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CONSIDERATIONS ON THE ROLE OF ECONOMIC ANALYSIS IN THE FIELD OF COMPETITION

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Abstract. *Economic analysis plays an important role in the field of competition for investigating the behavior of firms and for the assessment of economic concentrations. It can lead to the significant improvement of the decisions issued by competition authorities, as well as of the decisions of the courts. Concluding, we can consider qualitative economic analysis as being an essential component for the development and enforcement of competition policy, thus supporting consumers' interests.*

Based on these considerations, this article tries to present a few aspects concerning the role of economic analysis in the field of competition.

Keywords: economic analysis; competition; practices; jurisprudence.

JEL Classification: D4, D7.

Taking into account the global tendencies and the behavior, some time aggressive, of the firms trying to enter new markets, the competition becomes more and more forceful, many times being difficult to delimit anticompetitive practices from legal commercial practices. In this respect, developing new methods of analysis and implementing the existing ones is able to give solutions for the necessity of interpreting, from the competition perspective, new valences concerning the behavior of firms.

Once the final aim of competition law enforcement – consumers' welfare – is achieved, the important role played by economic analysis in developing and implementing competition policy becomes clearer. The role of economic analysis in examining a certain practice or economic concentration is to establish how much it advantages or disadvantages consumers. Even if it is not always applied easily in practice, this aspect is conceptually very clear and it is necessary to find answers to certain questions, such as: is the respective practice leading to higher or lower prices? Is the level of production in the market increasing or declining? Is the quality of products improving or worsening? How are services affected? Do consumers have more or less options? In this respect, econometrics provides a set of analytical instruments which can be useful in responding theoretically, as well as empirically to these questions.

Some specialists had identified three essential affirmations regarding the role of economic analysis in enforcing competition law, namely: review and adjustment of theories, administrative capacity of implementation and empirical testing.

a) *the necessity to review periodically the hypotheses* explaining the effects of the behavior of undertakings not only from the perspective of the new economic theories, but also from the point of view of the continuous transformations occurring in a more and more dynamic business environment;

b) *the increase of the capacity of using them administratively* by transforming economic hypotheses in fundaments for developing standards which can be applied by enforcement agencies and courts for grounding their decisions.

The economists, as well as the lawyers accept the fundamental principle regarding the link between economic analysis and competition policy as being valid. This principle states that economic approaches have a maximum impact over the legislation and over the efficiency of competition policy when they are transformed in applicable norms and analytical techniques for assessing the business behavior. The paradigm of the theoretical

monopolist (also known as the SSNIP test) for defining the relevant market is an excellent example for demonstrating this affirmation. Although previously used in economy, it was transposed in a compressive and efficient applicable form only when a lawyer with solid economic knowledge has formulated it in an actual form.

c) *the empirical testing of hypotheses and of the validity of theories*/doctrines, especially through assessing the economic effects of the administrative and judiciary decisions within the application of competition law. Whereas the economic theory shows us that monopoly – meaning the concentration of the market power – may be "bed", this is just a part – the "easy one" – of the problem. The difficulty appears when trying to establish when we are dealing with a monopoly/dominant position, what are the basis ensuring us that a behavior of a firm holding a dominant position on a certain market is indeed "bed"? Going forward, even if knowing that a certain behavior is "bed", the issue is determining how this situation can be remediated in due time and in an efficient manner. The analysis and assessments answering to these questions are at least of the same importance. This is why each of the decisions of the competition authorities require certain incriminatory hypothesis, preferable supported by evidences which must essentially include an adequate empirical support.

In reality, the role and the scope of the modern economic analysis within the competition policy faces a constant change. The evaluation of the decisional process based on modern economic principles, which were previously tested, and the use of empirical methodologies are a current trend in the application of economic analysis in the field of competition.

At the level of the European Commission, the accent on using economic analysis in the decisional process is a continuous and stabile approach. For example, in order to issue new guidelines and to apply the policy relating to the abuse of dominant position, where economic analysis plays an important role, a continuous reviewing process is being carried out at the internal level. Last but not least, economic principles can be also applicable in the field of State aid in respect to interpreting the distortion of competition and using the concept of *market failure*.

Competition policy is a major component of the Community policies, offering to the European executive large powers in the field. This is why it is essential that particular instruments for the competition field must be used (including sectoral inquires on the liberalized markets) in order to take the necessary measures for achieving the final aim: ensuring the welfare of consumers and of the entire economy.

