with regard to different types of benchmarking analyses. Then, we review the literature in applying the data-mining techniques on financial performance benchmarking, and, finally, we apply one of these techniques (C-Means algorithm) to find clusters with similar financial performance among non-banking financial institutions in Romania.

## KEYWORDS

Data Mining, Financial Performance, Financial Institutions.

## JEL CLASSIFICATION CODES

C38, C81, G23

## 1. INTRODUCTION

The problem of assessing comparatively the financial performance of non-banking financial institutions (NFIs' financial performance benchmarking) represents an open issue in the activity of the Supervision Department at National Bank of Romania because by performing this type of analysis, the central supervision authority would use more efficiently its resources (time and personnel) by allocating them to institutions which present a lower level of financial stability. In the scientific literature, there are methods that can be used to address the problem of modelling the performance of financial institutions. But, traditional statistical methods used to collect, clean, store, transform, and analyse financial data, while still in place and useful, need to be challenged. This challenge is provided by so-called Computational-Intelligence (CI) methods such as machine learning, neural networks, evolutionary computation and fuzzy logic. The Knowledge Discovery in Databases (KDD) process (Fayyad et al., 1996) and its engine, Data Mining (DM), represent the umbrella under which the CI methods operate. In a previous paper we formalized the process of NFIs' financial benchmarking by considering this real-world application as a knowledge discovery problem and by following the formal steps of the KDD process.

In the KDD process data is transformed into knowledge following iteratively a number of steps: (a) definition and analysis of the business problem, (b) understanding and preparation of data, (c) the setup of the search for knowledge, (d) the data-mining (DM), (e) interpretation and evaluation of the mined patterns or knowledge refinement, and (f) application of knowledge to the business problems and the consolidation of the discovered knowledge. Data mining step is the core of KDD process, because is the outcome of this step that after evaluation and refinement gives the nuggets of knowledge. In order to fulfil its role DM could perform a number of tasks such as clustering, classification, regression, dependency modelling, summarisation, and change and deviation detection. The link between these tasks and the real-world applications is not straightforward, because the latter ones rarely have a simple single solution. Many different DM tasks may match a particular application, depending on how one approaches the problem. We match our business problem of NFIs' financial performance benchmarking with both DM clustering and classification tasks. We use clustering methods in order to find patterns (models) that describe the financial situation of NFIs and classification methods for financial (class) predictions.

The algorithms used to perform data-mining tasks are numerous and they come from different research fields (statistics, machine learning, artificial intelligence, fuzzy logic, etc.). Some authors group data-mining algorithms in three categories: mathematically-based, statistically-based and "mixed" algorithms. "Mixed" algorithms borrow heavily from both, the mathematically- and the stochastically-based ones. We include here: clustering methods, induction techniques such as decision trees, neural networks, fuzzy logic and genetic algorithms. We call these techniques Computational-Intelligence (CI) methods and they would be those specific methods that KDD could offer in order to develop better performance evaluation systems to support the supervision activities at National Bank of Romania.

In our research we plan to explore and combine statistically-based and CI methods to address the problem of assessing comparatively the performance of NFIs. For the DM clustering task we plan to explore algorithms such as: Self-Organising Maps, C-Means, Fuzzy C-Means and our previously developed algorithm: Weighting FCM algorithm. For the DM classification task we plan to explore classification methods such as multinomial logistic regression, Quinlan's algorithm for decision-tree induction, artificial neural networks for supervised learning, and genetic algorithms for learning the weights of an ANN.

In the next section of this paper we describe the benchmarking process in general, and the financial competitor benchmarking, in particular. Then, after we engage in a thorough literature review regarding the application of CI methods in assessing comparatively companies' financial performance, we present our concluding remarks.

## **2. BENCHMARKING**

Before we explain the link between our research problem and the benchmarking process we give the definition of benchmarking. The process of benchmarking includes activities such as comparing, learning and adopting best practices that can increase performance. Benchmarking is simply about making comparisons with other organisations and then learning the lessons that those comparisons throw up. Benchmarking refers to the process of comparing entities' performance based on some common performance measures. Usually, the entities are companies or organisations. In our research the entities are represented by the non-banking financial institutions. We benchmark NFIs based on their financial performance.

Depending on the scope of the benchmarking there are four types of benchmarking process: *internal*, *competitor*, *functional* and *generic* benchmarking (Bendell *et al.*, 1998; Camp, 1989). At the same time, depending on the goal of the benchmarking, there are three types of benchmarking: *performance benchmarking*, *process benchmarking* and *strategic benchmarking* (Bhutta & Huq, 1999).

*Internal benchmarking* is the process by which comparisons are made between parts of the same entity. This is one of the easiest benchmarking investigations and is suitable for international firms that have similar operating units in different locations. However, the outcome of such benchmarking is unlikely to yield results that are world best practices (Bendell *et al.* 1998, pp. 82-84).

*Competitor benchmarking* is the process of comparing the performances of direct competitors. The comparability of measures (e.g. size) used in the benchmarking process deserves high consideration (Camp 1989, p. 63). Here the entities compete in the same area (e.g. different countries compete for EU accession or

to attract foreign capital, different companies compete on the same market), making comparability achievable.

*Functional benchmarking* includes comparisons between indirectly competing entities. In the case of companies' performance benchmarking, there is a great potential for identifying functional competitors or industry leader firms to benchmark even if in dissimilar industries. This would involve, in the case of logistics, identifying those firms that are recognised as having superior logistics functions wherever they exist (Camp 1989, pp. 63-64).

*Generic benchmarking* involves comparisons of generic processes across heterogeneous entities. This is the most pure form of benchmarking, is the most difficult concept to gain acceptance and use but probably that with the highest long-term payoff (Camp 1989, p. 65).

*Performance benchmarking* is concerned with comparing performance measures to determine how well one entity is performing as compared to others.

*Process benchmarking* involves comparing the methods and processes used across different entities.

In *strategic benchmarking* the comparisons are made in terms of strategies (e.g. policies, direction, long vs. short term investment, etc).

The pairs' suitability between goal-oriented and scope-oriented types of benchmarking is shown in Table 1.

Table 1. Suitability of goal and scope-oriented types of benchmarking

	Internal benchmarking	Competitor benchmarking	Functional benchmarking	Generic benchmarking
Performance benchmarking	Medium	High	Medium	Low
Process benchmarking	Medium	Low	High	High
Strategic benchmarking	Low	High	Low	Low

Source: Bhutta & Huq, 1999, originally adapted from McNair & Liebfried, 1992

As Table 1 shows some scope-goal benchmarking pairs have more relevance than others. For example, it is irrelevant to compare the entity's strategy with itself, whereas comparing the performance and strategies of different competitors in the same area should be relevant. The type of benchmarking process that applies to our research problem (assessing comparatively the performance of non-banking financial institutions) is at the intersection of performance and competitor benchmarking. We benchmark the performance of NFIs using financial measures. We call such a benchmarking *NFIs' financial performance competitor benchmarking*. By performing the benchmarking process we try to find the gaps in the performance of different NFIs with regard to three financial performance measures: capital adequacy, assets' quality and profitability.

### **3. LITERATURE REVIEW IN APPLYING THE DATA-MINING TECHNIQUES ON FINANCIAL PERFORMANCE BENCHMARKING**

When we checked the research literature in assessing comparatively companies' financial performance we looked at different areas such as: companies' financial benchmarking, companies' failure prediction, companies' credit/bond rating, analysis of companies' financial statement, and analysis of companies' financial text data.

In the research literature there are several models proposed for evaluating the performance of financial entities, applicable mainly to the credit institutions. In Collier *et al.* (2003) the authors described the characteristics of the off-site monitoring instrument of the FDIC (Federal Deposit Insurance Corporation) and the data used in its development. Doumpos & Zopounidis (2009) proposed a new classification system for the credit institutions as a support-tool for the analysts from the National Bank of Greece. The system provides a rich set of assessment, visualization and reporting options. Swicegood & Clark (2001) compare three models (based on discriminant analysis, neural networks and professional human judgment) used to

predict underperformance of commercial banks. Neural networks based model showed better predictive capacity than the other two models.

Boyacioglu *et al.* (2009) proposed several methods for classifying credit institutions based on 20 performance indicators grouped into six dimensions (CAMELS). They used four sets of financial data, the results showing that among the clustering and classification techniques tested, the best in terms of accuracy rates were neural networks.

Kumar & Ravi (2007) makes a literature review for research conducted during 1968-2005 on the application of statistical and computational intelligence methods in banks' or firm's bankruptcy prediction. The authors show, for each source of data, indicators used, country of origin and period of data collection.

The SOM (Self-Organising Map) algorithm was used extensively in assessing comparatively companies' financial performance. There are two pioneer works of applying the SOM to companies' financial performance assessment. One is Martín-del-Brío & Serrano Cinca (1993) followed by Serrano Cinca (1996, 1998a, 1998b). Martín-del-Brío & Serrano Cinca (1993) propose Self Organizing Maps (SOM) as a tool for financial analysis. The sample dataset contained 66 Spanish banks, of which 29 went bankrupt. Martín-del-Brío & Serrano Cinca (1993) used 9 financial ratios, among which there were 3 liquidity ratios: current assets/total assets, (current assets – cash and banks)/total assets, current assets/loans, 3 profitability ratios: net income/total assets, net income/total equity capital, net income/loans, and 3 other ratios: reserves/loans, cost of sales/sales, and cash flows/loans. A solvency map was constructed, and different regions of low liquidity, high liquidity, low profitability, high cost of sales, etc. were highlighted on the map. Serrano Cinca (1996) extends the applicability of SOM to bankruptcy prediction. The data contain five financial ratios taken from Moody's Industrial Manual from 1975 to 1985 for a total of 129 firms, of which 65 are bankrupt and the rest are solvent. After a preliminary statistical analysis the last ratio (sales/total assets) was eliminated because of its poor ability to discriminate between solvent and bankrupt firms. Again, a solvency map is constructed and, using a procedure to automatically extract the clusters different regions of low liquidity, high debt, low market values, high profitability, etc. are revealed. Serrano Cinca (1998a, 1998b) extended the scope of the Decision Support System proposed in the earlier studies by addressing, in addition to corporate failure prediction, problems such as: bond rating, the strategy followed by the company in relation to the sector in which it operates based on its published accounting information, and comparison of the financial and economic indicators of various countries.

The other major SOM financial application is Back *et al.* (1998), which is an extended version of Back *et al.* (1996). Back *et al.* (1998) analysed and compared more than 120 pulp-and-paper companies between 1985 and 1989 based on their annual financial statements. The authors used 9 ratios, of which 4 are profitability ratios (operating margin, profit after financial items/total sales, return on total assets, return on equity), 1 is an indebtedness ratio (total liabilities/total sales), 1 denotes the capital structure (solidity), 1 is a liquidity ratios (current ratio), and 2 are cash flow ratios (funds from operations/total sales, investments/total sales). The maps were constructed separately for each year and feature planes were used to interpret them. An analysis over time of the companies was possible by studying the position each company had in every map. As a result the authors claim that there are benefits in using SOMs to manage large and complex financial data in terms of identifying and visualizing the clusters.

Eklund *et al.* (2003) investigate the suitability of SOM for financial benchmarking of world-wide pulp-and-paper companies. The dataset consists of 7 financial ratios calculated for 77 companies for six years (1995-2000). Eklund *et al.* (2003) construct a single map for all the years and find clusters of similar financial performance by studying the feature plane for each ratio. Next, the authors used SOM visualisation capabilities to show how the countries' averages, the five largest companies, the best performers and the poorest performers evolved over time according to their position in the newly constructed financial performance clusters. Karlsson *et al.* (2001) used SOM to analyse and compare companies from the telecommunications sector. The dataset consists of 7 financial ratios calculated for 88 companies for five years (1995-1999). Karlsson *et al.* (2001) used a similar approach to Eklund *et al.* (2003) and built a single map. The authors identify six financial performance clusters and show the movements over time of the largest companies, countries' averages and Nordic companies. Both, Eklund *et al.* (2003) and Karlsson *et al.* (2001) used quantitative financial data from the companies' annual financial statements. The ratios were chosen based on Lehtinen's study (Lehtinen, 1996) of the validity and reliability of ratios in an international comparison. Kloptchenko (2003) used the prototype matching method (Visa *et al.*, 2002; Toivonen *et al.*, 2001; Back *et al.*, 2001) to analyse qualitative (text) data from telecom companies' quarterly reports.

Kloptchenko *et al.* (2004) combined data and text-mining methods to analyse quantitative and qualitative data from financial reports, in order to see if the textual part of the reports can offer support for what the figures indicate and provide possible future hints. The dataset used was that from Karlsson *et al.* (2001).

The use of fuzzy clustering – especially the Fuzzy C-Means (FCM) algorithm – in assessing comparatively companies' financial performance is relatively scarce. The fuzzy logic approach can also deal with multidimensional data and model non-linear relationships among variables. It has been applied to companies' financial analysis, for example, to evaluate early warning indicators of financial crises (Lindholm & Liu, 2003).

One of the pioneer works in applying *discriminant analysis* (DA) to assessing comparatively companies' financial performance is Altman (1968). Altman calculated discriminant scores based on financial statement ratios such as working capital/total assets; retained earnings/total assets; earnings before interest and taxes/total assets; market capitalisation/total debt; sales/total assets. Ohlson (1980) is one of the first studies to apply *logistic regression* (LR) to predicting the likelihood of companies' bankruptcy. Since it is less restrictive than other statistical techniques (e.g. DA) LR has been used intensively in financial analysis. De Andres (2001, p. 163) provides a comprehensive list of papers that used LR for models of companies' financial distress.

Induction techniques such as Quinlan's C4.5/C5.0 decision-tree algorithm were also used in assessing companies' financial performance. Shirata (2001) used a C4.5 decision-tree algorithm together with other techniques to tackle two problems concerning Japanese firms: prediction of bankruptcy and prediction of going concern status. For the first problem, the authors chose 898 firms that went bankrupt with a total amount of debt more than ¥10 million. For the going concern problem 300 companies were selected out of a total of 107,034 that have a stated capital of more than ¥30 million. The financial ratios used were: retained earnings/total assets, average interest rate on borrowings, growth rate of total assets, and turnover period of accounts payable. As a conclusion of the study, the author underlines that decisions concerning fund raising can create grave hazards to business and, therefore, in order to be successful, managers have to adapt to the changing business environments.

Supervised learning ANNs were extensively used in financial applications, the emphasis being on bankruptcy prediction. A comprehensive study of ANNs for failure prediction can be found in O'Leary (1998). The author investigates fifteen related papers for a number of characteristics: what data were used, what types of ANN models, what software, what kind of network architecture, etc. Koskivaara (2004) summarises the ANN literature relevant to auditing problems. She concludes that the main auditing application areas of ANNs are as follows: material error, going concern, financial distress, control risk assessment, management fraud, and audit fee, which are all, in our opinion, linked with the financial performance assessment problem. Coakley & Brown (2000) classified ANN applications in finance by the parametric model used, the output type of the model and the research questions.

#### 4. EXPERIMENT

C-Means is a partitive statistical clustering technique first proposed in MacQueen (1967). The goal of the C-Means algorithm is to minimise the sum of the variances within clusters. The objective function is defined as:

$$J = \sum_{j=1}^C \sum_{i \in S_j} \|x_i - c_j\| \quad (5-1)$$

where  $\|\cdot\|$  is some measure of similarity (e.g. Euclidean distance),  $C$  is the number of clusters,  $x_i$  is observation  $i$  and  $c_j$  is centre of cluster  $j$ .

The basic algorithm has the following steps:

1. Define the number of clusters  $C$ .
2. Select  $C$  observations as the centres for the  $C$  predefined clusters.
3. Assign each observation from the dataset to the closest cluster (e.g. in terms of Euclidean distance).

4. Recalculate the centres of the clusters (centroids –  $c_j$ ) either after each observation assignment or after all assignments.
5. Repeat steps 3 and 4 until the number of maximum iterations has been reached or the centroids no longer change.

There are different variations of the C-Means algorithm, depending on how the clusters' centres are initialised or what distance measure is used (Han et al., 2011; Theodoridis and Koutroumbas, 2003, pp. 529-532). The strengths of the C-Means algorithms come from their relative efficiency and ability to yield local optimum results. However, the C-Means algorithm has certain disadvantages: the need to specify the number of the clusters in advance, it is sensitive to initialisation of the centres, applicable only to ratio/interval scale data, unable to handle noisy data and outliers, unsuitable for discovering clusters with non-convex shapes (Han et al., 2011).

In this experiment we assess comparatively the performance of different NFIs in Romania. NFIs are financial institutions, other than banks, that engage in lending activities on a professional basis. NFIs in Romania are organized in three registers: Evidence Register, General Register and Special Register. Except pawn shops and credit unions which are included in the Evidence Register, the other NFIs are entered in the General Register. The institutions in the General Register are simply monitored while the ones in the Special Register are subject to prudential supervision. However, all entities in the Special Register also appear in the General Register. The entities in the former register fulfil some special requirements related to specific criteria, such as: turnover, total loans, indebtedness, assets, own funds and deserve special attention of the central bank due to the amplitude and social importance of their businesses. In order to be registered in the Special Register, such an entity must fulfil these criteria three quarters in a row and this evaluation is done according to their quarterly financial reports.

We have restricted the number of the performance dimensions proposed in literature (e.g. Cerna et al., 2008) to three quantitative dimensions, namely: capital adequacy (C), assets' quality (A) and profitability (P). The other quantitative dimension used in evaluating the credit institutions (liquidity dimension) is not applicable to NFIs, since they do not attract retail deposits. We have also eliminated the qualitative dimensions from our experiment (quality of ownership and management) because they involve a distinct approach and it was not the scope of this study to take them into account.

After choosing the performance dimensions, we select a ratio for each dimension based on the analysis of the periodic financial statements of the NFIs: *Equity ratio (Leverage) = own capital / total assets (net value)* for capital adequacy, *Loans granted to clients (net value) / total assets (net value)* for assets' quality and *Return on assets (ROA) = net income / total assets (net value)* for profitability dimension.

The data were collected with the help of the members of the NFIs' Supervision Unit<sup>1</sup> within the Supervision Department of the National Bank of Romania. The data were collected annually from 2007 to 2010 for the NFIs registered in the Special Register that have as main activity financial leasing and have been active since the introduction of the regulatory framework for these institutions in Romania. In total there were 11 NFIs that met the above criteria and 44 observations (11 NFIs x 4 Years = 44 observations).

We used MATLAB "kmeans" function from the Statistics toolbox to run the C-Means algorithm over our dataset. In order to ease the comparison with our results based on the SOM algorithm we chose 4 as the number of clusters. After several runs of C-Means we obtained the final clustering presented in Table 2.

Table 2. The final centroids and number of observations for the 4 clusters obtained with C-Means algorithm

Leverage	Loans/Assets	ROA	Cluster	No. of observations
0.0727	0.5725	-0.0086	A	16
0.0447	0.8077	-0.0134	B	22
-0.2825	0.5825	-0.1774	C	4
-0.8310	0.6631	-0.0861	D	2

<sup>1</sup> Ms. Denisa Derviș, expert in the Supervision Department, developed the Microsoft Excel's formulas based on which the data was gathered from the disparate reports of the NFIs.

Cluster A includes the NFIs with the highest values for the input variables measuring capital adequacy and profitability and lowest values registered for the variable measuring the assets' quality. This "real" cluster contains 16 observations. The average values for the variables are: Leverage – 7.26%, Loans/Assets – 57.25%, ROA – (0.86)%. It is the only cluster with lowest negative average profitability ratios.

Cluster B is the largest cluster containing half of the total observations (22 observations). It includes NFIs with medium capital adequacy and profitability and highest value for the variable measuring assets' quality. The average values for the variables are: Leverage – 4.47%, Loans/Assets – 80.77%, ROA – (1.34%).

Ratios in cluster C have the following average values: Leverage – (28.25)%, Loans/Assets – 58.25%, ROA – (17.74)%. This cluster contains NFIs with lowest profitability ratios, but second lowest leverage and assets quality.

Cluster D contains the worst performers. All performance ratios show low values: Leverage – (83.1)%, Loans/Assets – 66.31%, ROA – (8.61)%. All clusters contain NFIs that in average have negative profitability ratios.

In order to test the clustering power of C-Means algorithm we compared our results with those obtained when we applied the Self-Organising Map (SOM) algorithm on the same dataset. In Table 3 we present the results of SOM clustering.

Table 3. The final centroids and number of observations for the 4 clusters obtained with SOM algorithm

Leverage	Loans/Assets	ROA	Cluster	No. of observations
0.1083	0.6587	0.0036	A	8
0.0237	0.8014	-0.0295	B	22
-0.0304	0.5386	-0.0601	C	9
-0.4341	0.5865	-0.1315	D	5

As it can be seen from Table 2 and 3, C-Means algorithm is less able to handle noisy data and outliers. For example, C-Means formed two very small clusters, containing 4 (cluster C) and 2 (cluster D) observations, whereas in the case of SOM clustering the same clusters contain 9 and 5 observations. However, the overall Euclidean distance in the case of the two clustering techniques favors C-Means (0.7831 compared with 0.9749 in the case of SOM). The observations were placed nearly in the same clusters by both algorithms, with few exceptions. For example, in cluster B, both C-Means and SOM placed the same observations, except one. The 2 observations placed by C-Means in cluster D, were also placed in the same cluster by SOM. The extra 3 observations placed by SOM in cluster D were placed by C-Means in cluster C, and the extra 1 observation placed by C-Means in cluster C was placed by SOM in cluster B. In Table 4 we present the distribution of observations in clusters for the two algorithms.

Table 4. The number of observations for each cluster-cluster pair in the case of C-Means and SOM algorithms

	Cluster	C-Means				# obs.
		A	B	C	D	
SOM	A	7	1	0	0	8
	B	0	21	1	0	22
	C	9	0	0	0	9
	D	0	0	3	2	5
# obs.		16	22	4	2	44

One measure of calculating how far the results of the two algorithms are from each other is to calculate the following statistic:

$$\text{Statistic} = \frac{\# \text{ obs. except main diagonal}}{\# \text{ obs. in total}} = \frac{14}{44} = 31.82\%$$

This statistic would be interesting to use when we need to compare more than two techniques in order to find the technique with most unusual results.

From Table 5 we can see that SOM overcame C-Means in terms of average Euclidean distance calculated for the first three clusters (A, B, and C). Cluster D contains only 2 observations in the case of C-Means and can be considered as an outlier.

As an overall comment we can say that C-means can offer a good alternative to more sophisticated algorithms in terms of accuracy of the obtained clusters. However, the visualization capability of SOM should be taken into account when we are interested in how companies evolved over time.

Table 5. The Euclidean distance for each cluster and the average for the first three most populated clusters

Cluster	SOM	C-Means
A	0.2789	0.4799
B	0.4728	0.3878
C	0.3109	0.3892
D	0.7433	0.2849
Average (A, B, C)	0.3542	0.4190

## 6. CONCLUSIONS

In this paper we presented the state-of-art of using the so-called Computational Intelligence methods in the process of financial performance benchmarking in order to apply them in the case of non-banking financial institutions (NFIs). Computational Intelligence methods are methods specific to Knowledge Discovery in Databases (KDD) and Data Mining (DM) processes.

Firstly, we showed how our research problem can be addressed by employing the tasks and the algorithms that belong to Data Mining research field. We matched our real-world application (assessing comparatively the performance of NFIs) with the DM clustering and classification tasks and we presented the algorithms used to perform these tasks. Next, we have introduced the benchmarking process and showed how our research problem represents a financial performance competitor benchmarking problem. Then, we presented the literature review in applying unsupervised learning methods (e.g.: the self-organising map – SOM), statistical discriminant techniques, induction techniques and supervised learning neural networks in financial competitor benchmarking of various entities.

Finally, we showed how one such Data Mining technique (C-Means algorithm) can be used to assess comparatively the performance of non-banking financial institutions in Romania. The comparison with another technique is discussed.

## ACKNOWLEDGEMENT

This work was supported from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/89/1.5/S/59184 „Performance and excellence in postdoctoral research in Romanian economics science domain”.

## REFERENCES

- Altman, E.I., 1968. Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy. *The Journal of Finance*, Vol. 23, pp. 589-609.
- Back, B., Sere, K. and Vanharanta, H., 1996. Data Mining Accounting Numbers Using Self Organising Maps. *Proceedings of Finnish Artificial Intelligence Conference*. Vaasa, Finland, August 20-23, 1996.
- Back, B., Sere, K. and Vanharanta, H., 1998. Managing Complexity in Large Databases Using Self-Organizing Maps. *Accounting Management and Information Technologies*, Vol. 8, No. 4, pp. 191-210.
- Back, B., Toivonen, J., Vanharanta, H. and Visa, A., 2001. Comparing numerical data and text information from annual reports using self-organizing maps. *International Journal of Accounting Information Systems*, Vol. 2, No. 4, pp. 249-269.
- Bendell, T., Boulter, L. and Goodstadt, P., 1998. *Benchmarking for Competitive Advantage*. Pitman Publishing, London.
- Bhutta, K.S. and Huq, F., 1999. Benchmarking – best practices: an integrated approach. *Benchmarking: An International Journal*, Vol. 6, No. 3, pp. 254-268.
- Boyacioglu, M.A. et al, 2009. Predicting bank financial failures using neural networks, support vector machines and multivariate statistical methods: A comparative analysis in the sample of savings deposit insurance fund (SDIF) transferred banks in Turkey. *Expert Systems with Applications*, Vol. 36, No. 2, pp. 3355-3366.
- Camp, R.C., 1989. *Benchmarking – The Search for Industry Best Practices that Lead to Superior Performance*. American Society for Quality, Quality Press, Milwaukee, Wisconsin.
- Cerna, S. et al, 2008. *Financial Stability*, West University Publishing House, Timișoara, Romania.
- Coakley, J.R. and Brown, C.E., 2000. Artificial Neural Networks in Accounting and Finance: Modelling Issues. *International Journal of Intelligent Systems in Accounting, Finance & Management*, Vol. 9, pp. 119-144.
- Collier, C. et al, 2003. The SCOR System of Off-Site Monitoring: Its Objectives, Functioning, and Performance. *FDIC Banking Review*, Vol. 15, No. 3, pp. 17-32.
- De Andres, J., 2001. Statistical Techniques vs. SEES Algorithm. An Application to a Small Business Environment. *The International Journal of Digital Accounting Research*, Vol. 1, No. 2, pp. 153-178.
- Doumpos, M. and Zopounidis, C., 2009. A Multicriteria Bank Rating System. *European Working Group “Multiple Criteria Decision Aiding”*, Vol. 3, No. 19, pp. 17-19.
- Eklund, T. et al, 2003. Financial Benchmarking Using Self-Organizing Maps – Studying the International Pulp and Paper Industry. *Data Mining - Opportunities and Challenges* ( pp. 323-349). J. Wang, Ed., Idea Group Publishing, Hershey, PA.
- Fayyad, U., Piatetsky-Shapiro, G. and Smyth, P., 1996. From Data Mining to Knowledge Discovery in Databases. *AI Magazine*, Vol. 17, No. 3, pp.37-54.
- Han, J. et al, 2011. *Data Mining: Concepts and Techniques*. 3<sup>rd</sup> edition. Morgan Kaufmann Publishers.
- Karlsson, J. et al, A., 2001. Financial Benchmarking of Telecommunications Companies. *TUCS Technical Report No. 395*, February 2001.
- Kloptchenko, A., 2003. *Text Mining Based on the Prototype Matching Method*. TUCS Ph.D. dissertation, Åbo Akademi University, Turku, Finland, 2003.
- Kloptchenko, A., et al, 2004. Combining Data and Text Mining Techniques for Analysing Financial Reports. *International Journal of Intelligent Systems in Accounting, Finance and Management*, Vol. 12, No. 1, pp. 29-41.
- Koskivaara, E., 2004. Artificial Neural Networks in Analytical Review Procedures. *Managerial Auditing Journal*, Vol. 19, No. 2, pp. 191-223.
- Kumar, P.R. and Ravi, V., 2007. Bankruptcy prediction in banks and firms via statistical and intelligent techniques – A review. *European Journal of Operational Research*, Vol. 180, No. 1, pp. 1-28.
- Lehtinen, J., 1996. *Financial Ratios in an International Comparison. Validity and Reliability*. Acta Wasaensia 49, Vaasa, Finland.
- Lindholm, C.K. and Liu, S., 2003. Fuzzy Clustering Analysis of the Early Warning Signs of Financial Crisis. *Proceedings of the FIP2003, an International Conference on Fuzzy Information Processing: Theory and Applications*, Beijing, March 1–4, 2003.
- MacQueen, J.B., 1967. Some Methods for Classification and Analysis of Multivariate Observations. *Proceedings of 5<sup>th</sup> Berkeley Symposium on Mathematical Statistics and Probability*, Berkeley, University of California Press 1, pp. 281-297.
- Martín-del-Brió, B. and Serrano Cinca, C., 1993. Self Organizing Neural Networks for the Analysis and Representation of Data: some Financial Cases. *Neural Computing & Applications*, Springer Verlag (ed.), Vol. 1, No. 2, pp. 193-206.
- McNair, C.J. and Liebfried, K.H.J., 1992. *Benchmarking – A Tool for Continuous Improvement*. John Wiley and Sons, Inc., New York, NY.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Ohlson, J.A., 1980. Financial ratios and the probabilistic prediction of bankruptcy. *Journal of Accounting Research*, Vol. 18, No. 1, pp. 109-131.
- O'Leary, D.E., 1998. Using Neural Networks to Predict Corporate Failure. *International Journal of Intelligent Systems in Accounting, Finance & Management*, Vol. 7, pp. 187-197.
- Serrano Cinca, C., 1996. Self Organizing Neural Networks for Financial Diagnosis. *Decision Support Systems*, Elsevier Science Vol. 17, pp. 227-238.
- Serrano Cinca, C., 1998a. Self-organizing Maps for Initial Data Analysis: Let Financial Data Speak for Themselves. *Visual Intelligence in Finance using Self-organizing Maps*. Guido Deboeck and Teuvo Kohonen (eds.). Springer Verlag.
- Serrano Cinca, C., 1998b. From Financial Information to Strategic Groups - a Self Organizing Neural Network Approach. *Journal of Forecasting*, John Wiley and Sons (ed.), Vol. 17, pp. 415-428.
- Shirata, C.Y., 2001. The Relationship between Business Failure and Decision Making by Manager: Empirical Analysis. *Proceedings of 13<sup>th</sup> Asian-Pacific Conference on International Accounting Issues*, Rio de Janeiro, Brazil, 28-31 October, pp. 20-23.
- Swicegood, P. and Clark, J.A., 2001. Off-site monitoring systems for predicting bank underperformance: a comparison of neural networks, discriminant analysis, and professional human judgment. *Intelligent Systems in Accounting, Finance & Management*, Vol. 10, No. 3, pp. 169-186.
- Theodoridis, S. and Koutroumbas, K., 2003. *Pattern Recognition*. 2<sup>nd</sup> Edition. Academic Press, San Diego, CA, USA.
- Toivonen, J. et al, 2001. Validation of Text Clustering Based on Document Contents. *Machine Learning and Data Mining in Pattern Recognition (MLDM 2001)*, Leipzig, Germany.
- Visa, A. et al, 2002. Contents Matching Defined by Prototypes: Methodology Verification with Books of the Bible. *Journal of Management Information Systems*, Vol. 18, No. 4, pp. 87-100.

## THE NECESSITY OF CHANGES IN THE LEGAL FRAMEWORK OF EUROPEAN COMPANY

Kalliopi Kalampouka<sup>1</sup> and Ilektra Simitsi<sup>2</sup>

<sup>1</sup>Assistant Professor, PhD in Law, Dept. of Accountancy, Kavala Institute of Technology,  
Ag. Loukas, Kavala, 65404, GREECE, pkalab@teikav.edu.gr

<sup>2</sup>Degree of Political Science and Public Administration, National and Kapodistrian University of Athens,  
Postgraduate in International Relations, University of Democritus, Greece

### ABSTRACT

The European Company Statute ("SE Regulation" 2157/2001) offered the possibility to create a new legal form called a European Company, also referred to as an SE (Societas Europaea). The main idea behind the SE Regulation was to make it easier for companies and groups with a "European" dimension to combine, plan and carry out the reorganisation of their business on an EU scale.

Council Regulation 2001/2157/EC on the Statute for a European Company (SE) contains not only provisions that are directly applicable in all Member States, but also cross-references to the national legislation applicable to public limited-liability companies as well as several Member State options. As a result the legislation applicable to SEs varies, sometimes considerably, from one Member State to the other.

The content of national company law rules applicable to SEs does not seem to be the actual driver for choosing the SE form, however, other rules such as fiscal law, labour law or the requirement on minimum capital could be important in assessing the attractiveness of national provisions applicable to SEs.

From the other side a division consists an obvious instrument for restructurings both within and across the borders of a Member State and that a cross-border division whereby an SE will be formed would be easier and less time-consuming than the alternatives that already exist. It is also argued that although there is no legislation at EU level on cross-border divisions, the jurisprudence of the European Court of Justice has already made it possible to carry out a cross-border division when the companies involved are governed by the laws of different Member States.

However, the fact that only public limited-liability companies can be transformed into an SE and participate in a merger to set up an SE and the high level of the minimum capital requirement (€120,000) makes the SE form more easily available only for larger entities, but makes it more difficult for smaller entities.

Finally, the requirement to conclude the negotiations on employee involvement before the registration of the SE is a practical problem, because it creates substantial delays and uncertainty in the registration of the SE. It is important to note that the SE Directive does not contain specific rules on the role of employees when an SE is activated or structural changes occur after its formation, such as changes to the structure of the SE, or the employment of employees or the acquisition of (part of) another company and its employees. Therefore, it is not clear in all cases how it should be dealt with in practice if a shelf SE is activated. If the law of a Member State is not clear, this law could be interpreted in conformity with the SE Directive. However, the interpretation of the national laws of the Member States in conformity with the SE Directive offers little legal certainty.

This study analyzes all the above mentioned issues as a clarification of the SE Regulation and 2001/86/EU Directive could resolve the current legal uncertainty and remove the potential risk of circumvention.

### KEYWORDS

European Company, legislation, jurisprudence, company law, cross-border division.

### JEL CLASSIFICATION CODES

K, K2, K31

## **1. IN GENERAL.**

After over thirty years of intensive discussions and difficult negotiations since the non adopted draft SE Regulation in 1970, on 8 October 2001 the European Council of Ministers formally adopted Council Regulation (EC) No 2157/2001 (hereafter referred to as the “SE Regulation”) creating the Statute for the European Company (known by its Latin name Societas Europaea – SE) and Council Directive 2001/86/EC (hereafter referred to as the “SE Directive”) supplementing the Statute for a European Company with regard to the involvement of employees.

This legislation entered into force on 8 October 2004, the date on which, in principle, the new legal entity became available to companies conducting operations in more than one Member State of the European Union.

The purpose of adopting the SE Statute was to provide for “the creation, side by side with companies governed by a particular national law, of companies formed and carrying on business under the law created by a Community Regulation directly applicable in all Member States” in order to overcome the obstacles arising from the disparity and the limited territorial application of national company law.

The aims of the SE were :

- to allow cross-border groups with a “European” dimension to structure, reorganize and expand or combine their pan-European operations on a Community scale and freely transfer their registered office to another Member State, while ensuring adequate protection of the interests of shareholders and third parties and “ensuring as far as possible that the economic unit and the legal unit of business in the Community coincide”;
- to allow cross-border groups with a “European” dimension to adapt their organizational structure, and to choose a suitable system of corporate governance ensuring the efficient management, proper supervision and maintaining of the rights of employees to involvement (Perakis, 2006).

Thanks to the existence of the SE, European companies and groups were to be given the opportunity to structure, reorganize and combine their pan-European operations, to transfer their registered office (Perakis, 2010, p. 293) and to adapt their organizational structure throughout the European Union (EU) and the European Economic Area (EEA) without prohibitive legal obstacles.

## **2. INTRA MEMBER STATE ANALYSIS**

As far as the intra Member State comparison between the rules applicable to the SE and the respective national public limited-liability company is concerned, the main conclusion is that the SE is basically treated in every Member State as if it were a public limited-liability company: in the large majority of cases and Member States, the status of the SE is similar to the status of a domestic public limited-liability company. It is noteworthy that a majority of Member States provide the SE with higher protection for minority shareholders and that many of them also provide higher protection for creditors. However, this is generally related to the cross-border nature of the SE and not to the desire to adopt a more stringent statute for the latter. Conversely, and as far as corporate governance is concerned, the SE statute appears to be generally more flexible than the domestic public limited-liability company statute. This is due to the fact that many options provided by the SE Statute have been adopted by the Member States and lead to a result that provide more options or is in other ways less rigid than that provided by their own law.

## **3. EXISTING SES**

The main features of the overall SE picture are as follows: 369 SEs were registered in 20 EU / EEA Member States as at 15 April 2009. In relation to these SEs 19 Member States have been registered locations of an original SE incorporation, whilst 21 Member States have been registered locations of an SE at least at one point during its life. The number of new SEs have accelerated considerably from year to year; this could be partially explained, on the one hand, by the fact that the implementation of the SE Statute was only fully accomplished by all Member States in 2007 and, on the other hand, by the creation of many shelf SEs. Shelf

SEs (SEs with no activity and no employees) represent 37.7% of the total number of SEs, and most of them are in the Czech Republic. An increased awareness and knowledge of the SE form amongst companies and their legal advisors could also be a partial explanation (the commission of the European parliament and the council, 2001).

The highest number of SEs registered as at 15 April 2009 are in the Czech Republic (137), followed by Germany (91), the Netherlands (22), the United Kingdom (16), France (15), Austria (13), Luxembourg (11), Slovakia (13), Cyprus (10), Belgium (10), etc. Ten Member States had no SEs. The majority of SEs operate in the services sector, but SEs are found in all sectors of activity. The most frequently used method of formation of an SE is the creation of a subsidiary of an SE, which is illustrated by the relatively high number of shelf SEs. Other methods often used include the conversion of a public limited-liability company, the creation of a joint subsidiary and the merger. The creation of a holding SE is very rare. SEs (apart from shelf SEs) are in the majority of cases (53%) created by only one founding SE company (SE subsidiary of an SE and conversion) and in 40% of cases by two companies (merger, joint subsidiary or joint holding company). 10% of the SEs (38) have transferred their registered office and the most frequently chosen destinations are the United Kingdom, Cyprus and France followed by Luxembourg and Austria (the commission of the European parliament and the council, 2001). As far as corporate governance is concerned, most SEs have been created in Member States which have a codetermination system and where the two-tier corporate structure is compulsory for domestic public limited-liability companies. In most Member States, a majority of SEs have implemented the one-tier corporate structure.

#### **4. MAIN TRENDS AND PRACTICAL PROBLEMS**

To date, the SE is the only form of company able to transfer its registered office beyond its national border within the EU / EEA. They continue to keep a close watch on tax and legal developments in the various Member States, bearing in mind that the transfer of their registered office is possible. The possibility of a cross-border merger was initially but is no longer, an incentive for adopting the SE legal form, as the EC Directive on cross-border mergers is now implemented in the Member States and makes mergers easier. In particular the merger Directive assures the protection of the existing employee participation but does not organize the negotiation procedure for employee involvement as strictly as the SE Statute does. As a consequence, it is easier for small and medium-sized companies to conduct a cross-border merger resulting in a national public limited-liability company than in an SE.

As far as it concerns the simplification of the group structure, only a few SEs actually took advantage of the SE Statute to simplify the group structure. This is due, in particular, to the unlimited liability of branches, leading to the preference for a structure with subsidiaries. Furthermore, since the implementation of the EC Directive on cross-border mergers, the creation of an SE is not necessary in order to simplify a group structure. Flexibility and attractiveness of the national SE form (inter Member State) with the possible exception of Luxembourg (and to a lesser extent the United Kingdom, the Netherlands, Belgium and Slovakia), the inter Member State level of attractiveness and flexibility of the national legislation applicable to the SE does not seem to be an actual driver in the choice of the SE legal form.

However, in some Member States, especially those where the two-tier structure and the co-determination regime are compulsory for domestic public limited-liability companies, the SE may present an interesting alternative to the domestic public limited liability company. This is particularly the case in Germany where the one-tier system (Mastromanolis, 2008, p. 58-60.) is common for family businesses, which are normally run as private limited-liability companies and which would have to adopt the two-tier structure when they are or would like to be organized as a public limited-liability company. Tax law may also be an issue for SEs and in particular the possibility of transferring the registered office to a lower-tax-rate Member State (or a Member State with more flexible tax legislation or more tax treaties). Of course, taxation may be triggered in the case of transfer of the activity, but transfer may still be advantageous in certain situations.

On the other hand the formation of an SE is generally considered to be expensive and time-consuming, due to the negotiation procedure with employees and to the lack of public recognition of the SE legal form. Uncertainty also results from the fact that behind the unified image of the SE, many different national

legislations apply and uncertainty remains as to the legal effect of directly applicable law and the interface between the latter and applicable national law.

#### **4.1. The main trends**

The concentration of SEs is noted in Member States where the SE legal form offers the possibility for individually negotiated forms of employee participation as an alternative to obligatory rules in national legislation. In these countries, the SE makes it possible to design the employee participation to be better adapted to the company's situation and provides for a specific European solution. It also allows its optimization. For example, according to German legislation, employee representatives must be employees of the companies having their registered office in Germany. In the SE, participation is organized with the representation of employees of the companies located in all Member States concerned.

The SE also appears to be an alternative to domestic companies in Member States where the one-tier system is not available for public limited-liability companies. In Member States with a one-tier corporate governance and without employee participation companies are in general relatively reluctant to create SEs (Rokas, 2008), which are seen as having more drawbacks than advantages compared with national public limited liability companies.

#### **4.2 The practical problems**

The practical problems can be separated into those relating to the formation of the SE and those relating to the running of the SE.

There are some inconsistencies in the rules on the formation of SEs: the two-year period of existence of a branch or a subsidiary is not required in a merger. It is therefore possible to use a procedure involving a merger with a public limited-liability company created for this purpose, instead of the conversion of the national public limited-liability company into a SE. On the other hand, there is a general request for extending the definition of a merger in order to include the contribution of a branch of activity (in the form of a partial contribution of assets) (Rokas, 2008).

According to the SE Directive, measures must be taken if there is a structural change in the SE. However, an increase or decrease in the number of employees is not usually considered to be a structural change. Consequently, the initial negotiations may from the view of employees' interests turn out to be inadequate in relation to the SE's new situation, without there being any general obligation to renegotiate.

The efficiency of the SE Statute has to be measured according to the degree to which the initial aims assigned to this new European corporate vehicle have been fulfilled.

When assessing the fulfillment of the initial aims of the SE Statute, ancillary elements must be taken into consideration: (i) the real needs of companies within the EU/EEA at the time of adoption of the SE Statute and their development since then, (ii) the unexpected counter effects linked to the implementation of the initial aims, (iii) the changes in the economic and legal environment since the time of adoption of the SE Statute.

With a view to the above, the efficiency of the SE Statute has been evaluated on the basis of the legal mapping, the SE Survey, the interviews with SEs, non SEs and experts, and the review of literature, and results in the following conclusions:

- The SE Statute allows cross-border groups with a "European" dimension to restructure and reorganize, and, above all, to freely transfer their registered office to another Member State, while ensuring adequate protection of the interests of shareholders and third parties. However, so far this has not led to having the economic unit and the legal units of business in the Community coincide. This is due to the fact that the reorganization of groups is legally possible but is still complex (the methods of formation of the SE are limited and thus access to this legal form is limited) and lacks harmonization in the areas of tax, competition, intellectual property and insolvency.
- The SE Statute allows cross-border groups with a "European" dimension to adapt their organizational structure and to choose a suitable system of corporate governance, ensuring the efficient management, proper supervision and maintaining of the rights of employees to involvement.

However, this objective encounters two limits to its achievement: first, behind its unified image, the SE is mainly governed by different national legislations and second, in specific situations, the employee involvement system can appear to be stringent and ill adapted.

An essential question to address is whether the initial objectives pursued by the SE Statute remain unchanged. In particular, the SE Statute has been implemented in order to allow the reorganization of the business of companies and groups on a community scale while including the concern of employee involvement. If these objectives remain, the SE Statute can be considered as having formed an appropriate basis for the achievement of these goals but could be enhanced and improved to ensure the full completion of the objectives. The SE legal form and its Statute have had the advantage of re-opening the debate on several issues of European company law which, in the past, did not produce any concrete result. This is the case, for instance, with the non-adopted fifth Directive which left a kind of harmonization loophole in European company law. Thus, the SE can be perceived as providing the impetus leading, firstly, to greater harmonization within EU / EEA company law and, secondly, to constructive company law competition inter and intra Member States, these two trends not being contradictory but complementary. Possible improvements should therefore be in line with those objectives. It's indicated that employee involvement rules for the SE is, on the one hand, a considerable factor for the limited take up of the SE in some Member States (Tountopoulos, 1999).

On the other hand, it seems that some SEs (in particular shelf SEs) are created to elude the negotiation procedure for employee involvement. This is considered by some as not fully complying with some objectives pursued by the SE Statute. Considering both aspects and taking into account developments in EC legislation and case law, the negotiation procedure for employee involvement could be revised. As regards the first aspect, the simplification of the negotiation procedure could further increase the attractiveness of the SE. As regards the second aspect, an obligation to organize negotiations when a threshold in the number of employees is reached could be considered.

Moreover, taking the objectives of the SE Statute into account, issues such as the possibility of allowing the registered office and the head office of the SE to be located in two different Member States, or of authorizing the Member States to allow SE rules to deviate from domestic public limited-liability company rules, are debatable.

Finally, article 37 par. 3 of the SE Regulation define that the simultaneous conversion of a public limited liability company into an SE and the transfer of the registered office to another Member State is expressly prohibited, but a consecutive transfer is allowed. A simultaneous conversion and transfer of the registered office would be less time-consuming and would reduce administrative burden for the company. The current prohibition to transfer the registered office at the same time as the conversion might also not be in accordance with the freedom of establishment (article 43 EC) following the *Cartesio* case.

Contrary to the formation of a holding SE, the SE Regulation does not contain extensive provisions on the procedure for the formation of a subsidiary SE. One can consider that the SE Regulation assumes that the participating companies pay up for the shares in the subsidiary SE. However, due to the absence of a legal framework for the formation of a subsidiary SE in the SE Regulation, it can be argued that the participating companies can (see, Article 37 paragraph 5 and article 8 paragraph 6 of the SE Regulation and also, Case 210/06), not only form a subsidiary SE by paying up for its shares, but that they can also form a subsidiary SE by a national or cross-border division. However, that, it is not clear.

The SE Directive does not contain specific rules on the role of employees when an SE is activated or structural changes occur after its formation, such as changes to the structure of the SE, or the employment of employees or the acquisition of (part of) another company and its employees. In this way, there is potentially a possibility to circumvent the rules on employee involvement by establishing a shelf SE or acquiring the shares of a shelf SE and then carrying out certain activities – also referred to as the 'activation' of a shelf SE. The national laws of the Member States concerning the subject of structural changes in the SE, such as the activation of a shelf SE, differ from each other. Therefore, it is not clear in all cases how it should be dealt with in practice if a shelf SE is activated. If the law of a Member State is not clear, this law could be interpreted in conformity with the SE Directive. However, the interpretation of the national laws of the Member States in conformity with the SE Directive offers little legal certainty. A clarification of the SE Regulation/Directive could resolve the current legal uncertainty and remove the potential risk of circumvention.

According to Article 7 of the SE Regulation, the registered office and the head office of an SE shall be located in the same Member State. It has the consequence, that, if the head office of an SE is moved, also the registered office has to be moved and vice versa. This is considered by many stakeholders as an obstacle in practice which is contrary to the nature of an SE as an international legal form designed for cross-border business and contrary to the practice of national regulations authorizing the board of directors or the management board of companies to be held through videoconferencing or telephone conferencing systems. It is also argued that this requirement may be contrary to the freedom of establishment as mentioned in Article 49 of the TFEU Treaty (Kotsiris, 2003).

According to Article 39(2) of the SE Regulation, members of the management shall be appointed and removed by the supervisory organ. In some Member States it is required that removal of management can only be done if there are "good reasons" to do so. It is not clear whether the Regulation's provision is exhaustive (i.e. allows the supervisory board total discretion as regards the removal of members of the management board) or whether national law prevails.

Last but not least, the future of the SE is not only linked to the possible amendments of its Statute. The other EC Regulations and Directives are also very important, notably the EC Directive on cross-border mergers and the currently discussed proposal for an SPE Regulation.

In particular, the consistency of the SE Statute with the SPE model is essential in order for those two forms of companies to complement each other.

## **5. CONCLUSIONS**

The European Company has made it possible for companies with a European dimension to transfer the registered seat cross-border, to better reorganise and restructure and to choose between different board structures, while maintaining the rights of employees to involvement and protecting the interests of minority shareholders and third parties. The European image and supra-national character of the SE are other positive aspects of the SE.

However, six years of experience with the SE Regulation have shown that the application of the Statute poses a number of problems in practice. The SE Statute does not provide for a uniform SE form across the European Union, but 27 different types of SEs. The Statute contains many references to national law and there is uncertainty about the legal effect of directly applicable law and its interface with national law. Furthermore, the uneven distribution of SEs across the European Union shows that the Statute is not adapted to the situation of companies in all Member States (Perakis, 2003).

On the basis of the legal mapping, there are several areas for possible modification that have been identified and may lead to an improvement of the SE Statute. Currently, the conditions for the formation of an SE are limited, depending on the method of formation chosen, to certain specific legal entities that can create an SE. The current situation are the formation by merger, by holding, by subsidiary and by conversion.

Any considerations of amendments to the SE Statute to tackle the practical problems identified by various stakeholders will have to take into account that the SE Statute is a result of a delicate compromise following lengthy negotiations. The Commission is currently reflecting on potential amendments to the SE Statute, with a view to making proposals in 2012, if appropriate. Any such amendments, if put forward, would need to be carried out in parallel with any possible revision of the SE Directive, which would be subject to the consultation of social partners in accordance with Article 154 of the Treaty. More generally, any measures which the Commission would propose as a follow-up to the present report would be subject to better regulation principles, including an impact assessment.

## **REFERENCES**

- SE Regulation (2006). Article 37 paragraph 5 and article 8 paragraph 6 of the. See also Case 210/06 Article 43 EC  
Kotsiris, L., 2003. European Commercial Law, Vol. 1, pp. 281-289

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Mastromanolis, E., 2008. *The private international law of trade*, Athens.
- Oberlandsgericht Dósseldorf, 2009, I-3 Wx 248/08, Deutsche Notarzeitung.
- Perakis E., 2003, *Une societe pour quelles enterprises ? Law of Enterprises and Companies*, pp. 354-356.
- Perakis E., 2006, The “Greek” Societas Europaea.
- Perakis E., 2010. *The Law of public limited company*, Legal Library, Athens.
- Report from the commission to the European parliament and the council, 2001, *The application of Council Regulation 2157/2001 of 8 October 2001 on the Statute for a European Company (SE)* COM/2010/0676 final
- Rokas N., 2008. *Commercial Companies*. pp. 32-39.
- Tountopoulos V., 1999. The free establishment of legal entity in the community law. *Law of Enterprises and Companies*, pp. 1118-1127.

# FEMALE ENTREPRENEURSHIP AND ITS CONTRIBUTION TO REGIONAL ECONOMIC DEVELOPMENT

Evangelia Zikou<sup>1</sup> Katerina Sarri<sup>2</sup>

<sup>1</sup>*Dep. of Balkan Studies, University of Western Macedonia, 2nd Km Florina-Niki, Florina, Greece, ezikou@uowm.gr*

<sup>2</sup>*Dep. of Balkan Studies, University of Western Macedonia, 2nd Km Florina-Niki, Florina, Greece, ksarri@uowm.gr*

## ABSTRACT

The widening participation of women in the labor force and particularly in entrepreneurship is an increasing phenomenon. Women entrepreneurs make an important contribution to the development of the world economy, particularly in low and middle-income countries. Moreover, there is a growing body of literature suggesting that entrepreneurship plays a significant part in regional development. Therefore, it is crucial for policy makers to recognize the factors affecting entrepreneurial activity on a regional basis. This paper is a study of the Greek entrepreneurial environment with emphasis placed on female entrepreneurship, its characteristics and motivation, in order to examine its contribution on a regional development base.

In this paper, the assessment of the entrepreneurial environment and female entrepreneurship in the Greek regions is examined through the study of the existing bibliography and the analysis of related data. The data processed and analyzed covers a period of 15 years (1995-2009) for the 13 Regions in Greece.

Findings suggest that female entrepreneurs are a very important determinant for entrepreneurship and economic development in regional level in Greece in terms of job creation, networking, promoting local products, preservation of local characteristics and identity.

The paper's originality lies in the review of the Greek regional female entrepreneurial situation, adding more evidence on the existing literature on the characteristics of women entrepreneurs and its impacts on the development of the Greek regions.

## KEYWORDS

Female entrepreneurship, regional development, personal characteristics, Greece

## JEL CLASSIFICATION CODES

L26, R11, J16

## 1. INTRODUCTION

Female entrepreneurship, as a subject of academic research has attracted attention in recent years and is fast becoming the aim for scholars and governments (Kay, 2009). The increase of female entrepreneurship would appear to be due to the increase in entrepreneurship research activity and to understanding that women make a contribution to economies worldwide in terms of job creation, economic growth and increase of income. Moreover, it is estimated that currently there are ten million self-employed women in Europe. This, with the fact that twenty-first century women are setting up the so-called "new economy companies", with success in high technology and life sciences has led them to become important agents of economic change. Furthermore, inward migration stimulates enterprise as new and existing ethnic minorities turn to self-employment to counter labour market discrimination or unemployment. An important challenge of research is to identify initiatives that may lead European economies to become more helpful for new and growing enterprises for both men and women, while learning from best practice's examples of crucial importance (Carter et al., 2007).

So, we would say that, women entrepreneurs make an important contribution to the development of the world economy, particularly in low and middle-income countries. However, regardless of gender, entrepreneurial activity is significantly higher in both the low/middle-income country groups than in the high-income countries.

For this reason, in this paper, we will deal with the situation of female entrepreneurs in Greek regions. The increase of entrepreneurship, especially female entrepreneurship will empower the weak economic situation in Greece and it will offer advantages to the society as a whole through new jobs creations and local products promotion, while helping the local characteristics and the identity to be preserved.

This paper consists of two parts. In the first part, the characteristics of female entrepreneurs and their motivations (push/pull factors) are presented whilst in the second part the role of entrepreneurship on regional development and its relation as well as the situation of female entrepreneurs in the Greek regions and its impact on regional development are presented. A third part serves as the epilogue to the paper.

## **2. UNDERSTANDING FEMALE ENTREPRENEURSHIP: FEMALE ENTREPRENEURS' CHARACTERISTICS AND MOTIVATION**

As Green and Cohen (1995) supports, women entrepreneurs should not be treated as monolithic category. They are a diverse and complex group. For this reason, female entrepreneurs' personal characteristics and motives have to be studied and taken into consideration. (Sarri and Trihopoulou, 2005).

The types of self-employed women according to Carter et al, (2007), fall within four distinct categories: "Conventional" entrepreneurs, who are committed to both entrepreneurial ideals and conventional gender roles, "Innovative", who believe in entrepreneurial gender roles, "Domestic" entrepreneurs, who organize their business life around the family situation and believe in conventional female roles and "Radicals", who hold low attachment to both and often organize their businesses on a political basis.

Women often do the things differently and for different reasons from men. They are holistic, comprehensive, long-term and profit is not the main aim. Moreover, women entrepreneurs set up more social enterprises and they start their own business in order to get a better work-life balance. Furthermore, they are risk averse and they grow their businesses slowly (Kobeissi, 2010). Women usually have businesses with fewer than five employees. Another characteristic is that male business proprietors start by thinking that "in ten years time I want to retire with £20 million" but their female equivalent think "I want to take the control of my life, I want my own money, I want to see my kids" (Kay, 2009).

Authors, have also found some other differences between genders, especially with regards to networking strategies, personal background, information usage and business characteristics (Shim and Eastlick, 1998).

A recent study (Kobeissi, 2010), investigates the impact on female and male entrepreneurship activities across a number of countries finding that the negative effect for unemployment was smaller for women and the positive effect for the life satisfaction was important only for women. She also, noted that the theory of entrepreneurship states that the abilities of entrepreneurs are the primary human resource possessed by the firm and added that theory also relates entrepreneurial capabilities to business environment.

Moreover, according to the female educational attainment, there are different opinions regarding the effects of education on female entrepreneurs. Some studies have found no effect (Dunn and Holtz-Eakin, 1995; Renzulli et al., 2000), others found positive and significant effects (Carr, 1996; Dolinski et al., 1993). One research for example has suggested that individuals with lower educational attainment are more likely to pursue a venture where they perceive their abilities to be more relevant (Brockhaus and Nord, 1979). Other scholars suggest that individuals who possess limited wage-labor skills are more likely to become entrepreneurs (Light 1980; Min 1984; Evans and Leighton 1989).

Dolinski et al. (1993) and Bates (1990), report that initial entry to entrepreneurship increased with the increasing level of educational attainment. Another study found that education is positively associated with the probability of self-employment (Cowling and Taylor, 2001). At last, Borjas and Bronars (1989) suggests that self-employed are more likely to be college-educated.

About the gender empowerment we could say that the way the person thinks has a significant impact on the propensity to engage in entrepreneurial activities. Thinking “entrepreneurially” leads to start a business and to act on that aim (Busenitz and Lau, 1996). However, it is important to say that the tendency to think entrepreneurially and to perform entrepreneurial activities are conditioned by many factors, among which culture has an important part (Mueller et al., 2001). Culture has a great influence on gender equality and empowerment. Moreover, according to Birley (1989), cultural conditions have the greatest impact on navigating women away from entrepreneurship. Gender empowerment enables women to break away from occupational stereotypes. It increases their abilities to make their own decisions and it leads to satisfaction for their choices (Vermeulen and Minor, 1998).

According to the extent of female economic activities, while social and cultural characteristics have been found that have an impact on female economic activities and employment (Youkyoung and Jaesoen, 2001), female economic activities as measured in terms of previous employment and work experience have been found that have a significant effect on the incidence of self-employment among women (Carr, 1996; Taniguchi, 2002).

Another factor, as Kobeissi (2010) supports, is the fertility rate. A near constant among the research on women self-employment is the recognition of the role of children. Some authors, suggest that the number of dependent (Holtz-Eakin et al., 1994) and older children (Kuhn and Schuetze, 2001), increases the exit rate of the self-employed generally and of female self-employed in particular.

Moreover, in high-income countries, one study suggests that the female to male labor force participation has a negative effect on necessity but a positive effect on opportunity (Minniti and Arenius, 2003). The authors put forward the fact that the availability of paid employment lowers the motivations for women in order to engage in necessity. Necessity entrepreneurs are relatively less in developed countries but they are a significant part of entrepreneurship in developing country (Desai, 2009).

A research administered from the Ergani center of Thessaloniki (Center for enhancing female participation in the workforce) discloses data related to female entrepreneurs’ motivation and characteristics (Sarri and Trihopoulou, 2005) The sample in this study consists of female owners of small business in the prefecture of Thessaloniki for the period 1990-2000. Data was collected through personal interviews with women entrepreneurs, the target group was women entrepreneurs at the start up or early stage 1-3 years of their business and 120 businesses were randomly selected for the research out of which 80 questionnaires were eventually collected. The characteristics that studied were the age of the business owners, when they started their business, their marital status, the level of education and the family background.

Table 1: Age of starting entrepreneurial activity.

<b>Age</b>	<b>1992</b>	<b>1997</b>	<b>2000</b>
<b>&lt; 35</b>	n. a.	27.5%	19.1%
<b>36-45 years</b>	30.2%	38.5%	43%
<b>46-54 years</b>	11,1%	27%	25.5%
<b>&gt;55 years</b>	n. a	7%	12.4%

Source: Sarri and Trihopoulou 2005

n.a = not available

In table 1, it is observed the tendency of women to undertake entrepreneurial activity in older age. Women started their business in an older age than men. The above data indicates an increasing tend of women to undertake entrepreneurial activity between the age of 36-54 and a continuous increase for the age group 46-54.

Table 2: Level of education of female entrepreneurs.

<b>Education</b>	<b>1992</b>	<b>1997</b>	<b>2000</b>	<b>2002</b>
<b>Elementary</b>	22%	23%	25%	11%
<b>Secondary</b>	41.2%	40%	33.6%	45%
<b>Higher Education Institutions (Universities &amp; Polytechnics)</b>	27%	30%	25%	42%
<b>Other</b>	9.7%	7%	16.4%	20%

**Source:** Sarri and Trihopoulou 2005

The *level of education of female entrepreneurs* is high. The “other” category which has a growing trend for the period 1992-2002 includes technical or other education in Greece, due to the European resources funding. It worth to point out that the percentage of the women with low educational level (primary education) and secondary education that fluctuate is one quarter of the total (Table 2).

Regarding the marital status, we can say that the majority of the female entrepreneurs are married with children. This with the fact that women entrepreneurs spend many hours a day in their businesses, depicts that they have managed to become entrepreneurs simultaneously with their family life.

Table 3: Business creation.

<b>Business creation</b>	<b>1992</b>	<b>1997</b>	<b>2000</b>
<b>New business</b>	73%	70%	72,5%
<b>Purchase</b>	27%	30%	10,4%
<b>Succession in family business</b>			11,1%

**Source:** Sarri and Trihopoulou 2005

Moreover, according to the survey’s results, female owned small businesses are in their majority, newly established businesses (72.5 percent) and only 11,1 percent state that they undertook the family business, while a percentage of 10.4 states that they have taken over the business from somebody else (Table 3).

The above findings are in accordance with Kay (2009) who supports the view, that women often juggle a business alongside family commitments, or set up business after having children. Moreover, many women have engaged with different businesses in their life, due to their changing needs.

However, female entrepreneurs’ personal profiles may differ between the European countries, however they have common ground for the age of female entrepreneur, who start their business and their level of education, according to Sarri and Trihopoulou (2005).

The importance of female entrepreneurship and its contribution to the economy has been stressed by many researches in terms of motivation. The majority of surveys have found that motives between men and women are similar with the independence and the need for self-achievement being first (Hisrich, 1990) while according to Orhan and Scott (2001), the occupational flexibility is also an important factor.

In order to study the different motives for women to become entrepreneurs, many authors use “Push” and “Pull” factors (Brush, 1990; Buttner and Moore, 1997). Push factors are associated with economic considerations and elements of necessity such as family income and job dissatisfaction, while pull factors are associated with elements such as independence, desire for wealth, social status and power (Ducheneaut, 1997). In general, authors agree that women entrepreneurship is the result of push factors (Hisrich and Brush, 1985; Stokes et al., 1995).

The pull/push model is also a way to explain the motivations for women to start a business. Push factors, as we have said refer to necessities such as unemployment, redundancy, economic reasons (inadequate family income), dissatisfaction with being employed or the need to accommodate work and home roles simultaneously. Pull factors are related to need for independence, for achievement, economic reasons (desire for profit-wealth) personal development, self-fulfillment, social status and power (Sarri and Trihopoulou, 2005). Moreover, it is important to underline that the motives differ per country, time period and group of women, however, the main trend in most European countries is pull factors (Orhan and Scott, 2001).

The following table (Table 4) presents the motives of women entrepreneurs in Greece and covers business start-ups for a period of ten years, 1990-2000. According to the data, female entrepreneurs in Greece are motivated to entrepreneurship mainly from economic reasons and self-fulfillment including the needs for creativity, autonomy and independence.

However, female entrepreneurs in Greece and in other European countries such as Holland, France and Italy cannot be considered as ‘accidental’ entrepreneurs pushed in their present activity only from unemployment, redundancy or job insecurity (Glancey et al., 1998).

Table 4: Motives of female entrepreneurs.

Motives	Factors	1 <sup>st</sup> more important factor	2 <sup>nd</sup> more important factor	3 <sup>rd</sup> more important factor
<b>Push</b>	<b>Financial reasons and unemployment (inadequate family income)</b>	16,1%	8,1%	5,8%
	<b>Personal–family (need for flexible work schedule)</b>	11,4%	12,6%	13,8%
<b>Pull</b>	<b>Economic reasons (desire for profit-wealth)</b>	31,1%	27,8%	10,9%
	<b>Self-fulfillment</b>	9,8%	14,8%	27,5%
	<b>Interest for their business</b>	18,8%	13,9%	11,6%

Source: Sarri and Trihopoulou 2005

### **3. ENTREPRENEURSHIP, FEMALE ENTREPRENEURSHIP AND REGIONAL DEVELOPMENT**

The role of entrepreneurship in economic development is subject of many studies and searches. Entrepreneurship is associated with job creation, wealth and innovation. Moreover, across developed and developing countries, entrepreneurship is an important part of economic development strategies (Desai, 2009). There is not an agreed definition about entrepreneurship; however Rural Policy Research Institute (RUPRI)<sup>2</sup> defines, entrepreneurship as the process which entrepreneurs create and grow enterprises.

According to Desai (2009), there are many types of entrepreneurship. The most popular are Formal/informal, Legal/illegal and Necessity/opportunity.

The distinction between formal and informal entrepreneurship is determined by registration status. If a firm has been registered with the appropriate government agency, it is a formal entity. In Greece a lot of the entrepreneurial activity falls within the “informal” category due to the very high taxation rates for business profits and the vast bureaucracy in the process for starting up a business.

Entrepreneurs engaged in illegal activities (mining in prohibited areas) are illegal entrepreneurs, while legal entrepreneurship applies to activities that are permitted by law. According to the distinction between necessity and opportunity, we could say that necessity engage entrepreneurs in entrepreneurship in order to avoid unemployment. However, opportunity helps entrepreneurs to recognize opportunity for profit (Reynolds et al., 2002).

In order to study the relationship between entrepreneurship and regional development firstly, we have to see the relationship between unemployment and entrepreneurship. As Carree and Thurik (2002) support, the literature has found that unemployment stimulates entrepreneurial activity, known the “refugee effect” and that high levels of entrepreneurship reduce unemployment, a fact known as the “Schumpeter effect”.

<sup>2</sup> RUPRI is a joint venture of Iowa State University, University of Nebraska, and University of Missouri (MU) and was established by Congress in 1990 in order to provide non-partisan, unbiased, independent analysis and counsel to policymakers.

Furthermore, many studies (GEM, 2005) have shown that entrepreneurs introduce innovations related to new products and services.

Entrepreneurs are an important link between entrepreneurship and economic growth. Moreover, economic development is reinforced by the variety of demand for goods and services (Carree and Thurik, 2002).

So, one could argue that the key contribution of entrepreneurship to economic growth may be is the word 'newness'. This includes the start-up of new firms, especially the transformation of inventions and ideas into economically viable entities (Baumol 1993).

Moreover, as Carree and Thurik (2002) say, there are many strands in the literature which show the effect of entrepreneurship on regional economic development, such as: -the question of the effect of turbulence on economic growth. Turbulence is the sum of entry and exit in industries or regions and can be an indicator for entrepreneurial activity.

-the effect of the size in regions for economic growth. This means that a region which has a number of small firms when compared to another region it could indicate a higher level of entrepreneurial activity.

-the effect of the number of market participants in an industry for economic growth. This means that an increase of the number of competitors leads to entrepreneurial activity.

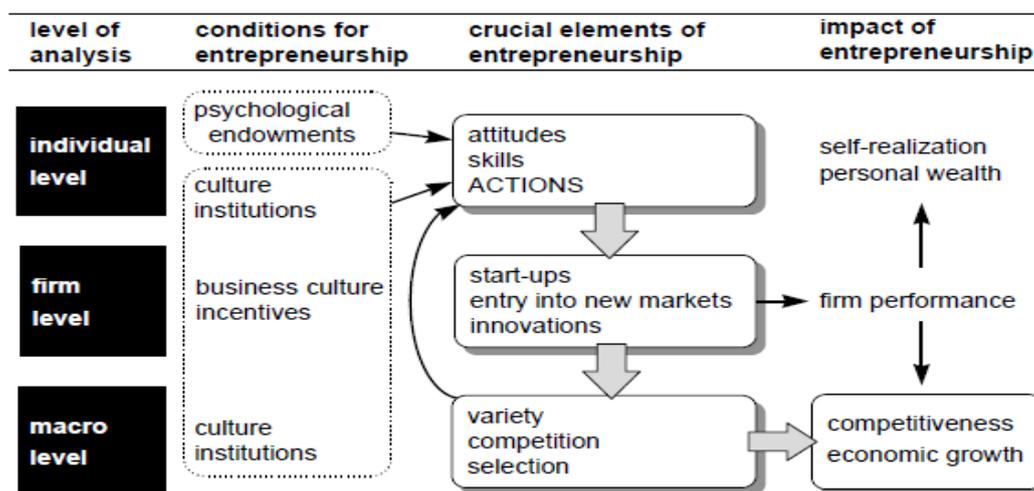
-the effect of the number of self-employed on economic growth. It is known that, in developed economies the rate of self-employment is related to the entrepreneurial activity.

-the economic history of the formerly centralized planned economies. The positive relationship between entrepreneurship and economic growth at the regional level has been studied from many authors. For example, Foelster (2000) examined not just the employment impact within new and small firms but also on the link between self-employment and total employment. Hart and Hanvey (1995) found that the employment creation came from SMEs, while they also identify that most of the job losses came from SMEs too.

Kreide (2003), recognized that female entrepreneurship has a significant impact on economic development and poverty decrease. According to Orhan and Scott (2001), female entrepreneurship has been identified as a major factor for innovation and job creation.

Moreover, for this positive relationship to become more understandable, we will present the following figure (Figure 1) that depict the three levels of analysis linking entrepreneurship to economic growth. Firstly, it should be noted that entrepreneurial action happens at firm level. Entrepreneurs need a vehicle to transform their personal ambitions into actions, newness (Carree and Thurik, 2002).

Figure 1. Framework for linking entrepreneurship to economic growth.



Source: Wennekers and Thurik (1999)

This figure, presents a framework inspired by the different insights of the literature. Three levels of analysis are distinguished, linking entrepreneurship to economic growth which also means linking the individual level to the firm and the macro level. Moreover, it refers to the national or regional cultural environment and to the internal culture of corporations. Entrepreneurial action happens at the firm level. Entrepreneurs need a vehicle in order to transform their personal qualities and ambitions into actions. The linkages between culture and entrepreneurship are by no means simple and straightforward. The history of

the rise and fall of nations has shown that cultural vitality, flourishing sciences and high tide in entrepreneurship often coincides. Moreover, it is indicated, that the countries which have entrepreneurial activity have also high rates of growth and economic development. In fact, entrepreneurship generates growth because it serves as a means for innovation and change and as a canal for knowledge. For this reason in a region of increased globalization, entrepreneurship plays an important role and the impact of entrepreneurship is to generate growth (Carree and Thurik, 2002).

Entrepreneurship as a local and regional activity and new firms create benefits for the regions. Furthermore, entrepreneurship can address the needs, which are related to income and employment. Lastly, it also creates job for the entrepreneur as well as income, but the most important is that it generates income for other people (Desai, 2009).

Below we present some data on entrepreneurship in the all Greek regions. Table 5, depicts the self-employed, the employees (or employment), the employment in technology and knowledge-intensive sector, the number of students in all levels of tertiary education and the number of students with tertiary education only. This table, through these data presents an image of the situation which exists in the Greek regions the last 15 years.

Table 5: Entrepreneurship in Greek regions.

Regions	Self-employed (1999-2008)	Employees (1999-2008)	Employment in High technology (1994-2007)	Total education to population (1998-2006)	Tertiary education to population (1999-2006)
<b>Anatoliki Makedonia, Thraki (gr11)</b>	85,890	116,270	232,711	0,063	0,014
<b>Kentriki Makedonia (gr12 )</b>	236,470	429,420	705,358	0,066	0,020
<b>Dytiki Makedonia (gr13)</b>	37,640	57,100	102,390	0,073	0,021
<b>Thessalia (gr14 )</b>	107,040	138,900	275,980	0,058	0,010
<b>Ipeiros (gr21 )</b>	46,850	67,500	116,302	0,067	0,022
<b>Ionia Nisia (gr22 )</b>	35,090	41,330	83,935	0,051	0,005
<b>Dytiki Ellada (gr23 )</b>	99,390	132,760	254,468	0,071	0,023
<b>Sterea Ellada (gr24 )</b>	76,530	115,840	196,244	0,055	0,008
<b>Peloponnisos (gr25 )</b>	107,710	103,510	233,423	0,049	0,003
<b>Attiki (gr30)</b>	321,910	1209,250	1497,214	0,064	0,020
<b>Voreio Aigaio (gr41 )</b>	27,020	35,640	63,434	0,055	0,010
<b>Notio Aigaio (gr42 )</b>	40,270	66,540	110,449	0,056	0,001
<b>Kriti (gr43 )</b>	93,410	132,240	242,481	0,069	0,015

Source: Eurostat. The numbers are the M.O. of the data for the above period

Note: Self-employed: Employment by professional status at NUTS levels 1 & 2  
(1000)

Employees: Employment by professional status at NUTS levels 1 & 2 (1000)

Employment in High Technology: Employment in technology and knowledge-

intensive sectors in thousands

Total education to population: Number of students in Tertiary education, in Tertiary programmes with academic orientation and in Tertiary programmes with occupation orientation

Tertiary education to population: Number of students in Tertiary education

As we can see, the four regions with the higher number of self-employed are the Attiki, the Kentriki Makedonia, the Peloponnisos and the Thessalia. Moreover, we can stress that the high number of self-employed in these regions depicts at the same time high number of employment in high technology. Furthermore, it is important to underline that the highest number of students are in the region of Dytiki Makedonia, one of the smallest Greek regions. This enhances the previous result that the majority of Greek female entrepreneurs come from the higher education institutions as the one of the most important attainments.

However, the world changes rapidly due to the rise of global competition, the increase of uncertainty, the growth and the technological progress (Carlsson, 1992). As a result there are many changes in the sector of employment (Acs, 1992).

Studies for Greece that have been carried out during the last decade for female entrepreneurship, are limited to those of the Ergani center and of Aristotle University of Thessaloniki. There are three in total (1992, 1997, 2002) which cover the region of Kentriki Makedonia and looking into women entrepreneurs' profile and factors affecting women entrepreneurship, but there is also some limited research on a national base, examining female entrepreneurship (Kapa Research, 1999) and the profile of young entrepreneurs and their business (MRB, 2002).

According to another study, in Greece there are social factors, that prevent the equal participation of women in entrepreneurship and are related to the historically distribution of roles between sexes and the stereotypes for the role of women in the family and in the taking care of children (Simeonidou, 1996).

Related research on women and development indicates that the returns to the investment in women are much higher than for men. Women are more likely to share their gains in education, health and resources with members of their families and their communities. Women are more likely to work for, buy for and share their economic and non-economic "rewards" with other people. This means that investment in female entrepreneurship is an important way for the countries to increase the impact of new business and new job creation. For this reason, finding ways to empower women's participation in entrepreneurship is important for the economic development. Women entrepreneurs create and run businesses across all of the industrial sectors, transformation, business services and consumer-oriented products. Moreover, the pattern of age distribution for men and women entrepreneurs is similar regardless of country. In the low/middle income country groups, like Greece, women are most likely to be early stage entrepreneurs between the ages of 35 to 44 and to become established entrepreneurs between the ages of 45 to 55 years old. Furthermore, in low/middle income countries, the percent of women early stage entrepreneurs and established business owners with less than a secondary degree is 39.2 percent and 39.7 percent, respectively, for the European group. It is important the fact that, in all country groups, the level of educational attainment is not higher for women who are established business owners than for women who are early stage entrepreneurs. Except for women with secondary education, the level of education is the same or higher for early stage entrepreneurs compared with established business owners. Moreover, it is important to recognize that women and men in households with the highest incomes are more likely to be involved in early stage entrepreneurial activity.

Despite the impact that female entrepreneurs have on economic activity and entrepreneurship, the role of female entrepreneurs is often undervalued and underplayed. Women still have a poor part in the new venture creation market and compared to their male counterparts, start and manage their businesses differently. Moreover, women entrepreneurs are the same risk and debt averse. Women behave differently from men. However, they provide innovative solutions to existing problems and in exploiting new opportunities (Carter et al., 2007). As indicated in a relative research (Karagianni, 1999) with regard to the Greek entrepreneurship and the Greek economic policy, female entrepreneurs consider that the economic environment and policies in the last 25 years did not support entrepreneurship. The entrepreneurs are so dissatisfied with the economic policy that they often prefer to get no financial support in order not to be controlled by the state, because bureaucracy is the biggest problem. Bureaucracy is one of the most important problems that they have to

face. This “negative” situation becomes bigger by the limited support which the public sector offers and the non-existent support from other chambers associations or institutions (Sarri and Trihopoulou, 2005).

However, increase in self-employed women has been observed in Greece despite the above and economic crisis, opening a window to economic development.

Therefore, it can be argued that female entrepreneurship contributes in regional development through the enhancement of employment and the reduction of unemployment, the maintain of local products and therefore the local identity (female cooperatives are one of the main entrepreneurial activities), creation of new jobs and source of income for their family and society, contribution to the development of local and rural environment, promotion of the networking with other regions and entrepreneurs leading to the exchange knowledge and expertise and increase of added value of local products.

#### **4. CONCLUSION**

Female entrepreneurship is an increasing part of the economic makeup and is a key to economic growth and development. Women through entrepreneurship strengthen their role in the society and at the same time help in the empowerment of the economy’s productive potential. Women create and run businesses across the regions. Female entrepreneurship is an increasingly part of the economic makeup and is a key to economic growth and development. Being employed and having a social network that includes other entrepreneurs are stronger predictors of women’s entrepreneurship than educational attainment or household income.

Female entrepreneurs are a very important determinant for entrepreneurship and economic development in regional level in Greece. They through the entrepreneurship strengthen their role in the society and at the same time help in the empowerment of the economy’s’ productive potential. Women entrepreneurs assist the unemployment reduction and underemployment, create new jobs and sources of income, promote local products, as the production of these products is one of the main entrepreneurial activities through the female cooperatives, helps them do not leave their home and region, contributes to maintaining the unique characteristics and identity of the region, improves their economic and social status and contributes to local and rural environment.

All the above, are positive effects of female entrepreneurship and give new opportunities and development in the regional level.

It is recommended that policies and programs aiming to support women entrepreneurs should start with the diagnosis of their personal characteristics and motives, the understanding of the economic environment and the future needs. In addition, emphasis should be placed on the strengthening of “pull motives” as opposed to “push motives” for entrepreneurship to consist the basis for more viable and innovative regional economic growth and development.

Women can do many things and even successfully and entrepreneurship is the vehicle.

#### **REFERENCES**

- Acs, Z.J., 1992. Small business economics; a global perspective. *Challenge* 35, pp 38-44.
- Bates T, 1990. Entrepreneur human capital inputs and small business longevity. *In Review of Economics and Statistics*, Vol. 72, No 4, pp. 551–559.
- Birley S, 1989. Female entrepreneurs: are they really different? *In Journal Small Business Management* , Vol. 27, No. 1, pp. 7–31.
- Borjas G, Bronars S, 1989. Consumer discrimination and self-employment. *In Journal of Political Economy*, Vol. 97, No. 3, pp. 581–605.
- Brockhaus RH, Nord WR, 1979. An exploration of factors affecting the entrepreneurial decision: personal characteristics vs. environmental conditions. *Proceedings of the Thirty Ninth Annual Meeting of the Academy of Management*, pp. 364–368.
- Brush CG, 1990. Women and enterprise creation: barriers and opportunities. *Enterprising women: local initiatives for job creation*. OECD, Paris.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Busenitz LW, Lau CM, 1996. A cross-cultural cognitive model of new venture creation. *In Entrepreneurship: Theory and Practice*, Vol. 20, No. 4, pp. 25–39.
- Buttner HE, Moore DP, 1997. Women's organizational exodus to entrepreneurship: self reported motivations and correlates with success. *In Journal of Small Business Management*, Vol. 35, No. 1, pp. 34–46.
- Carlsson, B., 1992, The rise of small business; causes and consequences. Adams, W.J., Singular Europe, Economy and Policy of the European Community after 1992, University of Michigan Press, Ann Arbor, MI, 145-69.
- Carr D, 1996. Two paths to self-employment? women's and men's self-employment in the United States, 1980. *In Work and Occupation*, Vol. 23, pp. 26–53.
- Carree M.A, Thurik A.R, 2002. The impact of Entrepreneurship on Economic Growth. pp. 1-28.
- Carter N, Henry C, Ó Cinnéide B and Johnston K, 2007. *Female Entrepreneurship: Implications for education, training and policy*. Routledge, New York.
- Cowling M, Taylor M, 2001. Entrepreneurial women and men: two different species? *In Small Business Economics*, Vol. 16, No. 3, pp. 167–175.
- Desai S, 2009. Measuring Entrepreneurship in Developing Countries. Working paper, *United Nations University*, pp.1-14.
- Ducheneaut B, 1997. *Entrepreneurship and higher education. From real-life context to pedagogical challenge*. Paper presented at the Internationalizing Entrepreneurship Education and Training Conference. Monterey Bay (California, USA).
- Dunn T, Holtz-Eakin D, 1995. Capital market constraints, parental wealth and the transition to selfemployment among men and woman. NLS Discussion Paper, Report: NLS 96-29. US Department of Labor, Bureau of Labor Statistics, Office of Economic Research, Washington, DC.
- Evans DS, Leighton LS, 1989. Some empirical aspects of entrepreneurship. *In American Economic Review*, Vol. 79, No. 3, pp. 519–535.
- Green E., Cohen L., 1995. Women's business: are women entrepreneurs breaking new ground or simply balancing the demands of women's work in a new way?. *In Journal of Gender Studies*, Vol. 4, No. 3, pp. 297-315.
- Hisrich RD, Brush CG, 1985. Women and minority entrepreneurs: a comparative analysis. *Frontiers of entrepreneurship research*. Babson College, Wellesley, pp. 566–586.
- Holtz-Eakin D, Joulfaian D, Rosen HS, 1994. Sticking it out: entrepreneurial survival and liquidity constraints. *In Journal of Political Economy*, Vol.102, No. 1, pp. 53–75.
- Karagiannis, A.D, 1999. Entrepreneurship and the economy. Interbooks, Greek edition, Athens, pp. 127-144.
- Kay Alison, 2009. *The Foundations of Female Entrepreneurship*. Routledge, New York.
- Kobeissi, 2010. Gender factors and female entrepreneurship: International evidence and policy implications. *In Journal of International Entrepreneurship*, Vol. 8, pp.1-35.
- Kuhn PJ, Schuetze HJ, 2001. Self-employment dynamics and self-employment trends: a study of Canadian men and women, 1982–1998. *In Canadian Journal of Economics*, Vol. 34, No. 3, pp. 760–784.
- Light IH, 1980. *Ethnic enterprises in America*. University of California Press, Berkeley.
- Min PG, 1984. From white-collar occupations to small business: Korean immigrants occupational adjustment. *In Sociological Quarterly*, Vol. 25, No. 3, (Summer), pp. 333–352.
- Minniti M, Arenius P, 2003. Women in entrepreneurship. The entrepreneurial advantage of nations. First Annual Global Entrepreneurship Symposium.
- MRB, Hellas, 2002. New entrepreneurs' Research prepared for The Entrepreneurship Club, Athens, Greece.
- Mueller SL, et al, 2001. National entrepreneurial potential: the role of culture, economic development, and political history. *In Advances in Comparative International Management*, Vol. 14, pp. 221–257.
- Orhan M, Scott D, 2001. Why women enter into entrepreneurship: an explanatory model. *In Women in Management Review*, Vol. 16, (5/6):232.
- Renzulli LA, Aldrich H, Moody H, 2000. Family matters: gender, networks, and entrepreneurial outcomes. *In Social Forces*, Vol. 79, No. 2, pp. 523–546.
- Reynolds P. et al, 2002. *Global Entrepreneurship Monitor Executive Report*. Babson Park: Babson College; London: London Business School; Kansas City: Kauffman Foundation.
- Sarri K, Bakouros I and Petridou E, 2010. Entrepreneur Training for Creativity and Innovation. *In Journal of European Industrial Training*, Vol. 34, N. 3, pp.270 – 288.
- Sarri K. and Trihopoulou A, 2005. Female Entrepreneur's personal characteristics and motivation : A review of the Greek situation. *Women in Management Review*, Vol. 20, N. 1, pp.24 – 36.
- Shim S, Eastlick MA, 1998. Characteristics of Hispanic female business owners: an exploratory study. *In Journal of Small Business Management* , Vol. 36, No. 3, pp. 18–34.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Simeonidou, H, 1996. The exclusion of Women from the labor market in Greece: Dimensions of social exclusion in Greece. Vol. A, National Institution of Social Research, Athens.
- Stokes J, Riger S, Sullivan M, 1995. Measuring perceptions of the working environment for women in corporate settings. *In Psychology of Women Quarterly*, Vol. 19, pp. 533–549.
- Taniguchi H, 2002. Determinants of women's entry into self-employment. *In Social Science Quarterly*, Vol. 83, No. 3, pp. 875-893.
- Vermeulen ME, Minor CW, 1998. Context of career decisions: women reared in a rural community. *In Career Development Quarterly*, No. 46, pp. 230–245.
- Wennekers, A.R.M. and A.R. Thurik, 1999. Linking entrepreneurship and economic growth, *In Small Business Economics*, Vol. 13, pp. 27-55.
- Zhao F. 2005. Exploring the synergy between entrepreneurship and innovation. *In International Journal of Entrepreneurial Behaviour and Research*, Vol. 11, No. 1, pp.25-41.

# **THE LIMITS OF EUROPEAN ECONOMIC CONVERGENCE**

Ion Lucian Catrina

*Academy of Economic Studies, Bucharest*

## **ABSTRACT**

The Stability and Growth Pact (SGP) failure was strongly reflected in the high level of the budget deficit and consequently a fast growing stock of public debt for most of the European countries, members or willing to become member of European Monetary Union (EMU).

The nominal convergence criteria set in 1992 at Maastricht and reinforced in 1996 by SGP which established the thresholds of 3% of GDP for budget deficit and 60% of GDP for public debt, have been configured according to the development degree of EU 15 economies. But now, the EU has 27 members, and the twelve new members have a weaker level of development than the founders of EMU. Therefore, the initial parameters of nominal convergence, at least for the new members, should be reviewed.

The current international context has undoubtedly shown that the less developed EU members have had more difficulties in restructuring their public expenditure and they have not easily found financial support for their excessive budget deficits.

The objective of this paper lies in analyzing the extent to which the policies restricting budget deficit and public debt have delayed the resumption of economic growth. Therefore, our study sets out to show that new rules for the financial stability of EMU must be designed according to the new economic realities.

## **KEYWORDS**

Convergence, budget deficit, public debt, Monetary Union

## **JEL CLASSIFICATION CODES**

E61, H61, H63

## **1. INTRODUCTION**

In the last three years, the fiscal deficit and public debt have certainly been the most affected nominal convergence criteria. The influence of excessive deficits and debt on macroeconomic stability and the necessity to resume economic growth have been a constant concern since the Second World War.

Since the '50s, James Buchanan and Richard Wagner have proposed to define the burden of public debt through the analogy with the tax burden. These scholars have paid attention to the following issues: who pays, how much and when? Buchanan and Wagner have defined the burden of public debt as "the opportunity cost of public goods which are financed through debt" (Buchanan and Wagner, 1958). The opportunity cost is commonly measured through the value of sacrificed alternatives. In the case of public debt, the opportunity cost is the value of private goods that are given up in exchange for public goods that debt issue makes possible.

Having similar objectives, James Meade and Franco Modigliani have analyzed the long-term implications of public debt on economic growth and its consequences in the field of intergenerational equity.

James Meade believes that a clear distinction must be made between external debt and domestic debt. While external debt is a burden for the community, because it produces transfers of real goods and services between debtor and creditor, domestic debt is a transfer from citizens, as taxpayers, to citizens as property owners and consequently nothing is lost (Meade, 1958).

Franco Modigliani argued that despite the fact that government action to expand the deficit could involve a future cost for society this does not mean that action should be taken. In terms of intergenerational income gains, Modigliani sees much more significant the present gains than the sacrifices in the future. Moreover, if the governments spend for projects that produce a yield in the future, the gross debt burden could be offset by the expenses, so that the gross yield net result would be quite positive (Modigliani, 1961).

Robert Barro has demonstrated that the public debt will be, sooner or later, moved into taxation field, leading to a higher taxation and reducing the potential production. Barro approved that there are also alternatives like the limitation of government spending which will have contractions effect on production as well. Besides, he considers that the debt maturity structure is important too. As Robert Barro notes there is an obvious link between inflation and real cost of debt, since long-term government debt is extremely vulnerable to inflation (Barro, 1979).

In the 1988's, Paul Krugman has introduced the new concept of "debt overhang" referring to inheritance or accumulation of a large volume of governmental debt, leading to mistrust the ability of creditors for early repayment. In other words, Krugman believes that a country has a real problem with the debt if the expected present value of the future potential resources' transfers is less than the amount of the debt (Krugman, 1988).

Reinhart and Rogoff have shown that a higher public debt is generally associated with lower rates of long term growth (at a debt level over 90%). According to Reinhart and Rogoff, the EU public debt (about 88.5% in 2010) is still below the threshold at which growth is adversely affected. These scholars suggest that the debt of many developing countries have already had a negative impact on GDP growth (Reinhart and Rogoff, 2010).

In their latest work, Iron and Bivens have emphasized that an economic growth with a lower level than the expectation of the decision makers will strongly increase the deficits in developing countries. The large annual deficits leading to a higher public debt will cause higher interest rates, lower levels of private investment and lower growth opportunity in the future (Iron and Bivens, 2010).

## **2. WHAT KIND OF CONVERGENCE DO WE WANT TO REACH?**

The strong need to establish some nominal criteria was primarily determined by the particular structure of European economy, which requests a harmonious economic development of their members that have chosen or wish to participate in European Monetary Union (EMU). It is projected that these nominal conditions remove any tensions between members, caused especially by the spread of negative effects of economic imbalances between them.

The nominal convergence criteria laid down in the Maastricht Treaty of the European Union, in February 1992, were related to the introduction of a common monetary policy, based on a single currency, managed by an independent central bank. Four years later, the Stability and Growth Pact aimed at the coordination of national fiscal policies in order to ensure stability and prudence for budgetary climate, essential conditions for the success of EMU.

For the new member states of the European Union (EU), one of the targets sets in Copenhagen in 1993 was the adoption of European single currency in the shortest possible time frame. This objective has been misunderstood by the new member states, because the adoption of the Euro currency is not the end of the complex process of convergence but rather its beginning. The entry into the Euro area does not mean removing the need to solve macroeconomic imbalances existing in the Member States wishing to join EMU (Cristian Popa, 2009).

Another illusion of emergent economies from Central and Eastern Europe has been linked to the false idea that macroeconomic imbalances are rather a natural component of the convergence process, than the result of a bad management.

Moreover, most of the new members have misunderstood that the achievement of real convergence will be easily accomplished and that is a short time process. The harsh lesson learned from the previous accession processes, such as Greece, Ireland, Spain or Portugal, has shown that the catching up process takes a very long time. Besides, this process continues a long time after accession, and does not end with the accession. For example, despite the fact that these four countries have had more solid economies than the new members from Eastern Europe, it is important to note that for Greece the revenues fell soon after accession, for Ireland

the revenues growth came much later than it would have been expected and Portugal has needed over 10 years to gain 17% GDP per capita growth.

Analyzing the evolution of the most used indicator for measuring the real convergence into EU, the GDP per capita (Figure 1), we can see that the catching up process of the new member states was strongly influenced by the negative effects of the economic crisis, turning into a stop and go process after 2008.

Figure 1. GDP per capita in Purchasing Power Standard (PPS)

Countries	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
<b>EU 27</b>	100	100	100	100	100	100	100	100	100	100	100	100	100
<b>Bulgaria</b>	26	27	27	28	30	32	34	35	37	38	40	<b>44</b>	<b>44</b>
<b>Estonia</b>	42	42	42	45	46	50	54	57	62	66	69	<b>68</b>	<b>64</b>
<b>Latvia</b>	35	36	36	37	39	41	43	46	49	52	56	<b>56</b>	<b>52</b>
<b>Lithuania</b>	39	40	39	39	41	44	49	50	53	55	59	61	55
<b>Poland</b>	47	48	49	48	48	48	49	51	51	52	54	<b>56</b>	<b>61</b>
<b>Portugal</b>	78	79	81	81	80	80	79	77	79	79	79	78	80
<b>Romania</b>	29	27	26	26	28	29	31	34	35	38	42	<b>47</b>	<b>46</b>
<b>Slovenia</b>	78	79	81	80	80	82	83	86	87	88	88	<b>91</b>	<b>88</b>
<b>Slovakia</b>	51	52	50	50	52	54	55	57	60	63	68	72	73

Data source: Eurostat April 2011

It is also important to note that countries such as Romania have received a massive support from their population to join the European Union, over 85% of the population according to the Barometer carried out in 2005. This result was the reflection of the people's expectations that after accession the revenues and standard of living will instantly increase. In this context, the Romanian policy makers have tried to respond to the huge population pressure by increasing public wages and pensions over the national budget capacity.