Another very important aspect is the role of economic analysis within the Courts of Justice. For example, in the case Airtours vs. Commission, the Court of First Instance stated that the decision of the Commission "is altered by a series of errors in the assessment of the fundamental factors estimating the probability related to the creation of a dominant position".

The evaluation of the *court* leaned to a better employ of economic evidences in the decisional process of the Commission. Moreover, the court requested certain standards to be met by the evidences used by the Commission in considering a certain situation as being collective dominance.

The employ of economic analysis is also important when collaborating with other jurisdictions. This was the case in DG Competition vs. FTC and DOJ. Confidence in the economic analysis carried out in particular cases is considered to help in reducing the conflicts between different jurisdictions. However, a bigger accent on economic analysis will not lead to a full convergence; there will always be some differences and asymmetries.

The use of economic and analysis principles may vary significantly based on the actual context, such as may be the case in the following instances:

a) in the case of economic concentrations

Economic theory is necessary for defining the context of each individual case. This involves data on the structure of industry, of the firms, of the demand and the particular technologies, as well as a preliminary determination of the possible strategies. This will

always be the firs step in economic analysis within a case on competition issues (and for a case involving State aid matters).

In order to assess which economic theory may be useful in each particular context, the employ of economical principles are always a part of the process. New developed theories (such as new models, based on alternative evaluations leading to radical different results) seem to be less influenced in the context of the procedures of the analyzed case for several reasons, including the difficulty to communicate these theory in a limited period of time.

The aim of a plausible theoretical framework within a particular case is to bring testable hypotheses regarding the impact over consumers. For this reason, decisions mused be grounded on empirical evidences. The effects of a concentration or of a price practice will depend on certain circumstances and on their assessments, and implication must be verified based on the observable information and facts.

Testing which is the most adequate theoretical framework is fundamental within the decisional process; that's why, in social sciences it is known as identifying the problem. The application of economic analysis in a certain case is based on the empirical analyses, which must be correlated with the economic principles.

If the theoretical economic analyses can prove to be useful for evaluating the possible effects of a certain concentration, even more useful can be the high quality empirical analysis. Such analyses are more and more employed for two main reasons. First of all, firms and third persons collect nowadays a great deal of data than anytime in the past; this leads to the increase of the potential quantity of useful information. Secondly, economists are able to develop increasing more and better analytical instruments allowing the assessment of the final competitive effect of a certain transaction. Even if these analyses are not possible in all cases, this type of direct evidence concerning the competitive effects is useful in the decision making process.

b) in the case of the secondary legislation (guidelines and regulations)

Compared to the application of economic analysis in assessing competition instances, in the case of secondary legislation it provides rules describing the framework to be employed in distinct circumstances. The challenge faced by the economists in developing guidelines relates to the capacity to provide relative simple rules in a number of circumstances. The guidelines cannot describe all the economic analysis which can be applied in a certain case. This is the reason why the guidelines must supply information regarding the types of empirical analyses, which might be used for increasing the predictability and certitude of the interpretations.

c) in the case of vertical restraints (bloc exceptions)

Despite the continuous development of the competition policy, there are still issues under debate in the area of certain vertical restraints. One of this issue concerns the resale price fixing, occurring when a producer imposes or recommends the prices of its distributors. For example, the producer may request to its distributors not to go below a certain level. Since 1911, distribution price fixing is being considered „per se" illegal, in spite of the opinion very often adopted by economists and lawyers that such a practice may have different stimulating effects for competition.

Economic arguments are similar to those applicable in territorial exclusivities, many economists considering illogical for distribution price fixing to be regarded as „per se" illegal, whereas territorial exclusivities are analyzed case by case. The argument supporting distribution price fixing is that, by reducing the competition between the distributors of a certain brand, this practice stimulates the inner brand competition through stimulating distributors to promote the brands of the producer they are representing.

d) in the case of ex-post and ex-ante assessments

The ex-post analysis is carried out in order to understand how did the decisions of the competition authority affected the markets following the clearance of economic concentrations,

the sanctioning of cartels and abuses of dominant position, as well as the granting of State aids. The most important difficulty is to establish what could have happened on these markets in the case of taking other decisions. This is, in fact, a well known issue in social sciences and, in particular, in evaluating policies: only the fact that nothing has changed after the intervention does not mean that there is no effect on the market and vice versa.

In this case, economic and econometric analysis plays very vital role. A significant challenge is the control and the detection of the factors which may have an important influence over the results on the market, in the sense of identifying the impact of the decision taken in that particular case. Market learning and familiarizing with the particularities of the sector are crucial in this phase for fully understanding the factors involved.