It was many times considered that the process of nominal convergence has been privileged in relation to the real convergence, several nominal fulfilment efforts influencing negatively the real economic variables. In fact, the two processes cannot be seen otherwise than complementary. Even if nominal convergence produces a slowing of the real economic performance, fulfilling all the Maastricht criteria, that ensures a greater economic stability and a solid economic growth.

For example, reducing inflation rate will lead to higher economic performances and an increase in real convergence of the wages. Lower interest rates will also stimulate the growth of investments and the growth of the real GDP.

### **3. WHY HAS THE REAL CONVERGENCE SLOWED DOWN?**

The most frequently asked question that European governments have tried to respond to in the last three years has been related to the optimal fiscal behaviour over the business cycle and especially in the economic downturn.

If we analyze the European economic recovery measures we can observe that they did not followed the Keynesian model which recommend that the fiscal policy should be countercyclical: in bad times the government should increase government spending and should reduce the taxes in order to help production. The European decisions have been neither framed nor have followed the neoclassical pattern of tax-smoothing (Barro, 1979) which suggests that the fiscal policy should remain essentially neutral over the business cycle and respond only to unanticipated changes that may affect the government's budget constraint.

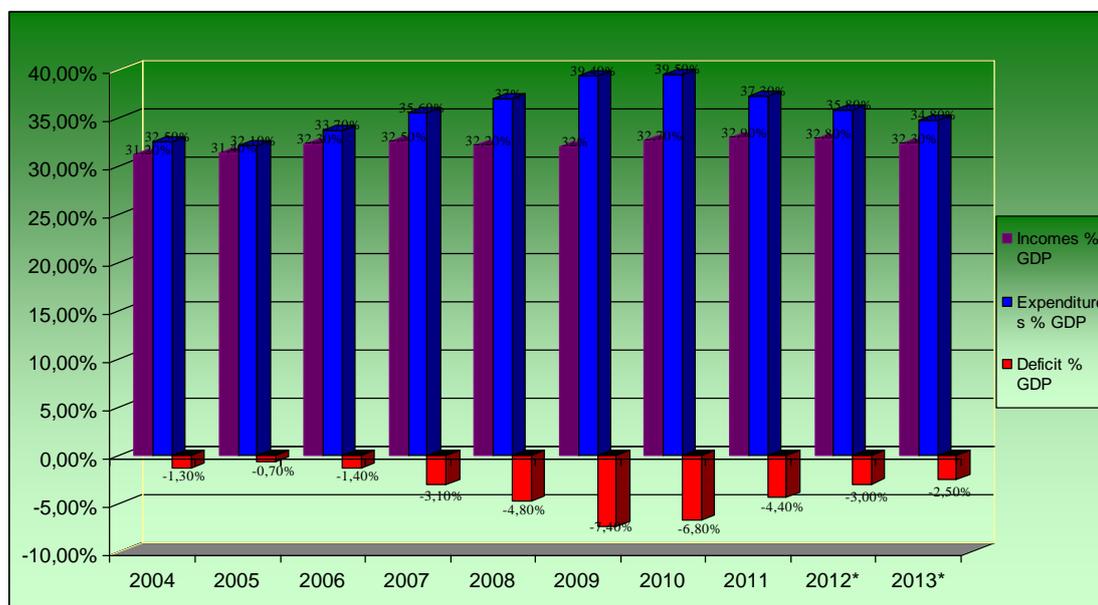
Empirical research has shown that in opposition to the developed countries, the emergent markets tend to promote pro-cyclical policies even in times of recession or before to entry into recession (Gavin and Perotti, 1997). In addition, the international credit markets do not trust the developing countries. For this reason, it becomes more difficult for the government to finance the budget deficits.

Pro-cyclical temptation is mostly due to the "distortions" coming from the political arena, which may engage projects and government spending over the national ability to finance them (Talvi and Vegh, 2005). For instance, analyzing the Romanian fiscal behaviour during the last three years that could be characterized by the accelerated growth of the public wages and public pensions (Figure 2), we can assert that Talvi and

Vegh's hypothesis is entirely verified. This kind of action overlapped the parliamentary and local election. Additionally, this behaviour may repeat in 2012 and 2014, when the elections will be held again in Romania.

The new Romanian agreement with the International Monetary Found (2011) aim to give not only a psychological signal to the international markets, but also to impregnate continuity for the fiscal reforms, without delaying or altering them by the electoral events.

Figure 2. Romanian fiscal policy



Data source: Romanian Ministry of Public Finance

In Romania, the catching up process was based on an economic growth rate higher than the European average, but this growth has abruptly halted in the last quarter of 2008. The process of the real convergence has had a strong partner in the productivity growth, more than 10% annually, caused by its very low initial level, the progressive reduction of the rate of employment in agriculture and especially by the growth of foreign direct investments. This substantial increase in labour productivity has been brought forward by the accelerated growth of wages, leading to a worsening of external deficit and a further inflationary pressure (Isărescu, 2008).

The effects of the economic crisis have been felt in the most macroeconomic indicators since the beginning of 2009, on the one hand as a result of relatively low flexibility of the Romanian economy and on the other hand because of the inability of the Romanian government to adapt immediately its macroeconomics policies to a radically changed economic environment.

#### **4. WE MUST REDRAW THE MAIN CRITERIA FOR THE CONSOLIDATION OF PUBLIC FINANCES**

The main arguments to prevent the excessive budget deficits and high public debts into EMU were related to the transfers between generation and to the public investments with a large social return. Following Blanchard and Giavazzi (Blanchard and Giavazzi, 2003) the present condition of the European fiscal stability has been based on the estimation of nominal growth rate of potential output of 5%, without taking into account potential external shocks, but merely the cyclical economic fluctuations. For example, a deficit  $d\%$  would lead to an increase of public debt as ratio to GDP as  $d=g$ , where  $g$  is the nominal potential output. Thus, if  $g$  will be  $g = 3\%$  (real growth) +  $2\%$  (inflation) =  $5\%$  and  $d$  proposed by SGP  $d = 3\%$ , the ratio of debt to GDP will be estimated as:

$$d=g$$

$(d=3\%) = [g = 3\% \text{ (real growth)} + 2\% \text{ (inflation)}]$  lead to a 60% debt ratio to GDP, level of EU Treaty.

If we estimate this level for an emerging country like Romania, we will find out that 60% ratio is overvalued:

Figure 3. Estimation of public debt ratio

Year	SGP deficit	Real deficit	Real growth	Inflation	Debt ratio by SGP deficit	Debt ratio by real deficit
2007	3%	3,10%	6,30%	4,90%	26,79%	27,68%
2008	3%	4,80%	7,30%	7,90%	19,74%	31,58%
2009	3%	7,40%	<b>7,10%</b>	5,60%	15,15%	37,37%
2010	3%	6,80%	<b>1,30%</b>	6,10%	34,48%	78,16%
2011	3%	4,40%	1,50%	<b>7,00%</b>	<b>35,29%</b>	51,76%

Data source: Eurostat April 2011

The Reinhart and Rogoff's estimation of debt threshold cannot be tested on Eastern European countries due to the lack of data for long time, especially in the communist regime. In addition, countries like Romania have never faced with a higher rate of debt of 40%. Moreover, for Romania, at its present degree of development, it seems to be clear that a public debt threshold of 35% of GDP is the highest limit of confidence, especially for foreign investors and credit markets as well. This debt threshold is lower than the IMF estimation, 40% of GDP (Cottarelli, 2010), which took into consideration the negative perspectives of aging population.

## 5. CONCLUSIONS

Unfortunately, Romania is not the only New Member State to which the accepted level of public debt on GDP in terms of nominal convergence should be revised. Countries with similar position are Bulgaria, Hungary, Latvia or Lithuania.

Then, it is really difficult to predict when the economies of the new Member States will be able to fit into the central bank inflation targets. For Romania, the failure in targeting inflation was mainly driven by the requirement to adjust the minimum European duty level, by increasing the value added tax, from 19% to 24% as a result of government failure to find alternative solutions to restrict the huge governmental expenditures, the dynamics of the prices for the imported food and the increase of the international fuel prices.

It must be said that the nominal condition of 3% of GDP set by SGP for fiscal deficit may affect the real convergence of those economies in which the investment volume is really weak. For this reason, the governments may choose higher deficits than 3%, in order to stimulate the public investments.

The public investments have been the strong reason used by the new Member States of EU in order to justify their excessive deficits. Unfortunately, we cannot exactly say if there is a strong relationship between a higher fiscal deficit and the public investment levels in the New Member States, an unconfirmed hypothesis even by the IMF research (Graeme Justice and Anca Paliu, 2006).

Moreover, this kind of financial stability evaluation, used by the European Commission, do not respond to other critical conditions of macroeconomic stability like structural imbalances of developing economies, exchange rate, interest rates and a huge demand for finance in the international shocks' circumstances. Recent history has shown us that there were emerging countries, especially in Latin America, that have entered into default at a lower level of debt ratio than 40%. For example, Romania faces the following situation: a steady decline in number of young people who could enter the labour market; this process is accompanied by a fast growing number of pensioners, the dependence degree in pay as you go system is already of 0.79 employees to one pensioner. The structural budgetary deficit created only by such negative demographic situation has already reached 2.64% of GDP and is expected to increase until 2050. Other

structural difficulties are related to a low capacity to collect the revenue from economy, corruption and tax evasion affecting over 11% of GDP from potential revenues in Romania. This situation is similar to other New Member States.

We also have to specify that there are more ways to count the fiscal deficits, the public debt as well. Eastern economies still hold huge enterprises and companies whose losses are not quantified into so-called quasi-fiscal deficit. It is also important to mention what kind of public debt we are talking about. Because there is a debt contracted directly by governments and a debt contracted by other public authorities but guaranteed by the same governments.

We believe that for a more accurate assessment of fiscal sustainability we have to take into account the debt of the state-owned companies when estimating the fiscal deficit and we must include the guaranteed debt into the total public debt.

## **ACKNOWLEDGEMENT**

This work was cofinanced from the European Social Found through Sectorial Operational Program Human Resources Development 2007-2013; project number POSDRU/1.5/S/59184, „Performance and excellence in postdoctoral research in Romanian economic science domain”

## **REFERENCES**

- Barro T.R., Oct., 1979. On the Determination of Public Debt., *The Journal of Political Economy*, Vol. 87, No. 5, Part 1, pp. 940-971.
- Becker T., Dăianu D. et al, 2010. *Whither Growth in Central and Eastern Europe?*, Bruxelles: Bruegel Blueprint Series.
- Blanchard O., Giavazzi F., 2003, *Improving the SGP trough a proper accounting of public investment*, Center for Economic Policy Research, London.
- Buchanan M. J., WAGNER E. R., 1958. *Public Debt in a Democratic Society*, American Enterprise Institute for Public Policy Research, Washington.
- Dinu M., Socol C., 2006. *Romania in the European Union. The Potential of Convergence*, Bucharest: AGER.
- Gavin M., Perotti R., 1997. *Fiscal Policy in Latin America*, National Bureau of Economic Research, Macroeconomics Annual, Cambridge, Vol. 12, pp. 11-72.
- Georgescu F., 2010. *The Romanian Economic Policies for Adoption of European Currency*, NBR, Bucharest.
- Iancu A., 2008. *Nominal Convergence*, Romanian Academy, Bucharest.
- Isărescu M., 2008. *The Issue of Real Convergence towards the Euro*, Romanian Academy, Bucharest.
- Krugman P., 1988. *Financing vs. Forgiving a Debt Overhang*, National Bureau of Economic Research, Cambridge.
- Meade J.E., 1958. Is the National Debt a Burden?. *Oxford Economic Papers*, New Series, Vol. 10, No. 2, pp. 163-183.
- Modigliani F., 2005. *Long-Run Implications of Alternative Fiscal Policies and the Burden of the National Debt*, MIT Press, Cambridge.
- Presbitero F. A., 2010. *Total public debt and growth in developing countries*, MOFIR, Marche.
- Reinhart, M. C., Rogoff, S. K., 2010. *Growth in a Time of Debt*, National Bureau of Economic Research, Cambridge.
- Talvi E., Vegh A. C., 2005. Tax base variability and procyclical fiscal policy in developing countries. *Journal of Development Economics*, Vol. 78, pp.156– 190.

## ANALYSIS OF SHOCKS SIMILARITIES BETWEEN NEW EU MEMBER STATES AND EURO AREA

Marius-Corneliu Marinaş<sup>1</sup>, Cristian Socol<sup>2</sup> and Aura-Gabriela Socol<sup>3</sup>

<sup>1</sup>Lecturer PhD, Academy of Economic Studies, Bucharest, Romania  
Moxa street, Moxa E, Room 307, District 1, Bucharest, marinasmarius@yahoo.fr

<sup>2</sup>Senior Lecturer PhD, Academy of Economic Studies, Bucharest, Romania  
Izbândeii street, District 1, Bucharest, socol.cristian@gmail.com

<sup>3</sup>Lecturer PhD, Academy of Economic Studies, Bucharest, Romania  
Izbândeii street, District 1, Bucharest, auragabriela.socol@gmail.com

### ABSTRACT

The objective of this paper is to identify demand and supply shocks affecting the new member countries of the European Union (Central and Eastern Europe countries) and the euro area. This analysis offers a different perspective on the costs of adopting a common currency, avoiding technical examination of its. If there is a low correlation between shocks that affect the new member states and euro area, then the costs of single currency adoption will rise. This paper is structured in three parts. In the first part we explain the relationship of this study with macroeconomic theory and with related literature. In the second part we make a brief presentation of the decomposition shocks methodologies, developed by Blanchard and Quah (1989), respectively by Bayoumi and Einchengreen (1992). In the third part we decompose using SVAR models, the aggregate demand and supply shocks for each of the economies included in the analysis with SVAR models. Realizing the correlation between demand and supply shocks of the of new member countries with those of the euro area, we identify which country is better prepared to euro adoption.

### KEYWORDS

SVAR model; euro area; demand shocks; supply shocks; Central and East European countries

### JEL CLASSIFICATION

E32; E37

## 1. INTRODUCTION

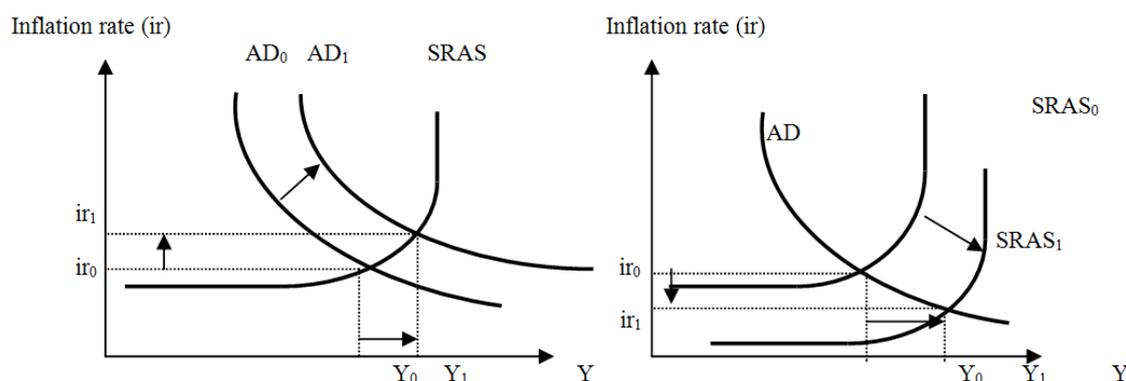
Adopting the euro means to renounce at two tools that can be used to neutralize the shock that will affect the national economy. These shocks will become more rather asymmetric because there are significant differences between the economic structures of the new member countries and the euro area and between models of development. In these circumstances, the asymmetric shocks which affect emerging economies can not be adjusted by means of the common monetary policy. Without its own monetary policy instrument and without the exchange rate, the economy will be able to use only short-term fiscal policy, even if it is characterized by a complex transmission lag into real economy. The event of asymmetric shocks between the Central and Eastern European countries and the euro area will generate a lower correlation of business cycles and macroeconomic policies will generate increasing gaps between business cycle phases. The objective of this study is to identify aggregate demand and supply shocks, using the methodology proposed by Blanchard and Quah and to determine the correlation of these shocks between the new EU member countries and the euro area. In the first part of this paper we have explained the relationship between macroeconomic theory and proposed objective and we made a summary of the related literature.

## 1.1 The theoretical background of the shocks decomposition

Decomposition of supply and demand shocks involves using a structural VAR type, whose restrictions are inspired by traditional economic model of aggregate demand and aggregate supply. Rising inflation leads to a reduction in real GDP as a result of the event called wealth effect, the interest rate change and change in net exports. The increasing form of the short-run aggregate supply can be explained by the law of marginal returns, saying that as production increases, unit cost decreases first, then inevitably begin to rise. Demand and aggregate supply shocks are interpreted according to the deviations from short-run macroeconomic equilibrium, respectively from long-run equilibrium. In the short run, growth in aggregate demand causes an increase both of the production and of the inflation rate, so that there will be a direct relationship between these variables (figure 1). Demand shocks can be generated by macroeconomic policies adopted, the change in external demand, the change in consumer preferences or economic actions depending on the degree of confidence in economic change.

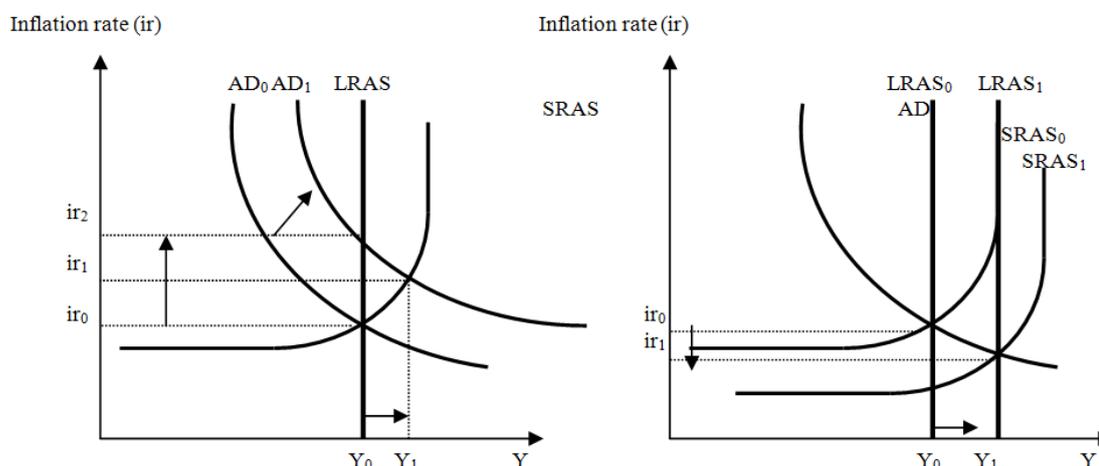
The growth of short-run aggregate supply (SRAS) increases domestic production and decreases inflation rate, so there is an inverse relationship between these variables (figure 2). In the long term, aggregate demand (AD) and supply shocks will be analyzed with reference to long-run macroeconomic equilibrium. If an economy which produces at level of potential GDP registers a positive shock to aggregate demand, then it will generate a both increase of inflation rate and of domestic production. However, the economy will register an increase of the price of resources, because it is an inflationary gap, which will generate a rise of production costs and a supply decrease to level of potential GDP. Therefore, there will be no long term than a price increase, while production levels unchanged. Therefore, in the long term there will be only a price increase, while the level of production remains unchanged.

Figures 1 and 2. Short-run effects of the positive demand and supply shocks



In the long term, aggregate demand and supply shocks will be analyzed with reference to long-run macroeconomic equilibrium. Thus, if in an economy at its potential level of GDP there is a positive shock to aggregate demand, then it will generate a first stage an increase in both inflation and domestic production. However, it will register a trend of price increase of resources as the economy because economy is in an inflationary gap, which will generate increasing production costs and lower supply to the potential GDP. Therefore, there will be no long term than a price increase, while production levels will be unchanged (figure 3). On the supply side, a positive shock (for example, improving the technology used) will generate an increase in both the short-run and long run aggregate supply. This will lead to a reduction in inflation and rising production on the long-run (figure 4).

Figures 3 and 4. Long-run effects of the positive demand and supply shocks



## 1.2 the review of the literature on shocks correlation

Our investigation on the nature of business cycles and shocks correlation within Europe leads us to the optimal currency areas theory. The main contributions on optimal currency areas theory are those of Mundell (1961), Mckinnon (1963) and Kenen (1969), considered the base of subsequent studies. Their objective was to identify the main criteria of a possible integration of a country to a monetary area. The strategy consists in identifying benefits and costs a given country faces joining the monetary area. If benefits for each country wishing integration are positive and higher than costs, monetary area is called as optimal.

The most used methodology for decomposition of shock is that of Blanchard and Quah (1989), was further developed by Bayoumi and Einchengreen (1992). It aims at identifying the aggregate demand and aggregate supply shocks from economic shocks that influence the inflation rate and production. To estimate the aggregate supply and demand shocks, Blanchard and Quah have used gross national product and the unemployment rate, the first variable being expressed as first difference in logarithm, to become stationary data series. Bayoumi and Eichengreen have used as variables the first difference of the real GDP expressed as logarithm and first difference of inflation rate expressed by change of GDP deflator. Econometric methodology used involves in a first stage the expression of the two variables in the function of the errors of estimation as an infinite moving average. In the second stage, they created a structural VAR to isolate the aggregate supply and demand shocks from the residuals of the two previous models.

As well, the methodology was used to estimate the impact of expanding the monetary union with countries from Central and Eastern Europe. Using data for ten emergent economies and for euro area economies, Fidrmuc and Korhonen (2001) estimated that Hungary, Latvia and Estonia registered a high correlation with the EMU on the supply side shocks during 1994-2000 years. For others, the estimated correlation was close to zero, suggesting a reduced structural convergence of these countries with the EMU. Correlation of demand-side shocks is generally lower than the supply side, this situation reflecting the macroeconomic differences between these countries. Latvia and Lithuania were the less correlated aggregate demand-side countries, the latter also registering the lowest correlation of the supply side shocks. Horvath and Ratfai (2004) examined the correlation between demand and supply shocks between the Baltic countries and the Visegrad group, on the one hand, and Germany as a reference. In this case, Hungary is characterized by the highest correlation of aggregate supply shocks and the lowest correlation to the aggregate demand side.

Taking into account the different data sets for the EMU countries (1990-1995) and CEE countries (1996-2001) to show comparable situations in terms of period up to euro area accession, Weimann (2002) estimated that Bulgaria, Czech Republic, and Hungary have registered the strongest correlations of shocks on the demand side with the euro area. Also he explained that the openness of the economy has a significant positive influence on the correlation with the supply shocks, being a positive relationship between openness

and geographic location of each country. Frenkel and Nickel (2002) found that there are significant disparities between the nature, intensity and ability to adjust the shocks of the CEE countries and the euro area, but for some new member countries are a strong correlation with monetary union countries. According Babetski (2003), lower correlation of demand and supply shocks with monetary union economies should not be a risk factor because the situation might improve in the euro area. Adapting the hypothesis of the optimal currency areas endogeneity, the economist pointed out that adopting the euro for some new members would lead to intra-industry trade increase and to higher demand shocks correlation.

Applying the methodology of Bayoumi and Eichengreen, Arfa (2009) has calculated the correlation between euro area shocks and those of the different acceding countries. He found that several new member countries of the European Union have a quite high correlation of demand shocks with the euro area however supply shocks are asymmetric. The correlation between euro area and Central and East European countries is negative. Therefore, it can be concluded that joining the European Monetary Union is not yet possible: Central and East European countries have to make structural changes to join the European Monetary Union.

## 2. THE SHOCKS DECOMPOSITION METHODOLOGY

VAR type models allow the simultaneous analysis of exogenous and endogenous variables and the identification of a variable response to a shock. It is part of a variable that can not be explained by its past values or other variables included in the model. Thus, the term appears as a shock error (residual) from a certain stochastic equation. A VAR-type model with two variables can be written in the following form, where each variable is influenced by current and lagged values of other variables and by its lagged values. The model described by equations (1) and (2) is structural one and the error terms are considered as structural shocks.

$$y_t = b_{10} - b_{12}z_t + c_{11}y_{t-1} + c_{12}z_{t-1} + e_{yt} \quad (1)$$

$$u_t = b_{20} - b_{21}y_t + c_{21}y_{t-1} + c_{22}u_{t-1} + e_{ut} \quad (2)$$

where variables  $y_t$  și  $u_t$  are stationary,  $e_{yt}$  și  $e_{ut}$  represents the errors with standard deviations  $\sigma_y$  și  $\sigma_u$ , which are not correlated  $\text{cov}(e_y, e_u) = \mathbf{0}$ .

Blanchard and Quah directly associated structural shocks  $\varepsilon_{1t}$  and  $\varepsilon_{2t}$  with  $y_t$  și  $u_t$  variables, as a bivariate moving average. In the model estimated by these economists,  $y_t$  is the logarithm of real GDP and  $u_t$  is the unemployment rate. Since the first variable was not stationary, they resorted to writing them as the first difference:  $\Delta y_t = \log(\text{real GDP}_t) - \log(\text{real GDP}_{t-1})$ . The shocks  $\varepsilon_{dt}$  și  $\varepsilon_{st}$  represents the aggregate demand shocks, respectively supply aggregate shocks, which influences the two variables.

The vector composed by the two endogenous variables will be written as an infinite moving average vector of structural shocks, including demand and supply shocks:

$$X_t = C_0\varepsilon_t + C_1\varepsilon_{t-1} + \dots + C_n\varepsilon_{t-n} = \sum_{n=0}^{\infty} L^n C_n \varepsilon_t \quad (3)$$

where,  $X_t = \begin{bmatrix} \Delta y_t \\ u_t \end{bmatrix}$ ;  $\varepsilon_t = \begin{bmatrix} \varepsilon_{dt} \\ \varepsilon_{st} \end{bmatrix}$  and L is a lag operator;  $L^0\varepsilon_t = \varepsilon_t$ ;  $L^1\varepsilon_t = \varepsilon_{t-1}$ ;  $L^2\varepsilon_t = \varepsilon_{t-2}$ ....

These assumptions can easily be introduced in a structural bivariate VAR on output (Y) and inflation rate (ir) to obtain the series of demand and supply shocks ( $\varepsilon_{dt}$ , respectively  $\varepsilon_{st}$ ). The starting point of their model is the following:

$$\begin{bmatrix} \Delta Y_t \\ \Delta ir_t \end{bmatrix} = \sum_{i=0}^{\infty} \begin{bmatrix} a_{11i} & a_{12i} \\ a_{21i} & a_{22i} \end{bmatrix} \cdot \begin{bmatrix} \varepsilon_{dt} \\ \varepsilon_{st} \end{bmatrix} \quad (4)$$

where  $\Delta Y_t$  and  $\Delta P_t$  represent, respectively, changes in the logarithm of output and prices at time  $t$ ,  $\varepsilon_{dt}$  and  $\varepsilon_{st}$  represent supply and demand shocks and  $a_{kji}$  represent each of the elements of the impulse-response function to shocks.

The identification restriction is based on theoretical assumption about the effects of the demand shocks. As output data is expressed in first differences, this implies that cumulative effects of demand shocks on output must be zero:

$$\sum_{i=0}^{\infty} a_{11i} = 0 \quad (5)$$

The model defined by equations (4) and (5) also implies that the bivariate endogenous vector can be explained by lagged values of every variable. If  $A_i$  represents the value of model coefficients, the model to be estimated is the following:

$$\begin{bmatrix} \Delta Y_t \\ \Delta P_t \end{bmatrix} = A_1 \cdot \begin{bmatrix} \Delta Y_{t-1} \\ \Delta P_{t-1} \end{bmatrix} + A_2 \cdot \begin{bmatrix} \Delta Y_{t-2} \\ \Delta P_{t-2} \end{bmatrix} + \dots + \begin{bmatrix} e_{yt} \\ e_{irt} \end{bmatrix}, \quad (6)$$

where  $e_{yt}$  and  $e_{irt}$  are the residuals of every VAR equation. Equation (6) can be also expressed as:

$$\begin{bmatrix} \Delta Y_t \\ \Delta P_t \end{bmatrix} = (I - A(L))^{-1} \cdot \begin{bmatrix} e_{yt} \\ e_{irt} \end{bmatrix} = (I + A(L) + A(L)^2 + \dots) \cdot \begin{bmatrix} e_{yt} \\ e_{irt} \end{bmatrix}, \quad (7)$$

and in an equivalent manner:

$$\begin{bmatrix} \Delta Y_t \\ \Delta P_t \end{bmatrix} = \sum_{i=0}^{\infty} \begin{bmatrix} d_{11i} & d_{12i} \\ d_{21i} & d_{22i} \end{bmatrix} \cdot \begin{bmatrix} e_{yt} \\ e_{irt} \end{bmatrix} \quad (8)$$

Putting together equations (4) and (8):

$$\sum_{i=0}^{\infty} \begin{bmatrix} d_{11i} & d_{12i} \\ d_{21i} & d_{22i} \end{bmatrix} \cdot \begin{bmatrix} e_{yt} \\ e_{irt} \end{bmatrix} = \sum_{i=0}^{\infty} L^i \cdot \begin{bmatrix} a_{11i} & a_{12i} \\ a_{21i} & a_{22i} \end{bmatrix} \cdot \begin{bmatrix} \varepsilon_{dt} \\ \varepsilon_{st} \end{bmatrix}, \quad (9)$$

a matrix, denoted by  $c$ , can be found that relates demand and supply shocks with the residuals from the VAR model.

$$\begin{bmatrix} e_{yt} \\ e_{irt} \end{bmatrix} = \left[ \sum_{i=0}^{\infty} \begin{bmatrix} d_{11i} & d_{12i} \\ d_{21i} & d_{22i} \end{bmatrix} \right]^{-1} \cdot \sum_{i=0}^{\infty} L^i \cdot \begin{bmatrix} a_{11i} & a_{12i} \\ a_{21i} & a_{22i} \end{bmatrix} \cdot \begin{bmatrix} \varepsilon_{dt} \\ \varepsilon_{st} \end{bmatrix} = c \cdot \begin{bmatrix} \varepsilon_{dt} \\ \varepsilon_{st} \end{bmatrix}. \quad (10)$$

From equation (10) it results that in the 2x2 considered model, four restrictions are needed to define uniquely the four elements of matrix  $c$ . Two of these restrictions are simple normalisations that define the variances of shocks  $\varepsilon_{dt}$  and  $\varepsilon_{st}$ . The usual convention in VAR models consists of imposing the two variances equal to one, which together with the assumption of orthogonality define the third restriction  $c'c = \Sigma$ , where  $\Sigma$  is the covariance matrix of the residuals  $e_y$  and  $e_{ir}$ . The final restriction that permits matrix  $c$  to be uniquely defined comes from macroeconomic theory and has been previously explained. In terms of the model introducing (5) in (10), it follows that:

$$\sum_{i=0}^{\infty} \begin{bmatrix} d_{11i} & d_{12i} \\ d_{21i} & d_{22i} \end{bmatrix} \cdot \begin{bmatrix} c_{11} & c_{12} \\ c_{21} & c_{22} \end{bmatrix} = \begin{bmatrix} 0 & \cdot \\ \cdot & \cdot \end{bmatrix} \quad (11)$$

and the resolution of this equation permits us to estimate the series of demand and supply shocks from residuals of the estimated VAR.

## 2.1. Applying the shocks decomposition methodology for new member states and the euro area

In this study we have applied the SVAR model to identify aggregate demand and supply shocks for new member countries group and the euro area. We also made estimates of the economic shock for five new member countries of Central and Eastern Europe (Romania, Hungary, Czech Republic, Poland, Slovakia). From the analysis we excluded the smaller countries, such as the Baltics. We have used econometric package Eviews 6, in which have included quarterly data series GDP and inflation rate between 1998:1 and 2010:3. Real GDP is expressed as indices with base year 2000, and inflation rate is the percentage change of GDP deflator. Source of the 51 observations was Eurostat. Before to estimate the each SVAR model, must be eliminated the seasonal component of variables. To remove the influence of seasonality on macroeconomic variables, we have used the procedure TRAMO Seats.

Both variables which we have included in the SVAR analysis, real GDP and GDP deflator, are suspected to have a unit root. To validate this assumption, we have used the common Unit Root tests Augmented Dickey Fuller (ADF). For the most series expressed in logarithm, we found that these have a unit root and the null hypothesis of the unit root tests cannot be ruled out. However, the first difference of each variable does not have a unit root and it is stationary as the null hypothesis of the test can be ruled out. The results of ADF stationary test are shown in table 1, in which we included the probabilities to have a unit root. Thus, if the probability is less than the 1%, then is refuted the null hypothesis, ie, the respective variable has not a unit root at first level of integration. Slovakia is the only economy with a stationary inflation rate, evidence of aggregate supply growth, which mitigated the inflationary pressures caused by increasing aggregate demand during economic expansion. Therefore, we have differenced the non-stationary variables and introduced the first difference in logarithms in the VAR analysis.

Table 1. The probabilities associated with ADF test

	Real GDP growth		Inflation rate	
	I(0)	I(1)	I(0)	I(1)
	H0: there is an unit root (lack of stationarity)			
Euro area	0.5386	0.0005	0.4605	0.0000
Romania	0.8544	0.0072	0.5854	0.0000
Czech Republic	0.2388	0.0169	0.1823	0.0000
Hungary	0.0871	0.0002	0.0424	0.0000
Poland	0.7708	0.0128	0.1075	0.0000
Slovakia	0.1368	0.0000	0.0028	-
New member states	0.6423	0.0378	0.1393	0.0107

Source of data: Eurostat (2011); our estimations in Eviews 6.

Since the economic growth and inflation rate variables expressed as first difference are stationary, we can build a VAR model type for each of the five economies and of euro area, respectively the new member states group. For a valid VAR model, it must satisfy the conditions of better representation (choosing the optimal number of lags), its stability (roots lower than unity) and residual validation (by autocorrelation, normalization and heteroskedasticity tests). To identify the correct number of lags of the VAR model for economies included in this paper we used the criteria provided by LR Sequential tests, Final Prediction Error, Akaike Criterion, Schwarz and Hanna-Quinn Criterion tests. To validate these tests we applied the Lag Exclusion Wald Test, whose null hypothesis is rejecting the choice lag. If its probability is below 1% or 5% the optimal lag is selected. According to estimates, it results that the VAR model has one lag for the euro area countries, Czech Republic, Hungary, Slovakia, two lags for Poland and four lags for Romania and the new member states group (table 2).

Table 2. Identifying the number of lags in VAR models

	Sequential LR	FPE	AIC	SC	HQ	Probabilities of Lag exclusion test H0: the statistics $\chi^2$ rejects the selected lag	Optimal lag
Romania	4	4	4	4	4	0.000261	4
Euro area	1	1	1	1	1	0.000136	1
Czech Republic	1	1	1	1	1	0.000053	1
Hungary	1	1	1	1	1	0.007902	1
Poland	2	2	1	2	2	0.009867	2
Slovakia	1	1	1	1	1	0.000000	1
New member states	4	4	2	4	4	0.000046	4

Source of data: Eurostat (2011); our estimations in Eviews 6

The residual of the VAR model should also meet all the necessary conditions for a good representation: normal distribution, absence of heteroskedasticity and errors autocorrelation. Table 3 presents the methodology which is specific to testing a VAR, and the conclusion is that of entirely validating the selected model for the economies included in this paper. The probabilities of the three tests are higher than 5%, which generate the acceptance of null hypothesis.

Table 3. Residual tests in the VAR model

	Autocorrelation test	LM	Cholesky (Lutkepohl) Normality test	White Heteroskedasticity test
Test probability	H0 no errors correlation for the choice lag		H0 the residual VAR has a normal distribution	H0 no heteroskedasticity
Romania	0.2815		0.4411	0.3486
Euro area	0.2105		0.2485	0.2979
Czech Republic	0.2282		0.0788	0.2225
Hungary	0.1539		0.0641	0.1830
Poland	0.3507		0.2319	0.8631
Slovakia	0.6900		0.1916	0.2608
New member states	0.2971		0.1993	0.2574

Source of data: Eurostat (2011); our estimations in Eviews 6

After the final VAR form is established we have imposed the structural restriction, namely the restriction that the aggregate demand shock does not have a permanent effect on output. Further on we have composed the series of the structural aggregate demand and supply shock for each country and studied the relations among them. To achieve compatibility between the theoretical model (aggregate demand - aggregate supply) and SVAR model, the latter must meet the following conditions:

- Aggregate demand shocks on GDP are some temporary, while aggregate supply shocks are some permanently. Therefore, the accumulated response of economic growth rate to aggregate demand shocks should be register a neutralization, while the response to aggregate supply shock is permanent. In other words, an aggregate demand shock has only temporary and positive influence on output.
- Positive aggregate supply shocks on inflation induce its increase, while positive shocks of the aggregate supply decreases the rate of inflation.

Among the economies included in this analysis, Slovakia registers the highest GDP response to supply shocks in the first quarter after shock impact, while Romania's GDP largely changes on the long run. Thus, a shock of 1% of the aggregate supply causes real GDP increase of 0.17% of Slovakia in the first quarter and

0.2% long-term. In Romania, an increase of 1% of the aggregate supply generates a small increase in short term (less than 0.1%), but about 0.3% in the long term. Also, Hungary, Czech Republic, Poland and the group of new member states experienced a reaction similar to that of Slovakia's GDP in the long term. In contrast, euro area GDP increased by 0.12% long-term, due to supply increase by 1%. In general, less developed economies (such Romania) have the potential to grow rapidly, according to the theory of decreasing marginal returns. According to figure 5, aggregate demand shocks on GDP in Hungary is neutralized quickly (after two quarters of the shock impact), Slovakia (after three quarters) and the euro area (five quarters). In Romania, aggregate demand shocks are neutralized after about 20 quarters, and after 12 quarters for the whole group of new member states. Thus, it confirms that aggregate demand has only temporary effects on GDP.

Aggregate demand shocks cause increase of the inflation rate to a greater extent in Hungary (0.16% on the long term) and the group of new member states (0.19% on the long term) and to a lesser extent in the euro area (below 0.03% on the long term). The aggregate supply shocks lead to quickly reduction of the inflation rate, as shown in the cases of Poland and the euro area. However, the group of new countries is characterized by lower inflation rate from four quarter, as a consequence of the positive shocks of the aggregate supply. The response of aggregate supply shocks inflation rate is different from economic theory in the cases of Romania and Slovakia. Given that Romania's economy is slightly modernized and highly rigid, then the inflation rate is not reduced even with the increase in aggregate supply. Thus, low production costs of domestic producers do not generate reduced prices, but the maintenance, even their increase, resulting in higher profits. For Slovakia, the inflation rate responds insignificantly as a result of the increase in aggregate supply, as shown in figure 6.

To identify the link between the intensity of shocks affecting new member states and the euro area, we used Pearson correlation coefficient. According to it, the correlation between aggregate demand shocks is larger than correlation between aggregate supply shocks, conclusion that is not validated when we made an individual analysis of the main economies in Central and Eastern Europe. Thus, only Hungary, Romania and Slovakia have been positive correlations, but insignificant, of the demand shocks with the euro area. The correlation degree of supply shocks is higher in four of the five economies considered (except Czech Republic), the highest values recorded Hungary and Slovakia (0.6, 0.51 respectively). Average correlation intensity of supply shocks in these two countries is the result of structural and trade convergence with the euro area countries (table 4).

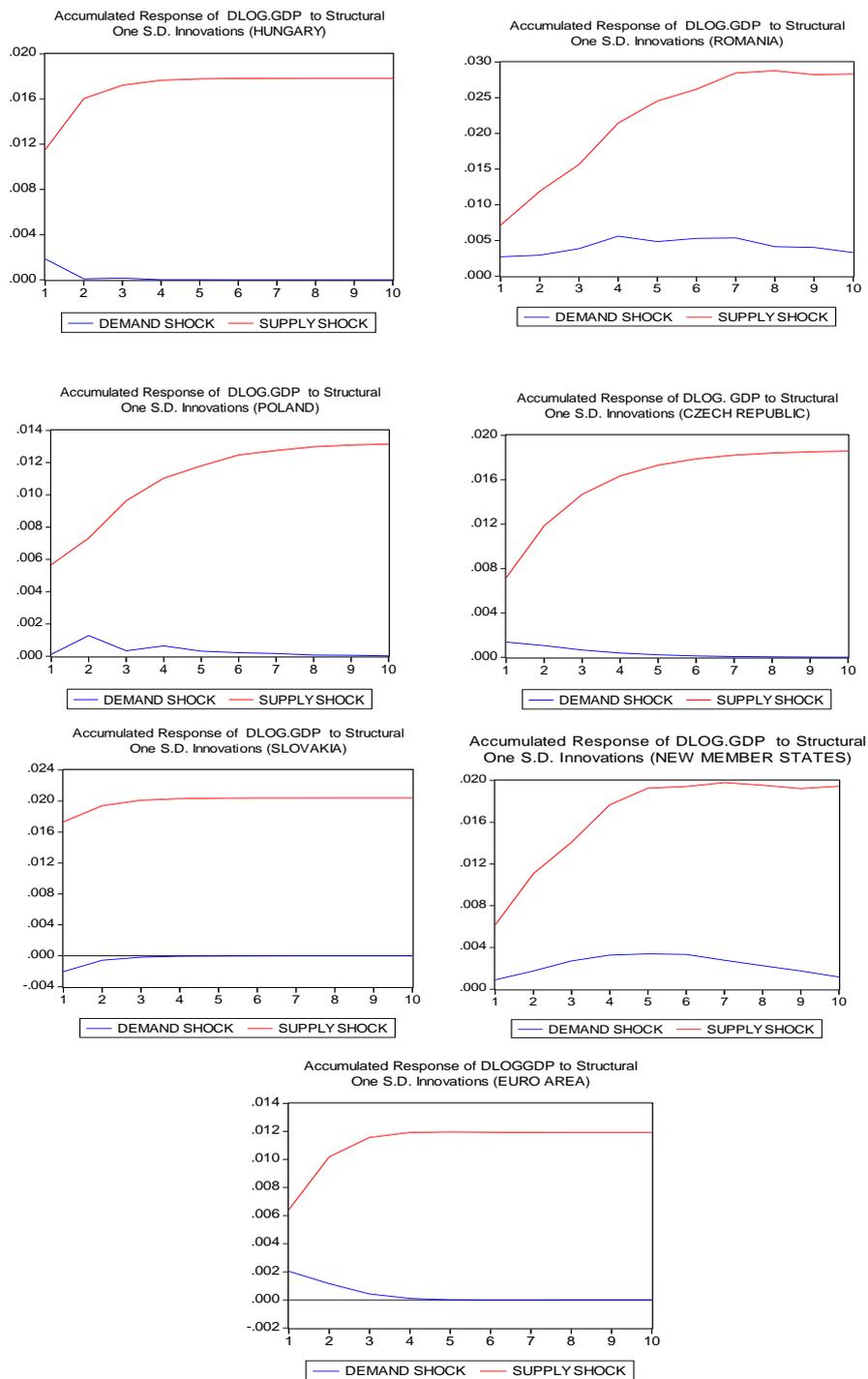
In general, lower values of the correlation of shocks between euro area countries and new Member States can be explained by:

- Differences between economic, trade and financial structures of the two economies.
- The existence of different exchange rate regimes and different rates of inflation.
- Differences between stages of development, Romania recording a higher growth rates compared with the euro area.
- Practicing divergent macroeconomic policies, as a result of different economic developments.

Between the two shocks, those on the aggregate supply side have acquired greater importance in view of accession to the euro area, because it will decisively influence the convergence between business cycles with euro area. Those on the aggregate demand side will automatically become more related, in the context of a common monetary policy and a more strictness national fiscal policies.

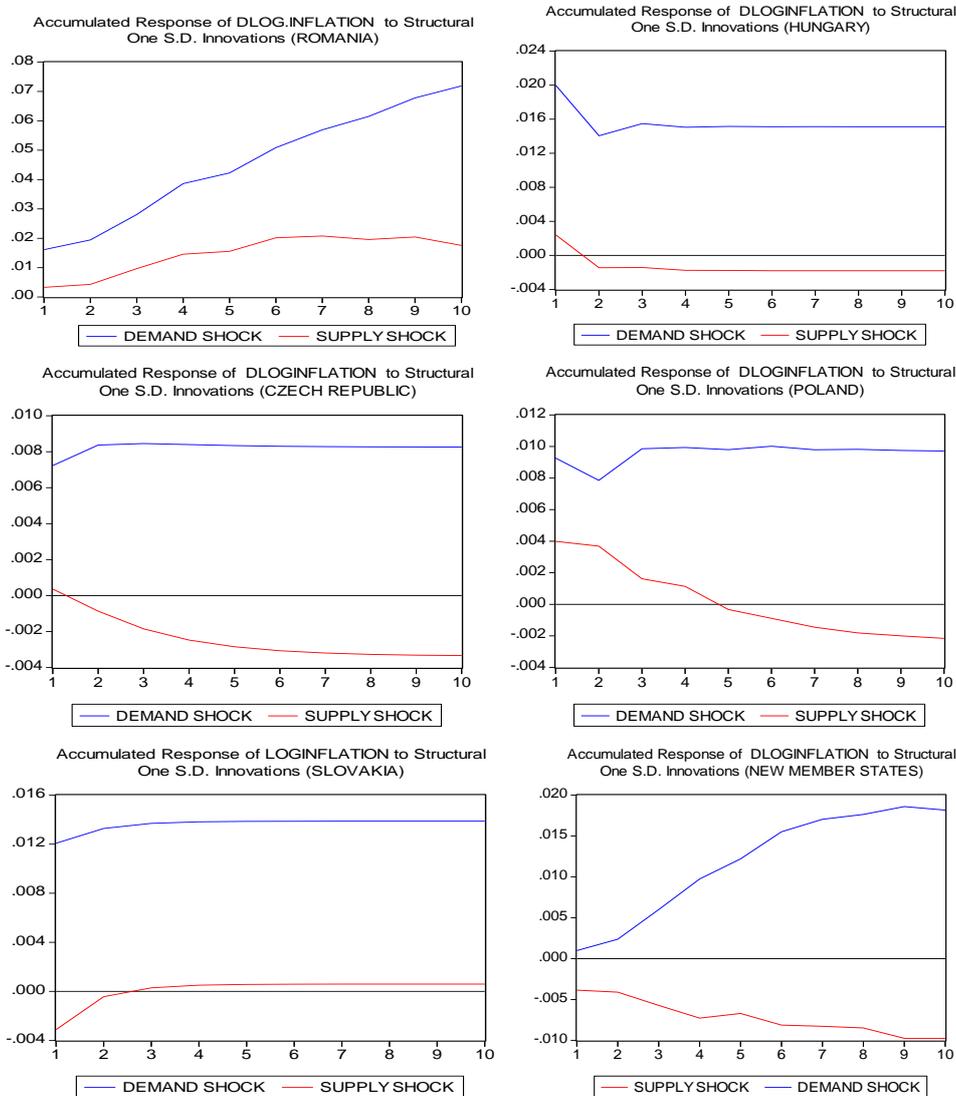
According to estimations made in this study, Slovakia adopted a smart decision on adopting the euro because it features a highly flexible economy and a mean correlation of shocks on the supply side. Also, Hungary has a trade and economic structure suitable for joining the euro area, so that aggregate supply shocks are the most correlated with the countries of the monetary union. However, Hungary is characterized by relatively high inflation rate and had an inappropriate behavior in terms of budget by 2007. Therefore, macroeconomic policies aimed at targets other than the euro area, which is reflected in the correlation of demand shocks by 0.2.

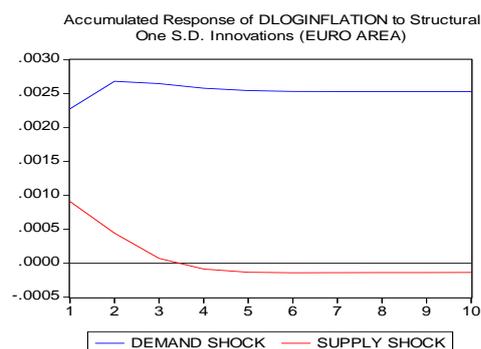
Figure 5. Accumulated responses of GDP to demand and supply shocks



Source of data: Eurostat (2011); our estimations in Eviews 6

Figure 6. Accumulated responses of inflation rate to demand and supply shocks





Source: Eurostat (2011); our estimations in Eviews 6

Table 4. Correlation coefficients between euro area and new member states demand shocks

	Demand shocks	Supply shocks
New member states group (Central and East European Countries)	0.31	0.07
Romania	0.13	0.17
Czech Republic	-0.06	-0.12
Hungary	0.20	0.61
Poland	-0.06	0.20
Slovakia	0.07	0.51

Source of data: Eurostat (2011); our estimations in Eviews 6

### 3. CONCLUSION

The methodology applied in this study is a useful framework to analysis the risks of adopting a common currency, because it allows the identification of the nature of the shocks and more appropriate responses to their action. The basic idea is that aggregate demand shocks affect real GDP only short term, while the impact on inflation is one permanently. Also, in these cases there is a direct relationship between the changes in the short term of the production and inflation rate. Instead, aggregate supply shocks have a permanent influence on the short and long term both on prices and production, the relationship between these being one inverse (increasing the aggregate supply increases production and reduce inflation). These conditions are validated in the case of new member states and the euro area, as we have estimated with SVAR models. Between these countries, there are positive but weak correlations between demand shocks, i.e. between supply shocks. According to the theory of optimum currency areas, the criterion of the aggregate supply shocks and demand is not met by the countries of Central and Eastern Europe. Therefore, the decision to adopt the single currency must be the result of improvements of other criteria, such as increasing trade and financial integration with the euro area countries, the flexibility of the economy through structural reforms.

### ACKNOWLEDGEMENT

This paper represents a partial dissemination of the postdoctoral research project CNCISIS, HUMAN RESOURCES type, *Macroeconomic modeling of the relationships between the asymmetric shocks, convergence of business cycles and*

*mechanisms of adjustment in the context of Romania's adhesion to the euro area*, No 78/03.08.2010, Project Manager Marinaş Marius-Corneliu.

## REFERENCES

- Arfa, B.N., 2009. Analysis of Shocks Affecting Europe: EMU and some Central and Eastern Acceding Countries, *Panoeconomicus*, No 1, pp. 1-15
- Babetski, J., 2004. EU Enlargement and Endogeneity of some OCA Criteria: Evidence from the CEECs, Czech National Bank, *Working paper*, No.2, pp. 5-20
- Blanchard, O. J., Quah D., 1989. The Dynamic effects of Aggregate demand and Supply Disturbances, *American Economic Review*, Vol. 79, No. 4, pp. 655-673
- Bayoumi, T., Eichengreen B., 1992. Shocking Aspects of European Monetary Integration. In: *Growth and adjustment in the European Monetary Union*, ed. Torres Francisco and Francesco Giavazzi, 193-230. Cambridge University, New York, pp. 193-220
- Fidrmuc, J., Korhonen, I., 2003. The Euro goes East. Implications of the 2000-2002 economic slowdown for synchronisation of business cycles between the euro area and CEECs, *BOFIT, Discussion Paper*, No. 6, pp. 313-334
- Frenkel, M., Nickel, Ch., 2002. How Symmetric are the Shocks and the Shocks Adjustment Dynamics between the Euro Area and Central and Eastern Europe?" *IMF Working Paper*, 02/222, pp. 53-74
- Ramos, R., Suriach, J., 2004. Shocking Aspects of European Enlargement. *Eastern European Economics*, Vol. 42, No. 5, pp. 36-57
- Weimann, M., 2002. OCA Theory and EMU Eastern Enlargement – An Empirical Application, *Dresdner Beiträge zur Volkswirtschaftslehre*, No 7, Technische Universität Dresden, pp. 5-30
- Eurostat database, 2011.

# SEARCHING FOR A RELATION BETWEEN REGIONAL GROWTH AND MIGRATION

Stilianos Alexiadis<sup>1</sup>, Christos Ladias<sup>2</sup> and Sotirios Milionis<sup>3</sup>

<sup>1</sup>Ministry of Rural Development and Foods, Department of Agricultural Policy and Documentation, Division of Agricultural Statistics, e-mail: salexiadis7@aim.com

<sup>2</sup>Department of Regional Economic Development, University of Central Greece

<sup>3</sup>Hellenic Tourist Properties SA

## ABSTRACT

This paper aims to discuss some implications of the contemporary trends in migration on the Greek economy. The 'push and pull' factors for contemporary immigration, at the international level are considered, followed by an analysis of the underlying reasons behind the influx of immigrants in Greece. The three basic statuses of immigration are highlighted in order to pinpoint the differential influences on the economy of Greece. A brief historical overview of contemporary migration in Greece is also provided, together with an analysis of the immigrants' employment. The analysis is extended further by considering the effects of immigration on the process of regional growth and convergence in Greece, using spatial econometric techniques.

## KEYWORDS

Immigration, Greek Economy, Regional Growth

## JEL CLASSIFICATION CODES

R23

## 1. INTRODUCTION

Recently there has been a proliferation of studies on regional convergence (e.g. Coulombe, 2000; Martin, 2001). Empirically, convergence is frequently encapsulated by a negative relation between the growth rate during a given time period and initial level of per-capita GDP. A central question to the issue of convergence is, therefore, whether poor regions grow faster than rich regions. In a regional context, the spatial distribution of regions is presumed to be of some significance in determining the pattern of regional development and in contributing to any convergence mechanisms.

Nevertheless, as Rey and Montouri (1999) point out, despite the fact that regional convergence depends crucially on geographical factors, these have often been ignored in the literature. More recently, however, there have been a number of studies examining the process of regional convergence from a spatial econometric perspective (Fingelton, 2001; Maurseth, 2001; Roberts, 2004; Fischer and Stirböck, 2006; Tselios, 2009). Whilst it is the case that regional convergence in Greece has been examined elsewhere (Siriopoulos and Asteriou, 1998; Tsionas, 2002), a spatial perspective has not been taken into account. This paper contributes to the empirical literature by testing for regional convergence in Greece using spatial econometric techniques. Furthermore, this paper attempts to examine the impact of migration upon the process of regional convergence in Greece.

The remainder of this paper is organised as follows. Section 2 provides the model framework while an overview of regional convergence in Greece is presented next. Section 4, provides a discussion of the push and pull factors for international migration and the evolution of contemporary immigration to Greece is examined in section 5. The econometric results are provided and discussed in section 6. Section 7 concludes the paper.

## 2. EMPIRICAL TESTS OF CONVERGENCE

The recent explosion of interest in regional growth and convergence has not followed a uniform path. Instead, several distinct types of convergence have been suggested in the literature, each being analysed by distinct groups of scholars employing different methods. Nevertheless, (absolute)  $\beta$ -convergence, defined by Baumol (1986) has been used extensively in the empirical literature. Absolute convergence is defined as a negative relationship between growth rates over a given time period and initial levels of per-capita output. More formally, this concept is tested as follows:

$$g_i = \alpha + by_i + \varepsilon_i \quad (1)$$

where  $y_i$  represents per-capita GDP of the  $i$ th region and  $g_i = y_{i,T} - y_{i,0}$  is the growth rate over the time interval  $(0,T)$  and  $\varepsilon_i$  is the error-term. If regions with relatively higher initial levels of  $y_i$  grow more slowly, then  $b < 0$ . This is true, however, only if all economies are converging to the same steady-state, given that the initial poor regions will be farther away from the steady-state<sup>1</sup>. If regions have different structural characteristics, then convergence is conditional on these parameters, giving rise to different steady-states and appears as follows:

$$g_i = a + b_1 y_{i,0} + b_{x_i} \mathbf{X}_i + \varepsilon_i \quad (1.1)$$

where  $\mathbf{X}_i$  represents a vector that includes a set of variables to control for differences in various structural characteristics across regions. Absolute (unconditional) convergence is signalled by  $b_1 < 0$  and  $b_{x_i} = 0$  while conditional convergence depends upon  $b_1 < 0$  and  $b_{x_i} \neq 0$ .

## 3. AN OVERVIEW OF REGIONAL CONVERGENCE IN GREECE

The regional groupings used in this paper are those identified by the National Statistical Service of Greece<sup>2</sup> (NSSG) and comprise the 51 NUTS-3 regions (prefectures) of Greece while data on GDP per-capita for the period 2001-2008 are employed. The time period is rather short and the current financial crisis, which broke out in Greece in 2008, is not included. However, the NSSG does not provide any data for the period after 2008. Data were deflated to 2001 current prices using deflators provided by the NSSG<sup>3</sup>.

Figure 1 relates the initial level of GDP per-capita with the average rate of growth. Preliminary examination of the data indicates that  $\beta$ -convergence is slow amongst the 51 prefectures of Greece.

---

<sup>1</sup> In addition to testing for the presence of convergence, the coefficient  $b$  may be employed to estimate the *speed* of convergence as follows (Barro and Sala-i-Martin, 1992):  $b = -(1 - e^{-\beta T}) \Rightarrow \beta = -[\ln(b + 1)]/T$ , where  $\beta$  indicates the average rate of convergence.

<sup>2</sup> Recently renamed to Hellenic Statistical Authority (EL.STAT.)

<sup>3</sup> Ideally, the data should be deflated using regional deflators. However, such deflators are not available from any official source and we use national deflators.

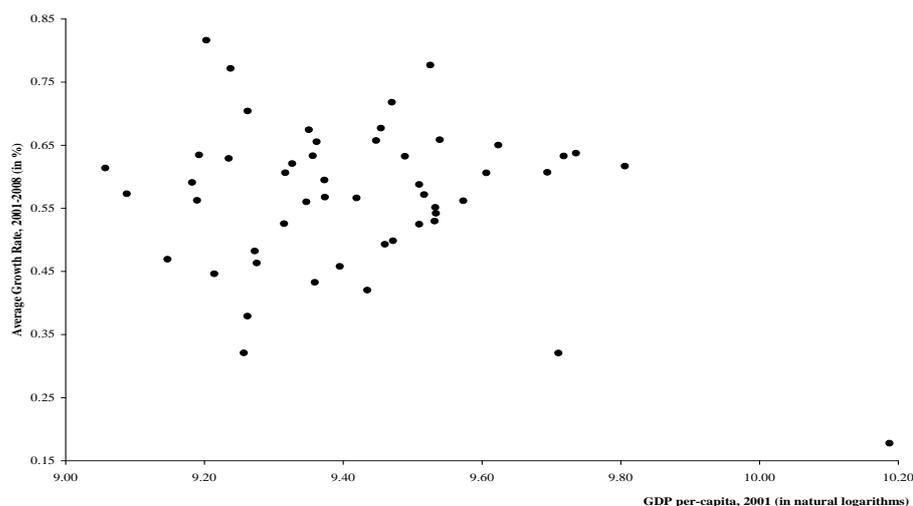


Figure 2:  $\beta$ -convergence

The hypothesis of absolute convergence will be examined in Section 6. The alternative hypothesis of regional convergence conditioned upon migration will be also examined empirically. Prior to this however, some general comments about migration are essential.

#### 4. MIGRATION IN GREECE

During the last two decades, migration has progressively received worldwide attention, due to its ever increasing impact on both destination and departure countries; not to mention transit countries as well. Numerous world renowned organizations, such as the U.N. (2006; 2009), the World Bank (Ratha & Shaw, 2007; Ratha, Mohapatra and Xu, 2008; Ratha, Mohapatra and Silwal, 2011), the International Labor Organization (2004; 2002) and the OECD (2009; 2010), specialist agencies like the International Organization for Migration (Appave and Cholewinski, 2008; Siar, 2008; Koser and Laczko, 2010) and high profile research projects such as the CLANDESTINO project (Jandl, Iglicka, and Vogel, 2008; Kaya, 2008; Maroukis, 2009) of the EU, as well as scholars from various disciplines (Borjas, 2006; Putnam, 2007; Reyneri, 2001; Venturini, 2004; Zorlu & Mulder, 2007) have all been extensively engaged in research and analyses of various aspects of the migration phenomenon. A review of the voluminous literature suggests that among the most prominent effects of migration are those associated with the society and the economy, whereas effects on other domains such as the culture and the environment remain less significant. Because of the complexity of immigration and employment laws, and the wide range of possible restrictions attached to different types of immigration status, research has identified various grey zones of irregularity which blur the line between legal/illegal (regular/irregular). Düvell (2008) has worked extensively on the subject producing a fine-tuned analysis of clandestine migration on a scale between the legal/illegal dichotomy.

International migration can also be categorized under the voluntary/forced dichotomy. Collinson (1993) distinguishes between voluntary migration on economic and political basis. As for forced migration, it is stressed that political or economic/environmental reasons may be the main driving forces behind it.

Migration projects may significantly vary, including family reunion purposes, a more general form of which is chain migration involving friends, relatives, compatriots, acquaintances of the initially arrived immigrant. Return migration is another form of international migration referring directly to country nationals returning to their motherland after having stayed abroad usually for a long period of time. Ethnic migration is different in the sense that it refers to ethnicity rather than nationality. According to Okolski (1997), petty traders and labor tourists fall in the incomplete migration category which includes those migrants who stay abroad for short periods of time before returning to their country of origin. Finally, illegal migration involves

processes of human trafficking or smuggling (Salt, 2000). Consequently, international migrants may be typified under the following distinct categories; first the economic migrant category which is the broadest category including the majority of international migrants. The category of students is a relatively small category of international migrants studying abroad. The ethnic migrant refers to expatriates returning to their country of origin. Special migrant categories are the refugees and the asylum seekers.

The massive influx of immigrants arriving in Greece since the early 1990's can be attributed to both Greece's internal structural changes, such as the large informal economy and the large service sector run according to the internal demands for cheap and seasonal-flexible labor, and to global politics. As far as the latter is concerned, the collapse of the former USSR and the consequent liberalization of Eastern European countries, along with the shift in the political regime in Albania, constituted the driving force behind an immense influx of documented and mainly undocumented immigrants from former eastern bloc countries. Another reason for attracting external migration has been the fact that Greece was until recently the only Balkan country belonging to the EU. According to Reyneri (2001), factors fostering especially illegal migrant influx are the existence of long coastlines and the topographical features of the northern borders, which make them very difficult to patrol effectively. Domestic politics were also significant. Greek borders opened against people's will in the early 1990's aiming to facilitate the immense migrant influx that would allow for the economic and monetary integration in the EU. Negative public opinion towards immigration in Greece, although depicted in numerous surveys conducted throughout the 90's and the 00's (Kappa Research, 1996; V-Project Research Consulting, 1999; 2006; European Commission, 2000; Public Issue, 2008, 2009, 2010) as well as in empirical research documents (Vulgaris, 1995; Karydes, 1996;), was not enough of a reason for governments to pursue a different migration policy.

Two waves of immigration took place during the period 1990-2001 (Kasimis and Kasimi, 2004). In the early 1990's Albanians dominated. After 1995 immigrants from other Balkan states, the former Soviet Union, Pakistan, and India also participated in the second wave. According to Hellenic Migration Policy Institute (HMPI), Albanians constitute about 56% of total immigrants, Bulgarians (5%), Georgians (3%) and Romanians (3%). What is of particular importance is the fact that Greece is unique in the EU having one dominant immigrant group of its total immigrant population, amounting to 7% of the country's total population (2004:5). The HMPI report mentions that the highest concentration of immigrants from outside the EU is located within the municipality of Athens, reaching almost 17% of the local population. The primary reason why migration to Greece takes place is job opportunities or unemployment. Immigrants in general are attracted to economically developed areas where they are likely to find a job. This is the driving force that directs immigrants chiefly to Athens and to a lesser extent towards tourist areas such as the islands (HMPI, 2004). Factors encouraging immigrants' entering Greek territory are the geographical proximity to countries of origin and the morphology of the Greek borderlines (Kassimati, 1998) the former being able to explain the phenomenon of Albanians being the dominant immigrant group. Greece however, demonstrates a unique characteristic that distinguishes it from all other potential destinations in the EU. It is the only country in the European Union that stands at the crossroads of both Asia and Africa with Europe. Due to its location it has inevitably become the initial destination of mostly developing country immigrants who arrive by land or sea. Greece's long coastline and the proximity of its islands to Turkey makes the country particularly attractive to maritime human smugglers, many of whom have shifted their operations away from more heavily patrolled areas of Spain and Italy. According to the Dublin II Regulation (Council Regulation (EC) No 343/2003), where the asylum seeker has irregularly crossed the border into a Member State, that Member State will be responsible for examining the asylum application. In case the asylum seeker has moved on to another EU country, the first country of entry is still responsible to consider the asylum seeker's application. Therefore, in compliance with the Dublin II regulation, irregular immigrants are transferred back to the first E.U. country of entry for their applications to be considered. In both cases, the first country of entry is obliged to keep irregular immigrants in its territory. It is thus straightforward that the Dublin system's first country of entry criterion disproportionately shifts responsibility towards Member States at the EU's external borders (McDonough et al., 2008). Border countries, such as Greece, get 'punished' for being unable to control their own borders and thus for allowing irregular immigrants enter European Union territory. Hence, Greece is made to keep them in its own territory. In addition, by demanding that protection seekers who pass through these countries return there for reception and assessment, the Dublin regulation exacerbates pressures

on states that already experience dire challenges in hosting asylum seekers. Greece in particular, is under severe pressure stemming from irregular migration influx. Greece's irregular migrant population accounts for almost 56% of its total foreign population (OECD, 2009:121-122) the highest by far of all OECD countries and also the highest in relation to the total population, coming second only to the U.S. in both respects. According to Appave and Cholewinski (2008: 210) the total number of irregular migrants in Greece for April 2006 was estimated at 550,000. Even though the number of detections of illegal border-crossings in Greece for 2007 and 2008 already accounted for 50% of the EU total, in 2009 this figure rose to an impressive 75% of the total (FRONTEX, 2009: 5). In 2009, the Greek land-border sections with Albania and FYROM represented the largest share (34%) of the EU total, followed by the Aegean Sea (21%). Outside Greece, the number of detections was much lower, representing only 10% of the EU total. It should be noted that most illegal migrants detected at the Greek land-border section with Albania, mainly Albanian nationals, are quickly returned to Albania under a long-standing and effective readmission agreement. However, despite this good collaboration, people who have been returned tend to rapidly cross the border again illegally. Unlike at the Greek-Albanian land border, illegal migrants from the Greek-Turkish land border (such as Afghan nationals) are neither returned quickly nor in large numbers (FRONTEX, 2008: 13). Gil Arias-Fernandez, deputy director of FRONTEX, stated during an October 2009 visit that Turkey was uncooperative in stanching illegal immigration and EU Justice Commissioner Jacques Barrot noted that uncontrolled immigration risked "destabilizing Greek democracy" and called on Turkey to do more to stop migration flows (Speckhard, 2009).

On the issue of contemporary immigration at the local level, the international experience indicates that migrants tend to concentrate in a limited number of regions in the host country and especially in downtown areas where local conditions such as rents, opportunities for work and proximity to productive activities are theoretically more favorable. This has also been the case in Greece as according to the 2001 census, 48.6% of non-Greek residents reported as their usual place of residency the region of Greater Athens. According to Lianos (2003), migration inflows are fostered by the urbanization level, the relative volume of the primary sector of the economy and the GNP per capita. Bacharopoulou (2007) appends the rise of the informal sector as a contributing factor to migrant inflows as regards southeastern European countries<sup>4</sup>.

## **5. THE IMPACT OF MIGRATION IN GREECE**

As Cholezas and Tsakloglou (2008) note the arrival in a particular country of a large number of immigrants with a considerable proportion of illegal workers among them has positive effects on total production (GDP) and on the dampening of inflationary pressures. On the other hand, the size of the informal sector of the economy is boosted, the wage rates of indigenous and immigrant workers fall, the rate of employment of the unskilled and semi-skilled natives falls (nonetheless overall employment is not affected), the distribution of income becomes more uneven and the pace of technological growth, the cost of public services (especially public order) incurred by the state, the amount of remittances taken out of the country (as a net loss of national income), and the social security and health systems are all negatively affected. As they point out, the existing studies show that Greece is not an exception to this rule. It is thus contradictory that the authors' review of past research on the issue concludes that on average the economic effects of immigration were beneficial (although their distributional consequences were adverse) since the drawbacks evidently outweigh the positive effects by far.

Sarris and Zografakis find that the influx of illegal migrants in Greece has increased the country's GDP by 1.5%, has reduced the real wage rate of the entire economy by 6%, has led to a net job loss of 25,000 and has improved the competitiveness of Greek products through the reduction of their price levels by 2% (1999: 155-182). This study also found that immigration has induced adverse distributional effects that exacerbated

---

<sup>4</sup> For a more detail review of the contemporary migration to Greece see Lianos et al. (2008).

income inequality; it reduced real disposable income of poor households and increased the income of the middle and rich households.

Kontis (2006) examines three alternative scenarios the first of which is, as the author admits, unrealistic. Therefore, there is no sense in presenting it here. According to the second scenario, the assumed increase of immigrants by 215,000 (note that since that time many more have actually come) would cause a GDP rise by 0.74%. However 215,000 is way more than a 0.74% population increase so GDP per capita, being a far more meaningful measurement than GDP per se, would decrease that is, the country would become poorer. In addition, this influx of immigrants would cause an additional 2.5% loss of income for middle and lower class Greeks and a striking 28-52% loss of income for the immigrants already in the country. Furthermore, according to this study, less than half of these 215,000 new immigrants would find a job. The third scenario, based on the assumed gradual departure of immigrants, results in a GDP decrease, however GDP per capita would increase as the vast reduction in population outweighs the reduction in absolute GDP. Moreover, wages would go up and unemployment would go down. Real income of poor Greek households would increase whereas middle and rich households would experience fluctuations in their income. Overall, income inequality would decrease. On the other hand, prices would go up and the balance of payments would deteriorate.

Pouliakas et al (2009), acknowledging the importance of the skill level factor on the economic effect of migration at the regional level estimated the impact of different scales of immigration and of diverse skill-types of migrants on the GDP, welfare and wage distributions using a Computable General Equilibrium (CGE) model. The conclusion they arrived at, confirmed what has already been known by past research; that immigration of low-skilled workers has been a significant contributor to the rising inequality of earnings experienced by OECD economies and that the flow of skilled individuals outside their own country of origin, is a potentially serious barrier to economic growth and development.

## 6. REGIONAL CONVERGENCE AND MIGRATION IN GREECE

In this paper the impact of migration in the process of regional convergence in Greece is approximated by four factors. To be more precise, immigration of 'highly skilled labour is measured in terms of the percentage of immigrants with a tertiary education in a region ( $X_1$ ). The 'absorption' of immigrants to a regional economy is expressed as the percentage of immigrants in a region in industrial and services sectors ( $X_2$ ). Given that agriculture plays an important role in several Greek regions, the previous proxy is supplemented by the percentage of immigrants employed in the agricultural sector of a region ( $X_3$ ). Finally, the percentage of illiterate immigrants in a region is considered as a proxy for negative effects of migration in the economy of a region ( $X_4$ ). Therefore,

$$g_i = a + b_1 y_{i,0} + b_2 X_1 + b_3 X_2 + b_4 X_3 + b_5 X_4 + \varepsilon_i \quad (2)$$

In the light of recent literature it may be argued that any empirical test for regional convergence is misspecified if the spatial dimension is omitted. Rey and Montouri (1999) have incorporated the potential for spatial interaction within convergence analysis through the spatial-error model<sup>5</sup>. This model, assumes that any effects from spatial interaction are captured in the error-terms of equations (1) and (1.1). Thus,

$$\mathbf{g}_i = a + b_1 \mathbf{y}_{i,0} + (\mathbf{I} - \zeta \mathbf{W})^{-1} \mathbf{u}_i \quad (3)$$

and

---

<sup>5</sup> In constructing the spatial weights matrix, the weights are calculated using distances between the main cities of prefectures within a boundary of 100 km, given the geomorphology of Greece and the fact that economic activities are typically concentrated in the capital city of each prefecture. For a more detailed analysis of the spatial-error model see Alexiadis and Alexandrakis (2008).

$$\mathbf{g}_i = a + b_1 \mathbf{y}_{i,0} + b_2 X_1 + b_3 X_2 + b_4 X_3 + b_5 X_4 + (\mathbf{I} - \zeta \mathbf{W})^{-1} u_i \quad (3.1)$$

In the first instance a cross-section version of the absolute convergence model is estimated for the period 2001-2008. The results (Table 1) show the convergence coefficient to be negative and significant, and thus indicate the presence of absolute convergence in the form of a negative relationship between the rate of growth and initial GDP per-capita. Greek prefectures have, on average, shown a tendency to converge over the period 2001 to 2008, albeit at a slow rate of 0.76% per-annum. It has been argued in section 2 that geographical factors are potentially of significance to the process of regional convergence. Therefore, a subsequent step in assessing convergence across the 51 NUTS-3 regions involves testing the spatial-error model. Estimation of this model is carried out by the maximum likelihood method, as OLS may result in problems of bias<sup>6</sup>. The coefficient  $b$  is negative and statistically significant. The rate of convergence, nevertheless, is still low (0.68%). From the perspective of model selection, the obtained values of the Akaike ( $AIC$ ) and the Schwartz-Bayesian ( $SBC$ ) information criterion for the spatial-error model suggest that this model is superior from the ‘conventional’ model for convergence<sup>7</sup>, given that the best fitting model is the one that yields the minimum values for the  $AIC$  or  $SBC$  criterion. Another selection criterion, used extensively in spatial econometrics, is the Log-Likelihood statistic (LIK). According to this criterion the best-fitted model is the one that yields the greatest value of the LIK (Anselin, 1988). The calculated values of the LIK statistic confirm the superiority of the spatial model. It follows, therefore, that the ‘conventional’ model is misspecified, given that it does not take any account of geographical factors.

Table 1. Absolute Convergence, GDP per-capita, Greek Prefectures

Depended Variable: $g_i$	Equation (1)	Equation (3)
$a$	0.982**	0.930*
$b_i$	-0.059**	-0.053**
$\zeta$		1.202**
<i>Implied <math>\beta</math></i>	0.0076**	0.0068**
LIK	22.2572	31.0478
AIC	-40.5144	-56.0956
SBC	-36.6507	-50.3001

Notes: \*\* indicates statistical significance at 95% level of confidence, \* 90% level. AIC, SBC and LIK denote the Akaike, the Schwartz-Bayesian information criteria and Log-Likelihood, respectively.

It is important to note that the spatial coefficient is positive, which suggests that the disturbances to the growth rate of a prefecture spillover to affect growth rates in surrounding areas with their pattern determined by the extent of spatial proximity. Overall, the spatial model suggests that the prefectures of Greece have been converging, although at a very slow rate. One interpretation of this slow rate is that convergence towards a unique ‘steady-state’ may not be the case for the prefectures of Greece. Instead, the alternative hypothesis of conditional convergence seems to be an interesting possibility. Given the aims of this paper,

<sup>6</sup> The presence of spatial interaction in the error-term in equation (1) leads to a non-spherical covariance matrix:  $E[\varepsilon_i \varepsilon_i'] = (\mathbf{I} - \zeta \mathbf{W})^{-1} \sigma^2 \mathbf{I} (\mathbf{I} - \zeta \mathbf{W})^{-1'}$ , which results in unbiased OLS estimators but biased estimations of the parameter’s variance.

<sup>7</sup>  $AIC = N \ln(RSS) + 2p$  and  $SBC = N \ln(RSS) + p \ln(T)$ , where  $RSS$  is the residual-sum of squares,  $N$  is the number of observations and  $p$  the number of parameters. The  $SBC$  has superior properties and is asymptotically consistent, whereas the  $AIC$  is biased towards selecting overparameterized models (Enders, 1995).

regional convergence is conditioned upon factors related to migration. To the best of our knowledge, this issue has not received considerable attention in the relevant literature.

Table 2. Regional Convergence and Migration, non-Spatial and Spatial Specification

Depended Variable: $g_i$	Equation (2)	Equation (3.1)
$a$	1.3723**	1.0231**
$b_1$	-0.0481**	-0.0424**
$b_2$	0.0496**	0.0406**
$b_3$	0.0281	0.0203
$b_4$	-0.0861*	-0.1162**
$b_5$	-0.0066**	-0.0079**
$\zeta$		0.8542**
<i>Implied <math>\beta</math></i>	0.0061**	0.0054**
LIK	54.3014	57.4194
AIC	-96.6028	-102.8388
SBC	-85.0118	-91.2478

Notes: \*\* indicates statistical significance at 95% level of confidence, \* 90% level. AIC, SBC and LIK denote the Akaike, the Schwartz-Bayesian information criteria and Log-Likelihood, respectively.

The coefficient attached to the  $X_1$  variable is positive and statistically significant. It might be argued, therefore, that an educated immigrant labour force constitutes a ‘facet’ of the human capital and promotes growth in a region and, by extension, regional convergence. A similar argument can be raised for the  $X_2$  variable. This is not the case, however, for the percentage of immigrants employed in agriculture. As perhaps anticipated, the econometric estimation of both specifications yields a negative value for the  $X_4$  variable.

Overall, the econometric estimations imply that migration restricts the process of regional convergence in Greece. Indeed, both specifications suggest a relatively low rate of  $\beta$ -convergence. This can be attributed to the fact that most immigrants are concentrated in the two ‘leading’ regions of Greece, Attiki and Thessaloniki. To account for this factor, the spatial-error model, which is to be preferred by the selection criteria, is estimated for the remaining regions of Greece (Table 3).

Table 3. Regional Convergence and Migration, Excluding Attiki and Thessaloniki

Depended Variable: $g_i$	Equation (3.1)
$a$	1.5021**
$b_1$	-0.0648**
$b_2$	0.0492**
$b_3$	0.0123**
$b_4$	-0.0916*
$b_5$	-0.0271*
$\zeta$	1.1731**
<i>Implied <math>\beta</math></i>	0.0082**

Notes: \*\* indicates statistical significance at 95% level of confidence, \* 90% level.

Based on the results in Table 3, two features are most noticeable. First, the rate of convergence increases when the two ‘leading’ regions of Greece are excluded. This implies that if immigrants were more evenly

distributed across the areas of Greece, then the Greek regions would exhibit a relatively faster one. This is estimated to be about 0.8% per annum. Second, the coefficients attached to the variables approximating the 'absorption' of immigrants ( $X_2$  and  $X_3$ ) are positive. Given that these variables refer to the main sectors of a regional economy, it might be argued that the favourable effects of migration are directly related to structural characteristics of a particular region.

## 7. CONCLUSION

This paper contributes to the empirical literature on Greek regions by testing for regional convergence over the period 2001-2008 using spatial econometric techniques. Previous studies on Greek regions have concentrated on the application of the 'conventional' models without incorporating spatial effects. The econometric performance of an explicitly spatial model suggests that geography is a crucial factor that determines the process of regional convergence. Furthermore, the impact of migration in Greece is taken into account. One important conclusion to emerge from the econometric analysis is that if immigrants were located across the regions of Greece in accordance to the needs, the peculiarities and the characteristics of each region, then this would have positive effects for regional convergence. In terms of policy implications this implies that migration policy in Greece should take into account the educational level of the immigrants and relocate them, if possible, to certain regions. In short, migration policy in Greece should include an explicit regional dimension.

## ACKNOWLEDGEMENT

The authors wish to thank the three anonymous referees for their helpful comments. The findings, interpretations and conclusions are entirely those of the authors and, do not necessarily represent the official position, policies or views of the Ministry of Rural Development & Foods and/or the Greek Government.

## REFERENCES

- Alexiadis, S. and Alexandrakis, A. 2008. "Threshold Conditions" and Regional Convergence in European Agriculture. *International Journal of Economic Sciences and Applied Research*, Vol. 1, No.2, pp. 13-37.
- Anselin, L. 1988. *Spatial Econometrics: Methods and Models*, Kluwer, Dordrecht.
- Appave, G. and Cholewinski, R. (eds.) 2008. *World migration 2008. Managing labour mobility in the evolving global economy*, Vol. 4 - IOM World Migration Report Series, Geneva: International Organization for Migration.
- Bacharopoulou, A., et al, 2007. Tracing urban change through the everyday lives of migrant women domestic workers and their employers. Working Paper presented at the international workshop: *Gender, work and the household. Comparative perspectives*. University of the Aegean. Mytilene, 30-31 March 2007.
- Barro, R. and Sala-i-Martin, X. 1992. Convergence. *Journal of Political Economy*, Vol. 100, pp 223-251.
- Baumol, W. 1986. Productivity Growth, Convergence and Welfare: What the Long-Run Data show. *American Economic Review*, Vol. 76, pp 1072-1085.
- Borjas, G. 2006. The Impact of Immigration on the Labor Market. Paper prepared for the Conference on Labor and Capital Flows in Europe Following Enlargement, organized by the International Monetary Fund, the Joint Vienna Institute, and the National Bank of Poland.
- Cholezas, I. and Tsakoglou, P. (2008). The Economic Impact of Immigration in Greece: Taking Stock of the Existing Evidence. *Institute for the Study of Labor Discussion Paper No. 3754*. October 2008.
- Collinson, S. (ed.) 1993. Europe and International migration, Pinters, Royal Institute of International Affairs, London.
- Coulombe, S. 2000. New Evidence of Convergence across Canadian Provinces: The Role of Urbanisation. *Regional Studies*, Vol. 38, pp. 713-725.
- Düvell, F. 2008. Clandestine migration in Europe. *Social Science Information*, Vol. 47, No. 4, pp. 479-497.
- Enders, W. 1995. *Applied Econometric Time-Series*, Wiley.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- European Commission, 2000. EuroBarometer: Public Opinion in the European Union. Report Number 53, October 2000.
- Fingelton, B. 2001. Theoretical Economic Geography and Spatial Econometrics: Dynamic Perspectives. *Journal of Economic Geography*, Vol. 1, pp. 201-225.
- Fischer, M. and Stirböck, C. 2006. Pan-European regional income growth and club-convergence. *Annals of Regional Science*, Vol. 40, 693-721.
- FRONTEX, 2008. *General report 2008*. European agency for the management of operational cooperation at the external borders of the Member States of the European Union.
- FRONTEX, 2009. *General report 2009*. European agency for the management of operational cooperation at the external borders of the Member States of the European Union.
- Hellenic Migration Policy Institute, 2004. *Statistical data on immigrants in Greece: an analytic study of available data and recommendations for conformity with European Union standards*.
- International Labor Organization, 2002. Migrant workers, Labor education 2002/4 No. 129.
- International Labor Organization, 2004. Towards a fair deal for migrant workers in the global economy. International Labor Conference, 92nd Session, Report VI, Geneva.
- Jandl, M., D. Iglicka, and K. Vogel. 2008. Report on methodological issues. CLANDESTINO research project, European Commission.
- Karydes, V. 1996. Migrant criminality in Greece. Issues of theory and anti-criminal policy. Athens: Papazisis (in Greek).
- Kappa Research, 1996. Conclusions of two parallel studies. Athens: Athens Work Center, 1996 (in Greek).
- Kasimis, C. and Kasimi, C., 2004. *Greece: A History of Migration*. Migration Policy Institute.
- Kassimati, K. 1998. Pontic Greek immigrants and social exclusion. In K. Kassimati. (Ed.) *Social exclusion: the Greek experience*, pp. 275-307. Athens: Gutenberg (in Greek)
- Kaya, I. 2008. Undocumented Migration. Counting the Uncountable. Data and Trends across Europe. Country report Turkey. CLANDESTINO research project, European commission.
- Kontis, A. et al, (2006). *The economic impact of immigrants' employment on Greek gross domestic product during the last decade*. University of Athens, laboratory for the study of immigration and diaspora research project, December 2006. Retrieved from <http://www.imepo.gr> (in Greek).
- Koser, K. and F. Laczko. 2010. World Migration Report 2010. The Future of Migration: Building Capacities for Change. IOM World Migration Report Series, Geneva: International Organization for Migration
- Lianos, T. 2003. *Contemporary migration to Greece: economic aspects*. Athens: Center of Economic Studies and Planning (in Greek).
- Lianos, T., et al, 2008. *Estimate of the illegal immigrant population in Greece: program for financial and technical assistance to third countries in the areas of migration and asylum*. Athens: Hellenic migration policy institute.
- Martin, R. 2001. EMU versus the Regions? Regional Convergence and Divergence in Euroland. *Journal of Economic Geography*, Vol. 1, pp. 51-80.
- Maroukis, T. 2009. Undocumented Migration. Counting the Uncountable. Data and Trends across Europe. Country report Greece. CLANDESTINO research project, European commission.
- Maurseth, P. 2001. Convergence, Geography and Technology. *Structural Change and Economic Dynamics*, Vol. 12, pp. 247-276.
- McDonough, P., et al, 2008. *Sharing responsibility for refugee protection in Europe: Dublin reconsidered*. European Council on Refugees and Exiles. March 2008
- Okolski, M. 1997. Incomplete Migration - a New Form of Mobility in Central and Eastern Europe: the Case of Ukrainian Migrants. Paper presented at Pultusk Conference, Poland, 11-13 December 1997.
- OECD, 2009. *International migration outlook. SOPEMI 2009 Special Focus: managing labor migration beyond the crisis*. France, Paris: OECD Publishing.
- OECD, 2010. *International migration outlook. SOPEMI 2010*. France, Paris: OECD Publishing.
- Pouliakas, K. et al, 2009. Modelling the Effects of Immigration on Regional Economic Performance and the Wage Distribution: A CGE Analysis of Three EU Regions. *Institute for the Study of Labor Discussion Paper No.4648. December 2009*.
- Public Issue, 2008. Research on immigration. March 2008 (in Greek). Retrieved from <http://www.publicissue.gr/category/pi/surveys/society/immigrants/>
- Public Issue, 2009. Greek citizens' attitude towards immigration. June 2009 (in Greek). Retrieved from <http://www.publicissue.gr/category/pi/surveys/society/immigrants/>
- Public Issue, 2010. Greeks towards immigration. Attitudes towards immigration and towards the new legislative framework. January 2010 (in Greek). Retrieved from <http://www.publicissue.gr/category/pi/surveys/society/immigrants/>

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Putnam, R.D. 2007. E Pluribus Unum: diversity and community in the twenty-first century, the 2006 Johan Skytte Prize Lecture. *Scandinavian Political Studies*, 30(2):137-174.
- Ratha, D. and Shaw, W. 2007. South-South Migration and Remittances. *World Bank working paper No. 102*
- Ratha, D., Mohapatra, S and Xu, Z., 2008. Outlook for Remittance Flows 2008 - 2010. Migration and Development Brief, No. 8. Migration and Remittances Team, Development Prospects Group. The World Bank.
- Ratha, D., S.Mohapatra, and A.Silwal. (eds). 2011. Migration and Remittances Factbook 2011. Second edition. Washington: The World Bank.
- Rey, S. and Montouri, B. 1999. US Regional Income Convergence: A Spatial Econometric Perspective. *Regional Studies*, Vol. 33, pp. 143-156.
- Reyneri, E. 2001. *Migrants' involvement in irregular employment in the Mediterranean countries of the European Union*. International Migration Papers, ILO: Geneva.
- Roberts, M. 2004. The Growth Performance of the GB Counties: Some New Empirical Evidence for 1977-1993. *Regional Studies*, Vol. 38, pp. 149-165.
- Salt, J. 2000. Current Trends in International Migration in Europe, CDMG 31, Council of Europe, November 2000.
- Sarris, A.H. and Zografakis St. 1999. A Computable General Equilibrium Assessment of the Impact of Illegal Immigration on the Greek Economy. *Journal of Population Economics*, Vol. 12, pp 155-182.
- Siar, S., ed. 2008. Migration in Greece: A Country Profile. Geneva: International Organization for Migration.
- Siriopoulos C. and Asteriou, D. 1998. Testing for Convergence across the Greek Regions. *Regional Studies*, Vol. 32, pp. 537-546.
- Speckhard, D. 2009, December 04. Greece: New government tackles migration and asylum issues. *Classified report N° E.O. 12958*. Retrieved from <http://www.thepressproject.gr/cablegate/details.php?id=13058>
- Tselios, V. 2009. Growth and convergence in income per-capita and income inequality in the regions of the EU. *Spatial Economic Analysis*, Vol. 4, 343-370.
- Tsionas, E. 2002. Another Look at Regional Convergence in Greece. *Regional Studies*, 36, pp. 603-609.
- Venturini, A. 2004. Postwar migration in southern Europe 1950-2000 an economic analysis. Cambridge, MA: Cambridge University Press.
- V-Project Research Consulting.1999. Public Opinion in Greece. Athens: Livanis, (in Greek).
- V-Project Research Consulting, 2006. Attitudes and perceptions towards immigrants. A review of international and national theoretical and empirical literature. November 2006 (in Greek).
- Vulgaris, G. et al. 1995. The perception and confrontation of the 'other' in contemporary Greece. Empirical research findings. *Greek Review of Political Science* 5, pp. 81-100 (in Greek).
- Zorlu, A. and C. Mulder. 2007. Initial and subsequent location choices of immigrants to the Netherlands, Institute for the Study of Labor Discussion Paper No. 3036.

# INTEGRATING WEB 2.0 IN THE E-LEARNING PROCESS

Logica Banica<sup>1</sup>, Viorel Paun<sup>2</sup> and Liviu Cristian Stefan<sup>3</sup>

<sup>1</sup>University of Pitesti, Faculty of Economics, Republicii Street, no.71, Pitesti, Romania, olga.banica@upit.ro

<sup>2</sup>University of Pitesti, Faculty of Mathematics and Informatics, Tg.Vale, no.1, Pitesti, Romania viorel.paun@upit.ro

<sup>3</sup>University of Pitesti, Faculty of Mathematics and Informatics, Tg.Vale, no.1, Pitesti, Romania, cristi.stefan@upit.ro

## ABSTRACT

In the last years we have witness a whole new orientation on teenagers' life which is also reflected in their education: a step-by-step isolation from the real world and a powerful socialization in the newly-created virtual worlds.

In this paper we present a range of arguments in favor of integrating social software tools within academic e-learning systems and to emphasize the advantages of socialization forms on student's education. Social software includes several technologies, such as: social networking sites, weblogs, wikis, RSS feeds (Really Simple Syndication) and social bookmarking. It's based on Web 2.0, a term associated with web applications that allows interactive information sharing, interoperability, user-centered design. The rigorous academic style of learning systems can greatly benefit from social software tools to have a better impact on the student. As educators, we would like to be less boring, much more flexible and open, and to have a better communication with our students. For this purpose, we tried to include the social software technologies in our classes, to achieve a deeper implication of the students in learning activities, to share knowledge, ideas and thoughts.

In respect of the truth, it would be very misleading to define the social software as the best practice for use in higher education, but we insist on the idea of including its tools in the learning systems in order to create a good relationship between educator and learner.

There are open-source web-based applications that include such technologies, like Claroline, MIT .LRN, Dokeos, ILIAS and, of course, Moodle. In our case study we will focus on IBM® Workplace Collaborative Learning™ (WCL), implemented at our university with the help of UE funds, it is a portal-based learning solution that allows fully localized course and classroom management, online and off-line course planning, it is SCORM compliant and integrates the power of Sametime collaboration suite (live chat, blogs and wikis) along with audio and video conferencing.

The pedagogical effectiveness is a research object for scientists, and a target for policy makers, but teachers have their primary concern: will work? This question does not only refer to the fact that the software is easy to install and to use, and that it is free, but also to questions such as: Will work with my students?

A quasi-experiment was conducted using WCL compared with social software to prepare lessons during a semester, to study the learning effect according to the achievement, motivation, and interaction. The results were positive in favor of WCL and also revealed some issues for future research.

In the final section of this paper and based on the foregoing, we propose to continue that learning method using WCL tools, by enlarging the interactivity teacher-learners, without affecting the quality of student education.

## KEYWORDS

E-learning, collaborative software, Web 2.0.

## JEL CLASSIFICATION CODES

I23, A23, L86

## 1. INTRODUCTION

In the last years we have witness a whole new orientation on teenagers' life which is also reflected in their education: a step-by-step isolation from the real world and a powerful socialization in the newly-created virtual worlds.

In this paper we try to define this migration and to emphasize the advantages of socialization forms on student's education.

Social software includes several technologies, such as: social networking sites, weblogs, wikis, RSS feeds (Really Simple Syndication) and social bookmarking. It's based on Web 2.0, a term associated with web applications that allows interactive information sharing, interoperability, user-centred design. The rigorous academic style of learning systems is necessary to be completed with social software tools to have a better impact on the student.

It's obvious that wikis, social sites and blogs have penetrated in higher education, but it seems they have not been used to their full potential or in the right direction for e-learning.

As teachers, we would like to be less boring, much more flexible and open and to have a better communication with our students. For this purpose, we tried to include the collaborative software technologies in our courses, to achieve a deeper implication of the students in learning activities, to share knowledge, ideas and thoughts.

In respect of truth, it would be very misleading to define the social software as the best practice used in higher education, but we insist on idea to include its tools in learning systems, in order to create a good relationship between educator and learner.

The term „social software” is used in many different contexts, and the different technologies covered by the term are not developed for educational purposes. The concept of educational social software was introduced by Terry Anderson (Anderson et al., 2005) within a context of distance education as *networked tools that support and encourage individuals to learn together while retaining individual control over their time, space, presence, activity, identity and relationship*.

Social software is a concept very difficult to define not only because it includes a wide range of different technologies, but the social aspect of the application often emerges from a combined use of these technologies. The concept of *social networking site* describes a global phenomenon, that can be defined as web-based services that allow individuals to build *a public profile within a bounded system*, articulate a list of other users with whom they share a connection, and view and traverse their list of connections and those made by others within the system (Boyd & Ellison, 2007).

This paper will discuss two ways to solve the problem of integrating the collaborative software in e-learning process and will offer the results of an opinion poll done with the help of 60 students.

The first possibility refers to the teachers that cooperate using social networks for educators and realize the interaction with their students by weblogs. Social networking sites such as *Facebook*, *MySpace*, or *Twitter* may be considered tools of the e-learning system because they facilitate the transparency and flexibility of student works, development of ideas and sharing of thoughts, provided they are properly guided by a teacher.

We consider there is another approach which is much more adequate to the academic world and namely the integration of social software instruments in the e-learning platform, which makes both teachers and students more responsible.

## **2. WEB 2.0 – BASIS OF E-LEARNING 2.0**

The social networking sites use the concept of Web 2.0, which is commonly associated with web applications that facilitate interactive information sharing, interoperability, user-centered design, and collaboration on the World Wide Web (Boyd & Ellison, 2007).

A Web 2.0 site allows its users *to interact with other users or to change website content*, in contrast to non-interactive websites where users are limited to the passive viewing of information that is provided to them. Although the term suggests a new version of the World Wide Web, it does not refer to an update of any technical specifications, but rather to cumulative changes concerning the ways of using Web 1.0 for both categories: software developers and end-users.

In education, there is a very similar context: e-learning 1.0, based on the teachers who create courses within a restricted access platform, providing access to authorized users on the educational content for a limited time and not allowing them to edit this content or to interact actively in creating them.

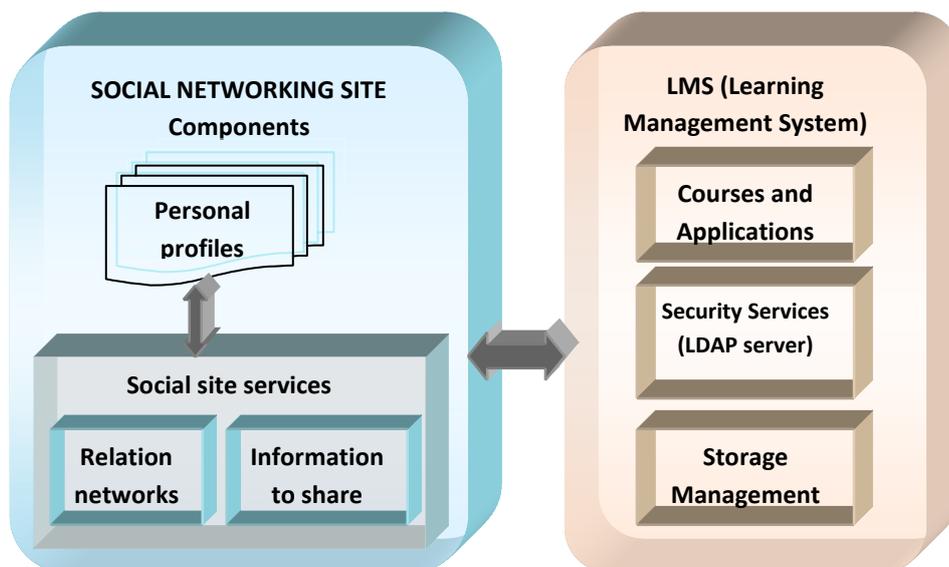
E-learning 1.0 is developed by the new web tools. E-learning 2.0 in fact is made with many pieces generated by all users: all these fragments and every single part are used, reused and shared to the communities without limitation (Lattanzio & Mascella, 2010).

Thus, the participation in creating and managing knowledge is bidirectional, eliminating the default roles and enriching expression skills and knowledge that come from web users.

E-learning 2.0, or web learning, use a range of tools to implement education methodology: whiteboards, forums, wikis, podcasts, blogs and social bookmarkings. These tools encourage highly pedagogical interaction between students and teachers for creating an open common learning environment.

Figure 1 presents the architecture of the Learning Management System, which is Web 1.0 based, having integrated Social Networking services, Web 2.0 based.

Figure 1. The architecture of the Learning Management System with Social Networking Services



Other examples of Web 2.0 include web-based communities, hosted services, web applications or video-sharing sites (Dalsgaard, C., 2006).

In this context it's essential for students, a major segment of social software users, to formulate and find answers to a major question: *what is the educational potential of the social software technologies within an university Learning Management System?*

To find answers, we started an experiment with two starting points: first, we consider a student sample that changes academic communication and adopt software collaborative tools and second, another group that studies using e-learning platform Web 2.0 based.

### 3. ADVANTAGES AND DRAWBACKS OF USING SOCIAL SOFTWARE IN UNIVERSITY ENVIRONMENT

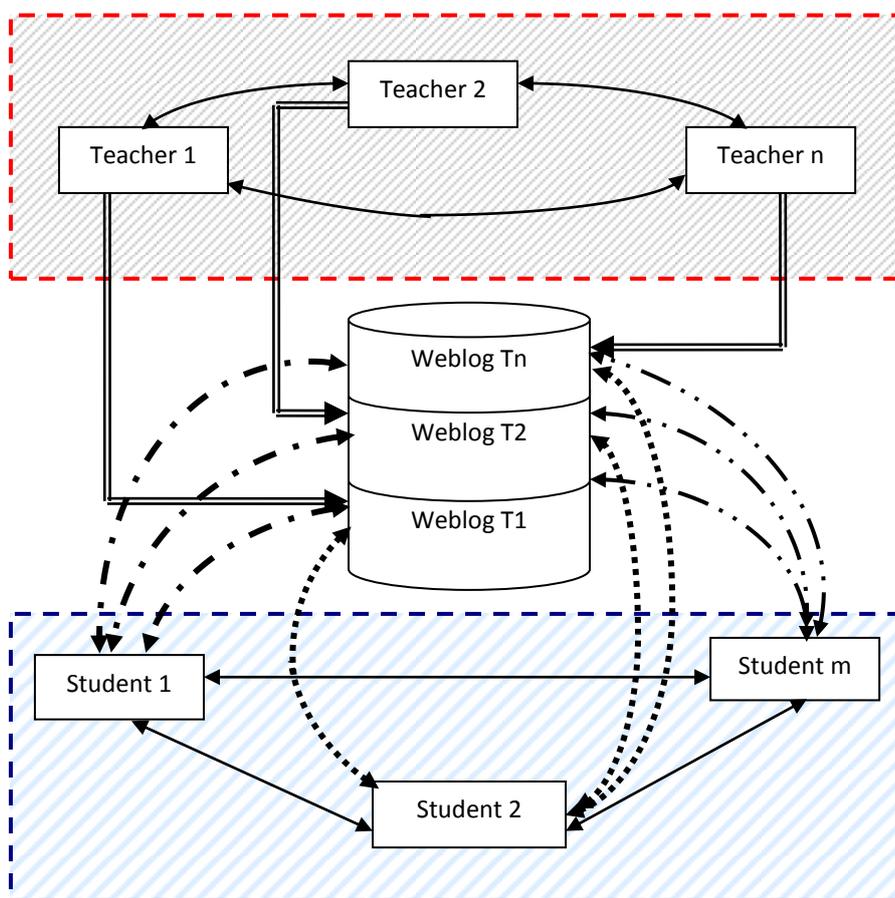
In terms of Web 2.0's social impact, critics such as Andrew Keen argue that Web 2.0 (Keen, 2007) has created a cult of digital narcissism and amateurism, which undermines the notion of expertise *by allowing anybody, anywhere to share* – and place undue value upon – *their own opinions about any subject* and post any kind of content regardless of their particular talents, knowledgeability. The core assumption of Web 2.0, that all opinions and user-generated content are equally valuable and relevant, is misguided and is instead *"creating an endless digital forest of mediocrity: uninformed political commentary, unseemly home videos, embarrassingly amateurish music, unreadable poems, essays and novels"*.

Beyond the criticism, the extension of SNSs is enough important and we cannot ignore their role in the young people's life. It is a new type of education which allows the educators to approach students and remove part of the negative effects of social sites that dominate the market.

Thus, *Facebook* increased its dominance of the online social networking market, *MySpace* is the second-most popular SNS and *Twitter* recorded a considerable growth and it is ranked on third position.

First approach supposes that the teacher network is separate from student network and they „talk” by weblogs. A model of the *interactivity teacher-learner* using social software methods is presented in figure 2.

Figure 2. The model of the interactivity teacher-learner



In e-learning process we defined a model that includes the collaborative activities to the traditional method. At the moment this may be considered a research method because it is experimented on groups of students that accepted the cooperation.

That scheme means:

1. *Teachers may cooperate using several social networks for educators:*

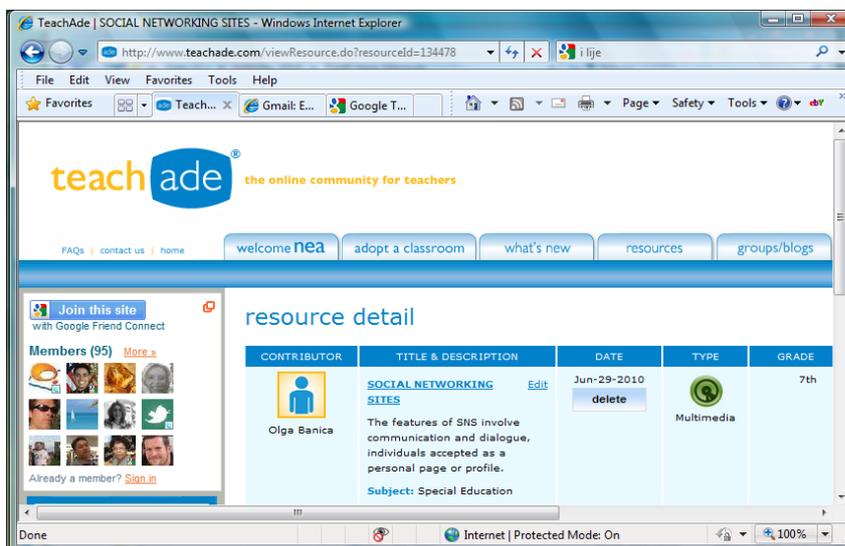
- It's important to maintain a professional relationship with students, so our recommendations is not to accept students as “friends” of teachers by using profiles on SNS;

There are several social networks for educators where they may share their ideas, lessons and best practices without direct interaction with students, such as:

- The Apple - where teachers meet and learn;
- Classroom 2.0 – the popular social networking site for educators;
- Classroom Earth - a social network for environmental education created in partnership between the Weather Channel and the National Environmental Education Foundation;
- Educate Interactive – the educational community with opportunities to connect and collaborate in order to share resources and lessons;

- TeachAde - the online community for teachers (figure 3).
2. Teachers may build their own weblogs for courses or projects:
- It is an appropriate way to develop communication with students and increase the effectiveness of education activity by using weblogs;

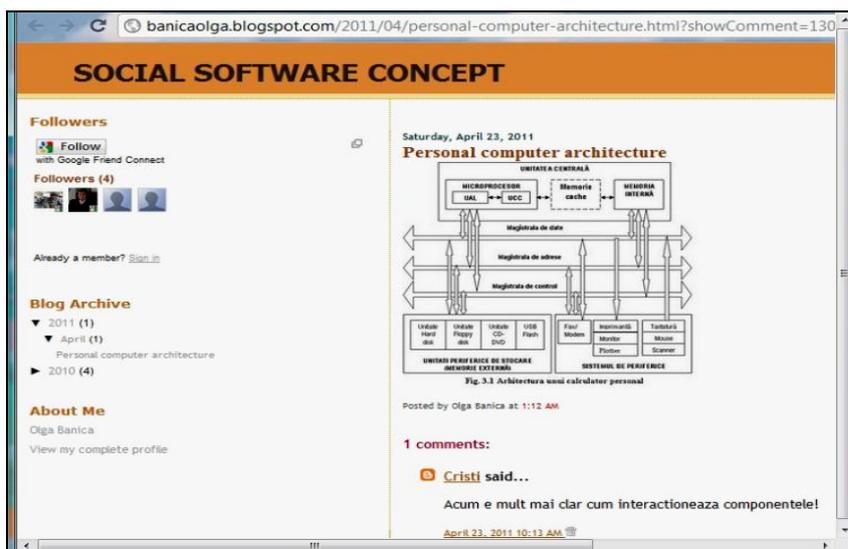
Figure 3. A teacher profile on TeachAde Social Network



4. The interaction teacher-learner is made by comments and questions addressed on teacher weblogs:
- For educators this is the most appropriate way of dialogues;
  - The student interaction with his teacher is beneficial for his support and for surveying the evolution of his activity.

Our experiment is at the beginning, we have selected a group of 30 students and we have built teachers group on education networks. Two teachers have built their blogs (figure 4) and then they have posted the courses and the plans for seminars.

Figure 4. An example of teacher weblog with student comments



Now we collect their comments and we wait their ideas about the subject of social networking sites. Also, we are interested in the perception of this teaching method so we sent them a questionnaire about this subject. The interview results demonstrate that the most part of students choose to participate in collaborative activities, there is a significant interest in enhanced forms of interaction with teachers and other students.

The three main characteristics of social networks (personalization, socialization and transparency) are relevant for remote education. Transparency in student relations offers flexibility to education with continuous enrollment and examination. A challenge of flexible education is to get students to engage in joint work. Transparency means that students are visible to each other as potential partners and resources. Further, the starting point is the problem-oriented individual or a group working together on a common project.

To follow the outlined socio-cultural approach, an important objective is to support an individual's consciousness and awareness of activities of the others.

This can be achieved by development and use of personal tools, which first support the activities of the individual or group. It's now possible to use the personal tools as the basis of social networks.

*Students can connect to and subscribe to personal tools of other students.* The result is a different kind of transparency than in discussion forums. Whereas discussion forums and other tools for direct communication and collaboration focus on direct sharing, social networking can support students' indirect sharing of resources, thoughts, ideas, productions, writings, notes, etc. This kind of sharing can provide students with insights on the workings of other students, and, thus, give them an increased awareness of the activities of other students (Ellison et al., 2007).

So, it's obviously that the educational potential lies within developing social networks, where students share their individual or group activities.

#### **4. INTEGRATING WEB 2.0 INTO E-LEARNING 2.0**

The second approach supposes that the university has a Learning Management System based on Web 2.0.

By integrating collaborative software in the e-learning platform many inconveniences are removed, first of all because the connected users are authenticated by a security system, secondly the relationships are established by respecting the educational institution ethics and thirdly, there is an academic context which supposes knowledge, directed learning, leaving room for originality and creativity.

Success or failure of integration of social software depends largely on its implementation in the university education activity. Every implementation of learning system depends on the chosen pedagogical approach. A discussion of the educational potential of social software, and other tools, needs to be started from the point of view of an understanding and description of specific learning activities (Anderson, 2006).

Problem-based activities describe a learning process in which students are directed at solving a specific problem. Students' self-governed and problem-solving activities are considered the focal point of a learning process. With the increasing flow of and access to information, academic communication is changing. In order to have a better impact on the student, the learning experience must be active, social, contextual, engaging and student-centered.

To achieve this goal, the e-learning 2.0 system provides many advantages:

- encourages contact and cooperation among students;
- develops active learning;
- gives prompt feedback;
- emphasizes time on task activities;
- communicates student and teacher expectations;
- respects individual ideas and own chosen ways of learning.

Learning and teaching are two linked concepts that imply great changes directly related to the World Wide Web evolution and to the mutation that take place within the Information Society.

Distance learning, or distance education with the computer is no longer a novelty for some time, as evidenced by the strong standardization activities about educational contents and standards.

For this reason and for the continuing evolution of the web in many educative contexts there are developing innovative and participatory forms of e-learning that are based upon the social and

communicative software called *Web 2.0*. To distinguish the new e-learning marked by the diffusion of Web 2.0 from past form of distance learning, the ITC and academic world called this feature *E-learning 2.0*.

It's a form of distance learning through Internet, which shall disseminate the information on a *technological platform (Learning Management System)* from which the learners obtain educative contents given by the teachers and, they can approach individual and group learning activities.

Online teaching, that may be synchronous and asynchronous, and allows checking student's activities, so the teachers and the tutors benefit by this way of evaluation.

Our experiment use a portal based-learning solution implemented at our university with the help of UE funds: IBM – WCL.

**IBM® Workplace Collaborative Learning™** is a portal-based learning solution that helps organizations to manage their training programs and activities more efficiently. Users can access a personalized, online learning environment for "just-in-time" learning within the context of day-to-day work activities (<http://publib.boulder.ibm.com/infocenter>, 2010)

The learning platform is employed by a collaborative environment where students, teachers and tutors meet each other. In that digital world they exchange learning materials and develop some kind of cooperation through use of *shared whiteboards, chat and forum in a virtual classroom*.

The student, the tutor and the teacher have the principal educative roles, but they have different possibilities to access to the platform, with extensive privileges in administrating and directing the activities on the Learning Management System (for teachers and tutors). Every teacher gives to the students some learning items, which we call Learning Objects and that should ensure interactivity and interoperability in order to reduce the distance between teacher and student.

So e-learning is evolving with the World Wide Web as a whole and it's changing to a degree significant enough to become a methodology of learning, teaching and collaborative environment that involves both the learning content and the training process. The E-learning 2.0 product means every kind of digital content produced by teacher, and the training process means the managing of the teaching process from contents delivery to evaluation and also the use of essential elements of social software for online interaction, collaboration, tutorship, high flexibility and customization of learning environment.

## **5. SNS VS. E-LEARNING 2.0 IN UNIVERSITY LEARNING ENVIRONMENT**

This study adopted a quasi-experimental research method to evaluate the influence for the students of the social networking sites vs. E-learning 2.0 in the learning process.

The experiment is at the beginning and it will be conducted during 14 weeks (one semester) in two undergraduate classes of Department of E-learning in the University of Pitesti, Romania. The subject is 'Informatics' which is a mandatory course for first graders. Following subsections will detail the participants, instructional design, and evaluation tools.

Two classes with totally 60 students will participate as experimental groups, one will use the first method the social networking site Facebook, Blogspot and ADE-Teachers and the other will use only the e-learning platform WCL.

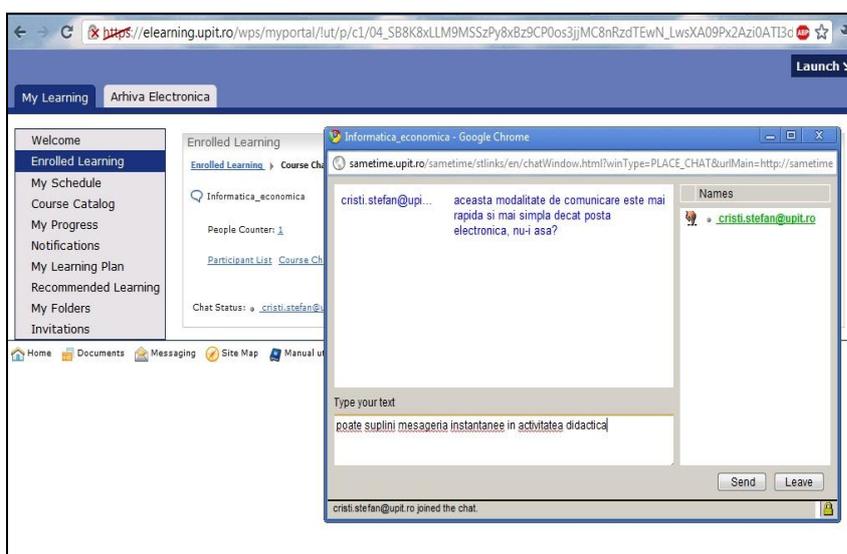
Each group will be involved in the same learning activities in this experiment: reading the assigned materials and asked to write the answers for at least three questions on paper. Teachers will evaluate the answers and will develop the interactivity with the students. Students are engaged in learning activities because they have discussion opportunities with tutors for solving the same problems in classroom (Sclater, N., 2008). After classroom learning, both the experimental groups were asked to reply the warm-up questions of each other on the Facebook and the WCL system.

Finally, the study will use the achievement test to evaluate the learning effect, built on questionnaire to survey the degree of agreement about the learning model and to assess the performance of classroom learning. All response data from students will be recorded so that we can establish correctly the learning performances for each model.

In the first week of testing we met one of the students' major problems: confidentiality of the information and discussions among participants in E-learning 2.0 variant vs. SNS Facebook, thus their chat is visible to all and the teacher, but Facebook talks are only visible for the invited friends of each student.

The main tools that WCL offers are course chat, teacher's blog and wiki. They greatly enhance the educational experience, allowing the students to interact and benefit from the experience of the group, sharing knowledge and having their questions answered. The chat allows instant feed-back, offering a simple way to ask a question while they read the course, or inform the others on their difficulties (figure 5).

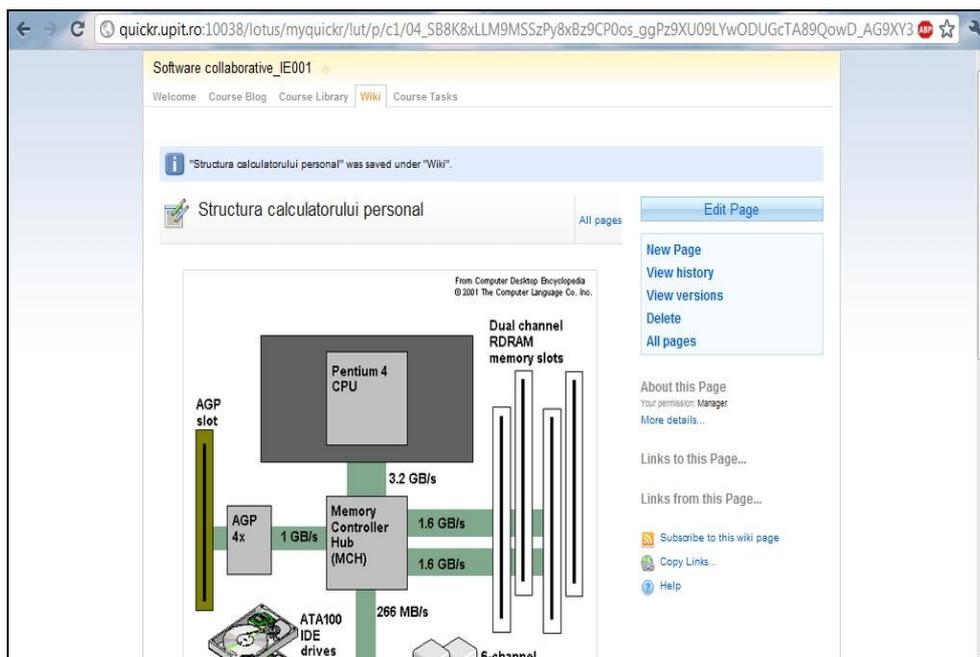
Figure 5. A course chat session



A wiki is essentially a website constructed in such a way as to allow users to change content on the site (Freire, 2008). The wiki pages are an easy-to-use resource for the main items presented in the course, giving clear definitions and examples to enrich the topics covered by the slides.

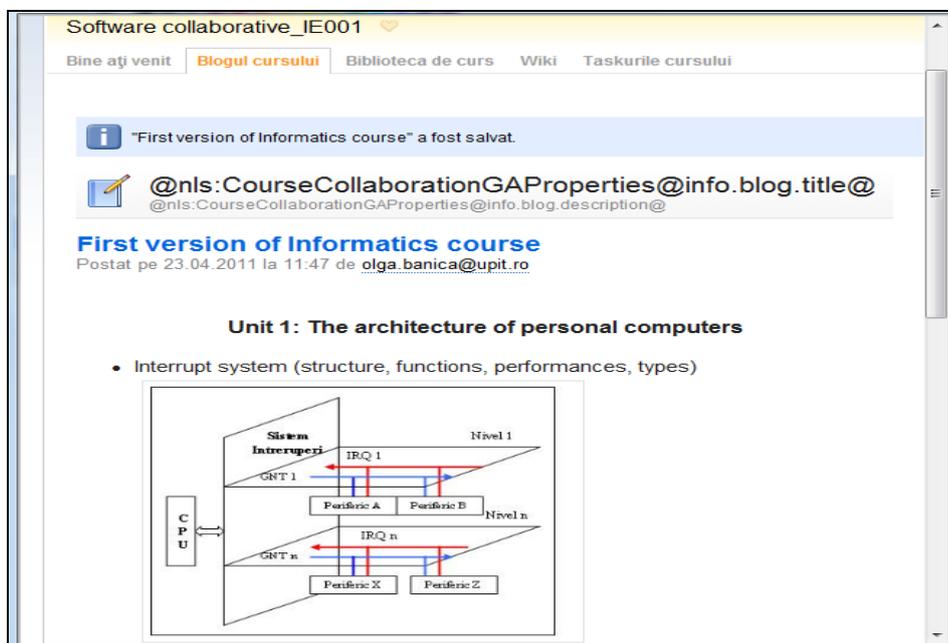
Can be revised before the exam, to have a clear view of all ideas and their meaning, and can be edited by the students, with their own content (figure 6).

Figure 6. A wiki page, explaining the architecture of a PC



The weblog is the place where the teacher can closely interact with his students, by sharing thoughts, displaying last-minute information and giving them a chance to post feed-back comments, as they advance on the learning path. This way, the process of assimilation becomes more customized and rewarding (figure 7).

Figure 7. A post on teacher's blog



It is obvious that the „non-educational” advantages are for SNS, but the educational ones, on favor of WCL. The following table represents the results obtained using two methods of learning and their perception among students.

Table1. The Results after seven weeks of the experiment start

Point of view		Using SNS in learning process			Using collaborative software on WCL platform		
		Very helpful	Helpful	Not so helpful	Very helpful	Helpful	Not so helpful
<b>Teacher</b>	Helped in their progress	14	9	8	19	5	6
	Evaluation by grades	6 – grade 10	4 – grade 7	4 – grade 5	8 – grade 10	4 – grade 7	3 – grade 5
		4 – grade 9	5 – grade 6	4 – grade 4	6 – grade 9	1 – grade 6	3 – grade 5
		4 – grade 8			5 – grade 8		
<b>Students</b>	Contribution to the learning process	17	8	5	22	5	3
	Contribution to the interaction with the teacher	12	8	10	14	10	6
	Socialization with other students	27	3	0	20	8	2

## 6. CONCLUSION

Every implementation of e-learning depends on the chosen pedagogical approach. A discussion of the educational potential of social software, and other tools, needs to be started from the point of view of an understanding and description of specific learning activities.

Problem-based activities describe a learning process in which students are directed at solving a problem. It's important for a social network approach that a student tries to solve the problem by him or herself. Students' self-governed and problem-solving activities are considered the focal point of a learning process.

In the final section of this paper and based on the foregoing, we propose to continue those learning experiences in the following 7 weeks, and repeat the experiment with a larger population and by enlarging the interactivity teacher-learner without affecting the quality of student education.

## REFERENCES

- Anderson, T., Annand, D., Wark, N., 2005. The Search for Learning Community in Learner-Paced Distance Education Programming, *Australasian Journal of Educational Technology*, Vol. 21, No. 2, pp.222-241, ISSN 1449-3098, available at <http://www.ascilite.org.au/ajet/ajet21/res/anderson.html> [last visit 10 june 2010].
- Anderson, T., 2006. Higher education evolution: Individual freedom afforded by educational social software, *Perspectives on the Future of Education in the Digital Age*, Nova Science Publishers, New York, pp. 77-90.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Boyd, D., M., Ellison, N. B., 2007. Social network sites: Definition, history, and scholarship, *Journal of Computer-Mediated Communication*, Vol. 13, No. 1, article 11, Indiana, 2007, available at <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>
- Buraga, S., 2001. *Tehnologii Web*, MatrixRom Publishing, Bucharest, 2001, pp.E1-E48.
- Dalsgaard, C., 2006. Social software: E-learning beyond learning management systems, *European Journal of Open, Distance and E-learning*, available at <http://www.elearning-reviews.org/topics/technology/communications-technology/2006-software-social/> [last visit 15 june 2010].
- Ellison, N., et al, 2007. The Benefits of Facebook “Friends:” Social Capital and College Students Use of Online Social Network Sites, *Journal of Computer-Mediated Communication*, Vol. 12, No. 4, pp. 1143-1168, available at <http://www.blackwell-synergy.com/doi/full/10.1111> [last visit 1 july 2010].
- Freire, J., 2008. Universities and Web 2.0: Institutional challenges, *eLearning Papers*, No 8, available at from <http://www.elearningpapers.eu>
- Keen, A., 2007. *The Cult of the Amateur: How today's internet is killing our culture*, Currency Doubleday Publisher, New York, 2007.
- Lattanzio, P., Mascella, R., 2010. E-learning 2.0 as reciprocal learning, 5th Global Conference Inter-Disciplinary Net, Salzburg, Austria, available at <http://www.inter-disciplinary.net/critical-issues/cyber/cybercultures/project-archives/>
- Sclater, N., 2008. Web 2.0, Personal Learning Environments and the Future of Learning Management Systems, *Educause Center for Applied Research, Research Bulletin*, Boulder, Colorado, Vol. 2008, No. 13.  
[http://publib.boulder.ibm.com/infocenter/wclhelp/v2r7m0/index.jsp?topic=/com.ibm.help.learning.doc/wcl\\_po\\_productoverview\\_c.html](http://publib.boulder.ibm.com/infocenter/wclhelp/v2r7m0/index.jsp?topic=/com.ibm.help.learning.doc/wcl_po_productoverview_c.html)

## TRAVEL 2.0 AND HUNGARIAN TURISM

Gergely Ráthonyi<sup>1</sup> and László Várallyai<sup>2</sup>

<sup>1</sup>University of Debrecen, Centre for Agricultural and Applied Economic Sciences, Faculty of Applied Economics and Rural Development, Institute of Economic Analytical Methodology and Applied Informatics,  
H-4032 Debrecen, Böszörményi út 138.  
Email:lrathonyi@agr.unideb.hu

<sup>2</sup>University of Debrecen, Centre for Agricultural and Applied Economic Sciences, Faculty of Applied Economics and Rural Development, Institute of Economic Analytical Methodology and Applied Informatics  
H-4032 Debrecen, Böszörményi út 138.  
Email:viral@agr.unideb.hu

### ABSTRACT

Despite the financial crisis, tourism is one of the most important and profitable sectors of the Hungarian economy. In rural areas it is often the only successful economic activity. Tourism has got an important role in employment (400 000 jobs indirectly) and contribution to the GDP (7% indirectly). The government of Hungary marks out an emphasized role for the development of the tourism in the economic increase. One of the major plan is to increase the places of work more than 300 000 jobs.

The development of Information and Communication Technologies (ICTs) and the expansion of the Internet penetration have changed dramatically in the past few decades. Platform of tourism increasingly get to the Internet nowadays. Internet has fundamentally altered the tourism related information search and destination selection process. In consequence of these changes new technologies have been adopted into the tourism industry (hotel information systems, Geographical Information Systems (GIS), Internet, web technology, mobile technology) and this trend is likely to continue into the future. In recent years social media websites and searching have become an increasingly dominant mode in travellers' use of Internet. Due to the role of information in tourism it is critical to understand changes in technologies and consumers behaviour that impact the distribution and accessibility of travel-related information.

The aim of our study is to show a brief summary of the significance of the Hungarian – especially of the North Plane Region – tourism with the help of the most important statistic indices. Next we also show data from the Internet penetration of the country. In addition to this in our study we summarize the most important technological adoptions – especially web.2.0 – which will be part of the future research of the Ph.D. research work. In this part of our study we try to show the importance and use of ICTs in tourism with some concrete examples.

### KEYWORDS

Hungarian tourism, ICTs, Internet, Web 2.0

### JEL CLASSIFICATION CODES

L86

## 1. INTRODUCTION

The Hungarian travel and tourism industry suffered from the global financial crisis in 2009, when the productivity of the Hungarian economy affected disposable income levels and resulted sharp decline in spending on leisure and recreation services by consumers. However, in the past years– except the drop – tourism has become one of the most important sectors in Hungary.

Travel journalism and traditional media were the key sources for consumers during the travel-related information process. Widespread of Internet and the evolution of the technology – web 2.0 – have changed

the behaviour of tourism consumer considerably. Customers seek travel-related information and make online purchases (online air-ticket bookings, online room reservations etc.) themselves instead of relying on professional travel agencies to assume this process for them. Developed Information and Communication Technologies such as Web technology has now become more easily accessible and the costumers can create their own content by using blogs, social networking sites, wikis and map mashups or video and photo sharing sites.

Widespread of business use of Geographical Information System (furthermore GIS) is designed to support sales activities. There are a lot of business scopes such as insurance, transportation, telecommunications, finance, marketing, broadcasting, service activities, mail services, health care, banks, restaurants and supermarket chains. With the development of a complex GIS, on the one hand we may grant an overall service for the tourists, on the other hand we may give information which support business decision for the institute which provide tourism services. In this paper we show a concrete example of a GIS application how can improve the quality of service for tourists.

## 2. HUNGARIAN TOURISM

According to World Travel and Tourism Councils' prediction (WTTC) travel and tourism sector's contribution to the GDP will be 9.6% in 2011 and the contribution to the labour market will be 260 million people (8.4% of the whole employment) in the same year (WTTC, 2011). In Hungary this sector contribution to the GDP will 11% and the contribution to the labour market will be 430 000 according to the WTTC's prediction for 2011. By available data of Hungarian Central Statistical Office, direct contribution of tourism sector to the GDP was almost 6% and the contribution to the labour market was 8.4% of the whole population in 2007 as we can see in the first figure.

Figure 1.: Direct economy impact of tourism in Hungary

The Economic Impact of Tourism in Hungary*				
	2005		2007	
	billion HUF	%	billion HUF	%
GDP	990	5.4	1,322	5.9
	000s	%	000s	%
Employment	303	7.9	323	8.4

\*Direct impact of tourism.

Source: HCSO preliminary data

On the following figure (figure 2.) we can see the most important data in connection with the tourism industry of our country. This figure contains a decisive index of successfulness in tourism which is the number of tourist arrivals. This figure clearly shows us – tourist arrivals, financial balance of the sector - that tourism plays a vitally important role in Hungary.

Figure 2.: Most important data on Hungarian tourism

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Main Data on Hungarian Tourism			
	2009	2010	2010/2009
<b>Visitors at Frontiers*</b>			
Incoming (000s)	32,017	31,131	-2.8%
Outgoing (000s)	13,189	12,465	-5.5%
<b>Arrivals and Guest Nights at Commercial Accommodation</b>			
<b>Domestic</b>			
Arrivals (000s)	3,923	3,918	-0.5%
Guest nights (000s)	9,490	9,672	+1.6%
Average length of stay (nights)	2.4	2.5	+2.1%
<b>International</b>			
Arrivals (000s)	3,228	3,386	+4.8%
Guest nights (000s)	9,220	9,358	+1.4%
Average length of stay (nights)	2.9	2.8	-3.3%
<b>Total</b>			
Arrivals (000s)	7,151	7,304	+1.9%
Guest nights (000s)	18,710	19,031	+1.5%
Average length of stay (nights)	2.6	2.6	-0.4%
<b>Commercial Accommodation Gross Revenues</b>			
Domestic accomm. fee (million HUF)	51,671	48,927	-5.5%
International accomm. fee (million HUF)	77,414	78,573	+1.5%
Food & beverage and other revenue (million HUF)	95,768	106,784	+11.5%
Total (million HUF)	224,853	234,284	+4.0%
<b>Social Tourism</b>			
Holiday vouchers (million HUF)	48,146	46,171	-4.1%
Number of voucher holders (000s)	2,000	1,600	-20.0%
Commercial accommodation revenues (million HUF)	25,401	28,921	+13.9%
<b>Balance of Tourism*</b>			
Receipts (million EUR)	3,162	3,170	+0.3%
Expenditure (million EUR)	2,060	1,738	-15.6%
Balance (million EUR)	1,102	1,432	+29.9%

\*January–September.

Sources: HCSO preliminary data, CBH, HNRF

Our Region, the North – Plane Region has the third place with 10.4% share in the gradation of the region, which is eminent especially for that this region involves the most high and dry areas in the country. Other regions contributed with a bit less rate to the gross added value in 2007. In 2009 the utilization of quarters in the region was 20% that is the third place in the gradation of all the regions. There is some great enticement for the tourists in the two regions that have forerun Hajdú – Bihar: in Middle – Hungary (34%) the capital and in West – Transdanubium (28%) Lake Balaton. (HCSO, 2010b) In the last years the rate of home and foreign guests per quarters has not changed significantly in the region. In 2009 56% of foreign guests and 44% of home guests loved to choose hotels with higher standards. The rate of home guests was between 63-85% while the rate of foreign guests was between 8-36% at quarters with lower standards like pensions, tourist hostels and camp-sites. (HCSO, 2010c) In 2009 this region had the 4th best (8%) in foreign circulation in the gradation of regions. Our region is forerun by the economically more developed region of Middle – Hungary (43%) and region of West – Transdanubium (25%). Since 2004 guest circulation has grown by 4% in our region. (HCSO, 2010a) The most foreign tourists have visited Hajdú – Bihar County while Szabolcs – Szatmár – Bereg County has become only the second among counties. It is an amazing result as this county borders on three countries so most foreign tourists guests are expected here. However, this result is possibly due to the popular spa and medicinal bath in Debrecen and Hajdúszoboszló which are the enticement of Hajdú – Bihar County. 6.8% of foreign guests have come from the member states of the European Union but visitors also arrived from Africa, Australia and America to the Region. After the investments of service of quarters and hospitality in the national economy sector had boomed in previous years in 2009 the degree of investments was 31.2% less then in the previous year while the whole national economy had only 8.6% decline. It also means that the rate of investments in this sector had fallen back to 0.9% which was the level of 2004. Since the beginning of this decade most of the investments have been in connection with developing wellness and medicinal hotels and it can be seen in segment guest circulation and flare of capacity. (HCSO, 2010a)

### 3. INTERNET PENETRATION

The usage of internet has a direct impact on the participants of tourism, with regards to passengers. The most important impact which should be emphasized is the possibility of obtaining information. Consumers are using Internet to get accurate information and plan their trip and travel, so that is why information is the key element in the tourism industry (Buhalis and Law, 2008; Shanker, 2008).

Currently, there are 2 billion Internet users in the world which is three times greater than in 2000. In Europe (EU-27) Internet access is about 60 % of the whole population that is naturally meant to be an average (Internet World Stats, 2009). According to recent findings of the NRC Informationline Company, computer and Internet access at Hungarians' home have produced significant growth within the last five years – 55% of the households has computer and 51% of the households is connected to the Internet in Hungary in 2010. In Hungary the Internet penetration is 62% in 2010 (Internet World Stats, 2010).

### 4. ICTS IN TORISM

#### 4.1. Social media

Customers search travel-related information and make online purchases (online air-ticket bookings, online room reservations etc.) themselves instead of asking travel agencies to take on this process for them. Traditional forms of media are not anymore effective, because consumer has changed. The new consumer is more sophisticated so he needs and requires more specialized media where he can take information from. This new type of media is called Social Media (Buhalis and Law, 2008; Shanker, 2008).

In my opinion, Kaplan and Haenlein (2010) give an excellent brief definition for this term: social media as a group of Internet-based applications that build on the concept of Web 2.0, which allows the creation and exchange of user-created content (video clips, photos, texts etc.). Web 2.0 is providing consumers with countless tools to find, and design, not just the cheapest trip, but the perfect trip. Before dealing with these media we should clarify the concept of Web 2.0. According to the Wikipedia, Web 2.0 allows users to interact and collaborate with each other in a social media dialogue as creators of user-generated content in a virtual community. Web 2.0 describes the second generation of web-based services which are interactive, context-rich, and easy to use (O'Reilly, 2007).

Travel 2.0 is a term that represents the concept of Web 2.0 that applies the world's largest industry: travel and tourism. Tourism related topics are among the most popular issues in this environment, for instance, travel plans, destinations and hotels reviews, tourist guides, and suggestions for restaurants or exhibitions.

The following figure shows the most important platforms of social media, which are encourage users and travellers to post and share their travel experiences, comments, opinions to serve as a source of information for other users (Xiang and Gretzel, 2009).

Figure 3.: Key social media platforms



From this figure, we try to highlighted, described and analysed the main platforms (blogs, social networks, video sharing and photo sharing) which are the major sources of information for tourists.

#### **4.1.1. Blogs**

Web log, blog or blogging is a type of website/platform formed by entries or posts, which are made in journal style which often included photos or link and displayed in reverse chronological order. A typical blog combines text, images, links to other blogs, Web pages, and media related to its topic. For example, very well known blogging platforms for tourists are the web pages of Igougo and Tripadvisor (Camilleri et al., 2007; Nagy, 2010).

Forums are those platforms where users can write short messages about a topic of interest and wait for other user's answers.

Gretzel and Yoo (2008) have shown that "reviews play an important role in the trip planning process for those who actively read them. They provide ideas, make decisions easier, add fun to the planning process and increase confidence by reducing risk making it easier to image what places will be like". Thereafter all the platforms where tourists can express themselves, they will be used by other tourists to collect information from in order to get ideas and reduce the complexity of the decisions making process (Xiang and Gretzel, 2009).

As blogs are seen as a personal communication channel, visitors tend to see them as a more neutral source of information than corporate Web sites. Consider the difference of asking a friend to recommend a trip to Hungary, to ringing the Hilton in Budapest and asking for their opinion. Examining the other side by tracking what is discussed in blogs, companies can keep up with the public's opinions of their brand and that of competitors.

Universal McCann, 2010 latest "The Socialisation of Brands" survey has revealed changes in the way that people are using the Internet to create and share information. The usage of different blogs in almost every examined area – especially tourism – has increased steadily from 2008 to 2010. Nowadays approximately every third of the people read travel related blogs for getting trustworthy information from fellow travellers.

#### **4.1.2. Social network sites**

According to Boyd and Ellison (2007) drafting, social network sites are those platforms which provide the users to construct a public or semi public profile within a community system. These platforms allow users to articulate a list of users to whom they share any connection and establish or maintain connections with others. Another interpretation of social networking sites according to Buhalis (2010): a virtual area where Internet users can establish their own profile, or home page, on which they can write blogs, post pictures, videos and share their ideas.

One of the most important social networking sites in Hungary is Facebook. This site has over 500 million active users worldwide and more than 3 million users in Hungary where almost half of the members of the community are in the age between 13 and 25. (<http://www.socialbakers.com/facebook-statistics/hungary>)

#### **4.1.3. Video and photo sharing site**

Video or photo sharing platforms allow users to upload video or photo files, store them and share them with other users. Examples of video sharing platforms are the worldwide known Youtube; and photo sharing: Picasa, Fotolog, Flickr.

According to an interesting study which revealed that 90% of pleasure travellers take photographs and that 45% of them posted their photographs online (Lo et al., 2011).

Kiraly (2011) refers to a study made by Skyscannar which examined that how social network sites impact travelling attitudes. The result was interesting which claims that half of the participants select their next holiday destination by their friends' shared photographs. Furthermore, this study also reveals that 88% of the users always look at their friend's holiday pictures.

Murphy et al., (2010) examined the online sharing attitudes in general (video, text, photo etc.). 40-50% of the respondents frequently share texts and pictures while only 3% post videos. Respondents are more likely to share content on their own social media website than on a media sharing or review site.

There are several numbers of video clips available online and for travel and tourism operators, online video provides the ability to create a depth of engagement that, until now, has been restricted to television travel shows.

All of these Social Media platforms offer opportunities for users to express themselves upload, interact and share information with other users. They constitute an immense source of information where users can

gather information or even participate. Thereafter all the platforms where tourists can express themselves, they will be used by other tourists to gather for information from in order to take ideas, reduce the complexity of decisions and make the process less tedious.

## **4.2. Geographical Information System in tourism**

GIS integrates hardware, software, and data for capturing, managing, analyzing, and displaying all forms of geographically referenced information. GIS helps us to view, understand, question, interpret, and visualize data in many ways that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts. GIS is a rapidly developing, steadily changing scope of science looking back on a very short past (<http://www.gis.com/content/what-gis>).

There is a new field of GIS applications, that will be more and more significant in Hungary, that is business application of GIS – among the many fields of application mention must be made of insurance, transport, telecommunication, finance, marketing, broadcast, service activities, health care, developing of banks, fast food restaurants, chains of stores, and last but not least the potential of GIS applications in tourism industry. In the next paragraph we can see a case study of how GIS can serve tourists.

### **4.2.1. Case study of using GIS in tourism**

On the basis of an American application I show an example how tourists can serve by a GIS application. I introduce a GIS-based Spatial Decision Support System application which assists the tourists to discover the treasures of a national park. This is a useful tool to facilitate tourists' activity planning. The application has got a user-friendly interface, which guides the users through the application in an intuitive and informative manner. GIS knowledge needn't required to use this application.

When users start the application, they will find some dialog windows which help them to choose the most appropriate tour. A set of terms is presented in this dialog window for users to choose. For example the first term offers to the users a choice of the mode of travel among the three options of foot, horse, or car. For instance, if car is selected, only roads open for automobile traffic will be considered. Another possibility that the users can choose is the difficulty level of the trip such as easy, medium, hard, or strenuous and the tourists can also specify how many kilometres they would like to travel round trip. The decision support analysis in the application will be performed only on those trails that meet these criteria. After that the user can select the season when they are visiting the national park. This is very important part of the decision because some roads and trails are not accessible in the winter months.

There are several different factors for the user to rank. There are three possible importance rankings for all factors, such as 'Low', 'Medium' and 'High'. The factors are broken down into categories. For example, two of the categories are the points of interest and the park facilities category. Points of interest contains factors like waterfalls, lookouts, historical structures, and natural sites while park facilities includes factors that may be in the centre of interest if the user plans to have an extended stay or picnic at a campground, or visit a ranger station while they are in the park.

After tourists decide what they want to do, the analysis module evaluates the choices. The importance rankings of various factors are translated into numerical weights assigned to the factors. A factor with a high importance ranking receives a greater weight than other factors. Each candidate trail is evaluated by the combination of all factors weighted by their respective importance rankings as specified by the user. A composite score is then generated for each candidate trail. For instance, if the user ranks waterfalls and caves high, flowers, campsites, and lookouts medium, and takes the default ('Low') for the remaining factors, greater emphasis would be given to trails that have waterfalls and caves along their path Trails that meet these criteria and also contain flowers, campsites, or lookouts would receive a higher score than other trails. If no trails have both waterfalls and caves, the trails with the highest combination of high and medium factors will be reported based upon their composite scores. When the analysis is completed, the system displays a map and a report of the recommended trails. The report includes a list of recommended trails and summary information for each trail. The user can interactively explore each recommended trail on the map display using the tools before making a final choice. Users also have options to modify their terms and preferences and use the system to re-evaluate the trails based on the modified criteria (Dye – Shaw, 2007).

It is an easy to use and this is a flexible system, which assists the tourist in choosing the most appropriate trails. The application is easily expandable with additional factors to the user interface. Using this GIS-SDSS application increases the number of visitors and their satisfactory. On the basis of this example we can create a similar application, for instance, for the rural tourism areas in Hungary.

## 5. SUMMARY

Social media platforms are the new media which offer tourists the opportunity to express themselves, share contents, ideas and experiences which other tourists may use as a reference in their travel planning; fact which is greatly appreciated among tourists due to the high needs of information which they require.

This study demonstrates the power GIS for a tourism application. GIS-based SDSS provide useful tools to help tourists in finding the best trip.

There are considerable literatures about the system, typology, motivation and the impact of tourism. Examination of the relationship between tourism and ICTs is being evolved in the world but in Hungary very few scientific researches were publicized in connection with this topic. For this reason the main purpose of the Ph.D. research is to create a continual research that focuses on the impact of digital media and technology on tourism. Furthermore, we would like to analyse how tourists use ICTs along their decision-making process of tourism product. Other major objective of our research is to examine the adoption of ICTs by tourism organisations in the North – Plane Region and in Hungary as well. In addition to this, the aim of the study is to determine whether North-Plain Region tourism businesses could respond to the changing consumer demands (Social Media) and collect the barriers and benefits of technological adoptions. Finally, we would like to examine the opportunities of these new technologies in the evolving numbers of destination organizations in Hungary.

## REFERENCES

- Boyd, D. M., and Ellison, N. B. 2007. Social Network Sites: Definition, History, and Scholarship. *In Journal of Computer-Mediated Communication*, Vol. 13, pp. 210-230.
- Buhalis, D and Law, R. 2008. Progress in information technology and tourism management: 20 years on and 10 years after the Internet – The state of eTourism research. *In Tourism Management*, Vol. 29, pp. 609-623.
- Camilleri, M. et al, 2007. *Blogs: web journals in language education*. Strasbourg, Council of Europe Publisher Available from: <http://books.google.es/books> [Accessed 12 April 2011]
- Dye, A. S. and Shaw, S.-L. 2007. A GIS based spatial decision support system, for tourists of Great Smoky Mountains National Park. *In Journal of Retailing and Consumer services*, Number 14., pp. 269-278.
- Gretzel U. – Yoo K.H. 2008. Use and Impact of Online Travel Reviews *In Information and Communication Technologies in Tourism 2008*, Vol. 2, pp. 35-46.
- Internet World Statistics 2009. Internet usage statistics: World Internet users and population stats. <http://www.internetworldstats.com/stats.htm>.
- Internet World Statistics 2010. <http://www.internetworldstats.com/eu/hu.htm>
- Kaplan, A. M. and Haenlein, M. 2010. Users of the world, unite! The challenges and opportunities of social media. *In Business Horizons*, Vol. 53, No. 1, pp. 59-68.
- Kiraly, D. 2011. Facebook influences the tourism as well. (A Facebook befolyásolja a turizmust is.) <http://www.utazonet.hu/facebook-befolyasolja-turizmust.html>
- Hungarian Center Statistic Office (HCSO) (Központi Statisztikai Hivatal, KSH) 2010a. Report of the performance of Hungarian tourism in 2009 (Jelentés a turizmus 2009. évi teljesítményéről.) <http://portal.ksh.hu/pls/ksh/docs/hun/xftp/idoszaki/jeltur/jeltur09.pdf>
- Hungarian Center Statistic Office (HCSO) (Központi Statisztikai Hivatal, KSH) 2010b. <http://statinfo.ksh.hu/Statinfo/themeSelector.jsp?page=2&szst=OGA>
- Hungarian Center Statistic Office (HCSO) (Központi Statisztikai Hivatal, KSH) 2010c. [http://portal.ksh.hu/portal/page?\\_pageid=37,598153&\\_dad=portal&\\_schema=PORTAL](http://portal.ksh.hu/portal/page?_pageid=37,598153&_dad=portal&_schema=PORTAL)
- Lo, I. S. et al, 2011. Tourism and online photography. *In Tourism Management*, Vol. 32, pp. 725-731.
- Murphy H. C. et al, 2010. An investigation of motivation to share online content by young travellers – Why and Where. *In Information and Communication Technologies in Tourism 2010*, pp. 467-478

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Nagy, T. 2010. Opinion 2.0 – Social Media Book (*Vélemény 2.0 – Közösségi Média Könyv*) [http://tereptnaplo.freeblog.hu/files/2010/01/kozossegi\\_media\\_konyv.pdf](http://tereptnaplo.freeblog.hu/files/2010/01/kozossegi_media_konyv.pdf), pp 55-71.
- O'Reilly, T. 2007. What is Web 2.0: Design patterns and business models for the next generation of software Proceeding. *In Communications and Strategies*, Vol. 65, pp. 17–37.
- Shanker, D. 2008. ICT and Tourism: Challenges and Opportunities. *Proceedings of Conference on Tourism in India – Challenges Ahead*, pp. 50-58.
- Universal McCANN, 2010. *The Socialisation Of Brands.: Wave. 5*. New York: Universal McCANN. Available from: <http://www.scribd.com/doc/39391023/Social-Media-Wave-5-OCT2010-Universal-McCann>
- World Travel and Tourism Council (WTTC) 2011. [http://www.wttc.org/eng/Tourism\\_Research/Economic\\_Research](http://www.wttc.org/eng/Tourism_Research/Economic_Research)
- Xiang, Z. and Gretzel, U. 2010. Role of social media in online travel information search. In *Tourism Management*, Vol. 31, pp. 179-188.

# INFORMATION SOURCES AND SERVICES FOR FARMERS

András Cseh

*University of Debrecen, Faculty of Applied Economics and Rural Development  
Institute of Economic Analytical Methodology and Applied Informatics  
Böszörményi út 138, Debrecen, Hungary  
csehandras83@freemail.hu*

## ABSTRACT

In the information society information became new factor of production in the economy. The efficiency of farming depends on whether we can possess the suitable information in the suitable time or can't. We can make better decision that what kind of product we should produce and when and where we have to buy the necessary materials. The agricultural producers are in a much weaker bargain position compared to the traders in addition the price of the products may change quickly within a few days. It is hard to decide that the product should be sold promptly after the harvest or later waiting for a favorable sales opportunity. It is important to select the suitable and authentic information channel, not only the information deficiency, but the excessive information dangerous, because this may cause indecisive situation. Nowadays we get information most quickly through the internet. This is true for the enterprises, who working in the agricultural sector. In my article I examine what main information sources are visited by farmers based on a questionnaire survey. I give a brief overview based on my study the what the farmers habit are in utilizing of internet services in foreign countries.

## KEYWORDS

information sources, internet usage, e-government.

## JEL CLASSIFICATION CODES

L86, Q19

## 1. INTRODUCTION

The aim of my research is recognition of agricultural producers' external information resources and analysing their adaptation. External information resources are vitally important for producers because farming's efficiency really depends on that adequate information are available on time. They are able to make better decision what they produce, when and whereof they purchase materials. Nowadays one of the fastest information channel is the Internet which is accessible in even more household (Várallyai & Herdon, 2010). Much of private farmers manage their farming from home so they use their already existing computer and internet in their household. Also the EU and the Hungarian government recognised that Internet may play an important role by agricultural organizations in rural areas (Herdon & Hausman, 2007), for instance, it can give a hand in connection with marketing of products or gaining new markets. These opportunities are the purposes of e-Agrarium which have already worked out in the Hungarian Information Society Strategy (IHM, 2003).

Several international publications pointed why farmers buy computers and other information technologies. The main mentioned causes were (Nuthall, 2004):

- realize higher income through the selection and consumption of much more cost effective input materials;
- spare time because of the faster and easier supplying of data to state and public administration organizations;
- easier leader tasks since faster decision, more effective planning, construction and audit processes are feasible;
- easier get in touch with market participants and governmental organizations;
- extended education curricula, more effective professional development;
- maintain competition with other farmers who have already used computers.

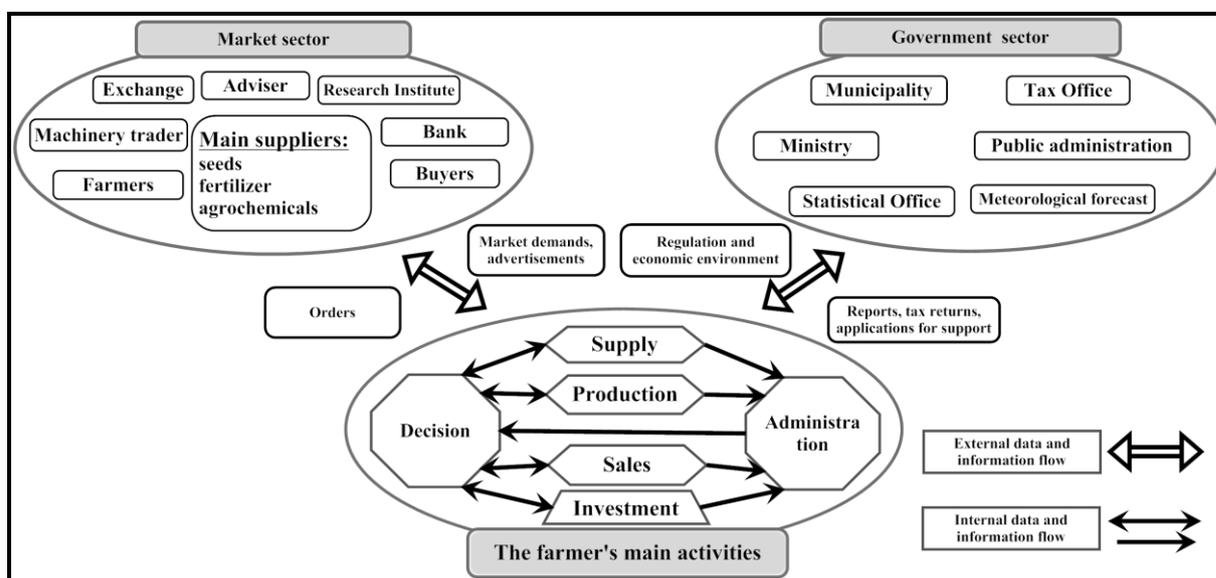
Because of the fact that Internet became one of the fastest and most important information channel recently, using questionnaire I show the main features of farmers' usage of Internet and frequency of farmers' attendance on state and administrative supplying of data web sites.

In this study I represent the main advance conclusion from my questionnaire. The online questionnaire was made by LimeSurvey programme. One of the main advantages of online questionnaire is that with selection of the adequate question type the filling is much more controlled and contains less logical contradiction so the rating of questionnaire is developed. In addition to this it is a more cost efficient solution. The questionnaire was filled by farmers or social intermediaries according to farmers' answer. The filling is based on free-will, the sample size is 40. Respondents are private farmers from Hajdu-Bihar County. Due to low sample size, the survey is not representative. I used descriptive statistics and relied on literatures to represent some features of foreign farmers' usage of Internet.

## 2. RESULTS AND EVALUATION

I created a model which shows an average farmer's main information associations (Figure 1.). Usually decision is formed by several factors, working of a farm we have to allow for lot of internal information: what we can produce according to existing aptitude, where we can purchase the needful input, to whom sell our products and so on.

Figure 1. Farmer's information associations



Source: Own editing

All data can be considered as external information resources which arose not in farms' internal processes, but describe enterprises' environment and have a meaning as regards decision making (Pető, 2004).

Changing of data among market participants is in connection with tender, order, delivery documentation, market survey, promotion. As regards government – because of their importance – we have to mention the law and subsidy rules, namely production won't be profitable without subsidy regarding the whole agricultural production. After submitting of different applications farmers can get their subsidy, besides from time to time different administrative notification is compulsory for government. Eventually the agricultural producer has a great number of data from their external environment which may complicate their job, so due to huge amount of data they may become indecisive.

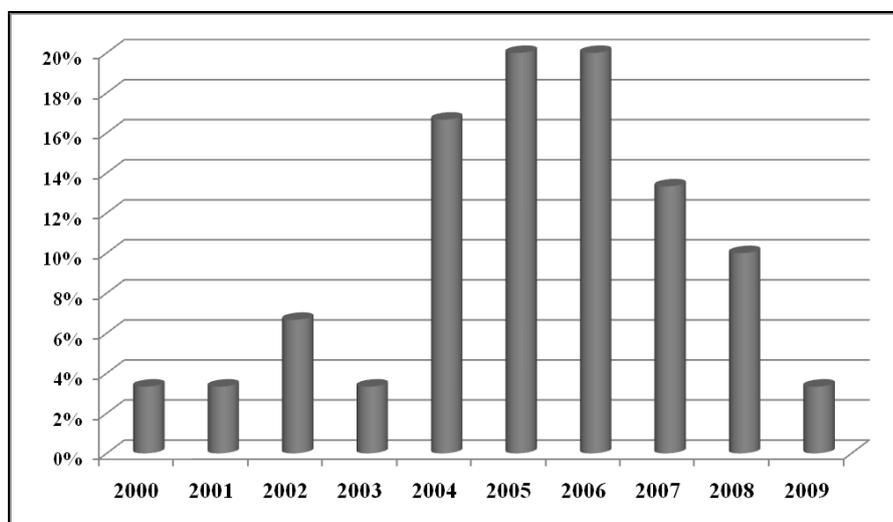
I analysed farmers' situation – with regard to information circulation – just in connection with government because growers must be in contact with members of this sector.

A sort of information systems are at work by all members in the government sector; these systems common attribution are to collect, analyse, store, retrieve and forward information about economic participant so help the government in decision making (Hetyei, 2002). Several administrative studies have revealed that client associations are primary among areas which should be converted into electronic processes. The supplier character demands that office provides communication channel for clients in an easily practicable way.

Many experts claim, that in the operation of public administration the use of information technologies may cause fundamental change, because electronic administration may evolve. Nowadays the judgement of opportunities of e-democracy is not clear. On the one hand, one part of people regards e-democracy as the solution of all problems on the other hand others look it as a future dream. The main argument of oppositions is that e-administration generates digital gap in the society due to its costly appliances (PC) and the relative high demand of knowledge (PC and internet use) (Buday & Tóza, 2007).

In case of the electronic governmental services the communication pass via internet, so it is important to analyse how long private farmers have an own internet access. Figure 2. shows the measure of spread of own internet access by private farmers.

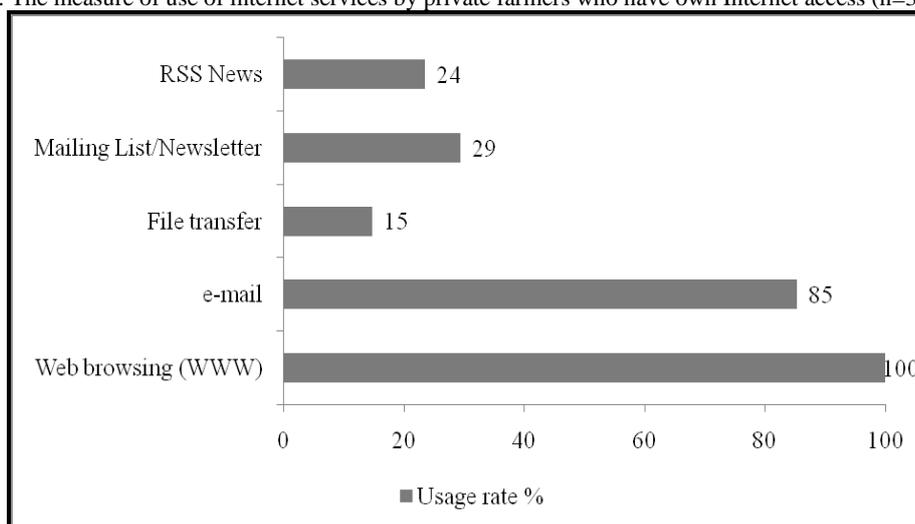
Figure 2. Distribution of home Internet access by private farmers in the first year (n=31 year=2010)



Source: Own Survey

In the period 2004-2006 the number of own internet access increased to the full. Computer purchases within the confines of Sulinet program might have helped for this growth in the previous period. I find it important to analyse what measure private farmers use different internet services.

Figure 3. The measure of use of internet services by private farmers who have own Internet access (n=31 year=2010)



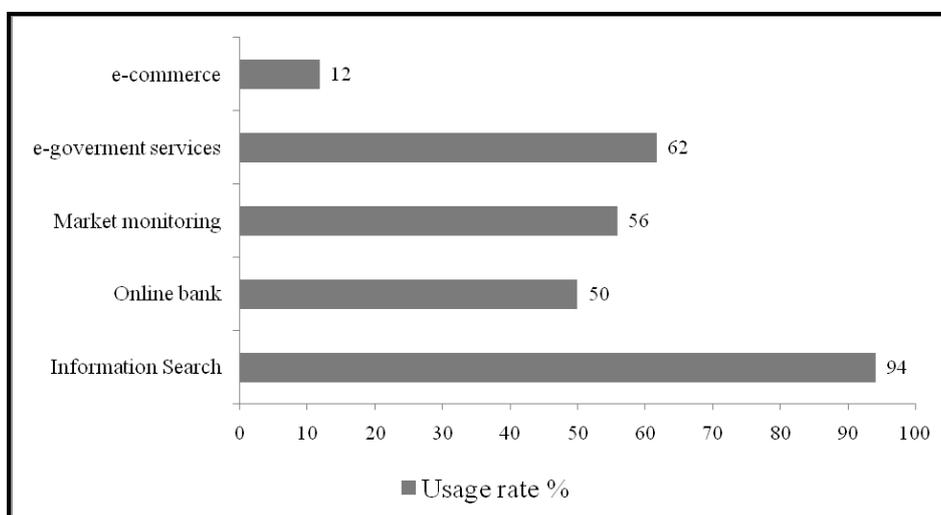
Source: Own Survey

Figure 3. shows that each private farmers, who has internet access, use web browser and more than 80% use e-mail during their farming as well.

Using of FTP may be lower because of the fact that by using email not just texts but files with small size can be transferred as well. The cause of low-level use of electronic mailing list may be that farmers don't put down their name to the list, because they don't spend enough time in front of the computer in order to read each letter.

Figure 4. represents why farmers, who have own internet access, use internet browser. In the course of browse almost everybody searches for information and at least half of them use it in reference to market research or services of e-government and bank.

Figure 4. The purpose of web browse by private farmers who have own Internet access (n=31 year=2010)



Source: Own Survey

In 2010 in France an electronic survey was made about French farmers' habit of using internet. The forehand results are readable in EFITA's newsletter. According to this survey, French farmers spend 8 hours a week before internet and spend 4,5 hours to do their business. Table 1. shows some additional attributes.

Table 1. The purpose of using Internet by French farmers (n=1200 year=2010)

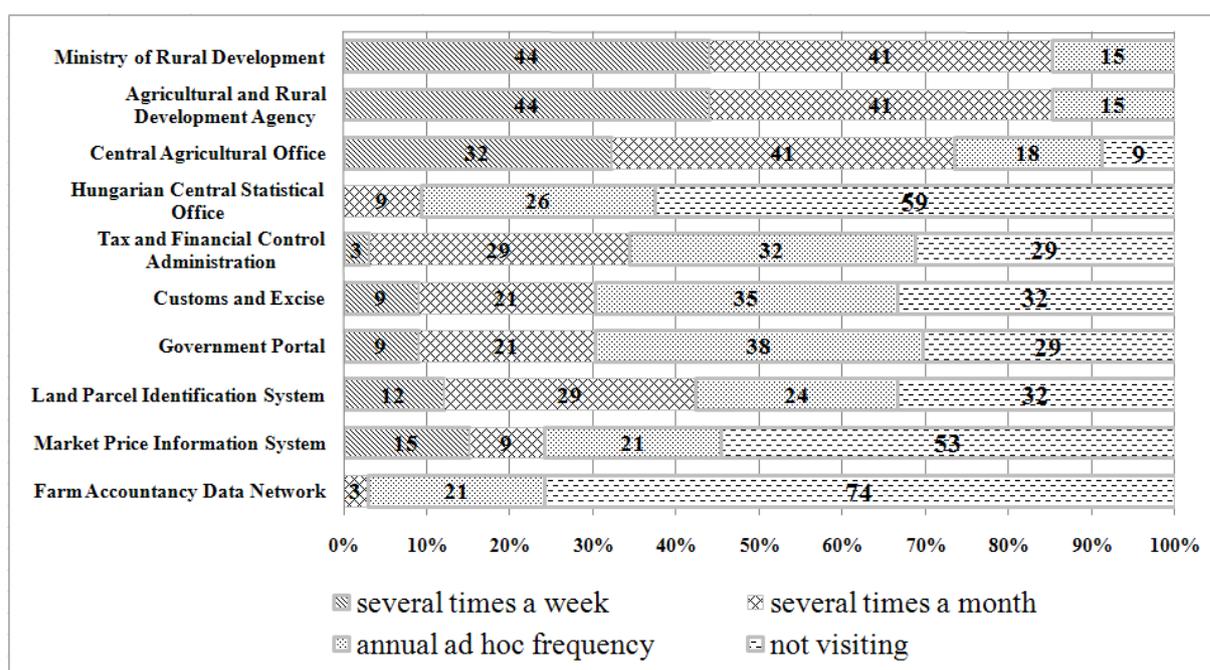
The internet services used by farmers	Usage rate
Weather information	97%
Online Bank	96%
Ag Information	96%
Administration (ex. CAP)	92%
Market information	92%
Shopping	~90%

Source: EFITA

In reference to their business, French farmers use internet higher times than Hungarian farmers which originate in better internet access and major routine by using PC.

With the help of my questionnaire, we can see (Figure 5.) what measure private farmers visit web sites of government and public administration. Web sites of the Ministry of Rural Development, Agricultural and Rural Development Agency (ARDA) and Agricultural Administration Office (AAO) are visited because of actual laws and regulations. On the web site of ARDA we can find training assistances related to electronically submission of the application form.

Figure 5. Attendance of web sites of government and public administration offices by private farmers (n=35 year=2010)



Source: Own Survey

On the governmental web pages located the client gate which helps for citizens to arrange their administrative, official proceedings and attain services related to them. After registration online users are able to use electronic governmental services with the help of client gate.

The cause of less attendance of Market Price Information System may be that respondents are mainly plant growers. But the system is much more important and useful those farmers who produce fresh, easily deteriorating foods (e.g. fruit, milk, egg, meat) so the measure of attendance is higher by them.

### 3. CONCLUSION

From the point of my view, e-services have great opportunities in agriculture, since the fast and effective serving of 200-300 thousand customers is attainable with the help of Internet. As regards e-services, a farm with some or with more thousand acre need the same IT infrastructure, just a computer with internet accessibility is needed. In short period the employ of experts, who could use these services instead of farmers but in favour of farmers, may help the spread of e-services. However, in long period farmers' information technology knowledge must be developed in order to increase the own use of e-services. Namely, if the farmer requires the help of external person he has to go to the office. It would be opposite to one purpose of electronic administration, because the main target of these services would be that services would available from home at any time.

### REFERENCES

- Buday B. B., Tózsá I. 2007. *E-government (E-közigazgatás)*. DE-AMTC AVK Debrecen, Hungary
- EFITA 2011. *newsletter 497* <http://www.efita.net/apps/accueil/autodefault.asp?d=6825> (accessed 15/01/2011).
- Herdon M, Houseman J, 2007. ICT and Innovation in Rural Areas. *Agricultural Economics and Rural Development, Agricultural Information Conference Proceedings*. Debrecen, Hungary, pp. 1-11. ISBN:978-963-87118-7-8
- Hetyei J. 2002. *Information Systems of Financial institutions and Government Agencies in Hungary (Pénzüntézetek és állami Intézmények Információs Rendszerei Magyarországon)*. Computerbooks, Budapest, Hungary
- Informatikai és Hírközlési Minisztérium, 2003. *Hungarian Information Society Strategy: Program Guide e-Agriculture (Magyar Információs Társadalom Stratégia: eAgrárium programfüzet)*, Budapest, Hungary
- Nuthall P. L. 2004. *Case studies of the interactions between farm profitability and the use of a farm computer*. Computers and Electronics in Agriculture, Vol. 42, No. 1, pp. 19-30
- Pető I. 2004. *Development of external agricultural information systems (Mezőgazdasági külső információs rendszerek fejlesztése)* [http://odin.agr.unideb.hu/magisz/rendezveny/E-agrarium2004/konferencia/Publikacio/A22\\_doc.pdf](http://odin.agr.unideb.hu/magisz/rendezveny/E-agrarium2004/konferencia/Publikacio/A22_doc.pdf) (accessed 10/02/2011)
- Várallyai L, Herdon M, 2010. Digital Europe – Chance for Job in Hungary. *AGRIS on-line Papers in Economics and Informatics*, Vol. II, No. 1, pp. 49-56. Faculty of Economics and Management CULS Prague ISSN 1804-1930 [http://online.agris.cz/files/2010/agris\\_on-line\\_2010\\_1\\_varallyai\\_herdon.pdf](http://online.agris.cz/files/2010/agris_on-line_2010_1_varallyai_herdon.pdf)

# BUSINESS NETWORKING AS DIGITAL ECOSYSTEM

PhD Student Maria-Cecilia Ciocan (Simion)

*Department of Economic Cybernetics, Bucharest University of Economics, Bucharest, Romania,  
cecilia.simion@yahoo.com*

## Abstract

The organization is a living organism that has to integrate and expose business intelligence to adapt and survive in a changing environment. To build such an organization is used modern information and communication technologies, and artificial intelligence, leading to a business environment more and more dynamic. Thus, to be dynamic a business network need of agility. Agile and interconnected business processes are needed to lead to a dynamic business ecosystem that allows a flow of collaborating and accessing information by people that need it.

## KEYWORDS

network, digital ecosystem, artificial intelligence, e-business

## JEL CLASSIFICATION CODES

L2, M2

## 1. INTRODUCTION

In the last time businesses are more and more and become more modular, aspects that characterize business relationships and understanding how the actions or decisions taken by an entity of the impact of interdependencies.

Ignoring these unexpected interactions can lead to undesirable outcomes. Tools that help to characterize systematically business ecosystem (or network) and analyze the potential impact of various business decisions, on each entity in the network are essential for improving the design activity.

Competitive market economy is an economic system characterized by specific mechanisms for substantiating and ensuring coherence of decisions on the fundamental issue of economy: the rarity. Over the time, competitive market economy affirmed its positive valences that are required to be formed and strengthened in countries that wish to integrate into economic and social structures of the EU, including in our country. The market cannot reflect the full costs of goods and services, it provides to economic agents incomplete information and inconsistent with the requirements of the ecosphere which inevitably drives the economy towards its own destruction of natural systems.

The organization is a component of socio-economic system, along with other systems, organizations with diverse activity profiles, being in close relationship with the economic environment through a mutual and continuous exchange of products, services and information.

## **2. ORGANIZATIONS AND THEIR WORK ENVIRONMENT**

Human organizations as complex socio-human systems, regardless of information technologies they use, have been and are still conditioned by knowledge, both at the level of individual behavior of members, as well as at large scale, regarding the behavior of all groups and organizations: relations between goals, means, results, as well as relations between the organization and its ambience.

The success of an organization depends on external forces, which work outside in the global environment.

Environmental factors are grouped as economic, management, technical and technological, socio-cultural, demographic, political, legal and ecological.

External environment influences activity of an organization in two ways:

- Direct (direct external environment)
- Indirect (general external environment).

External environment characteristics:

1. Independence of external environment factors
2. Weight in which the change of a factor influences other factors. Example: When the raw material price increases, organizations are turning to more economical techniques and technologies.
3. The complexity of the external environment. Number of factors to which the organization is forced to react.
4. Environment mobility. The speed of changes outside the organization. Mobility environment is different. Slower rhythms are found in the food industry and car production. In international companies mobility environment is different because they have production activities in various countries.
5. Environment certainty. The quantity and quality of information available for the organization regarding a concrete factor and the safety of information accuracy. The environment becomes uncertain whether the information is insufficient and inaccurate. In case of reliable and accurate information the environment is safe and stable.

In terms of stability, the environment may be:

- Stable - characterized by unexpected difficulties of market, standardized procedures, new technologies, rigid structures with strict hierarchies and regulations, etc.
- Dynamic - frequent changes of customer needs, new adaptive structures

In terms of complexity, the environment may be:

- a. Simple - characterized by standardizing work processes and centralized structures
- b. Complex - characterized by standardizing the necessary knowledge and qualifications of staff and decentralized structures.

The external environment in which organizations operate can be direct (consisting of suppliers, customers, competitors, government organizations, NGOs and trade unions) or general (comprising macroeconomic, technological, socio-cultural, political, informational and international).

Companies have multiple relationships with outside "partners", which can be direct or indirect, formal or informal. These "partners" are not only companies and have a common goal. Strategic Environmental Analysis should take account of these external elements and their dynamics.

Relationships that companies have with foreign partners can be vertical (channel suppliers - customers, direct complementarity, cooperation, subcontracting), horizontal (sector, industry, competitors, the possibility of substitution, competition and cooperation), transverse (no complementarity, no direct possibility of substitution, common purpose, agreements among sectors), the intangibility (common culture, standards of behavior, informal and indirect). All this leads to the formation of synergies.

Companies are developing within a Business Ecosystem. Thus the need for a "platform" (services, tools and technologies) to manage the business ecosystem appears.

The internal environment of organizations consists of objectives, structure, personnel and technology. Objectives are set by management and are disclosed to its members. Structure of organization realized through logical interaction of management levels and structural subdivisions, so as to allow the achievement of objectives. The tasks are differentiated as objectives, information and people and are addressed to people job, not the person.

Personnel achieves organization goals through their activity in the service organization, providing experience, potential to solve some concrete work, psychological and physiological condition, the qualities necessary to achieve specific tasks. The technology is influenced by standardization and mechanization.

Organizational culture is represented by all the values, beliefs, and expectations that influence the behavior within the organization directly or indirectly, its functionality and performance.

### **3. CONCEPT OF VALUE AND NETWORK**

An ecosystem could be considered a co-creation value, for configuring people, technology, information sharing, and value of proposals of internal and external links and on duty systems. This concept is closely linked of the value chain and network concept which describe tangible means (such as goods, services, and income) and intangible (knowledge), transactions between different business entities. In the context of value chain there are described relationships between business entities by three types of business transactions: goods, services, and income; knowledge; intangible value.

A business model is usually used to describe the roles and relationships between a company, customers, partners and its suppliers, including the flow of goods, information and money between these parties, as well as the financial benefits for those involved.

Typically to decision framework businesses of strategic support is that the result can be defined independently of the other reactions of the players. At almost all levels of decision-making, however, is significant interaction between players. Thus there are combined ideas from value-analysis network to characterize systematically the ecosystem, from game theory to describe the behaviour of entities and multiagent systems to provide an evolving computational approach to analyze business models.

Classical game theory is based on explicit analytical methods, making difficult its extend beyond two or three participants. The term of *multi-agent systems* is used for all types of autonomous systems composed of multiple components showing the following characteristics:

- each agent is deficient in its ability to solve a problem
- there is no global control system
- the data are decentralized

Recent research in the field of designing multi agent systems and coordination mechanisms led to the adoption from the game theory of some analysis approaches of multiagent systems.

An ecosystem consists of both an environmental as well as a set of entities or agents that reproduce in that environment. Environment acts as a set of constraints that can be analyzed using the metaphor of adaptation profile. In the adaptation profile individuals are represented as solutions to the problem of survival and reproduction. All possible solutions are distributed in a space whose dimensions are possible properties of individuals.

### **4. INTELLIGENT AGENTS IN BUSINESS NETWORKS**

Business networks are essentially artificial market constructed using agent-based models. Much of the work of agent-based modeling take into account the way in which simple agents or market mechanisms can solve complex tasks with agents that act independently without a central control mechanism. In economic systems these principles of self-organization have been discovered for some time ago.

An agent is an autonomous software program performing some activities for a user or another process. Intelligent agents can range from simple predefined rules to the special deduction machines of artificial intelligence with self-directed learning. They may cooperate each other, execute synchronous or asynchronous operations and can migrate to remote nodes in order to accomplish the task (mobile agents).

An agent needs an agent execution environment (AEE-Agent Execution Environment) to exist. In a market built on the computer, market agents interact with other agents, firstly through the exchange of goods and services. Thanks to a well-developed economic framework, we can achieve a rich source of analytical tools and theoretical techniques for designing individual agents and predicting aggregate behavior. For the most limited areas of static problems, designing a market built on the computer is relatively simple. Problems

arise in attempting to design computer economy built on large areas and dynamic environments. These issues include the way in which are specified exchanges of goods and services, how should these agent-based markets to set exchange policies, and how market mechanisms built using computer, being appropriate for idealized environments can be adapted to work in a broader class of environments which are not ideal.

An artificial market is a closed system, goods are not convertible into anything from the real world. Real markets are open systems, where goods can be exchanged for real world things (money or resources). Artificial economies usually consist of agents that are controlled by the system designer. It can thus be assumed that all agents act under the rules established by him. More, the designer of the artificial market has control over all market parameters: what assets are in the market, how are they changed, monitoring transactions.

To act in accordance with the theory of competitive behavior, the agents must adhere to certain conditions of rationality. Consumer agents are endowed with an initial quantity of goods and are employed in exchanges so as to maximize utility. Producer agents are related to a certain technology, which specifies the ability to transform some goods into other goods. The sole objective of producers is to choose an activity of their technology so as to maximize their profit. From the perspective of staff, state of the world is completely described by the movement of prices, therefore, the price determines the maximized behaviors. This arrangement is highly modular, because the agents did not necessarily need to take into account the preferences and capabilities of others, and communication consists exclusively of the offer to exchange goods at different prices.

In fact, an agent has mental states (beliefs, preferences, intentions), and capabilities (technologies and resources), and can communicate with any other agent. Its distinctive feature is its interface with the rest of the world. In particular, its interaction with other agents is realized through the exchange of goods and services, and communication is mainly meant to arrange such exchanges.

Dynamics study based on expectations is relevant when entities and agencies that are part of a complex system take into account possible future situations when take decisions today. Agents who want to achieve goals plan what will achieved at the end basing on their knowledge about causes, on their past experiences, on their predictions about the future, as well as their prejudices and beliefs. A dynamic formula of interacting agents requires a different approach when the behaviour of entities depends on their beliefs and knowledge as well as rules governing the evolution of the system. The forecast of agents about the future must be introduced explicitly in dynamic rules that govern the evolution of the system.

Agencies can plan or can be scheduled to plan the future. As a result, their actions seem to be intentional.

## **5. NETWORK BUSINESS MODELS**

In order that traditional business models to succeed in the New Economy they should use e-business strategies. The term E-business occurred to describe the ways in which firms have changed their business models to compete successfully. Differences between traditional business models and the business models of new economy are given by their value chains. In case of traditional business models, value chain is given by suppliers, while the value chain of e-business model is driven by the client. Value chain activities are serials in their nature and are focused on business activities.

Exchanges among business network participants consist not only of goods, services and money, but also of information (customer needs, knowledge of transactions, etc.) and intangible (loyalty, trust, collaboration, access to new customers, etc.).

Although they share many similar characteristics, there are major differences regarding the organization and how to create value in companies. Thus there are two dimensions: economic control and value integration. Economic control refers to the hierarchical relationships that are established among participants, while value integration refers to the level of coordination required to deliver value to customers. Given these differences, there are distinguished more types of network business models:

- Open Markets - online auction markets self-organized in which the products sold have little to do with each other.
- Aggregators - intermediaries between producers and consumers, coordinating activities of other participants in a hierarchy.

- Value chains - as well as aggregators, but the products and / or activities require a significant effort of coordination and integration to add value to consumers

- Alliances - the most complex model, in that it provides a high value integration without hierarchical control.

- Distributive networks - that create value by mediating exchange of companies and individuals. They are simultaneous, hierarchical and self-organized.

All these business models join customers, suppliers and competitors to redefine process of creating value from the beginning to the end. Relationships between enterprises defined in this way represent a dynamic business organization that will form the basis of competition in business networks.

## **6. STRATEGIES**

Ecosystems, business networks, is changing as the relationship between employees, customers, partners and suppliers are becoming more and more dynamic. The need for a more and more dynamic global business environment is required.

To get a dynamic working network, business needs of agility. Although business networks need to become more and more dynamic and fluid, most organizations, processes and systems do not evolve in the same way. Thus agile and interconnected business processes are required to enable to establish a dynamic ecosystem.

It is noticed more and more that organizations need to review their processes and IT infrastructure to be more agile.

It aims to:

- Improving the business environment for SMEs by building partnerships and developing business ecosystems, by creating an infrastructure to enable the structuring of specific ICT solutions from generic components.

The development of digital business ecosystem in European regions implies that networks are firstly catalysts for the system and to work with regions that have already experienced such systems.

- Improving the capacity of SMEs to benefit from ICT-based innovations in their current activities by adopting innovative solutions by users (through laboratories, research centers, etc..), creating a favorable environment for ICT-based innovations, through the rapid and on large scale assimilation of innovative solutions based on microelectronic components, microsystems, etc., supporting rapid assimilation by learning and training methods.

Regarding intelligent assist of learning activities, innovation and knowledge management, Information and Communication Technology has an overwhelming role in the adoption of best practices, paying a particular attention to SMEs.

It aims to create systems and models for virtualization of economic, social, administrative and services processes which consist of: realizing new business models - virtual organization and enterprise in the business network; securing technology and business information in economic cooperation systems from public administration and services; definition, development and implementation of the "Digital City" concept; the definition, development and implementation of the "County online" concept; development of open training platforms based on virtual reality, computer animation, combining real and artificial images, sound and voice.

## **7. CONCLUSIONS**

In case of business ecosystems the competition is very important. It is required both cooperation and competition. Competition is approached from the perspective of common interest, which keeps agents' contribution.

There are several companies that use the same standard or know-how. This allows them to develop one or more central competences. Companies that use these skills will be formed in a strategic community subject to

the same fate on the principle of co-evolution. Companies are looking for a network effect (increasing the value of a product or service the growing number of people who use it).

One or more companies hold leadership. The head company must develop a common vision to all members of the business ecosystem.

Like real ecosystems, digital ecosystems usually consists of agents that are self-replicating and interact both each other, as well as the external environment. Dynamics and evolution of agents' population, network and spatial interactions and dynamic and complex adapting profiles influences the behavior of such systems.

In the network business, for ecosystems is necessary strategic involvement and managerial ingenuity regarding combination of intelligent computer facilities with consolidated organizational practices related to innovation, learning and interactive partnership. Being a rapidly developing area, applications of information and communication technology are still far from peak.

However aiming at a management strategy involves ensuring the business objectives, as a result of the organizational and procedural problems known, taking into account that there are known the tools that are already used and whether they are redundant or ineffective. Time used to identify all these things can be an invaluable foundation in applying the criteria in the selection of appropriate manager solutions.

## **ACKNOWLEDGEMENT**

This work was supported by CNCSIS - UEFISCDI, project number PNII - IDEI 810/2008.

## **REFERENCES**

- Burduş E., Căprărescu G., Androniceanu A., Miles M., 2000. *Management of organizational fluctuation*, Editura Economică, Bucharest.
- DEBI Institute, Digital Ecosystems Simulation Prototype, 2007. Curtin University of Technology, Australia Available at <http://www.debi.curtin.edu.au>
- Dutta, S. , 1997. *Strategies for implementing knowledge-based systems*, IEEE *Transactions in Engineering Management*
- Eliasmith, C., & Anderson, C. H., 2003. *Neural Engineering: Computation, Representation and Dynamics in Neurobiological Systems*, Cambridge, MA: MIT Press
- European Commission, 2004. <http://europa.eu.int/comm/enterprise/entrepreneurship>, (accessed 05/07/2008)
- European Commission, 2010, Europe`s Information society. Available at [http://europa.eu.int/information\\_society/eeurope/](http://europa.eu.int/information_society/eeurope/), (accessed 20/12/2010)
- European Commission, 2008. Technologies for *Digital Ecosystems - Innovation Ecosystems Initiative*. <http://www.digital-ecosystems.org>, (accessed 20/04/2010)
- Fahey, L. et al, 2001. *Linking ebusiness and operating processes*.
- Iansiti, M., Levien, R., 2004. Strategy as ecology. *Harvard Business Review*, No. 3
- IBM Research (2011), Available at <http://www.research.ibm.com/journal>, (accessed 10/03/2011)
- KnowledgeBoard, 2011. Knowledge Board your global community, <http://www.knowledgeboard.com>, (accessed 15/01/2011)
- Moore, J.F., 1993. *Predators and prey: a new ecology of competition*, Harvard Business Review
- NetMBA Business Knowledge Center (2010), Internet Center for management and Business Administration. Available at <http://www.netmba.com/strategy/swot/>, (accessed 11/10/2010)
- Nicolescu O., 1993. *What is new in international managemnt*, Technics Publisher. Bucharest.
- Nicolescu O., 2001. *Compared management*, Economic Publisher, Bucharest.
- Nicolescu O., Verboncu I., 1999. *Management*, Economic Publisher, Bucharest.
- Tian, Ch.et al, 2008. *Service Science, Management, and business*, Vol. 47, No. 1, IBM System Journal

# EDUCATIONAL NEEDS OF YOUNG FARMERS IN INFORMATION AND COMMUNICATION TECHNOLOGIES

Georgios Kountios<sup>1</sup>, Anastasios Michailidis<sup>2</sup> and Afroditi Papadaki-klavdianou<sup>3</sup>

<sup>1</sup>Department of Agricultural Economics, Aristotle University of Thessaloniki, Greece, agrog@auth.gr

<sup>2</sup>Department of Agricultural Economics, Aristotle University of Thessaloniki, Greece, tassosm@auth.gr

<sup>3</sup>Department of Agricultural Economics, Aristotle University of Thessaloniki, Greece, papklavd@agro.auth.gr

## ABSTRACT

Agriculture has changed significantly in recent years worldwide. The liberalization of the world markets for agricultural products, the growing interdependence of agriculture with the rest of the economy, the overproduction of agricultural products, the changes in consumer preferences, the increasing problems of environmental protection, the daily bombardment of information, constitute the world in which they live, produce and operate today's young farmer. Consequently, a special role played by the agricultural education for understanding and applying the methods of Information and Communication Technologies always in accordance with the principles of good agricultural practices not only in domestic but also international markets. The present study investigates the training needs in matters related to ICTs for young farmers working on farms in the prefecture of Serres. For the purposes of research used both primary and secondary data. Of particular interest is the existence of an increased need of the target group for training on issues related to new technologies, in order to gain professional qualifications to improve the competitiveness of their agricultural holdings through specialized skills.

## KEYWORDS

Agricultural education, Educational needs, Information and Communication Technologies, Young farmers, Categorical Regression Model.

## JEL CLASSIFICATION CODES

A20, C38, C83

## 1. INTRODUCTION

The evolution of technology and mass media, as well as the changes of the various methods of production have been noted in recent years, have led to significant changes in all fields of agricultural activity. At the same time, the ageing population combined with the lack of education of the workforce in agriculture, is one of the main structural problems of the Greek and European agriculture (Fennell, 1997; Alexopoulos et al., 2006; Papadaki-Klavdianou, 2009).

The necessity, therefore, to find sustainable solutions to address the above problems, of an utmost importance's priority measures of the CAP, in which important role is played by the agricultural education, with its existing structures (Kazakopoulos et al., 2005). Agricultural education is a branch of vocational education. According to another term, agricultural education refers to education, which aims to contribute to the development of the agricultural sector and refers to the following purposes (Koutsouris, 1997): (a) improve rural income, leading to a balance between itself and the other productive sectors, (b) improves the standard of living and working conditions of farm families and contributes to the improvement of the cultural level and (c) improves the operation of the three factors of production, land, labor, capital and give a new impetus to the development of entrepreneurship and management.

According to Halim and Mozahad Ali (1998) education in rural areas is a circular process that goes through the following steps:

- The design phase of the educational process, which defines the educational needs of the population, the specific educational needs of individuals or groups of the population and further development of the training program.
- The selection of educational method, i.e. the strategy which the instructor uses in order to achieve the objective of the training program, which is essential for its success.
- The stage of implementation
- The stage of assessment, i.e. the systematic process of collecting information for the educational process.

In Greece the support measures for young farmers aimed at creating their own farm and also at improving their competitiveness. These measures have been applied since the early 1990s, in the context of operational programmes of EU. Young farmers are capable of producing high quality products, competitive on international markets and contribute substantially to the continuation of the traditional family farm (Kinsella et al., 2000; Gidararakou & Kazakopoulos, 2002). Throughout in this paper the term “young farmers”, is referring to the farmers who are beneficiaries of the single premium by the EU for the first installation in plant production and are its target group. The present paper explores the educational needs of young farmers of the Prefecture of Serres, Greece, for the use of information and communication technologies (ITCs) in agriculture and as specific objectives: (a) the investigation of the attitudes of the young farmers concerning new technologies and (b) the examination of the opinion of young farmers about their preference to the various training methods in order to meet their educational needs.

## **2. METHODOLOGY**

The present research, took place in the Prefecture of Serres between June 2010 and end of September 2010 and completed with the help of a fully structured questionnaire that was composed based on the study of the associated literature after the necessary adjustments were made in order for the questionnaire to respond to the particular goals of the project (Oppenheim, 1992; Siardos, 2005).

It was held in the form of a personal interview to farmers of the Prefecture of Serres, Greece, to a total of 69 completed questionnaires. The questionnaire was divided into three sections. The first section had general questions regarding personal information of the respondent, in the second, there were questions about knowledge and use of information and communication technologies (ICTs) in order to determine whether the young farmers use and are familiar with these technologies. The third and last section regarded the educational needs of young farmers concerning the ITCs and the preferred educational methods.

Concerning the analysis, the data were entered after being codified and the statistical analysis was made with the Statistical Package for Social Sciences, ver 17 for Windows (SPSS, 2008). The reliability and validity of the questions were tested with the use of Categorical Principal Component Analysis technique, followed by descriptive statistical analysis research of basic variables.

## **3. RESULTS**

Prefecture of Serres occupies the eastern part of Central Macedonia, and is one of the seven Prefectures of the region of Central Macedonia, in which it belongs administratively. The total area is 3,970 km<sup>2</sup> and represents 3% of the country. Serres is considered by most lowland prefectures of Greece, given that 48% of the total area is flat. This region has been selected because it represents one of the largest agricultural Prefectures in the region of Central Macedonia, based on Hellenic Statistical Authority's data and also has a significant number of beneficiaries of a grant program called “the first installation in plant production”. The cultivated land in Serres is 142,299.5 Ha (19.5%) and the number of beneficiaries is 665 (17.2%) of Central Macedonia's Total figures (Table 1).

Table 1: Cultivated land and Young Farmes in the areas of Central Macedonia and Serres

Area	Cultivated Land (Ha)	Young Farmers (Crop Production)
Central Macedonia	729447.4	3875
Serres	142299.5	665

The identity of the young farmers' sample is presented in the table below (table 2). According to the descriptive statistics analysis the representative participant of the study area is male, about 35 years old, married, with 12 years of education. Basic figures regarding their farm indicate that young farmers cultivate land around 3.56Ha, their yearly family income is around 896€ and more than two-thirds (78%) of their total income come from farming.

Table 2: sample identity

Variables		Number of Farmers	Percentage (%)
Gender	Male	56	81.15%
Age	Mean value: 35		
Family status	Married	45	65.21%
Educational Level	High school graduate	29	42.02%
Main profession	Farmer	69	100%
Yearly family income	10,001€-15,000€		40.58%
Number of Ha	Mean value: 3.56 Ha		
Percentage of farming income	Mean value: 78%		

Reliability analysis for the ICTs items was performed to determine the extent to which these items are related to each other to get an overall index of the internal consistency of the scale as a whole and to identify items that had to be excluded from the scale (Siardos, 2005). Table 3 shows the use of available ICTs in farms. Television, tone and cellular telephone are the most common-used items that show that young farmers prefer traditional methods. The value of Cronbach's alpha ( $\alpha$ ) reliability coefficient was found equal to 0.79, indicating that the ICTs scale is reliable to accept.

Table 3: ICTs on farms

ICTs	Use (Positive)
Television	67 (97.10%)
Tone telephone	61 (88.40%)
Cellular telephone	53 (76.81%)
Personal Computer	34 (49.27%)
Fax	33 (47.82%)
Printer	21(30.43%)
Answering machine	19 (27.54%)
Internet	13 (18.84%)
Cable television	6 (8.69%)
Satellite TV	3 (4.34%)
Global positioning system (GPS)	3 (4.34%)

In table 4 they are presented the ICTs' items in which young farmers are willing and prefer not only to learn, but also to follow a training program. Thus, PC, Internet and recording of farm's techno-economical data are the basic preferred ICT's training with 95.65%, 89.85% and 79.71% respectively. Nearly the half of the sample responded an "update on agricultural issues via the Internet" and "e-mail", meanwhile e-banking, e-shopping and e-selling tends not to be preferred from the most of the young farmers.

Table 4: Preferred ICTs' training

ICTs	Positive
PC	66 (95.65%)
Internet (search)	62 (89.85%)
Keep records of farm's techno-economical	55 (79.71%)
Update on agricultural issues via the	37 (53.62%)
e-mail	33(47.82)
e-banking	11(15.94%)
e-shopping	9 (13.04%)
e-saling	8 (11.59%)

Table 5: Efficient training methods

Training Method	Mean tactical
Educational excursions	1.68
Field demonstrations	1.67
Short-term seminars (up to 10 hours)	1.59
Practical courses/exercise	1.59
Education at the individual level/individual contact (one on	1.58
Educational visits	1.57
Agriculturalist's visit in farms	1.45
Lectures at meetings	1.38
Farmer's visits to the agriculturalist's Office	1.30
Creating newsgroups	1.16
Broadcasts on radio	0.87
Information in the form of forms-brochures	0.81
Television broadcasts	0.68
Articles in newspapers	0.50
Agricultural journals	0.45
Helpline	0.30
Instructions on DVD	0.29
E-learning	0.26

Table 5 refers to the question about how efficient are the following training methods. The answers were expressed in a 1-5 scale of Likert type very efficient (2), efficient (1), neutral (0), harmful (-1), very harmful (-2). According to the mean tactical value the most efficient training methods were with a rank above 1.00, while others tend not to be concerned as highly efficient. Thus, the most efficient training methods were Educational excursions, Field demonstrations, Short-term seminars, Practical courses/exercise, Education at the individual level/individual contact and Educational visits, with a value greater than 1.50.

#### 4. CONCLUSIONS

This paper refers to the educational needs of young farmers, as regards the ICT's. The significance lies in the fact that there are only a few similar references to this target group in the Prefecture of Serres. It can also be helpful during the obligatory seminars in which young farmers take part in order to become beneficiaries of their single premium. On the other hand, the absence of others' Prefecture of Central Macedonia's data, excludes the possibility to generalize and compose young farmers' profile by itself, throughout the Prefecture, although this as a part of an ongoing research, in which some of the results are in a relative reluctance.

As far as the results of the survey, although there is a number of up dated training methods, as well as modern ICT's items there is a strong "traditional -way" preference. This, along with the relatively young

sample of the research is at utmost importance and an issue which modern agricultural extensions should take into account, and support young farmers to adopt new technologies and methods of modern agriculture.

## REFERENCES

- Alexopoulos, G., et al, 2006. *Advisory services in rural areas: Results of on-field research on the attitudes and needs of young farmers in rural areas*. In *The economy and society face the new challenges of global agro-food system. Proceedings of 9<sup>th</sup> Pan-Hellenic Conference on Agricultural Economy*. Athens, 2006.
- Fennell, R., 1997. *The Common Agricultural Policy-Continuity and Change*. London: Clarendon Press, Oxford.
- Gidararakou , I. & Kazakopoulos, L., 2002. Incentives for young farmers. The case of young women farmers in the region of Thessaly. In *The rural society in a changing countryside. Proceedings of 7<sup>th</sup> Pan-Hellenic Conference on Agricultural Economy*. Athens, 2002. Ministry of Rural Development and Food.
- Halim, A. and Mozahad Ali, M., 1998. *Training and Professional Development*. In Swanson, B., Bentz, R. & Sofranko, A. *Improving Agricultural Extension - a Reference Manual*. Rome: Food and Agriculture Organization of the United Nations.
- Kazakopoulos, L. et al, 2005. The program "Young Farmers": The spatial variation of its implementation and prospects of new farms. In *The Greek agriculture and countryside in an enlarged European Union: New Challenges and guidelines. Proceedings of 8<sup>th</sup> Pan-Hellenic Conference on Agricultural Economy*. Athens, 2005. Agrotypos.
- Kinsella, J. et al, 2000. Pluriactivity as a livelihood strategy in Irish farm households and its role in rural development. *Sociologia Ruralis*, Vol. 4, No. 40, pp. 481-96.
- Koutsouris, A., 1997. *Agricultural Education and Training*. Athens: Geriki Technologia.
- Meulman, J.J..H.W.J.a.S., 2001. *SPSS Categories 11.0*. Chicago: SPSS Inc.
- Oppenheim, A., 1992. *Questionnaire Design, Interviewing and Attitude Measurement*. London and Washington: Pinter.
- Papadaki-Klavdianou, A., 2009. *Agricultural Education*. Thessaloniki: Grafima [in Greek].
- Siardos, G., 2005. *Sociological Research Methods*. 2nd ed. Thessaloniki: Ziti.
- SPSS, 2008. *SPSS Base 17. User Guide*. Chicago: SPSS Inc.

# MONTE-CARLO SIMULATION IN SECURITY RISK ANALYSIS

Emil Burtescu<sup>1</sup>, Claudia Burtescu<sup>2</sup>

<sup>1</sup>University of Pitesti, *emil.burtescu@upit.ro*

<sup>2</sup>University of Pitesti, *claudia.burtescu@upit.ro*

## ABSTRACT

The ensurance of high security within an organization must be a permanent concern of its leadership. For this it's imperative that during a security risk management cycle a risk analysis to be done. Security Risk analysis, security risk management component mostly use estimative data during the extensive process. The results may not exactly reflect the further evolution of events. This is absolutely normal if we think about the fact that hazard must be modeled. Even though a way to model the events that affect the informational security of the company must be found. In this paper we will use the Monte-Carlo method to model a set of security parameters used in security risk analysis. Our focus will be made on estimating the frequency of unwanted events, damages and their impact and will be applied both to the qualitative and quantitative security risk analysis approach. The results will guide the experts to better allocation of resources for decreasing or eliminating the risk and will warn the leadership about some absolutely necessary investments.

## KEYWORDS

security, risk analysis, Monte-Carlo method, likelihood, impact, loss.

## JEL CLASSIFICATION CODES

D81

## 1. INTRODUCTION

The investments in controls that are designed to reduce or to eliminate the security risks are difficult to be reasoned if they do not have a solid base. In quite many cases the amounts of money that must be allocated are separated of direct investments, so the decision of allocating funds for security is even harder. Information security risk analysis comes to clarify the things somehow and to provide support for making the decision. This will model the security risk using parameters such as: probability, impact, impact class, exposure factor, costs, estimated (annual) losses etc. These parameters have a certain degree of uncertainty that will make the achievement of a consensus regarding information security rather difficult. The most often encountered case in such situations refers to the quantification of the probability of occurrence of an event with impact on information security. Risk analysis team will have to determine what is the occurrence probability. The team members' answers will be different in this case. Some will have values with a longer certainty in time, others with a lower certainty and some others' values will be outside the possibility of occurrence. These answers depend both on the team members and their experience (Burtescu, 2005; Burtescu, 2008)..

We can already notice that the values of the given answers will create uncertainty due to both the random processes that must be quantified and the personal perception and estimation of the team members. What values are still possible? Based on these answers the resource owner must be capable of taking the correct decision based on data that will shape as good as possible reality by decreasing the degree of uncertainty. The

answer can be given using the Monte-Carlo simulation. A Monte-Carlo simulation enables an analyst to quantify the uncertainty in an expert's estimate by defining it as a probability distribution rather than just a single expected value (Conrad, 2005).

In the following we will exemplify the use of Monte-Carlo simulation for the qualitative and quantitative approach of information security risk analysis (Burtescu, 2006; Burtescu, 20010).

## 2. RISK AND RISK ANALYSIS

Risk, depending on the domain and context can have different definitions. Some of them are more complex and some others are simpler. According to ISO Guide 73 *risk is the combination between the probability of an event and its consequences*. A much more simple definition defines risk as being an event that is expected to happen. In information security, risk is defined as being a threat that can exploit the potential weaknesses of the system. Whatever the field, in order to occur risk needs two elements: *impact* and *probability*.

**Impact** refers to the action upon the organization's assets, in the sense that some assets must be protected against certain threats. An asset with a certain value which has a degree of exposure will generate impact. This impact is actually a loss for the organization. Impact rate is defined as:

$$\text{Impact rate} = \text{Impact Class Value} * \text{Exposure Factor}$$

**Probability** refers to the degree at which a threat may occur.

Threat, with its components - vulnerability and mitigation will be successful if vulnerability is high, and will be a failure if mitigation is high. The two elements, vulnerability and mitigation are inversely proportional.

Finally the risk level is defined as:

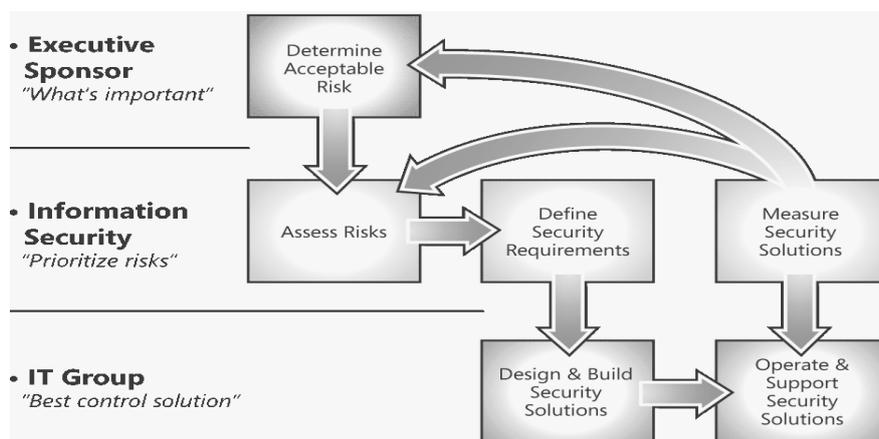
$$\text{Risk Level} = \text{Impact rate} * \text{Probability Rate}$$

Risk analysis involves a security risks identification process, determining their magnitude and identifying the high risk areas that must be secured. Risk analysis is a part of the set of measures called risk management. As objectives, risk management manages risk in the sense of decreasing it to an acceptable level for the organization's needs, and risk analysis identifies and classifies risks within the organization.

Risk management is a process that must be permanent within the organization, while risk analysis is a process that works in only one phase-when a risk evaluation is needed.

Microsoft approach defines rules and responsibilities within the risk management process as following (Figure 1):

Figure 1. Rules and responsibilities in security risk management



Source: <http://www.microsoft.com/technet/security/topics/policiesandprocedures/secrisk/default.aspx>

If we analyze the scheme in figure 1 we will see that the main role goes to the resource owner. He must define an acceptable risk level for the organization he leads. This is where everything starts.

The resource owner will establish the things that are important to be protected within the organization and will impose an acceptable security risk level according to his objectives.

The hardest task belongs to the Security Group which has as main purpose the classification of risks. Other tasks will include risk analysis, defining security demands and measuring security solutions.

The IT group's responsibilities are to choose the adequate control solutions meant to reduce or to eliminate the risk.

The adopted solutions will have to be analyzed in order to determine their effectiveness. Following this process a feedback with the results will be sent to the resource owner for information on the costs and the solutions that must be adopted. The same results will be sent as feedback to the risk analysis stage in order to see which is the new level of risk.

Right from the involvement of the owner who has to define an acceptable risk level for the organization we can notice that we work with elements of uncertainty. In this case we talk about the human perception on an event. The same uncertainties will appear on the stage of risk analysis where the team will have to quantify certain events. As I previously stated some uncertainties will come from human perceptions but also from the fact that certain events are themselves uncertain. In the following we will try to model and solve these situations.

### **3. QUALITATIVE APPROACH**

This method is more commonly used than the quantitative method and it refers to de small and medium size companies. The method operates with terms such as: high, medium or low - to quantify the probability of occurrence or the vulnerability level; high, medium, low - to quantify the impact; catastrophic, major, moderate, minor, insignificant - to quantify the consequences of the events etc. They are associated numerical values - 1, 2, 3, ... 5. With these numerical values calculations will be made and the risk level will be established. Due to these values it allows the faster achievement of a consensus within the risk analysis team. Due to the fact that determining the financial value of assets is not necessary, but especially because the quantification of the occurrence frequency of threats is not necessary this approach method can have as result risk level values that are not correct. The main culprit. Of this situation is the man who can't perceive correctly or who can't quantify an event correctly.

To determine the risk level we will use the previously stated formulae [6]:

$$\text{Risk Level} = \text{Impact Rate} * \text{Probability Rate}$$

$$\text{Impact Rate} = \text{Impact Class Value} * \text{Exposure Factor}$$

$$\text{Probability Rate} = \text{Vulnerability Level} + \text{Control Efficiency}$$

finally we have:

$$\text{Risk level} = (\text{Impact Class Value} * \text{Exposure Factor}) * (\text{Vulnerability Level} + \text{Control Efficiency})$$

All these terms must be quantified by the risk analysis team members. It is obviously that there will be discrepancies between the appraisals of the members. Estimating the values for these terms is a challenge and can sometimes be done wrong. The probability of erroneous estimation for these factors is illustrated in the next table (Table 1).



The values highlighted in the table are dominant values because they have received the greatest number of affirmative answers from the team members because they have the highest probability of occurrence. Associating each value an estimated occurrence value we will be able to simulate the way in which risk evolves over a period of time. In our example I have considered a number of 52 steps for simulation, corresponding to the 52 weeks of a year. Generating random numbers statistically independent for the four terms we will have the following values for the risk level (Table 4).

Table 4. Random numbers and obtained values for qualitative risk analysis

Week	Impact Class Values	Exposure Factor	Vulnerability Level	Control Efficiency	Risk Value
1	2	20	5	1	2.4
2	10	40	5	0	20
3	10	20	5	3	16
4	5	40	5	1	12
...	...	...	...	...	...
51	5	40	3	1	8
52	2	20	5	1	2.4

Correlating the results with Microsoft data of determining risk level (table 5) and making a graphic for the obtained results (Figure 2) we will be able to see the evolution for the 52 weeks of simulation.

Table 5. Corresponding between risk value and risk level

Risk Value	Risk Level
41 – 100	High
20 – 40	Medium
0 – 19	Low

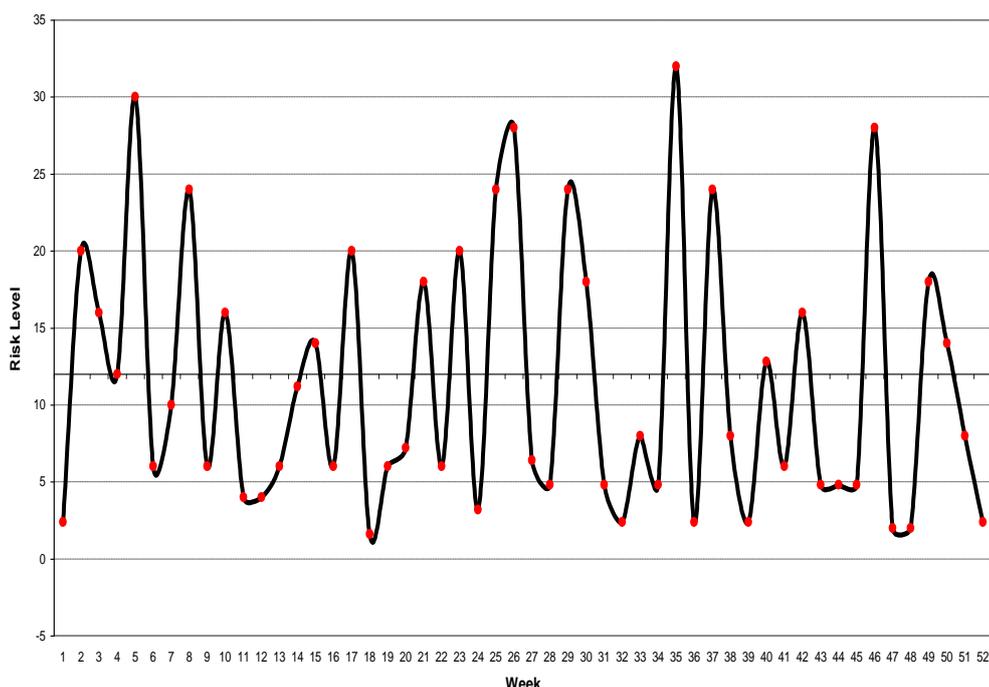


Figure 2. Estimated risk level evolution

Compared to the reference value of a risk value of 12 (according to Impact Class Values = 5, Exposure Factor = 40, Vulnerability Level = 5 and Control Efficiency = 1) we can draw the following conclusions:

1. The risk level does not reach High.
2. There are only 8 weeks in which the risk level can be Medium.
3. In most of the weeks (44 weeks) the risk level is Low - similar to the one obtained with the dominant values.

It may be considered that extreme measures are not necessary in order to reduce the risk generated by this event.

#### 4. QUANTITATIVE APPROACH

Quantitative analysis works with statistical data in the field. It is suitable for large companies that have their own specialized personnel for risk analysis. The accuracy of the method tends to increase over time due to the fact that the company creates a database with the history of the events, in the same time the company gaining experience. Because of this calculating the impact is very important. Reaching a consensus is even more difficult this time because now we have a wide range of values.

Let's take the example of an organization that has a number of assets which are the subject of threats that will produce a certain level of losses (Table 6):

Table 6. Assets, occurrence rate and losses expectancy

		Losses expectancy per every threat			
		Workstation	Dataserver	Webserver	Local Printer
Threat	Pieces	20	1	1	10
	Occurrence Rate				

Voltage shock	5	500	10,000	500	500
Theft	0.5	100	1,000	100	0
Reveal	3	50	1,000	300	0
Strikes	2	200	300	50	400

In order not to further complicate things we will consider that the values of estimated losses for each asset and threat have been correctly estimated. The only element of uncertainty is the rate of occurrence of a threat. Considering this data, the following question arises: What is the total value of Annual Losses Expectancy (ALE)? Taking into account occurrence rates as the ones in the table, the total value of annual losses - ALE - has a value of 152650 monetary units. Now we come up with another question: What will be the value if the threat occurrence rates vary around the values in the table? Obviously we will use a Monte-Carlo simulation. The input data are in accordance with the following table (Table 7).

Table 7. The input data for quantitative risk analysis

Voltage shock		Theft		Reveal		Strikes	
Values	Probability	Values	Probability	Values	Probability	Values	Probability
4	0.2	0.25	0.1	2	0.2	1	0.2
5	0.5	0.5	0.6	3	0.6	2	0.7
6	0.2	0.75	0.2	4	0.2	3	0.1
7	0.1	1	0.1				
	1		1		1		1

The values highlighted in the table are dominant values. Even if these values are obtained by evaluations much more rigorous than the qualitative analysis, they can be contradicted over time. This time we want to see how the annual losses expectancy level evolves. We will use a number of 50 evaluations with statistically independent values for each threat (Table 8).

Table 8. Random numbers and obtained values for quantitative risk analysis

Tragging	Voltage shock	Theft	Reveal	Strikes	ALE
1	4	0.5	3	2	127150
2	5	0.5	3	2	152650
3	5	1	2	2	151900
4	4	0.5	3	2	127150
5	4	0.25	3	2	126375
6	7	0.5	2	2	201350
7	4	0.5	2	2	124850
8	7	0.5	3	2	203650
...	...	...	...	...	...
10	7	0.75	3	2	204425
49	6	0.5	3	2	178150
50	5	0.5	3	2	152650

The representation of the obtained values after the simulations is exemplified in figure 3.

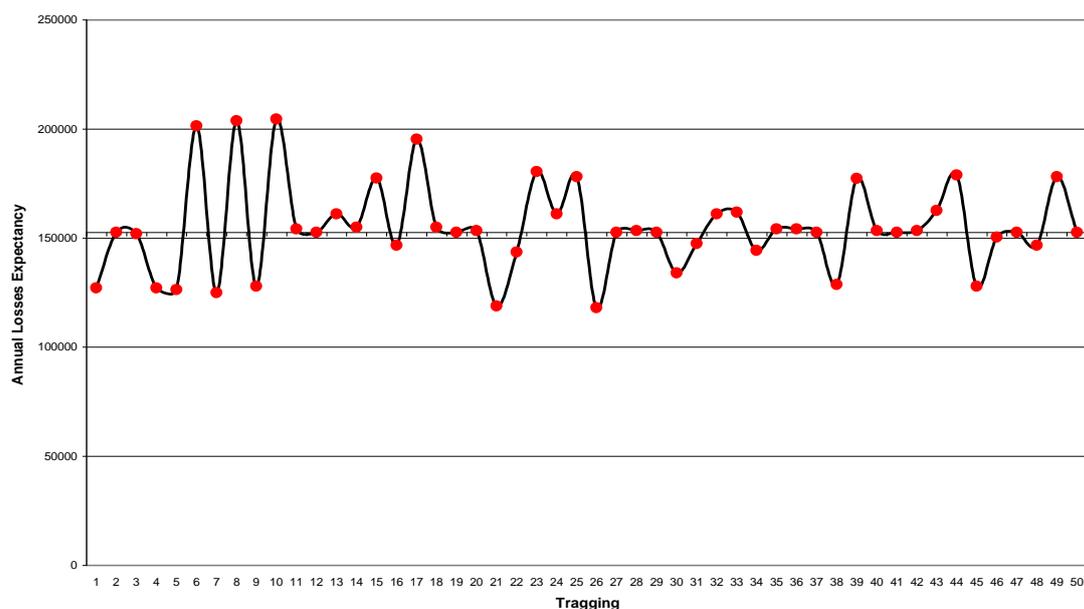


Figure 3. Annual Losses Expectancy evolves

The calculated values for the estimated annual losses have a deviation of  $\pm 25\%$  compared to the reference value. This is not an alarming value especially because we talk about an estimation and this can be corrected during the implementation of controls.

## 5. CONCLUSIONS

The Monte-Carlo simulation will allow the risk analysis team to run different scenarios to be able to estimate all the possible future situations. Running different scenarios we will be able to manage uncertainty for the future and to think in future terms. It is very important to know what will happen tomorrow before happening today. Based on the data generated by the scenarios controls meant to reduce risks and of course the level of investments will be chosen.

The simulation is well suited to the events that are uncertain over time but it can be used for different scenarios in which the perception on an event is different from one individual to the other. In the latter case better results are given by the Delphi method. Using the Monte-Carlo simulation for security risk analysis will be expanded in security risk management. This will involve running scenarios to determine the risk level reduction for different applied controls or to establish the investment level for ensuring security.

## 6. REFERENCES

Burtescu, E., 2010. *Business Information Systems*, SITECH, Craiova, Romania.

Burtescu, E., 2008. The Network's Data Security Risk Analysis, *Informatica Economica Journal*, Vol. XII, no. 4/2008, pp. 51-53, <http://www.revistaie.ase.ro/content/48/BURTESCU%20Emil.pdf>

Burtescu, E., 2006. Network Security Risk Level, *Informatica Economica Journal*, Vol. X, No. 4/2006, pp. 107-110, Available at <http://www.revistaie.ase.ro/content/40/burtescu.pdf>

Burtescu, E., 2005. *Data Security of the Company*, Independenta Economica, Pitesti, Romania.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Conrad, J. R., 2005. *Analyzing the Risks of Information Security Investments with Monte-Carlo Simulations*, <http://infoseccon.net/workshop/pdf/13.pdf>

Microsoft Corporation, 2006. *The Security Risk Management Guide*, Available at <http://www.microsoft.com/technet/security/topics/policiesandprocedures/secrisk/default.aspx>

# THE ANALYSIS OF THE ECO-TOURIST POTENTIAL FROM THE PERSPECTIVE OF ECO-LABELING OF ARGO-TOURIST PENSIONS IN ROMANIA

Associate Professor Ph.D. Virgil Nicula<sup>1</sup>, Lecturer Ph.D. Simona Spănu<sup>2</sup>

<sup>1</sup>*Faculty of Economic Sciences, "Lucian Blaga" University of Sibiu, Sibiu, no. 17, Calea Dumbrăvii,  
niculavirgil@yahoo.com*

<sup>2</sup>*Faculty of Agricultural Sciences, Food Industry and Environmental Protection  
"Lucian Blaga", University of Sibiu, Romania, Sibiu, no. 31, Oituz Street, simona\_spanu@yahoo.com*

## ABSTRACT

Developing a rural eco-economy depends on the global vision of the natural resources and on a broad understanding of the restructuring of economic notions and concepts needed to realize this vision.

What we suggest in this paper is to harmonize the existing Romanian system with international models in order to adapt the methods and techniques of implementing an eco-pension to the local ecotourism, by taking into account the character and traditions of the Romanian tourist village.

Evaluating the preliminary conditions for accrediting the pensions in Sibiel as eco-pensions is done by field investigation and surveys. The results obtained are formulating some proposals for issuing a series of methodological norms of classifying the reception structures with the function of tourist accommodation of the type of eco-pensions. What we monitor is the quantitative and qualitative analysis of the eco-tourist potential of the natural capital, clean technologies, ecological agriculture, the exploitation of non-polluting natural resources, the evaluation of the ecological impact and strategic eco-marketing, in order to identify those pensions that have an eco-tourist potential.

Promoting the concept of eco-pension among the administrators of the pensions which are selected as having eco-tourist potential and the highlighting of the profitability in time of this activity offers the advantages of experiencing a new model of tourist activity, the only one viable, and we are counting on the perceptiveness of the administrators of pensions in Sibiel, which will in this way be able to keep Sibiel on the top of rural tourist destinations. Evaluating and directing the activities from the field of tourism in relation to the ecotourism criteria will allow the exploitation of local natural and economic resources through the certification of eco-tourist products and that of destinations and accommodation structures, in order to guarantee the eco-tourist quality.

The eco-economical principles are essential elements when deciding to transform an agro-tourist pension into an eco-tourist pension.

## KEYWORDS

ecotourism, rural eco-economy, eco-pension, sustainable development.

## JEL CLASSIFICATION CODES

Q01, L83

## 1. INTRODUCTION

European Ecotourism Labelling Standard (EETLS) based on the European and global experience in the field, would assure comparable standards of service to Ecotourism clients across Europe, at least in relation to a core group of baseline quality criteria. EETLS shares all of GSTC as they are all highly applicable to

Ecotourism. Currently EETLS is made up of 40 specific criteria divided into the four pillars of sustainable tourism, in line with GSTC:

- Demonstrate effective sustainable management.
- Maximise social and economic benefits to the local community and minimise negative impacts.
- Maximise benefits to cultural heritage and minimise negative impacts.
- Maximise benefits to the environment and minimise negative impacts.

The European Ecotourism Labelling Standard shares also the same description of criteria with The Global Sustainable Tourism Criteria. This ensures high compatibility with GSTC; and a clear understanding of what sustainable tourism is. But there are several differences between a sustainable tourism system and an Ecotourism one, especially when focusing on Romanian ecotourism. The criteria apply to various aspects of the management system of an Ecotourism business in Romania, requiring the implementation of a long-term sustainability management plan and the business's compliance with all relevant national or local regulations and legislation. Developing a Romanian Ecotourism label mince to create, promote and implement a system of accreditation for ecotourism, for eco-business (touroperators), eco-destinations (protected areas, rural communities) and eco-lodging (rural pensions). This problem determinate many changes like:

- to will be implemented practical mechanisms for nature conservation and sustainable local development (including financial mechanisms) at destinations level;
- to will change the mentality of the business sector regarding the environmental protection and local communities;
- to increase the quality of the ecotourism services;
- AER will promote at the international level only certified tour operators and eco-destinations;
- to increase the number of foreign tourists and to develop rural areas;
- to identify new eco-destinations.

The Global Sustainable Tourism Criteria (GSTC) can provide a basic framework for developing Ecotourism criteria, because Ecotourism is a sustainable form of tourism. The International Ecotourism Society's (TIES) definition and principles of Ecotourism provide a useful tool for the interpretation of GSTC in the context of Ecotourism. The scope of developing a standard for Ecotourism practice derives from the need to harmonise existing European ecotourism labelling systems and strengthen the position of labeled businesses in the tourism market (Cooper Ch., 1996).

The harmonisation effort is based on an integrated concept of ecotourism, which brings together the different services offered to the tourist, i.e. accommodation, food, travel and nature-based outdoor activities. Each of the service-components of Ecotourism may come under different quality labels. Labelling standard would assure the baseline quality of the tourism product and harmonise existing labels while recognizing their specific experiences and background.

## **2. ECO-ECONOMY- GENERAL CONSIDERATIONS**

Evaluating the preliminary conditions for accrediting the pensions in Mărginimea Sibiului as eco-pensions will be done by field investigation and surveys. The results obtained will allow formulating some proposals for issuing a series of methodological norms of classifying the reception structures with the function of tourist accommodation of the type of eco-pensions, in collaboration with ANTREC and other professional associations of the kind. What we monitor is the quantitative and qualitative analysis of the eco-tourist potential of the natural capital, clean technologies, ecological agriculture, the exploitation of non-polluting natural resources, evaluation of the ecological impact and strategic eco-marketing, in order to identify those pensions that have an eco-tourist potential (Fuad-Luke A., 2008).

The use of the expertise and results of the research for the specialists in ecology and food industry will enable the implementation of food biotechnologies, the preservation of biodiversity, and the development of eco-friendly economic activities, including ecological agro-tourism (Bogdan A.T. et.al., 2010).

A great importance have that the administrators of pensions from Mărginimea Sibiului aware of the advantages offered by ecotourism, which is more compatible with the traditional way of living than the other forms of tourism.

The history proving that the *sustainable development* is the only solution unanimously accepted which leads to the promoting of the market economy elements in a democratic background through keeping the high demands and ecological criteria (Nicula V., 2008).

It is important to underline that finding optimal alternatives between economy and environmental protection depends on the decision-makers' ability to choose and use the financial-economic instrument adequately to an effective promotion of the actions for environmental protection. The financial instruments that can be used, whose efficiency has been verified in other countries are: taxes that can be promoted as tax differentiation; subsidies to encourage the change of attitude and to grant funds for stopping pollution, deposit redemption (Bran Florina, 2002).

Of course, it is the results' problem and the economic consequences of sustainable development. From this point of view there is no long term experience in the enforcement of the concept. Such consequences can be understood without having a certain level of certainty and without being finished: improvement service quality, evolution of large sectors of consumer energy and resources towards "cleaner" technologies and less resource users; the development of new types of approaches, jobs, activities; cutting down the resources and environment emergencies and mostly of their outcomes (Bran Florina, 2002).

Regarding the types of economic growths which predominated in the 19th and 20th centuries we can state that there is a large consensus which has been reached. The concept of sustainable development represents a small bridge between the development which has been taken into account for four decades having no satisfactory results and a movement towards saving nature and environment. This is an alliance of two contemporary trends, both coming into being during the 20th century.

The notion of sustainable development supposes the accomplishment of interdependence between the three main ways of reaching this: education, scientific research, political activity. Underlining the fact that most of present problems regarding the environment are determined by the individuals way of life and solutions are found both by transforming the social conditions and the changing the way of each persons life.

Most important are economical and political structures responsible fro the determination of the so-called inequity, intra-generations that of the major difference between lower and higher strata which have been emphasized starting from development of the actual global crisis (Hera C., 1998).

Until two years ago we could state that the sustainable development was meant to be economic growth (not zero or negative growth) tallying the demand of the ecologic balance and the whole human development.

Under the present conditions of the world economic recession we must rethink such notions and try to find adequate solutions to continue the sustainable development even under the conditions of diminishing financial results. The new development depends on the previous experience of people and governments of the ability to interpret the present, of the multiple difficulties our present peoples confront with (Quelch A. J., Jocz Katherine, 2009).

The technical substantial base of this development will be a new technical way of production. One of its fundamental characteristic is the tallying on the so called 'soft' technologies – biotechnologies – and the narrowing up to eliminating the 'tough' ones as far as their use has polluted some geographical areas.

The problem is not exactly to know the volume of growth but that one referring to the kind of growth that has been looted for and accomplished (Beirman D., 2009).

Taking place under the conditions of limited resources and mostly those that are not recycled the process of economic growth is not a continuous set of circular fluxes where the poles are production and final personal consumerism. This means that on one side the economic development is addicted to the environment. On the other side any economic activity entails problems between nature and economy, man and environment. This ratio regarding the economic activity and the environment is outlined by entropy, entropic and antientropic.

In an economic area entropy means the process of degradation of material and energetic resources and this process takes place both within economic and not only.

If energy within a certain source might be infinitely used there would be no more economic activity therefore there would be no economy.

Free energy is the energy used to obtain a certain economic asset. After its degradation its transformation into rubbish, free energy changes into linked energy.

Low entropy has an ordered structure and is used in economic processes. High entropy represents a structure of total linked energy with disordered character. Such a qualitative, continuous and irreversible

degradation takes place within the economic processes. The free energy turns into a linked energy, order turns into disorder (Georgescu-Roegen, 1997).

Knowing that the economic processes have entropic character, people must act in correspondence with nature laws, to give a non-entropic character to their activities. Almost people by their actions especially economic ones, produce the acceleration of some natural entropic processes being able to act by accelerating the nonentropic processes too (Georgescu-Roegen N., 1996).

Today, more than ever the theories of the well known researcher seem to be true that the negative and positive social and economic process for Terra are taken into consideration by people in different ways: finding and using new types of energy, managing carefully the existent ones. Avoiding the pollution, degradation of environment factors; so one of the most important contemporary options is the selection with responsibility - the type of economic growth, economic development (Brown L., 2006).

In context, it is necessary that the economic agents to organize and to lead the economic processes, so as they to get the entropy free, instead of the linked on the organized entropy instead of the unorganized one. As a consequence, the intensity of non-entropic economic growth depends on two important complementary and contradictory processes: the entropic, where the natural potential is degrading; another nonentropic, creative, informative, with new possibilities to discover and valuing the resources, to use new ways saving.

By enforcing such a type of development means more powerful ecologic prices which overlaps the global financial-economic crisis. The ecological challenges mostly regarding the principles, the economic system works, shapes the dimension of the efforts which are being asked by this new way.

In a world in which the economy demands are forcing the limits of the natural systems to rely on the distorted signals of the market to guide the decisions on the investments is a certain way to disaster. Converting the economy into an eco-economy is a major challenge. Building an eco-economy will affect "every corner of our life" (Brown L., 2001).

### **3. THE DURABLE TOURISM AND THE RURAL ECO-ECONOMY**

In an ecologic vision, tourism finds to be within a tight interaction with abiotic elements, biotic elements, entropic and economic, social, cultural elements of the environment. The current evolution of tourism is characterized by the profound renewal of the world touristic offer especially by developing a new array of touristic products, both by a qualitative and quantitative point of view (Bran, F., 1997).

Four general factors determine and influence directly the touristic activity: the quantitative and qualitative value of touristic resources; the general economic growth, which mostly influences jobs and incomes; the exchange rate, which determines the evolution of the purchase power of residents and non-residents; the reparation which determines the purchasing power of clients. These factors mainly rely on exploiting the natural and cultural resources with touristic shades. All touristic activities determine in time and space potential effects on the environment, health or social system. All these influences together are being expressed through the notion of impact (Krippendorf J., 2008).

Tourism, more than any other domain, relies on the environment; this represents its "raw material", its object and domain of activity and tourism deployment being its main frame carrying the resources. Tourism is being carried out through the environment and its quality can favour or on contrary, touristic activities (Spănu Simona, 2010).

The tourism-environment relationship has a special meaning, the development and protection of the environment representing a sine qua non condition of tourism, any alteration of it can cause damages also to the touristic potential by diminishing or even cancelling its resources (Ionescu Emanuela, 2009).

From an economic point of view the deficiencies due to the existence of damaged touristic resources are reflected first in the impossibility of taking into account the touristic potential and mainly the lower use of touristic base and lower incomes from their marketing.

The touristic potential as part of the environment, the existence and development, on its quality, therefore considered a possible quality index for its environment, in other words, a barometer of its quality; it is intensively used in those areas in which the adequate requirements are met and it is diminished and gradually removed in those areas in which, for various reasons, a certain component of the environment, such as the scenery, air, or water is degrading. The economic effects of tourism – estimate income, jobs – are easily emphasized while ecological effects cannot be qualitatively measured rather than quantitatively. Besides the

fact that it is a source of income and jobs, tourism is also a source of satisfaction, for people inhabiting touristic areas (Glăvan V., 2003).

The concept of durable tourism has become increasingly popular at a microeconomic level through the promotion of green tourism. The actors of the industry of hospitality and travel have become increasingly sensitive to environmental issues. Few are those who support the idea the economic activity does not influence the environment. On the other hand, more and more managers and employers in tourism admit that natural resources have a great economic, actual and potential value if they are adequately handled (Glăvan V., 2003).

Developing a rural eco-economy depends on the global vision of the natural resources and on a broad understanding of the restructuring of economic notions and concepts needed to realize this vision (Talabă I., et al, 2010).

Concerning the classification of some agro-tourist pensions from Romania (from the actual system with flowers or daisies) like eco-tourist pensions (one could adopt a system with acorn or something else), it is necessary to harmonize the existing system with international models (Swedish, Austrian, Swiss, German, French, and Italian) in order to adapt the methods and techniques of implementing an eco-pension to the local ecotourism, by taking into account the character and traditions of the Romanian tourist village.

#### **4. EVALUATING THE ECO-TOURIST POTENTIAL IN “MĂRGINIMEA SIBIULUI”**

Promoting the concept of eco-pension among the administrators of the pensions selected as having eco-tourist potential and the highlighting of the profitability in time of this activity will be done through meetings and discussions held with the support of the town hall and of the members of “Mărginimea Sibiului” Association.

Evaluating and directing the activities from the field of tourism in relation to the ecotourism criteria will allow the exploitation of local natural and economic resources through the certification of eco-tourist products and that of destinations and accommodation structures, in order to guarantee the eco-tourist quality. The food products obtained in the household through ecological farming and stock raising activities could be valorised as traditional products and ecologically certified, in accordance with the effective legislation. The eco-economical principles are essential elements when deciding to transform an agro-tourist pension into an eco-tourist pension. Ecotourism creates jobs, sustainable development alternatives, and a well defined image that can be used in marketing the local, regional, or national products.

By implementing adequate marketing strategies, one could promote, together with the interested tourism agencies, a realistic and attractive tourist product. In the same time, we shall elaborate a guide which will contain short studies, destined for the administrators of pensions, useful for implementing the eco-pensions in the Romanian rural tourism. Alongside norms regarding the use of ecological building materials, of unconventional sources of energy, the use of biotechnologies, the conservation of biodiversity, the guide will also include menus, traditional recipes for valorising the ecological food products, and leisure activities in protected natural areas.

The marketing of ecological tourist services (accommodation, food, and leisure) that blend tradition and environmental protection will allow the sustainable development of the area. Ecotourism is the best practice for tourism in a sustainable environment. Adopting ecological technologies requires a systematic effort in formulating eco-economic policies, especially for restructuring the traditional agricultural activity. Sibiel has an old tradition (before 1989) and, more recently, holds the “Golden Apple” trophy for the hospitality of the people and the well established agro-tourism.

The benefits of ecotourism are:

- ecotourism creates employment and sustenance without destroying nature or cultural assets;
- it is a way of eating the cake while still keeping it;
- ecotourism is one of the most efficient tools to combine conservation, with socio-economic development;
- ecotourism, like no other industry, gives pristine nature an economic value;
- ecotourism creates more benefits for nature conservation yet a lot less damage on the environment, as compared to conventional tourism;

ecotourism experiences are cutting edge products that can be used in the marketing of both regions and whole countries;

ecotourism is more compatible with traditional livelihoods and indigenous cultures, than are most other kinds of industry;

- ecotourism is well positioned to promote and develop Romanian nature and cultural tourism;
- ecotourism normally demands much less heavy investments than conventional tourism, mainly because the clients focus more on the travel experience, rather than on the grade of luxury.

- Evaluating and directing the activities from the field of tourism in relation to the ecotourism criteria will allow the exploitation of local natural and economic resources through the certification of eco-tourist products. A realistic way for the evaluating the degree of understanding of the concept of "tourist eco-guesthouse" and "green village" is the questionnaire.

- The questionnaire was distributed in a number of 18 rural agro-tourist or tourist guesthouses from the Sibiel village of Mărginimea Sibiului:

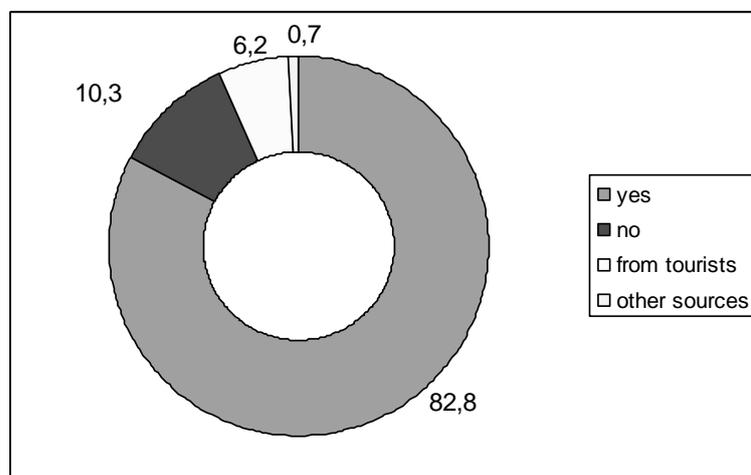
- Most guesthouses are included in the 2 flowers (daisies) category – 57% of them, then 22% guesthouses have 3 flowers (daisies), and 5% guesthouses are 4 flowers (daisies) ones. A number of 16% are classified as rural tourist guesthouses of 2 or 3 stars.

- Of the total surveyed guesthouses, 58% are members of the National Association of Rural, Ecological, and Cultural Tourism (ANTREC - Romanian language), most having no registered employees (i.e. 56,4% from the total number of guesthouses), and a great number of guesthouse administrators not being able to understand what the term "employee" refers to, since they hold the guesthouse as a Family Association.

- 100% of the guesthouses offer accommodation services, 51.3% offer accommodation and food services, and a 53.8% percent provide recreation and animation activities.

- It is worth underlining that a great number of the respondents does not mention from the beginning of the questionnaire that they also provide food services for fear of the authorities (many carry out food-related activities without the necessary approvals, as it is difficult to meet the legislation criteria), but then, a bit later, at one of the questions regarding the criteria that they currently meet in terms of being able to fall in the category of "eco-guesthouses" they mention that presently they offer organic menus.

Figure 1. The degree to which the guesthouse administrators are familiar with the concept of "eco-guesthouses"



Many guesthouse administrators carry out collateral activities such as: painting on glass, pottery, wood carving, carpentry, and so on. 53.8% of guesthouse administrators are male and 43.2% are female.

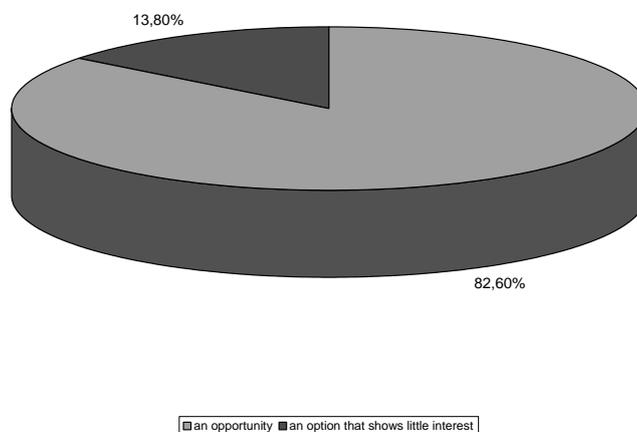
Regarding the degree of professional training (level of their studies), out of all the respondents 44.8% graduated from high school, 10.4% have specialized high school studies, 44.8% graduated from the university, and 55.2.% have completed a course of "Guesthouse Administrator" through CCIA Sibiu, or a course in hygiene, cooking, sales.

Regarding the structure by age groups, 2.9% are under the age of 29, 1% are between 30-39, 41.3% are between 40-49, 24.6% are between 50-59, and 2.1% are over 60. The most significant percentage is that of the category of administrators having the age between 40-49.

When asked "Are you familiar with the concept of eco-guesthouse" 82.8% of respondents said "yes", from mass media, and 6.2% from tourists, while 10.3% have not heard of "eco-guesthouses", and an insignificant percentage 0.7% learned about it from other sources.

When asked "Do you think that currently the eco-guesthouse, through the opportunities it offers, represents for your guesthouse: a threat? a variant that is of no interest to you?, a competition?, an opportunity?", 86.2% of the respondents indicated that this concept represents an opportunity, and only 13.8% see it as an option that shows little interest, at least for now.

Figure 2. The degree to which the guesthouse administrators think that currently the eco-guesthouse concept represents a threat, a variant that is of no interest, a competition or an opportunity



When asked "Which of the following criteria do you consider as being closer to the concept of eco-guesthouse?", 58.6% of the questioned administrators answered: "A guesthouse where the menu consists of organic products", 48.2% "A guesthouse where the environmental pollution is reduced", 24.1% "A guesthouse in which heating is based on clean technologies", 31% "A guesthouse in which the construction materials are ecological ones", 34.5% "A guesthouse in which waste is sorted and recycled", 31% "A guesthouse that meets at least half of the criteria listed above", and 41.4% "A guesthouse that meets all the criteria listed above".

When asked "Are you familiar with the concept of "green village"?", 37.9% of the respondents said "yes, but I would like to know more", 17.2% answered "yes, to a large extent", while 31% replied with "no, but I would be interested to learn more".

When asked if they are interested to participate in a workshop in the village of Sibiel, in Sibiu county, in order to learn more about the possibility of shifting from an agro-tourist guesthouse to an eco-guesthouse and about the concept of "green tourism", 72.4% said "yes, to the extent that this is possible", 16.3% said "no, because I do not think that these concepts can be successful in Romania".

## 5. CONCLUSION

Eco-certification is more and more present in many of the fields of economy, including for identifying products with high ecological potential. The tourist product offered by eco-pensions can be a promoter of green tourism. The systematic construction of public support for changing the mentality implies an intelligent

and concerted effort, developed with the help of well informed citizens. Ecotourism contributes to preserving the environment and to supporting the well being of the local population. Eco-pensions will represent a green model, focused on the strategy of the four R's (Reduce, Reuse, Recycle, and Re-examine), by using eco-economic systems, procedures, and strategies.

Transforming the agro-tourist pensions from the village of Sibiel into eco-pensions, thus making Sibiel the first green village in Romania, and training the administrators of pensions and other key members of the tourist business into forming an eco-economic view of the sustainable development actively contributes to preserving the natural and cultural heritage, includes local communities in the sequential planning, development, and operating processes contributing to their well being.

For realizing such challenges, on elaborating an eco-agrotouristic pension guide, which combines essential knowledge about ecotourism and classification in ecotourism, in order to pass from an agro-tourist to an eco-tourist pension. The manual will represent a useful source of information that can contribute to generating new ideas or adapting practices of sustainable ecotourism to the local conditions of other regions. The manual will be based on the data gathered from the field from persons that will develop these initiatives and will reflect the complexity of small enterprises, the challenges and opportunities with which they are confronted, as well as the endless creativity that this type of business allows. The transition from the traditional economy to eco-economy is generally known, but there is too little understanding for the means that are involved and the technologies necessary in ensuring the development of this process. The necessity of an ecological agriculture, the safety of food, the use of non-polluting technologies and the implementation of the eco- and bio-economy in the future eco-pensions represent an educational challenge.

The role of the interdisciplinary teams of specialists resides in informing and making the local population aware, so that they are not just simple spectators to these changes, but actors that actively co-work at their accomplishment. The challenge launched by this research is to put together in a traditional agro-ecosystem as many pieces of sustainable development as possible, based on the principles of eco-economy. Once certified, the eco-tourist pensions in Sibiel can become polarization centres for the rural tourism activity. Obtaining the eco-classification and some commercial brands and inovative products of food biodiversity will generate the development of new projects. Taking part in fairs organized by ANTREC and ANAT (tourism scholarships) with our own stand dedicated to the eco-pension, and promoting the image of the eco-pension through leaflets, specialized catalogues and website, will ensure the coherence of the sustainable development.

The integrated approach and the possibility to use the methodology of selection, elaboration, and application in the eco-pension of various results that regard the food biotechnologies will represent an opportunity for a future access to the post-adherence structural funds for the sustainable development of the Romanian village. The eco-pension is an important link in the chain ecological agriculture – ecological food – conservation of biodiversity bio and eco-economic development.

Ecotourism is a tourism which directly or indirectly promotes and supports sustainable economic development. Ecotourism can generate financial support for the formation, management and protection of natural areas.

The geographical and climatic conditions of Mărginimea Sibiului are to favour the development of tourism in an ecological environment. Therefore, Mărginimea Sibiului should follow the example of other regions with very rich natural and ecological reserves such as alpine region on Austria or Swiss, for which ecotourism has become an important source of income. The drawback of ecotourism, like any kind of tourism, is that it can lead to a certain loss of values or custom, that is why Mărginimea Sibiului should implement very carefully ecotourism facilities with the outside assistance of NGO's for a backup option due to uncertainties of the tourism market.

Ecotourism is still at a starting stage in Romania. Nevertheless, several local initiatives have already been undertaken in the Mărginimea Sibiului region.

## **ACKNOWLEDGEMENT**

This paper was cofinanced from the European Social Fund through Sectoriale Operational Program Human Resources Development 2007-2013, project number POSDRU/89/1.5/S/63258 "Postdoctoral school for zootechnical biodiversity and food biotechnology based on the eco-economy and the bio-economy required by eco-san-genesis".

## REFERENCES

- Beirman D., 2009. *Tourism and the Global Economic Crisis of 2008*, Harvard Business Review, USA.
- Bogdan A.T. et.al., 2010. Ecoeconomic and Bioeconomic Impact of Food Safety and Security in Perspective Increased Consumption of Food and Feed During 2030-2100, *International Symposium "Risk factors for Environment and Food Safety"* Oradea, Romania, pp. 1044-1056.
- Bran Florina, 2002. *The ecological component of the decisions concerning the sustainable economical development*, Publishing House ASE, Bucarest, Romania.
- Bran, F., M. et al, 1997. *Rural Tourism. European model*, Economical Publishing House, Bucarest, Romania.
- Brown L., 2001. *Eco-economy*, Technical Publishing House, Bucarest, Romania.
- Brown L., 2006. *Rescuing a Planet under Stress and a Civilization in Traubel*, Technical Publishing House, Bucarest, Romania.
- Cooper Ch. et al, 1996. *Tourism. Principles & Practice*, Longman, London.
- Fuad-Luke Aliastair, 2008. *Eco-travel – a source of complete informations for business and leisure*, Verland Publishing House, Bucarest, Romania.
- Georgescu -Roegen, N., 1997. *The Romanian Economy*, Expert Publishing House, Bucarest, Romania.
- Georgescu-Roegen, N., 1996. The entropy law and the economical process, *Legea entropiei și procesul economic*, Expert Publishing House, Bucarest, Romania.
- Glăvan V., 2003. *Rural rourism. Agriturism. Sustainable tourism. Ecotourism*. Economical Publishing House, Bucarest, Romania.
- Hera C., 1998. *The rural worl today and tomorrow*, Academy Publishing House, Bucarest, Romania.
- Ionescu Emanuela, 2009. *Ecotourism. Rural Tourism*, Artifex Publishing House, Bucarest, Romania.
- Krippendorf J., 2008. *Les devoreurs de paysages*, Ed. 24 Heures, Lausanne.
- Nicula V., 2008. Tourism and globalization-a significant perspective in implementing the European tourism policy, *Proceeding of the he International Economic Conference 15th Edition*, Sibiu, pp. 222-227.
- Quelch A. J., Jocz Katherine, 2009. *How to Market in a Downturn*, Harvard Business Review.
- Spânu Simona, 2010. The impact of climate changes on the tourism climate resource using "tourism climate index", *Proceeding of the International Economic Conference 16th Edition*, Sibiu, pp. 223-228.
- Talabă I. et al, 2010. *The rural tourism in the context of the sustainable development. Actuality and perspectives*, Tehnopress Publishing House, Iași, Romania.

# EVALUATION OF NEW TECHNOLOGIES AND FARMING METHODS IN AGRICULTURE: A CASE STUDY OF AN INNOVATIVE GREENHOUSE IN GREECE

Ioanna Apostolidou and Anastasios Michailidis

*Aristotle University of Thessaloniki, School of Agriculture, Dept. of Agricultural Economics, 54124, Thessaloniki, Greece, tassosm@auth.gr*

## ABSTRACT

Innovations contribute to rural development as well as in economic growth. It is worthy to mention that agriculture plays a major role in making the economy of Greece strong. However, farmers are to adopt a new cultivation method or technology only if the investment is profitable. Thus, constructing and operating a pilot production unit, operated only for educational purposes is a research topic of great interest. The main aim of this article is the evaluation of an innovative greenhouse that has been installed by the Public Power Corporation S.A. to the Lignitic Center of Western Macedonia, in Ptolemaida. By applying the theoretical framework of evaluating investments and scenarios analysis, alternative cultivations as well as innovative farming methods were investigated and are estimated to be competitive mixtures and viable enterprising practices. The risk and uncertainty of the investment, which are endogenous characteristics of agriculture, were examined by employing sensitivity analysis. Results indicate that the greenhouse unit, under certain conditions, can be a particularly attractive investment. The small size of the unit as well as the relatively long time required from the beginning of the unit until the «break-even point» of the investment appear to be major limiting factors. To sum up, the inquiring results can provide a significant guidance for agricultural policy and a handbook of greenhouses' competitiveness.

## KEYWORDS

District heating, Hydroponics systems, Investment evaluation, Rural development, Scenarios analysis, Sensitivity analysis

## JEL CLASSIFICATION CODES

G11, O18, O32

## 1. INTRODUCTION

Greenhouse businesses are the most intensive firms in agriculture, both in terms of labor and capital, while they contribute significantly in Greece's overall agricultural income and strengthen the national income of the country. The cultivations of crops under cover offer better prospects regarding to the control of quality and production and thus can lead to high production and quality.

In Greece, the sector of greenhouse cultivation shows potential development as it is thought to be immensely advantageous (INRMD, 1994). However, in recent years greenhouse businesses are not modernized, due to large investments in fixed capital, the lack of strategic growth, the small plottage occupied by greenhouses, the very slow incorporation of new technologies and the inadequate training and scientific support to farmers (ICAP, 1999).

The adoption and diffusion of innovations in the greenhouse businesses could greatly improve the above mentioned problems. Moreover, innovations play a major role in agricultural growth as well as in economic development, since they enable the increase of yields, farms' productivity and profitability, competitiveness

and social welfare (Moschini and Lapan, 1997; OECD, 2001; Nyemi and Virolainen, 2002; Karafillis and Papanagiotou, 2008; Karafillis and Papanagiotou 2009). Besides, through innovations a substantial increase in yields and agricultural productivity was reached worldwide (Cummings, 1971), resulting in technological advances to become the most important driving force in the development of agriculture in all OECD countries (OECD, 2001).

In addition, it is notable to mention that risk has often been considered to be a major factor reducing the rate of adoption of a new technology in agriculture (Leathers and Smale, 1992; Feder and Umali, 1993; Marra et. al., 2003). Thus, it would be useful if farmers knew how to make their businesses profitable and competitive adopting innovations (new technologies and farming methods).

This paper aims to evaluate an innovative greenhouse cultivation which operates experimental, mainly for educational purposes. Specifically, this pilot production unit investigates alternative cultivations and combinations of innovative farming methods to assess compounds that are competitive and viable enterprising practices. Furthermore, the possibility of development for the greenhouse business in areas where soil conditions are not very favorable is examined.

The evaluation of investments, through the scenarios analysis, is an attractive and interesting object for study, especially in the construction and operation of this pilot production unit, which is an innovation for the sector of greenhouse businesses in Greece. The innovativeness of this investment lies not only on the fact that new technologies and modern methods of cultivation are being used, but mainly because of the experimental operation to investigate the most effective investment strategies to be followed. It is noteworthy that the studied greenhouse is the only one in Greece operated solely for educational purposes.

The remainder of the paper develops as follows. Section II briefly describes the innovative studied greenhouse. Section III describes the methodology employed in the study, while the next section explores the data set (Section IV). Empirical results are then presented (Section V) and some concluding remarks (Section VI) are offered.

## **2. DESCRIPTION OF THE PROJECT**

This project investigates an innovative greenhouse which was established by the Public Power Corporation (P.P.C) S.A in Ptolemaida, on restored land after the mining of lignite. This unit functions experimentally, mainly for educational purposes, and has been established in the Lignitic Center of Western Macedonia, in the outer deposition of the Mine Main Field.

The greenhouse was constructed in 1999 and it concerns a double modified arched greenhouse E-W orientated, with a frame of galvanized-in-heat pipes. It has a double glazed roof window in each arch in the shape of a butterfly and also a window in the lee side. The total area that the greenhouse occupies is 1000 m<sup>2</sup> (50 x 20m). One year later, the production process began and its products are cultivated with the use of hydroponics. The installation of the hydroponic systems concerned two different systems of hydroponic cultivation, one system in each arch of the greenhouse. The NFT (Nutrient Film Technique) system in greenhouse's first arch and in the second arch the system concerned cultivation in substrate of inert materials (peat, perlite, pumice). Furthermore, both a closed circuit (with recycling nutrient solution) and open circuit (without recycling nutrient solution) were used to the inert substrate system.

Since the beginning of the greenhouse operation until the year 2008, there have been various cultivation tests involving different hydroponic systems and different substrates, which have been made to determine the most appropriate for each crop in respect of product quality and crop yield. Specifically, vegetables (tomato, lettuce, endive, green beans, cucumber, broccoli and eggplant), ornamental pot-plants (geranium, mastic, eyed, earrings and dimorfothiki) and roses have been cultured.

## **3. METHODOLOGY**

The economic attractiveness of investment is examined through ex ante and ex post analysis by applying the theoretical framework of evaluating investments. In particular, the method of Net Present Value (NPV) and Internal Rate of Return (IRR) were used (Brealey and Myers, 2000). The risk and uncertainty, which

characterize the rural area, were investigated through the analysis of alternative scenarios and through sensitivity analysis. Specifically, variables are investigated that may have negative impact on the profitability of the investment and making it unattractive and then some possible scenarios are created in order to evaluate. For the evaluation of different investment options (scenarios) criteria discount were used and investigated the most effective investment strategies to be followed by manager farmers in order to make the greenhouse cultivations competitive and viable.

The analysis of 24 different scenarios identified the «optimistic», the «basic» and the «pessimistic». Afterwards, as regards the «basic» scenario, which is the most likely to occur, became sensitivity analysis and the «break-even point» of the investment was calculated. In any case, scenario and sensitivity analysis does not deal with the risk and uncertainty, but simply locate and explain their existence. Specifically, the scenarios analysis is a useful tool to investigate factors that affect negatively or positively the investment when considering the effect on an investment of combinational changes in factors affecting the project. The sensitivity analysis is a tool with which to determine whether the uncertain estimates of various parameters which affect the return of investment, affect the investment decision or not. Therefore, the sensitivity analysis demonstrates the existence of investment uncertainty and analyzes how this affects the expected net benefits and in no way is neither a solution to the problem of uncertainty in economic conditions nor a methodological tool for correcting false estimations or even improving the predictions for the sizes of the project more accurately.

Besides, in order to cope with risk and uncertainty, modern methods of evaluation are being used, like the Probability theory, Decision trees, the method of Monte Carlo simulation, Risk Adjusted Discounting Rates and Certainty Equivalent Method (Brealey and Myers, 2000). Regarding to uncertainty and irreversibility, a new theoretical framework has been developed, the real options (Dixit and Pindyck, 1994; Tzouramani and Mattas, 2004; Keswani and Shackleton, 2006; Michailidis and Mattas, 2007).

#### **4. DATA**

The dataset for the evaluation of the innovative greenhouse, derive from the firms' logistic investigation, which operated experimentally, for the years 1999-2008, while for the years 2009-2014, data are forecasted through the calculation of the average of past real economic data. The size of the investment determined at one acre. The data for the method's implementation are the cost of fixed installations, operating costs, investment flows, the duration of the economic function of investment, inflation and discount rate.

The expenses of fixed installations consist of fixed capital and replacement costs of materials such as construction costs, the heating and cooling system, the facilities of NFT hydroponic system and facilities of the hydroponic system substrates. The cost of replacement materials is the cost of cover material which is renewed every three (3) years and the cooling system with a life expectancy of ten (10) years.

Operating costs are divided into costs of NFT hydroponic system and the system of inert substrate and include the cost of materials which are important for the conversion of any hydroponic system. Moreover, they include the cost of materials needed to prepare the hydroponic system of inert substrate, which are peat (either seedling or transplant), pumice and perlite. Finally, operating expenses include plant capital, drugs, biological plant protection products, nutrient solution, laboratory tests, tanks and measurement tools, labor costs, costs of irrigation, maintenance, transportation, alternative cost and the heating costs (oil or lignite) or the district heating expenses according to the issued scenario. The expenses of district heating also include the cost of connection to district heating.

The gross income of the greenhouse is the total produced quantity of the greenhouse products in times of their selling price, ie the gross revenue. It is noteworthy that the gross income calculated according to the produced quantity of the greenhouse, which operated experimentally, by the average selling price of the producer which prevails in the local market of Ptolemaida. The investment horizon is 15 years, since this is the life span of the greenhouse according to the construction company. Therefore, any costs or gains arising after the fifteenth year are practically negligible for the calculation of NPV, hence ignored by the analysis.

Considering the costs of construction, heating and cooling systems, facilities and installations of NFT system and system of inert substrates, estimations were made forecasting the inflation and the first full year of operation for the model greenhouse. According to data from the Hellenic Statistical Authority about the annual inflation (H.S.A, 1999-2010 census), the cumulative inflation rate is 5,58% at the end of the first year.

The discount rate which used for the analysis is 5% and it is the average long-term lending rate in the agricultural sector (Agricultural Bank of Greece). In Table 1, the inputs and outputs of the greenhouse business are presented in accordance with the current state of business, namely the financial data 1999-2014 which obtained from operations for the years 1999-2008 and projections for the years 2009-2014. In addition, 24 scenarios were created examining the replacement of the existing production project with an optimum one and the conventional heating system with fuel lignite or district heating. Furthermore, the reduction of some costs, economies of size (area of 10 acres) and state subsidies (50% of the initial investment) are investigated.

In each scenario the necessary changes to input – output table were made. Specifically, the replacement of the existing production plan with the optimum one resulted in increased net benefits from 176,440.86 € (current production plan) to 556,516.80 € (optimum production plan). According to the optimum production plan, the field cycles in NFT hydroponic system are: Lettuce (January-March), Tomato (March-October) and Lettuce (October-December). For the system of inert substrate the plan would be: Ornamental pot-plants (January-April) and Tomato (May-December).

Table 1. Input – Output presentation of greenhouse cultivation

Output		Input	
<b>Fixed capital</b>		Net benefit	176,440.86€
Construction cost	24,945.00€		
Heating system	17,610.00€		
Cooling system	2,935.00€		
Facilities of NFT hydroponic system	5,365.00€		
Facilities of inert substrate hydroponic system	2,377.00€		
<b>Cost of replacement materials</b>			
Cost of cover material	10,500.00€		
Cooling system	3,861.00€		
<b>Operating costs</b>			
NFT system cost	2,990.00€		
Inert substrate cost	8,711.67€		
Plant capital	11,410.91€		
Drugs	7,635.00€		
Biological plant protection products	12,102.00€		
Nutrient solution	8,370.00€		
Laboratory tests	6,979.50€		
Tanks and measurement tools	10,010.18€		
Labor cost	109,800.00€		
Irrigation cost (water)	5,543.01€		
Heating cost (oil)	336,592.50€		
Maintenance	4,603.50€		
Transportation	354.91€		
Alternative cost	900.00€		
Other expenses	16,095.00€		
Incidental expenses	1,807.00€		
Cumulative inflation	2,970.35€		
<b>Total output</b>	<b>614,468.53€</b>		

Source: Processing of survey data

In addition, an alternative optimum production plan (with a ratio of 1:3 to the above mentioned optimum plan), helps a lot in shaping better overall net benefits for the studied greenhouse business. Field cycles of alternative production plan for the NFT system are the same, but for the system of inert substrate would change into: Ornamental pot-plants (January-April), Roses (April-August) and Tomato (September-December).

It is important to mention that the optimum production plan is actually the perfect combination of the usual crop of the greenhouse operation after applying linear programming (Papadopoulos et al., 2008). The optimum production plan change costs of propagating material and labor thus increasing revenue.

Furthermore, replacing the conventional heating system (oil) with the one where fuel is lignite resulted in reduced heating expenses from 336,592.50 € to 75,362.61 € respectively. It should be noted that the heating costs of lignite were calculated based on the calorific power (by mass). Specifically, liters of oil were converted into kilos per year, from the current state of the pilot greenhouse. Afterwards, the calorific value of both oil and lignite were calculated and according to the price of lignite and the total amount needed to heat the greenhouse, heating costs incurred based on lignite fuel. Also, replacing the conventional heating system (oil) with the district heating one resulted in reduced heating costs from 336,592.50 € (oil) to 230,698.54 € (district heating). It must be noted that costs for maintenance are removed, because they are undertaken by the Municipal District Heating Company of Ptolemaida (M.D.H.C.P) free of charge, just bear the greenhouse with the connection cost as acreage (in this analysis the cost was 7,625.38 €).

Table 2. Presentation and description of scenarios

Scenarios	Heating system	Production	Other factors	
Scenario 1	Conventional (oil)	Current	Without subsidy	
Scenario 2			With subsidy	
Scenario 3		Optimum	Without subsidy	
Scenario 4			With subsidy	
Scenario 5			Reduction of some costs	Without subsidy
Scenario 6			With subsidy	
Scenario 7		Current	Economies of scale	Without subsidy
Scenario 8			With subsidy	
Scenario 9	Without subsidy			
Scenario 10	With subsidy			
Scenario 11	Without subsidy			
Scenario 12	With subsidy			
Scenario 13	Conventional (lignite)	Optimum	Reduction of some costs	Without subsidy
Scenario 14	District heating			With subsidy
Scenario 15				Without subsidy
Scenario 16	With subsidy			
Scenario 17	Conventional (lignite)		Economies of scale	Without subsidy
Scenario 18	District heating			With subsidy
Scenario 19				Without subsidy
Scenario 20	With subsidy			
Scenario 21	Conventional (lignite)	Current	Economies of scale	Without subsidy
Scenario 22	District heating			With subsidy
Scenario 23				Without subsidy
Scenario 24	With subsidy			

Source: Processing of survey data

The expenses of the district heating were calculated based on the requirements of the heat from burning oil, in particular based on the total calorific value (by mass) of oil and the price of the M.D.H.C.P for each «megawatt hour» (MWh). It should also be noted that the greenhouse businesses in the area have different charges from M.D.H.C.P at night hours, specifically decreased by 30%. However, the expenses of district heating in this analysis were calculated according to the consumers' selling price, because it was difficult to calculate the greenhouse's heating needs at night. Finally, it is worth to note that several more scenarios were created (scenarios 13 to 24) and they are combinations of the factors which examined in the first 12 scenarios. The presentation and brief description of all alternative scenarios is in Table 2.

## 5. RESULTS

In Table 3 below, the NPV estimates are presented for each scenario (ex post analysis for S1 and ex ante analysis for the others).

Table 3. Presentation of NPV results

<i>Scenarios</i>	<i>NPV</i>	<i>Scenarios</i>	<i>NPV</i>
<b>Scenario 1 (S1)</b>	<b>-314,790.83€</b>	Scenario 13 (S13)	+ 90,082.36€
Scenario 2 (S2)	-286,780.30€	Scenario 14 (S14)	+ 118,092.89€
Scenario 3 (S3)	- 88,696.97€	Scenario 15 (S15)	- 22,076.96€
Scenario 4 (S4)	-60,686.44€	Scenario 16 (S16)	+ 5,933.57€
Scenario 5 (S5)	-87,210.35€	Scenario 17 (S17)	+ 2,611,454.24€
Scenario 6 (S6)	-59,199.82€	<b>Scenario 18 (S18)</b>	<b>+ 2,722,294.51€</b>
Scenario 7 (S7)	-115,138.41€	Scenario 19 (S19)	+ 2,391,697.17€
Scenario 8 (S8)	-4,298.13€	Scenario 20 (S20)	+ 2,502,537.45€
Scenario 9 (S9)	-137,498.13€	Scenario 21 (S21)	+ 239,447.00€
Scenario 10 (S10)	-109,487.60€	Scenario 22 (S22)	+ 350,287.28€
Scenario 11 (S11)	-249,657.44€	<b>Scenario 23 (S23)</b>	<b>+ 19,689.94€</b>
Scenario 12 (S12)	-221,646.44€	Scenario 24 (S24)	+ 130,530.22€

Source: Processing of survey data

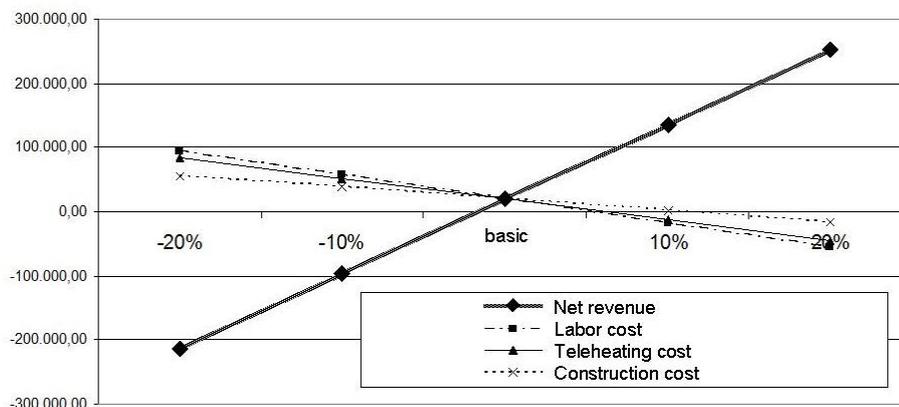
Although the greenhouse unit is non profitable (S1-S12), it could be an attractive investment under some conditions. Specifically, in the combined scenarios (S13-S24), the investment in most cases is profitable because the NPV is positive and quite large. According to the above mentioned scenario evaluation, the «pessimistic», the «basic» and the «optimistic» scenarios are resulting. The «pessimistic» is the scenario 1 (S1) which refers to the current economic state of the pilot greenhouse with NPV= -314,790.83€. The «optimistic» with NPV= +2,722,294.51€ is the scenario 18 (S18), which follows the optimum production plan of the greenhouse cultivation, reduced costs, lignite used as heating fuel, there are economies of scale and subsidy is given by the state.

Moreover, the «basic» is the scenario 23 (S23), where the greenhouse business follows the current production plan, but has replaced the conventional heating system with district heating and economies of scale are used. In «basic» scenario the investment is still profitable with NPV= +19,689.94 € and IRR= 5.60802% > 5% (discount rate 5%). However, the difference between these two rates is small and it is necessary to do sensitivity analysis, because it is possible with this analysis to end up in a non profitable investment.

In sensitivity analysis, all input and output data of the investment, both positive and negative, were changed by 10% and 20% sequentially. In each change, it was noticed a corresponding change in the price of NPV. When the sign of NPV does not change, then the analysis is robust and the results are reliable (Brealey and Myers, 2000). Conversely, when the sign of the NPV becomes negative from either a positive or negative change of some expense or gain by 10%, then there is «great sensitivity» to that item, while respectively 20% change means «just sensitivity». The analysis examined the sensitivity to inflation, incidental expenses, the net benefit and the expenses for replacing the greenhouse cultivation. In addition, the sensitivity is examined by changing the fixed capital and the operating costs of the greenhouse business, too (Fig. 1).

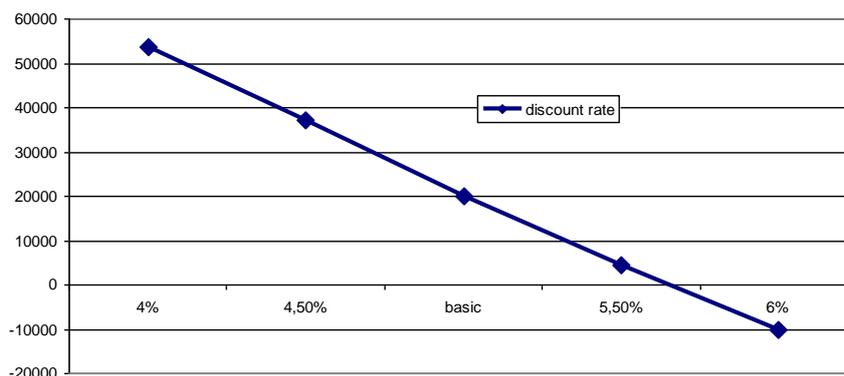
Sensitivity analysis at «basic» scenario showed that the NPV has great sensitivity to the net benefit (higher declination of the curve), because a possible reduction by 10% would result in a change of NPV from +19,689.94 € to -96,765.77 €. Furthermore, through sensitivity analysis on fixed capital, a certain sensitivity to the construction costs is noticed, as alleged increase of 20% will result in a change of NPV from +19,689.94 € to -17,062.83 €. Moreover, the sensitivity analysis on operating costs showed that the NPV is very sensitive to labor costs and district heating expenses. A possible increase in labor costs by 10% would result in a change of NPV from +19,689.94 € to -17,756.50 €. In addition to that, any increase in district heating expenses by 10% would result in a change of NPV from +19,689.94 € to -12,384.97 €.

Figure 1. Sensitivity Analysis of NPV on costs and benefits



Source: Processing of survey data

Figure 2. Sensitivity Analysis of NPV in the discount rate



Source: Processing of survey data

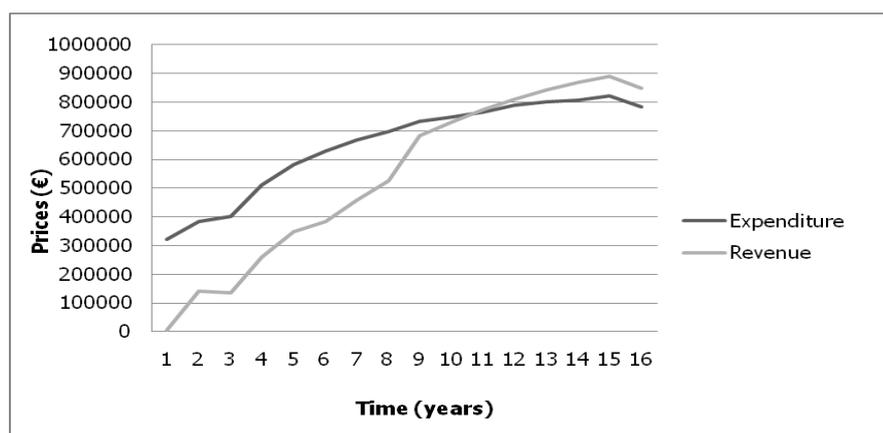
It should be noted that the sensitivity analysis, which took place, had as a given parameter the discount rate. However, it would be very useful to investigate the effects on sensitivity analysis of a different discount rate. Thus, it was examined how the NPV formed for different discount rates varied from 4% to 6%. Sensitivity analysis showed that by changing the discount rate to 6% the NPV is negative and the specific value is -10,819.02 €, so there is sensitivity when discount rate is 6% (Fig. 2).

The «break-even point» indicates the minimum amount of sales that a business has to make in order to cover both fixed and variable costs. In other words, its specification determines how far it is possible to restrict sales of a business without showing losses or profits (Brealey and Myers, 2000). Therefore, the calculation of the «break-even point» in a firm helps so that right enterprising decisions can be made. In the case of the studied greenhouse business, it is necessary to find the «break-even point», because it will be examined at what extend the incomes (net benefits) can be reduced without damages to the firm. Also, it will be investigated whether the decision to invest in farms under coverage is profitable, because through

calculating the «break-even point» it is known in how many years the business will make those sales that will bring neither profit nor loss.

The «break-even point» was calculated according to the «basic» scenario (S23), which is the most likely to occur and for its calculation the total costs and revenues for each year after their reduction to present values are used. The diagram below (Figure 3) shows the «break-even point» of the investment to be in the eleventh year. Therefore, the investment will manage to operate without showing profits or losses ten years after its initial operation.

Figure 3. The break-even point of the greenhouse business



Source: Processing of survey data

## 6. CONCLUSIONS

According to the results of ex post analysis, the investment is not profitable, but only under prerequisites because there are variables that hinder it. The scenario analysis examined which strategies should be followed and adopted, so that greenhouse business may flourish in areas with no favorable climatic conditions. The results of the ex ante analysis for the combined scenarios (S13-S24) show that the investment is profitable, economically viable and competitive.

By evaluating different scenarios, the «pessimistic» (S1), the «basic» (S23) and the «optimistic» (S18) scenarios came up with. Based on the sensitivity analysis that followed, the NPV in the «basic» scenario shows great sensitivity to the net benefit, labor costs and expenses of district heating. Furthermore, it shows a certain sensitivity to the construction costs and a possible increase in the discount rate to 6% will turn the NPV to negative, equal to -10,819.02 €.

In addition, the «break-even point» of the investment for the «basic» scenario was examined, in order to calculate the time at which the investment will start having net profits. Knowing that the greenhouse's life span is fifteen years, the firm's profits come too late since the «break-even point» is located at the eleventh year.

In conclusion, this investment is particularly attractive, even in areas where soil conditions are not so favorable, as long as farmers take into consideration some factors, the most important of which is the acreage of the greenhouse. Most greenhouses occupy small area and this turns them to small businesses, as far as size is concerned. Thus, they become economically unviable and uncompetitive in the global market.

Investors of greenhouses in areas with no favorable soil and climate conditions should have flexibility in their investment choices. The strategy that is followed should be examined every time according to the particularities of each region and each market. Investing in greenhouses, where innovations are being adopted and applied, such as hydroponics cultivation and substitution of conventional heating systems with cheap energy (district heating, lignite) contribute positively to the competitiveness of products by reducing their production costs and therefore result in higher financial effects for the farmer.

However, in order for the producers of greenhouse products to adopt and apply all the innovations, training has to take place on topics such as means of cultivating (hydroponic systems) products and energy saving, since consumption is particularly high in greenhouses because of the large heating and cooling requirements. The scientific training of the greenhouses' workforce can result in achieving higher yields in the production process and in better quality products, which will be more competitive and with higher selling price. Therefore, investments in greenhouses should include farmers who have the necessary scientific knowledge for the crops they will cultivate and the techniques they will use.

Moreover, the construction and operation of innovative greenhouse businesses in Greece depends to a large extent on the applied investment policies and the possibility that producers may receive, in the early stages of the construction, some financial aid from the government (subsidy). However, subsidies in recent years are characterized by uncertainty and the possibility of their fadeout in the future is great.

The results of this study are important as the study itself presents and examines several scenarios that render a greenhouse investment into a profitable one, even in areas where soil and climate conditions are not favorable. Furthermore, although the results cannot be the basis for assessing all greenhouse businesses in Greece as they have only indicative value, they can however be a methodological guide for agricultural policy and a manual for competitiveness.

The operation of the studied experimental greenhouse and the evaluation of investments in new technologies and cultivation methods, which are environmental friendly, help to a great point the present or future farmers in their decisions and strategies to follow for their greenhouse business. Essentially, through the research results they will have an extra motivation to adopt innovations and implement those that could bring the best financial outcome for their firm. Moreover, the risk that they have to take when applying for the first time a new technology or farming method is reduced since they will know how to handle each situation and will have as a guide the course of this innovative greenhouse business.

## REFERENCES

- Agricultural Bank of Greece, 2011. Rates of interest. Available at <http://www.atebank.gr>
- Brealey, R.A. and Myers, S.C., 2000. Principles of corporate finance. 6th edition. McGraw-Hill/Irwin. Boston.
- Cummings, R.W., 1971. *Agricultural research and technology*. In Leagans, J.P. and C.P. Loomis (Eds). Behavioral change in agriculture: Concepts and strategies for influencing transition. Cornell University Press. Ithaca N.Y.
- Dixit, A.K. and Pindyck, R.S., 1994. *Investment under Uncertainty*. Princeton University Press. Princeton.
- Feder, G. and Umali, D.L., 1993. The adoption of agricultural innovations: a review. *Technological Forecasting and Social Change*. 43, pp. 215-239.
- H.S.A – Hellenic Statistical Authority, 2010. Inflation. Athens. Available at <http://www.statistics.gr>.
- ICAP S.A., 1999. Greenhouses, greenhouse products. Sector study. Athens.
- INRMD - Institute of Natural Resource Management and Development, 1994. Investigation Study for the Enterprising Modernization of Greenhouses in Greece. GBID (Greek Bank for Industrial Development). Athens (in Greek).
- Karafillis, C. and Papanagiotou, E., 2008. The contribution of innovations in total factor productivity of organic olive enterprises. *Proceedings 12<sup>th</sup> Congress of the European Association of Agricultural Economists*. EAAE.
- Karafillis, C. and Papanagiotou, E., 2009. Innovation and Profit Efficiency in Organic Farming. *World Journal of Agricultural Sciences*. Vol. 5, pp. 17-23.
- Keswani, A. and Shackleton, M., 2006. How real option disinvestment flexibility augments project NPV. *European Journal of Operational Research*. Vol. 168, pp. 240-252.
- Leathers, H.D. and Smale, M., 1992. A Bayesian approach to explaining sequential adoption of components of a technological package. *American Journal of Agricultural Economics*. Vol. 68, pp. 519-527.
- Marra, M. et al, 2003. The economics of risk, uncertainty and learning in the adoption of new agricultural technologies: where are we on the learning curve? *Agricultural Systems*. Vol. 75, pp. 215-234.
- Michailidis, A. and Mattas, K., 2007. Using real options theory to dam investment analysis: An application of binomial option pricing model. *Water Resource Management*. Vol. 21, pp. 1717-1733.
- Moschini, G. and Lapan, H., 1997. Intellectual property rights and the welfare effects of agricultural R&D. *American Journal of Agricultural Economics*. Vol. 79, pp. 128-137.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Nyemi, J. and Virolainen, M., 2002. *Ex ante economic assessment of adopting Genetically Engineered Crops in Finland*. In: Santaniello, V., R. E. Evenson and D. Zilberman. Market development for genetically modified food. CAB International. New York.
- OECD - Organisation for Economic Co-operation and Development, 2001. Adoption of technologies for sustainable farming systems. Organisation for Economic Co-operation and Development (OECD). Paris.
- Papadopoulos, I. et al, 2008. Evaluation of Hydroponic Production of Vegetables and Ornamental Pot-Plants in a Heated Greenhouse in Western Macedonia, Greece. *American Journal of Agricultural and Biological Sciences*.
- Tzouramani, E. and Mattas, K., 2004. Employing real options methodology in agricultural investments: the case of greenhouse construction. *Applied Economics Letters*. Vol. 11, pp. 355-359.

# EXPLOITING ORGANISATIONAL KNOWLEDGE THROUGH VIRTUAL COMMUNITIES

Alexis Lazanas<sup>1</sup>, Yiannis Aggelopoulos<sup>2</sup>

<sup>1</sup>*Technological Institute of Patras, Koukouli, 26334, Patras, Greece*

<sup>2</sup>*Technological Institute of Patras, Koukouli, 26334, Patras, Greece*

## ABSTRACT

The wide recognition of Communities of Practice (CoP) and their contribution as knowledge construction mechanisms due to the fact that group work and collaboration - using online environments - has become an important research topic through the interconnectivity enabled by the World Wide Web. CoP are constantly applicable in alternative application domains such as: education, social life, Internet and mainly in the Organizational structure. The main objective of this paper is to investigate the role of Virtual Communities of Practice in the leadership domain and especially in decision making process within a company. In classifying a CoP as successful some critical factors play a key role such as: human resources, collaboration technology, and the practices used to solve the problems or make decisions. The objective of CoP is to accumulate different forms of knowledge through the interaction of its members and to exploit this knowledge in problem solving through Decision Support Systems (DSS). Therefore, we propose a new decision making model that is capable of using the knowledge generated by CoP, exploiting at the same time Collaboration Support Systems (CSS) proposed in the literature in order to provide the DSS's with both types of formal (explicit) and informal (tacit) knowledge.

## KEYWORDS

e-Communities of Practice, Collaboration Support Systems, Decision Making, Leadership, Knowledge Management

## JEL CLASSIFICATION CODES

D83

## 1. INTRODUCTION

In today's business reality, the need for organizations to become more systematic and intentional about managing knowledge is urgent and therefore Communities of Practice (CoP) have a critical role as structural part of organizations and as part of knowledge management programs to assist in achieving their goals. Cultivating communities of practice in strategic areas is a practical way to manage knowledge as an organizational asset, which is part of organizations' knowledge management vision. Developments in science and technology, how-ever, create a paradox: increasing complexity of knowledge requires increased specialization and collaboration, but the half-life of knowledge is getting shorter (Hislop, 2004). An organization's adaptive flexibility in this fast-paced globalised world is a major critical success factor (Hinton, 2003). The demand for communities of practice to collaborate and provide structure to the organizational knowledge base therefore keeps on growing on a daily basis. This rapid change of pace in the business world is felt even more intensely by Small and Medium Enterprises (SMEs), as they do not always have the funds to compete on the same level as larger organizations in respect of knowledge management. SMEs are specifically often way behind larger organizations in respect of technology availability and usage for CoP (Du Plessis, 2008). However, not all organizations have the luxury of having e-CoP. Information also cannot be shared in a central place, except maybe in a shared Windows file structure on a local area network without any proper search facility. The impact is thus that staff must keep up with changes in the

rapidly changing business world, but without the necessary technology and tools to assist them and sometimes even without the essential CoP.

CoP are important to the functioning of any organization, but they become crucial to those that recognize knowledge as a key asset (Wenger, 1998). From this perspective, an effective organization comprises a constellation of interconnected CoP, each dealing with specific aspects of the company's competency - from the peculiarities of a long-standing client, to manufacturing safety, to esoteric technical inventions. Knowledge is created, shared, organized, revised, and passed on within and among these communities (Denning, 2006). In a deep sense, it is by these communities that knowledge is "owned" in practice.

CoP fulfill a number of functions with respect to the creation, accumulation, and diffusion of knowledge in an organization:

- They are nodes for the exchange and interpretation of information. Because members have a shared under-standing, they know what is relevant to communicate and how to present information in useful ways. As a consequence, a CoP that spreads throughout an organization is an ideal channel for moving in-formation, such as best practices, tips, or feedback, across organizational boundaries.
- They can retain knowledge in "living" ways, unlike a database or a manual. Even when they routinize certain tasks and processes, they can do so in a manner that responds to local circumstances and thus is useful to practitioners. CoP preserve the tacit aspects of knowledge that formal systems cannot capture. For this reason, they are ideal for initiating newcomers into a practice.
- They can steward competencies to keep the organization at the cutting edge. Members of these groups discuss novel ideas, work together on problems, and keep up with developments inside and outside a firm. When a community commits to being on the forefront of a field, members distribute responsibility for keeping up with or pushing new developments. This collaborative inquiry makes membership valuable, because people invest their professional identities in being part of a dynamic, forward-looking community.
- They provide homes for identities. They are not as temporary as teams, and unlike business units, they are organized around what matters to their members. Identity is important because, in a sea of information, it helps us sort out what we pay attention to, what we participate in, and what we stay away from. Having a sense of identity is a crucial aspect of learning in organizations (Wenger, 1998).

CoP structure an organization's learning potential in two ways: through the knowledge they develop at their core and through interactions at their boundaries. Like any asset, these communities can become liabilities if their own expertise becomes insular. It is therefore important to pay as much attention to the boundaries of CoP as to their core, and to make sure that there is enough activity at these boundaries to renew learning. For while the core is the center of expertise, radically new insights often arise at the boundary between communities.

Communities of practice truly become organizational assets when their core and their boundaries are active in complementary ways (Wenger and Snyder, 2000). To develop the capacity to create and retain knowledge, organizations must under-stand the processes by which these learning communities evolve and interact. We need to build organizational and technological infrastructures that do not dismiss or impede these processes, but rather recognize, support, and leverage them.

Taking into consideration the above issues in this pa-per we examine the potential of integrating CoP provided knowledge into the organizational decision making in order to enhance the quality and practice of the organization's executive leadership. More specifically, Section 2 presents related work concluded in the areas of CoP, Collaboration Support Systems as well as in Knowledge Management and Leadership Section 3 discusses some technical issues considering Information Technology (IT) and Collaboration challenges, Section 4 focuses on Leadership and Strategic Planning through CoP driven Decision Making, Section 5 proposes a new Decision Making through the encapsulation of CoP and, finally, in Section 6 we conclude our work and set some future research directions .

## **2. RELATED WORK**

## **2.1 E-Communities of Practice as knowledge construction mechanisms**

Virtual communities (e-CoP) use networked technology, especially the Internet, to establish collaboration across geographical barriers and time zones. In comparison to traditional communities, virtual communities in cyber-space differ in several respects (Palloff and Pratt, 1999). Traditional communities are place-based and have membership according to norms. Group dynamics often override individual expression. There is a distinct border between membership and differentiation, that is, it is clearly defined who is a member and who is not.

In contrast, virtual communities exist according to identification to an idea or task, rather than place. They are organized around an activity, and they are formed as a need arises. Squire and Johnson (Squire and Johnson, 2000) also note that virtual communities do not need formal boundaries for they can be fluid. Because the members cannot see each other, norms do not dominate as much as in traditional communities, thus allowing for greater individual control. In other words, the Internet, or the WWW, becomes the “place” for the community; thus networked communication has increased the parameters of what is known as a community.

Palloff and Pratt (Palloff and Pratt, 1999) describe several steps in constructing a virtual community. First, one needs to define clearly the community’s purpose and create a gathering place for the group. Subsequently, the participants in the group should promote leadership from within the group, as well as define norms or a code of conduct. This allows community members to resolve conflicts by themselves. In addition, a range of member roles should be established, plus facilitation of subgroups.

Both virtual communities and “traditional” communities of practice have life cycles. Palloff and Pratt (Palloff and Pratt, 1999) outline the following five stages with respect to the life cycle of community development, whether the community is traditional or virtual: “forming, norming, storming, performing, and adjourning.” “Storming” refers to conflict that is an inherent and necessary part of all workgroup evolution. An interesting research (Haythornthwaite et al., 2000) refers to these temporal stages of community development as initial bonding, early membership, and late membership. Palloff and Pratt (Palloff and Pratt, 1999) delineate the phases of building a virtual community as follows:

1. The initial (testing the waters) phase,
2. The conflict phase,
3. The intimacy and work phase,
4. The termination phase.

In (Seufert, 2002) the researcher [11] focuses on learning within a community and divides it into four phases: (1) content, (2) intention, (3) contracting, and (4) settlement. These phases are also based on time. Thus, in communities of practice and virtual communities, language, practices, customs, and resources develop over time (Squire and Johnson, 2000).

Communities of practice comprise social arrangements in which individuals learn by participating in activities. They include the members, which consist of both experts and novices. In addition, communities of practice also include the artifacts, which are the products, technology, media, and processes that are created by its members. Constructivist techniques (e.g., collaboration, facilitation, and ill-structured problems) enable learning (knowledge) to take place in communities of practice. CoP differ from traditional learning environments because the learning takes place in the actual situation, including the social environment. This means novices and experts, as well as novice movement to expertise, are important aspects of communities of practice. Virtual communities are networked communities that bridge time zones and geographical locations (Palloff and Pratt, 1999). Networked technologies, especially the Internet, allow these virtual communities to exist.

## **2.2 Collaboration Support Systems in CoP**

Collaboration Support Systems (CSS) have become a powerful tool for the development of CoP. Without any doubt, collaborative work based on information sharing is becoming a necessity. All categories of tools providing group communication and collaboration, address some of the coordination problems that decentralization, joint ventures, mobile working and outsourcing of business functions have created. Widely

dispersed working groups can jointly author, comment and annotate documents (group file handling), organize and conduct electronic meetings (EMS), and engage in synchronous or asynchronous group discussions (real-time/non-real-time computer conferencing) (Bafoutsou and Mentzas, 2002).

File and document sharing is clearly the most common and at the same time most needed collaboration service. The majority of the literature referred tools provides file and document sharing functionality and often, document management facilities. Geographically dispersed work groups, either consisting of project team members, usually working in different organizations, or of interactive employees of the same company, have the common, compelling need to share the information included in documents and files of various formats and to be able to work with that information, preferably using their local applications. Therefore, basic file/document sharing and management functionality should be integral part of all collaborative tools. Non-real-time collaborative software is not necessarily intended for professional activities. More often, people use it to create discussions around any issue they are interested in. It is commonly integrated in e-commerce sites, to attract frequent visitors, or it can be part of a company intranet to involve employees. Services provided by non-real-time collaborative tools are usually also included in systems belonging to the other categories. Electronic meeting systems enable people to work together more effectively, mostly during face-to-face meetings with many participants. They are especially useful if sensitive issues need to be discussed, which participants may be reluctant to talk about openly and in case of extreme opinion differences among dominant personalities. Also, it is considered best to use EMS, when consensus is needed before going forward, when there is limited time to collect information from a large group of people, a very complex decision based on many criteria must be made, and the meeting content needs to be quickly documented and used for desired impact on the organization (Bafoutsou and Mentzas, 2002).

### **2.3 E-CoP and Leadership**

In respect to issues concerning community's leadership, most authors (Wenger, 1998), (Wenger and Snyder, 2000), (McDermott, 2007) have focused on the assignment of a facilitator or a sponsor to the community. By doing so, the organization defines the leadership structure of the e-CoP. Decisions regarding the identification of specific roles to be played are among the initial decisions that help define what a community is. There are what we call a structuring characteristic.

However, beyond these initial identifications of roles, the way this leadership structure is managed throughout the e-CoP's life is the result of the decisions and actions of actors in the organization. For instance, top management may choose, for political reasons, to keep a leader in his/her position even though this person has no abilities for the task at hand. Such a decision may seriously impede the success of the e-CoP. Therefore, we must look beyond a community's leadership official structure to understand how this structure is operationalized and managed throughout the e-CoP's life in response to the challenges and opportunities faced by the community.

While studying how organizations may support their e-CoPs, Fontaine in (Fontaine, 2001) identified "eleven formal and informal roles needed to keep communities afloat". Among those roles, two are considered leadership roles: leaders and sponsors. Fontaine's definition of the various roles taken by community members is a first step in understanding how leadership's actions may influence a community's success. Moreover, his typology provides an insight as to which responsibilities are associated with each role. However, it falls short of investigating how decisions regarding those roles should be carried out to maximize the benefits of a CoP. In order to fully comprehend how the e-COPs' leadership team may counteract, by its actions, the challenges arising from their structuring characteristics, we need to go beyond the identification of roles, and focus more closely on how these roles are being managed during the e-CoPs' life.

Alvesson and Sveningsson invite a greater openness to the consideration of leadership than it is presently found. It is suggested that an alternative way to think about leadership is to adopt "systems-control" thinking. Systems-control orthodoxy has the tendency to promote a rather mechanistic view of organizations and managerial work showing managing as an activity mainly concerned with "designing and controlling work organizations as if they were big machine-like systems rationally devised to meet unambiguous organizational goals".

Such thinking derives from modernist and universalistic aspirations to maximize control over human circumstances with the manager being viewed as an expert who controls subordinates to behave in ways which are consistent with the organization's goals throughout the power and interrelatedness of technologies.

A further branch of leadership research identified that information is organization's lifeblood and that relationships are the arteries through which the information flows. The leader must take on a relational slant in all aspects of organizational life because organizations differ from a mere collection of individuals in that the parts have an influence on each other (Goldstein, 1994), (Stumpf, 1996). Leadership must recognize that organizations, due to the fact that are open systems, are comprised of elements that relate to each other in unique, non – linear ways (Sweet, 1997). This demands development of trust, inclusion, respect, and a concern for the “whole-soul” of the people we lead through a common communicative system (Bolman and Deal, 1995), (Fairholm, 1997). Rather than restricting and controlling information coming from within and without an organization, leaders recognize the importance of free and easy access to information. To benefit the most, leaders must recognize that information must flow from and to all levels in the hierarchy of the organization - from the outside in, inside out, top down, bottom up, and side to side. Previous notions of leadership that suggest the job of executives and senior managers is to buffer and filter information to and from internal and external environments lose their credibility. Though opening up the lines of communications may be frightful prospect for some, the pay-off is clear. A sense of community is developed, which allows to trust and to individual autonomy to develop. Also, ensuring feedback and institutionalizing feedback procedures is a sign of confident leadership. The leadership confirms the need for continuous feedback loops to capitalize on creativity, internal organizational culture, and external flows of information. Models are being developed to illustrate how organizations can do it (Rinaldi, 1997).

Researchers consider the challenge of organizational renewal, through internal reorganization, as a response to the trend of environmental evolution. Adaption and change therefore become the guarantors of organizational survival, and disappearance the final fate befalling those firms that stray from the guidelines set down by their environmental context (Santos, 2002). On the other hand, we should not forget the strategic decisions should be taken by the management and the leadership of the firm. The decisions are related to the process of organizational renewal constitute decisions of a strategic nature, insofar as they are long-term decisions that frequently affect the whole form and provide a guarantee of organizational survival. Thus, the process of organizational renewal is consists of executive perceptions, attitudes and planning. The literature has focused, above all, on organizational renewal processes deriving from executive succession (Pitcher et al., 2000), (Zajac et al., 2000). Recently, researchers have also analyzed the question of the leadership's and management's capacity to guarantee organizational survival (Montuori, 2000), (Barnett and Pratt, 2000). The leadership's perception of the environmental evolution and of adaptive misfits, along with their interest in organizational adaption- as a guarantee for future survival- marks the starting point for organizational renewal. The attention of the leadership to the analysis of the environment and their evaluation of the degree of firm- environment fit become determinants of the renewal and subsequent survival of the firm (Kakabadse et al., 1995), (Analoui and Katami, 2002).

### **3. E-COMMUNITIES OF PRACTICE IN BUSINESS MANAGEMENT**

#### **3.1 Interconnecting IT and Business Knowledge**

Poor relationships, rather than a poorly integrated IT portfolio, may be at the root of poor knowledge sharing between Business Managers and IT staff (Peppard and Ward, 1999), (Schein, 1997). These poor relationships are a result of a lack of know-ledge and differences in knowledge sharing styles. This poses two challenges for Knowledge Management (KM) between Business and IT functions (Martin et al., 2004):

1. Establishing a common vision/understanding between Business and IT:
  - IT is focused on Technology rather than being Business focused
  - Business expects efficient and fast solutions from IT, but gives them little guidance
  - Lack of a ‘one-team’ mentality and a lack of knowledge of each other's issues
2. Knowledge sharing between Business and IT
  - Poor communication and diverse knowledge sharing styles (Martin et al., 2004).

The field of KM is diverse, spanning a multitude of areas and views. One of the most dominant, however, is the IT, tool driven view. KM sprang from the artificial intelligence movement where knowledge is viewed as a commodity that can be codified, stored and transmitted. Scarborough et al., claim that nearly 70% of

articles on KM are from the IT/IS areas and many of these are practice driven with the emphasis on explicit knowledge. Managers hope that these tools can be exploited to capture and retain knowledge within the company, and that this will encourage learning across functional boundaries. This trend is also evident in academic literature. The most common use of technology in KM is to create a repository of so-called “structured knowledge”. In analyzing the predominant views in KM, (Schultze and Leidner, 2002) claim that the vast majority of research in the area of KM in information systems falls under an approach which is concerned with codification of objective knowledge. This view is clearly the dominant view in KM. However, the weakness of this approach is the assumption that all knowledge can be made explicit and captured in a formal way (Martin et al., 2004). It is questionable if this view can capture the nuances of more complex issues such as tacit mental models, relationships, degree of involvement and depth of knowledge in an information sharing community. People are active sense-makers who often share common views but also conflict and disagree. While they may like to make sense of things through codifying knowledge and formalizing processes, they often prefer informal dialogue and networks to share knowledge. Knowledge in organizations is not simply about technology, no matter how sophisticated it is, but is a complex mix of people, technology, processes, relationships, dialogue, consensus and conflict.

### **3.2 Requirements and challenges in Collaboration Technology**

An interesting research presented in (Karacapilidis et al., 2009) as the result of a research study, concerned the improvement of practices, strategies and knowledge in diverse cognitively-complex collaborative environments. Design of a smart solution to improve a community’s understanding and productivity in such environments is certainly a big challenge. Towards meeting it, the authors have first performed a series of interviews with members of diverse communities in order to identify the major issues they face during their ordinary practices. Twelve communities, coming from three distinct work environment types (management, engineering and learning), and ranging in size from a few decades to a few hundreds of members, were involved (7 of these communities were moderated). In total, 37 people went through a semi-structured interview (the vast majority of them were ‘early adopters’ with more than 5 years hands-on experience with collaborative technologies). All people selected were highly active members in their communities and/or they were having a moderator role. Major issues identified were (these issues delineated categories of crucial, problem-specific requirements to be met during the development of CoPe\_it!) (Karacapilidis et al., 2009):

- Cognitive overhead and management of information overload: This is primarily due to the extensive and uncontrolled exchange of diverse types of data and knowledge resources. For instance, such a situation may appear during the exchange of numerous ideas about the solution of a public issue, which is accompanied by the exchange of big volumes of positions and arguments in favor or against each solution. In such cases, individuals usually have to spend much effort to conceptualize the current state of the collaboration and grasp its contents (Hollan et al., 2000). The need to consider an overwhelming amount of resources may ultimately harm a community’s objectives (Wenger, 1998). To avoid that, functionalities for scalable filtering and timely processing of the associated big amounts of data need to be offered.
- Social behavior: The representation and visualization of social structures, relationships and interactions taking place in a collaborative environment with multiple stakeholders are also of major importance. This is associated to the perception and modeling of actors, groups and organizations in the diversity of collaborative contexts. A problem to be addressed is to provide the means to appropriately represent and manage user and group profiles, as well as social relationships. However, neither relationships nor contexts are static; they are emerging and change over time, which necessitates the development of adaptive services
- Collaboration modes: Interviews indicated that the evolution of the collaboration proceeds incrementally; ideas, comments, or any other type of collaboration objects are exchanged and elaborated, and new knowledge emerges slowly (Wenger, 1998), (Hollan et al., 2000). When members of a community participate in a collaborative session, enforced formality may require them to specify their knowledge before it is fully formed. Such emergence cannot be attained when the collaborative environment enforces a formal model from the beginning. On the other hand, formalization is required in order to ensure the environment’s capability to support and aid the collaboration efforts. In particular, the abilities to support decision making or estimation of the present state benefit greatly from formal representations of the information units and

relationships. Generally speaking, solutions to the problem under consideration should be generic enough to address diverse collaboration modes and paradigms.

- **Expression of tacit knowledge:** A community of people is actually an environment where tacit knowledge (i.e. knowledge that the members do not know they possess or knowledge that members cannot express with the means provided) predominantly exists and dynamically evolves. Such knowledge must be efficiently and effectively represented in order to be further exploited in a collaborative environment.

- **Integration of legacy resources:** Many resources required during a collaborative session have either been used in previous sessions or reside outside the members' working environment (e.g. in e-mailing lists or web forums). Moreover, outcomes of past collaboration activities should be able to be reused as input in subsequent collaborative sessions. The inherent issues of liability and preservation of intellectual rights need particular attention in such cases.

- **Data processing and decision making support:** In the settings under consideration, timely processing of data related to both the social context and social behavior is required. Such processing will significantly aid the members of a community to conclude the issue at hand extract meaningful knowledge and reach a decision. This means that their environment (i.e. the tool used) needs to interpret the knowledge item types and their interrelationships in order to proactively suggest trends or even aggregate data and calculate the outcome of a collaborative session.

### **3.3 Motivation for knowledge exchange through interaction**

The underlying motivations for why people exchange knowledge are fundamentally different. The motivation to exchange knowledge is affected by whether the decision to share is viewed as primarily economic and motivated by self-interest, or non-economic and motivated by community interest and moral obligation. Different norms govern people's behavior in economic and non-economic spheres of activity and appropriate behavior varies according to context and the nature of the goods being exchanged. Thus whether knowledge exchange is viewed as an economic or non-economic exchange is socially constructed and depends upon individual perception and contextual factors such as organizational structures and incentives (Pillutla and Chen, 1999). The knowledge as object and knowledge embedded in people perspectives view knowledge as a private good, owned either by the organization or the individual. In such cases, people exchange their knowledge through market mechanisms in order to receive commensurate benefits. They are motivated by self-interest and are less likely to exchange knowledge unless provided with tangible returns such as promotions, raises, and/or bonuses, or intangible returns such as reputation, status and direct obligation from the knowledge seeker. With a public good, the economically rational action is to free-ride; in other words, consume the public good without contributing to its creation or development. The motivation to maximize self-interest does not adequately explain why people contribute to public goods when it is not rational to do so. Therefore, the motivation to exchange knowledge as a public good goes beyond the maximization of self-interest and personal gain. People do not act only out of self-interest, but forego the tendency to free-ride out of a sense of fairness, public duty, and concern for their community. People often behave altruistically and pro-socially, contributing to the welfare of others without apparent compensation.

Recent research suggests that work units behaving as focused communities are more innovative. When people are motivated by moral obligation they are willing to work harder and are more likely to persevere in the face of adversity than people acting out of self-interest. In addition, research in face to face settings indicates that greater self-interest reduces knowledge sharing (Constant et al., 1994), and people are less likely to use collaborative technologies to share information perceived to be owned by the organization (Jarvenpaa, 2000).

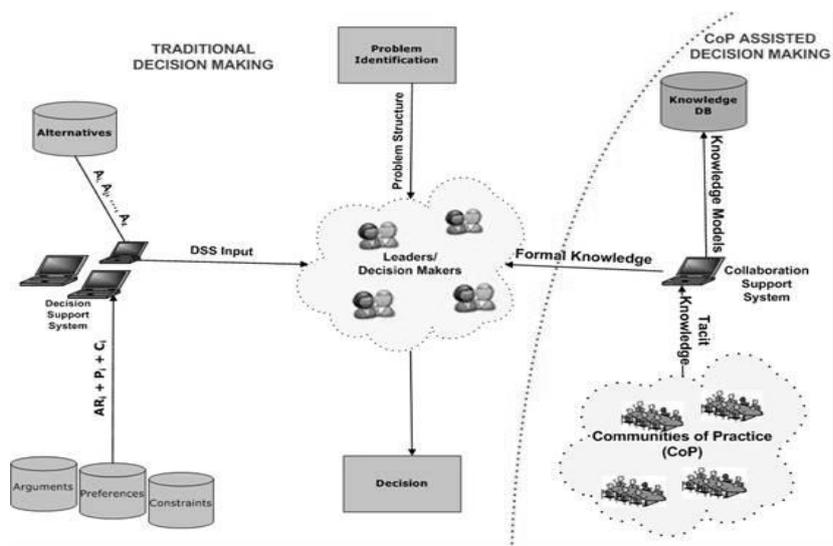
Research also suggests that introducing tangible rewards in return for the provision of a public good promotes self-interested behavior, reduces intrinsic motivation, and destroys the public good. Although extrinsic rewards provide temporary compliance, these rewards also rupture work relationships, inhibit organizational learning and undermine interest in the work itself (Hoadley and Kilner, 2001). Therefore, organizations promoting knowledge exchange by establishing knowledge markets and providing tangible incentives could actually be encouraging hoarding behavior and competitive actions, diminishing the free flow of knowledge in the organization.

#### 4. THE PROPOSED COLLABORATIVE DECISION MODEL

The research conducted as part of this work, reveals the community's major effect in the rationality of management and organizational decision making by executive managers in the organizational structure. Due to technology's rapid evolvement, in order to meet the needs of communities of practice, it is an urgent requirement for an increasingly number of businesses to incorporate the term "Communities of Practice" in their everyday practice. This is partially difficult, because of the lack of the executives' "collaborative culture" and their capacity for the utilization of new technologies. Moreover, a strict and clear guide for creating a community is hardly available, but in the contrary each company must adapt to community needs and requirements (Johnson, 2001). It arises also the issue of providing (manning) the community with the appropriate members (professionals, experts, extra skilled personnel) from the external environment, in order to replace the possible lack of experience and skills of the existent community members. Finally, a community's establishment does not lead to immediate countable production results, as it should be periodically maintained and provided with extra skills because of the constant changes in the organizational environment, in order to prevent its final disappearance.

Foreseeing the obvious advantages of integrating the Communities of Practice in business practice and decision making (Lazanas et al., 2005), this paper proposes a new model for making business decisions based on the integration of Communities of Practice in the above procedure (see Figure 1). Based on the present knowledge in this paper we propose a new theoretical model for collaborative decision making.

Figure 1. Organizational Decision Making through the encapsulation of CoP generated knowledge



As presented in the above figure, the "traditional" decision-making process includes steps such as: definition of the problem, evaluation of various alternatives ( $a_i, a_j, \dots, a_z$ ), user definition of the constraints ( $C_i$ ), submission of the arguments "in favor" or "against" the proposed alternative (weight ( $AR_i$ )) and the definition of user preferences ( $P_i$ ). All of the above steps are implemented through the exploitation of decision support systems (DSS) (Karacapilidis and Papadias, 2001). The evaluation (score) of the alternatives proposed by the DSS is defined as follows:

$$score(a_i) = \sum_{i=1}^n weight(AR_i) + \sum_{i=1}^n (P_i) | a_i \notin \{C_i\} \quad (1)$$

Each alternative ( $a_i$ ) is evaluated using a set of arguments, taking into consideration the constraints set by the DSS user. These arguments may be derived from an existing knowledge database system or can be extracted from past similar cases (case - based decision making).

The proposed decision model, by retrieving the knowledge generated through Communities of Practice, will be capable not only to exploit data from past cases, but in addition to transform - through the use of Collaboration Support Systems - the informal knowledge type into explicit. If we define as  $k_i$  the knowledge produced by the Community ( $Q_i$ ):

$$score(a_i) = \sum_{i=1}^n weight(AR_i) + \sum_{i=1}^n (P_i) | a_i \notin \{c_i\} + \sum_{i=1}^n k_i | k_i \subseteq \{AR_i\} | Q_i \in \{a_i\} \quad (2)$$

The evaluation of alternatives and therefore the proposed decisions provided by the proposed model will be based not only on existing knowledge structures but also on specialized knowledge appropriately transformed and utilized. The obvious benefit of this approach is the ability to solve unstructured problems – a challenging issue in decision making - directly through the collaboration of the involved parties.

## 5. CONCLUSION AND FUTURE WORK DIRECTIONS

Concluding this work, we can denote that our basic objective was the examination of e-Communities of Practice and their contribution in the organizational decision making. We distinguished the benefits that arise for the organization from the collaboration process that takes place in the inner organizational environment. More detailed research has been conducted regarding the “texture” of the CoP, the knowledge management process and the positive affect in the executive decision making.

The review of the correspondent literature (Karacapilidis et al., 2009), (Karacapilidis and Papadias, 2001), (Rogers, 2000), (McLure et al., 2000), (Druckenmiller, 1994), (Gongla and Rizzuto, 2001), suggested that organizations should rethink basing their knowledge management strategies on knowledge markets and Collaboration Support Systems (CSS). These systems based on extrinsic rewards quickly turn moral obligation into acts of self-interest, and could potentially destroy the open provision of knowledge in a community. Organizations concerned with increasing knowledge exchange should consider using Collaboration Support Systems that connect members to open-membership electronic communities of practice. However, the greatest difficulty to developing these communities is convincing members that knowledge should be treated and valued as a public good rather than a private good (Probst and Borzillo, 2008). This means that organizations should establish a cultural norm that encourages people to participate and share knowledge in the community, and –on the other hand- organizations can foster participation by acknowledging the reputation and status of organizational members actively engaged in their electronic community.

Engagement in these communities should not be limited to experts. As more members participate, the burden of helping others is lessened for any one individual. In addition, most direct benefits may flow to less experienced members seeking advice; therefore novices and hobbyists should also be encouraged to engage in the community. Organizations can also encourage members to give back to the community by establishing a community norm of generalized reciprocity. If members do not have the requisite expertise to give advice to others, these members should be encouraged to thank and recognize those members who provided help. There is a tendency for organizations to view talking as ‘socializing’ and detracting from work. Our results suggest the opposite. If workers are given the resources to connect to a community of practice, the forum of ‘talking’ is work, and the end result is increased knowledge flows and innovation within the community. However, participation in the communities can be time consuming (Stuckey and Smith, 2006), (Eom, 2001). Therefore, slack time may be necessary to ensure that people (especially time-starved experts) participate in the work of the community.

However, our research should continue further in the following directions:

- A primary research direction could be the establishment of a direct interconnection between Communities of Practice and organizational leadership. More specifically, a number of fundamental indicators have to be carefully selected in order to explore the initiatives and motives necessary to advance the participation and interaction between the external environment and the community. The appropriate incentives an organization can adopt have to be thoroughly considered, aiming at making “independent” individuals to become active members of the community and, finally, to improve or develop the desired “collaborative culture” through their involvement in Communities of Practice. To investigate the above

issues, we should define appropriate indicators for measuring the diffusion of these terms in the everyday organizational operation, and analyze them with appropriate statistical tools.

- A secondary future direction that requires further investigation is interoperability issues of all the systems involved in the decision making process (MIS, EIS, DSS, ASS, CSS). More specifically the interaction between the above systems frequently confronts several problems, mainly in the construction and representation of data structure. Therefore it is an urgent need to define appropriate data structures, interfaces and communication models between such systems. The objective will be the optimal interoperability between all the involved systems, since this will obviously lead to the intensive use and effective decision making within organizations.

## REFERENCES

- Alvesson, M. and Sveningsson, S., 2003. The great disappearing act: the difficulties in doing 'leadership. *Leadership Quarterly*, Vol. 14, pp. 359-381.
- Analoui, F. and Katami, A., 2002. How chief executives' perception of the environment impacts on company performance. *Journal of Management Development*, Vol. 21, No. 4, pp. 290-305.
- Bafoutsou G. and Mentzas, G., 2002. Review and functional classification of collaborative systems. *International Journal of Information Management*, Vol. 22, No. 4, pp. 281-305.
- Barnett, C.K. and Pratt, M. G., 2000. From threat - rigidity to flexibility - toward a learning model of autogenic crisis in organizations. *Journal of Organizational Change Management*, Vol. 13, 1, pp.74-88.
- Bolman, L.G. and Deal, T.E., 1995. Leading with Soul: An Uncommon Journey of the Spirit. *Jossey-Bass*, San Francisco.
- Constant, D., Kiesler, S. and Sproull, L., 1994. What's Mine is Ours, or Is It? A study of Attitudes about Information Sharing. *Information Systems Research*, Vol. 5, No. 4, pp. 400-421.
- Denning, S., 2006. Ten steps to get more business value from knowledge management. *Strategy and Leadership*, Vol. 34, No. 6, pp. 11-16.
- Druckemiller, D.. Face to face group decision support systems. A partnership between traditional group process mythologies and computer technology. *Journal of Information Systems Education*, Vol. 3, No. 2, pp. 27-51.
- Du Plessis, M., 2008. The strategic drivers and objectives of communities of practice as vehicles for knowledge management in small and medium enterprises. *International Journal of Information Management*, Vol. 28, pp. 61-67.
- Eom, S., 2001. Decision Support Systems. *International Encyclopedia of Business and Management*, Warner, International Thomson Business Publishing Co.
- Fairholm, G.W., 1997. Capturing the Heart of Leadership: Spirituality and Community in the New American Workplace. Praeger, Westport.
- Fontaine, M., 2001. Keeping communities of practice afloat. *Knowledge Management Review*, Vol. 4, No. 4, pp. 160-210.
- Goldstein, J., 1994. *The Unshackled Organization*. Productivity Press Inc, Portland.
- Gongla, P. and Rizzuto, R., 2001. Evolving communities of practice: IBM Global Services experience. *IBM Systems Journal*, Vol. 40, pp. 842-862.
- Haythornthwaite, C., Kazmer, M. and Robins, J., 2000. Community development among distance learners: temporal and technological dimensions. *Journal of Computer-Mediated Communication*, Vol. 6, No. 1, pp. 45 – 62.
- Hinton, B., 2003. Knowledge management and communities of practice: An experience from Rabobank Australia and New Zealand. *International Food and Agribusiness Review*, Vol. 5, No. 3, pp. 193 – 218.
- Hislop, D., 2004. The Paradox of Communities of Practice: Knowledge Sharing Between Communities. P. Hildreth and C. Kimble, *Knowledge Networks: Innovation Through Communities of Practice*, Idea Publishing, pp. 36-47.
- Hoadley, C. and Kilner, P., 2001. Using Technology to Transform Communities of Practice into Knowledge-Building Communities. *SIGGROUP Bulletin*, Vol. 25, No. 1, pp. 31-40.
- Hollan, J. et al, 2000. Distributed Cognition: Toward a New Foundation for Human-Computer Interaction Research. *ACM Transactions on Computer-Human Interaction*, Vol. 7, No. 2, pp. 174-196.
- Jarvenpaa, S. and Staples, D., 2000. The use of collaborative electronic media for information sharing: an exploratory study of determinants. *Journal of Strategic Information Systems*, Vol. 9, No. 2, pp. 129-154.

- Johnson, C., 2001. A survey of current research on online communities of practice. *Journal of Internet and Higher Education*, Vol. 4, pp. 45 – 60.
- Kakabadse, A. et al, 1995. Correlates of internal and external leadership of top management teams: an international comparative study. *Leadership & Organization Development Journal*, Vol. 16, No. 7, pp. 10-17.
- Karacapilidis N. and Papadias D., 2001. Computer supported argumentation and collaborative decision making: the HERMES system. *Information Systems*, Vol. 26, pp. 259–277.
- Karacapilidis, N. et al, 2009. CoPe\_it! - Supporting collaboration, enhancing learning. Proceedings of the 2009 International Conference on Information Resources Management, Conf-IRM 2009, Al Ain, UAE.
- Lazanas, A. et al, 2005. Ontology-Driven Decision Making in Transportation Transactions Management”, *Proceedings of the 8th International Conference on Business Information Systems, BIS 2005*, pp. 228-241.
- Martin, V. A. et al, 2004. Cultivating a Community of Practice Between Business and IT. *Knowledge Networks*, Jossey-Bass, eds., San Francisco, pp. 24-35, 2004.
- McDermott, D., 2007. Artificial Intelligence and Consciousness. P. Zelazo, M. Moscovitch and E. Thompson, *The Cambridge Handbook*, pp. 117–150.
- McLure, M. et al, 2000. It is what one does: why people participate and help others in electronic communities of practice. *Journal of Strategic Information Systems*, Vol. 9, pp. 155-173.
- Montuori, L., 2000. Organizational longevity – integrating systems thinking, learning and conceptual complexity. *Journal of Organizational Change Management*, Vol. 13, No. 1, pp. 61-73.
- Palloff, R. and Pratt, K., 1999. Building online learning communities. Jossey-Bass, *Effective strategies for the online classroom*, San Francisco.
- Peppard, J. and Ward, J., 1999. Mind the gap: Diagnosing the relationship between the IT Organization and the rest of the business. *Journal of Strategic Information Systems*, Vol. 8, No. 1, pp. 29-60.
- Pillutla, M. and Chen, X-P., 1999. Social Norms and Cooperation in Social Dilemmas: The Effects of Context and Feedback. *Organizational Behavior and Human Decision Processes*, Vol. 78, No. 2, pp. 81-103.
- Pitcher, P. et al, 2000. CEO succession research: methodological bridges over troubled waters. *Strategic Management Journal*, Vol. 21, No. 6, pp. 625-48.
- Probst, G. and Borzillo, S., 2008. Why communities of practice succeed and why they fail. *European Management Journal*, Vol. 26, pp. 335– 347.
- Rinaldi, S.M., 1997. Complexity theory and airpower: a new paradigm for airpower in the 21st century. National Defense University, Washington.
- Rogers, J., 2000. Communities of practice: a framework for fostering coherence in virtual learning communities. *Annual Review of Information Science and Technology*, pp. 171-227.
- Santos, M. V., 2002. The phenomenon of organizational evolution: a model for analysis. *Leadership & Organization Development Journal*, Vol. 24, No. 4, pp. 215-27.
- Scarborough, H. et al, 1999. Knowledge management and the learning organization. *The IPD Report*, Report for the Institute of Personnel Development, UK.
- Schein, E., 1997, Jossey-Bass, *Organizational culture and leadership*, California.
- Schultze, U. and Leidner, D., 2002. Studying knowledge management in Information Systems research: Discourses and theoretical assumptions. *Management Information Systems*, Vol. 26, No. 3, pp. 213-242.
- Seufert, S., 2002. A reference model for online learning communities. *International Journal of Educational Telecommunications*, Vol. 1, No. 1, pp. 23 - 44.
- Squire, K. and Johnson, C., 2000. Supporting distributed communities of practice with interactive television. *Educational Technology Research and Development*, Vol. 48, No. 1, pp. 23–43.
- Stuckey, B. and Smith, J., 2006. Sustaining Communities of Practice. *Journal of Strategic Information Systems*, Vol. 9, pp. 57-69.
- Stumpf, S.A., 1996. Applying new science theories in leadership development activities. *Journal of Management*, Vol. 14, No. 5, pp. 39-49.
- Sweet, K.V., 1997. Incorporating non-linear thinking, into public administration’s purview. *Administrative Theory and Praxis*, Vol. 19, No. 3, pp. 331- 341.
- Ward, J. and Peppard, J., 1996. Reconciling the IT/Business relationship: A troubled marriage in need of guidance. *Journal of Strategic Information Systems*, Vol. 5, No. 1, pp. 37-65.
- Wenger, E. and Snyder, W., 2000. Communities of practice. The organizational frontier. *Harvard Business Review*, Vol. 2, pp. 135-146.
- Wenger, E., 1998. Communities of Practice: Learning as a Social System. *The Systems Thinker*, Vol. 3, pp. 38 – 68.
- Wenger, E., 1998. Communities of Practice: learning, meaning, and identity. *The Systems Thinker*, Vol. 2, pp. 34 – 65.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Zajac, E.J. et al, 2000. Modeling the dynamics of strategic fit: a normative approach to strategic change. *Strategic Management Journal*, Vol. 21, No. 4, pp. 429-454.

# COST ANALYSIS – A COMPANY PERFORMANCE MANAGEMENT TOOL

Marian Țaicu<sup>1</sup> and Maria-Daniela Bondoc<sup>2</sup>

<sup>1</sup>University of Pitești, Faculty of Economic Sciences, Bld. Republicii, no. 71, Pitești, Argeș, Romania,  
[marian.taicu@upit.ro](mailto:marian.taicu@upit.ro)

<sup>2</sup>University of Pitești, Faculty of Economic Sciences, Bld. Republicii, no. 71, Pitești, Argeș, Romania,  
[daniela.bondoc@upit.ro](mailto:daniela.bondoc@upit.ro)

## ABSTRACT

Performance, value and costs are three concepts holding a central place in the analysis of the activity of any company, and there are mutual determination relationships among them. The accurate determination of costs is essential for the correct assessment of the company performance, and the cost analysis allows for making decisions concerning the actions taken to decrease them.

Due to the depletion of resources, the economic growth must take place by taking into account the principles of sustainable development. In recent decades, the concern for achieving social and environmental performance has increased as a result of the increase in the social and environmental costs of the companies.

There is an interdependence relation among the three types of performance (economical and financial, social and environmental). Thus, obtaining economic performance enables companies to invest more to solve social and environmental issues, and obtaining performance in these two areas may lead to an increase in the economic performance.

An accurate cost analysis is required, on the one hand, by the fact that resources are limited, and on the other hand by the desire to increase the efficiency of the activity, with positive effects on the future performance.

## KEYWORDS

cost analysis, performance, value

## JEL CLASSIFICATION CODES

M41

## 1. INTRODUCTION

Decision-making and implementation is carried out under the conditions of disturbing factors whose origins are inside and outside the unit. In relation to the pressures exercised by these factors, managers can have two types of behaviour:

- reactive – seeking to implement changes in order to adapt the company to the changes of the external and internal environment;
- proactive – seeking to anticipate the changes of the external and internal environment in order to prevent the negative effects of these changes.

Managerial decisions should be substantiated based on situations able to provide the necessary information in at the right time. The quantity of information received by the manager should be metered in such a way as to facilitate the management process. Excessive information is as harmful as the lack of information.

## 2. THE CONCEPT OF COST AND THE OBJECTIVES OF THE COST ANALYSIS

Etymologically, the term of the cost comes from the Latin verb “constare” meaning to establish, to set. From this the verb “to cost” derives, which expresses how much was consumed to make a product. Later, the notion of “cost” was derived from this term.

Under the conditions of the market economy, the production cost occupies a central position in the system of the indicators at company level. This is why it is necessary for each company to have precise knowledge about its costs. The precise assessment of the cost is particularly important for the assessment of the company performance, especially due to the fact that cost is not a constant measure over time. The production cost is a basic indicator that characterizes the entire business of a business entity and is the main element of the efficiency of the activity carried out by the business entity, and if it is not known, it can lead to erroneous decision making with very serious consequences for the company.

The need to know the costs as accurately as possible results, on the one hand from the limited nature of resources, and on the other hand from the desire to increase performance. We cannot size company performance unless we can determine the costs generated by the activity of the company with accuracy.

In the current economic circumstances, the sales prices of the company products are set on the market based on the supply/demand ratio. Therefore, the achievement of financial performance is dependent on the reduction of costs. One of the anticompetitive strategies applied by business entities that gave very good results is the cost strategy. This strategy, called "Japanese strategy" is to achieve supremacy in the market by charging low prices due to lower costs.

Product unit cost analysis has as main objectives:

- the analysis of the level, dynamics and structure of the cost per unit of product;
- the analysis of the main categories of costs per unit of product;
- the effects of the change in the unit cost on the economic and financial results of the company;
- the analysis of the marginal cost.

The cost-volume-profit analysis is a tool that allows the management to fulfill forecast and control functions. Managers need accounting modelling able to provide them with a true picture of the short-term behaviour of costs. The cost-volume-profit relationship provides an overall financial view on the company and is based on the hypothesis- hypothesis consequence tandem.

The cost-volume-profit analysis is a classic management tool and answers questions such as: “What will be the consequences on the turnover if more products are sold?”, “If we increase or decrease sales prices, what will be the effect on the sales volume?”.

## 3. THE COST-VALUE RELATIONSHIP

In the last two decades we have witnessed an evolution of company performance measurement system, which evolution has three main areas:

- company performance measurement has become generally accepted both by means of traditional financial indicators and by means of non-financial indicators;
- the relation between the strategic planning process and performance measurement at each level of the company has been increased;
- company performance is no longer viewed only from the business perspective, but also from the social and environmental perspective as well.

The accounting result is viewed as the main company financial performance indicator, but has a number of limitations. This indicator, by its calculation method, is oriented towards the past, and is used as basis for the assessment of the results obtained by carrying out the activity, during a past period of time. It is not enough to know the past performance of the company, it is also necessary to do a thorough analysis for the forecast of future performance.

There is a close connection between the concept of performance and the concept of value. Ioniță I. (2006) defines performance as “the manner of representing the increase in the value of a business between two moments plus the profit taken by the investor for other usages”. Diaconu P. (2004) believes that “the value

included in the sale price is given by the adjusted net assets present in the balance at the moment in question and the goodwill items accumulated in the company that will generate future profits”.

There is a close connection between value and costs, which can be highlighted through value engineering studies. Value engineering was conceived and developed after World War II. Its purpose is to have an optimum ratio between the value in use of a product and the direct and indirect production costs generated to make the product in question.

In relation to the performance measurement there is a series of controversies among experts, which has been measured over time either through the company size, or through the profit obtained, or through cash. Performance measurement requires an enterprise to consider several factors, such as:

- the multiple meanings of the concept of performance;
- the complexity of the business activity;
- the peculiarities of the areas of activity of the companies.

For this reason in carrying out the performance measurement process, not only a single indicator should be used, but a variety of indicators.

#### **4. ANALYSIS OF THE STANDARD COST DEVIATIONS**

Performance is assessed according to objectives proposed in advance. It is impossible to assess performance in the absence of clearly defined objectives. Objectives can be expressed quantitatively or qualitatively, and must have a completion term. The planning activity must involve the measurement required to supply information to the managers in order that they make decisions able to improve performance. Therefore performance can be viewed from the perspective of the manner in which strategic objectives are reached or exceeded. Company performance must be assessed according to the level of such objectives. We must take into account the fact that, if the set objectives were modest, reaching or even exceeding them is a modest performance.

In management accounting, costs are the objects of two-way actions:

- the cost optimization (in fact the reduction of costs) – implies seeking means to reduce costs (by improving product design, processes and organization);
- cost control – the control of real costs in order to prevent their deviation from cost standards determined through the previous optimization process.

For the company management it is important to determine the difference between the actual cost of the actual production and its standard cost. The result of such difference is interpreted as follows:

- a negative cost deviation corresponds to an actual cost lower than the standard cost and is called a favorable deviation;
- a positive cost deviation corresponds to an actual cost higher than the standard cost and is called an unfavorable deviation.

This deviation group highlights the significance of the deviations as a consequence of the manner in which activity is organized, which can be efficient or inefficient.

Another deviation group takes into account responsibilities, as follows:

- controllable deviations imputable to responsible people;
- uncontrollable deviations generated by external factors, such as the increase in the material price that cannot be imputed to persons responsible for their occurrence.

The occurrence of the deviations is the consequence of a variety of causes, and the problem of the management is to identify the responsible persons or centers, while control is preponderantly exercised in the case of unfavorable deviations, and is a consequence of the management by exception. Following the analysis of the deviations and the identification of the responsible persons, the management can take a number of corrective actions by which the set objectives can be reached. One of the measures consists in reviewing budgets and implicitly performance.

The analysis of the deviation allows for updating the database, setting responsibilities for each deviation, integrating the relevant factors into the assessment of the company performance, renewing standards for decision-making and budgeting purposes.

Knowing deviations is useful to managers for planning and control. In order to use a deviation in the assessment of performance, it is essential for the manager to understand the cause of the deviation in question.

The management by exception is to focus on areas in which parameters are not as expected. Areas with higher deviations receive increased attention.

Deviations should be reported taking into account the following:

- the correct identification of deviations on influencing factors;
- establishing responsibilities for each employee, in order to identify the employees responsible for unfavorable deviations;
- the deviation reporting should focus on unfavorable deviations, as a consequence of the management by exception;
- when deviations are reported to the senior management of the company, details can be included in the case of the deviations supplied at lower levels, with causes and responsible persons.

## **5. THE COST OF CAPITAL AND THE CREATION OF VALUE FOR SHAREHOLDERS**

The classic performance measurement indicators have the disadvantage of providing information about the historic performance of the company. These indicators do not take into account the cost of the invested capital, they only highlight the results of its use. Consequently, if we only use classic indicators we can find companies that make profit but do not create value for shareholders, consuming, instead, the existing value. In the economic theory and practice, several indicators are used that measure the value created by the company during an accounting period as compared to a reference period, as follows:

- a) Economic Value Added – EVA;
- b) Market Value Added – MVA;
- c) Cash Value Added – CVA;
- d) Cash Flow Return on Investment – CFROI.

The indicator EVA was created by the American economist Bennett Stewart and is a registered trademark of the Stern Stewart consulting firm. The economic value added is a measure of the economic profit made by the company.

The Economic Value Added (EVA) is determined as the difference between the Net Operating Profit After Taxes (NOPAT) and the Cost of capital.

$EVA = NOPAT - \text{Cost of capital}$

$NOPAT = \text{Operating profit} - \text{Taxes} = (\text{Net sales} - \text{Operating expenses}) - \text{Taxes}$

$\text{Cost of capital} = WACC\% * TC$

where:

WACC = weighted average cost of capital

TC = total invested capital

The invested capital includes the equity capital and the interest bearing borrowed capital. Thus, the cost of capital in absolute value is the sum of the cost of the equity capital and the cost of the borrowed capital.

We can notice that in order to determine the level of the economic value added we start from the operating result, without taking into account the result of the financial and of the extraordinary activities. Within the concept of economic value added, the operating activity is viewed as the only activity that creates value for shareholders, while the other activities are viewed as collateral. The correct assessment of the operating result is essential for the calculation of a real level of the economic value added.

The calculation of the economic value added as the difference between the net operating result and the cost of the invested capital has the same limitations as that of the profit in expressing performance, due to accounting distortions. In order to eliminate such accounting distortions it is necessary to perform accounting re-treatments meant to eliminate the accounting abnormalities occurring in the calculation of the net operating result and of the cost of the invested capital.

In the opinion of the specialists of the Stern&Stewart consulting firm, in order to obtain a level of the economic value added reflecting the actual performance of the company it is necessary to make up to 160

accounting adjustments. In practice, company experts make on average 10-15 adjustments, and the calculation methodology varies from one company to another.

In order to provide the comparability of the data in time and space, it is necessary that, irrespective of the methodology adopted at the level of the company, such methodology be maintained for a longer period.

Taking into account the formula used for the calculation of the economic value added, in order to maximize the result managers can act in several directions:

- increasing the management efficiency in order to obtain a maximum level of the operating result;
- using capital as strictly necessary.

The use of the indicator EVA is advantageous because:

- it reflects the actual economic profit made by the company, not the fiscal one;
- it can be calculated both at the level of the company as a whole, as well as at subunit level, based on the existing needs for information;

- it is a simple concept;
- it can represent a means of motivating company managers, who can receive bonuses according to the value of the EVA;

- it allows for commensuring of the value created in cash, not as a percentage;
- it is based on elements that can be affected directly by managers (invested capital and financial structure);

- it is a strategic planning tool.

The limits or disadvantages of using EVA are determined by the following aspects:

- the evaluation of the company performance is only made from the perspective of the investors, and currently an efficient company is a company that meets both the expectations of the internal environment as well as the expectations of the external environment;

- the indicator cannot be used on short-term, in the case of the sectors of activity in which investments are made on long-term;

- its use is made more difficult by the large number of required accounting adjustments and by the lack of a unitary methodology.

## **6. TRIPLE BOTTOM LINE**

In addition to the traditional measurement of performance through profit (economic performance), companies should also take into account social performance (to act in a socially responsible manner) and environmental performance (to minimize the impact on the environment). These aspects are perfectly integrated in the “triple bottom line” concept which was first coined in 1994 by John Elkington, the founder of a British consultancy called SustainAbility (<http://www.sustainability.com>). He supported the idea that companies should be preparing three different bottom lines: one is the traditional measure of corporate profit - the “bottom line” of the profit and loss account; the second is the bottom line of a company’s “people account” - a measure in some shape or form of how socially responsible an organization has been throughout its operations; the third is the bottom line of the company’s “planet” account - a measure of how environmentally responsible it has been.

Thus, the triple bottom line (TBL) consists of three Ps: profit, people and planet and it aims to measure the financial, social and environmental performance of the corporation over a period of time.

In the issue of November 17, 2009 of the magazine The Economist, in the article “Triple Bottom Line” it is specified that “one problem with the triple bottom line is that the three separate accounts cannot easily be added up. It is difficult to measure the planet and people accounts in the same terms as profits - that is, in terms of cash”.

### **6.1 Environmental costs and company performance**

In the last decades, the costs incurred by companies for the environmental protection were constantly increased (costs for the reduction of pollution, for the combat of the effects of pollution), a costs related to the monitoring and reporting of the results concerning the measures taken for the environmental protection, ,

the taxes collected by the Government and the related insurances. At the same time, the applicable legal provisions have become increasingly severe. These costs also existed in the mid-twentieth century, but their level was insignificant, and they were ignored more often than not. The emergence of the environmental management accounting (EMA) was an answer to such issues.

The environmental cost category includes:

- costs incurred by the company to prevent pollution, including those for research and development of environmental projects;
- costs with the waste (emissions) treatment, transport and storage, which include labour costs and material costs;
- health insurance costs and costs related to the environmental obligations;

In its relationship to the environment, in addition to costs, the company can also have environmental profits coming from the sale of the wastes, non-reimbursable loans for environmental issues and other sources.

By analysing environmental costs one can identify new opportunities, savings can be made by recycling resources or by using them in other activities.

## **6.2 Social costs and company performance**

The social performance of the company can be assessed taking into account a number of criteria such as:

- created jobs;
- impact on the regional development;
- providing professional development opportunities;
- the actions initiated to combat corruption, imposing ethical standards to the employees,
- observing the employees' and consumers' rights,
- investments in areas such as education, culture and health.

In some developed countries, social performance statement has become compulsory, but in most countries, the decision to report social performance is left to the company management. In the absence of standards for the elaboration of reports, companies have difficulties in proving their social and environmental performance.

## **7. HIDDEN COSTS AND COMPANY PERFORMANCE**

Traditionally, management accounting was based on recording and monitoring costs incurred by the company to realize its economic function. In the past decades, the social function of the company was gradually increased, generating hidden costs, unaccounted in the traditional management accounting systems. Professor Henri Savall from ISEOR (Socio-Economic Institute of Firms and Organizations) of Lyon, proposed and developed the hidden cost-performance method. The method was tested in very different sectors of activity and in companies with various companies, with 20 to 18,000 employees.

A cost is deemed hidden if it does not appear explicitly in the company information systems. On the other hand, visible costs are the costs detected by such systems.

Hidden costs are divided into two categories. The first category is made of hidden costs included in visible costs. These are effective costs and correspond to actual losses of the company. The second category is made of hidden costs that are not included in visible costs. These costs are also named potential costs and are represented by the absence of the production resulted following dysfunctions. These are virtual costs, corresponding to a sub-activity.

The assessment of the hidden costs is made by non-accounting methods and is based on the very precise determination of dysfunctions and their consequences, from inside, by those in question. For the assessment of the hidden costs, five components are taken into account: excess salaries, overtimes, over-consumption, non-production, non-creation of potential (Savall, 1997).

The hidden cost-performance method, also called socio-economic method, seeks to reconcile the economic and social dimension of the company, with the purpose of increasing the efficiency of the management (Savall, 1997).

In order to reduce the level of the hidden costs, it is necessary to act on the dysfunctions occurred in the company.

In the reduction of hidden costs, the company employees play an important role. Each employee of the company is a possible generator of hidden costs, because he/she can create dysfunctions in the company.

Most hidden costs of the company can be reduced, but not completely eliminated. Thus, the company can eliminate most of its internal dysfunctions, but will not be able to act on the external causes that generate hidden costs, such as strikes of the public services or the tedious operation of the legal system.

## **8. CONCLUSIONS**

The sustainable maintenance of any company on a competitive market cannot be achieved without the continuous concern for performance and success. The notion of performance is quite complex and has many facets. In economics, the concept of performance is interfered with notions such as profitability, productivity, yield or growth. In addition to these concepts, company performance can be assessed according to its capacity to create value.

Performance, value and costs are three fundamental interdependent concepts of modern management of organizations. We cannot analyze company performance without taking into account the costs of the company and the value created inside it. The importance of the information concerning the level of costs is given by the increase in the competitive pressures, as an effect of globalization, and the increase in the number of the products and manufacturing processes, as a result of the diversification strategies.

In the contemporary economy, the sales prices of the goods and services is set based on the relation between demand and supply, not just based on costs. Consequently, the decrease of the production costs will result in the increase of the company performance and vice versa.

Companies with remarkable social and environmental performance obviously enjoy a more favorable image on the market and have a competitive advantage. Unfortunately, lately, there is a noticeable tendency of some companies to prove that they are concerned with achieving social and environmental performance, just to create a favorable image especially among consumers. In our opinion, this phenomenon can be countered through legislation by imposing standards in the area of reporting social and environmental performance.

## **REFERENCES**

- Albu, N. and Albu, C., 2003. *Instrumente de management al performanței (Performance management tools)*, Economica Publishing House, Bucharest, Romania.
- Diaconu, P., 2004, *Cum fac bani contabilii? Evaziune fiscală, paradisuri fiscale. Contabilitate creativă (How do accountants make money? Tax evasion, tax heavens. Creative accounting)*, Economica Publishing House, Bucharest, Romania.
- Firescu, V., 2006, *Contabilitatea de gestiune (The Management accounting)*, Economica Publishing House, Bucharest, Romania.
- Iacob, C. et al, 2007, *Contabilitate de gestiune conformă cu practica internațională (Management accounting in accordance with international practice)*, Universitaria Publishing House, Craiova, Romania.
- Ioniță, I., 2006, *Diagnosticul financiar-contabil privind performanța întreprinderii (Financial-accounting diagnosis regarding company performance)*, Publishing House of the University of Suceava, Suceava, Romania.
- Jianu, I., 2007, *Evaluarea, prezentarea și analiza performanței întreprinderii – o abordare prin prisma standardelor internaționale de raportare financiară (Valuation, presentation and analysis of company performance – an approach through international reporting standards)*, CECCAR Publishing House, Bucharest, Romania.
- Lala Popa, I. and Miculeac, M.E., 2009, *Analiză economico-financiară - elemente teoretice și studii de caz (Economic-financial analysis – theoretical and case studies)*, Mirton Publishing House, Timișoara, Romania.
- Niculescu, M., 2003, *Diagnostic financiar (Financial diagnosis)*, Economica Publishing House, Bucharest, Romania.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Radu, F. et al, 2008, *Analiză și diagnostic economico-financiar (Economic-financial analysis and diagnosis)*, Scrisul Românesc Publishing House, Craiova, Romania.
- Savall, H. and Zardet, V., 1991, *Maitriser les couts et les performances caches (Controlling hidden costs and performances)*, Economica, Paris, France.
- Savall, H., 1997, *Les couts caches et l'analyse socio-economique des organisations (The hidden costs and the socio-economic analysis of the company)*, Encyclopedie de gestion, Economica, Paris, France.
- Siminică, M., 2008, *Diagnosticul financiar al firmei (Company's financial diagnosis)*, Universitaria Publishing House, Craiova, Romania.
- Stern Stewart&Co, 2011, 'Economic Value Added', <http://www.sternstewart.com/?content=proprietary&p=eva> (accessed 1/3/2011)
- The Economist, 2009, 'Triple Bottom Line', <http://www.economist.com/node/14301663>, (accessed 1/3/2011).
- Țaicu M. and Roman A., 2009, 'The Importance of Knowing the Enterprise's Hidden Costs', *The Annals of the University of Oradea*, Tom XVIII, Vol. 3, pp. 1192-1196.
- United Nations Division for Sustainable Development, 2001, 'Environmental Management Accounting, Procedures and Principles', <http://www.un.org/esa/sustdev/publications/proceduresandprinciples.pdf> (accessed 1/3/2011).

# COMPANY PERFORMANCE MEASUREMENT: CONCEPTUAL AND METHODOLOGICAL APPROACHES

Victoria Firescu<sup>1</sup> and Marian Țaicu<sup>2</sup>

<sup>1</sup>University of Pitești, Faculty of Economic Sciences, Bld. Republicii, no. 71, Pitești, Argeș, Romania,  
[firescuvictoria@yahoo.com](mailto:firescuvictoria@yahoo.com)

<sup>2</sup>University of Pitești, Faculty of Economic Sciences, Bld. Republicii, no. 71, Pitești, Argeș, Romania,  
[marian.taicu@upit.ro](mailto:marian.taicu@upit.ro)

## ABSTRACT

The issue of the conceptualization and especially of the company performance measurement under the impact of the international accounting standards is far from receiving a satisfactory answer in the context of information asymmetry, and of countless and various objectives of the business entities. In the approached research, we use the literature review method, studying previous research in the literature, as well as the activity of various standardization bodies related to the company performance definition and measurement. We aim at expanding all this research effort based especially on documentation in the literature and on the analysis of the requirements of the financial reporting standards issued by professional or regulating bodies beyond the customization of the opinions, assumptions or financial reporting standards and at testing the reflection of the concepts outlined at the theoretical level on the company reporting practice.

## KEYWORDS

performance, measurement, performance indicators

## JEL CLASSIFICATION CODES

M41

## 1. INTRODUCTION

The notion of performance has a multitude of usages despite the fact that this concept is sporadically defined in specialty works. Is the meaning of this notion so obvious for researchers that its concise definition is no longer necessary?

In our opinion, the notion of performance is highly complex and it is currently searching for a way to rediscover itself, in order to cease being mistaken for the indicators used to describe and measure it.

Company performance is assessed differently by the participants in the life of the company, based on their interests. Performance can be studied from the perspective of each category of users of accounting information: shareholders, managers, employees, creditors, state, business partners.

## 2. PERFORMANCE DEFINITION

The meaning of the word “performance” is associated to the verb “to perform” which means to always do better by assimilating the performance of an action - dynamic vision, and not only to a single result - static

vision (Bourguignon, 1997). In other words, performance represents the sum of all the logical elementary stages of the action, from intention to actual result (Albu and Albu, 2003). A result cannot be separated from an action, from an objective, and consequently it is not performance if it is considered alone.

Being efficient is used to characterise future results, and is a potential and dynamics indicator. Often, the notion of performance is used for the metaphorical allusions it contains. For example, performance represents the success of a sportsman.

The main meanings of performance are: success, the result of an activity, action.

Success represents a profitable business, and this cannot be assessed by a single result, which means that performance does not exist per se, due to the fact that it varies based on the objectives set by each enterprise.

As a result of the action, performance represents the value created within an activity.

The third meaning is the dynamic vision of performance which includes the whole process of its formation.

## **2.1. Defining performance based on level of achievement of the objectives**

Annick Bourguignon (1995) defines performance as: the realization of organizational objectives irrespective of their nature or variety. This means that: company performance represents everything that contributes to the achievement of strategic objectives.

The above-mentioned performance definition is incomplete because it does not indicate the means of achieving it. Performance is multidimensional because there are multiple objectives.

M. Lebas (1995) argues that the definition of performance given by A. Bourguignon seems incomplete, because it is limited to defining the characteristics of performance without seeking an operational tool.

An efficient person is somebody who achieves his/her objectives. Performance does not exist in an absolute manner, but only as a reference to a set strategic objective. What is performance for a company can be lack of performance for another company. For Lebas, performance only exists if it can be measured and this cannot be limited to knowing a result under any circumstances.

From the definitions presented the following consequences are derived: the actual content of performance is dependent on setting the objectives; there is no absolute performance, independent of its objectives; what is efficient in a certain situation, characterised by certain objectives, can be inefficient in another situation, characterized by other objectives; someone who achieves his/her objectives is efficient.

## **2.2. The concept of performance based on the productivity and efficacy of the company**

Elie Cohen (1995) equates performance with efficiency, by defining it as the relation between the results obtained by the company and the means used. In our opinion, this view is erroneous because a company can be efficient without achieving its objectives.

Maria Niculescu (2003) mentions that an enterprise theoretically achieves high performance if it is productive and effective at the same time. The author adds knowledge into the definition of performance. More specifically, the efficacy which represents the ratio between the results obtained and the expected results expresses the performance of a company when the ratio is bigger than one. Obviously, a company which has a high productivity (is efficient) cannot achieve high performance if it is not effective at the same time. In the ratio productivity/efficacy, priority should be given to efficacy, which means care producing as much as it is required. In this approach, measuring efficacy means determining the purpose or the objectives of an organization, which is not as simple as it seems at first sight. Many times, a company has several objectives, many conflicting, ambiguous and inexplicit. Performance cannot exist without a strategy with competitive objectives defined in terms of overall efficiency.

## **2.3. Defining performance based on the value creation**

Performance and value are two fundamental concepts of modern management of organizations.

M. Porter (1986) believes that company performance depends on its capacity to create value for its customers. In competitive terms, value is the amount that the clients are willing to pay for what the company provides to them. A company is efficient if the value it can obtain exceeds the costs of creating the product.

Philippe Lorino (1995) argues that performance for the company represents what contributes to the improvement of the value-cost couple. In other words, performance is a ratio between the cost of the company operation and the value of the goods or services obtained. To measure performance is to assess value.

There are two types of values: an external value and an internal value.

The external value exists when the market value of the company is higher than the accounting value of its assets. This value can only be measured for listed companies. In our opinion, external value is only an operational tool for the assessment of the internal performance of the company due to the fact that it does not indicate when and where the business entity has created value.

The internal value is the economic value added created by the company, after remunerating all the production factors, including the cost of equity.

In our opinion, the processes taking part into the value creation and sharing should be reconsidered. Thus, social and environmental processes also take part into the creation of value together with the business processes.

### **3. PERFORMANCE MEASUREMENT – A COMPONENT OF THE PERFORMANCE MANAGEMENT**

The measurement of the performance achieved by the company is necessary for:

- knowing the economic and financial results obtained;
- knowing the social and environmental results obtained;
- comparing the results with the set objectives;
- analysing the contribution of each employee or compartment to the result of the company;
- elaborating the diagnosis of the company and setting future directions of action.

The sustainable maintenance of each company on a competitive market cannot be achieved without the continuous concern for performance and success. The notion of performance is quite complex and has many facets. In economics, the concept of performance is interfered with notions such as profitability, productivity, yield or growth. In addition to these concepts, company performance can be assessed according to its capacity to create value.

The analysis of the economic and financial performance should be made in conjunction with the long-term objectives of each company.

The indicators that assess the economic and financial performance of a company quantify the finality of the action performed in financial or non-financial form. Performance indicators can be used as follows:

- they are the main decisive element of the dividend policy;
- they are a means of forecasting future results;
- represents a tool for the assessment of the company management efficiency;
- represents a managerial tool in a number of areas (the pricing policy, wage negotiations, establishing loan potential);
- they allow for the evaluation of the level of achievement of the set objectives.

The system of indicators used for the assessment of the economic and financial performance of the company include the following categories of indicators (Radu et al, 2008):

- indicators for the assessment of the results of the production and trade activity (turnover, accounting year production, value added) ;
- human resource use efficiency indicators (annual, daily and hourly labour productivity) ;
- fixed assets use efficiency indicators (average output per machine, hourly average output) ;
- material resources use efficiency indicators (specific consumptions on categories of raw materials and other materials, average raw material use efficiency) ;
- efficiency rates;
- profitability margins and rates of return;

- property use efficiency rates, also called asset and equity management or rotation ratios.

Several authors believe that an efficient company meets the expectations of all its partners. In our opinion, this view is incorrect since the expectations of the parties participating in the business of an enterprise are often conflicting. In fact, company managers do not view all their partners as equal, and give priority to the expectations of some of them to the detriment of the others. As a matter of fact, the stakeholders are not equal and have different and sometimes even conflicting expectations.

The indicators used by the company's partners for performance measurement are presented in Table 1.

Financial statements should provide useful information for all their users. But in order to reach this objective, we should renounce the principle of a single balance sheet and use an accountancy based on the needs of each partner, which is impossible. It is not by chance that IASB Conceptual Framework nominates on the first position the investors within the list of accounting information users.

In fact the financial statements filed in compliance with IFRS provide this category of users with useful accounting information for the forecast of the future performance of the company.

Other accounting reference systems such as US GAAP view investors as the main users of accounting information, while the others are deemed auxiliary investors.

Table 1. The correlation between the objectives of the partners and the indicators used for the measurement of the performance expected by them

<b>Partner</b>	<b>Objective (purpose) of the performance measurement</b>	<b>Performance measurement indicators</b>
Shareholders	Estimating the company value	Net profit
		Profit-based rates
	Capacity concerning the return on investment	Value creation indicators:
		EVA - Economic Value Added
		MVA - Market Value Added
	CVA - Cash Value Added;	
Managers	Estimating the strategic and tactical objectives, as well as the degree of their achievement	Efficiency indicators
		Efficacy indicators
		Resource indicators
		Resource use indicators
		Sustainable development indicators
Creditors	Estimating the capacity of the company to generate cash inflows or cash equivalents in order to pay their debts per the due dates.	Liquidity indicators
		Solvency indicators
		Cash flow indicators
Employees	Assessing the profitability of a company Determining the form and level of remuneration	Activity indicators
		Efficiency indicators
		Employee motivation indicators
Customers	Production quality assessment	Production quality assessment
	Assessing the stability of the company	Overall quality indicators

Source: Niculescu, 2003

The notion of performance is many-sided and sometimes paradoxical. One thing is sure though: performance is noticed nowadays, and it is built over time.

Performance exists only if it can be measured, i.e. if it can be described by a set of measures or indicators, more or less complex. Performance measurement can by no means be limited to knowing a summary. Performance should not be mistaken for the indicators or measures that describe it.

#### **4. PERFORMANCE ASSESSMENT BASED ON THE PROFIT AND LOSS ACCOUNT**

Financial performance represents the goal of every company and is monitored by the users of accounting information. To meet their information needs, accounting standardization bodies have been concerned with the creation of models of financial statements to reflect information on the company's performance.

Thus, the profit and loss account, the statement of changes in equity, cash flow statement are components of the financial statements that supply information concerning the company performance.

The accounting result has been considered the most important indicator for assessing company performance for a long time. Based on information provided by the profit and loss account a set of indicators that assess company performance are calculated.

The profit and loss account is the main document that reflects the financial performance of the company. The preparation of the profit and loss account implies observing certain conditions, such as the significance threshold of certain values, and the nature and function of the income and expense items.

IFRS deems that the main financial statement that reflects company performance is the Profit and Loss Account. We can say that the overall result is the main financial statement to reflect company performance because it can set a pertinent result.

The profit and loss account reflects the manner in which the result of the accounting period is formed.

There are two known models of Profit and Loss Account based on grouping operational expenses by their nature or by the company functions.

The Romanian profit and loss account is similar to that indicated by Directive IV as amended with the specification of a differentiation concerning the statement of the profit tax (in Romania it is stated cumulated while the European reference system reflects it divided into the current activity and the extraordinary activity).

As with the a American reference system, in the structure of the Romanian profit and loss account, the extraordinary items are presented separately, and we believe that is aspect is a positive one because the elements must be known by the users in order not to be taken into account for forecasting future profits.

We do not agree with the practice of the international and British reference system that forbid the separate statement of extraordinary items. The extraordinary elements must be presented separately because they cannot be controlled by the company, they will not recur in a predictable future and consequently they should not be used in estimations.

## **5. THE USE OF THE BALANCED SCORECARD FOR PERFORMANCE MONITORING AND MANAGEMENT**

The Balanced Scorecard was launched at the beginning of 1990s as a new management concept. In the beginning, it was used as a mere tool for measuring company performance, but the business environment needed a tool for measuring performance, not for a simple measurement. BSC has become one of the most used management systems worldwide.

Kaplan and Norton introduced, in 1992, the concept of Balanced Scorecard by publishing the article “The Balanced Scorecard- Measures That Drive Performance” in the Harvard Business Review journal.

For every organization, there is a set of areas where positive results must be obtained: the financial results, the relationship with the customers, the internal processes, knowledge and learning, market share, the quality of products and services and others.

Kaplan and Norton (1996) believe that there are four main axes: financial, customers, internal processes, knowledge and learning.

1. The financial perspective: is related to the company’s financial health, as viewed by shareholders and business partners.

Short-term financial results are particularly important for American companies.

The financial perspective assesses the profitability of the company’s strategy (Horngren et al, 2006).

2. Customers: this area takes into account customers’ satisfaction, how they view the company. The construction of the BSC is meant to raise questions concerning the market-customers tandem in which the activity will be performed.

Indicators highlighting the performance obtained in the relationship with the customers will be elaborated, allowing for piloting customers’ satisfaction, customer retention rate, profitability per category of customers, attracting new customers.

3. The internal processes must be controlled in order to create value for customers. The company must determine the processes in which it must excel in order to satisfy its customers.

4. Knowledge and learning ensure the future success of the company. Both the abilities and the knowledge of the employees and the capacity of the whole company to learn are taken into account.

In the literature (Horngren et al, 2006) there are studies concluding that company managers keep attaching greatest importance to financial results for the evaluation of the performance, as can be observed in Table 2.

Table 2. Average relative importance of performance indicators

Category of performance indicators	Average relative importance
Financial perspective	55%
Customer perspective	19%
Internal business process perspective	12%
Learning and growth perspective	14%

Source: Horngren et al, 2006

The successful implementation of the BSC depends on the commitment of the management team. The implementing team must hold discussions with the company managers, should know information about the customers, competitors, and the market in which the company operates. An important step is to set the objectives that will be included in the BSC.

The traditional BSC has the disadvantage that it does not capture performance in all its forms. Overall performance includes, in addition to the economic performance, social and environmental performance. The studies in this area showed that the BSC can be adapted to successfully meet the need to measure the global performance of the company.

Three manners of developing a durable BSC were outlined starting from the traditional model:

- the integration of the social and environmental performance indicators in the customer and internal processes axes, axes perceived as exposed to the problems of sustainable development (partial integration);
- the integration of the social and environmental performance indicators in all the four axes of the BSC (complete integration);
- adding an additional axis, separated from the four traditional axes and which brings together the social and environmental performance indicators (additive integration). This axis was proposed by Biecker and Waxenberger and changes the traditional architecture of the BSC.

Kaplan and Norton (2001) proposed the integration of the social and environmental aspects into the traditional model by integrating these aspects into traditional BSC axes. They proposed the existence of societal indicators at the level of the axis of the internal processes and the expansion of the customer axis to all the partners of the company.

For the development of a durable BSC team work is needed, involving responsible persons from several departments of the company:

- persons responsible for environmental and social aspects;
- staff in charge with developing traditional BSC;
- representatives of subdivisions in which a durable BSC is to be implemented.

The Balanced Scorecard seeks to achieve a balance in several aspects:

- the long-term and short-term indicators should be equally important;
- a balance between the means indicators and the indicators of the results;
- it monitors both internal aspects (internal processes, the development of the organization) and external processes (customers, shareholders);
- it uses both financial indicators and non-financial indicators;
- monitors both the interests of the organization and the interests of the society.

The balanced scorecard has positive effects on the company by bringing senior management strategies down to the level of simple employees, as the implementation of such strategies takes place through their daily actions. According to Balanced Scorecard Institute the implementation of this tool has several advantages:

- the attention is focused on the strategy and results, not on the tasks;
- a better understanding of, and reaction to customers' needs;
- improving company performance by measuring what matters;

- helps leaders make better decisions;
- helps leaders allocate time and resources more efficiently;
- helps leaders and employees fulfil priority tasks.

In Paul Niven's opinion, "the Balanced Scorecard assists an organization overcoming three key aspects: the efficient measurement of the organization's performance, increasing intangible assets and triggering the implementation of the strategy" (Niven, 2006).

For the assessment of the success obtained in the implementation of the strategy, the company must compare the target performance with the actual one in its BSC. The achievement of these targets must be interpreted as a success of the strategic initiatives of the managers.

This approach used by managers is generally correct taking into account that the favourable financial results are those that animate and motivate investors to take risks. In our opinion, the low importance attached to the internal business process perspective can have consequences on the future financial results.

The Balanced Scorecard reflects the Anglo-Saxon thinking framework and favours valuing the company for shareholders and customers. Swedish specialists have criticised the BSC due to the fact that, in their opinion, does not attach importance to the human capital of the company. The concept of BSC does not take into account human capital as the main profit generator for the organization. The importance of intellectual capital has increased, as managers gradually became aware of its value.

Unlike the BSC, Skandia Navigator reflects the Scandinavian thinking framework and attaches importance to the valuation of human capital.

## 6. CONCLUSIONS

The long-standing maintenance of any company on a competitive market cannot be achieved without concern for performance and success. The notion of performance is quite complex and has many facets.

There is no universal definition of performance. The manner in which company performance is assessed has changed over time.

Performance is multiple and appears as a result of the achievement of the strategic objectives, this insuring a durable position on the market. Performance does not exist unless it is measured. The performance cannot be mistaken for the indicators that measure it and cannot be limited to the observation of a result. The concept of performance is currently being enriched with new notions such as "social responsibility", stakeholders... Financial performance is not sufficient to assess the performance of a company. The commitment of the companies to sustainable development implies joining performance and responsibility.

Any accounting system has, among its objectives, the measurement of the company performance. An adequate management requires monitoring and reporting situations allowing for the correct decision to be made.

## REFERENCES

- Albu, N. and Albu, C., 2003. *Performance management tools (Instrumente de management al performanței)*, Economica Publishing House, Bucharest, Romania.
- Andronic, B., 2000. *Company performance (Performanța firmei)*, Polirom Publishing House, Iași, Romania.
- Biecker, T. and Waxenberger, B., 2002. Sustainability Balanced Scorecard and business ethics developing a balanced scorecard for integrity management. <http://www.alexandria.unisg.ch/export/DL/17767.pdf>, (accessed 1/4/2011).
- Bourguignon, A., 1995. Can we define performance? ('Peut-on Définir la Performance?'), *Revue Française de Comptabilité*, No. 269, pp. 61-66.
- Bourguignon, A., 1997. Under the paving stones, the range or the multiple functions of accounting vocabulary: the example of performance' ('Sous les pavés, la plage ou les multiples fonctions du vocabulaire comptable: l'exemple de la performance'), *Comptabilité, Contrôle, Audit*, Tome 3, Vol. 1, pp. 89-101.
- Caraiani, C. et al, 2008. *Management accounting & Management control (Contabilitate de gestiune & Control de gestiune)*, Universitara Publishing House, Bucharest, Romania.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Horngren, C. et al, 2006. *Cost accounting, a managerial emphasis (Contabilitatea costurilor, o abordare managerială)*, XIth edition, ARC Publishing House, Chişinău, Moldova.
- Kaplan, R., and Norton, D., 1996. *Balanced Scorecard: Translating strategy into action*, Harvard Business School Press, Boston, USA.
- Kaplan, R. and Norton, D., 2001. *The Strategy-focused organization: how Balanced Scorecard companies thrive in the new business environment*, Harvard Business School Press, Boston, USA.
- Lala Popa, I. and Miculeac, M.E., 2009. *Economic-financial analysis – Theoretical and case studies (Analiză economico-financiară - Elemente teoretice și studii de caz)*, Mirton Publishing House, Timișoara, Romania.
- Lebas, M., 1995. Performance measurement and performance management. *International Journal of Production Economics*, Vol. 41, No. 1-3, pp. 23-35.
- Lorino, P., 1995. *Accounts and narratives – Essay on the control of the company (Comptes et recits de la performance - Essai sur le pilotage de l'entreprise)*, Les Editions d'Organisation, Paris, France.
- Lorino, P., 2000. *Performance measurement (Mesure de performances)*, Les Editions d'Organisation, Paris, France.
- Niculescu, M., 2003. *Financial diagnosis (Diagnostic financiar)*, Economica Publishing House, Bucharest, Romania.
- Niven, P., 2006. *Balanced Scorecard step by step: Maximizing performance and maintaining results*, Second edition, John Wiley Sons, New Jersey, USA.
- Porter, M.E., 1986. *Competition in global industries*, Harvard Business School Press, Boston, USA.
- Radu, F. et al, 2008. *Economic and financial analysis and diagnosis (Analiză și diagnostic economico-financiar)*, Scrisul Românesc Publishing House, Craiova, Romania.

## LMS CONTRIBUTION TO A BETTER BUSINESS EDUCATION

Ioannis Kazanidis<sup>1</sup>, Ioannis Petasakis<sup>2</sup>, Stavros Valsamidis<sup>3</sup>, Alexandros Karakos<sup>4</sup>

<sup>1</sup>Accounting Department, Kavala Institute of Technology, Agios Loukas, 65 404, Kavala, Greece,  
kazanidis@teikav.edu.gr,

<sup>2</sup>Accounting Department, Kavala Institute of Technology, Agios Loukas, 65 404, Kavala, Greece,  
jpetasakis@hotmail.com

<sup>3</sup>Accounting Department, Kavala Institute of Technology, Agios Loukas, 65 404, Kavala, Greece,  
svalsam@teikav.edu.gr

<sup>4</sup>Department of Electrical and Computer Engineering, Democritus University of Thrace, Xanthi, Greece,  
karakos@ee.duth.gr

### ABSTRACT

Further education and training of the employees are very important factors for the enterprise success. Unfortunately, the lack of time and space has lead to their limited appliance in an enterprise. Limited financial support is another suspending factor. On the other hand, rapid technological progress in the sector of information technology and communications has lead to the implementation of the Internet applications such as Learning Management Systems (LMSs). None could deny that LMSs supplement existing traditional educational systems or they fully substitute the latter.

Structured questionnaires exposed to the learners are the means for evaluation. Initially the learners were asked to express their attitude how useful the e-learning courses were. Afterwards the collected data from attitude questionnaires were analyzed in terms of Quality, Quantity, Utilization and Technology Acceptance Model (TAM) factors. The latter was assessed for potential correlation with each of the three former terms. The assessment results were notified to the educators in order to improve their online courses. This courses evaluation will end up to a better LMS offering optimal educational material to the learners.

### KEYWORDS

LMS, evaluation, TAM

### JEL CLASSIFICATION CODES

I21, I23

## 1. INTRODUCTION

Classroom teaching, distance learning through the reading of books and other written material, and apprenticeship relations where apprentice follows master in action are traditional modes of education and training. With the recent advances in information and communication technologies (ICT), an alternative mode, e-learning, has come on to the scene.

E-learning is technology-based learning such as computer-based learning, web-based learning, virtual classroom and digital collaboration. It is widely believed that e-learning technologies are going to change and revitalise education and training (Cone and Robinson, 2001) thereby bringing new benefits to society.

E-learning describes the ability to electronically transfer, manage, support, and supervise learning and learning materials (Govindasamy 2002; Normark and Cetindamar, 2005; Imamoglu, 2007). Many authors have discussed the way in which e-learning can be used for the delivery of training, assessment and support (Fichter, 2002). E-learning has made considerable progress since the early 1990s, attributable in large measure to technological developments. Technological improvements have been fast, and so have the changes in corporate training methods.

Learning Management Systems (LMSs) are software tools designed to manage user learning interventions that offer an extensive range of complementary functionality. LMSs offer a lot of methods for distribution of information and communication between the participants in a course. They allow instructors to deliver assignments to the students, produce and publish educational material of the course, prepare assessments and tests, create discussions forums, tutoring distant classes and activate collaborative learning with forums, wiki, students' interaction with multimedia, archive storage, news feeds etc. (Romero et al., 2008).

Some of the most well known commercial LMS are (Romero et al., 2008) Blackboard, Virtual-U, WebCT and TopClass while Moodle, Ilias, Claroline and aTutor are free distributed.

E-learning allows organizations to train and develop employees. Cost savings, learning flexibility, better retention, unified and updated information and the ability to provide safe and easy to manage learning environment are just some of the advantages e-learning provides (Kathawala and Wilgen, 2004; Dagada and Jakovljevic, 2004; Macpherson et al, 2004; Rabak and Cleverand-Innes, 2006).

In today's competitive environment (Kathawala and Wilgen, 2004), work based training and learning are critical. They enable organizations to keep up with the fast-changing world (Normark and Cetindamar, 2005; Wellman, 2007).

E-learning as a corporate training method has been enhanced by virtuality, which now manifests itself in aspects such as content provision, electronic access to libraries, e-books, discussion rooms and chat lines (Abell and Foletta, 2002). Soon these delivery channels will become mainstream delivery modes for corporate training and will become part and parcel of the competitive advantage of a successful company (Christner, 2003).

A significant benefit of e-learning is that it allows learners access to learning material at their convenience (DeLima, 1999). The advantage for the corporate world lies in the fact that training can be offered without the necessity for a physical classroom, as learners can learn anywhere where there is access to the Internet. Moreover, the interactivity inherent in Internet-based courses has fuelled the growth of online learning. Trotter (2002) notes that learners who use the Internet for learning purposes have reported a greater engagement in the learning experience than in the case of the more static learning associated with the traditional classroom. E-learning enables the instructor to monitor the learners' progress continuously. Learners become involved in the learning process and modules can be designed to suit different learning styles.

Arnone (2002) reports that some learners find that e-learning suits their learning styles better than the conventional, face-to-face options - which could be attributed to the fact that some learners are more visual than auditory. Furthermore, some learners prefer working at their own pace and prefer not to restrict their learning to a specific location. Christner (2003) remarks that e-learning offers learners a range of options for navigating through the lessons, submitting assignments and holding discussions with other learners. In most instances, discussion takes place by means of a threaded discussion feature, in which learners can send messages on a specific topic. Learners may also respond to messages posted by the trainer.

Christner (2003) cautions, however, that both critics and supporters have identified some weaknesses associated with e-learning. These include the lack of social presence usually associated with physical classrooms, as learners miss the real-life interaction with their colleagues and the instructor. This feeling of loneliness could be a serious stumbling block to learning; in adult education in particular there is much that learners can learn from each other.

Christner (2003) further observes that it takes a long time for trust to develop among online learners. A dilemma is posed by the fact that the very technology that makes e-learning possible can constitute a hurdle as online learners need certain types of hardware, technical support and fast Internet connection (Abell and Foletta, 2002).

Some authors are suspicious about the quality of E-learning materials (Abell and Foletta, 2002). Subjecting E-learning materials to quality standards, accreditation and legislation could solve this.

Furthermore, one weakness of the LMSs is the lack of exploitation of the acquired information due to its volume. Most of the times, these systems produce certain reports with statistic data, which however, don't help instructors to draw out useful conclusions either for the course or for the students and are useful only for administrative purposes of each platform. Moreover, the existent e-learning platforms do not offer concrete tools for the assessment of user actions and courses educational content.

Some metrics, which are firstly introduced by the authors, are used for this evaluation. Structured questionnaires exposed both to the educators and the learners are the second means for evaluation.

According to Trotter (2002), e-learning will overtake conventional classroom training models over the next years, claiming half of the overall corporate training market share. Corporate instructors should be exposed to a programme that will equip them with online instructional design. The Internet, too, has a number of tools and resources that can help both instructors and learners (Pethokoukis, 2002).

The paper is organized as follows. Section 2 describes the background theory (related work). Section 3 describes the approach used. Results of a two-fold experimental evaluation are reported in Section 4. Section 5 presents discussion about the approach and the results. We draw some conclusions together with directions in the future.

## **2. BACKGROUND THEORY**

### **2.1 Organizational learning**

The phrase 'new economy' is often used to describe contemporary economies (Lundvall and Johnson, 1994), where the importance of knowledge and learning is highly appreciated. This is because improved capability, either at the individual or organizational level, leads to increased organizational performance and employee satisfaction, which in turn contribute to the welfare of individuals and society as a whole.

An organization learns when it acquires new knowledge or skills of any kind and by whatever means. To be organizational, the outcome of learning must be embedded in the images of the organization held by its members' mind and/or in the epistemological artefacts embedded in the organizational environment (Agrygis and Schön, 1996).

The maturation of e-learning technologies will increase the interest in understanding why e-learning works, what affect it has and how to conduct successful e-learning. There is a lack of studies in the literature about implementation problems (Beller and Or, 1998).

### **2.2 Data analysis in e-Learning**

Data analysis may be applied to (i) traditional educational systems, (ii) web based courses, (iii) LMS like Moodle, Claroline, WebCT etc. as well as iv) adaptive and intelligent educational systems. Data analysis methods in the World Wide Web have been systematically used in a lot of e-commercial applications. Nevertheless, their utilization was lower than in the asynchronous e-learning systems (Zaiane, 2001).

It is important to notice that traditional educational data sets are normally small (Hamalainen et al, 2006), if we compare them to files used in other data analysis fields such as e-commerce applications that involve thousands of clients (Srinivasa, 2005). This is due to the fact that the typical sizes of the classroom is often small, depending on the type of the course (elementary, primary, adult, higher, tertiary, academic and special education) and the corresponding transactions are fewer. The user model is also different in both systems (Romero and Ventura, 2007).

### **2.3 TAM (Perceived usefulness and ease of use)**

Technology Acceptance Model (TAM) was developed in order to explain the acceptance of information systems, as well as to predict the value of related factors to the spread of these systems (Davis, 1989). According to the Technology Acceptance Model (TAM), there are two determinants of new technology acceptance: perceived usefulness, and perceived ease of use. Davis defines perceived usefulness as the degree

to which a person believes that a specific system will raise his/her performance in his/her job (Davis, 1989). Respectively, the perceived ease of use is defined as the amount that a person believes that the use of a specific system does not need effort. Both perceived usefulness and perceived ease of use are predictors of user attitude toward using the system, subsequent behavioral intentions and actual system usage. TAM validness has been proved by research and is widely accepted (Legris et al, 2003). Lee (2006) and Maslin (2007) validated the extension of the model on e-learning.

### **3. APPROACH**

This paper analyzes the effects of online asynchronous education in an organization and its employees. The organization consists of 455 employees with a variety of specialties.

#### **3.1 Experimental design**

During the year 2010 the Claroline (Claroline.NET, 2011) Learning Management System was installed in the organization's intranet. Ten online courses were delivered in this platform and the employees were informed that they had the opportunity to study these courses during their presence at the organization's plant. These courses provided useful information in different domains like Information and Communications Technology, Logistics, Economics, Management, Marketing etc. Their aim was to provide useful knowledge to the employees that could help them increase both their performance on work as well as on their personal life interaction with new technologies.

Special care was given on the educational content of the online courses, since it should fulfill specific requirements and authors could improve it after a short evaluation by the employees. For this reason an experiment took place. During the experiment both qualitative and quantitative data were gathered. These data were collected with the aim of a structured questionnaire. The employees were asked to study and assess the online courses filling a structured questionnaire.

#### **3.2 Procedure**

Employees study the courses for four weeks. At the fifth week they were asked to evaluate the online courses they studied, filling an online questionnaire for each one of the courses they studied. The questionnaire data was analyzed through the statistic package SPSS in order to discover courses quality, content quantity and possible correlations between specific courses properties.

#### **3.3 Measures**

Survey questionnaire was consisted by five parts. The first part examines employees' personal profile. The knowledge of employees' profile is important, in order to understand the needs and the personal characteristics of the learners.

The third and fourth questionnaire parts deals with the educational content quality and quantity respectively. Both quality and quantity of educational content are important factors for a successful learning experience. If course quality is not adequate, learners have problems on understanding the course domain. On the other hand problems in learning may be raised in case that content quantity is either too low or more than it should be for specific type of learners.

The fifth and last part of the questionnaire attempts to discover the utilization of LMS tools by the authors. LMS provide a variety of features and tools like forums, wikis, course description, assignments etc. that may expand study experience and help the learning process.

The questionnaire consists of 33 questions. Most were Likert 5 scale agreement questions from "Totally Disagree" (1) to "Totally Agree" (5). In addition there were two open-ended questions and three multiple-choice questions.

## 4. RESULTS

An attitude questionnaire aimed to determine the subject's experience with the platform courses was applied to the learners. For most of the learners (84%), this was the first time they had studied through online courses, while the average time that they spent studying was approximately 30 minutes per week. Overall, the learners reflected positively on the experience of studying online courses (TAM mean score=4.05 in 5 grade Likert scale).

The questionnaire's outcomes for each course show their quality, quantity, easy of use and usefulness, as well as the platform features exploitation by the course authors. Platform courses were sorted in accordance with the average grade took from the TAM section of the questionnaire, which detects the perceived usage of the courses by the learners. Table 1 presents the courses delivered by the platform as well as their average scores collected from the questionnaire results. Furthermore the courses were grouped into two distinct clusters according to their fulfillment of TAM factors.

Table 1. Online courses and their scores

Course	Sample size	TAM	Cluster	Quality	Quantity	Utilization
OA231	69	4.44	High	4.07	3.92	3.94
GM859	41	4.17	High	4.08	4.33	3.00
HS982	34	4.09	High	4.01	3.97	3.85
PM143	14	4.03	High	3.89	3.79	3.65
LO053	9	3.97	High	3.83	3.67	3.80
IT645	75	3.89	Low	3.78	3.55	3.61
SM022	17	3.88	Low	3.45	3.38	3.62
MA428	36	3.79	Low	3.45	3.33	3.50
QA563	12	3.72	Low	3.67	3.67	3.33
CA146	17	3.41	Low	3.50	4.00	2.92

The courses are divided into two clusters, depending on the score captured by TAM method. The clustering is performed using the K Means Cluster Analysis method. As shown in Table 2, the number of courses in each cluster is equal. The first five courses are classified as High because these are courses with higher values of TAM and the next five as Low (F test=11.272, p-value=0.01). Courses with high TAM score are expected to be used more by learners, since they are considered more useful and easy in their use.

Table2. Cluster Membership

Cluster High		Cluster Low	
Courses	Distance	Courses	Distance
OA231	0.000	IT645	0.480
GM859	0.270	SM022	0.470
HS982	0.350	MA428	0.380
PM143	0.410	QA563	0.310
LO053	0.470	CA146	0.000

In addition to the above results, we checked for possible correlations among the score in TAM and the other parts of the questionnaire (quality, quantity and utilization). These correlations are presented in Table 3. All these Pearson correlation coefficients have positive and relatively high values, between 0.477 and 0.778 and are significant at 1% level. That means higher values of TAM lead to higher values of Quality, Quantity and Utilization respectively. Therefore these correlations will potentially help researchers find quantitative criteria for course assessment and, as a consequence, provide adequate automated help to authors for course improvement.

Table 3. Presentation of Pearson Correlation Coefficient

	Quality	Quantity	Utilization
TAM	0.778*	0.477*	0.658*

\* Correlation is significant at the 0.01 level

We were also wondering if the total time that a student spends, each week per course, on the course web site is correlated with its TAM mean score. We split the time into four groups as shown in Table 4. The mean score of TAM, separately for each one of the time categories, is shown in the table below. The analysis of variances (ANOVA) method shows that the differences in mean scores of TAM are not significant at the 5% level. That is, the time each employee spends studying the online courses does not affect their experience of studying such courses, as described by TAM score.

Table 4. Employees' allocation according to time they spent each week at the online course

	Sample size	TAM score	Standard Deviation
Till 20 minutes	107	3.87	0.31
21-40 minutes	98	3.91	0.29
41-60 minutes	97	3.86	0.33
More than an hour	34	3.94	0.49

## 5. DISCUSSION AND CONCLUSION

Further education and training of the employees are very important factors for the enterprise success. Unfortunately, the lack of time and space has lead to their limited appliance in an enterprise. Limited financial support is another suspending factor. Consequently the LMS exploitation is a necessity for the employees' education and training.

The proposed approach performs attitude analysis of online courses. It evaluates courses in terms of quality, quantity, utilization, ease of use and usefulness through an attitude questionnaire according to the TAM. It has the advantage that it is independent of a specific LMS.

The results seem to confirm the proposed approach. The fact that TAM is correlated with quality, quantity and utilization amplifies the outcomes and consequently helps researchers to proceed with the provision of specific suggestions for course improvement.

However, the limitations of the proposed method are the small number of courses (10), the consequent small number of respondents to the questionnaires and its application in only one platform. More experiments have to be done in other platforms and courses, so as to check for conformant with the current results.

For the evaluation of the method, as described earlier, in the future the evidence will be collected with two more means. By using an LMS log file analysis as a first kind of evidence. Namely, a statistical comparison of the log files analysis of the courses with the questionnaire results will offer valuable insights and help systematically evaluate the approach. Structured questionnaires exposed to the educators is the second kind of assessments. Educators opinion about their courses will be compared with learners' and log file analysis results in order to mention possible weaknesses and propose adequate improvements.

From a pedagogical point of view, this method contributes to the improvement of course content and course usability and the adaptation of the courses in accordance to learner capabilities. Improvement of course quality gives to learners the opportunity of asynchronous study of courses with actualized and optimal educational material.

It should be mentioned that even if the scope of the method is on LMS platforms and educational content, it can be easily adopted in other web applications such as e-government, e-commerce, blogs etc.

## REFERENCES

- Abell, M. and Foletta, G., 2002. Kentucky educators first to web with middle school and High school online learning'. *Mathematics Teacher*, 95, 5, pp. 396-397.
- Argyris, C. and Schon, D.A., 1996, *Organizational Learning II: Theory, Method and Practice*, Reading, Mass.:Addison-Wesley.

- Arnone, M., 2002. 'Mixing and matching distance-education software. *Chronicle of Higher Education*, Vol. 48, No. 37, pp. 33-34.
- Beller, M. and Or, E., 1998. The Crossroads between Lifelong Learning and Information Technology: A Challenge Facing Leading Universities. *Journal of Computer-Mediated Communication*, Vol. 4, No. 2.
- Christner, T., 2003. A classroom of one (book). *Library Journal*, Vol. 128, No. 1.
- Claroline. NET, 2011. Claroline' <http://www.claroline.net>, (accessed 10/4/2011).
- Cone, J. W. and Robinson, D. G., (2001). 'The power of e-performance. *Training & Development*, Vol. 55, No. 6, pp. 32-41.
- Dagada, R., and Jakovljevic, M., 2004. Where have all the trainers gone? E-learning strategies and tools in the corporate training environment'. Proceedings of SAICSIT, Pretoria, South Africa.
- Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology'. *MIS Quarterly*, Vol. 13, No. 3, pp. 319-340.
- Delima, F., 1999. Web-based learning more cost effective. *Computing Canada*, Vol. 25, No. 27.
- Fichter, D., 2002. Intranets and e-learning: a perfect partnership. *Online*, Vol. 26, No. 1, pp. 68-71.
- Govindasamy, T., 2002. Successful implementation of e-learning: pedagogical considerations. *Internet and Higher Education*, Vol. 4, No. 3-4, pp. 287-299.
- Hamalainen, W. and Vinni, M., 2006. Comparison of machine learning methods for intelligent tutoring systems. *Proceedings of Int. Conf. in Intelligent Tutoring Systems*, pp. 525-534.
- Imamoglu, S. Z., 2007. An Empirical Analysis Concerning the User Acceptance of E-Learning. *Journal of American Academy of Business*, Vol. 11, No. 1, pp. 132-137.
- Kathawala, Y., and Wilgen, A., 2004. E-learning: Evaluation from an organization's perspective. *Training & Management Development Methods*, Vol. 18, No. 4, pp. 501-506.
- Kirkpatrick, D., 1979. Techniques for evaluating training programs. *Training and Development Journal*, Vol. 33, No. 6, pp. 78-92.
- Lee, Y., 2006. An empirical investigation into factors influencing the adoption of an e-learning system. *Online Information Review*, Vol. 30, No. 5, pp. 517-541.
- Legris, P. et al, 2003. Why do people use information technology? A critical review of the technology acceptance model. *Information and Management*, Vol. 40, No. 3, pp. 1-14.
- Lundvall, B. and Johnson, B., 1994. The learning economy. *Journal of Industry Studies*, Vol. 1, No. 2, pp. 23-42.
- Macpherson, A., Eliot, M., Harris, I., Homan, G., 2004. E-learning: Reflections and evaluation of corporate programmes. *Human Resource Development International*, Vol. 7, No. 3, pp. 295-313.
- Maslin M., 2007. Technology Acceptance Model and E-learning. *Proceedings of the 12th International Conference on Education*, Sultan Hassan al Bolkiah Institute of Education, University Brunei Darussalam.
- Normark, O. R. and Cetindamar, D., 2005. E-learning in a competitive firm setting. *Innovations in Education & Teaching International*, Vol. 42, No. 4, pp. 325-335.
- Pethokoukis, J., 2002. E-learn and earn. *U.S. News & World Report*, Vol. 132, No. 22, pp. 36.
- Rabak, L. and Cleveland-Innes, M., 2006. Acceptance and resistance to corporate e-learning: A case from the retail sector. *Journal of Distance Education*, 21, No. 2, pp. 115-134.
- Romero, C. and Ventura, S., 2007. Educational Data Mining: a Survey from 1995 to 2005. *Elsevier Journal of Expert Systems with Applications*, Vol. 33, No. 1, pp. 135-146.
- Romero, C. et al, 2008. Data mining in course management systems: Moodle case study and tutorial. *Computers & Education*, Vol. 51, No. 1, pp. 368-384.
- Srinivasa, R., 2005. Data mining in e-commerce: A survey. *Sadhana*, Vol. 30, No. 2-3, pp. 275-289.
- Trotter, A., 2002. Calif. 's online-learning potential evaluated. *Education Week*, Vol. 22, No. 8, pp. 11-12.
- Valsamidis, S., Kazanidis, I., Kontogiannis, S., Karakos, A., 2010. Automated suggestions and course ranking through web mining. *Proceedings of 10th IEEE International Conference on Advanced Learning Technologies, ICALT 2010*, Sousse, Tunisia, pp. 197-199.
- Valsamidis, S. et al, 2010. Homogeneity and Enrichment, Two Metrics for Web Applications Assessment. *Proceedings of the 14th Panhellenic Conference on Informatics, PCI 2010*, Tripoli, Greece, pp. 48-52.
- Wellman, J., 2007. Lessons learned about lessons learned. *Organization Development Journal*, Vol. 25, No. 3, pp. 65-72.
- Zaiane, O.R., 2001. Web Usage mining for a better web-based learning environment. *Proceedings of Conference on Advanced Technology for Education*.



# FACTORS AFFECTING THE EVALUATION OF MARKET VALUE IN RIGA

Oksana Ruzha

*Daugavpils, Parades 1-331, ksjuha2@tvnet.lv*

## ABSTRACT

Factors affecting the evaluation of market value. In accordance with definition of market value of the property depends on the factors that determine the average or most probable sale price in the market by normal conditions of the deal. The price of each purchase - sale deal of the real estate is determined by many such factors as in other pricing mechanism.

At the first level of classification they can be divided into objective and subjective factors. At a certain conventionality of division it groups the factors, which are dependent and independent of the will of the individual participant of the deal.

There are considered the objective factors in determining the market value. The subjective factors are related with the behaviour of a concrete buyer, seller or broker settling the transaction, which is not defined directly by the economic conditions (temperament, knowledge, honesty, patience, trust, personal likes and dislikes, etc.). Analysis of these factors, which are related to the field of individual psychology, not economics, goes beyond the market value of real estate.

Objective factors, mainly, are economic, determining the average price of concrete transactions. But the price of each particular transaction forms under the influence by other factors and is a kind of a random measurement that fluctuates around this average level.

Economic factors can be divided into macro and micro. The first group includes factors related to overall market conditions: initial security requirements in real estate objects in the region; the amount and structure of new construction and reconstruction; factors of migration; legal and economic terms of transactions (taxes, fees, etc.); level and the dynamics of inflation; rate of currency and its dynamics.

In Latvian conditions in a group of macro-economic factors may also be specified following long-term factors:

- differences in the dynamics of prices for goods and services, also conditions of remuneration of labour, affecting the extent of accumulation of money and the value of pent-up demand;
- development of a mortgage system;
- the pace and scale of the formation of a new social stratum "rich people", and their opportunities to invest in real estate;
- development of foreign representation in the region (Riga).

Macroeconomic factors are inertial, significantly affecting the long-term dynamics of the general level of prices for apartments and determination of their structure (ie, the ratio of prices between different groups of similar apartments). But in the short term (approximately within a few months) they can be roughly assumed to be constant, while the overall market conditions - fixed. (Downs, J.C. 2005).

Microeconomic factors characterize the objective parameters of concrete transactions. Important factors of them are those that describe the object of the transaction (apartment). Also relevant factors are, which are related with nature of the transaction and the terms of payment. But so far the nature of transactions with apartments in Latvia became standard and stable. There are worked out the basic procedures for processing transactions and their payment.(Fridman.J, 1995).

## KEYWORDS

Housing, property evaluation, factors affecting the real estate appraisal.

## JEL CLASSIFICATION CODES

L85

## 1. INTRODUCTION

Population actively participate in forming of the economic policy by building the real estates, for example, private houses, using the savings and credit possibilities. A building of houses increase determined a necessity to search new managements and maximal possibilities, which is most approached new-built and market of already existing houses cost of exact value in same queue. Desire to influence a property estimation, fictitious transactions, incorrect purchase sums are part from problems, with which have to face, searching the true market cost of the real estate.

Letter purpose – to find out features of the real estate value and factors influencing value of the real estate in Riga.

## **2. THE EVALUATION OF MARKET VALUE**

In the capitals and major regional, transportation, cultural centers, with a high level of financial flows, effective investment and good prospects for development, residential real estate market is developing rapidly, and prices for residential real estate set at a relatively high level eventually.

Riga – is the capital in Latvia. Each residential property is unique and has specific system of qualitative and quantitative characteristics that affect market value. Let's consider these options in relation to Riga residential real estate market.

It is known that for effective management of property and transactions with real estate for each facility must have a qualitative and quantitative information of four types: physical characteristics of land, buildings and other; property and legal description: property rights, restrictions, easements; economic indicators of demand, costs, prices, profitabilities and employment and other; condition of the external environment: transport, climate, ecology, noise, proximity of "unfriendly business objects", seismicity, hydrography, and more.

Gathering and analysis of information is held on three levels: regional, local (district) and on the level of the residential real estate. There should be identification of the object on the first place - checking the mailing address, location, borders, the cadastral number and plot number. Residential real estate of Riga includes a wide variety of buildings, which are significantly different of the grounds of floors, quality of construction materials and other criteria, so they are classified into many types and categories. The housing fund of Riga consists of various types of buildings, so these various types are divided in such "quality groups" of housing: housing of low quality (low-rise wooden buildings), housing of average quality (serial home) housing of high quality (special projects) and luxury housing.

The physical condition of the building of any functional purpose can be characterized by a single program that takes into account the following key indicators:

- title of a building or structure (industrial, residential, public);
  - the area ( $m^2$ ) Volume ( $m^3$ ), height (m);
  - material of walls, roofs, floors (block, panel, brick, wood);
  - time of construction;
  - list of defects by type and size; expert valuation of the elements and the whole building or structure.
- Necessary parameters can be obtained by using the following instructional techniques:
1. Area of the building, basements, semi-basement and the attic is determined by their external perimeter without architectural elements (columns, etc.). Complex configuration is measured in parts.
  2. Height of the building is measured: distances from the surface of the earth around it to the top of the cornice line, basements and semi-basement - from their floor to ceiling, and attic - on the top line of the eaves of the building to the top line of the eaves attic.
  3. Extension of light type (verandas and others) describe, measure and evaluate separately from the building itself, while small extensions (outside porch, etc.) account by an expert way.
  4. In describing the deficiencies constitute a defective statement of each structural element of the building indicating the amount of damage and wear or safety.
  5. Wear or level of conservation (100% minus the percentage of wear) of the building in normal (typical) using can be calculated by a simplified way - the ratio of the limit of its useful life and actual chronological age or on rates of loss of value of the structure for each 10 years of operation at

an average of typical usage conditions. All of these indicators are widely used in practice, for example, in the case when it is necessary to determine the value of any residential object.

There are three approaches to determine the value of residential real estate: cost, relative and profitable. But even here there are specific features. For example, in Riga profitable method of determining the property value is not widely applied. According to appraisers, residential property owners request to determine potential revenue of their homes rarely. The most frequently used are relative and cost approach. The cost approach is used in cases where it is impossible to pick up the object-analogue, for example, a house or an exclusive new building. The relative method is usually used to determine the market value of the typical apartments.

Presence or absence of a variety of amenities significantly affect the market price of residential real estate. For example, an apartment in a brick house with elevator, good sound insulation, with balcony or loggia, separate bathroom will be more expensive than apartments in the panel house without a balcony or loggia, and so on. Main role plays floor. The most valuable apartments are those which are located on the second till fourth floor, and much less - on the first and last. The level of demand for apartments with different number of rooms is more on the subjective preferences of citizens, as well as to their financial capabilities.

The commercial price of housing is also greatly influenced by its location. Apartments located in different areas may have a similar price, but they can also be quite different. Such a situation is due primarily to the concept of "prestige" area. It includes a number of indicators: equipped area of social infrastructure, remoteness from the centre (measured as a rule, the distance in kilometres on the main overland routes), the presence or lack of convenient transportation routes, environmental conditions and so on.

Most often "prestige" area is considered by its remoteness from the centre. Centre, above all, is the focus of the business life of the city, in the central areas is the administration of the city, offices of large companies, shops and etc. In this regard, wealthy city dwellers seek to buy a flat if not in the city centre, at least in the surrounding areas. Therefore, prices for apartments here will be much higher than the housing prices in outlying areas away from the centre.

Over the past two years, the cost of any apartment located in the centre of Riga, exceed the cost of similar apartments in other areas by an average of 20-25%.

It should be noted that the approach to designate areas only on the basis of prestige factor to their distance from the centre and transport accessibility is not without flaws - it creates the notion that the price of apartments, houses directly depends on their location: the farther from the centre, the lower the price.

The cost of housing in Riga depending on the type and location, is shown in table 1 (Prian.ru., 2010).

Table 1. The cost of housing in Riga depending on the type and location

<b>District</b>	<b>Price (thousand EUR/m<sup>3</sup>)</b>
<u>Old Riga</u>	
Houses until the 1st part of 20th century	1,80 – 3,2
New projects	2,0 – 3,2
<u>Central districts</u>	
Houses until the 1st part of 20th century	1,2 – 1,6
New projects	1,4 – 2,0
<u>Dormitory</u>	
Houses until the 1st part of 20th century	0,56 – 0,65
New projects	0,9 – 1,5
<u>Riga district</u>	
New projects	0,8 – 1,2

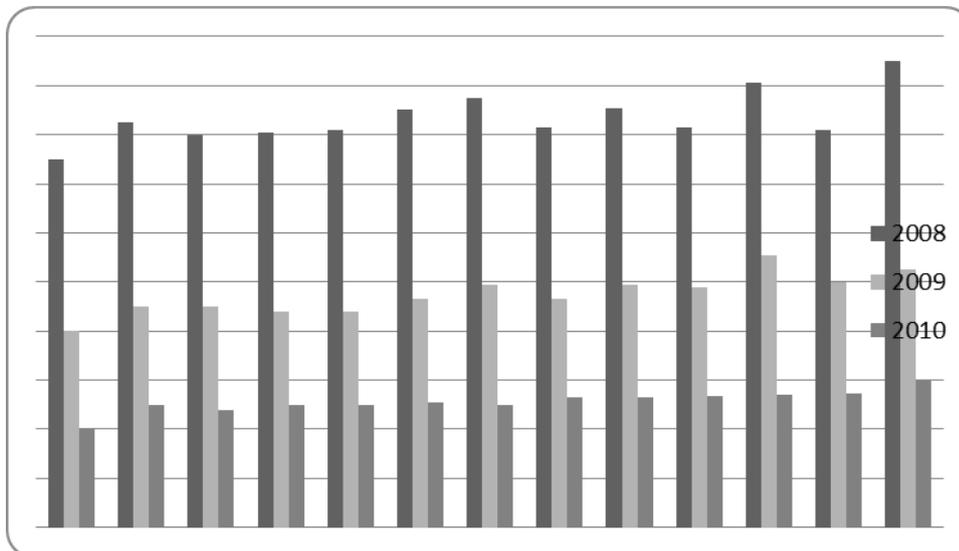
It may be noted that depending only on the basis of the remoteness of the area from the city center, it can not be explained, why in the equally remoted areas from the city center are different prices.

It seems that the zoning of the city is useful to manage on the social and town planning grounds, which takes into account both the quality of the housing and the quality of the area it is located.

The differentiation of the urban population by income level should be included to social features, which is responsible for including trends in its spatial distribution: the displacement of poor people from downtown to the suburbs, the formation of rich and poor sections.

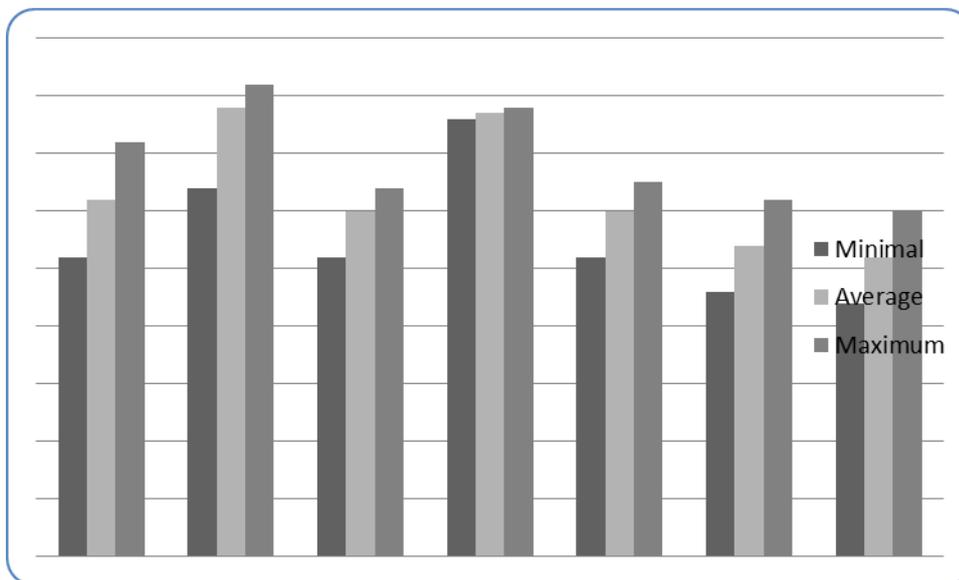
This so-called factor of social geography. Average prices of standard apartments in Riga districts are shown in figure 1 (Arco Real Estate, 2010).

Figure 1. Average prices of standard apartments in Riga districts in 2008 - 2010 (EUR/m<sup>2</sup>)



The highest prices remains in such areas as Teika, Purvciems, Zolitude - where the average price is 680 EUR/m<sup>2</sup>. Lowest prices in the area Bolderaya - where the average price is 510 EUR/m<sup>2</sup> (Arco Real Estate, 2010).

Figure 2. Prices of standard 2-room apartments in Riga districts in 2010 (EUR/m<sup>2</sup>)



In last years, such trend persists, that the most popular and expensive apartments are in serial buildings of 119 and 104 series, the cheapest - in the buildings of the Lithuanian project.

In Riga, as well as in other large cities, this factor (social geography) is just beginning to become a determinant of prices in the market of elite housing, but its role is increasing rapidly. It is why there are

appearing prestigious suburban areas in Riga, where distance from the centre is not a significant determinant of prices.

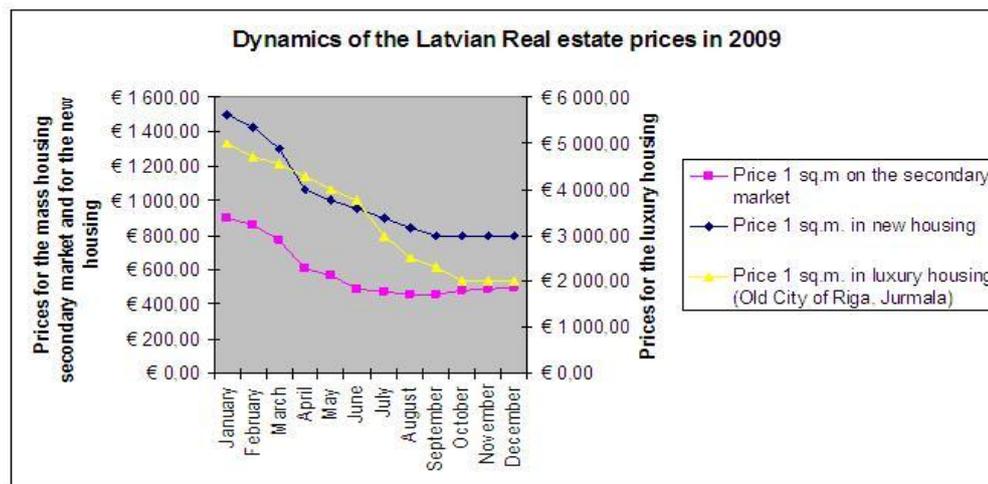
Housing prices in these areas are comparable to the level of prices in areas close to the centre.

World experience shows that a large effect on the market price of apartments in one or other area provides ecological situation. This is one of the major characteristics of the prestige of the district.

However, in most cities in Latvia, including Riga, which is among the most contaminated, the current differentiation of housing on the environmental conditions is not yet a determinant of prices.

Prices of primary housing market in Riga have some differences from the price of secondary housing (see figure 3) (Valery Engel, 2010).

Figure 3. Dynamics of the Latvian Real estate prices in 2009 (EUR/m<sup>2</sup>)



Considering the housing market in Riga it is impossible not to dwell on such its varieties as luxury housing. Luxury housing is available only to those who can pay for it. A similar situation led to the fact that along with the existing dwelling species appeared the so-called "housing for the rich" with its own typology.

Cottage - one of the available types of luxury housing. In the early 90's in Latvia started cottage building boom. Specialists predicted even outflow of urban population to the suburbs and the decline of the central regions.

However, in the current recession of the Latvian economy, reflected on household income and contribute to compression of aggregate demand, the purchase of cottages is available only for the secured segment of the population. For comparison, the average income of the population in Riga district in 2009 amounted to 473.00 LVL, and the average price of 1 square meter of luxury housing - 4,859 LVL per sq. m. Even when the population with incomes below the average cost of living is 44.7%.

Difficult to imagine the average resident citizen of Riga living in 2-3-floored mansion with an area of 300-1000 square meters, which even for wealthy city dwellers do not always available. Costs of building roads, construction of water-main, sewerage, electricity, phone, etc. formed on the prospective owners of luxury homes. The remoteness of infrastructure - another barrier to the implementation of cottages to become as type living house. This is why the most wealthy people for the same money trying to buy luxury apartments in the city centre.

Aspiration of wealthy people to the city centre has resulted to the fact that began to build housing exclusively for the rich in these areas. Such flats are built only based on individual projects with very spacious rooms and a kitchen, total space often is greater than living for two times.

As an example it can be used an apartment on Alberta street, Palisade. 20 exclusive apartments - each with six or seven rooms and an area of 130 to 210 m<sup>2</sup> (Ivimosstate, 2010). In market such apartments are valued average 4500 EUR per square meter of total space. (Westbalt group, 2010).

Table 2. Prices for exclusive apartments in Riga

Floor	Number of rooms	Living space, m <sup>2</sup>	Balconies, m <sup>2</sup>	Total space, m <sup>2</sup>	Price
1	2	58.6	0	58.6	146500 €
1	2	50.5	0	50.5	126250 €
1	1	31.4	0	31.4	78500 €
2	3	86.1	1.7	87.8	254620 €
2	4	108.4	2.8	111.2	311360 €
3	3	86.1	1.7	87.8	280960 €
3	4	108.4	2.8	111.2	343480 €
4	3	86.1	1.7	87.8	316080 €
4	4	108.4	2.8	111.2	389200 €

Not so long ago a new type of housing for the wealthy people showed up - a residential complex. This sort of "reservation" where is everything for a comfortable and most importantly safe life. Typically, a residential complex includes several buildings and has its own infrastructure.

Attention is drawn to the fact that residential complexes are built in ecologically clean areas near the forest, water bodies, etc. As an example, a residential complex «Saliēna». Saliēna - city of the future, strategically located between the historic centre of Riga, Riga International Airport and the famous resort Jūrmala.

The project is quite impressive with size of territory and amount of the investments in the Baltic region. Saliēna offers a wide range of amenities for its residents - adults and children, as well as for retailers.

Area of Saliēna is greater than area of the central area of Riga for 50% and in the master plan of the new city attention shall be paid to public places and places for recreation and entertainment. Zoning project differs with well thought out and offers residents a variety of tenants and effective modern solutions for even greater comfort (Ivimestate, 2010).

The most expensive houses in Riga - the exclusive mansions and villas, located in the exclusive area of the urban forest "Mežaparks". Luxury home located in the pines or on the shore of Lake Ķīšezers.

Exclusive villas and mansions with swimming pools, with their own docks on the lake with the possibility of enter out to the sea and simply elegant homes are located in towns Baltezers, Bukulti and Alderi. Only 3 kilometers from the city and 25 minutes by car to the centre - the optimum location for the house in Riga (Arco Real Estate, 2010).

Table 3. Prices for private houses in Riga (by type and construction)

	2007	2008
Prewar wooden buildings (must have renovation)	100000 – 200000	50 000 – 100 000
Small buildings till 100 m <sup>2</sup>	130 000 -280 000	80 000 – 180 000
New building till 200m <sup>2</sup>	205 000 – 500 000	140 000 – 300 000
Exclusive projects of houses with great space and good	430 000 – 2 500 000	300 000 – 150 000

location		
----------	--	--

Prestigious houses are in area Teika, in Riga. The property here is a little more modest, but the forest park with a small forest lake makes these houses in Riga a valuable investment. To purchase a house in Riga also is well area close to Lake Jugla.

### 3. CONCLUSION

So, there can be made such conclusions according to the results of the research.

First of all, residential real estate is the only of economic benefits, whose value is determined not only by the consumer properties of concrete object, but also the characteristics of the location.

Secondly, as the main distinguishing features of residential property (real estate) secured affiliation to things and inextricable connection to the land.

Thirdly, the economy of the real estate equivalent of residential property's value is considered in the dynamics - throughout the life cycle of this object.

It is these major features of residential real estate are the basis of its assessment, which aims to determine the equivalent of value, expressed in various types of residential real estate.

It is necessary to have a quantitative and qualitative information of four types to manage the property and transactions with real estate for each facility effectively: physical characteristics, legal description, economic indicators, condition of the environment) and other.

There are several "quality groups" of housing in the housing fund in Riga, consisting of various types of buildings: housing of low quality (low-rise wooden buildings), housing of average quality (serial home) housing of high quality (special projects) and luxury housing.

There are three approaches to determine the value of residential real estate: cost, relative and profitable. The most frequently used are relative and cost approach.

The highest prices remains in such areas as Teika, Purvciems, Zolitude - where the average price is 680 EUR/m<sup>2</sup>. Lowest prices in the area Bolderaja - where the average price is 510 EUR/m<sup>2</sup>.

The most popular and expensive apartments are in serial buildings of 119. and 104. series, the cheapest - in the buildings of the Lithuanian project.

Prices of primary housing market in Riga have some differences from the price of secondary housing.

Cottage - one of the available types of luxury housing, and the average price of 1 square meter of luxury housing in 2009- 4,859 LVL per sq. m.

### REFERENCES

- Downs, J.C. 2005. *Principles of Real Estate Management, Fifteenth Edition*. Chicago, IREM.
- Belniak, S. 2001. *Market of the real estate development in Poland on a background countries highly developed*. Kraków: publishing House of Economic Academy in Krakow.
- Valery Engel, 2010. *The Latvian market of real estate record falling of the prices in all segments in 2009*. Available at [http://translate.google.lv/translate?hl=ru&langpair=en/ru&u=http://www.baltic-course.com/eng/real\\_estate/%3Fdoc%3D22352](http://translate.google.lv/translate?hl=ru&langpair=en/ru&u=http://www.baltic-course.com/eng/real_estate/%3Fdoc%3D22352)
- Prian.ru., 2010. *The review of the market of real estate of Latvia (April 2010)*. Available at <http://prian.ru/pub/18687.html>
- Westbalt group, 2010. *Exclusive apartments in Riga (2010)*. Available at [http://www.westbalt.lv/ru/Proekty/plan\\_8.html](http://www.westbalt.lv/ru/Proekty/plan_8.html)
- Arco Real Estate database, 2010. Unpublished materials
- Ivmostate, 2010. *Projects 2010*. Available at [http://www.immostate.lv/ru/prodazha\\_sdacha\\_v\\_naem\\_arena/zhilaya\\_sreda/sales/proekty](http://www.immostate.lv/ru/prodazha_sdacha_v_naem_arena/zhilaya_sreda/sales/proekty)
- Ivmostate, 2010. *Saliena 2010*. Available at [http://www.immostate.lv/ru/prodazha\\_sdacha\\_v\\_naem\\_arena/zhilaya\\_sreda/sales/proekty/13814/par\\_projektu/](http://www.immostate.lv/ru/prodazha_sdacha_v_naem_arena/zhilaya_sreda/sales/proekty/13814/par_projektu/)
- Fridman.J, 1995. *Estimation bringing income of real estate*. Translated from English, Moscow:Business



# BALKAN TOURISM FORECASTS IN THE CONTEXT OF GLOBAL ECONOMIC CRISIS

Diaconu Mihaela<sup>1</sup> and Micu Ionela Cristina<sup>2</sup>

<sup>1</sup>University of Pitesti, Pitesti, bd. Republicii, no. 71, diaconu\_m2005@yahoo.com

<sup>2</sup>University of Pitesti, Pitesti, bd. Republicii, no. 71, micucristyna@yahoo.com

## ABSTRACT

Through this work we want to talk about the Balkan tourism evolution in the context of the global economic crisis, insisting on the effects generated by the tourism over the economy, quantified effects with the help of the Satellite Account of Tourism and Travelers Industry, an instrument that approaches from a new perspective the expenses that generate the travel cash flow. Global economic crisis has determined a contraction of all economic activities and it obviously has reflected in tourism too. This work emphasizes the impact of tourism over the economy at a global and European level and at the level of two Balkan tourist destinations, Romania and Bulgaria. We chose these countries because Bulgaria is one of the Balkan tourist destinations which together with Turkey, Greece and Croatia has been noticed and the arrivals index and it can be an important competitor for Romanian tourism. We are also trying to talk about the economic recovery program developed by the Global Tourism Organization, and it includes an assembler of guidelines for the travel industry to get out of crisis.

## KEYWORDS

Balkan tourism, Satellite Account of Tourism and Travelers Industry, economic crisis, Romania, Bulgaria

## JEL CLASSIFICATION CODES

L83, Q56

## 1. INTRODUCTION

Tourism, by its nature, generates important economic, social, political and cultural effects in its whole. Because of the fact that at an economic level of a state or region, the consumer travel effects are multiple, these have to be analyzed by the beginning of their relations with the entire economic system. So, it can be determined the tourism contribution to the economic growth, to establish the prices, to equilibrate the balance of payments, to the right and balanced distribution of the national income and to the full use of workforce. (Baretje and Defert, 1972).

To quantify the total effects of tourism, both the direct effects, resulted from the collections made through the journey, and the indirect effects, made on other activity branches, it has been imposed the elaboration and the usage of Satellite Account of Tourism and Travel Industry. This approaches by a new perspective the expenses generated by tourism starting with the accommodation, transportation, meals, cultural services, leisure, insurance services, local products, tourist services offered by travel agencies, employment in tourism and all expenses that generate the tourist cashflow.

In this paper it will be analyzed the comparative structure of Satellite Account of Tourism and Travel Industry for 2011 and 2021 at global level – the European Union and at the level of two Balkan tourist destination, Romania and Bulgaria.

The global financial economic crisis has determined a contraction of all economic activities and obviously, it has also been reflected in Balkan tourism because most of tourist journeys imply high expenses.

The experience proved that in difficult economic periods, population seeks primarily essential needs of life, but it doesn't quit of tourism. Thereby, in the context of current economic crisis, there are concerns of the World Tourism Organization materialized in an economic relaunch programme that includes a set of guidelines for the tourism industry to get out of crisis.

## **2. REPRESENTATIVE INDICATORS OF TOURIST TRAFFIC IN THE MAIN TOURIST BALKAN COUNTRIES**

The indicators of international tourism supply and quantify the necessary information of tourism policy actions, allowing subsequent measurement of the effects of those actions. These are calculated upon the main statistic information that offers comparable, reliable and consistent data.

The most representative and frequently used indicators for measuring the tourist traffic are the arrivals and the departures, the collections of tourism reported to GDP, the number of nights spent in accommodations and the number of tourists reported to the total population of the country.

The countries considered to be part of Balkans are: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Greece, Montenegro, F.Y.R.O.M., the Republic of Moldavia, Romania, Serbia (including Kosovo), Slovenia, Turkey – the European part.

In the last 20 years, the number of arrivals in Europe has increased from 266 mil. in 1990 to 471,5 mil. in 2010 and it is estimated that by 2020 it will grow to 717 mil., and it means almost a doubling in only 2 decades. In the inside of European continent there have been subdivided 4 subregions: Mediterranean and South Europe (168,4 mil. of arrivals in 2010), West Europe (158,1 mil. of arrivals in 2010), Central and East Europe (93,7 mil. of arrivals in 2010) and North Europe (53,3 mil. of arrivals in 2010).

According to the data offered by the World Tourism Organization, 4 of the Balkan countries are in the top of the most 50 global tourist searched destinations. Turkey is still one of the most wanted European vacation spot, occupying the 7th place in this tables of arrivals, and Greece the 16th place in 2009. Croatia and Bulgaria are also in between those 50 states, on 24th and 39th place.

Table 1. The arrivals in Balkan destinations in 2005-2009 (mil. of arrivals)

	2005	2007	2008	2009
Bulgaria	4837	5151	5780	5739
Romania	1430	1551	1466	1272
Albania	-	2515	2592	-
Bosnia-Herzegovina	217	306	322	311
Croatia	8467	9307	9415	9335
FYROM	197	230	255	259
Greece	14765	16165	15939	14915
Montenegro	272	984	1031	1044
Serbia	453	696	646	645
Slovenia	1555	1751	1771	1668
Turkey	20273	22248	24994	25506

Source: UNWTO World Tourism Barometer, Volume 8, No. 2, June 2010, p. 22.

F.Y.R.O.M., Bosnia Herzegovina, Montenegro and Serbia registrate the lowest values as far as the arrivals indicators and tourism collections are concerned.

In the Eastern Mediterranean, Turkey reports an 8 % increase in international tourism arrivals in the first five months of 2010 – which probably understates the underlying trend. Turkey has a big cultural heritage due to the fact that there have appeared the civilizations created by the Byzantine Empire and Ottoman Empire. Coastal tourism represents the main tourist product offered by Turkey. But, many natural and anthropic resources of which Turkey benefits – from untouched beaches and thermal springs to archaeological sites – indicate the fact that it will succeed to vary the tourist offer to satisfy the adventure tourism offer, eco-tourism and cultural holidays.

With a big history behind her, being the swing of one of the most influent European culture, Greece benefits from all the trumps to be an important European tourist attraction. The most popular types of tourism from Greece are coastal tourism, religious tourism, spa tourism and business tourism – most of the being, essentially, seasonal activity. That's why, Greek Minister of Tourism plans to turn Greece into an accessible destination throughout the year. For this purpose, the Minister invested in 2006 more than 38 mil. of Euros for the promotion of Greek tourism.

The competitive situation of Greece has been poor for several years, but it has worsened as the financial crisis unfolded. Tourism in northern Greece is affected by the economic weakness in neighbouring countries in 2010. The government is not in a position to provide much help to the industry, although it has cancelled landing fees for charter flights at the airports its owns and cabotage fees for cruise ships – but neither measure will have an early effect because charter flight and cruise schedules are set well in advance. In the wake of the crisis in Greece, many governments have been announcing austerity measures and tax rises.

Croatia represents one of the most searched destinations from Balkan, being mainly preferred for season holidays. With an over 700 km coastal region that includes Istrian Coast and Dalmatia Coast, with modern resorts and a myriad of 1885 inlands, of which less than 100 homes, Croatia recommends itself as „Mediterranean as it once was. On this slogan Croatia recommends its tourism, trying also to attract the attention of cultural wealthy which it has to offer. The Ministry of Tourism shared the state's territory in 8 different tourist regions, each of them being destined to have its tourist specific. Istrian Peninsula offers the best tourist infrastructure of the country, perfectly suited to the multitude of cultural purposes, as towns dating since the Romans or for tourist luxury tourist stations. Kvarner region is the widest as tourist offer, being an area of rare beauty which has sufficiently mild climate both for healthy and elite travel. Dalmatia area is a true paradise for yachting enthusiasts, but also for those keen on Croatian rich history. The central Croatian area is sprinkled with castles, spas, national parks and also numerous places of worship built in baroque. The capital, Zagreb, has a central-European air, still keeping numerous monuments from the XVIth century.

### **3. SATELLITE ACCOUNT TOURISM AND TRAVEL INDUSTRY. COMPARATIVE ANALYSIS OF ROMANIA AND BULGARIA.**

The Satellite Account Tourism system represents a front instrument used to evaluate the tourism impact over the economy. In terms of theoretical and methodological, at a global level, in the domain of Satellite Account Tourism were required 2 approaches: the version of Recommended Methodological Framework (RMF) – the common approach of World Tourism Organization, Organisation for Economic Cooperation and Development, Eurostat and the UN Statistics Division and the version of World Travel & Tourism Council (WTTC).

The Satellite Account Tourism and Travel is a statistic method by which it is aimed the measuring of the economic impact of tourism, being able to compare directly the size of the tourism sector with the other sectors of economy and it learns about the measure in which it can influence them. The Satellite Account offers the most complete and synthetic image of the economic and social effects induced by tourism in national, regional and world plan. It is built as a balance in which are represented both costs and incomes, the economic and social effort and effect at the level of the entire society (Cristureanu, 2006).

The World Tourism Organization started the development of the Satellite Account of Tourism and Travel Industry since 1995 starting from the conviction that its implementation will help to: the growth and improvement of knowledge in tourist relations, in all economic activities from the participant countries; the provision of an important additional instrument for developing efficient policies from specific countries and for creating availabilities and a better understanding of the quantitative importance of tourism around a number of factors directly or indirectly involved in tourism. (Stănciulescu, 2010)

Satellite Account Tourism and Travel Industry is a system developed by the United Nations, that measures the economic impact of tourism. For example, tourism is an amalgam of industries as transport, accommodation, food and beverage, leisure and animation and travel agencies. The visitors buy goods and services associated both with tourism and other connected activities (Goeldner and Ritchie, 2006)

The World Tourism and Travel Council (WTTC) pleads for full implementation of the Satellite Account Tourism and Travel Industry as it was defined in the methodologic framework recommended by the Account Satellite to build the highest level of benefits for the industry and the gouvern, respectively:

- customer information related to the acquisitions on tourism before, during and after finishing the stay – however it is internal or external – and also related to the services, to the duration which have never been identified before;
- comprehensive documentation and full analysis of the services and tourist products' chains and the gouvern's ability to ensure quality and timely services for the visitors;
- identifying and quantifying the relations between the tourist sector and travels and other sectors of the economy to illustrate the expenditure flow;
- complete identify of public works that benefit the visitors, travel agencies and the travelers to support the plans and priorities of the public sector to increase;
- setting centered opportunities for domestic production, and also the incentives from the public sector to support the growth of busines, which can facilitate to equilibrate the trade balance;

Satellite Account Tourism and Travel Industry allows the measuring of other economic activities' impact. The main advantage of TSA is that it can be compared the tourism data with those of other economic activities' domains. It has been found that few researchers have examined the consequences of tourist consumption over the environment (Calvin and Max, 2007).

The CST/TSA structure is presented as a complex form, containing the elements of the application with two components: tourism consumption and aggregate demand and the offer's elements with two components: tourism and travel industry and the tourism and travel economy. The tourism and travel consumption consists of expenses incurred by and on behalf of tourists in the local economy, plus three other elements (collective government expenditures, capital investment, exports to non-visitors) to obtain the total demand of tourism and travel. The tourism and travel industry offer is formed of GDP of tourism and travel industry – directly, the GDP of tourism and travel industry – indirectly, the import from tourism and travel industry. These elements are added by the GDP of tourism and travel economy – directly and indirectly, the imports from tourism and travel economy to obtain the offer of tourism and travel economy, respectively the total offer of this sector.

The World Tourism and Travel Industry Council (WTTC) has proposed to illustrate the economic impact of tourism and travel at 2011's level and, in perspective, over ten years, comparing the offer and demand's account at world and European level (table 2). Travel and tourism is an important economic activity in most countries around the world. The direct contribution of travel and tourism to GDP is expected to be US\$1,850.0bn in 2011 (2.8% of GDP). This primarily reflects the economic activity generated by industries such as hotels, travel agents, airlines and other passenger transportation services (excluding commuter services). But it also includes, for example, the activities of the restaurant and leisure industries directly supported by tourists. The direct contribution of travel and tourism to GDP is expected to grow by 4.2% per year to US\$ 2861 bn (2.9% of GDP) by 2021. At European level, the direct contribution of travel and tourism to GDP is expected to be USD554.5bn in 2011 and is expected to grow by 3.0% per year to USD748.2bn (2.9% of GDP) by 2021.

At a global level, the total contribution of travel and tourism to GD is expected to be US\$5991.9 bn in 2011 (9.1% of GDP) and at Europe is expected to be US\$ 1535.3 bn. It is forecast to rise by 4.2% from US\$ 9226.9 bn by 2021 (9.6% of GDP) at global level and from US\$ 1999.9 bn by 2021 (7.8% of GDP).

In terms of human resources, at global level, in 2011, about 99 millions of jobs will be occupied by in the tourism industry and is expected a growth up to 120 millions until 2021. Europe registrates at 2011 level about 9.7 millions of jobs in the tourism industry and there are predicted 11 millions of jobs for 2021.

Visitor exports are a key component of the direct contribution of travel and tourism. The World is expected to attract 970160000 international tourist arrivals in 2011, generating US\$ 1163 bn in visitor exports. By 2021, international tourist arrivals are forecast to total 1362120000, an increase of 6.6% generating expenditure of US\$ 1789 bn. At European level, the visitor exports are expected to generate US\$ 487 bn (6% of total export) in 2011, growing to US\$ 683.1 bn (5 % of total export) in 2021.

At a global level, domestic travel spending is expected to total US\$ 2637 bn in 2011, rising to US\$ 4128 bn in 2021, leisure travel spending is expected to total US\$ 2963 bn in 2011, rising to US\$ 4604 bn in 2021. Business travel spending is expected to total US\$ 899 bn in 2011, rising to US\$ 1402 bn in 2021, but at

European level, business spending is expected to total US\$ 249 bn (1.2 % of total business) in 2011, rising to US\$ 342.6 bn (1.3 % of total business) in 2021.

Table 2. Comparative structure of Satellite Account of Tourism and Travel Industry at the level of 2011 and 2021

Indicators	Global				European			
	2011		2021		2011		2021	
	US\$bn	% of total	US\$bn	% of total	US\$bn	% of total	US\$bn	% of total
Direct contribution to GDP	1850	2.8	2861	2.9	554.5	2.8	748.2	2.9
Total contribution to GDP	5991.9	9.1	9226.9	9.6	1535.3	7.7	1999.9	7.8
Direct contribution to employment('000 jobs)	99048	3.4	120427	3.6	9709	2.6	11153	3.0
Total contribution to employment('000 jobs)	258592	8.8	323826	9.7	28058	7.7	30338	8.1
Visitor exports	1163	5.7	1789	4.7	487.2	6.0	683.1	5.0
Domestic spending	2637	4.0	4128	4.3	654.2	3.3	879.8	3.4
Leisure spending	2963	4.5	4604	4.7	914.1	4.6	1246	4.8
Business spending	899	1.4	1402	1.5	249	1.2	342.6	1.3
Capital investment	651	4.5	1124	4.6	144.1	3.8	214.2	3.9

Source: WTTC, Executive Summary, Travel and Tourism Economic Impact Europe2011, p. 9, www.wttc.org

Tourism is also an important “catalyst” for goods producing industry, for construction. In 2011 tourist and travel capital investment is estimated to US\$ 651bn, representing 4,5% from total investment. Up to 2021 it is predicted a doubling of the investment, bringing it up to US\$ 1124 bn (4,6% from total investment). In Europe, tourist and travel capital investment represents 3,8% from total investment in 2011, and for 2021 it represents 3.9.

Further, we intend to analyze two Balkan tourist destinations, Romania and Bulgaria, because, the latter is one of the Balkan tourist destinations which with Turkey, Greece and Croatia was noted at the indicator of tourist arrivals and it is an important competitor for Romanian tourism.

Romania’s movement of international tourism is characterized by an evolution that reflects very closely the changes, the transformations on political, economic and social level. There are some positive phenomena that mark the dynamics and structure of tourist movement, such as globalization and internationalization of economic and social life, the penetration of high technology sectors of the economy, the industrialization and the tertiary sector, but also the negative ones, such as world economic crisis, global warming, extended poverty and unemployment. In 2000-2008 tourist arrivals at the border have oscillated between 5,2 millions in 2000, 4,7 millions in 2002 and 8,9 millions in 2008. This trend has to be put in touch with the overall evolution of political, economic and social level which marked Romania in those times.

In 2009-2010, tourism has been mainly characterized by:

- slow process of privatization;
- development of tourism programs that offered a wide range of services and products, especially by practicing attractive programs for Romanian and foreign tourists;
- rehabilitation of the Black Sea beach, modernization of Mamaia resort and improving conditions in the Carpathians superschi a moderate rhythm;
- Black Sea tourism decline in 2009 and 2010 compared with 2008. About 10.000 foreign tourists have taken part to the “Danube Cruise” Program;
- registration of a winter tourist seasons fewer tourists, although weather conditions were favorable in 2009-2010.

Bulgaria was said to be in the last years as an important tourist destination, only recently beginning to exploit at full potential the varied topography and rich historical heritage. However, the main types of tourism practiced in Bulgaria are all those of coastal and mountain. There are some development possibilities of cultural-historical, spa tourism or ecotourism, but despite the fact that the country has a lot of mineral springs and some scenic landscapes, these remain unexploited at the entire potential. The main tourist attractions for Bulgaria are:

- *The resorts from Black Sea*, where Bulgaria benefits of 380 km of seaside, with managed beaches, mineral water springs, holiday villages and camping places.
- *Winter sports* also attract lots of tourists in Bulgaria, the most important resorts being Borovets, Bansko, Pamporovo and Aleko. Most of the resorts are under renovation and modernization and is trying the planning of new resorts.
- *Spa tourism* also starts to gain scale, being a non-seasonal tourist attraction that seems to be popular in other period of the year. Bulgaria has 600 mineral water springs, but most of the resorts are still undeveloped or offers deficient services.
- *Cultural-historical tourism* is undeveloped, but is described as an area with big potential. Other Bulgarian tourist attractions would be those offered by the three national parks, ten natural parks or those 429 reserves.

Bulgarian tourism is a sector that is in continuous development and an important participant to economic growth in recent years. In 2009, the foreign tourists arrivals in Bulgaria registered 5739 arrivals, and the collections volumes US\$ 3728 mil.

The economic impact of tourism and travel in Romania and Bulgaria is illustrated by the Satellite Account Tourism and Travel (table 3).

Table 3. Satellite Account Tourism and Travel Romania - Bulgaria

Indicators	Romania				Bulgaria			
	2011		2021		2011		2021	
	RONbn	% of total	RONbn	% of total	BGNmn	% of total	BGNmn	% of total
Direct contribution to GDP	9.6	1.9	20.3	2.4	3200.9	4.3	3490.9	3.0
Total contribution to GDP	22.5	4.5	42.8	5.0	11059.3	14.9	13020.3	10.0
Direct contribution to employment('000 jobs)	239	2.8	301	3.4	122	3.9	88	3.0
Total contribution to employment('000 jobs)	446	5.2	535	6.0	424	13.7	286	9.6
Visitor exports	7.0	3.3	16.1	3.9	7324.4	14.5	8630.6	8.2
Domestic spending	9.9	2.0	19.0	2.2	1806.4	2.4	3261.9	2.5
Leisure spending	17.3	3.4	35.7	4.2	7108.2	9.6	9579.4	7.4
Business spending	1.1	0.2	2.6	0.3	2044.7	2.8	2341.4	1.8
Capital investment	11.2	7.4	23.5	7.7	983.0	6.2	1088.7	4.4

Source: WTTC, Executive Summary, Travel and Tourism Economic Impact Romania 2011, p.12, WTTC, Executive Summary, Travel and Tourism Economic Impact Bulgaria 2011, p.12, www.wttc.org

In Romania, the direct contribution of Travel & Tourism to GDP is expected to be RON 9.6 bn in 2011 (1.9% of GDP) and it is expected to grow by 7.7% per annum to RON 20.3 bn (2.4% of GDP) by 2021. In Bulgaria, the direct contribution of Travel & Tourism to GDP is expected to be BGN 3200.9 mn in 2011 (4.3% of GDP), rising to BGN 3490.9 mn in 2021.

Travel & Tourism is expected to generate 239000 jobs directly in 2011 (2.8% of total employment), rising to 301000 jobs directly, an increase of 62000 (26.0%) over the next ten years for Romania. In Bulgaria, 122000 work places will be occupied by the tourism and travel industry, and is expected a decrease of the number of work places for 2011, meaning a gloomy prevision for the Bulgarian tourism. In Romania, Travel & Tourism is expected to attract capital investment of RON 11.2bn, rising by 7.7% to RON 23.5 bn and in Bulgaria is expected BGN 983.0mn, rising by 1.0% to BGN 1088.7mn.

At the end of 2008, in Romania were 4884 accommodations, and in Bulgaria 2128, while the number of beds was relatively equal: 294210 in Romania and 271642 in Bulgaria. A first conclusion would be that the Bulgarians have a double number of beds per accommodations, meaning that they have bigger hotels than ours. Referring to the evolution from the last 20 years of local infrastructure

from the 2 states, it can be concluded that there are notable differences: in Romania, the minimal point was achieved after the Revolution, in 1993, when the number of accommodations decreased with 17% than 1990, and then it started to grow. In Bulgaria, the minimal point was achieved in 1999, when the number of accommodations was less with 41% than that in the 1990.

Bulgarians have exceeded us because of the massive investment in tourism. At the end of 2008, foreign investments in this domain were of € 181 mil. in Romania (0.4% from the total foreign investments) and € 487 mil. in Bulgaria (2.5% from the total foreign investments). But the situation is much more worse that it seems because Bulgaria is a country of more than two times smaller than Romania, so the investments per capital are of € 8.4 in our country and of € 54 in Bulgaria, and the foreign investments in the tourism domain that are calculated per km square are of € 762 in Romania and of € 4390 in Bulgaria.

In terms of advertising, Bulgaria has a promotional budget compared with Romania. And other countries that are in competition with Romania have allocated important sums for the promotional budget (Bulgaria - € 10 mil, Poland - € 11 mil., Hungary - € 28 mil, Turkey - € 76 mil.) (Anghelache, 2010).

#### **4. THE EFFECTS OF GLOBAL ECONOMIC CRISIS ON TOURISM**

The global financial economic crisis determined a contraction of all economic activities and has been reflected also in tourism because most of the travels imply high costs. In difficult economic periods, the population firstly follows the cover of essential needs of life (food, shelter etc.), but it doesn't give up at tourism at all. Because of older crisis (the events from September 11 2001), it has been found that people continue to travel in a different way that they used to, meaning they are going to destinations near to their residences.

Europe is one the most affected regions by the global economic crisis, because most of the countries from which the tourists are have gone into recession. According to the estimates of World Tourism Organization, international arrivals at global level for tourism business, leisure or of other kinds, have increased with 6.7% in 2010 than in 2009, reaching 935 mil.

In Europe (+3% to 471 million) recovery was slower than in other regions due to the air traffic disruption caused by the eruption of the Eyjafjallajokull volcano and the economic uncertainty affecting the Euro zone. However, the sector gained momentum from the second half of the year and some individual countries performed well above the regional average, but this was not sufficient to bring overall results above the losses of 2009.

Tourism enterprises must adapt their services according to the budget of tourists. The demands for luxury services in tourism have begun to decrease, while the number of low-cost travels have begun to grow. The airlines and the hoteliers must quickly adapt to this trend. However, some experts have gloomily described the actual economic environment, most of the people remaining without work places. The global economic crisis and the uncertainty related to the pandemic flu A (H1N1) have made of 2009 the most difficult year for the tourist sector. The impact of A (H1N1) flu over the tourism is monitored by UNWTO in close collaboration with World Health Organization.

The Europe Committee, united at Baku, Azerbaijan, found that tourism is one of the most resistant sectors, even if at a global level the economic conditions continue to damage and it could play an important role in the recovery of the world and of the national economies, especially for Europe. Azerbaijan Minister of Tourism and Culture said that „this is not a tourism crisis, but one in which tourism can help to overcome the global crisis”.

In developing countries, the governments have adopted stimulation measures of fiscal and monetary packages in order to reduce the crisis effects over the tourism, emphasizing thus the idea that tourism can be a key factor of economic relaunching. Some tourist destinations have reduced the taxes to facilitate the travels, and others have adopted financial system to support tourist enterprises, the growth of work places in this sector and the development of infrastructure

In the context of actual economic crisis, OMT developed an economic relaunching program, that includes a set of guidelines so that the tourist industry overcomes the crisis. In this difficult period, it must not be underestimated the capacity of tourism to help the economic growth, but it must be outlined the challenges on a long term, such as creating new jobs, reducing poverty and combating climate changes.

Tourism represents one of the sectors with the biggest influence over the economic relaunch, because:

- tourism and travel industry offers more than 75 mil of jobs;

- tourism creates jobs for young people from urban and rural collectivities;
- tourism and travel industry represents 30% of world services exports;
- tourism and travel industry contribute directly to the development of local economies;
- because of the importance and the low level of CO<sub>2</sub> emissions (5%), the tourist sector is the best placed to reduce gradually the CO<sub>2</sub> emissions' level until 2050.

The economic relaunching program, made by OMT, includes a set of measures necessary to sustain the global economy and the tourist sector according to the 15 strategies assigned in 3 interdependent actions: recovery capacity, incentives and green economy.

➤ ***Recovery capacity***

In the context of global economic crisis, the tourist industry is characterized by a remarkable elasticity. Enhancing public-private partnerships between the public and private sector will play a key role in keeping and creating jobs. The travelling will grow into a more accelerated rhythm than GDP. Innovation and technology are vital to adapt to the new economic conditions. Because of the fact that people tend to travel closer to their house during the recession, will be used to the intensifying regional and interregional connections.

➤ ***Incentives***

Tourism must be included in the general stimulating the economy programs, especially in the budgetary and monetary measures, putting into value its capacity to contribute to the global economic growth. The infrastructure development is very important because it creates new jobs in construction and in related sectors. In terms of economic crisis, is required the objective examination of taxes over the travels to remove excessive costs that affect both tourists and tourist enterprises. The actors of tourism will collaborate with the international bodies in order to adopt the measures necessary for the economic recovery and will build the great events (especially, the sporting ones), that represent fantastic opportunities for tourist industry.

➤ ***The green economy***

The transition to the green economy will allow the tourist sector to create jobs and to ensure a sustained growth which will profit everybody of. Also, the tourism will have to adapt to the climate changings and to alleviate the negative impact over the environment. The tourism and travel industry will continue to answer efficiently to the climate changings, to focus on a system based on reducing the CO<sub>2</sub> emissions and to respect the commitments accepted by the United Nations Convention over the climate changings. The fighting against climate changings implies investments in the ecologic infrastructure for travellings. Transport and construction are the main goals of ecologic investments. The priority of tourist sector is to sensitize as much as possible the population concerning the durable tourist goods and services.

Within the 7th reunion in Costa Rica, 2009, World Committee on Tourism Ethics debated the ethic problems that the economic crisis have determined in the tourist sector. The Committee asked the governments and tourist enterprises to take into account the ethic problems that pressure the jobs, and also the decline of goods and services from this sector.

Within this reunion there have been addressed the next key-points:

- ✓ the necessity for the public and private administrations to improve practices to limit pressures over the jobs and to stimulate the dialogue with the unions;
- ✓ minimizing the travelers' restrictions, especially those with the visa;
- ✓ in terms of the flu A(H1N1), it is recommended not to inquire disproportionate restrictions to the travelers, because it can prejudice an industry that contributes to the economic growth.

Global crisis represents an opportunity to remedy the deficiencies by implementing strategies that promote the durable development and the green economy transition. As is the recession was not enough, another crisis with significant economic impact has deviated all over the Europe. This crisis is caused by the volcanic ash cloud. Air travels and tourism generate about 5% of GDP, meaning about US\$ 3.000 bil., Europe being responsible for third of this volume, the majority of traffic taking place in summer months. In the worse case scenario, in which the cloud would persists for several months, the old continent's GDP would lose 1-2%.

## **5. CONCLUSION**

Tourist industry remains one of the most dynamic sectors of the economy. Tourism plays an important role in creating work places, vulnerable factor in this age of economic crisis.

Satellite Account Tourism and Travel Industry allows, on one hand, a complete and correct evaluation of the tourist impact over the development of global and local economy, and on the other hand, with the help of the provided information, it represents an instrument that facilitates the making of long term decisions. Analyzing the indicators of tourist circulation for Balkan states, we found that Bulgaria and Croatia are in the top of the 50th world destinations in terms of the indicator of tourists' arrivals.

After the comparative analyze of the two destinations, Romania and Bulgaria, made with the help of Satellite Account Tourism and Travel Industry, Bulgaria has been once again remarked by the major investments in tourism, the tourism contribution to create GDP, business travelling.

World economic crisis has made its presence felt also in the Balkan states, threatening the standard of living, the welfare of millions of people, and it implicitly had negative effects over the Balkan tourism. That's why, in the context of the actual economic crisis, World Tourism Organization elaborated an economic relaunching program that includes a set of guidelines so that the tourist industry may be out of crisis.

## REFERENCES

- Anghelache C., 2010. *The economic situation over the impact of the crisis*. Editura Economică, București.
- Baretje R. and Defert P., 1972. *Economic aspects of tourism*, Edition Berger-Levrout, Paris.
- Cristureanu C., 2006, *Strategies and transactions in the international tourism*, Editura Ch. Beck, București.
- Calvin J. and Max M., 2007, *Exploring the Environmental Consequences of Tourism: A Satellite Account Approach*, *Journal of Travel Research*, No. 46, pp. 164-165.
- Doswell R., 2002, *Tourism, How effective management makes the difference*, Elsevier, Science.
- Goeldner C. and Ritchie B., 2006, *Tourism, Principles, Practices, Philosophies*, John Wiley&Sons, Inc.
- Gossling, S., 2002, *Global environmental consequences of tourism*, *Global Environmental Change*, vol 12, no. 4, pp. 283-302.
- Muller H. and Weber F., 2008, *Climate change and tourism – scenario analysis for the Bernese Oberland in 2030*, *Tourism Review*, vol 63, no. 3, pp. 57-71.
- Năstase C. and Kajanus M., 2009, *The impact of the global crisis on SME and entrepreneurship behavior – Romania and Finland cases*, *Amfiteatru Economic*, nol 3, 2009, pp. 752-753
- Stănciulescu G., 2010, *The operations' management in the event tourism*, Editura ASE, București.
- World Travel&Tourism Council, România, 2005. *The impact of tourism and travel over the work places and economy*, pp. 19, [www.mttc.ro](http://www.mttc.ro)
- The roadmap for recovery*, the Magazine of World Tourism Organization, year XXIII, no. 3, 2009, pp. 4,5
- OMT, *The barometer of World Tourism*, *The progressive back of trust in the tourist sector*, Vol 7, no. 3, Octobre, 2009, p. 7.
- World Travel&Tourism Council, *Travel&Tourism Economic Impact 2011, World*, [www.wttc.org](http://www.wttc.org), p 9
- UNWTO World Tourism Barometer, On track for recovery after an exceptionally challenging 2009*, Vol. 8, No. 1, January 2010, p. 1
- <http://www.incont.ro> (accessed 9.03.2011)
- [www.unwto.org](http://www.unwto.org) (accessed 11.03.2011)
- [www.world-tourism.org](http://www.world-tourism.org) (accessed 12.02.2011)

# ECONOMIC AND INSTITUTIONAL REFLECTIONS ON THE GREEK CRISIS

Petia Tanova<sup>1</sup> and John Violaris<sup>2</sup>

<sup>1</sup>Frederick University of Cyprus, 18, Mriou Agathangelou St., Agios Georgios Havouzas, 3080 Limassol, Cyprus, e-mail: ptanova@gmail.com

<sup>2</sup>Frederick University of Cyprus, 7, Y. Frederickou St., Pallouriotissa, 1036 Nicosia, Cyprus.

## ABSTRACT

The crisis in Greek public finance has turned into a central issue of economic and political debates in the European Union and beyond. The tangling of the crisis has questioned various macroeconomic approaches and has revealed their constraints and drawbacks. We raise the hypothesis that the Greek crisis exemplifies the ongoing crisis of the guided market economy. On the basis of comparative analysis within the EU member countries we conclude that the social market economy offers more adequate institutions to the current trends of economic development and to the social values prevailing in the EU.

## KEYWORDS

social welfare function, models, business system

## JEL CLASSIFICATION CODES

P52, P17, B52

## 1. INTRODUCTION

The crisis in Greek public finance has turned into a central issue of economic and political debates in the European Union and beyond.

It is being analyzed by investors, scholars, experts, official institutions and even the general public. The crisis is viewed from different perspectives, though most proposed solutions set as a must more severe and quite *clear* macroeconomic restrictions and some *vague* microeconomic reforms. While budget cuts and the reduction in government debt cannot be questioned, in this paper we argue that the emphasis should be shifted to institutional restructuring. This is to say, that the decrease in government spending and the increase in government collections should be based on a reexamination of economic and social priorities of the country, or what is called the *social welfare function*. Moreover, the Greek crisis has revealed fundamental inadequacies of the guided market economy as a model, adopted in many European countries.

Under the pressure of the current crisis political decision makers undertake measures that are to solve the most acute fiscal problems but do not demonstrate a *holistic* vision for economic and social restructuring. This is one of the reasons why Greek society, is divided between “imperative and impulse, between ordinance and unruly passion.” The philosopher R. Heilman (1981) classifies such a situation as a tragedy. And just like in a classic Aristotle’s tragedy, the tragic hero demonstrates the power of free will to stand against fate.<sup>8</sup>

From this perspective it is the most suitable time to reconsider the social welfare function of the economy, which presents the priorities in the coordination of economic decisions. The analogy with tragedy suggests

---

<sup>8</sup> We witnessed similar moves in recent situation in Portugal.

setting in the core of our economic reflections the ultimate question of any tragedy: “Why are we here?” The answers are not unequivocal.

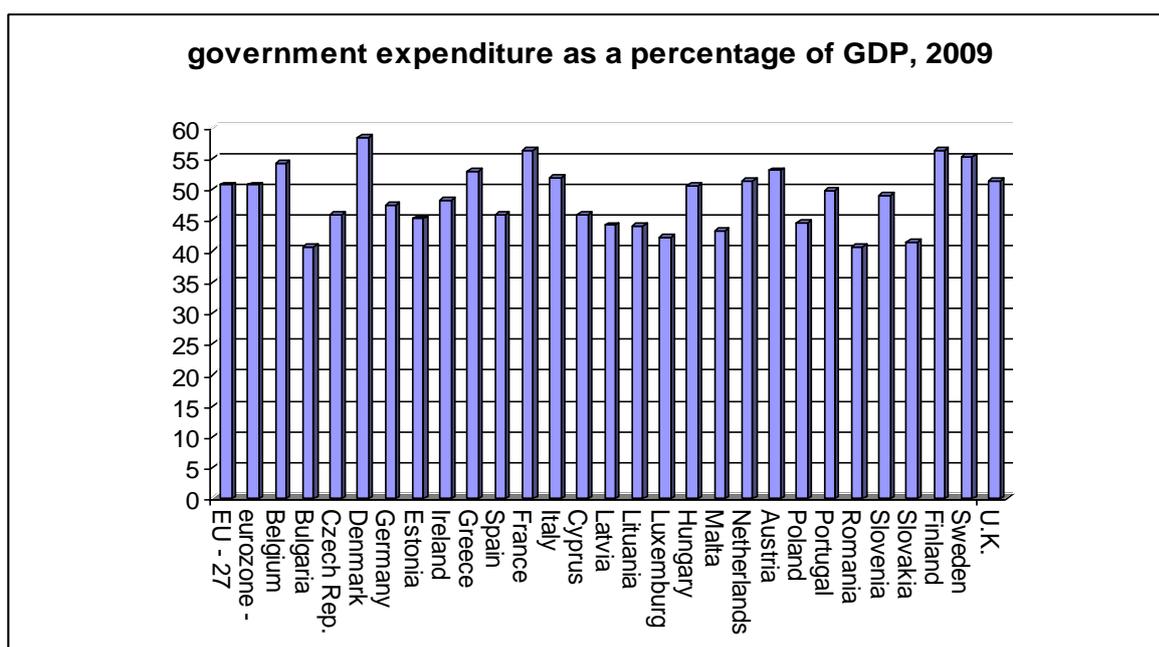
## 2. ECONOMIC AND INSTITUTIONAL REFLECTIONS ON THE GREEK CRISIS

### 2.1 The Macroeconomic Approach to Tragedy or the Tragedy of the Macroeconomic Approach

The most trivial and most often speculated answer emphasizes the Greek government’s overspending and the fact that many business deals are done underground. Instead of trying to examine the substantial reasons for corruption and to undertake radical institutional changes that would significantly reduce *motivation* for it, political decision makers concentrate their efforts on pure macroeconomic solutions.

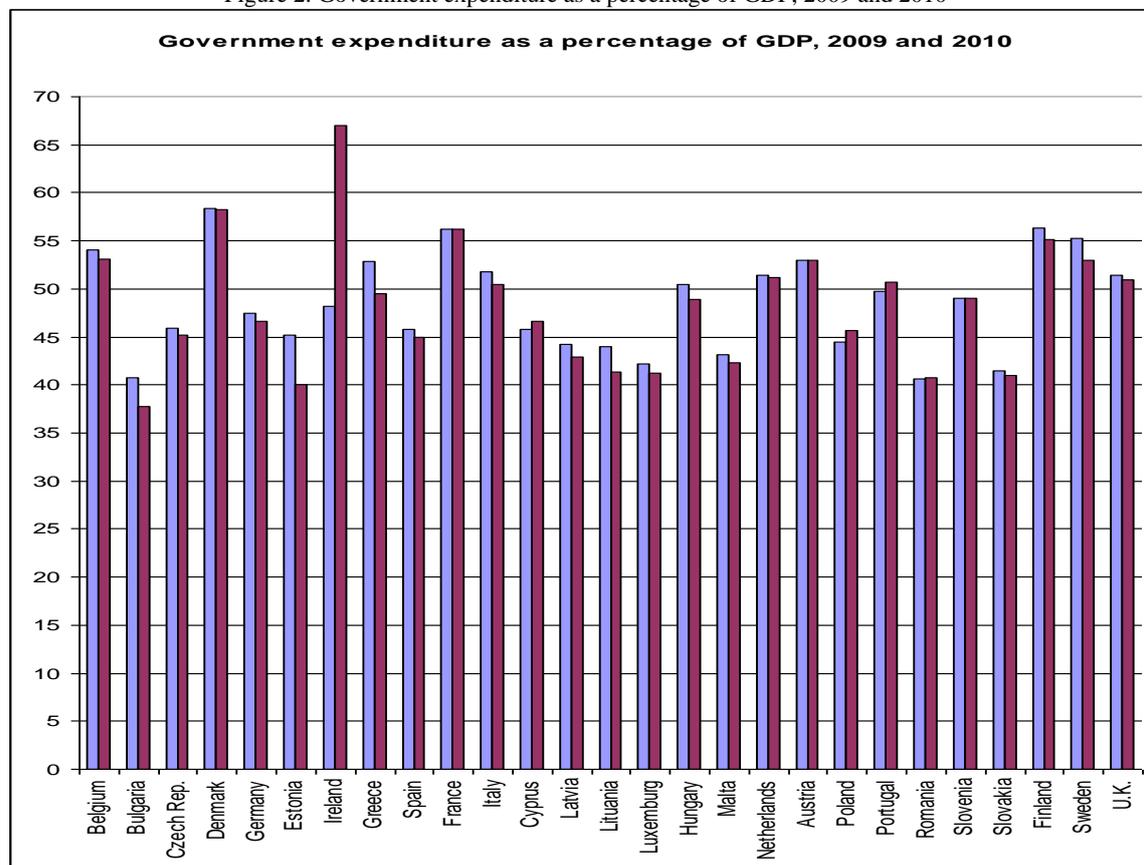
No doubt, the rise in budget spending and the increase in fiscal deficit and government debt are directly related to the issue. At the same time, an innocent review of the level and dynamics of these indicators in the other EU member countries and in particular the Eurozone, reveals that Greek public finance is far from being an exception. (Figure 1). Moreover, the share of government spending in GDP in Greece was below the average for the Eurozone and the EU in 2009 and in 2010 has decreased more than elsewhere in the Eurozone and the EU (Figure 2)

Figure 1. Government expenditure as a percentage of GDP, 2009.



Built on: Eurostat. Statistical Books. Government Finance Statistics. Summary Tables 1/2010. Eurostat. European Commission, 2010; Eurostat News Release. Euroindicators 60/2011. 26 April, 2011, p.p. 4-9.

Figure 2. Government expenditure as a percentage of GDP, 2009 and 2010



Built on: Eurostat. Statistical Books. Government Finance Statistics. Summary Tables 1/2010. Eurostat. European Commission, 2010; Eurostat News Release. Euroindicators 60/2011. 26 April, 2011, p.p. 4-9.

The acceleration of budget deficits and government debts EU-wide is usually simply explained by the financial and economic downturn in the last few years and the operation of the built-in stabilizers in the budget and the economy.<sup>9</sup> Since this process has spread over most of the EU member countries, the solution might be searched for in the effectiveness of government spending, but not in the uniqueness of the Greek case. As long as the country is one of the “leaders” in these trends, questions might be raised on the particular ways of deficit acceleration, and solutions might be recommended along these lines.

In an analysis of the Greek crisis, N. Christodoulakis (2010) focuses on the burst in government spending and acceleration in budget deficit in particular in the last few years. Even though he emphasizes on some specific sources of deficits, the Greek case still goes along the general lines of the main macroeconomic indicators in most of the EU member-countries. As it is seen on Table 1, government spending, budget deficits, and government debt have accelerated not only in Greece in the aftermath of the global crisis.

<sup>9</sup> See for instance European Commission. Annual Growth Survey. Brussels, 12.1.2011. COM(2011) 11 final ANNEXE 2 , p. 8.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Table 1. Dynamics of government spending, budget surplus (deficit), and government debt as a % of GDP – 1996, 2008, 2009 and 2010<sup>10</sup>

	Government expenditure				Budget surplus (deficit)				Government debt			
	1996	2008	2009	2010	1996	2008	2009	2010	1996	2008	2009	2010
Belgium	52.5	50.5	54,1	53,1	-4.0	-1.2	-5,9	-4,1	127.3	89.8	96,2	96,8
Bulgaria		37.3	40.7	37,7		1.8	-4,7	-3,2		14.1	14,6	16,2
Czech Rep.	42.6	42.9	45,9	45,2	- 3.3	-2.7	-5,9	-4,7	12.5	30.0	35,3	38,5
Denmark	58.9	51.8	58,4	58,2	-2.0	3.4	-2,7	-2,7	69.4	34.2	41,8	43,6
Germany	49.3	43.7	47,5	46,6	-3.3	<0.1	-3	-3,3	58.4	66.0	73,5	83,2
Estonia	0.8	39.5	45,2	40	-0.3	-2.7	-1,7	0,1	7.4	4.6	7,2	6,6
Ireland	39.1	42.0	48,2	67	-0.1	-7.3	-14,3	-32,4	73.5	43.9	65,6	96,2
<b>Greece</b>	44.1	46.8	52,9	49,5		-7.7	-15,4	-10,5	99.4	99.2	127	142,8
Spain	43.2	41.1	45,8	45	-4.8	-4.1	-11,1	-9,2	67.4	39.7	53,3	60,1
France	54.5	52.8	56,2	56,2	-4.0	-3.3	-7,5	-7	58.0	67.5	78,3	81,7
Italy	52.5	48.8	51,8	50,5	-7.0	-2.7	-5,4	-4,6	120.0	106.1	116	119
Cyprus	35.5	42.6	45,8	46,6	-3.2	0.9	-6	-5,3	42.8	48.4	58	60,8
Latvia	36.9	38.6	44,2	42,9	-0.4	-4.1	-9,7	-7,7	13.9	19.5	36,7	44,7
Lituania	36.4	37.4	44	41,3	-3.2	-3.3	-9,5	-7,1	13.8	15.6	29,5	38,2
Luxemburg	41.1	37.2	42,2	41,2	1.2	2.9	-0,9	-1,7	7.4	13.7	14,6	18,4
Hungary	50.6	49.2	50,5	48,9	-4.3	-3.8	-4,5	-4,2	71.4	72.9	78,4	80,2
Malta	42.6	44.8	43,2	42,3	-8.0	-4.5	-3,7	-3,6	40.1	63.7	67,6	68
Netherlands	49.4	45.9	51,4	51,2	-1.9	0.7	-5,5	-5,4	74.1	58.2	60,8	62,7
Austria	55.9	49.0	53	53	-4.0	-0.4	-4,1	-4,6	68.3	62.6	69,6	72,3
Poland	51.0	43.0	44,5	45,7	-4.9	-3.7	-7,3	-7,9	43.4	47.2	50,9	55
Portugal	44.1	46.1	49,8	50,7	-4.5	-2.8	-10,1	-9,1	59.9	66.3	83	93
Romania	34.7	37.6	40,6	40,8	-3.7	-5.4	-8,5	-6,4	11.1	13.3	23,6	30,8
Slovenia	44.5	44.3	49	49	-1.1	-1.7	-6	-5,6		22.6	35,2	38
Slovakia	53.7	34.8	41,5	41	-9.9	-2.3	-8	-7,9	31.1	27.7	35,4	41
Finland	60.6	49.5	56,3	55,1	-3.5	4.2	-2,6	-2,5	57.0	34.2	43,8	48,4
Sweden	63.0	53.1	55,2	53	-3.2	2.5	-0,7	0	73.0	38.3	42,8	39,8
U.K.	42.3	47.3	51,4	50,9	-4.3	-4.9	-11,4	-10	51.3	52.0	69,6	80

Thus, the focus on fiscal overspending does not explain why financial markets were threatened by an “ouzo” crisis, but not, say by a “Chianti” crisis. As the economic advisor of Greek government J. Stiglitz (2010) points out, financial speculators indeed have attacked the weakest link, but this does not make the Greek case unique and the Greek problems totally different.

The Greek crisis not only called for extraordinary decisions in the Eurozone but it catalyzed deeper debates on the approaches to counteracting such dramatic crashes.

One of the most discussed views is articulated in intensions for much stronger coordination of fiscal policies in the Eurozone and the setting of the European Stability Mechanism. It is debatable however where

<sup>10</sup> Built on: Eurostat. Statistical Books. Government Finance Statistics. Summary Tables 1/2010. Eurostat. European Commission, 2010; Eurostat News Release. Euroindicators 60/2011. 26 April, 2011, p.p. 4-9.

these intentions might bring us. As the British MEP Peter Skinner said once of the EU: "We're the world leaders in regulation. If we could sell regulation we would have become the richest bloc in the world."

The discussion is shifted to controversies between the major macroeconomic theoretical approaches. In fact, since the very beginning of the current financial and economic crisis we have witnessed a strong revival of the debate on the role of government and its economic policies. Quite often this debate has reached most ridiculous dimensions like speculations on "more" or "less" government. Definitely, "less" government cannot simply mean lower government spending, as it could be clearly seen in Japan with one of the lowest shares of government revenues and spending in GDP but with a very well articulated government intervention in the decision making, in particular in resource allocation. On the other hand, whatever the increase in government spending in the US might be, the American economy will be always given as an example of the triumph of free markets. Therefore, "more", or "less" government might be discussed within a given institutional framework, and cannot be measured only by the share of government spending and revenues in the economy, no matter how important these indicators are.

At the moment, the clash between such theoretical debates looks like a pure tragedy after Hegel – a collusion of mutually exclusive, but equally legitimate causes. They are legitimate since formal institutions of the Eurozone and the EU make decisions, drawing from both approaches. On the one hand, they stand on firm policies of fiscal restrictions; while on the other hand, they back up bailing out. The conservative approach unquestionably blames bailing out as an erosive policy. As the US Congressman T. Price (2008) noticed: "once the government socializes losses, it will soon socialize profits. If we lose our ability to fail, we will soon lose our ability to succeed. If we bail out risky behavior, we will soon see even riskier behavior." From a long-term perspective this approach cannot be debated. In the short run, however, can a treatment be a success if the patient dies?<sup>11</sup> Thus, the conflict in views is not between right and wrong, between good and evil but between goods that are each making too exclusive a claim.

In economic theory we can constantly debate pros and cons of arguments related to macroeconomic dynamics. Each of the main theoretical approaches is built on sound logic and is supported by solid empirical evidence. Each of them is convincing on its own, but at the same time each of them is one-sided: valid arguments for the short run are not relevant for the long run, and vice versa. While in theoretical reflections we can easily speculate on "short run pains for long run gains" vs. "in the long run we will be all dead", in real policies and reforms we should assess the exact dimensions of gains and pains and not declare a premature dead of theories.

If the basic institutions are not reformed, it is possible to achieve fiscal stability but at an opportunity cost of significant shrink in income and worsening of the quality of human capital, and eventually at the expense of productivity and competitiveness in the short run. Though, numerous "Indiana Joneses" of economic theory hanging around in Greece nowadays and trying to make good money on their advice for strong fiscal restrictions argue that such measures would strengthen Greek competitiveness that has shown a steady loss in relative competitiveness in the last decade as compared to the rest of the euro area.<sup>12</sup>

In the modern globalized economy and in the single EU market in particular, labor and capital supply might demonstrate high price and income elasticity and outflow from the "treated" economy, so that the long run perspectives might not follow the path of Schumpeterian logic.<sup>13</sup>

Apparently, we get into a vicious circle and the solution might be only in radical institutional changes. If macroeconomic and fiscal stability should be achieved at a high price, isn't it more productive to reform the entire institutional structure of the economy, so that factors of growth and motivation of economic decision makers are altered?

One point should be outlined here. Even though the giant financial injections in support of Greece are a short run instrument, par excellence, they have not supported by any means the weak domestic demand in the country and thus cannot be classified as anticyclical. They just counteracted the attack at the euro and the financial markets of the Community and reduced the pressure on the exposed German and French

---

<sup>11</sup> perhaps only if it can help future patients

<sup>12</sup> see See for instance European Commission. Annual Growth Survey. Brussels, 12.1.2011. COM(2011) 11 final **ANNEXE 2**, p. 5

<sup>13</sup> one might vision such foundations for the warnings of the "old Europe" when setting the opportunity for labor mobility restrictions for the new member countries.

Commercial banks that have been the main holders of Greek government debt. At the same time, fiscal restrictions and expected reforms in Greece (and in the other countries, announced to be threatened by a similar crisis), have directly affected income, domestic demand, and indirectly budget revenues and main social budget spending. In the long run such measures might affect factors of economic growth, but the response of the Greek society demonstrates a short run motivation. Moreover, while the public shows if not an outspoken support of macroeconomic restrictions, at least an understanding, all attempts to fundamental reforms targeting a greater mobility of the labor market, face reluctance and nationwide protests. And Greece is not unique. We witness such processes in France, Spain, and Italy. Let's just remind French students protests in April, 2006, against a measure which would have allowed employers to fire young people under the age of 26 without giving a reason. The government dropped the proposal after large-scale protests in the country. The outcome is clear – reluctance to hire young people and a greater rate of unemployment among the young. There is a similar legislation restricting firing young people in Greece and its impact is the same. Moreover, recent government intentions to relax it faced alike protests.

## **2.2 The Crisis of the Guided Market Economy**

While the debate in economic theory resembles a tragedy after Hegel, conflicts in real life fit more a tragedy after Aristotle. Caught in a crisis situation the tragic hero makes an error in judgment or action, missing the mark and disaster results.

The above reflections suggest that the search for a solution only along macroeconomic policies is overwhelmed by an erosive power, which might burst not only in Greece but Europe-wide. The analogy with tragedy induces the idea of catharsis. In the Greek case the “error of the tragic hero” is that the crisis is analyzed as a macroeconomic phenomenon, while its nature is rather institutional.

This is why analysts and politicians unanimously suggest lists of reforms that should be enforced in most of the EU member countries. No doubt that the current short run emergence of fiscal problems persists for long run radical solutions.

The long run targets of reforms put forward a commitment for significant economic restructurings. The fact that the current rate of technological, structural and institutional changes<sup>14</sup> in the continent is not satisfactory has been spelt out in the Lisbon Agenda and in Europe 2020 strategy for smart, sustainable and inclusive growth. They shift the focus of the analysis to microfoundations of macrobehavior.

While experts unanimously take into account structural foundations of the current crisis, traditional economic theory is still hesitating to raise the issue of the necessity of a change in the social welfare function. We mean here not only and not in particular the social dimensions of the reforms and their opportunity cost that should be paid by all social groups.

The social welfare function reflects the subordination of economic and social priorities in the society that construct the *coordination mechanisms* of the specific model of the market economy built in the country.

Since we claim that the Greek crisis is just an articulation of the model of the guided market economy and not a national phenomenon, it is worth to discuss shortly salient features of the models of the market economy from a comparative perspective.

Depending on the priority given to the functions of the coordination mechanism of the economy, we can distinguish three major models of the market economy in the industrialized world:

- The *guided* market economy, raising resource allocation as a priority and building its institutions upon government intervention into this market function. The model is presented in Japan, France, Greece, etc.
- The *modified* market economy giving a priority to incentives in motivation (the US and UK economies, for instance)<sup>15</sup>;
- The social market economy, prioritizing efficiency in income distribution. The model is built in Germany, Scandinavian countries, Cyprus.

---

<sup>14</sup> defined as salient features of the ongoing process of globalization

<sup>15</sup> the term *modified* market economy has been borrowed from M. Schnitzer (See: Schnitzer, 1994) . We preferred it to the “Anglo-American model” in order to avoid the national element in economic and institutional classifications.

Each of these models has a very well articulated business system<sup>16</sup>, financial system, structure of labor market institutions, etc, fitting the chosen subordination of priorities in the social welfare function.

While case studies reveal specific features in economic institutions in individual countries, we can identify common driving forces of business motivation in the countries classified under each model.<sup>17</sup>

The guided market economy raises as a priority the allocative function of the coordination mechanism. Government intervention is justified by the necessity of achieving higher efficiency in allocation. The main instrument of this intervention is related to the development of detailed industrial policy. Such a policy is successfully enforced under the existence of a specific business system and a corresponding system of capital allocation. The countries that have adopted this model have a very well articulated dual business structure with a modest share of medium size businesses in employment and GDP creation.

This model was quite successful in the second half of the 20<sup>th</sup> century<sup>18</sup> when manufacturing was the leading sector in the economy. Experts explain the economic miracle of the guided market economy by the very nature of large-scale production. As C. Freeman (2002, p. 330) points out, “the very nature of the technology determines the configuration and characteristics of the regulatory regime. The mass production technology in this view led inexorably to a centralized regulatory regime analogous to the managerial regime within the large corporations, with its hierarchical techno-structure.” Technological revolution at the end of the last century however, eliminated this advantage of the guided market economy because “the ICT<sup>19</sup> constellation, on the other hand, was often supposed to lend itself very easily to self-regulating networks with minimum central control.”

As a result, the very nature of the business system and coordination mechanisms of the guided market economy came into contradiction to the main trends of economic development. The Japanese experience since 1990 clearly demonstrates the efforts of the country to reset its priorities and to handle the crisis of the model. Unfortunately, since the attempts have been made within the main institutions of the guided market economy, Japan has still not shown a clear way out. The crisis was articulated, as well, in the failure of the Lisbon Agenda. It had to transform the EU into “the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion”. Even though it revealed an understanding of the need for major economic restructurings and emphasized on the stimulation of entrepreneurship, it was built on the philosophy of the guided market economy. Notwithstanding the significant reduction in the share of government spending in GDP (Table 1 illustrates it) in most of the EU-15, fundamental institutions of the models of the market economy adopted by each country, have not been significantly affected.

The one-sided attempts to liberalization of labor and capital markets in the countries with a guided market economy did not alter the nature of their business systems and the priorities in the social welfare function. This is one of the reasons why the cyclical downturn was most clearly pronounced in these countries. (Table 2).

If we adopt Schumpeterian approach here, we might speculate that perhaps, their business systems were more vulnerable to the recession. However, without radical reforms of the foundations of the model, it is difficult to rely on creative destruction alone to set the adequate grounds for sound recovery. While theoretically, spontaneous entrepreneurial moves are expected to do it, institutional arrangements in the real economy create substantial obstacles for the triumph of new “competition which strikes not at the margin of the profits and output of existing firms but at their very foundations and lives” (Schumpeter 1942, p. 84.)

The business system of the guided market economy has been developed and sustained with the decisive participation of government and “the rules of the game” are designed to support the routine, not the change.

---

<sup>16</sup> Business systems are “distinctive configurations of firms and markets which have become established in particular institutional contexts as the dominant ways of structuring economic activities” Whitley, R. (1992, p. 7) ; See also: Pedersen T. and S. Thomsen (1999).

<sup>17</sup>There is not a single approach in contemporary comparative economics to the criterion of distinction of the models of the market economy. We will not discuss here the difference of theoretical views. It is worth just to mention that.

<sup>18</sup> The French and the Japanese economic miracles, for instance.

<sup>19</sup> ICT - information and communication technologies

The reexamination of the social welfare function requires consistent government *and* social commitment. During the last two decades Greek governments have demonstrated efforts to change *some* of the institutions of the guided market economy. While we cannot deny the success of some restructurings, the overall outcome has not been satisfying.

Table 2. GDP growth rates in the EU in % - 2008, 2009<sup>20</sup>

	GDP growth rate in %	GDP growth rate in %
	2008	2009
EU – 27	-1.5	- 5.8
Eurozone -16	- 1.3	- 5.5
Belgium	-1.2	- 5.9
Bulgaria	5.8	-0.6
Czech Republic	- 2.8	- 6.2
Denmark	3.5	- 2.6
Germany	<0.1	- 3.3
Estonia	0.9	0.8
Ireland	- 3.1	-11.1
Greece	-6.6	-12.5
Spain	-1.8	-8.5
France	-2.6	-6.7
Italy	-2.3	-4.7
Cyprus	3.3	-2.6
Latvia	-2.4	-8.3
Lithuania	-0.6	-7.8
Luxembourg	4.5	1.2
Hungary	-4.2	-4.5
Malta	-4.4	-4.0
Netherlands	1.4	-3.9
Austria	-0.6	-3.6
Poland	-0.9	-3.6
Portugal	-3.5	-8.9
Romania	- 1.6	-4.7
Slovenia	1.2	- 2.4
Slovakia	-3.0	-7.2
Finland	4.5	-1.9
Sweden	3.2	0.3
UK	-3.5	-9.7

Apparently the vast liberalization processes and improvements in the regulation of certain product markets which took place in Greece (and in the other European guided market economies) set the foundations for a change in motivations mechanisms but at the same time have eroded the potentials of the industrial policy as a salient feature of the model. As a result, bureaucracy has expanded and the compliance costs have increased. Since the business system is still based on the predominance of the big business, tightly linked

---

<sup>20</sup>Constructed on: Eurostat. Statistical Books. Government Finance Statistics. Summary Tables 1/2010. Eurostat. European Commission, 2010.

with the political decision makers, it is hard to expect any significant transformations in the driving forces of the economy. We believe that such an argument sounds more likelihood than just the blames on Greek politicians opening new sinecures in the public sector to their relatives and fellow countrymen every time when they get into power. In short, the foundations of the process should not be looked for in the “national character” but in the crisis of the institutions of the guided market economy.

As long as we claim that the Greek situation exemplifies the crisis of the model, it is worth to bring as evidence the French experience from the early 1990s with their “national champion” industrial policy where main institutions of the guided market economy reveal their irrelevance to the modern technological revolution. As Japanese and French analysts N. Hiroatsu and E. Verdier (2001, p. 216) prove “the case of the French IT industry provides an emblematic case of the “embeddedness” of technological and industrial development in national innovation systems ... French hardware manufacturers were by and large incapable, despite certain flashes of inventiveness, not only of translating technological advances into industrial products but even of understanding the new opportunities those advances offered.” N. Hiroatsu and E. Verdier (2001, p. 205) bring evidence that government efforts to drive technological changes prove unsuccessful and “diminish the creative dynamic that should have led to the emergence of innovative industrial systems”.

### **2.3 The Opportunities of the Social Market Economy**

As compared to the guided market economies, the social market economies demonstrate the best performance among the EU member countries. One of the reasons for their relative success is the contribution of the specific business system of this model. In the countries with a social market economy we can witness a much greater mobility of labor and capital and a decisive role of the **medium size firms** in the economy. Unfortunately, even specialized publications of Eurostat do not give detailed data on the contribution of medium size businesses in all EU member countries to facilitate comparative studies. However, we can draw some conclusions on the basis of information on the share of medium size businesses in employment. Considering that on the average in the EU medium size businesses have contributed to 17.8% of the value added and 16.8 percent of employment (Schmiemann, 2008, p.1), we can assume that the data on employment might be taken as a proxy for its share in income creation. The most recent available research on it offers data for 2005, but since there has not been evidence on radical structural changes along these lines, we could consider the data as still relevant. On Figure 2 is presented the share of medium size enterprises in employment in non-financial sector in each of the EU member states. It outlines greater values for Denmark (DK), Germany (DE) and Sweden (SE), while the representatives of the guided market economy have the lowest than the EU average indicators, with Greece (EL) being at the end.

From the point of view of long run trends it is difficult to draw ultimate conclusions for the contribution of medium size businesses in the creation of the knowledge based economy, but apparently it should not be underestimated. Apparently it is not just by chance that social market economies (Germany, Sweden, Finland, and Denmark) have registered the highest achievements in the perspective of the goals of Lisbon Agenda<sup>21</sup>. Further, these countries have registered best success in promoting entrepreneurship as one of the main issues for the realization of the Lisbon agenda.<sup>22</sup>

The outlined advantages of the social market economies could be considered as arguments in favor of radical changes in the social welfare function of the guided market economies towards the social model. No doubt, this process would be long and painful, but much more fruitful as compared to the current one-sided reforms, undertaken as a momentary response to one or another crisis. These reforms rather remind the Indian story of 1000 blind men asked to describe an elephant by touching different parts of its body.

From the point of view of long run trends it is difficult to draw ultimate conclusions for the contribution of medium size businesses in the creation of the knowledge based economy, but apparently it should not be underestimated. Apparently it is not just by chance that social market economies (Germany, Sweden,

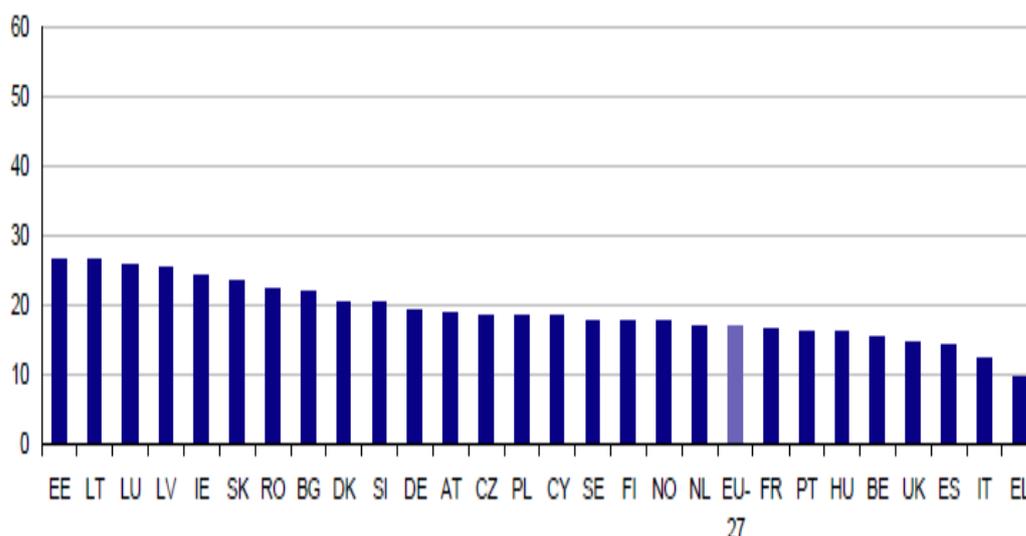
---

<sup>21</sup> See for instance: Science, Technology and Innovation in Europe. 2009. Eurostat. Statistical Books. European Communities, p. 24.

<sup>22</sup> At the same time, government expenditures in these countries are still significant and above the EU average, which just brings another argument for the “tragedy of the macroeconomic approach”

Finland, and Denmark) have registered the highest achievements in the perspective of the goals of Lisbon Agenda<sup>23</sup>. Further, these countries have registered best success in promoting entrepreneurship as one of the main issues for the realization of the Lisbon agenda.<sup>24</sup>

Figure 2. Medium-sized enterprises – share of non financial business economy employment, 2005, %



Source: Eurostat (SBS size class)

Source: Schmiemann M. Industry, Trade and Services. Eurostat, Statistics in Focus, 31/2008, p.7.

The outlined advantages of the social market economies could be considered as arguments in favor of radical changes in the social welfare function of the guided market economies towards the social model. No doubt, this process would be long and painful, but much more fruitful as compared to the current one-sided reforms, undertaken as a momentary response to one or another crisis. These reforms rather remind the Indian story of 1000 blind men asked to describe an elephant by touching different parts of its body.

Since the modified market economy has not been discussed here, we should make just one point. From our personal perspective, it is the most adequate model to the new technological revolution and it has the greatest potential for the creation of greater productivity and income. However, most of the EU member countries and the EU main institutions have constantly articulated the importance of social equality and equity. Many distinguished European scholars give their preferences to the social market economy as an adequate institutional structure for the new technological revolution (for instance, see Aiginger, 2002). Therefore, we believe that a transformation of institutions of the guided market economy to the modified one does not seem feasible.

The Europe 2020 Strategy “sets out a vision of Europe’s social market economy for the 21st century”. Even though the current crisis has revealed a number of deficiencies in the social market economies and some of their social commitments will have to be reconsidered, the model still demonstrates flexibility and adequacy to the current technological revolution. Furthermore, the structure of capital allocation institutions of the guided market economy is much closer to the social model, than to the modified. For instance, 70% of capital is allocated through the stock exchange in the modified market economy, while in the guided and the social market economies 70% of capital is allocated through the banking system. Since capital allocation institutions are a salient feature of the nature of the model of the market economy, a transformation of

<sup>23</sup> See for instance: Science, Technology and Innovation in Europe. 2009. Eurostat. Statistical Books. European Communities, p. 24.

<sup>24</sup> At the same time, government expenditures in these countries are still significant and above the EU average, which just brings another argument for the “tragedy of the macroeconomic approach”

institutions of the guided market economy to the social model seems much more feasible than to the modified one.

No matter which model would be preferred, the change in the social welfare function for the guided market economies is a must. Current fiscal problems in a way facilitate radical changes since budget cuts are unavoidable. Then, reductions in government spending might take place according to a change in the marginal benefits and marginal costs of each spending item from the perspective of radical institutional changes in the society. Respectively, restructurings are persistent on the budget revenue side. The ongoing raise in taxes in many EU member countries should be considered as only a short run response to fiscal difficulties. On the one hand, its impact on budget revenues is quite questionable. On the other hand, it could affect the shy signs of economic recovery and ultimately alienate the goals of Europe 2020.

### **3. CONCLUSION**

The traditional macroeconomic approach to the current turmoil of the Greek economy has questioned various theoretical doctrines and has revealed their constraints and drawbacks. We raise the hypothesis that the Greek crisis exemplifies the ongoing crisis of the guided market economy and that the solutions are to be found in radical institutional changes and, in particular in the transformation of the social welfare function. In dealing with some pieces of comparative evidence we conclude that the social market economy offers more adequate institutions to the current trends of economic development and to the social values prevailing in the EU. Bringing again the analogy with the classic Greek tragedy, we reach a rather general conclusion: It is time for catharsis not only for Greece but also for the entire model of the guided market economy.

### **REFERENCES**

- Aiginger K., 2004. The Economic Agenda: a View from Europe. *Review of International Economics*. Vol. 12, No. 2, pp. 187-206.
- Christodoulakis N., 2010. Crisis, Threats and Ways out for the Greek Economy. *Cyprus Economic Policy Review*, Vol. 4, No. 1, pp. 89-96
- European Commission. *Annual Growth Survey*. Brussels, 12.1.2011. COM(2011) 11 final Europe 2020 Strategy. Executive Summary. Available at <http://ec.europa.eu/eu2020/pdf/COMPLET%20EN%20BARROSO%20%20%20007%20-%20Europe%202020%20-%20EN%20version.pdf>
- Eurostat, European Commission, 2010. *Eurostat Statistical Books, Science, Technology and Innovation in Europe*, European Communities, 2009.
- Eurostat Statistical Books, 2010. *Government Finance Statistics*, Summary Tables 1/2010
- Eurostat News Release. Euro indicators 60/2011. 26 April, 2011.
- Freeman, C., 2002. *As Time Goes by from the Industrial Revolutions to the Information Revolution*, Oxford University Press. Oxford.
- Heilman R. B., 1981. Tragedy and Melodrama. In: Corrigan R. W. (Ed.) *Tragedy: Vision and Form*. New York, Harper, 1981, pp. 188-214
- Hiroatsu N., Verdier E., 2001. Sources of Resilience in the Computer and Software Industries in France. *Industry and Innovation*. August, pp. 201-220.
- Lisbon Conclusions, 2000. Council doc. 100/1/00 Rev.1
- Pedersen T., Thomsen S., 1999. Business systems and corporate governance. *International Studies of Management & Organization*, *White Plains*, summer 1999, vol. 29, issue 2, pp. 42-59.
- Price T., 2008. Republican Study Committee. Available at <http://rsc.tomprice.house.gov/News/DocumentSingle.aspx?DocumentID=105500>
- Schmiemann M., 2008. *Industry, Trade and Services*, Eurostat, Statistics in Focus, 31.
- Schnitzer M. C., 1994. *Comparative Economic Systems*. Sixth Edition. South-Western Publishing Co.
- Schumpeter J., 1942. *Capitalism, Socialism, and Democracy*, Allen and Unwin.
- Stiglitz J. 2010. Greek-crisis-intensifies-as-Joe-Stiglitz-calls-for-Europe-to-teach-the-speculators-a-lesson:

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Available at <http://www.telegraph.co.uk/finance/economics/7191113/Greek-crisis-intensifies-as-Joe-Stiglitz-calls-for-Europe-to-teach-the-speculators-a-lesson.html>

Whitley, R., 1992. *Business Systems in Asia: Firms, Markets and Societies*, London: Sage.

# ROMANIA POST – CRISIS. CLOSER OR FARTHER AWAY FROM THE EUROPEAN MODEL?

Socol Cristian<sup>1</sup>, Socol Aura<sup>2</sup> and Marinas Marius<sup>3</sup>

*Academy of Economic Studies, Bucharest, Piazza Romana, 6, [socol.cristian@economie.ase.ro](mailto:socol.cristian@economie.ase.ro)  
Academy of Economic Studies, Bucharest, Piazza Romana, 6, [socol.aura@economie.ase.ro](mailto:socol.aura@economie.ase.ro)  
Academy of Economic Studies, Bucharest, Piazza Romana, 6, [marinas.marius@economie.ase.ro](mailto:marinas.marius@economie.ase.ro)*

## ABSTRACT

Global economic crisis has seriously affected the Romanian economy. With one of the toughest austerity programs in the European Union, the Romanian economy have advanced the development prudent macroeconomics policies and implement structural reforms in the market for goods, labour and financial products. In this paper, we identify the stage of compliance the principal conditionalities on admission in Eurozone. The nominal and real convergence must be touched faster because this processus suppose stability prices, the financial soundness indicators, the need to stabilize exchange rate. In addition, the real convergence with European Union is very important. There is potential conflict between real and nominal convergence ? Can Romanian economy obtain a grow faster convergence ? Fiscal adjustment leads Romania closer or farther away from the European model?

## KEYWORDS

convergence, Maastricht criteria, real convergence, fiscal adjustment

## JEL CLASSIFICATION CODES

E61, F15

## 1. INTRODUCTION

For Romania, the completion of a seven-year interval of preparations (2000-2006) for the EU accession and the start of another interval of preparations (2007-2013) for the adoption of the euro currency, which has approximately the same duration, is a significant opportunity to continue the reforms and to reduce regional economic disparities. Improvements concerning real convergence must be made in such a manner not to affect the nominal convergence criteria that are by maintaining macroeconomic equilibrium. A country's EU integration automatically involves its integration to the European and Monetary Union (EMU). For the purpose of constituting a stable and sustainable monetary zone, The Maastricht Treaty (1993) established restrictive conditions for the member countries which want to join the Eurozone: budget deficits which are within the limit of 3% of the GDP, the public debt within maximum 60% of the GDP, the inflation rate close to the average inflation rate of the member countries which have recorded the best performances with reference to the price stability, stable interest charge on a long (close to the level of the best countries in terms of price stability), stable rate of exchange for two years at least, if joining the exchange rate mechanism (ERM II).

The nominal convergence process is obtained faster than real convergence. There is a consensus among policymakers regarding the correlation real convergence - nominal convergence. In fact, a higher degree of real convergence represents the substance of successful integration in European model.

## 2. ROMANIA - CLOSER OR FARTHER AWAY FROM THE EUROPEAN MODEL?

Since its membership, Romania should join the EU economic policies coordination mechanisms. Romania has been accepted to the European Union on January 1st 2007. The next step for us is the adoption of the unique currency (probably at the earliest in 2015, according to the official forecasts), and this practically means the acceptance to a superior integration stage – the Economic and Monetary Union integration.

**Box 1**

**How is calculated the nominal convergence criteria to integration in Euro Zone?**

The upper 3% for budgetary deficit is arbitrarily established. The figures used to calculate the limits derived from the formula for determining the government budget deficit that stabilizes debt:

$$d = xb,$$

where: **b** is the sustainable level which public debt could be stabilized (% from GDP) ; **x** is the nominal GDP growth rate and **d** is the public deficit (% from GDP).

The formula is:

Public deficit (D) is financed from new indebteding instruments:  
 $B = D$  (1)  
 where B is public debt.

From definition we can write:  
 $B = b \cdot Y + b \cdot Y'$  (2)  
 where  $b = B/Y$  and Y is GDP.

From relations (1) and (2), is obtained:  
 $D = b \cdot Y + b \cdot Y'$  or  $D/Y = b + b \cdot Y'/Y$ , which can rewrite also:  
 $b = d - xb$ ,  
 where  $d = D/Y$ ,  $x = Y'/Y$

Sustainability means  $b = 0$ , which implies  $d = xb$ .

The formula shows that for stabilizing public debt at 60% from GDP, public deficit must attained 3% from GDP if we consider that the nominal GDP growth is 5% ( $0.03 = 0.05 \cdot 0.6$ ) (de Grauwe, 2004)

First, we analyze the level of achievement of nominal convergence criteria for Romanian economy.

Figure 1. Nominal convergence indicators in Romania

Indicatorii de convergență nominală	Maastricht Criteria	Romania	Diference
Inflation rate (IAPC) (procent, annual average) (reference feb 2011/feb2010)	< 1,5 pp above the average to the best 3 members EU which performed in price stability (reference criterion 1,3%)	7,6%	6,3pp
Interest rates on the long run (annual procents) (reference mar 2011)	< 2 pp above the averageto the best 3 members EU which performed in price stability (refernce criterion 6,3%)	7,6%	1,3 pp
Exchange rate relative to euro (apreciation(+)/depreciation() maximum procentual*)	± 15 procents	+1,71/-14,3	-
Public deficit (procents form GDP) (ESA95 methodology)	< 3% from GDP	7,3% from GDP	4,3 pp
Public Debt (procents from GDP)	< 60% from GDP	35,6% from GDP	-

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Source: National Bank of Romania, Ministry of Finance, Eurostat, 2011

There is a significant risk of postponing the timing of euro adoption by Romania, especially in terms of failure to meet criteria on inflation and the budget deficit.

Secondly, we focused to the Romanian real convergence with the European model. Romanian must continuing and deepening the structural reforms and delivering improved public services in health, education and professional formation, research and development and transportation as well as implementing the necessary reforms to enhance accountability and efficiency.

The Romanian economy real convergence with European model can be analyzed starting to GDP per capita at purchasing parity power. In 2010, GDP per capita in Romania was 40% relative to the EU27 average, less than Czech Republic (86%), Poland (62%), Hungary (69%), Slovenia (88%), but more than Bulgaria (39%).

Table 1. GDP per capita at purchasing power parity (PPP)  
(EU 27 average = 100)

Country/Years	2003	2004	2005	2006	2007	2008	2009	2010
Bulgaria	29,7	30,6	32,1	33,3	35,5	40,0	39,0	39,0
Czech Republic	67,8	70,3	73,3	75,0	78,1	84,0	86,0	86,0
Poland	47,0	48,8	49,8	51,0	52,4	58,0	59,1	62,0
Romania	30,0	32,2	32,9	34,2	37,0	42,4	40,2	40,1
Hungary	59,3	60,1	61,9	63,2	63,7	68,2	69,1	69,2
EU15/EU27	100	100	100	100	100	100	100	100

Source: EUROSTAT, 2011

The structural convergence index with European economy can grow if the labor productivity will be higher. Then, it drives to the higher incomes, which can sustain economic growth, welfare, etc. If the average rate of labor productivity growth will be 10% annually, then Romanian economy obtain a faster catching up process.

Table 2. Labor productivity per person employed  
(GDP at purchasing power parity per person employed person, relative to EU 27 = 100)

Country/Years	2003	2004	2005	2006	2007	2008	2009	2010
Bulgaria	31,9	31,7	32,6	33,6	36,3	37,7	38,3	39,2
Czech Republic	62,0	64,3	68,6	70,4	72,3	73,4	76,1	77,2
Poland	59,6	62,0	62,7	63,8	60,4	61,9	63,4	64,2
Romania	34,0	36,3	36,6	37,9	42,5	44,2	42,2	44,1
Hungary	66,8	68,1	70,1	71,6	73,7	74,5	76,1	75,3
EU15/EU27	100	100	100	100	100	100	100	100

Source: EUROSTAT, INSSE, 2011

Many structural problems of the Romanian economy can be solved though efficient policy to attract foreign direct investments and a good capacity to European funds absorption (cohesion and structural funds). The growth of the capital stock in the Romanian economy will generated a higher rate of economic growth → the growth of labor productivity and higher incomes → the growth of the labor employment → an faster process regarding structural adjustment in the economy, if the FDI are concentrated in the tertiary sector. Know how based FDI increase the convergence speed.

A great opportunity for development Romanian infrastructure is the efficient use of European Funds. Since 1st January 2007, Romanian authorities must spending 9 millions euro per day. In the period 2007-2013, European Union approved for Romania 28 billions euro cohesion and structural funds. But the Romanian absorption capacity of European structural funds remains weak. During 2000-2005, from ISPA programme Romania spent only 11,6% and from SAPARD programme 43%. In case of cohesion and structural funds, the forecast level for Romania in 2007 is only 4%.

Table 3. Absorption capacity of European Structural Funds in the period 2007-2011

Country	Absorption capacity (% relative to commitments for period 2007/2013)
Estonia	26%
Letonia	29%
Poland	21%
Czech Republic	12%
Bulgaria	10,2%
Romania	8,6%

Source: Eurostat, Fiscal Council, Romania, 2011

The analysis of Community's directions suggests that financial assistance has positive effects on economic growth at a regional and national level. Cohesion Policy influences all of its sources, contributing to the growth of capital accumulation (through the birth of new firms), of the degree of employment (in concordance with the objectives set by the Lisbon Strategy) and the efficiency with which the production factors are utilized (education, innovation, reduction of transaction costs). The estimates of the European Commission emphasize an increase in national GDP by 10% as a result of the allocation of financial resources towards the less developed countries of the EU, between the years 2007 and 2013.

Beyond the immediate effects of aggregate demand (income rises in the beneficiary regions), decisive become those on aggregate supply, on a long time. Thus, the modernization of the infrastructure, the rise of education levels as well as subsidies of research and development activities permit the increase of potential growth in of the economy (as in potential GDP). In these conditions, shock absorption on the demand or the structural sides will be faster in the countries/regions that benefit from structural and cohesion funds. It results that from cohesion policy, the convergence of business cycles of a economy within the euro zone can rise, consequently increasing the benefits of adopting a single currency.

The fulfillment of the nominal convergence criteria by a certain member country of the EU constitutes a necessary, albeit not sufficient condition to adhere to a monetary union. Essential are the progresses in the process of real convergence, because these are, in a large measure, able to ensure a growth in the economy's flexibility and a higher concordance of business cycles. The adoption of the sole currency implies, beforehand, finding other methods of economical adjustment, as a consequence of the renunciation of the internal monetary policy. Some of these can be the result of structural fund allocation through cohesion policy. Thus, Romania's decision to adhere to the euro zone, after it would have been able to access the Community's financial assistance in the 2007-2013 periode, is explained.

### **3. CONCLUSIONS AND RECOMMENDATIONS**

The nominal convergence criteria for being accepted to the select group or the Economic and Monetary Union countries have proved their limits in providing financial stability and in favoring a sustainable and balanced economic growth within the member countries. Although the critics addressed to the EMU fundamentals in terms of requirements to be met by a optimum currency area are not recent, the new debates of the European authorities bring the necessity to intensify the real convergence process within the Union on the front page, simultaneously with the improvement of the mechanisms belonging to the security elements of the financial system. Under these terms, the series of conditions for the new EU member countries to be accepted to the Eurozone should be completed with elements which could provide economic competitiveness. The next stage is represented by the structuring and integration of these parameters into the mix of macroeconomic policies of our country, so that the moment of acceptance to the Eurozone should not affect the chances of a sustainable economic development of Romania. The necessity to reform the Eurozone, at least taking into account the previously mentioned aspects, is obvious. Moreover, it is necessary to make a more careful analysis of the criteria which should be met by the countries "aspiring" to be accepted to the Eurozone. And this is because their reformulation, at least a partial one, would be benefic for everyone. Here are at least three arguments which could result from the above analysis:

- Based on the catching-up process, under the terms of the occurrence of the Balassa- Samuelson effect, countries such as Romania (and, generally, the developing countries) may encounter problems in meeting two of the Maastricht Treaty criteria at the same time – the inflation criteria and the rate of exchange criteria (they are incompatible with each other);
- The deep restrictive characteristic of the criteria slows down the real convergence process. Thus, inconsistency occurs, if not the divergence between nominal and real. This is the reason why Eurozone entered a vicious circle during the crisis, which has been explained above;
- The deep lack of competitiveness in Romania (and, generally, in the ex-communist countries which aim to be accepted to the Eurozone) would turn us into a country with obvious net costs for entering Eurozone.

## **ACKNOWLEDGEMENT**

This article represents the dissemination of research financed by Social European Fund, contract no POSDRU/89/1.5/S/59184 *Postdoctoral research performance and excellence in economic sciences in Romania*, Academy of Economic Studies, Bucharest.

## **REFERENCES**

- De Grauwe, P., 2004. *Economics of Monetary Union*, Oxford, fifth edition, Londra
- De Grauwe, P.; Schnabl, G., 2003 Nominal versus Real Convergence with Respect to EMU Accession. How to Cope with the Balassa-Samuelson Dilemma, working papers available at [www.repec.org](http://www.repec.org)
- Dinu, M., Socol, C., Niculescu, A., 2005. *Romanian Economy*, Economica Edition, Bucharesti
- Dinu, M., Socol, C., Marinas, M., 2004. *European Economy*, Economica Edition, Bucharest
- Mankiw, N. G., 2000 *Macroeconomics*, Harvard University, Worth Publishers, New York, SUA
- Mihaljek, D.; Klau, M., 2003. *The Balassa-Samuelson Effect in Central Europe: a Disaggregated Analysis*, WP 143/ October, [www.bis.org](http://www.bis.org), SUA
- Samuelson, P., 1964. Theoretical Notes on Trade Problems, *Review of Economics and Statistics*, Vol. 46, no. 2, SUA

# THE COMPETITIVENESS OF THE ROMANIAN CAR INDUSTRY ON THE EUROPEAN UNION MARKET

Hagiu Alina<sup>1</sup> and Suciú Marta Christina<sup>2</sup>

<sup>1</sup>University of Pitești, Republicii Avenue, No.71, Pitești, Romania, alinahagiu@yahoo.com

<sup>2</sup>Academy of Economic Studies, Romana Square, No. 1-6, Bucharest, Romania, suciuchristina@yahoo.com

## ABSTRACT

Automotive industry is one of the most important industries in the world, which leaves its mark not only on the world economy but also on the world culture; it occupies millions of people and generates millions of dollars as overall profits. This industry has revolutionized the twentieth century, irreversibly changing the way people live, work, travel and leisure spending. Automobile construction has become the largest industrial activity, with over 50 million units manufactured annually.

Development of automobile industry is desirable to be examined in terms of concepts of environmental protection, economic growth and social equity. The car is a very complex system, through the chain of economic activities involved in creating, producing, delivering, operating, supporting services, but also get rid of him.

Automobile industry influences the world economy, generating in a year nearly 17% of shipments of durable goods, designed to operate at least three years; automobile production implies as inputs large amounts of iron, steel, aluminum, natural rubber, copper, zinc, glass, leather, plastic, lead and platinum, more than any other industry.

Romania's EU accession, involves major environmental responsibilities, namely economic, political, demographic and socio-cultural environment. Romanian automotive industry is highly internationalized, being probably the only national competitive sector able to be integrated in the current conjuncture of internationalization and globalization of world economy. Creating a single impressive market, by dissipation of trade barriers will mean for the Romanian automotive manufacturers a new challenge, that of creating a highly competitive sector.

The paper aims to present the evolution of car industry in Romania and the main directions in which the author considers to be done to increase the international competitiveness of Romanian companies. The paper will conclude with a relevant case study on the most appropriate ways and means to exploit the competitive advantages in relation to the actual situation existing in the automotive industry in Romania.

## KEYWORDS

Car industry, internationalization, competitiveness, strategy, investments;

## JEL CLASSIFICATION CODES

L62, O14

## 1. INTRODUCTION

The economic recession has had a huge negative impact on the car industry. The decline in car sales affects not only manufacturers themselves but also the considerable number of small and medium-sized businesses that depend directly on the car industry as suppliers and retailers. Thousands of jobs are consequently at stake.

The car industry is a key sector of the European economy contributing to employment, innovation and competitiveness in Europe. The industry must strive to continue developing the skills of its workforces. The focus should be on investment in innovative and green technologies. Renewal of the car fleet should also be encouraged to boost demand for new, safer and environmentally friendlier vehicles.

The European car industry is a very volatile industry with many peaks and falls. In fact, the EU is the world's largest producer of motor vehicles, so essentially it is central to Europe's prosperity. As such, the European car industry is an employer of a huge skilled workforce. It also represents Europe's largest investor in research and development and makes a major contribution to the EU's Gross Domestic Product (GDP), the European Commission states.

The European car industry has been deeply affected by the recession, so much so that governments throughout Europe and the world have passed stimulus packages to help the industry.

Automotive manufacturing is closely linked with many other sectors. Electronics, mechanical and electrical engineering, information technology, steel, chemicals, plastics, metals and rubber are all key suppliers. 20% of the EU's steel and 36% of its aluminum production goes into automotive production.

With a population of 21.6 million Romania is the third largest market in terms of population in Central and Eastern Europe (CEE) and the 7th largest among the European Union member states. Although Romania's real GDP is growing at above 5%, Romania is one of the less wealthy nations within the E.U. Romania's GDP per capita currently is about 5.000 EUR.

Romania's car penetration is still much lower than in Western European markets and also most other CEE markets like Poland or Bulgaria. In terms of car park however, Romania is among the top CEE markets. As in most other CEE markets, the car park is relatively old. 50% of cars are older than 10 years.

Since Romania became a member of the EU in 2007, the import of used cars has increased significantly. These imports mainly consist of cars which comply with the Euro 3 - emission standards. Romania is actively trying to prevent a further increase in older used car imports. However, a new registration tax scheme, with the aim of making older, less environmentally friendly cars much more expensive to import, was challenged by the European Court of Justice. Given this situation, the imports of older used cars into Romania will further increase.

The new car market is not affected through the increase in used car imports. It was also increasing strongly by 25% in the past and will grow at about 11% p.a. for the years towards 2011. A government initiative to pay people for scrapping their older cars and buying a new one is helping to boost the market.

Financing of cars is well established, with loan financing and leasing being equally preferred by private individuals and leasing being the preferred method by corporate buyers. Financing used car purchases is also widespread.

Romania has an active automotive industry since more than half a century. With Dacia, there exists a local passenger car brand. Dacia was taken over 100% by Renault in 1999. Since then, production capacity was increased and Dacia has been successfully positioned as a low-cost brand within parts of Europe. In 2007, Dacia manufactured 223.000 cars. Until end of 2007, the Korean Car Manufacturer Daewoo Motors has manufacturing a variety of its models in Romania. In March 2008 Ford bought the former Daewoo plant and plans to use Romania as a production base for a low-cost car. (Lianu, 2008). In addition, Daimler is planning to establish a manufacturing venture in Romania, also in the mini- and small car segment. Given these developments, the Romanian car industry will witness a major boost over the next year.

The current situation provides excellent opportunities for suppliers of all tiers. Ford is partly looking for a new supplier network and Daimler will also be looking for low-cost but good quality suppliers to support their strategy. Currently, the Romanian automotive industry consists of a limited number of players – far less than in Poland, for example.

The aftermarket is growing by over 10.7% over the next years to 2011 slightly above the car park. The aftermarket is one of the most attractive sectors of the Romanian automotive industry over the next years. With further additions to the park and with more demanding consumers, better and more frequent service and better parts are needed.

The Romanian distribution system for spare parts is currently expanding. Larger international players like ATR, AD and Temot are already present in the market. In addition there are still a large number of smaller players. Currently, consolidation is no issue – the market is large enough for all players to grow. Eventually, consolidation will start.

For foreign aftermarket parts manufacturers the market is highly attractive. The main challenge, however, is the countrywide access to service stations (the main sales channel for parts to car owners), to spare part shops and eventually to the end customers (Anghelache, 2009).

## 2. THE ROMANIAN CAR INDUSTRY IN THE INTERNATIONAL CONTEXT

The automotive industry has been one of the most profitable branches of the economy in recent years and has attracted increasing interest from foreign investors. The industry is still underdeveloped, but has been growing rapidly and is the fourth-largest producer in the region, after the Czech Republic, Poland and Slovakia, as is shown in the table 1.

Table 1. New passenger car registrations, international comparison ('000)

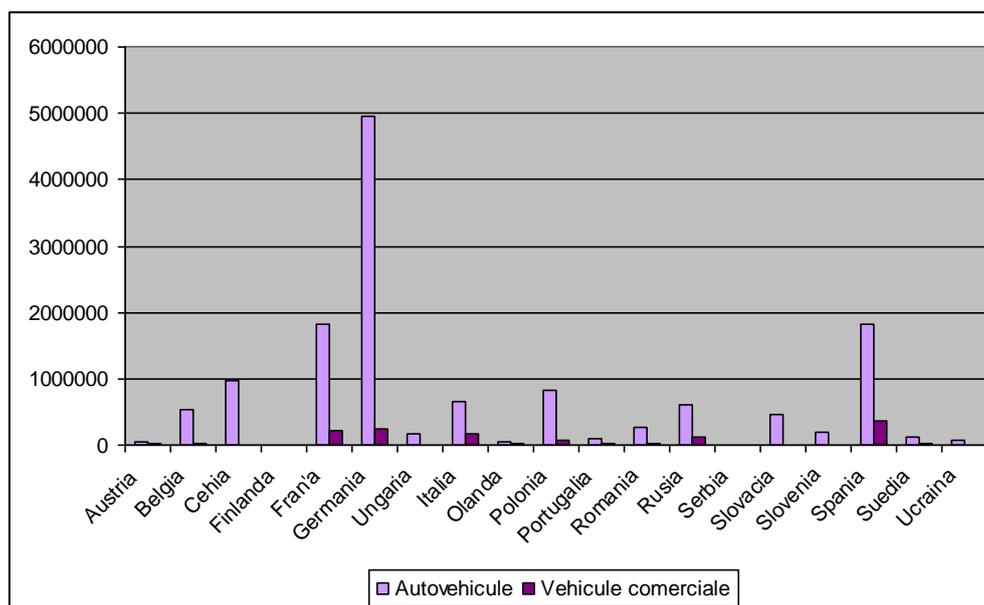
	2006 <sup>a</sup>	2007 <sup>a</sup>	2008 <sup>a</sup>	2009 <sup>b</sup>	2010 <sup>b</sup>	2011 <sup>c</sup>	2012 <sup>c</sup>	2013 <sup>c</sup>	2014 <sup>c</sup>	2015 <sup>c</sup>
Romania	256	316	271	130	106	115	127	141	159	179
US	16,505	16,090	13,195	10,402	12,043	14,065	15,708	16,598	17,563	18,490
Japan	4,642	4,400	4,228	3,924	4,474	4,305	4,488	4,641	4,780	4,863
China	5,073	6,300	6,760	10,489	13,159	15,445	17,694	20,325	23,171	26,042
Germany	3,468	3,148	3,090	3,807	3,015	3,161	3,250	3,329	3,475	3,683

<sup>a</sup> Actual. <sup>b</sup> Economist Intelligence Unit estimates. <sup>c</sup> Economist Intelligence Unit forecasts.

Source: Economist Intelligence Unit, <http://www.eiu.com>

The automotive industry accounts for more than 5% of total manufacturing output and directly employs around 120,000 people. In addition, significant numbers work for tier-two or tier-three suppliers. Low labor costs and a skilled workforce are the main advantages of manufacturing in Romania. Geographical proximity of the main car-producing region, in western Romania, to the main European markets has also been an important factor. There is a large network of suppliers and components manufacturers, consisting of traditional local suppliers and foreign-owned companies, with the foreign-owned companies producing mainly for export (although some have come to Romania specifically to supply the Dacia-Renault assembly line on a just-in-time basis).

Figure 1. Production of cars and commercial vehicles in Romania and Europe



Source: realized by the author based on the ACEA dates

A return to economic growth in Romania from 2011, and stronger growth in the country's primary export markets, combined with continuing foreign investment in and modernization of the automotive industry, should stimulate robust growth over the medium term. The economy contracted by an estimated 2% in 2010,

following a contraction of 7.1% in 2009. In 2011 consumer spending will continue to be constrained by the government's fiscal austerity measures—which include a 25% cut in public-sector wages, cuts in welfare spending and the July 2010 increase in the value-added tax (VAT) rate from 19% to 24%—as well as meager wage growth and subdued lending conditions. As a result, we expect real GDP growth of less than 1% in 2011, when consumer demand for non-essential goods, including automotives, will remain depressed. Demand will pick up again as the recovery gathers pace from 2012, when real GDP growth of 3.5% is forecast. In 2012-2015 growth is expected to average about 4.5% per year, and new passenger car sales are forecast to grow by around 12% per year over the same period. This situation is presented in the table 2.

Table 2. Income and demographics

	2006 <sup>a</sup>	2007 <sup>a</sup>	2008 <sup>a</sup>	2009 <sup>b</sup>	2010 <sup>b</sup>	2011 <sup>c</sup>	2012 <sup>c</sup>	2013 <sup>c</sup>	2014 <sup>c</sup>	2015 <sup>c</sup>
Nominal GDP (US\$ bn)	122.7	170.6	204.3	161.1 <sup>a</sup>	154.8	161.6	175.3	192.7	214.4	240.9
Population (m)	21.5	21.5	21.5	21.5	21.4	21.4	21.4	21.4	21.4	21.4
GDP per head (US\$ at PPP)	10,485	11,462	12,556	11,782	11,619	11,912	12,597	13,507	14,594	15,801
Private consumption per head (US\$)	4,437	5,975	7,043	5,457	5,520	5,772	6,190	6,743	7,412	8,201
No. of households ('000)	7,643	7,713	7,775	7,859	7,944	8,030	8,117	8,204	8,293	8,395
No. of households with annual earnings above US\$5,000 ('000)	7,225	7,713	7,775	7,859	7,944	8,030	8,117	8,204	8,293	8,395
No. of households with annual earnings above US\$10,000 ('000)	4,757	6,434	6,963	6,145	6,162	6,329	6,605	6,929	7,259	7,584
No. of households with annual earnings above US\$50,000 ('000)	0	0	94	0	0	0	0	0	42	129
No. of households with net wealth over US\$1m ('000)	0	0	0	0	0	0	0	0	0	0

<sup>a</sup> Actual. <sup>b</sup> Economist Intelligence Unit estimates. <sup>c</sup> Economist Intelligence Unit forecasts.

Source: Economist Intelligence Unit; <http://www.eiu.com>

Romania is now the fourth-largest vehicle manufacturer in central Europe, behind the Czech Republic, Poland and Slovakia. Over the medium term the industry is expected to experience strong growth, as investors are attracted to Romania by low labor costs, a relatively skilled labor force, investment-friendly government policies, and the country's geographic proximity to large automotive markets.

Table 3. Passenger car registrations

	2006 <sup>a</sup>	2007 <sup>a</sup>	2008 <sup>a</sup>	2009 <sup>b</sup>	2010 <sup>b</sup>	2011 <sup>c</sup>	2012 <sup>c</sup>	2013 <sup>c</sup>	2014 <sup>c</sup>	2015 <sup>c</sup>
Passenger cars (stock per 1,000 people)	167.3	229.7	261.4	277.2	291.1	306.0	323.0	340.9	360.4	381.9
Passenger car registrations ('000)	256.4	315.6	271.0	130.2	106.3	114.7	126.7	141.4	159.4	179.0
Passenger car registration growth (%)	18.9	23.1	-14.1	-52.0	-18.4	7.9	10.5	11.6	12.7	12.3

<sup>a</sup> Actual. <sup>b</sup> Economist Intelligence Unit estimates. <sup>c</sup> Economist Intelligence Unit forecasts.

Source: Economist Intelligence Unit; <http://www.eiu.com>

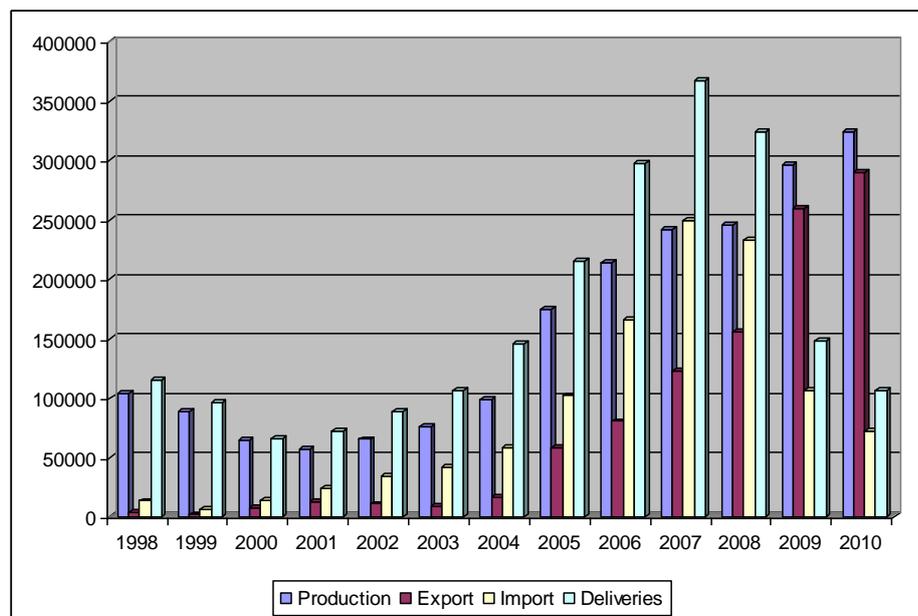
## 2.1 Demand

Demand abroad for cars produced in Romania has increased in recent years, notably for the main manufacturer, Dacia. Despite the global economic crisis, exports of passenger cars grew by 58% year on year in 2009, to 242,688, and by an estimated 20% in 2010, to 270,000, following very fast growth in 2004-2008, albeit from a low starting point. About 90% of Dacia's overall sales in 2010 were exports, up from about 80% in 2009, as declining domestic sales volumes in 2009-2010 encouraged Dacia to diversify into European markets. In 2010 France was Dacia's biggest market, with a 70% year-on-year increase in sales, to 110,000. Germany, the leading export destination in 2009, fell to second place after a 50% year-on-year decline in sales to 40,500 units, reflecting the absence of a car scrap page scheme. Spain and Italy are expected to become more important markets in 2011 and in 2012. Dacia hopes that the UK will become its biggest market with the launch there of the Duster SUV.

## 2.2 Supply

Romania is the fourth-largest vehicle manufacturer in central Europe, behind the Czech Republic, Poland and Slovakia. Low labor costs, investment incentives and the geographical proximity of the main car-producing plants in western Romania to EU markets have led many foreign companies to establish production facilities there.

Figure 2. The evolution of the Romanian car industry



Source: realized by the author based on the ACEA dates

Renault (France) has pioneered modern foreign-car production in Romania, taking over the Dacia plant in Pitesti in 1999. Since 2005 the Logan, conceived as a low-cost car for emerging markets, has been the flagship passenger car in production at Dacia, and the firm is now having success with new models such as the Duster. The takeover in 2008 by US-based Ford of Automobile Craiova (formerly owned by South Korea's Daewoo and then bought back by the state in late 2006) was another important watershed in the development of the Romanian motor industry (Lianu, 2008). Ford started production of Transit Connect vans at Craiova in September 2009, and plans to introduce the production of a small passenger car once the market recovers. Ford expects to be producing 300,000 units by the end of 2013, with around 90% going to export (Verdes, 2011).

In 2010 production of passenger cars rose by 15.8% to 323,587 units, and exports increased by 19.4% year on year. The bulk of automotive manufactures is exported, with imports mainly satisfying domestic demand. There is a large network of suppliers and components manufacturers, consisting of traditional local suppliers and foreign-owned companies, with the latter producing mainly for export (although some have come to Romania specifically to supply the Dacia-Renault assembly line on a just-in-time basis).

The largest share of the passenger-car market in 2010 was held by Renault's Dacia brand, with 32% of domestic sales. Dacia's sales are recorded separately from those of its parent company, which reports only the sales of Renault cars imported into Romania. In the table below is presented the evolution of the Dacia sales.

Table 4. The evolution of Dacia sales by destination

	2004	2005	2006	2007	2008	2009
Romania	80 013	113 276	107 777	102 062	84 708	41 862
International	16 306	51 130*	88 931	128 411	173 664	269 420
Total	96 319	164 406	196 708	230 473	258 372	311 282

Source: realized by the author based on dates from DACIA GROUP

In 2010 Volkswagen (Germany) accounted for 12.2% of imported passenger car sales, and Renault, in second place, for 11.7%. Skoda (Czech Republic) was in third place, with an 11.2% market share, and Ford was in fourth place with a 10.6% market share. They were followed by Opel (Germany) with 9%, Chevrolet (US) with 6.8%, Hyundai (South Korea) with 6.2%, Peugeot (France) with 3.6%, Fiat (Italy) with 3.6%, and Toyota (Japan) with 3.4%. These top ten companies dominated the import market with a total share of 78.2%.

The bulk of car sales in Romania are family-sized passenger cars. The top-selling models in 2010 were the Renault Clio (6.9%), Skoda Octavia (5.7%), Opel Astra (4.7%), VW Golf (4.3%), Ford Fiesta (4.2%), Chevrolet Aveo (3.6%), Ford Focus (3.3%), Opel Corsa (2.9%), VW Polo (2.8%) and Hyundai i 30 (2.6%). The luxury-car market is small, with sales averaging only about 20 per month, led by Porsche (Germany) and Japan-based Toyota Motor (Lexus model).

The main producer is Automobile Dacia, a Pitesti-based car manufacturer owned by Renault since 1999. After investing more than €1bn in the Pitesti plant up to 2008, Renault has continued to invest large sums in Romania, including €120m in Dacia in 2009, mainly in preparing the production of the new Duster model and the development of a new gearbox for the 4x4 version of the Duster, and more than €140m in 2010 (of which €75m went on the Technical Centre which opened in September in Titu, north of Bucharest).

In 2010, for the first time, Dacia produced more than 300,000 cars (an estimated 330,000). The plant's maximum capacity is 350,000 per year, and it will not be expanded.

Since its launch in 2004 the Logan, conceived as a low-cost car for emerging markets, has been the flagship passenger car in production at Dacia, selling at prices from €6,300 (US\$8,600).

Dacia started a new line called Sandero in June 2008, with a starting price of €6,890. Most of these vehicles are exported; in 2009 Dacia sold only around 20% to Romanian consumers and in 2010 only 10%.

In 2010 Renault launched the compact (Mégane-sized), all-terrain Duster model, manufactured at the Pitesti factory, with prices starting at €11,900 for the two-wheel drive and from €13,900 for the 4x4 version.

Since March 2010 the model has been rolled out progressively in Europe, Turkey, Africa and the Middle East, badged either as a Renault or a Dacia, in the same way as the Logan and Sandero.

Table 5. Top 10 export destinations in the first semester of 2010

	Country	Unit
1	France	64 287
2	Germany	17 107
3	Italy	13 755
4	Spain	12 144
5	Algeria	11 145
6	Turkey	6 667
7	Belgium	5 400
8	Austria	2 766
9	Holland	2 693
10	Switzerland	2 517

Source: [www.daciagroup.com/vanzari](http://www.daciagroup.com/vanzari)

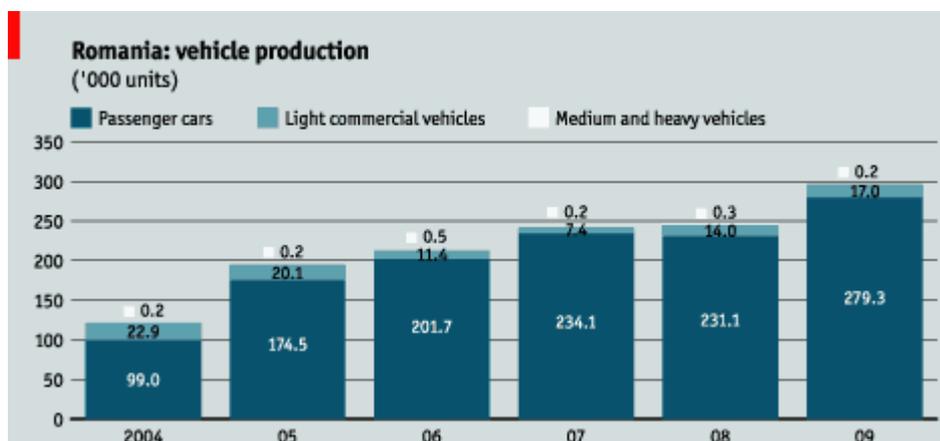
In addition, Dacia produces completely knocked-down (CKD) and semi-knocked-down (SKD) kits for Logan assembly locations all over the world. Renault has invested in a large CKD centre in Pitesti to work as a hub for Logan production worldwide.

Ford is the country's second motor-vehicle producer. In March 2008 Ford paid €57m for a 72.4% share of Automobile Craiova and pledged to invest a further €675m (US\$880m) in recapitalizing and modernizing the plant, where it plans to build up to 300,000 cars a year by 2013, with around 90% being exported. In May 2009 Ford had a 95.63% stake in the company. Ford Transit Connect (both the passenger-carrying and van models) was the first Ford model produced in Craiova. It was to have been followed in 2010 by low-capacity car engines and a small-class car, and the launch of a third model, a small commercial vehicle, scheduled for 2011-2012. However, the 2009-2010 recessions derailed these plans, and Ford had to ask the government to extend the contract deadlines for meeting investment and production targets at Automobile Craiova. The Craiova factory will start production of a small car—one not currently in Ford's portfolio—at the end of 2011 at the earliest (and it may well be delayed until 2012). The aim is to produce 150,000 units per year initially, and although the original plan had been to produce 250,000 vehicles by the end of 2011, Ford is still aiming to produce 300,000 per year by 2013. In early 2010, at the peak of the recession, the factory was producing only about five Transit Connect vans per day, but this had risen to about 85 per day by mid-year. Ford plans to employ 3,500 people in the next two years, in addition to the 3,500 it took over from Daewoo (Verdes, 2011).

Total production of passenger cars rose by 21% year on year in 2009, to 279,320 units, boosted by the foreign demand arising from car-scrapping schemes in Western Europe, and by 15.8% in 2010, to 323,587 in 2010. Exports of passenger increased by 58%, to 242,688, in 2009, and by 19.4%, to 289,855, in 2010. Exports of cars thus accounted for almost 90% of domestic production in 2009-2010, an unusually high percentage because of the car-scrapping schemes. Export growth has been driven almost exclusively by Dacia, first with its Solenza model and now with the Logan, Sandero and Duster. In addition, Dacia exports tens of thousands of CKD kits for assembly abroad, mainly to Russia and Morocco.

Having experienced strong growth up to 2008, imports of passenger cars declined in 2009 by 52% year on year, to 91,457, and they fell further in 2010, by 21.4%, to 71,928. Leading car dealers include Porsche Romania and Romcar. Porsche Romania imports car brands of the Volkswagen stable and is the largest automotive importer. The other large foreign importer is Renault. In 2009-10, in response to the economic crisis, the government amended the tax regime to try to prevent used-car imports from eroding demand for new cars, especially domestically produced cars. A three-fold increase in the pollution tax for second-hand cars has made them more expensive on the Romanian market, and fewer and fewer of them will be imported (second-hand cars account for two-thirds of total cars first registered in Romania). Producers and importers of new cars will also benefit in 2011 from the government's decision to keep the car scrap page scheme under the same terms as in 2010, with three vouchers worth Lei 3,800 (US\$1,246) each per acquisition. We expect imports to begin to pick up modestly from 2011 as incomes and lending growth recover.

Figure 3. The Romanian vehicle production by category



Source: International Organization of Motor Vehicle Manufacturers; [www.oica.net](http://www.oica.net)

### **2.3 Solutions to overpass the crisis and to increase future international competitiveness**

It is true that the automotive sector is in a serious recession. Worldwide demand has decreased dramatically. Factories produce less or sometimes no produce at all. But the crisis could be the beginning of a new automobile era.

The car has over 100 years and probably even in the next 100 we can not miss it. Demand for a means of personal travel will return in next years and the factory production lines will be filled ever again. But perhaps the future will bring us something else. Not outside, but under the hood where were howling multi-cylinder engines could be replaced by a pleasant hum (Aitken, Robertson & Johnson, 2010).

The latest studies in that field show that for the first time in 100 years is a real chance to impose solutions on the market and drive than other classic internal combustion engine. The future is of electric motors.

Therefore we believe that manufacturers that implement innovative technical solutions now, i.e. at the right the time comes, will have the best chance of getting out quickly from the crisis.

Alternatives to conventional propulsion will dominate not very distant future and will ensure continuity of human mobility with the latest drying oil reservoir on the planet. Researchers now work on improving their power solution and, most importantly, on reducing costs. Currently not many people can afford an electric motor under the hood of the car: a KW/hour costs 1000 Euros; in addition there are other problems such as weight, distance, duration and frequency of loading supply cycles (Pilegaard, Moroz & Neergaard, 2010).

Changes will not be realized today for tomorrow. Systemically transformations from the auto industry will follow very slowly so that in 10 or 15 years we will go also on gasoline. But the passage, though long, will be one smooth. Already appeared and will continue to gain ground the hybrid models, and once the cost issue eliminated, the electrification trend will not be stopped.

Biofuels are currently highly acclaimed by various circles, but still there will be no dilemma "in the tank or bowl" because the agricultural areas are limited. The solution that is currently the most successful is gas engines (LPG), but also those will be over at last. And the hydrogen ones are in the field of science fiction, already (Macduffie & Fujimoto, 2010).

From my point of view, beyond the crisis, a significant impact on new car sales is old car sales boom and if you look at the figures published by DRPCIV, we see that in the last six months, were registered with 77% more old cars than new ones (183,000 vs. 104 000) and this has been possible primarily due to inconsistencies in the car tax legislation, last year.

In recent years, companies involved in this industry (manufacturers, suppliers, importers, dealers) have invested very much money in business development and now, due to lower demand, many of them see themselves in a position to close doors.

Because of these investments, Romania became a Mecca of parts manufacturers, auto industry directly generating 200,000 jobs and a turnover equivalent to 8% of GDP. Although this industry is one of strategic importance for Romania's economy, the Government did nothing to help it.

It is clear that if sales will not recover in coming months, the auto industry will enter in collapse in the sense that at least 25-30% of employees will become unemployed and suppliers will bankrupt on the ends.

### **2.4 Previsions for the next period**

Romania's car production could go up by as much as 75 percent in 2014 compared to last year, to around 520,000 units produced locally, according to a recent study by PricewaterhouseCoopers (PwC). This would be the third fastest growth pace in Central and Eastern Europe.

Romania will become the sixth biggest car producer in the region by 2014, following Russia, Turkey, the Czech Republic, Poland and Slovakia. The country will outrun Hungary, Ukraine and Slovenia, PwC also foresees.

Is expected a strong increase pace for the Romanian car industry in the following five years, as the recent investments in the car plant in Craiova will become fully operational, and the production capacity in Pitesti will grow to cater the increasing demand for new models.

The local car production grew in Romania by 24.7 percent in the first seven months of the year, to 219,656 units. Automobile Dacca produced the bulk of it – 215,463 vehicles, while Ford, 4,178 units is true that the automotive sector is in a serious recession. Worldwide demand has decreased dramatically. Factories produce less or sometimes no produce at all. But the crisis could be the beginning of a new automobile era.

### **3. CONCLUSION**

The presence of the car is actually a delicate problem to be solved by moderation of urban human addiction to the automobile, the emergence of a new culture of consumption, reduced road violence and negative effects on the, by valuing the transport offer with "commune car."

Romania's EU accession, involves major environmental responsibilities, namely economic, political, demographic and socio-cultural environment. Romanian automotive industry is highly internationalized, being probably the only national competitive sector able to be integrated in the current conjuncture of internationalization and globalization of world economy. Creating a single impressive market, by dissipation of trade barriers will mean for the Romanian automotive manufacturers a new challenge, that of creating a highly competitive sector.

Production, market and competition in automobile are in Romania is still at their beginnings under the influence of internal and international requirements of quantity, quality and structure. Currently, Romania, as a member of the European Union since January 1, 2007, faces new economic opportunities that will be marked also in the future to improve production and sale of cars, which have a powerful drive effect for the Romanian economic system.

### **REFERENCES**

- Aitken RA. et al, 2010. Personal Property Financing: Manufactured Housing and Auto Finance, *Business Lawyer*, Vol. 65, No. 2, pp. 621-628.
- Anghelache C., 2009. *Romania 2009. Economic state in profound crisis*, Economic Publishing House, Bucharest, Romania.
- Barney J., 2006. *Strategic management and competitive advantage. Concepts and cases*, Prentice Hall, Upper Saddle River.
- Campbell J. and Pedersen O., 2007. Institutional competitiveness in the global economy: Denmark, the United States, and the varieties of capitalism, *Regulation & Governance*, Vol. 1, No. 3.
- Craig B.J. et al, 2008. Leveraging Family-Based Brand Identity to Enhance Firm Competitiveness and Performance in Family Businesses *Journal of Small Business Management*, Vol. 46, No. 3.
- EL Ouardighi F. and Kim B., 2010. Supply quality management with wholesale price and revenue-sharing contracts under horizontal competition, *European Journal of Operational Research*, Vol. 206, No. 2, pp. 329-340.
- European Automobile Manufacturers Associations, 2010, European Union Economic Report, Brussels, December.
- European Institute of Romania, 2005. Cross-Country Study on External Competitiveness: Bulgaria, Croatia, Romania.
- European Commission, 2005. EU Policy in the area of competition and the consumer, Luxembourg, pp. 32-47.
- Hontou V., Diakoulaki D. and Papagiannakis L., 2007. A multicriterion classification approach for assessing the impact of environmental policies on the competitiveness of firms, *Corporate Social Responsibility and Environmental Management*, Vol. 14, No. 1.
- Gavrilă I. and Gavrilă T., 2008. *Competitiveness and competition environment. Promoting and protecting competition in E.U.*, Economic Publishing House, Bucharest.
- Globis GmbH, 2010. Romanian Automotive Market: Passenger Cars, Components and Spare Parts 2007/2008 -2010, *Automotive Research Reports*, pp. 34-72.
- Lianu C., 2008. *Management of export strategies at national and regional level*, Economic Publishing House, Bucharest.
- Lei-Yu Wu et al, 2008. Internal Resources, External Network, and Competitiveness during the Growth Stage, *Entrepreneurship Theory and Practice*, Vol. 32, No. 3.
- Marcussen M. and Kaspersen L., 2007. Globalization and institutional competitiveness, *Regulation & Governance*, Vol. 1, No. 3.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- Macduffie JP. and Fujimoto T., 2010. Why Dinosaurs Will Keep Ruling the Auto Industry, *Harvard Business Review*, Vol. 88, No. 6.
- Miao Q. and Wang X., 2009, Empirical Research on Relationship between International Entrepreneurial Opportunities and Performance of Automotive Enterprise, *Proceedings of International Conference On Management Science & Engineering (16th)*, VOLS I AND II, pp. 1644-1649.
- National Association of Exporters and Importers from Romania, 2008. *Romania – member country of the European Union. Challenges of the exterior trade*, Economic Publishing House, Bucharest.
- National Institute of Statistic, Romania's Statistic Annuary, 2000-2009, <http://www.insse.ro>
- Pilegaard M. et al, 2010, An Auto-Ethnographic Perspective on Academic Entrepreneurship: Implications for Research in the Social Sciences and Humanities, *Academy Of Management Perspectives*, Vol. 24, No. 1, pp. 46-61.
- Popescu I., 2010, PwC report: Romania, sixth largest car producer in the region by 2014, outrunning Hungary and Poland, *Romania Insider*, 24 August.
- Porter M., 2008, *About competition*, Meteor Press Publishing House, Bucharest.
- Romania's Government, 2007, Sectoral Program *Increasing Economic Competitiveness*, pp. 45-52.
- Rugman A. and Collins S., 2009, *International business*, 5TH Edition, Prentice Hall.
- The Association of Automotive Manufacturers of Romania, 2010, Yearbook ACAROM 2010, pp. 58-62.
- The Association of Automobile Manufacturers and Importers, 2010, *Automotive Statistical Bulletin*, January – December.
- The Economist Intelligence Unit Limited, 2011, *Romania: Automotive Report*, January 16<sup>th</sup>.
- Verdes D., 2011, 3Q: Henrik Nenzen, managing director, Ford Romania, *Business Review*, No. 14.
- Wei-Ping WU, 2008, Dimensions of Social Capital and Firm Competitiveness Improvement: The Mediating Role of Information Sharing, *Journal Of Management Studies*, Vol. 45, No. 1.
- World Economic Forum, 2010, Global Competitiveness Report 2010-2011, pp. 284-285.
- World Bank, 2011, *Doing Business 2010*, page: 147.
- Zinnes C. et al, 2001, Benchmarking competitiveness in transition economies, *Economics of Transition*, Vol. 9, No. 2.

# EDUCATION FOR SUSTAINABLE DEVELOPMENT

Stoika Radu

Academy of Economic Studies, Bucharest ,rstoika@gmail.com

## ABSTRACT

The European Union faces now an important number of interlinked priorities in the early 21st century, including the economic and social consequences of the global financial crisis, climate change, declining water and energy resources, shrinking biodiversity, threats to food security and health risks. Education for sustainable development in a lifelong learning perspective is essential for the achievement of a sustainable society and is therefore desirable at all levels of formal education and training, as well as in non-formal and informal learning. Education and training are indispensable to achieving a more sustainable Europe and world should be regarded as crucial in the process of lifelong learning and should, where appropriate, be mainstreamed into all levels and aspects of education and training, in order to strengthen the capacity of citizens to cope with imminent unpredictable problems and to find long-term solutions for these in many different situations throughout life. Through this article we intended to make a critical overview of the implementation of financed programmes from European Commission focused on mobility for students.

## KEYWORDS

Education, Training, Human Resources, Development

## JEL CLASSIFICATION CODES

J00, M53, M54

## 1. INTRODUCTION

According to recent years, three main areas have been identified that affect the requests registered by university graduates. An important trend is the emphasis on education and training is seen by many as the most important factor influencing economic growth in accordance with the 2006 World Bank study. The concept of knowledge society was made to indicate not only widen participation in higher education or knowledge-based sectors of the economy or high technology, but rather a situation in which the characteristics of work organization is changing under the important and growing influence of knowledge. Another direction shows the changes in the labor market structure. In 2000, it was introduced the concept of "labor market transition" to indicate how in modern society, the demarcation lines between work, leisure, education and care, have been blurred to such loss that lead to increased patterns of mobility and flexibility in order to "de-standardization of learning and overall emphasis placed on employment opportunities. There is thus an important proof of the fact that the transition is non-linear and chaotic, being influenced by the fact that many early school graduates are affected by being in a precarious financial situation. Last direction refers to the internationalization and globalization of product markets and labor markets and their impact on higher education. Directions above creates new indicators on the skills that people should be equipped with:

- "*Innovation and knowledge management*" = derived from the fact that workers are often expected to do more than a simply set of predefined tasks;

- "*Professional expertise*" = a number of graduates of higher education are expected to become experts in their professional area. Experts still distinguish their mental organization started by the upper and the ability to remember specific knowledge domain and how to address problems, perform diagnostics and statistics, use

automated procedures, which have intuitive feelings regarding solutions with the ability to properly deliver conclusions and interpretations;

- "*Functional flexibility*" = working environment is very dynamic. Rapid developments in technology, markets, organizations and relevant knowledge require the university graduates have access to various challenges directly related to their expertise and acquire new knowledge quickly from the system. This has implications for the changing job content, the reconfiguration structure positions within the organization or in another job or mobility in other organizations. To be flexible, graduates need a well-developed capacity to adapt to rapid changes in learning new skills - *skills and ability to cope with change*. Graduates can also change the environment in which they work by making the best use of their existing skills;

- "*Mobilizing Human Resources*" = university graduates will have the ability to effectively mobilize their skills and to concentrate their own work on others. First, higher education graduates will be expected to possess a highly developed capacity to raise their skills so they can work independently when working individually and cooperate with others when we work together. Then, graduates may be called upon to mobilize capacities of others. This is associated with leadership skills involving the ability to communicate ideas and inspire others, to plan and to monitor work processes and they can make decisions when necessary. Compared to the first two issues, graduates must be able to organize their work in order to use all of available human resources and synergies in teams, establishing clear lines of communication and if necessary, adapt the working environment with their skills and with their peers or subordinates.

- "*International orientation*" = globalization and the blurring of national boundaries increases the importance of international orientation indicator. This requires not only a good knowledge of foreign languages, but also an ability to understand and empathize with other cultures, the willingness and ability to appreciate the limitations of their own national context, i.e. the development of intercultural skills. The new millennium brings with it a series of processes indicated at the end of last century, but now takes on a special scale. Among these we mention: the process of globalization, computerization of society, high professionalism of the workforce, post industrialization, growth momentum in services, health system and the free time.

In order to better achieve these goals, taking into account the set a strategic goals for the European Union made in Lisbon Strategy (to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion) and based on the fact that an advanced knowledge society is the key to higher growth and employment rates, the European Commission response in 2006 was to make available a Lifelong Learning Programme targeting schools, higher education area, vocational training and adult education sectors.

The policy priorities for the Lifelong Learning Programme have been adapted to the recent evolution of the European cooperation agenda in the field of education and training, through the strategic framework 'ET 2020' started in 2009. So in view of those changes prefigured by ET 2020 we intend to make a sum of recommendations related to better achieve its objectives.

## **2. LIFELONG LEARNING BASE FOR SUSTAINABLE DEVELOPMENT**

It is essential that the basis of qualifications of EU citizens to be constantly renewed at any stage of life to cope with the challenges and present and future technological developments. While quality education at primary, secondary and tertiary education is crucial, ongoing training and education outside the classrooms are becoming more important. In a rapidly changing global economy, knowledge becomes the most valuable asset of the EU. This created an increased need for (re)education and training in all stages of life. Various EU initiatives in this area have been refurbished under a single programme for Lifelong Learning. This programme has four main routines:

- **Comenius programme** designed to increase the quality of education in schools, strengthen its European dimension and promote mobility, language learning and a greater involvement. The tools to achieve them are partnerships between schools in areas of common interest and multilateral projects between schools in different countries for the development of teaching methods and curricula of us. This programme also finance educational networks, and twinning of individual schools, both "real" world, and in the "virtual."

- **Erasmus Programme** mobility for cooperation in higher education across Europe. Its various actions are not only students who wish to study and train in a European university but also professors or staff of companies that intend to teach in a partner university, and teaching non-teaching staff of higher education seeking training abroad. Erasmus was launched in 1987 as a support program for students in conducting a study period in another European country, with formal recognition of studies at the partner institution. Since 1995, he became a part of the Socrates Programme of the European Union, with a wider area of coverage.

Since 1998, Romania is a participant in the Erasmus Programme, higher education institutions participating deasemnea and other inter-university cooperation projects and thematic networks. Since 2007, with the launch of the Lifelong Learning, Erasmus component has changed the structure, diversifying its target groups and actions financed

- **Leonardo Da Vinci Programme** funds a wide range of activities including mobility projects, but also the development and transfer of innovation projects and strengthening of legitimate individual networks.

- **Grundtvig Programme** seeks to help adults as they advance in life to adapt to trade on the labour market and society by updating knowledge and skills. This program is aimed at students, teachers, trainers and others working within education organizations.

- **Jean Monnet Programme** promotes teaching and research in European integration as a course taught at universities in the world.

The current programme (2007-2013) has the "general objective" to contribute through lifelong learning to the development of the European Community as an advanced knowledge-based society, with sustainable economic development, more and better jobs and greater social cohesion, while ensuring good protection of the environment for future generations. In particular, it aims to foster *interchange, cooperation* and *mobility* between education and training systems within the European Union so that they become a world quality reference. The main focus in those programmes is the concept of *mobility*. In order to better highlight this concept we have to look at the number of people involved in mobility at European scale for the LLP programme.

Table 1. Situation of participants (2008/2009) at transnational mobility financed by EU through Lifelong Learning Programme

	Participants	Comenius	Erasmus	Leonardo da Vinci	Grundtvig	Study Visits
Mobility	Students (study)		168.000			
	Placements		30.000	55.219		
	Staff/teachers/trainers/ education specialists	11.370	36.000	12.521		4.219
	Adult education staff				1.780	
Total	11.370	234.000	67.740	1.780	4.219	
Percentage of total	3,56%	73,33%	21,23%	0,56%	1,32%	

From this table, its easy to observe that almost 73% of all mobilities at European level are those for students financed from Erasmus Programme.

From another point of view, we made a research using an online questionnaire regarding the impact of this programme on students. We was interested about details of respondents, various aspects about the level of education of each beneficiary, general and international competences, the transition between higher education area to the labour market and information about the first and the following jobs. We collected important data about the information and counseling of students, preparing for going abroad, logistic preparation, linguistic aspects, evaluation and re-integration, difficulties encountered.

If we correlate statistical data presented at the European level we see that there are significant differences between the choice of economic sector for internship placement, so that areas where students represented a percentage over 50% were those that focused on the production of electricity, natural gas, supply of air conditioning and construction. For data analysis, above we can conclude that there is a high interest - triple those observed in our surveyed period. As university academics first place position to provide valuable knowledge, but also as an intermediary between students - the future highly skilled workforce and economic

environment every year by development agreements with several companies in Europe. Looking from another perspective employers are becoming more interested in numbers receiving increasingly greater mass of students who intend to provide a package of practical knowledge more complete and current, designed to facilitate their insertion into future market labor. At European level universities identified the following problems related to their capacity to increase the number of future best qualified human resources resulting from mobilities:

- insufficient funds;
- recognition results from running these types of mobility;
- curricula do not include investments for longer periods of economic environment;
- there are still some deficiencies in advising the institutions of higher education on counseling and guidance to students;
- issues related to identifying opportunities for investment in housing for conducting an enterprise;
- difficulties in finding business partners in some countries.

Also in addition to these identified problems and perceived impact of the 3 parties involved in the mobility placement:

a. regarding students appreciate that they are becoming more aware of the importance of the need for highly qualified workforce for the European labor market and employment opportunities from abroad. The main defining elements in the decision to undertake a placement abroad is determined by the prestige of the partner institution and improving language skills. A large part of the mass of students - recipients expressed their desire to pursue an international career in their field of study after considering these mobilities better prepared for the labor market. According to data collected from final reports of students that they identify these types of mobility are particularly beneficial and indicating its intention to participate for the second time such mobility is the same cycle or in a higher education. Another important thing for students is to ensure an easier insertion in the labor market, development of generic skills and cross, creating a European civic anchored in intercultural diversity.

b. for institutions of higher education creates prerequisites for cooperation to ensure mobility and thereby increase the visibility and reputation of the institution at European level, broadening the educational offer through regular exchange of procedures and standards.

c. for these types of mobility organizations creates opportunities for collaboration with university research centers for developing new technologies, products and future services, ie competitiveness, increase default interworking with possession of a highly qualified workforce, ensuring its long term sustainability.

Extended mobility and the need for employability with adaptation to labour market needs, will play a significant role as well as the reduction of poverty and social exclusion. Furthermore, the Lifelong Learning Programme should continue to contribute to raise the quality and attractiveness of Education and Training in Europe. In addition citizenship and the promotion of cultural and linguistic diversity also have to be addressed. To find the right balance between "reinforcement of the current structure" and "innovation", between a "system approach" and an "individual approach" and between target groups will be a great challenge in order to assure the future sustainable development of Europe.

### **3. CONCLUSION**

In line to the EU political agenda which sets ambitious targets and expectations for education and training, that are oriented as well on the demographic change and on the need to create more "green jobs" we want to make several recommendations for the future implementation of this programmes:

1. The new programme should move towards a system-based approach to mobility across all sectoral programmes;

2. The new programme should emphasize "learning mobility" as an essential element of lifelong learning and an important means of enhancing people's employability. It should also promote the recognition of outcomes of the mobility actions. Learning mobility can be seen as a means to enhance people's, knowledge, skills and competences and contributes to their personal development. It develops their social and civic competencies, sense of initiative, cultural awareness and expression and as a result enhances their employability and adaptability

3. The international dimension of the new programmes should be strengthened by:
  - a) widening mobilities and partnerships to include countries outside the EU, while the main focus should still remain on Europe
  - b) making better links with other EU mobility programmes so we share outcomes and good practice
  - c) exploring the use of Virtual Mobility to involve other countries outside the EU
4. The acquisition/development of language competence should be a more important element in the next programme for all mobilities.
5. The future programme should support mobility of educational leaders and decision makers. They are a distinct group with an important multiplier role and have different needs to teachers, trainers and staff of education and training institutions.

The domain that we proposed to analyze in this paper it was large and very interesting, because of the complexity implied by the implementation of changes in European higher education under the Bologna process and the economic environment because of his dynamics. Bologna reforms provides some tools to change that, if implemented properly. European Union level unit will produce positive effects including the protection of the rights and interests of students. Results from analysis once again highlighted the importance of mobility for placements both in the European educational and economic environment as well as the need to intensify cooperation in view to approach and even reach the targets set for sustainable development at EU level by 2020.

## REFERENCES

- Sparrow, P.R. et al., 1997. *Redefining the field of European Human Resource Management: A battle between national mindsets and forces of business transition?*, John Wiley & Sons, Inc, London, United Kingdom.
- Ghergut, A., 2007. *General and strategic management in education: practical guide*, Editura Polirom, Iasi.
- Roșca, I.G, Petrescu, et al, 2008. Amfiteatru Economic. *Quality assurance systems in higher education.*, Bucuresti, Sp. Iss. 2, pp. 6-12.
- Severin I, et al, 2008, UNISO, *Mobility: Asset for Professional Development*, Iasi, pp. 163-167.
- CEDEFOP, 2009. *Future skill supply in Europe: Forecast up to 2020*, Publications office, Luxembourg.
- Decision No 1720/2006/EC of the EU Parliament and of the Council of 15 November 2006 *Establishing an action programme in the field of lifelong learning*, J.O. L327/45, Brussels, Belgium.

# REPORTING THE INVESTMENTS OF INTANGIBLE ASSETS IN THE ANNUAL FINANCIAL STATEMENTS OF THE COMPANIES

Nikolina Grozeva

*VFU Chernorizets Hrabar, Varna, Slavianska 16 str., Republic of Bulgaria*

## ABSTRACT

The rapid development of knowledge economy requires adequate presentation of investments in intangible assets in the annual financial statements of companies that develop and/or produce them. The purpose of this article is to investigate current accounting regulation and practice according to the financial treatment of investments in internally generated intangible assets in order to summarize the consequence for financial reporting of the companies.

## KEYWORDS

R&D, intangible assets, IAS/IFRS, NFRS for SME, financial statements

## JEL CLASSIFICATION CODES

M41

## 1. INTRODUCTION

Since 1980s and 1990s the world saw an increasing development of technologies, which announced the end of industrial society and the emergence of knowledge society and the “new economy”. The latter is described as an economy principally driven by information and knowledge. While the industrial society focused on the use of tangible assets to create goods and services and deliver value for investors, the knowledge society increasingly relies on intangible assets. In the realm of economic performance small enterprises as well big companies deliver result from the effective utilization and development of intangible assets, that no longer fall within the current framework of accounting principles and standards.

The predominance of intangible assets in the economic area provoked considerable interest, resulting in reports being issued by accounting bodies, standard setters, academics and government regulators addressing the inadequacy of the accounting model. It is widely argued that intellectual capital has always been a driver of corporate performance, that traditional management and financial accounting means are insufficient to account for intellectual capital and hence that financial statements are insufficient at expressing corporate value (Guthrie, 2001; Reed, 2001; Robertson & Lanfranconi, 2001) Since financial statements omit internally generated intangibles, the financial accounting framework is criticised as being inadequate and fails to communicate the most important asset and resources of today’s business (Rodov & Leliaert, 2002) Yet much of this work has failed to reach adequate reporting, and it has not been embraced by the financial community.

The **objective** of this paper is to outline the problems in accounting treatment of investments in intangible assets in Bulgarian enterprises and also the result of this process, namely internally generated intangibles and their recognition and reporting in the financial statements. Accordingly the **goal** of the paper is to find out the

potential distortions in financial statements, due to the unadequate accounting rules for recognition and valuation of intangible assets.

## 2. THE PRACTICE OF REPORTING INTANGIBLES IN FINANCIAL STATEMENTS

The wide interest of academics and accounting community in this topic is the reason for a simultaneous use of three different terms or categories characterizing intangible assets. Professor Baruch Lev (2001) summarizes, that in general the terms “intangibles” and “intangible assets” are used in accounting literature, “knowledge assets” by economists, and “intellectual capital” in the management and legal literature but they refer essentially to the same thing: non-physical claim to future benefits. Therefore in this paper we use the term “intangible assets” and “intangibles” interchangeably.

Nowadays there are significant expenditures invested in intangibles including resources such as human capital, the long-term customer base, product and process related technologies, information technology, and brands and intellectual property. To date, the traditional categorization of expenditures evident in the financial statements does not identify and measure expenditures on these intangibles separately from expenditures on tangible investment and current production (operating expenditures). (Moneva&Grozeva, 2010).

### 2.1. Accounting rules for intangible assets

The regulations concerning the recognition, reporting and disclosure of costs associated with the creation of intangible assets, are contained primarily in IAS 38 and NAS 38 Intangible Assets (hereinafter called ‘standards’ for short). The same standards, whose content is similar, regulate the procedure for recognition and evaluation of internally generated intangible assets arising as a result of conducted research and development in the company.

For the purpose of analyzing the alternatives of accounting treatment for R&D expenditures we need to shortly discuss appropriate accounting regulation. According to the general **asset definition** in the conceptual framework, assets are resources expected to yield *future benefits* that are *controlled* by the entity as a result of a past transaction. Control implies the ability of the organization to capture the future benefits generated by an asset. Assets are recognised if: (a) it is probable the future economic benefits attributable to the asset will flow to the enterprise; and (b) the cost of the asset can be measured reliably (International Accounting Standards Board (IASB) Framework). IAS 38/NAS 38 *Intangible Assets* narrows the asset definition for intangible assets. An ‘intangible asset’ is an *identifiable* non-monetary asset without physical substance.

In the realm of accounting for intangibles, however, a further distinction exists between treatment of internally generated intangibles and purchased intangibles.

Purchased intangibles are capitalized and placed on a company’s balance sheet. Internally generated intangible assets must be out of the ‘research phase’ and into the ‘development phase’ and then pass six additional tests (IAS 38/NAS 38):

- (a) The technical feasibility of completing the intangible asset so that it will be available for use or sale;
- (b) Its intention to complete the intangible asset and use or sell it;
- (c) Its ability to use or sell the intangible asset;
- (d) How the intangible asset will generate probable future economic benefits. Among other things, the entity must demonstrate the existence of a market for the output of the intangible asset, or the intangible asset itself or, if it is to be used internally, the usefulness of the intangible asset;

- (e) The availability of adequate technical, financial and other resources to complete the development and to use or sell the intangible asset; and
- (f) Its ability to measure reliably the expenditure attributable to the intangible asset during its development.<sup>25</sup>

In accounting standards there is an assumption that intangible assets are created in two phases: the research phase and the development phase. Standards provide definitions for these two phases:

*'Development* is the application of research findings or other knowledge to a plan or design for the production of new or substantially improved materials, devices, products, processes, systems or services prior to commencement of commercial production or use.'

*'Research* is original and planned investigation undertaken in order to obtain new scientific or technical knowledge and understanding.'<sup>26</sup>

The cost price of an internally generated intangible asset should include all directly associated costs necessary for the creation, production and preparation of an asset in order to be brought to a condition to function in the way intended by management. Examples of directly associated costs are:

- a) costs of materials and services used or consumed in the creation of an intangible asset;
  - b) costs of employee benefits (as defined in IAS 19 *Employee Benefits*) arising from the creation of an intangible asset;
  - c) fees for registration of legal rights; and
  - d) amortization of patents and licenses which are used to create the intangible asset.<sup>27</sup>
- The standard adds that the cost of sales, personnel training for working with the asset, initial operating losses and certain others are not part of its cost price.<sup>28</sup>

IAS 38 specifically prohibits recognition of internally generated brands, mastheads, publishing titles, customer lists, and 'items similar in substance'.

## **2.2. Results from applying accounting rules in the financial statements**

I made an empirical study of the annual financial statements of 66 Bulgarian software companies, most audited in respect to my dissertation work. It shows, in the most general sense, that the costs of creating intangible assets are treated for accounting purposes ambiguously. In other words, the rules and regulations in the cited accounting standards are interpreted and implemented differently in different companies. Furthermore I reached some conclusions about the information's quality of financial statements, developed under current conceptual framework and further regulations, in terms of presenting the R&D investments:

**First:** For investors, the financial reporting of research and development expenditures has a great impact on the reported net income (if the R&D effort is not constant over time). Moreover, the presentation of R&D investments as current expenses in annual financial statements prevents outsiders from properly evaluation of the growth opportunity set in a context of information asymmetry. For standard setters, the accounting treatment of R&D expenditures is important as it relates to their conceptual framework - financial reports should provide useful information to investors. Managers typically take decisions about intangibles expenditure with little information about the returns from past expenditures of this type or the likely future return from that particular expenditure.

**Second:** From an accounting perspective there are several different opportunities for treating research costs. The decision encompasses four alternatives:  
– recognise as an asset;

---

<sup>25</sup> IAS 38, par.57, NAS 38, par. 3.3.

<sup>26</sup> See definitions to IAS 38 and NAS 38.

<sup>27</sup> IAS 38.66

<sup>28</sup> There again in par. 67

- recognise as an intangible expense;
- recognise as a general expense aggregated with S,G&A; and,
- disclose only without recognition.

More than a half of the enterprises disclose the research expenditures as a general expense and only 10% recognize some of R&D expenses as intangibles in the balance sheet.

This ambiguous treatment of R&D expenditures is due to mainly two difficult decisions faced by the accountants and managers: measurement of the internally generated intangibles and the right definition of the end of “research” phase and the beginning of “development” phase, i.e. the boundaries between the two activities.

### **2.3 Problems with recognition and measurement of intangibles**

The conceptual framework of accounting which governs financial reporting in most countries, defines – implicitly or explicitly – assets as the “*probable* future economic benefits *controlled* by the firm that can be *reliably* measured”. The first measurement problem arising from this definition is the lack of an “active market” for many intangible assets means that a “reliable measure” of future benefits is difficult to determine.

Concerning the first problem it could be summarized, that there is no reason for treating internally developed intangible assets differently from other assets of the enterprise - internally developed tangible assets for example. On the other hand it is often difficult for the accountants to recognise internally generated intangible assets because, when the expenditure to develop an intangible asset is incurred, it is often very unclear whether that expenditure is going to generate future economic benefits which will be sufficient to at least recoup the expenditures made. Therefore the standard setters bring into use the aforementioned condition-based capitalization of such assets, i.e. reaching technical and commercial feasibility. The uncertainty of such estimation prevents many intangible assets from being recognised as they are being developed. It is this perceived lack of reliability of the linkage between expenditures and future benefits that pushes towards the treatment of such expenditures as period cost (as an individual intangible expense of the income statement or also as a general expense aggregated with S,G&A). It is not until much later, when the uncertainty is resolved, that the asset may be capable of recognition. As current accounting requirements primarily focus on transactions, an event like the resolution of uncertainty surrounding an internally developed intangible asset is generally not captured in company financial statements. (Abernethy and Wyatt, 2003)

Intangible assets are subject to another measurement problem. Unlike many tangible assets, the cost to acquire an intangible asset (such as research and development expenditures) is difficult to directly link to a future revenue inflow. This linkage is necessary if the expenditure is to be recognised as an asset.

Standards have adopted the principle that costs incurred for internal project development in the so-called ‘research phase’ are not in one way only linked to a specific purpose in terms of accounting and therefore, their inclusion in the value of a future intangible asset is prohibited, i.e. these costs can not be capitalized and should obligatory be recognized as current for the period. From a certain moment, which standards define as ‘technical feasibility of completing the intangible asset’ and that marks the beginning of the second phase of the creation of the asset (called the ‘development phase’), the costs incurred can be capitalized. This term has been introduced because the distinction of the two phases based only on definitions is practically difficult. On the other hand, the criterion ‘technical feasibility’ itself is also difficult to be applied in practice. This gives the accountants in particular, and the reporting enterprise as a whole, relative freedom for its use.

Used by the standards, the criterion ‘technical feasibility’ leads to two major problems in accounting practice:

- Different interpretations of the criterion of technical feasibility result to that that capitalization of costs in the value of intangibles is done in different ways in the accounts of various companies. Using different approaches leads to breaches of requirements with the basic accounting principle<sup>29</sup> 'comparability', according to which information in the report should be possible to be used in comparisons of financial statements between separate companies in the sector.
- The possible non-recognition of costs of intangible asset development with reference to the criterion 'technical feasibility' leads to breaking the principle 'materiality' and 'match of revenues and expenses', which is expressed in the fact that investors are not provided key information about certain assets.

Each of the presented problems results in preparing a financial statement that gives a distorted picture to external users of the financial position and financial results of the company. For example, improper capitalization of costs leads to subsequent unjustified increase in the carrying value of assets in the share of non-current assets and, at the same time, to incorrect presentation of cash flows from investment activities. Also, non-inclusion of the listed expenses in the income statement for the period leads to unduly increase of the financial results. Improper allocation of costs for research and especially of costs for development is reflected in the misstatement of assets on the balance sheet on one side and distorts financial results on the other. In other words the cash, allocated to intangible expenditures, will be classified as either investing or operating cashflows in the cashflow statement. This classification predetermines the subsequent accounting treatment. Intangible expenditures classified as investing items are recognized as intangible assets on the balance sheet. Intangible expenditures classified as operating items are treated as flows. They are recognized as expenses in the income statement aggregated into cost of sales or sales, general and administration expenses.(Abernethy and Wyatt 2003).

Amir and Lev (1996) confirm this conclusion in a case study. They investigate the value relevance of financial accounting and non-financial information of independent cellular companies. The cellular industry is characterised by high technology, rapid innovation and requirement for capital-intensive investment in new technological developments in electronics and computing, that are highly uncertain with long payoff periods. Amir and Lev argue that financial variables of the companies in this industry are often distorted by accounting practices such as immediate expensing of capital investment, and by the effects of arbitrary depreciation and amortisation rules. Their first finding is that earnings and book value of equity for these wireless industry enterprises are not associated with the enterprises' market value (meaning this accounting information is not useful for valuing these enterprises). Investigating this further, Amir and Lev find cellular companies' S,G&A expenses divided by revenue median values vary between 42 percent and 60 percent, which is two to three times the corresponding ratios of other industrial companies. They find that these latter S,G&A expenses under GAAP, which includes intangible expenditures,are valued as assets by stock market investors. This situation is due to the lack of a classification system for the systematic reporting of intangible assets and expenses according to their type. It means that the cost to the firm of intangible activities is hidden in the cost of sales or sales, general and administration accounts.

The second distortion flows from the misclassification of investing cashflows as operating cashflows. There are several consequences related to the presentation of intangible investments in each of the financial statements.

In the cash flow statement the amount of cash flows resulting from the operating and investment activities is misrepresented. In the income statement for an accounting period with a high level of R&D investments written off as

---

<sup>29</sup> Accounting principles are regulated in the Conceptual Framework to IAS and in the Accounting Act. Compliance with them ensures the achievement of the main objective of the annual accounting report, namely the true and fair view of the financial position, cash flows, activities and financial performance of the reporting entity.

expenses as incurred, the earnings are underestimated. In the balance sheet the percentage of enterprise's fixed intangible assets is misstated. (Beaver & Ryan, 1997)

### **3. CONCLUSION**

Current accounting practices focus on tangible assets both because they were historically important, and because they are relatively easy to deal with, since they can be seen and measured and are usually bought from another firm. By contrast, current accounting procedures provide only minimal information about intangible assets. R&D, however, differs from other capital and financial inputs (e.g., property, plant and equipment, inventory or project financing) along several important dimensions. First, many R&D projects are unique to the developing firm, while most capital investments, share common characteristics across firms within an industry. Consequently, investors can derive little or no information about the productivity and value of a firm's R&D from observing the R&D performance of other firms. Second while most physical and financial assets are traded in organized markets, where prices convey information about asset productivity and values, there are no organized markets for R&D and hence no asset prices to derive information from. Third, accounting measurement and reporting rules treat R&D differently from other investments. R&D is immediately expensed in financial reports, so that no information on value and productivity changes of R&D is reported to investors. (Aboody&Lev) Intangible assets vary across firms, e.g. from brand name, patents, know-how but they do share some common features. The first is that traditional accounting rules either understate their value or completely ignore them; the balance sheets of these companies show little evidence of their value. The second is that a significant portion of the market values of these firms comes from these intangible assets. Finally, the failure to value these intangible assets distorts both accounting measures of profitability such as return on equity and capital market measures of value.

### **REFERENCES**

- Abernethy, M., and A. Wyatt, 2003. Financial Reporting and Intangible Assets. Chapter 3 in *Study on the Measurement of Intangible Assets and Associated Reporting Practices*, prepared for the Commission of the European Communities Enterprise Directorate General.
- Hunter L. C. et al, 2009. Identifying Corporate Expenditures on Intangibles Using GAAP, Melbourne Institute Working Paper Series, Working Paper No. 12/09
- Lev, B. and Zarowin, P. The Boundaries of Financial Reporting and How to Extend Them., *Journal of Accounting Research*, 37/1999, pp. 353-385.
- Lev, B., 2001. Intangibles: Management, Measurement, and Reporting. Washington DC: Brookings Institute Press.
- Robertson, D. A., and Lanfranconi, C., 2001. Financial reporting: Communicating intellectual property. *Ivey Business Journal*, Vol. 65, No. 4, pp. 8-11.
- Reed, A., 2001. Pounds of flesh. *Financial Management*, Vol. 4, pp.12-13.
- Rodov I./Leliaert P., 2002. FIMIAM: Financial method of intangible assets measurement. *Journal of Intellectual Capital*. Vol. 3, No 3, pp. 323-336.
- Guthrie, J., 2001. The management, measurement and the reporting of intellectual capital. *Journal of Intellectual Capital*, Vol. 2, No 2, pp. 27 - 41.
- Aboody, D., & Lev, B., 2000. Information asymmetry, R&D, and insider gains. *Journal of Finance*, Vol. 55, pp. 2747-2766.
- Moneva, I. Grozeva, N., 2010. The fair value measurement of intangible assets: A critical overview of Bulgarian financial reporting legislation. *Proceedings of The Conference Economies of Balkan and Eastern Europe Countries in the changed world*, Kavala, Greece, May 7-9, 2010, pp.220-228.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Wyatt, A. and Abernethy, M., 2003. Accounting for intangible assets : a conceptual framework for measurement and reporting on intangible assets. The Institute, Melbourne, available at <<http://www.law.unimelb.edu.au/ipria/publications/workingpapers/IPRIA%20WP%2012.03.pdf>

# COST ACCOUNTING ROLE IN AN ENVIRONMENT WITHOUT BORDERS

Radmila Jablan Stefanović

*University of Belgrad, Faculty of Economics, Belgrade, Serbia, [rasty@ekof.bg.ac.rs](mailto:rasty@ekof.bg.ac.rs)*

## ABSTRACT

Last decades business environment has changed and will changing more than ever in the years that have to come. Companies operate in an extremely dynamic world of interdependent and nonlinear events. The management is expected to lead the company towards the achievement of set objectives, which in the contemporary settings of marked external and internal complexity requires sophisticated expert knowledge and skills, as well as quality information support. Constant and dramatic changes in contemporary competitive environment, as well as the need of integrating into European and world market flows, require the knowledge of a wide focus of cost and performance management of companies. The contemporary business environment inevitably requires the restructuring of cost accounting and new approaches to costing and cost management, in the attempt to improve the quality of cost information that has always been the object of particular interest. Only a flexibly designed cost accounting information system can qualitatively respond to the increasingly numerous and various information requirements.

In this paper we discuss the role cost accounting has in offering support to managers at all managerial levels. Some of the new tools, techniques, approaches and concepts to costing and cost management have been emphasized (ABC/ABM, TQC/TQM, LCPC/LCPCM, VSA/VSM).

## KEYWORDS

management, strategy, competitive advantages, cost accounting, cost management

## JEL CLASSIFICATION CODES

M41

## 1. INTRODUCTION

The process of globalization is creating a world in which individual nation states are increasingly interdependent and interconnected. New environment brings new challenges and problems which inevitably impose the need for serious reconsideration of past business philosophies of companies based on stable and foreseeable business conditions. Constant and dramatic changes in contemporary competitive environment, as well as the need of integrating into European and world market flows, require the knowledge of a wide focus of cost and performance management of companies.

Cost accounting (CA), as a basic information source useful for business decision-making, has the fundamental role within the entire accounting information system of a company. The contemporary business environment inevitably requires the restructuring of CA and new approaches to costing and cost management (CM), in the attempt to improve the quality of cost information that has always been the object of particular interest. Only a flexibly designed CA information system can qualitatively respond to the increasingly numerous and various information requirements. Integrating the internal and external aspects it is possible to provide quality information for strategic management of a modern company. Strategic cost management (SCM) implies the use the cost data to develop and identify superior strategies that will produce a sustainable competitive advantage.

The purpose of the paper is to highlight the role cost accounting has in offering support to managers at all managerial levels. Some of the new tools, techniques, approaches and concepts to costing and cost management have been emphasized (ABC/ABM, TQC/TQM, LCPC/LCPCM, VSA/VSM).

## **2. COST ACCOUNTING AS A RELIABLE INFORMATION SUPPORT**

The accounting of a company has, basically, the objective to create a quality information basis which, ultimately, has to be in the function of efficient company management. Cost accounting, which measures and reports financial and non-financial information related to the organisation's acquisition or consumption of resources (Horngren, et al., 2005), has an exceptionally important position within the entire accounting information system of an organization because it provides information to both management accounting and financial accounting as subsystems of the accounting information system. When its information is intended for the financial accounting it measures product costs in compliance with the strict legal and professional regulations; however, when its information is used for internal purposes it provides the basis for planning, control, and decision-making. Thus, information support of CA is not exhausted by providing information for the purpose of reporting balance sheets and income statements of the company as a whole, which is its traditional task. It also provides valuable information support for the management in performing the systematic management control as well as in making various business and financial decisions. This means that its information support is expanding towards the creation of relevant information for internal reporting on a company's business activities – especially for short term periods and in smaller organizational segments. Cost data for the purpose of internal reporting are meanwhile relatively free from the constraints of legal and professional regulations. Accounting data used for external reporting very often do not completely satisfy managers' needs for decision-making purposes. Attempts at slight modifications of financial accounting systems for managerial purposes rarely end happily – like eating soup with a fork: it is possible, but it is far from effective (Maher, 1997).

Over the last few decades, meeting management various information needs related to making individual business and financial decisions has been emphasized as the fundamental CA task - assumes calculating costs and benefits of individual business alternatives. By using unroutine cost-benefit analyses, CA creates reports based on the concept of relevant information (Horngren et al., 2005). The concept of relevant costs (relevant revenues as well), in choosing among alternatives, assumes considering the expected future costs which differ in alternative actions. Relevant cost analysis generally emphasizes quantitative financial information, but in decision-making, managers must pay due attention to quantitative non-financial and qualitative information and must, occasionally, give greater significance to qualitative or non-financial quantitative information. Non-financial information concerns legal and ethical considerations and long-term effects of decisions on the company image, employees' morale and the environment, and is relevant to particular business decisions.

While designing cost accounting information systems one must not lose sight of the following (Maher,1997): decision-makers' needs must be met; different cost information is used for different purposes – what works for one purpose will not necessarily work for other purposes; cost information must meet the cost-benefit test – namely, cost information can always be improved, but before establishing a new system, one basic question should be asked: will the benefits outweigh the costs? It is of vital importance that cost accounting information systems should be flexibly designed. Due to the fact that they are relatively free from legal and professional constraints and are in function of the company management, they are, in accordance with the needs of internal users, able to generate a broad range of information. Organizational and methodological settings and functions are adapted to management requirements. Being flexible, it will be able to adapt to changes occurring in the business environment as well as in the company itself and, accordingly, respond in a qualitative manner to numerous and various information requirements of the company management. Today, there are new requirements for changes and continuous improvement so that the management could have adequate information support in managing the company – particularly key strategic variables. The extent to which CA is capable of helping the management in serving the abovementioned purposes fundamentally determines its significance, i.e. the usefulness of its information. It is of great importance that the accountants should know their job well and seek the ways to add value to their

organizations. In many successful companies in the world the accountant is a member of multifunctional teams as a reliable associate.

### **3. NEW ENVIRONMENT AND THE EMERGING THEMES**

Last decades business environment has changed and will changing more than ever in the years that have to come. Vastly improved transportation and communications have led to a global market for many manufacturing and service firms. Worldwide competitive pressures have changed the nature of an economy and have caused many manufacturers to change dramatically the way in which they operate their business. Market globalization creates a new business environment - some traditionally powerful markets have weakened while others have grown, cultural and geographical distances between people are fading, innovation in all aspects (technology, markets, finance, etc.) has become paramount for companies' sustainable competitive advantage.

Achieving maintaining and improving the competitive advantages of companies, is a condition sine qua non of modern business. The trends of globalization followed by the removal of national barriers inevitably result in sharp intensification of international competition. Powerful integration relations require systemic perception and coordination of business processes of all involved organizations. In recent years, companies worldwide have considerably changed their strategies – from internally focused strategies to externally focused ones, whose top priority is customer satisfaction. Numerous studies reveal that companies emphasize creating long-term value for shareholders are likely to outperform those that focus on preserving shareholder value in the short term (Horngren, et al. 2005). Moreover, customers are more fastidious – they insist upon low costs/prices, quality, time and innovations. This imposes the need of redirecting from mass production of standard products and the strategy of the economy of scope to the strategy of the economy of scale of company activities. Regardless of the specific commitments in terms of business strategy, the modern company is, inevitably, faced with the requirement of cost competitiveness. Numerous and skilled competitors with new sophisticated approaches to cost management and cutting edge technological achievements force it to manage costs carefully and skillfully.

In modern conditions of great external and internal complexity, achieving and maintaining competitive advantages is not possible without adequate information system. As the environment changes, the traditional CA system may not yield sufficient useful information for a significant number of organizations. Thus, advanced cost management accounting systems are emerging. The major trends that are bringing about these changes are: customer orientation, total quality management, time as a competitive element, advanced in information technology, advanced in the manufacturing environment, service industry growth, global competition. (Hansen&Mowen, 1997).

Many organizations have faced a new environment that inevitably affects CA and CM. There are a few new key themes that should be stressed. First of all – customer in focus is the of the organization's success. "To be customer-driven" lies at the heart of CM; among all aspects of business operations which the management must take care of, the customer is the most important because without him the organization loses its purpose. There is a permanent question in the way business operations are performed which puts the emphasis on customer satisfaction: how can value be added for the customer? The focus is on the most profitable customers and the ways to first attract them and then retain them. Today, companies first identify customer needs and demands, and then proceed with the product design and production. Value chain and supply chain analysis is also a key theme. Value chain (VC) facilitates consideration of the possibilities of achieving and retaining competitive advantage through strategically relevant activities. By using VC and activity cost information companies can identify strategic advantages on the market. Supply chain (SC) assumes the idea of an "extended company" and the focus expands from company production VC to purchase VC on the one hand to distribution VC as the final part of the whole industrial VC on the other. CM emphasizes integration and coordination of these activities through all links i.e. companies in the SC, as well as through each business function in the VC of individual companies. Costs, quality, time and innovations are key factors of business success. The management must continuously focus on these key strategic variables in relation to competition, which surpasses the frames of their company and draws their attention to changes in the external environment observed and assessed by their customers as well. It is of vital importance to manage them carefully and thus affect the level of customer satisfaction. Low costs are a significant business

goal but cost improvement does not necessarily have to be sufficient. Customers want more than just lower prices and costs – they want quality, responsibility, punctuality. The combination of benchmarking and continuous improvement is an ever-present theme in the new approach to management. Benchmarking is a systemic process of measuring and comparing one's own products, services and activities against the best performance levels (inside or outside of the company). By comparing with the best examples, the management finds ways of continuously improving their proper practice. Benchmarking and continuous improvement are often described as a “the race with no finish” because management and employees displeased with a particular performance level seek continuous improvement. When they adopt this philosophy, the organizations perceive that they are able to achieve performance levels which they previously considered unattainable ( Maher, 1997).

New environment brings new challenges and problems which inevitably impose the need for serious reconsideration of past business philosophy established in stable and predictable business settings. It is of great importance to adopt a wider external orientation with the constant focus on changeable and sophisticated customer demands. The company's existence on the market directly depends on the degree of fulfillment of customer expectations but also on the intensification and strengthening of cooperation with other organizations from the environment (customers, suppliers, distributors). Quality exchange of ideas and information, better interorganizational coordination and integration of vital business activities are necessary assumptions for more successful competitive positioning of the company on the market.

#### **4. INNOVATIONS IN COSTING AND COST MANAGEMENT**

As the key information core of companies accounting information system, CA has the task to help managers make balanced decisions in the light of organizational changes and possibilities offered by the environment, but also to monitor and evaluate strategic and operational development. Modern business environment inevitably requires CA restructuring and new approaches to costing and CM in order to improve cost information quality. It is necessary to provide adequate information support concerning the process of business strategy formulation and implementation, i.e. finding adequate directions leading to the strengthening of the competitive position on the increasingly turbulent market. In general, improved CA can reach more management objectives than traditional CA. In the new circumstances, many information weaknesses are attributed to traditional approaches to costing and CM.

While considering the development of CM, it is very important to link it to modern challenges to organizations. Therefore, suggestions go in the direction of separating it from traditional accounting and abandoning the long-standing linearity of measuring historical costs and static standards. Managers should anticipate rather than simply react to changes in cost structure and financial performances. In the past few decades there has been an increasing number of discussions about CM and extending various limits. It is a dynamic process which assumes intensive efforts directed towards continuous improvement, i.e. improving the existing and inventing new tools and techniques, starting with early activity-based costing models and pursuing lately in the direction of strategic cost management (SCM). In that period, the most prominent trend has been shift the focus from determining product costs by using standard traditional cost models, towards providing support for strategic and operational decisions by using certain forms of activity analysis.

The turning point in the development of CA was the advent of Activity Based Costing (ABC) which emerged primarily as an expression of the need to provide much more accurate data about the output cost price compared to traditional methods. It focuses on activities as parts of the entire process in a company and their cause and effect relations with the resources used as well as with cost objects (products and services, market segments, customers) i.e. activity drivers. However, management can use it not only for the purpose of calculation, i.e. more accurate product costing and, therefore, more successful price and product and service range management, but also for providing financial and non-financial information on activities, and effective CM – as assistance to activity based management. When considering the use of ABC for the strategic purposes, many experts think that it offers strategic opportunities to companies. Many companies have gained competitive advantage due to ABC information, i.e. cost reduction by lowering prices in order to increase their market share. Activity Based Management (ABM) focuses on managing activities with the aim of increasing the value which the customer receives and profit obtained by providing this value, which assumes driver analysis, activity analysis and performance evaluation. The main data information source for

that is ABC. Using cost information about various activities helps managers to identify activities that do not add value to products but waste resources, and also urges them to redesign expensive production methods. Thus, according to ABM approach to company management the attention of managers is directed towards company activities; ABM assumes a set of decisions and actions based on ABC concept information. The goal is to increase the value delivered to customers and to boost company profitability to a higher level. Strategic and operational ABM are singled out. Strategic ABM assumes directing the organization towards the most profitable use of resources. Due to ABC information we can point out non-profit activities as well as the most profitable ones, and make decisions affecting product development and design, fixing sales prices, specifying the production and sales mix, and establishing and developing relations with key customers and suppliers. All this can be achieved due to skilful combining of the knowledge about cost behavior (i.e. their drivers) with the knowledge about customer behavior. Operational ABM assumes decisions and actions with the goal of continuous improvement of business processes; and for designing ABC systems, as its information support, several hundred activities may be necessary in order to obtain better insight into processes underlying production and customer service. Operational ABM is directed towards the improvement of efficiency and reduction of resources necessary for performing respective activities (Cooper and Kaplan, 1999). ABC model determines where the greatest possibilities of cost reduction lie; but ABC information is not a current operating tool for the activities of improvement. This model offers the key direction for decision-making where to launch initiatives such as kaizen costing, pseudo-profit centers, TQM and reengineering. Activity Based Budgeting (ABB) extends the ABM idea to the planning cycle by using it to establish cost limits and control systems in organizations. Supported by activity analysis ABB uses benchmarking information to help the company to control costs and eliminate the increasing trend of exceeding the budget without improving the company's ability to create value for customers (McNair,2007). ABB is directed towards future resources, activities and outputs and is a valuable information support to the process of strategic decision – making.

One of the most important recent innovations is Just-in-Time (JIT) concept of purchase and production. This business philosophy emerged from the need of the management for a more efficient inventory management, i.e. reduction of investing in inventories and it assumes that materials flow and production process runs smoothly. JIT system application requires a highly efficient coordination of purchasing, production and marketing functions. Unless all production process components are reliable, this system loses its efficiency. As a result, significant changes in organizational (structural and procedural) company activities which occur with the introduction of JIT systems, affect the nature of CM accounting systems—traceability of costs changes, product costing accuracy rises, the need for allocation of service-center costs diminishes, cost behavior and relative importance of direct labor costs changes, job-order and process costing systems are affected, reliance on standards and variance analysis as well as inventory tracking systems decrease. In sum, organizational changes concern both CA and operational control systems. In general, they simplify CM accounting systems and at the same time increase the accuracy of cost information obtained. Therefore, a simplified approach to manufacturing cost flow has been developed – Backflush Costing (BFC). It is said to be a simplified method which significantly saves time and effort and reduces errors – in JIT settings, among other things, there are no departments, production cycle time is measured in minutes or hours, and products are dispatched immediately after the completion; so it looks absurd to track costs from position to position within a cell. BFC uses trigger points to determine when manufacturing costs are assigned to particular key accounts. There are several variants of this method depending on the number and location of trigger points.(Hansen&Mowen,1997).

In the last few decades, quality has become an important competitive dimension for both service and manufacturing organizations - quality is an integrating theme for all organizations. Increased attention to quality is result of not only increased competition but also increased customer demands for higher-quality products and services. Improving quality may actually be the key to survival for many firms. Continual improvement and waste elimination are foundation principles that govern a state of manufacturing excellence, which is the key to survival in contemporary world-class competitive environment. A philosophy of Total Quality Management (TQM), in which managers strive to create an environment that will enable workers to manufacture perfect (zero-defects) products, is replacing the acceptable quality attitudes of the past. Reducing defects, in turn, reduces the total costs spent on quality activities. Four categories of quality costs are emphasized: prevention costs are incurred to prevent poor quality in the products/services being produced (quality: engineering, training programs, planning, reporting, audits, circles; suppliers evaluation

and selection, design reviews, field trials, design reviews); appraisal costs are incurred to determine whether products/services are conforming to their requirements or customer needs (inspection/testing raw materials, packaging, inspection, supervising appraisal activities, product/process acceptance, inspection/test equipment); internal failure costs are incurred because products/services do not conform to specifications or customer needs (scrap, rework, downtime-due to defects, reinspection, retesting, design changes); external failure costs are incurred because products/services fail to conform to requirements/satisfy customer needs after being delivered to customers (costs of recalls, lost sales because of poor product performance, returns and allowances because of poor quality, warranties, repair, customer dissatisfaction, lost market share. Quality costs can also be classified as observable (available from an organization's accounting records) or hidden (opportunity costs resulting from poor quality – not usually recognized in accounting records). Quality costs must be reported and controlled. A quality cost report is prepared (by listing costs for each item within each of the four major quality cost categories) to improve managerial planning, control and decision making (strategic pricing and cost-volume-profit analysis). There are two views concerning the optimal distribution of quality costs: the conventional view (holds that there is a trade-off between costs of failure and prevention and appraisal costs, which produces an optimal level of performance called the acceptable quality level) and the world-class view (espouses total quality control – maintains that the conflict between failure and appraisal and prevention costs is more conjecture than real – the actual optimal level of defects is the zero-defects level). In achieving a defect-free state, a company is strongly dependent on its suppliers' ability to provide defect-free parts. This linkage has to be incorporated in a standard "partnering agreement" between purchaser and supplier (foster a sense of interdependence, including a sense of trust and ethical treatment). Perhaps the most important observation is that quality cost information is fundamental in a company's pursuit of continual improvement. Quality is one of the major competitive dimensions for world-class competitors (Hansen&Mowen, 1997). Organizations operating under the TQM philosophy have introduced a broad array of non-financial measures to monitor and improve the quality of their products/processes. For example, Motorola, a leading company in applying the TQM philosophy, adopted an aggressive approach to quality, setting a quality target of a level representing fewer than 12 defects per 1 million parts. (Cooper&Kaplan,1999).

Target Costing (TC) is a tool (McNair,2007) which emphasizes the relation between the price and market share as a basis for disciplining an organization's spending during product and process design, development and engineering. Basically, it assumes cost reduction per product unit. It is a completely new approach: how much a product is allowed to cost (Seidenschwarc,1993). As a concept of a much more comprehensive and aggressive CM information support, TC is built in the decision-making (planning) process concerning introduction of new and making radical changes to the existing products and processes. Target Cost Management (TCM), as a tool for a comprehensive cost and profit management and as a concept of long-term strategic CM, focuses on the design stage. It initiates CM in the earliest stages of product development and is aimed at intensifying the cooperation with the suppliers and other organizations on the market. TC operates after a general model: target costs = target sales price – target profit. If the target cost (as the difference between the sales price needed to ensure a previously determined market share and the desired profit per unit) is below the presently feasible cost, the management budgets cost reductions which direct real costs to target costs. Bearing in mind the organizational aspect, a successful implementation of TC concept assumes the creation of an organizational team structure that should include experts from different functional areas of the company as well as from the organizations it cooperates with on the market.

Life Cycle Product Costing (LCPC) is an extension (McNair, 2007) to TC tools, which links all costs driven by a new product, from the conception of the idea for the product through to its removal from the production program and withdrawal from the market, i.e. 'from the cradle to the grave'. The products are analyzed in order to determine whether they will bring profit during their entire life cycle. Life Cycle Product Cost Management (LCPCM), according to the integrated approach, consists of activities leading to product design, development, manufacturing, marketing, distribution, use, maintenance, service and removal, with the aim of maximizing life cycle profits. As a result, product costs are tracked and analyzed through all stages of its life cycle, which is radically shortened due to changeable customer demands and the increasingly ambitious competition regarding the technological product innovations. In contemporary settings it is of vital importance to launch a new product on the market and replace the existing product with the innovated one as soon as possible (regarding quality and functionality). LCPCM stresses cost reduction, not cost control. Since 90% of the life cycle product costs are determined in its design process, i.e. in the stages of a new product

development and construction, activity management during this stage of product existence is stressed. This should, by all means, affect the managerial decisions regarding investments and directing more resources towards activities in the early stages of product life cycle.

Value Chain Analysis (VCA), i.e. costing and CM through the value chain, is a concept representing the broadest approach to management. It assumes monitoring the relations among activities that create value with the aim of cost reduction, where the problems of tracking, measuring, analyzing and managing costs are extended outside the borders of a company. Beside internal value chains (VC), it extends to the area of supply chain, i.e. suppliers, on the input side, and distribution chain, i.e. customers – distributors and end users, on the output side, because the internal VC of a company is built in the broader value system which includes both supply VC and customer VC. That is to say that the leadership strategy in low costs and/or the differentiation strategy can lead to sustainable competitive advantage, but successful application of these strategies requires the managers to understand all the activities that contribute to their achievement. It is necessary to understand the industrial value chain as a whole, not only the part in which the company participates. Without an external focus there is no effective strategic CM. With the aim of successful implementation of the relevant strategies it is necessary to break the VC into strategically relevant activities of a company. VC is a necessary approach to understand these activities; understanding both the complex links and interrelations between activities performed inside the internal VC of a company (internal linkages), and those describing the linking of activities of a company with the activities of suppliers' VC and customers' VC (external linkages). Therefore, in order to describe and exploit these relations, it is necessary to identify company activities and choose the ones that can be used for creating and sustaining competitive advantage. The optimal choice assumes the knowledge of costs and value created by each of the activities, as well as relevant cost drivers.

We must also point out that one of the critical factors of the success of pursuing competitive strategies on the market is to provide a rounded up performance measuring system. One of the solutions is the so-called Balanced Scorecard (BSC) which provides a comprehensive framework linking strategic objectives of the company with a coherent set of performance measures (Zimmerman, 2000). BSC attempts to unite and balance traditional financial perspective (concerning the measuring of current and designing future financial results) with three more perspectives of vital importance for a successful pursuit of competitive strategies on the market – the perspectives of customers, business processes and innovations and learning. In the BSC approach to performance improvement the most critical processes for the success of a strategy are identified. They are stressed not only for their potential for cost reduction, but also for their ability to fulfill end users' expectations. When using BSC, managers usually realize that for the implementation of a new strategy it may be much more important to stand out in completely new processes than to create gradual cost improvements in the existing processes. (Cooper&Kaplan,1999).

Value Stream Accounting (VSA) is characteristic of lean manufacturing (LM) which developed from Toyota production system based on the JIT model and is the complete opposite of traditional production. Many companies, aspiring to the "world class" position, follow LM whose objective is to improve efficiency and effectiveness in every area – including product design, interaction with the suppliers, factory operations, managing employees and customer relations. In order to keep this position, they must persist in "endless journey" which requires continuous innovations and improvement. "Lean" includes making the right product at the right place at the right time in the right quantity with minimum waste and sustaining flexibility. Thus, the key for successful LM lies in the achievement of production flexibility which includes physical organization of production plants and the application of automated technologies including CNC machines, CIM, robotics, CAD, CAM. (Hall,2008). Companies inclining to LM often use the tool value stream map (VSM) to present their business process graphically in order to identify the wasteful aspects which should be eliminated. Information needs of a lean company cannot be adequately supported by traditional information provided through conventional accounting techniques, because of inaccurate cost allocation, promotion of non-lean behavior, inaccessibility in real time, financial orientation. Therefore, many lean companies have adopted an alternative accounting model, so-called VSA. VSA tracks costs by the value stream instead of department or activity; the value streams cut across function lines and departments, i.e. horizontally, and thus links with traditional vertical reporting on structure and cost flows are broken. (McNair,2007). It is of fundamental importance for its implementation to define product families. (Hall,2008). As for the information support to lean manufacturing and world class companies, three information systems are being considered - from MRP and MRP II to ERP.

Finally, in order that CM could secure an important position in the 21st century and reject the label 'old wine in new bottles', key instructions are listed for the most recent research and practice regarding new techniques for the 21st century, such as (McNair,2007): resource consumption accounting; the relative cost of intellectual capital and the value it creates; waste measurement and analysis; non-linear cost functions; dynamic cost modeling and prediction. Each of these techniques adopts a broader view of costs, focusing more on the way resources affect one another in creating or destroying the company value than on measuring the status quo. CM follows the need to define, measure and help the organization to maximize its potential to create value.

## 5. CONCLUSION

Cost accounting, as a basic information source useful for business decision-making, has the fundamental role within the entire accounting information system of a company. When considering the development of cost management, it is very important to link it with modern challenges to organizations. New environment brings new challenges and problems which inevitably impose the need for serious reconsideration of past business philosophies of companies based on stable and foreseeable business conditions. Therefore, suggestions are heading towards the separation of cost accounting from traditional accounting, together with abandoning of the long sustained linearity of measuring historical costs and static standards. Only by integrating the internal and external aspects it is possible to provide quality information for strategic management of a modern company. Practical application of some new solutions faces difficulties in developed countries as well, because of high investment and operational costs. It is particularly emphasized that, from the aspect of modern cost management, there is much left to be done in order to raise cost management to the highest level of the modern practices.

Unfortunately, our conditions are characterized by underdevelopment and weak application in practice of the conventional as well as the new solutions for cost accounting. It is necessary to widen and deepen more intensively the existing theoretical and practical knowledge which will enable us to examine the wide focus of company cost and performance management and to recognize the right conditions for gradual development and implementation of new solutions along with the development of our economy. It also seems logical to ask the following question: How much do cultural features and mentality affect the implementation and efficient functioning of a particular solution? In any case, the new solution must be closely examined by the cost-benefit analysis which should clearly show whether the benefit of using particular information outweighs the costs of providing it.

## REFERENCES

- Cooper, R. and Kaplan, R.S., 1999. *The Design of Cost Management Systems, Text and Cases*, Second Edition, Prentice Hall.
- Drury, C., 2004. *Management and Cost Accounting*, 6. Edition, International Thomson Business Press, London.
- Hall, J.A., 2008. *Accounting Information Systems*, 6 Edition, South-Western, USA,
- Hansen,D.R.& Mowen,M.M.,1997.*CostManagement,Accountin and Control*,South- Western College Publising, Cincinnati, Ohio.
- Horngren,C.T. et al., 2003. *Cost Accounting, A ManagerialEmphasis*, Eleventh Edition, PrenticeHall.
- Horngren, C.T. et al., 2005. *Management and Cost Accounting*, Third Edition, FT Prentice Hall, Pearson Education Ltd.
- Jablan Stefanović, R., 2008. Traditional Methods for Allocating Costs to Cost Drivers, *Proceedings of 12. World Congress of Accounting Historians (WCAH)*, Vol.II, pp. 1193-1210.
- Kaplan, R.S. and Cooper, R.,1997. *Cost & Effect:Using Integrated Cost Systems to Drive Profitability and Performance*, Harvard Business School Press, Boston.
- Maher, M.,1997. *Cost Accounting, Creating Value for Management*, Fifth Edition, Irwin, McGraw- Hill Co, Inc.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- McNair, C.J. , 2007. 'Beyond the Boundaries: Future Trends in Cost Management' *Cost Management*, Jan. /Febr. pp. 10-21.
- Silvi, R. et al., 2008. 'SCM and Lean Thinking: A Framework for Management Accounting', *Cost Management*, January/February pp. 11-20.
- Seidenschwarc,W., 1993. *Target Costing - Marktorientiertes Zielkostenmanagement*, München: Verlag Franz Vahlen (engl. *Target Costing - Market-oriented Target Cost Management*, Munich: Publisher Franz Vahlen).
- Seidenschwarc,W., 2005. *Target Costing - Auf dem Weg zum marktorientierten Unternehmen*, Seidenschwarc & Co. (engl. *Target Costing - on the Way to Market-oriented Organization*, Seidenschwarc & Co.).
- Zimmerman, J.L., 2000. *Accounting for Decision Making and Control*, Third Edition Irwin, McGraw-Hill International Edditions.

# REDUCING THE CARBON FOOTPRINT IN THE CONTEXT OF CLIMATE CHANGE – RESPONSIBILITY FOR PRESERVING THE BIODIVERSITY

Lecturer Ph.D. Simona Spanu

*Faculty of Agricultural Sciences, Food Industry and Environmental Protection  
“Lucian Blaga” University of Sibiu, Romania, Sibiu, No. 31, Oituz Street  
simona\_spanu@yahoo.com*

## ABSTRACT

Increasing the awareness among the inhabitants of the tourist villages from Mărginimea Sibiului regarding the reduction of the carbon imprint, in the context of climate change, encourages the preservation of biodiversity in the “Frumoasa” site and the development of a sustainable bio-economic concept.

Knowing, understanding, and interpreting the concepts and techniques of analyzing theoretical models regarding the carbon imprint and climate change allow the elaboration of a set of measures that aim to reduce the carbon imprint in the tourist villages from Mărginimea Sibiului, by raising the awareness and responsibility of the population, through the means of promoting unpolluting sources of energy, as well as an environmentally friendly demeanour, with the purpose of having a sustainable development of the area.

The European Commission launched in 2008 the project “Play to Stop – Europe for Climate”. The difference in attitude, when it comes to ecology, has a lot to do with the income, the people with higher wages being more responsible with regard to the environment. We wish to prove that also the rural population, once it is correctly informed and coherently made aware of the situation, can become more responsible in protecting the environment.

Climate change is no longer an environment-related problem, but one of sustainable human development. One of the main challenges of the 21st century, climate change has three distinct characteristics: a cumulative character, irreversible effects, and global manifestation. In order to avoid dangerous climate changes we have a common, but differentiated responsibility: the carbon imprint.

The exposure to the risks associated to climate disasters is not equal. In the developing countries 1 person in 19 is affected, while in the developed countries the proportion is of 1 to 1500 persons.

The impact of climate change regards five key elements: diminished agricultural productivity, increased insecurity of the water supply, increased exposure to extreme weather phenomena, collapse of ecosystems, increased health risks.

In limiting the effects of climate change, public policies intervene through regulation, research, and sustainable development.

## KEYWORDS

climate change, sustainable development, environment, the carbon imprint, tourist villages.

## JEL CLASSIFICATION CODES

Q54, Q57, Q56

## 1. INTRODUCTION

The human activity influences the atmosphere in numerous ways. The climatic regime is the one that suffers the most, because the gas emissions, the modification of the albedo through deforestations or fires, or the overflowing of used waters determines significant changes.

In its history, the planet has gone through climatic changes, highlighted by the relation between the solar variability and the glacial periods. These changes depended on the natural causes and had a cyclic

manifestation. But there are also climatic changes caused by humans, with a strong negative impact on the greenhouse effect.

The consequences of the greenhouse effect refer to the warming of the air with 1,5oC up to 4,5oC, in the conditions in which the CO<sub>2</sub> emissions are doubled in quantity; they then refer to the apparition of seasonal anomalies, through the diminishing of the winter thermic regime. The climatic changes will determine both the increase in the quantity of precipitations at the planet's level, and the rise of the ocean level, through the melting of the ice cap and of the glaciers and through the warming of the ocean's water.

The quantity of precipitations will grow, but rains will more often have a torrential character, being accompanied by phenomena related to storms and by wind intensifications. These precipitations will disrupt the hydrologic system through the decrease of the infiltration and the accentuation of the rapid surface flow, which will determine major increases in the debit and level of rivers, generating deluges and floodings. It is thus necessary to preserve the forests in the hydrographic basins. At the same time, torrential precipitations will determine rises in the solid debit of rivers, which will have negative effects regarding the rapid plugging of the retention basins with hydroenergetic and irrigations purpose, or the regular floodings.

Although the water will only suffer modifications regarding the quality, the spatial distribution and the means of obtaining and using it, respectively the problems related to the administration of waters, these will be felt in the availability of hydric resources, in the use and consumption. The problems related to the water economy are of utmost importance and that is why both the resources and the hydric sources must be carefully administered.

The term "carbon footprint" has become popular over the last few years. With climate change high up on the political and corporate agenda, carbon footprint calculations are in strong demand. Nevertheless the focus on CO<sub>2</sub>-emissions does not only provide possibilities, but also bears some risks that might as well weaken environmental labelling approaches in the future. These risks include for example the negligence of environmental impacts others than CO<sub>2</sub>, a disregard of product-quality aspects and the distortion.

## **2. THE CARBON FOOTPRINT - GENERAL CONSIDERATIONS**

The carbon footprint is quantified using indicators such as the Global Warming Potential (GWP). As defined by the Intergovernmental Panel on Climate Change (IPCC), a GWP is an indicator that reflects the relative effect of a greenhouse gas in terms of climate change considering a fixed time period, such as 100 years.

The international standards ISO 14040-14044 provide robust and practice-proven requirements for performing transparent and accepted carbon footprint calculations. In a policy context, the carbon footprint can be seen as a subset of the growing demand for life cycle based information that is being used for knowledge-based decision making in the context of sustainable consumption and production.

The ISO type I Eco-labels and type III Environmental Product Declarations are the best reference framework for third party verified claims on carbon performance of products. We note here the importance of critical third-party reviews to help ensure problems do not arise later.

Extreme weather could reduce global gross domestic product (GDP) by up to 1% \_ A 2-3o C rise in temperatures could reduce global economic output by 3%. If temperatures rise by 5oC, up to 10% of global output could be lost. The poorest countries would lose more than 10% of their output. In the worst case scenario global consumption per head would fall 20%. To stabilize at manageable levels, GHG emissions would need to stabilize in the next 20 years and fall between 1% and 3% after that. This would cost 1% of GDP.

In recent years, the 'carbon footprint' has become a popular way of comparing the relative environmental impact of goods, services or industrial activities. In practice, simply comparing carbon footprints is rarely fair or scientific. Indeed, as a measure of environmental impact or sustainability, it can be quite misleading. Instead the more complete life Cycle Assessment should be used. This results in a measure of environment impact that is fairer, more comprehensive and more transparent.

This is also in line with the European Commission's Joint Research Centre stating that the carbon footprint should never be used as the sole basis for making purchasing decisions.

There are three main problems in using such single indicator. The first problem is that many people have only a vague idea of what a carbon footprint is, or means. A carbon footprint measures the amount (expressed in units of CO<sub>2</sub> equivalents) of greenhouse gases that enter the atmosphere as the result of a given activity or

product. There is nothing wrong with this and sound environmental accounting methodologies are available for calculating it (ISO 14040, 14044 and 14064). But the carbon footprint tells us only about carbon emissions; it does not deliver a total environmental impact. To get an all-round picture, many other factors - acidification, ozone depletion, energy consumption, soil and water pollution, and more – need to be considered.

Unfortunately, many people tend simplistically to equate carbon emissions with overall environmental impact, although there is no direct correlation between the two. Therefore, if people are invited to compare products purely on the basis of carbon footprints, those who want to ‘do the right thing’ for the environment may be led to make precisely the wrong choices.

The second problem is that the scope of the carbon footprint is usually too narrow. Any genuine measure of a product’s or an activity’s environmental impact needs to encompass its total impact over time. It also needs to consider the wider context. All too often, however, the calculation of the carbon footprint is limited to the production phase, and takes little or no account of the subsequent use and disposal phases. It also neglects contextual effects. Many people believe fewer goods should be packaged, on the grounds that by not using packaging a certain ‘footprint’ is saved. But if, as a result of eliminating packaging, the goods perish the environmental impact of producing and transporting them will have been for nothing – and the small environmental benefit gained by eliminating packaging will be more than outweighed by the loss of the goods.

The third problem is that it is often impossible to compare like with like. In calculating a footprint we need to make certain assumptions – for example predicting the conditions under which activities will take place, or how a product will be used. Obviously, the reliability of the resulting footprint will depend crucially on the accuracy of these assumptions. If one footprint is calculated on the basis of realistic assumptions, while another is based on an overly optimistic or idealised scenario, then clearly any comparison between the two will be meaningless (Wiedmann, T., et al, 2006).

“Carbon neutral” is another popular term that is often not well understood. Something that is ‘carbon neutral’ has a carbon footprint of zero. An agritouristic pension, for example, that wants to reduce its climate change impact will usually first calculate its carbon footprint and then identify areas of its operations where emissions reductions can be made. Most of the time it will not be possible to reduce a carbon footprint to zero, and the agritouristic administrators may choose to invest in projects that generate emissions reductions to ‘offset’ the emissions that they cannot reduce internally (Bran Florina, 2002).

Emissions reductions (also known as “offset”) are sold in tones of CO<sub>2</sub> equivalent and can come from a range of projects such as renewable technologies, energy efficiency projects, land-use change projects and methane capture (Brown L., 2001).

The term ‘carbon neutral’ refers to something with a carbon footprint of zero. “Carbon neutrality” is normally achieved by first calculating a carbon footprint, then reducing emissions as far as possible, and finally ‘offsetting’ the remainder by purchasing emissions reductions “credits” generated by external projects such as renewable energy schemes or forestry projects.



Figure 1. Promoting sustainable forestry in Mărginimea Sibiului area

Wood products from sustainably harvested forests have a “negative carbon footprint” meaning that they act as a carbon store. As trees grow they “fix” carbon dioxide from the atmosphere by photosynthesis and it is stored as carbon within the organic matter that makes up the trees.

Carbon dioxide is also released back into the atmosphere when trees die and decay or is burned for fuel or during deforestation. Global emissions from deforestation due to land use change are about 1.8 to 9.9 billion tones of carbon dioxide every year. However the amount of carbon dioxide being fixed by forests around the world is still greater than emissions from deforestation, so forests act as a net “sink” for human-induced carbon dioxide emissions.

If wood is not destroyed, the carbon that was fixed by photosynthesis can act as a long – term carbon store. This means that wood has a negative carbon footprint.

It is often thought that deforestation is associated with wood production. However, in reality, forest cover in Europe is currently increasing due to a favourable market for wood products. Deforestation mostly occurs in areas where agriculture is more profitable than wood production. Promoting sustainable forestry and wood products could help to fulfil the potential of forests to slow down climate change.

Among the vegetation forms, the forest is the one that most influences the climatic elements and phenomena. The forest is a complex ecological system, between the elements of which interdependence reports are being created.

### **3. THE CARBON FOOTPRINT ANT THE TOURISM**

Tourism is a big and important business. It draws on the wealth of people in developed nations and helps transfer some of those resources to businesses and communities in emerging and some of the least developed markets.

But tourism also is responsible for about 5 percent of global greenhouse gases, according to Geoffrey Lipman, the assistant secretary-general at the United Nations World Tourism Organization. That makes tourism a very polluting business, too.

Balancing the beneficial and harmful aspects associated with tourism is going to be difficult. Among the UN agency’s suggestions are lowering emissions (no surprise there). Other suggestions are more interesting, including adapting tourism businesses and destinations to changing climate conditions, and spending more money to assist regions and countries in need.

In the past two years, travelling for pleasure has become taboo among some environmentalists because flying and driving and staying in hotels contributes so much to an individual’s carbon footprint. According to the Davos conference, concerning the way that tourism responding to global challenges, on agreed that:

- climate is a key resource for tourism and the sector is highly sensitive to the impacts of climate change and global warming, many elements of which are already being felt. It is estimated to contribute some 5% of global CO<sub>2</sub> emissions (Tukker, A., Jansen, B. 2006);

- tourism - business and leisure - will continue to be a vital component of the global economy, an important contributor to the millennium development goals and an integral, positive element in our society (Glăvan V., 2003);

- given tourism’s importance in the global challenges of climate change and poverty reduction, there is a need to urgently adopt a range of policies which encourages truly sustainable tourism that reflects a “quadruple bottom line” of environmental, social, economic and climate responsiveness (Bogdan A.T. et.al., 2010);

- the tourism sector must rapidly respond to climate change, within the evolving UN framework and progressively reduce its Greenhouse Gas (GHG) contribution if it is to grow in a sustainable manner; This will require action to mitigate its GHG emissions, derived especially from transport and accommodation activities; adapt tourism businesses and destinations to changing climate conditions; apply existing and new technology to improve energy efficiency; secure financial resources to help poor regions and countries (Talabă I., et.al., 2010).

While climate change is a natural phenomenon, human carbon footprints are increasing with each passing hour, leading to severe climatic transformations. Its impact will be felt in every field including the travel industry. That’s why there is an urgency of “green” adaptations in the travel and tourism industry. This is

triggering a range of policies to promote sustainable tourism, reflecting environmental, socio-economic and climate sensitivity of the national tourism authorities.

Climate has a direct impact on tourism as changing climate and weather patterns at a tourist destination significantly affect a tourist's decision and promotional strategies offered by the tourism board as well (Cooper Ch., et al., 1996).

The relation between climate and tourism is two thronged. Firstly, tourists visit a certain destination to escape the extreme climate of their country/region by visiting an entirely different climatic zone. Secondly, the pleasant climate of certain places attracts travellers, throughout the year due to their almost even climate.

Tourism Boards and regulatory authorities must work together with businesses within the sector to determine what can be done to minimise and adapt to the effects of climate change. It is essential to educate tourists as to help preserve the environment and minimize the effects of climate change in order to ensure the long-term sustainability of their favourite holiday destination.

Tourism businesses also need to look at going green, to try and cut back on the environmental impact of the tourism industry. Training the next generation tourism professionals to utilise climate information to reduce climate risks and adapt to climatic change in the decades ahead is a priority (Bran Florina et al, 1997).

In Mărginimea Sibiului, we can help to better understand and reduce the environmental impacts of companies in the tourism sector. We help consumers and organisations to plan environmental friendly holidays which give the satisfaction of discovering something new without harming the environment too much. Finally we can also offer a range of life cycle inventory data that allow calculating environmental impacts such as the carbon footprint of leisure activities.

The European Commission launched in 2008 the project "Play to Stop – Europe for Climate". The difference in attitude, when it comes to ecology, has a lot to do with the income, the people with higher wages being more responsible with regard to the environment. We wish to prove that also the rural population, once it is correctly informed and coherently made aware of the situation, can become more responsible in protecting the environment.

Together with the relief, the climate is the determining factor that contributed to the development of Mărginimea Sibiului area that initially focused on curing and relaxation, and later on relaxation and sport. The meteorological parameters registered in this area are proof of the privileged habitat that the region has, both from the point of view of the landscape, and from that of the climatic conditions.

#### **4. CONCLUSION**

Climate change is no longer an environment-related problem, but one of sustainable human development. One of the main challenges of the 21st century, climate change has three distinct characteristics: a cumulative character, irreversible effects, and global manifestation. In order to avoid dangerous climate changes we have a common, but differentiated responsibility: the carbon imprint.

The exposure to the risks associated to climate disasters is not equal. In the developing countries 1 person in 19 is affected, while in the developed countries the proportion is of 1 to 1500 persons.

The impact of climate change regards five key elements: diminished agricultural productivity, increased insecurity of the water supply, increased exposure to extreme weather phenomena, collapse of ecosystems, increased health risks. In limiting the effects of climate change, public policies intervene through research and sustainable development (Hera C., 1998).

The protection of the environment and of the touristic heritage is greatly influenced by the ecological awareness of the population and its respect and love of nature, historical, artistic and architectural heritage. Education in the protection of the environment and touristic potential is interdisciplinary; it is a continuous process and an integral part of education in general. It includes the main issues of protection from both a global and regional perspective and examines the economic development and growth in relation to environmental protection, focusing on local, regional and national co-operation for an adequate approach to pollution-related issues (Wackernagel, M., Rees, W.E., 1996).

The promotion of a "green" ecological tourism requires the involvement of several decision-makers. First the state, through its economic development policy, through its durable development strategies, provision of high-quality services so as to reduce excessive and inadequate exploitation of cultural and natural heritage (Udrea N. M., 2011). The state is able to trigger involvement of tour operators in environmental protection

through legal, juridical and financial regulations. The involvement of local administrations is equally required, as well as that of the population in Eastern European countries. Green tourism involves the improvement of the infrastructure, the rural-urban development, the use of non-conventional sources of energy. Moreover, an effective marketing policy is required, as well as a macroeconomic development able to prevent excessive exploitation of a specific area. The opinion of the local population with reference to the development of touristic areas is equally important (Udrea N. M., 2011).

## **ACKNOWLEDGEMENT**

This paper was cofinanced from the European Social Fund through Sectoriale Operational Program Human Resources Development 2007-2013, project number POSDRU/89/1.5/S/63258 "Postdoctoral school for zootechnical biodiversity and food biotechnology based on the eco-economy and the bio-economy required by eco-san-genesis".

## **REFERENCES**

- Bogdan A.T. et al., 2010. Ecoeconomic and Bioeconomic Impact of Food Safety and Security in Perspective Increased Consumption of Food and Feed During 2030-2100, *International Symposium "Risk factors for Environment and Food Safety"*, Oradea, Romania, pp. 1044-1056.
- Bran Florina, 2002. *The ecological component of the decisions concerning the sustainable economical development*, Publishing House ASE, Bucarest, Romania.
- Bran, F., M. et al, 1997. *Rural Tourism. European model*, Economical Publishing House, Bucarest, Romania.
- Brown L., 2001. *Eco-economy*, Technical Publishing House, Bucarest, Romania.
- Cooper Ch. et al, 1996. *Tourism. Principles & Practice*, Longman, London.
- Glăvan V., 2003. *Rural tourism. Agriturism. Sustainable tourism. Ecotourism*. Economical Publishing House, Bucarest, Romania.
- Hera C., 1998. *The rural world today and tomorrow*, Academy Publishing House, Bucarest, Romania.
- Talabă I. et al, 2010, *The rural tourism in the context of the sustainable development. Actuality and perspectives*, Tehnopress Publishing House, Iași, Romania.
- Tukker, A. and Jansen, B. 2006. Environmental impacts of products: A detailed review of studies, *Journal of Industrial Ecology* Vol. 10, No. 3, pp. 159.
- Udrea N. M., 2011. Study over the possibilities of utilizing and adapting the insurance of the rural ecosystems for the insurance of the urban ecosystems, *Proceeding of the International Symposium Alma Mater*, Sibiu, pp. 11-14.
- Udrea N. M., 2011. Employing the optional and mandatory insurance systems for increasing the security of urban ecosystems, *Proceeding of International Conference IECS*, Sibiu, pp. 434-437.
- Wackernagel, M., Rees, W.E., 1996. *Our Ecological Footprint - Reducing Human Impact on the Earth*, New Society Publishers Gabriola Island, B.C., Canada.
- Wiedmann, T. et al, 2006, Allocating ecological footprints to final consumption categories with input-output analysis, *Ecological Economics* Vol. 56, No. 1, pp. 28-48.

# THE IMPACT OF M-COMMERCE IN NORTHERN GREECE

Irene Moschou<sup>1</sup>, Pappas Dimosthenis<sup>1</sup>, Theodosios Theodosiou<sup>1</sup>, and Valsamidis Stavros<sup>1</sup>

<sup>1</sup>*Department of Accountancy, Ag. Loukas, 654 04, Kavala, Greece*

*Corresponding author: irene@gmail.com*

## ABSTRACT

This paper presents a survey which was conducted in 2010 and studies the use of wireless technologies, particularly mobile phones in conjunction with the recognition and use of electronic commerce by consumers and the business society. The main purpose of the research presented in the paper is to gather detailed information regarding the use of mobile phones and especially their usefulness for buying products and making general financial transactions through them.

The survey was conducted on a random sample of 131 individuals who all used had a cell phone. They were asked to complete a questionnaire through the process of a personal interview. The questionnaire had 26 closed type questions divided in to three sections. The first section contained the personal information of the interviewee such as gender, age, education, income. The second part is referred to the technical characteristics of the mobile phone, such as whether the phone has expandable memory, touch screen, tracking system (GPRS) and if it has access on the Internet. The last section of the questionnaire is referred to the attitude of users regarding the use of mobile technology to do all kinds of transactions via mobile phone. Special focus was given in this section regarding the kind of information the users want to learn from the Internet.

The data were analyzed using descriptive statistics and the chi-square test using the statistical package SPSS Statistics v17.0.

The conclusion is that despite the cost of using mobile phones, the slow connection speeds, the potential safety problems and misuse of personal data, mobile commerce is in constant growth due to the critical mass, directness and practicality of using mobile phones.

## KEYWORDS

Mobile phone, M-commerce, SPSS, Chi-square.

## JEL CLASSIFICATION CODES

M15

## 1. INTRODUCTION

The term m-commerce can have many different definitions (Weitzel and Konig, 2000), (Datamonitor, 2000). Nevertheless, all definitions have as a common that a terminal or mobile device is employed to communicate over a mobile telecommunication network (Knopse and Grosche, 2004). The difference between the various definitions lies on the views as of the purpose of this communication. Some definitions restrict m-commerce to transactions involving a monetary value, whereas other definitions generalize the term to services that involve communication, information, transaction, and entertainment (Knopse and Grosche, 2004). For example Durlacher (1999) defines m-commerce as “any transaction with a monetary value that is conducted via a mobile telecommunication network.” Similar to any traditional definition of e-commerce, the focus lies on the exchange of products and services that is associated with a monetary value. Skiba et al. (2000) take a

slightly different approach and define m-commerce as “the use of mobile hand-held devices to communicate, inform, transact and using text and data via connection to public or private networks”.

Generally m-commerce can be defined as the use of mobile devices for financial transactions using a mobile telecommunication network and usually involves the transfer of monetary values.

Another problem in definitions is between e-commerce and m-commerce, since there is yet not a universally accepted definition for either one. Another problem is the vast amount of terminology that is used synonymously, including terms such as “mobile electronic commerce”, “wireless electronic commerce”, or simply “wireless” (Lehner and Watson, 2001).

Skiba et al. (2000) defines the term e-commerce (electronic commerce) as a business processes on the Internet, such as the buying and selling of goods. There is a distinction between B2B (business-to-business) and B2C (business-to-consumer) markets. In the first case, the business processes are carried out between businesses; in the latter case, they are carried out between businesses and end consumers. This general definition of e-commerce does not say anything about the kind of device that the end user employs to gain access to the Internet. The underlying technology could be wireline (e.g. using a home PC as end user device) or wireless (e.g. using a mobile phone as end user device).

In other words, the term m-commerce is all about wireless e-commerce, that is, where mobile devices are used to do business on the Internet, either in the B2B or B2C market. As such, m-commerce is a subset of e-commerce.

It is also important to present a short overview of mobile devices. The following list gives an overview of different kinds of mobile devices:

- Mobile phone
- PDA (Personal Digital Assistant)
- Smart phone – the smart phone combines mobile phone and PDA technology into one device.
- Laptop
- Earpiece (as part of a Personal Area Network)

Each mobile device has certain characteristics that influence its usability, such as

- Size and color of display
- Input device, availability of keyboard and mouse
- Memory and CPU processing power
- Network connectivity, bandwidth capacity
- Supported operating systems (e.g. PalmOS, Microsoft Pocket PC)
- Availability of internal smart card reader (e.g. for a SIM card in mobile phones)

## **1.1 Differences between e-commerce and m-commerce**

In comparison to e-commerce, m-commerce offers both advantages and disadvantages. The following list summarizes the advantages of m-commerce (Weitzel and Konig, 2000):

- Ubiquity – the end user device is mobile, that is, the user can access m-commerce applications in real time at any place.
- Accessibility – accessibility is related to ubiquity and means that the end user is accessible anywhere at any time. Accessibility is probably the major advantage by comparison with e-commerce applications involving a wired end user device.
- Security – depending on the specific end user device, the device offers a certain level of inherent security. For example, the SIM card commonly employed in mobile phones is a smart card that stores confidential user information, such as the user’s secret authentication key. As such, the mobile phone can be regarded as a smart card reader with smart card.
- Localization – a network operator can localize registered users by using positioning systems, such as GPS, or via GSM or UMTS network technology, and offer location dependent services. Those services include local information services about hotels, restaurants, and amenities, travel information, emergency calls, and mobile office facilities.
- Convenience – the size and weight of mobile devices and their ubiquity and accessibility makes them an ideal tool for performing personal tasks.

- Personalization – mobile devices are usually not shared between users. This makes it possible to adjust a mobile device to the user's needs and wishes (starting with the mobile phone housing and ringtones). On the other hand, a mobile operator can offer personalized services to its users, depending on specified user characteristics (e.g. a user may prefer Italian food) and the user's location.

The following list summarizes the main disadvantages of m-commerce:

- Mobile devices offer limited capabilities. Between mobile devices these capabilities vary so much that end user services will need to be customized accordingly.

- The heterogeneity of devices, operating systems, and network technologies is a challenge for a uniform end user platform. For this reason, standardization bodies consisting of telecommunication companies, device manufacturers, and value-added service providers integrate their work. For example, many current mobile devices implement an IP stack to provide standard network connectivity. At the application level, the Java 2 Micro Edition (J2ME) offers a standardized application platform for heterogeneous devices.

- The communication over the air interface between mobile device and network introduces additional security threats (e.g. eavesdropping).

## **1.2 Categorization of e-payment systems**

E-payment systems are typically modeled on conventional payment systems. As such, there are the following categories (Weber, 1998):

- Direct cash
- Cheque
- Credit card
- Bank transfer
- Debit advice

Direct cash – in direct cash like payment systems, the customer withdraws money from the issuer, that is, the third party interacting with the customer (for example, a bank or service provider), and hands payment tokens for the payment amount to the merchant. The merchant deposits the payment tokens with its acquirer, that is, the third party interacting with the merchant (for example, a bank or service provider). The issuer and acquirer then settle the payment.

Since digital cash is trivial to copy, direct cash like payment systems involve either tamper proof hardware (i.e. smart cards) or online validation by the issuer (i.e. double spending test).

Cheque – in this scenario, the customer hands a cheque (a payment authorization) to the merchant. The cheque is presented to the acquirer who redeems it from the issuer.

Credit card – in terms of the information flow, credit card based payment systems are similar to cheque-like payment systems, with the difference that credit card based payment systems use the existing credit card infrastructure for settling the payment.

Bank transfer- Here, the customer instructs the issuer to transfer money to the merchant's account at the acquirer. The merchant is notified of the incoming payment.

Debit advice – this model describes the opposite case to the bank transfer model. The merchant instructs the acquirer to charge the account at the issuer. The customer is notified of the outgoing payment.

## **1.3 Categorization of m-payment systems**

Most e-payment systems are not suitable for use in a mobile context that is, using a mobile device and communicating over a mobile telecommunication network. This is due to the special characteristics of mobile devices and mobile telecommunications. M-payment systems can be categorized according to the whereabouts of the customer's money:

1. Software electronic coins – electronic money stored on the mobile device in file format.
2. Hardware electronic coins – electronic money stored on the mobile device on a smart card.

3. Background account – electronic money stored in a remote account at a trusted third party.

Software electronic coins – In this case, monetary value is stored on the mobile device and the customer has full control of his/her money wherever he/she goes and whatever he/she does. An electronic coin is represented as a file containing, among other information, a value, a serial number, a validity period, and the signature of the issuing bank. Since software electronic coins are easy to copy, the validity of an electronic coin depends on its uniqueness in terms of its serial number. The customer transfers electronic coins to the merchant, who forwards them to the issuing bank for the “double spending test”. In this test, it is checked whether the electronic coin has been spent beforehand. If yes, it is rejected. Otherwise, its serial number is entered into the double spending database and the money is credited to the merchant’s account<sup>4</sup>. The generation and storage of electronic coins is an orthogonal problem. Due to the limitations of mobile devices, electronic coins may have to be generated and stored externally, until they are downloaded onto the mobile device.

Hardware electronic coins – In this case, monetary value is stored on a secure hardware token, typically a smart card, in the mobile device. The presentation of electronic money is not important, as long as it is stored securely on the smart card. Electronic money could be represented as a simple numeric counter. In order to get to the money, the customer’s smart card and the merchant’s payment server authenticate each other and a secure channel is set up between them. Then, electronic money can be transferred from one to the other. This approach is quite attractive because smart cards provide an additional level of mobility. That means the payment smart card can also be used in POS transactions.

Background account – Here, the money is stored remotely on an account at a trusted third party. Depending on the specific payment system, the account could be a credit card account, a bank account, or an account held at the network operator. Common to all scenarios is that, on receipt of an invoice, the customer sends an authentication and authorization message to the merchant that allows the trusted third party (that holds the account) to identify the customer and to verify the payment authorization. The accounts can then be settled. There are numerous payment systems that fall into this category. The differences are regarding the nature of the trusted third party and the procedure to send authentication and authorization data. For example, in some cases this data is sent in the clear (e.g. a credit card authorization) not providing any security against eavesdropping, and in some cases this information is encrypted and digitally signed, providing anonymity to the customer (e.g. SET – Secure Electronic Transactions).

Some examples of m-payment solutions are mentioned in the following paragraphs.

Software electronic coins – There are several e-payment systems that are based on electronic coins. As for cash, one main advantage is that the customer can potentially remain completely anonymous to the merchant as well as to the bank, while staying in full control of the money.

E-commerce solutions of this type include eCash, NetCash, and MilliCent. Due to the storage and processing constraints of mobile devices, an adaptation of the software is necessary. Moreover, storing electronic coins on the mobile device is problematic. One option is to run the full-fledged payment system on a home PC and download electronic coins when needed.

Hardware electronic coins – There are various e-payment systems that implement an e-purse, that is, electronic cash on a smart card, for example GeldKarte and Mondex. In both cases, electronic money is stored on the card and can be transferred directly from the customer to the merchant. Shadow accounts are held at the bank to log transactions.

Background account – Depending on the type of trusted third party, there are various different approaches to a background account solution. If the background account is held at a network operator, the charged amount is transferred to the existing billing solution and included in the customer bill. Customers pay their bills using traditional systems, such as direct debit, cheque or cash.

Bill service from Vodafone and Mobilepay by Sonera. These systems work for micropayments only; accepting higher payments would imply that mobile operators become subject to a host of banking regulations. If the background account is held at a credit card institution, the payment mechanism is all about secure transmission of credit card data to the credit card company. The first possibility uses a dual slot mobile phone, whereas the second possibility employs a dual chip mobile phone. The dual slot solution (for example, ItiAchat by Mastercard, Oberthur smart cards, France Télécom, Europay, and Motorola) has the advantage that it works with “normal” credit cards that can also be used in traditional POS terminals. On the other hand, dual slot mobile phones are quite bulky. This solution is favoured by credit card companies and

banks, since it allows them to stay in control of the payment functionality. The dual chip solution (for example, EMPS – Electronic Mobile Payment System by MeritaNordbanken, Nokia and Visa) has the advantage that handsets can be kept small. This solution is favored by mobile operators, because they are in control of the dual chips.

Finally, if the background account is held at a bank, the existing banking infrastructure and technology can be reused. Examples are Paybox and MobiPay by BBVA and Telefónica.

Typically, the merchant receives the customer's mobile phone number (or a pseudonym) and passes it on to the payment server, together with the payment details. The customer authorizes the payment by providing a PIN.

The main payment methods used to enable mobile commerce are:

- premium-rate calling numbers,
- charging to the mobile telephone user's bill or
- deducting from their calling credit.
- registration of a credit card that is linked to a SIM card.
- Billing a customer's credit card through a secure user interface.

## **2. METHODOLOGY**

The research methodology involved the construction and use of a questionnaire. The questionnaire consists of 3 parts:

- 1.The first part contains the personal information of the respondent such as gender, age, education, income, and if in possession of mobile phone.
- 2.The second part refers to the characteristics of the mobile phone. That indicated whether the respondent's mobile phone has expandable memory, touch screen, positioning system (GPRS) and if you can access the Internet.
- 3.In the third part of the questionnaire referring to the attitudes of users about the use of mobile technology to be able to do all kinds of transactions via mobile phone. Equally important is the collection of information in what they want to be informed, by Internet service and navigation at this from their phone.

In total, the questionnaire includes 26 questions, but here we only present the most important of them due to space limitations. The format of the questionnaire is such that it meets the specifications necessary to have a questionnaire. The preparation was conducted in such a way that is as simple as possible and understandable. In this questionnaire, the respondent will face open-ended questions where they can freely give any answers like, and when closed is obliged to select one of the suggested answers. We also use multiple answers questions closed and open-ended questions. Using open-ended questions we want to achieve:

- Reduce the time required to complete the questionnaires.
- Better understanding of questions by respondents.
- Facilitate the introduction and analysis of data and result in better filling not to deny the respondents the possibility to express another opinion.

The questionnaire was tested and after making appropriate improvements - changes it was finalized, consolidated. Only then we began the process of distributing it to different individuals.

## **3. RESULTS**

The dataset consisted of a total 102 persons. 50 were men and 52 women. Their educational level can be seen at Figure 1. It is evident that most of the have a degree from a University.

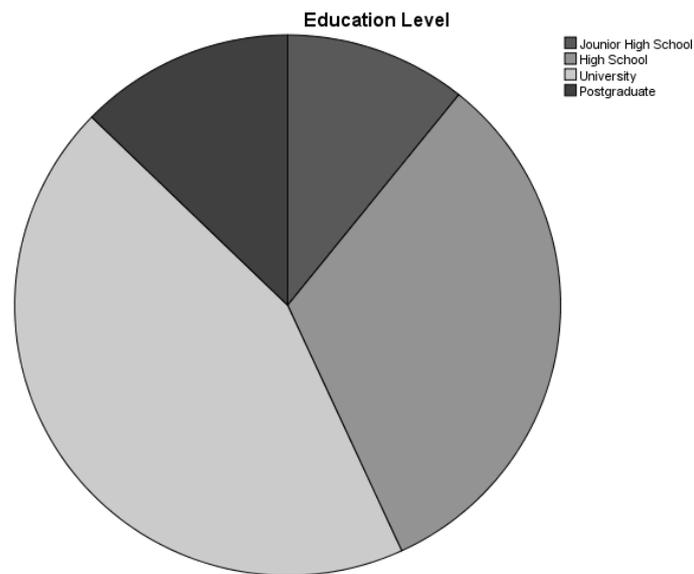


Figure 1. The educational level of the 102 people involved in the research.

Their age distribution can be seen at Figure 2. Most of the people were quite young with age between 18-30, where as the smallest percentages were for ages below 18 and above 51.

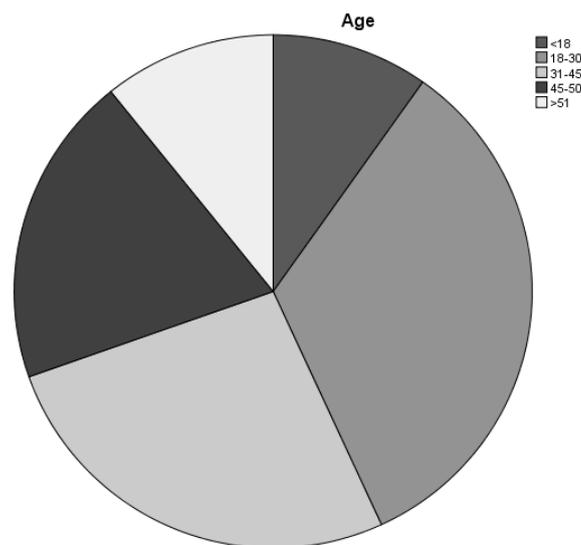


Figure 2. The age distribution of the 102 people involved in the research.

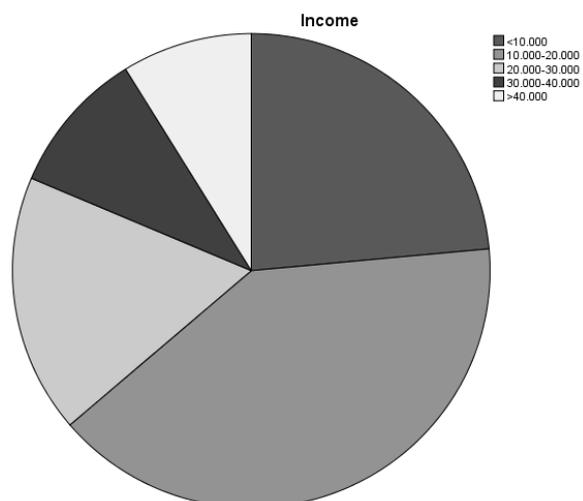


Figure 3. The income of the 102 people of the research.

Figure 3 depicts the income of the people we used in our research. Most of them have an average annual income of 10000 to 20000 Euros. Although their income is not very high they use m-commerce transactions and have mobile phones to handle these transactions. Usually the smartphones used in mobile transactions are more expensive than the simple ones which are not that suitable for m-commerce.

As far as the mobile phone characteristics of the users is concerned one can see from Table 1 that most users have mobile phones with advanced specifications, but usually without a touchscreen.

Table 1. The main characteristics of the mobile phones of the users in the research.

Response	Phone Memory Slot	Touch Screen	GPRS	Internet Connection
Yes	49 (48%)	40 (39.2%)	67 (65.7%)	77 (75.5%)
No	53 (52%)	62 (60.8%)	35 (34.3%)	25 (24.5%)

Figure 4 shows the opinion of the people in our survey about the safety of the m-commerce transactions. Most of them have quite a positive opinion considering it enough safe the whole process. Nevertheless, there is also a considerable percentage of m-commerce users that believe mobile transactions are not safe at all or very little.

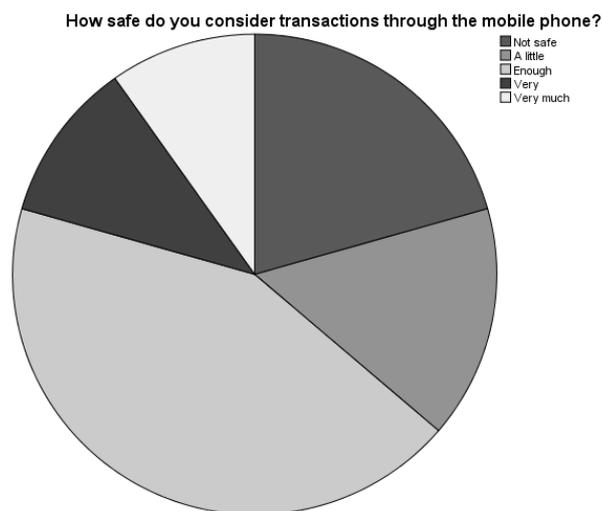


Figure 4. Opinions about the safety of the m-commerce transactions

In the question if they would consider in direct purchasing of products through m-commerce the answers were divided between yes (47 – 46.1%) and no (55 – 53.9%).

Figure 5 shows that more than half of the people in the survey would not like at all or very few advertisements at their mobile phones.

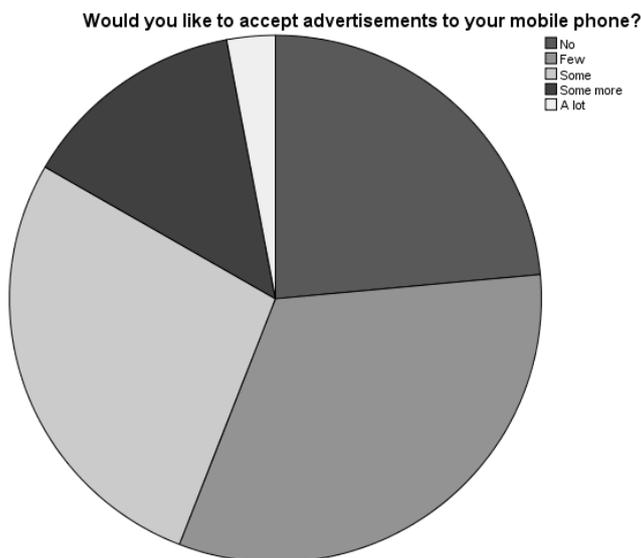


Figure 5. The opinion of the users about mobile phone advertisements.

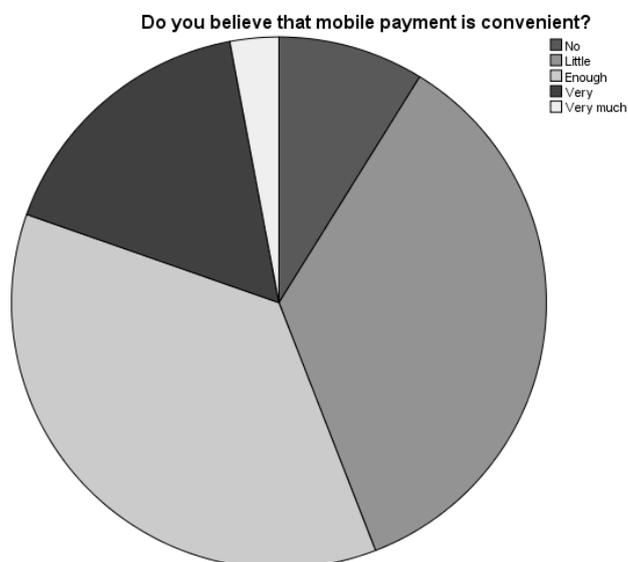


Figure 6. Convenience of mobile payments.

As far as the convenience of the mobile payments is concerned most of them believe they are very or very much convenient (Figure 6).

Finally, they were specific questions in the questionnaire concerning the quality of service and the ease of use for the two major mobile phone carriers in Greece, namely Vodafone and Cosmote. The results can be depicted at Figures 7 and 8 respectively.

It is evident that most of the users have a very positive opinion for both the quality of service and the ease of use.

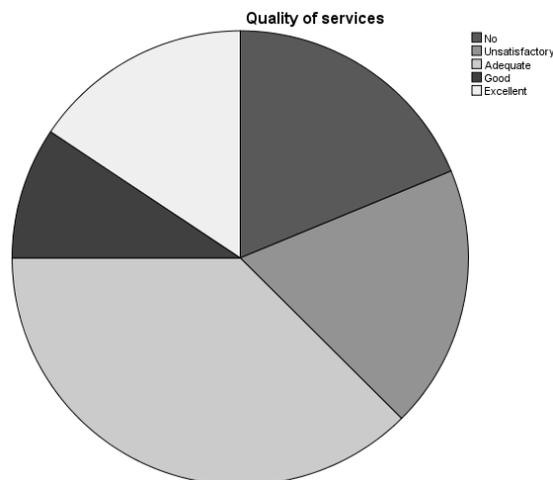


Figure 7. Quality of service concerning m-commerce services for the carriers Vodafone and Comoste.

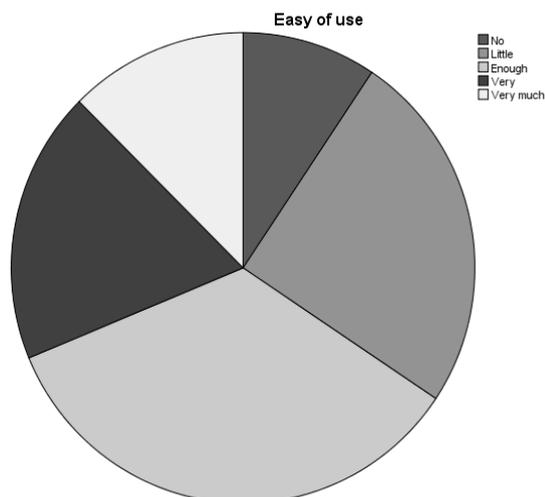


Figure 8. Ease of use concerning m-commerce services for the carriers Vodafone and Comoste.

#### 4. CONCLUSION

First of all, the most obvious outcome from our research was that most people have a positive opinion about m-commerce. They believe it can improve their everyday life by helping them avoid person to person transactions and achieving their goal using less time. Another outcome of our research is that people are willing to use their phones for direct purchasing and usually this is the way they choose for their purchases, even though m-commerce is in an early stage in Greece. An important aspect that helps them use m-commerce transactions is that they believe they are quite safe and cannot be easily hacked. Furthermore, they trust that their personal and private data will not be stolen or used without their consent.

One thing most people are not very keen are mobile advertisements. Most of the people in our research did not like mobile advertisements and they considered them to be spam. Perhaps in the future if the advertisements become more targeted and personalized their opinion about them could change for the better.

Another important outcome of the research is that almost one third of the respondents use the Vodafone live or Cosmote i-mode daily and they believe the quality and easiness of the services is more than adequate. Thus, the latest years there has been a fruitful effort from the major mobile telecommunications networks in Greece towards m-commerce that had as a result the development of a plethora m-commerce services which are easy to use and of high quality.

In the future we would like to further investigate the opinion of more people from different regions of Greece and age classes and compare their behavior between them. As the smartphone market expands the m-commerce transactions will also increase and every day even more mobile users will get accustomed to them and use them in their everyday life.

## **ACKNOWLEDGEMENT**

We would like to thank the students of the Department of Accountancy at the TEI of Kavala, Kiourtsoglou Maria and Kalkitsa Panagiota for helping us distributing and collecting the questionnaires.

## **REFERENCES**

- Datamonitor, 2000. Mobile Payment Systems, Whitepaper, November 2000. Available at <http://www.sun.co.uk/wireless/resources/pdf/datamonitor.pdf>.
- Durlacher, 1999. Mobile Commerce Report. Durlacher Research Ltd., <http://www.durlacher.com>
- Knospe, H. and Schwiderski-Grosche, S., 2004. In C. J. Mitchell, editor, Security for Mobility, IEE Press, pp. 325-346.
- Weber, R., 1998. Chablis – Market Analysis of Digital Payment Systems. Technical Report TUMI9819, TU Munich, 1998. Available at <http://chablis.informatik.tu-muenchen.de/Mstudy/>.
- Skiba, B., Johnson, M., Dillon, M., 2000. Moving In Mobile Media Mode. Lehman Brothers, 2000, Available at <http://www.entsoftware.com>, Access date: 09/14/00.
- T. Weitzel, W. König, 2000. Vom E- zum M-Payment. (in German), Available at <http://much-magic.wiwi.unifrankfurt.de/profs/mobile/infos.htm>.

# THE INTERPLAY OF INFRASTRUCTURE INVESTMENT AND FISCAL ADJUSTMENT: THE SERBIAN CASE

Ljubinka Joksimovic<sup>1</sup>

<sup>1</sup>Professor, Faculty of Economics, Kamenicka 6, Belgrade, Serbia, email: joka@ekof.bg.ac.rs

## ABSTRACT

The aim of the article is to explore the main characteristics of the Serbian fiscal adjustment and reveals the factors that may influence successfulness and effectiveness of fiscal rules in obtaining their intended results in terms of actual reducing of debt to GDP ratio and budget deficit to GDP ratio.

The investment - driven response to crisis has revived a decades – old debate about the costs and benefits of injections of public resources into an economy as it enters recession. The Serbian economy also makes a turn to a new model of growth and development that is pro – investment and pro – export oriented. The first part of the article is demonstrated the Serbian need for dramatic increase in infrastructure to close existing gaps in services provision and the factors that appear to explain why impact of public infrastructure investment is positive in some countries and negative in others. Second part of the article considers why good decision making in infrastructure appears particularly difficult during fiscal adjustment and almost no existing fiscal space as it is the case in the Serbian economy. Providing infrastructure can cost the government money in many ways (direct and contingent, explicit and implicit liabilities) and Serbia belongs to the countries perhaps most prone to the accumulation of contingent liabilities and related fiscal risk. These liabilities tend to surface and require public resources in times of economic slowdown.

It is concluded that fiscal surveillance process in Serbia requires the strengthening the initiatives to disclose and manage explicit and implicit contingent liabilities. Their proportion has already been very high and some external shock, change in market sentiment or a business collapse would be quickly crystallizing these obligations with significant negative impact on budget balance, government indebtedness and fiscal sustainability.

## KEYWORDS

Key words: public investment, fiscal adjustment, infrastructure, contingent liabilities

## JEL CLASSIFICATION CODES

H12, H54, H62, H63

## 1. INTRODUCTION

The massive fiscal stimulus in the wake of the global economic crisis has refocused the international community onto the nature and role of infrastructure spending. The idea that there should be a positive relationship between infrastructure – defined as the physical networks that support economic activity<sup>30</sup> - and economic growth is supported by a growing body of economic theory and empirical evidence.

Well designed infrastructure facilitates economies of scale, reduces costs of trade and is thus central to specialization and efficient production and consumption of goods and services. It is vital ingredient to economic growth and development which is the key to raising living standards.

Although, infrastructure is widely recognized as a key ingredient in a country's economic success, many issues surrounding infrastructure spending are not well understood. Why pay off from infrastructure investment are different among countries and which new factors with unpredictable cost can appear in interplay of fiscal adjustment and infrastructure investment?

---

<sup>30</sup> For the purposes of budgetary and economic classification these are defined as the transport, water, sanitation, power and telecommunications sectors.

With the Serbian large needs for infrastructure investments and simultaneously facing ballooning fiscal deficit and limited access to securing financing, government face increasing exposure to contingent liabilities<sup>31</sup>. Now, more than ever, prudent debt management requires involving and careful monitoring of government contingent liabilities.

## **2. THE RETURNS TO INFRASTRUCTURE**

In supplying infrastructure an important question is the extent to which infrastructure investment has effect on output over and above those from simply adding to productive capital stock. From a development perspective, infrastructure offers two kinds of benefits: (1) it raises productivity and reduces the cost of production and (2) it has a disproportional effect on the income and welfare of citizens by reducing costs to access markets, raising returns on existing assets, facilitating human capital accumulation and the dissemination of knowledge. However, measuring the returns of infrastructure investment have been a challenging exercise for long time.

The recent revival in measuring the returns to infrastructure was pioneered by Aschauer, who empirically found very high rates of return on public capital in the US – between 70 and 100 percent (Aschauer, 1989). This work suffered from serious methodological flaws. Some recent studies present new estimates of return to infrastructure that are very robust and address many of methodological shortcomings of previous studies. Calderon and Serven, in a World Bank study found significant positive contributions from public investments in telecommunications, transport and power, with the estimated marginal productivity of these assets significantly exceeding that of non- infrastructural capital (Calderon and Serven, 2004). Calderon, Moral-Benito and Serven present their estimates of the output elasticity of infrastructure which rely on a multi-dimensional measure of the physical stock of infrastructure as opposed to infrastructure spending. The elasticities lie between 0.07 and 0.10, in other words, a 10 percent rise in infrastructure assets directly increases GDP per capita by 0.7 to 1.0 percents (Calderon, Moral-Benito and Serven, 2009).

Another recent study of Latin America estimates that inadequate investment in infrastructure during the 1990s reduced long-term growth by 1-3 percentage points depending on country (Easterly and Serven, 2003). This assessment also suggests that infrastructure investments insufficiencies account for about one-third of difference in output per worker between Latin America and East Asia.

Southerland et al. in a study on network infrastructure investments in the OECD countries sought to gauge whether infrastructure investment has an effect on output ‘over and above those from simply adding to the productive capital stock’. They note that: “Infrastructure can have additional effects through a number of different channels, such as by facilitating the division of the labor, competition in markets, the diffusion of technology and the adoption of new organizational practices or through providing access to larger markets, new resources and intermediate products” (Southerland et al, 2009).

Their cross-sectional estimates suggest significant non-linearities, with relationship between infrastructure and growth changing with the level of infrastructure. Initial investments exhibit only small marginal effect on growth, but more substantial positive effects are observed when an infrastructural investment is elaborated in a sector. However beyond that, subsequent investments that only add to a network tend to have a smaller additional pay-off in terms of growth. Indeed, for some countries, investments even had a negative effect<sup>32</sup>. The energy and telecommunications sectors particularly exhibit these non-linear effects. Southerland et al. also emphasize that these results are by no means universal, with both positive and negative effects found in different countries, reflecting principally the pre-existing level of infrastructural availability. This implies that while infrastructure investment may have been profitable in the past for these OECD countries, future new investments may not be as profitable.

---

<sup>31</sup> Contingent liabilities represent potential financial claim against government. They are financial claims that may become government liabilities if certain events, beyond the control of government occur.

<sup>32</sup> For electricity generation the effects are significantly positive for more countries, but for Australia, Ireland, New Zealand and Republic of Korea, there is evidence of negative spillovers from additional investments. For roads, positive coefficients are found for New Zealand and the United Kingdom, but negative ones for France, Spain, Greece and Netherlands.

Scandizzo and Sanguinetti emphasize the positive impact on trade flows from public infrastructure investments in transport, airports and port facilities. The effects on transport cost margins have become particularly important as countries have sought to reduce tariff and non-tariff barriers. So, public infrastructure investments can create synergies with private investment. By providing key infrastructure, private investments that were previously uneconomic become profitable, as energy and water availability are no longer characterized by shortages, communication channels are raised to global standards and transport time become comparable to competitor countries. In terms of attracting foreign investments, infrastructure narrows the set of issues that deter consideration of a country as a potential market for investment (Scandizzo and Sanguinetti, 2009).

There is growing body of theoretical and empirical evidence to support the idea that physical improvements in coverage, quality and accessibility of infrastructure assets have positive impact on welfare and growth in developed, emerging and developing economies. However, the relationship between public investments in infrastructure and growth is less clear-cut. In recent paper, Ter-Minassian et al. emphasize mediating contextual factors that appear to explain why the empirical literature finds the impact of public infrastructural investment positive in some countries and negative in others (Ter-Minassian et al., 2008).

These factors include: (1) how the investment is financed: public investment financed by excessive level of taxation, deficits or debt tend to reduce growth by crowding out private investment or otherwise discouraging private economic activity; (2) the institutional context within which those investment decisions are taken: Ter-Minassian et al. cite studies suggesting that quality of governance as measured by the level of political openness and transparency, perceptions of corruption, or the risk of contract repudiation can play an important role in mediating the long-term growth impact of public investments in both physical and human capital; (3) the availability of complementary inputs some of which, such human capital, also require public support: public infrastructure investment has the largest impact on growth when combined with other forms of productive public expenditure such as effective education and health spending; (4) the quality of project evaluation, selection and management: large cost overruns and low completion rates are common to both public and private infrastructure projects in developed and developing world reducing the ultimate cost-effectiveness of infrastructure projects; (5) the regulatory and operational framework within which infrastructure services are provided: introduction of private competition and independent regulation in the infrastructure has a positive impact on infrastructure quality.

### 3. PHYSICAL INDICATORS OF INFRASTRUCTURE COVERAGE, QUALITY AND ACCESS IN SERBIA

There is a little argument that for Serbia a lack of adequate infrastructure is one of the major constraint on its productivity and competitiveness (Table 1).

Table 1. Transition results in infrastructure, 2010, Serbia and neighboring countries

	El. energy	Railway	Roads	Teleco- mmunica- tions	Water and sanitary	Urban transport
Croatia	3	3-	3	4	3+	3+
B&H	2+	3+	3-	2+	2	2+
Macedonia	3	3-	3-	4	2+	3

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

Montenegro	3-	2	2	3+	2	3
Bulgaria	4-	3+	3-	4-	3	3+
Romania	4-	4	3	3+	3+	3+
Albania	3	2	2+	3+	2	3-
Slovenia	3	3	3	3+	3+	3+
Hungary	4-	4-	4-	4	4	3+
Serbia	2+	3	3-	3	2	3-

Source: EBRD Transition Report, 2010

According to the Report on Transition 2010 published by EBRD, general infrastructure reform indicator for Serbia is 3- and it is disappointing result comparing to neighboring countries (particularly countries members of EU, but also ones which are more advanced in process of association to EU). Serbia made infrastructure progress in telecommunication sector continuing trend commercialization of services and improving market competitiveness. Internet and telephone penetration as well as costs of fix telephone services are about average for Southern-East Europe countries. However, fix telephones services are characterized with high rate outages base on one hundred main lines, 31.3. With transport, the percent of paved roads is below region's average, although the density of highways, main and national roads in network is similar to average for Sothern-East European countries. Average annual expenditures for maintenance of roads are the highest in region. Railway network posses the smallest number of trains per kilometers of network in region. Concerning air transport, Serbia is one among three countries in region with the largest number of daily departures and the largest size of cargo transport (IRI, 2010).

Enterprise Survey measure the quality of infrastructure by indicators assessing the wait times to obtain selected utility services, frequency and time hours of disruption of these services and cost burden due inadequate provisions of services in 125 countries. In this respect, Serbia has a low rates, especially concerning of delay in obtaining an electrical connection (109.52 days for Serbia, average for 125 countries is 37.2 days), delay in obtaining a water connection (61.11 and 34.96 days respectively), and delay in obtaining a main line telephone connection (46.67 and 26.31 days respectively), (Enterprise Survey, 2010).

#### 4. CRISIS AND THE PURSUIT OF FISCAL CONSOLIDATION

Fiscal consolidation literature does not offer the precise mechanism by which crises generate consolidation. It may be *force majeure*, driven by an unsustainable fiscal stance. Crises also increase public awareness of fiscal problems and thus help in overcoming resistance. Current world economic crisis reflecting to the Serbian economy, especially in decreasing rate of GDP and rising fiscal deficit to GDP, contributes to gauge the necessity of change growth and development model followed in past decade (Fig. 1 and Fig. 2). High GDP growth based on considerable growth in the non-tradable sectors i.e. on domestic demand (high wages and pensions, growth in domestic and external borrowing, substantial one-off privatization receipts) is no longer sustainable. There is an important link between public sector downsizing and the pursuit of efficiency gains which may also make expenditure cuts more sustainable than tax increases. Faced with rigid expenditures and high taxes, consolidation has come to rely quite heavily on improvements in public sector efficiency to make savings. This is an area which is rather easy to sell to public, though less easy to implement in practice. Serbia needs to reduce domestic demands in order to raise investment (Fig. 3, Fig 4 and Fig 5).

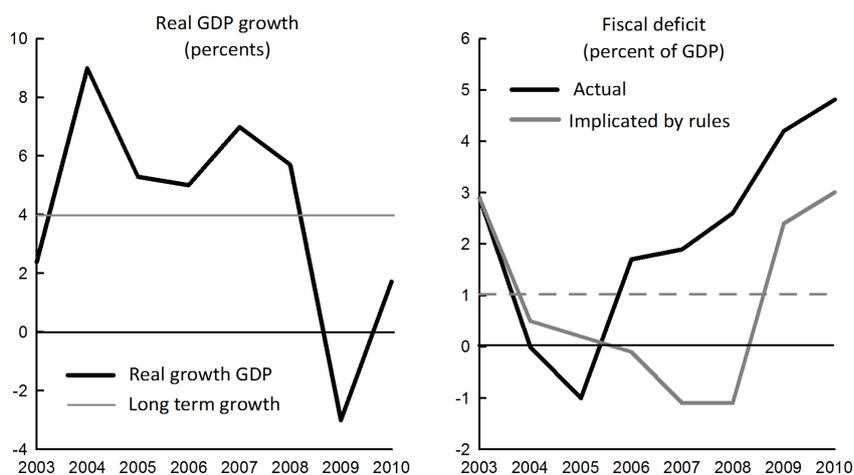


Fig. 1. Real GDP Growth                      Fig. 2 Fiscal deficit  
 Source: National Bank of Serbia, 2010

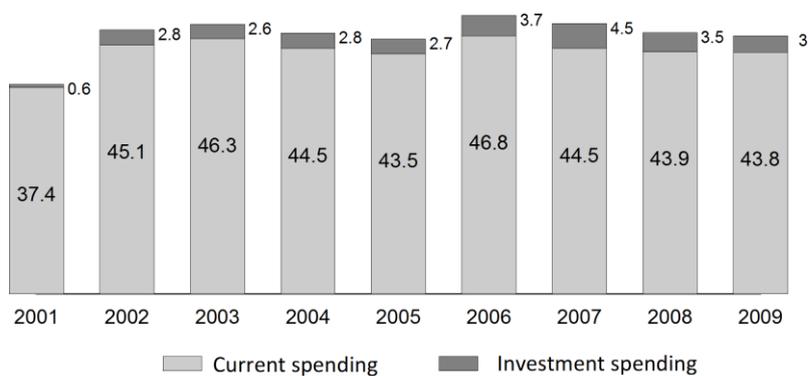


Fig. 3. Composition of public spending  
 Source: National Bank of Serbia and Ministry of Finance, 2010

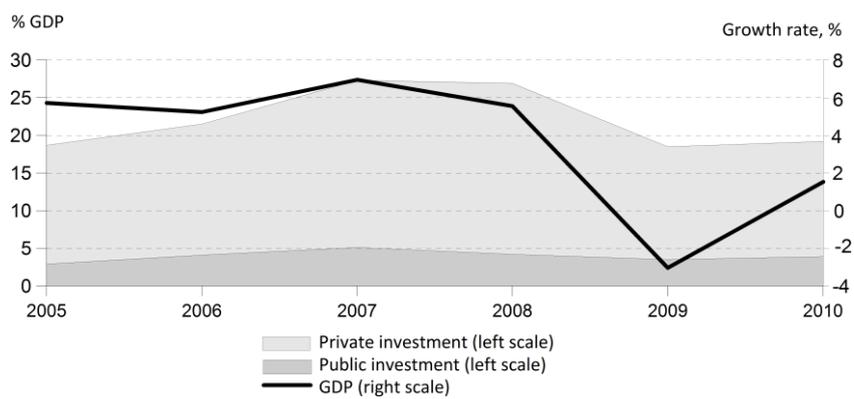


Fig. 4. Investment (constant prices 2002)  
 Source: National Bank of Serbia, 2010

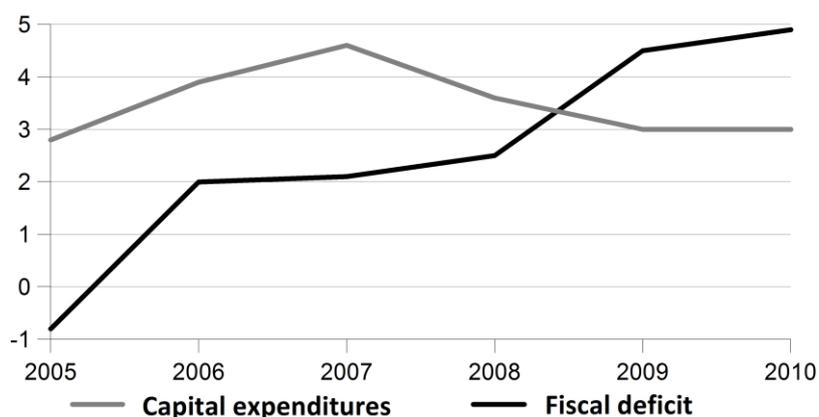


Figure 5. Fiscal deficit and government capital expenditures (% GDP)  
Source: Ministry of Finance, 2010

As expected, the crisis bore down most heavily on investment spending (as shows in Fig. 4). Widening fiscal deficit in crisis conditions did not result in higher government capital investments usually targeted at compensation of declining private investment (as shows Fig. 5). Only investment in infrastructure and creation of the export sector can ensure long-term sustainability of economic growth.

In the Serbian Budget for 2011, only 31.8 bn RSD is planned for capital expenditures. National Investment Plan has got 12 bn RSD, the same amount as previous year. Capital expenditures in 2010 as listed in the Budget, were 33 bn RSD, but with rebalance the largest part of these appropriations moved to current expenditures.

The Serbian authorities established fiscal rules by law intended to assure fiscal adjustment until 2015: decreasing of high budget deficit and control of public debt. Reestablishing sustainable public finance needs relative slower growth of salaries in public sector and pensions as main components of current public spending and rising government capital expenditures which should lead to increasing of government savings and using them partly for investments.

Space for financing higher fiscal deficit using fiscal stimulus is absent because Serbia has fiscal deficits of 4 – 5 percent of GDP for two years, and it will remain high even medium term fiscal adjustment began. High public debt is the most important constraint for using fiscal stimulus; it was 41.5 percent of GDP at the end of 2010, and there is prognosis it will continue to rise due to high deficits in several next years. More critical channel is the gross foreign debt which will arise because financing of future fiscal deficits will go by foreign borrowing; it was 81.5 percent of GDP at the end of 2010.

However, it has to be remind that key factors which can reduce debt tolerance, in Serbia as medium developing country, are not only relate to previous history of country concerning the debt payments and inflation. Sustainability of public debt in Serbia is less assure if contingent costs linked to its large exposures to exchange rate risk and off-balance sheet transactions, are taken into consideration. Further risk to debt outlook comes from large contingent liabilities mainly related to public enterprises. These are:

(1) Public enterprises. Some state-owned and socially-owned enterprises are running large quasi-fiscal deficits, mainly because of overly high wages and pricing below cost. With most public enterprise debt included in the general government debt stock (since they require state guarantees), and with enterprises receiving explicit or implicit subsidies through lower taxes and utility tariffs to cover their operations, their past and regular losses are implicitly covered. However, with the recession, delays in utility price adjustments, large investment plans and needs risks of build up of contingent fiscal liabilities going forward have increased. Preliminary assessments of these liabilities are range of 3.8 to 4.1 percents of GDP;

(2) Financial sector stability cost. In the context of the global financial crisis there are potentially contingent liabilities for the public sector from financial sector distress;

(3) Government support to the economy. The package to support domestic credit passed in February 2009 could carry risks up to about 2 percent of GDP. This includes state-guaranteed IFI loans to SME (1.5 percent of GDP), and loans through the National Development Fund and commercial banks (0.5 percent of GDP);

(4) Restitution. Restitution for confiscated assets after World War II of property seized or expropriated by the former communist governments remains pending. The government's 2007 plan contemplated a ceiling of 4 bn EUR (over 16 percent of 2010 GDP) and would significantly increase the public debt stock (IMF Serbian Country Report, 2010).

In order to safeguard public investments the Serbian authorities decided for flexible and 'public investment friendly' approach to fiscal policy focusing on broadening the usual set of fiscal indicators and targets, but without losing sight of the traditional overall balance and gross debt. Two periods are determined. First is fiscal consolidation i.e., reducing deficit and controlling public debt until 2015 and second, after 2015, with aim of holding prudential fiscal position and policy. Transitional rules will be used until 2015 and according to them consolidate fiscal deficit will be reduced from 5 percent of GDP to 1 percent in 2015, what means reduction of deficit for 0.75 percent in each next years. In order to safeguard plan of public investment, especially infrastructure investments, it will be applied modified golden rule which amounts to excluding a part of public investments from public expenditures (over 'normal' size of 4 to 5 percent of GDP). The aim is to avoid that rules appear as obstacle in years of availability more international financing and starting large number important projects. All it is based on argumentation that infrastructure investment are only effective fiscal stimulus of production for exit from recession in near future while new infrastructure should be main factor in raising competitiveness and economic growth on medium and long term. Second, it is planed that permanent rules begin to apply after 2015 and reduce fiscal deficit to 1 percent of GDP which together with relative high rate of economic growth would assure to stabilize or decline ratio debt – GDP. The Serbian budget system law limits public debt to 45 percent of GDP, including public guarantees and excluding future liabilities for restitution. Also, it is predicted the rule which would enable deficit to grow in years of economic activity is below potential level and reverse, all this to provide sound contra-cycle policy. Implementation of fiscal responsibility provisions is a task of new established Fiscal Council as an independent body (USAID, FREN, EI, 2010).

## **5. THE INTERPLAY OF FISCAL ADJUSTMENT AND INFRASTRUCTURE INVESTMENT**

In previous sections it was analyzed growth and welfare contributions of infrastructure investment, necessity of fiscal adjustment and rules included to assure fiscal sustainability. We now think it valuable to look at bigger more nuance picture demonstrating the importance of including contingent liabilities when assessing the magnitude of true fiscal adjustment and when analyzing fiscal sustainability. IMF has highlighted, for several times, during to two last years that contingent liabilities from large quasi – fiscal loses of state and socially owned enterprises and government support to private sector could pose additional risk for debt sustainability. The Serbian Ministry of Finance said that contingent liabilities totaled 1.8 bn EUR at the end of January 2010, or 4.2 percent of GDP (Tanjug, 2010) and that further accumulation of contingent liabilities is a serious threat to future fiscal sustainability. Stock of existing contingent liabilities could add 4-5 percent of GDP to future deficits.

Much of what government decides on the present has implications for future spending and deficits and problem will arise when these are not adequately foreseen. This is especially important for infrastructure investments.

Making good infrastructure investment decisions appears particularly difficult during fiscal adjustment. As noticed, the Serbian authorities under pressure to reduce budget deficit in 2010 responded by accumulating fewer assets and increasing hidden liabilities, what may remain government net worth unchanged and apparent fiscal adjustment eventually prove an illusion. Good policy starts with clear understanding of fiscal cost, benefits and risks of infrastructure. Serbian Master Plan of development strategy for transport sector for next 17 years predicated about 22 bn EUR in capital projects and these will be financed from pre-accession and accession EU funds, loans of International Banks, and revenue of sale

Telecom. It is worth emphasized that it does not take into account costs of financing which with the most favorable interest rate raising the amount to 35-40 bn EUR, as well as many other fiscal risks.

Providing infrastructure can cost the government money in many ways. Fiscal effects for government support for infrastructure, which is justified in many cases, often involve fiscal risks coming from different sources and in different forms. All this makes it difficult for government to identify and categorize them for the purpose analyzes and disclosure. One approach that many government have found useful is the fiscal risk matrix devised by Brixi, which classifies government liabilities as direct (obligations whose outcome is predictable) and contingent (obligations that may or may not come due, depending on whether particular events occur), Table 2.

Explicit direct liabilities are those that the government is legally obliged to pay and will arise with near certainty. Some results from year by year decisions, which are reported in budget documents. Unless such spending is funded by user fees or earmarked taxes, it is generally scrutinized and weighted against other spending claim on government budget. Other explicit direct liabilities arise from ordinary government debt used to finance infrastructure. These are usually well understood and scrutinized. There is a plan of relatively moderate reduction in share of subsidies in GDP from 2.2 to 1.8 percent which also includes the change of their structure in terms of reducing them for non privatized industrial enterprises and public utility enterprises. There is less transparency with tax expenditures (exemptions ) of public owned utilities which reduce government revenue. IMF has already noticed in previous years that this segment characterizes with increasing explicit hidden direct liabilities. Necessary conditions to permanent reduce or eliminated subsidies and tax exemptions are seen in finishing privatization of restructuring enterprises, starting bankruptcy procedures and rising prices for utility services. Liberalization and partly privatization of local public utilities is also planed in next ten years.

Implicit direct liabilities are those that must be paid with near certainty, but result not from legal obligation, but from political or economic necessity. Some infrastructure subsidies can be hardly withdrawn in the short term as these count as direct implicit liabilities. IMF has noticed that recurrent cost of ongoing capital projects are often underestimated and then also can be considered as direct implicit liabilities.

Good tool to capture such obligations is the medium term fiscal framework which is practical absent in Serbia. Three years fiscal plan introduced by Memorandum 2009 is usually solid in economic terms, but later it is found that planed expenditures and budget deficit are mostly underestimated because the main project planers are to optimistic or opportunistic in estimation costs and benefits of fiscal support for their projects.

With budget law 2011, Ministry of Finance became responsible for multiyear budget planning, making rigorous fiscal prognosis and executing priority programs, especially those of necessary infrastructure investment, and so promotion transparency and accountability (Joksimovic, 2010).

Explicit contingent liabilities are those that are legally binding, but require expenditure only in certain events occurs. In infrastructure provision some arise from state guarantees for borrowing public infrastructure entities, local government related to infrastructure, long term purchase contracts of state owned utilities, state guarantees of debt, revenue, exchange rates and construction costs in private infrastructure projects. Guarantees create large challenge for fiscal policy. In Budget Law for 2011, Serbia planned that their amount is 312 bn RSD mainly issued to WB, EBRD, EIB, Foreign Governments, Domestic Commercial Banks and Fiat Automobiles Serbia. In IMF Report from September 2010 we can see that Serbia is committed to ceiling accumulation of all guarantees, for domestic loans, issued by Republic Budget and Development Fund.

Table 2. Fiscal risk matrix of government obligations (infrastructure)

	Direct	Contingent
Explicit Government liability created by a law or contract	<ul style="list-style-type: none"> <li>- Sovereign debt contracted for infrastructure investment;</li> <li>- Central government subsidies;</li> <li>- Tax expenditures, such as exemptions.</li> </ul>	<ul style="list-style-type: none"> <li>- State guarantees of long term purchase contracts of state owned utilities;</li> <li>- State guarantees for borrowing of public infrastructure companies;</li> <li>- State guarantees for borrowing of local governments related to infrastructure;</li> </ul>

		- State guarantees of financial institutions involved in infrastructure financing;
		- State guarantees of debt, revenue, exchange rates, and construction costs in private infrastructure projects.
Implicit	- The future cost of any non contractual but politically unavoidable budget subsidies;	- Claims by state owned infrastructure enterprises to help cover their losses, arrears deferred maintenance and debt;
A "political" obligation of government that reflects public and interest-group pressures	- Future recurrent costs of public investment infrastructure project.	- Claims by local government to help cover their nonguaranteed debt, their own guarantees, arrears, and other obligations related to infrastructure;
		- Non contractual claims arising from private investment in infrastructure;
		- Claims by failing financial institutions whose portfolios have been weakened by financing infrastructure.

*Source: Based on Briksi, H., 2002*

In some private infrastructure projects government may bear risks relating to uncertainty about its own policy. Contrary to that, exposing the firm to big policy risks greatly increases the risk premium demanded by the firm. On the positive side, exposing the government to policy risk may encourage the government to maintain good policies and can reduce the total cost of the project.

In other cases government can agree to bear non policy risks, risk over which it has little or no influence: risk rising from uncertainty about the cost of construction, further demand for infrastructure project's services, whether firm will repair its debt, etc.

Protecting the firm from non policy risk reduces the price of the firm needs to charge to be willing to undertake the project. However, bearing non policy risk has the cost to government and in contrast to case of policy risk, this risk may be as high to the government as it is to the firm.

Infrastructure provision can also create implicit contingent liabilities. Provision of infrastructure services is often a politically sensitive issue and so government can be found under pressure to ensure the delivery of services, assume costs or even bail out an infrastructure provider, even when not legally is obliged to do so. Local government – responsible to roads, water and sanitation services – are often one such source of contingent implicit liabilities.

All these fiscal costs and potential risks point out that government have to make some trade offs between reducing current budget deficit, securing new infrastructure and keeping tariffs low.

Recent literature considering the challenges of how best to capture and manage contingent liabilities in the fiscal sustainability framework also highlights that yet this does not imply a trade off between true fiscal adjustment and all infrastructure investments. Taking into account future costs and revenues, infrastructure investments may or may not harm the government's net worth – that is, the difference in present values between its future revenues and expenditures. It depends on whether the investment generates enough extra tax revenue from higher economic output or sufficient profits from user fees, i.e. it depends on direct and indirect returns to the investments. For infrastructure investments which generate direct financial returns through user charges and these that increase growth and future tax collection i.e. have financial returns flows which present value exceed project's costs it is said that are self financing. These investments raise government's net worth even when public debt increases on short term. In practice to be realized this raise of net worth, government has to be able to reach and collect these revenues (Easterly et al.2009).

Whether a particular investment will create sufficient direct and indirect benefits depends on many circumstances. When infrastructure investment remains a public responsibility, including when public

corporations are investing, or when subsidization may be warranted, the government needs to examine the case for investment or support. The decision should be based on cost benefit analysis, preferable on case by-case base. Important overarching information needed to underpin the decision making includes defining both project objectives and alternative options for attaining these objectives. In the case of subsidization, the government should ensure that subsidies are targeted, transparent and non discriminatory. For Serbia it would be desirable to obtain and build in the assessment of medium term public debt sustainability available robust estimates of any impact of additional large infrastructure spending on growth.

Private financing of public infrastructure remains a tempting route for remedy the shortfall in available financial resources to the public sector and offers the possibility of efficiency gains as well. But, the lessons of last decade suggest that this is a route that requires careful planning and preparation in terms of gaining experience and developing appropriate prudential institutional vetting mechanisms. Due diligence is particular needed to ensure that the government's contingent risk is not so large, that public partnerships end up being another form of public debt.

Finally, fiscal spaces concerns also highlight the importance of continued efforts to ensure that when governments do engage in public investments, particularly when financed by debt, projects are evaluated carefully for their social profitability and adequate attention is paid to the management of both the investment and the capital during its lifetime. Particular attention is needed when government embarks on particularly large and the ambitious investment programs since experience tells us that opportunities for inefficiency and waste can be substantial.

## **6. CONCLUSION**

The Serbian economy is prone to accumulation of contingent liabilities and related fiscal costs, just like other transition and emerging countries, due to: (1) the high costs of transitional and structural reforms which open the door to creation of different schemes that involve government contingent liabilities and shift part of costs into the future; (2) privatization of some state functions driven by the fiscal constraint as well efficiency reasons which has demanded contingent explicit or implicit support and (3) fiscal opportunism to conceal the true fiscal cost of government programs.

The key lesson learned from crises in the late of 1990s and early 2000s was that large, lift unmonitored and unmanaged, contingent liabilities tend to surface and require public resources particularly in times of economic slowdown leading to significant build up of public debt. For these reasons, not only direct, but also explicit implicit contingent liabilities need to be fully considered in the Serbian fiscal sustainability framework. In previous year, some improvements in reporting, accounting, budgeting and overall fiscal management has been achieved mainly thanks to the initiatives led by IMF and World Bank. The main problem in fully including contingent liabilities in the fiscal sustainable framework is implementation which depends on the willingness of government to expose relevant information concerning especially contingent liabilities of state or socially owned utilities.

## **REFERENCES**

- Aschauer, D., 1989. Is Public Expenditure Productive?, *Journal of Monetary Economics*, 23.
- Bixi-Polackova, H. and Schick, A., 2002., *Government at Risk: Contigent Liabilities and Fiscal Risk*, World Bank and Oxford University Press.
- Calderon, C., Moral-Benito, E. and Serven, L., 2009. Is Infrastructure Capital Productive?, *The World Bank and CEMFI*, December.
- Calderon, C., and Serven., L., 2004. The Effects of Infrastructure Development in Growth and Economic Distribution, *World Bank Policy Research*, Working Paper 3400, World Bank.
- Easterly, W. and Serven, L., ed. 2003. *The Limits of Stabilization: Infrastructure, Public Deficit and Growth in Latin America*, Washington DC, Stanford University Press and World Bank.
- Easterly, W., Irwin, T., Serven, L., 2008. Walking Up the Downscalator: Public Investment and Fiscal Stability, *The World Bank Research Observer*, 23, 1.

Proceedings of the 3rd International Conference  
**The Economies of Balkan and Eastern Europe Countries in the changed world**

- EBRD *Transition Report*, 2010. *Enterprise Surveys*, Infrastructure 2010, The World Bank Group.
- IMF, *Country Report, Serbia*, January 2010, October, 2010, February 2011.
- Joksimović, Lj., 2011, Public Management Reform: Issues of Public Accountability, International Scientific Conference: *The Challenges of Economic Science and Practice in 21th Century*, Niš.
- OECD, *Invest Reform Index*, 2010, Available at [www.sourceoecd.org/finance/9789264079571](http://www.sourceoecd.org/finance/9789264079571)
- Scandizzo, S., and Sanguinetti, P., 2009. Infrastructure in Latin America, *Discussion Paper, Latin America Emerging Markets Forum*.
- Sutherland, D. et al., 2009. Infrastructure Investment: Links to Growth and Role of Public Policies, *Economics Department Working Paper No. 686*, ECO\WKP, 27.
- Ter-Minassian, T., et al. 2008. Creating Sustainable Fiscal Space for Infrastructure: The Case of Tanzania, *IMF Working Paper WP 256*, IMF, Washington DC.
- USAID, FREN, EI, 2010, *Postkrizni model ekonomskog rasta i razvoja Srbije, 2011-2010.*, Beograd.