Despite the multiple inherent empirical difficulties, the importance of the ex-post analysis cannot be underestimated. New knowledge obtained from ex-post tests can be useful for justifying and adapting the policies and the practices in the field.

Besides ex-post analysis, a very important place is held by the ex-ante analysis. Permanent monitoring of markets provides the opportunity of analyzing their functioning mechanisms, mainly in respect to the antitrust area. The challenges within market monitoring involve the identification of the situations when markets do not function because of certain anticompetitive behaviors or of market entry barriers. An important contribution brought by economists is to establish a set of indexes representing a signal with a high degree of certitude for indicating the existence of a problem within market functioning.

Another problem is establishing the priorities. Whereas monitoring envisages identifying potential malfunctions of the market, prioritization involves the evaluation of the extent of the identified competition problem. Economic analysis may contribute to identifying the cases where such an impact of the anticompetitive behaviors and of the market entry barriers is reduced. In other words, prioritization involves establishing the possible infringement of the competition legislation, as well as the level of loses for the final consumers.

e) in the case of State aids

A general view adopted in the State aid field supports the necessity for paying greater importance to the definition of the market failure concept. This is one component of the Lisbon Agenda which is taken very seriously, being focused on the grant of State aids within the regions where such aids would contribute to economic growth. An important aspect of the so-called "more economic approach" in the field of State aid is to demonstrate the existence of a market failure, thus involving a thorough economic and econometric analysis based on the exiting data.

In conclusion, we can state that economic analysis becomes more and more useful in the process of enforcing competition legislation. The permanent improvements in the IT field contribute fully to facilitating the application of the different methods of analysis (including the econometrics). However, it is crucially important to learn the real data from the analyzed market and to use the most appropriate economic techniques and methods.

References

Britan, L.(2005). „The role of competition protection policy in the European integration process", ASE *www.biblioteca.ase.ro/downres.php?tc=7159*

Houston, G.(2005). „The role of quantitative analysis in competition assessment", *NERA Economic Consulting, http://www.nera.com*

Roller, L.H. (2005). „Economic analysis and competition policy enforcement in Europe", *European Policy Perspectives, http://europa.eu.int/comm/dgs/competition/nma.pdf*

THE PROS AND CONS OF A PREFERENTIAL FISCAL SYSTEM FOR SMES

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Abstract. *Small and medium-sized enterprises (SMEs) raise wide debates, at political level and also within the heterogeneous community of SMEs, regarding especially the fiscal provisions. In this context, the problem brought to attention aims at highlighting some opinions with regard to the fiscal treatment applicable to the SMEs. The advocates of these ideas invoke arguments based on the contribution of SMEs within the economy, market failures, fiscal disadvantages and inherent size disadvantages, but theoretical and empirical research doesn't show enough evidence. In this sense, the purpose of the paper is to present the rationales in favour of a preferential system along with their critiques, as they emerge from the literature dedicated to this issue.*

Keywords: fiscal reform; small and medium enterprises; preferential fiscal system; profit taxation.

JEL Classification: E62, H25, H32.

1. Introduction

Although the meaning of the concept of globalization is not fully clarified for many people, is a doubtless fact that we are engaged nowadays in a process of globalization. Essentially, globalization means that the degree of dependency of one country of the rest of the world is high (Tanzi, 2004). The option of a country to stay away from this phenomenon and, implicitly, isolated from the rest of the world is no longer possible without paying a price while its acceptance involves also costs and benefits (Tanzi, 2004). This choice becomes more difficult for developing countries, because, in their case, in the short run, the costs are prevailing and, consequently, the resistance of some social and professional groups may be considerable. The option of a country in the face of the challenges induced by globalization is very important as it has consequences in the long run. Therefore, if a country decides to prevent the forces of globalization from affecting its economic activity, the price that it will pay, in the long run, consist in the reduction of the economic growth rate as compared to other countries, difference that will accumulate and become important with the time. Conversely, if a country open up its economy, the role that the government must assume is to facilitate this opening and also to prevent and reduce the opposition to this decision. This is the area where the role played by the fiscal policy becomes important (Tanzi, 2004). Given that globalization implies risks and opportunities as well, the role of the government is to act in order to support those who bear most of the costs and to encourage taking advantage of the opportunities. In this context has appeared the necessity of reforming the fiscal systems in developed and developing countries, as well.

European governments, especially from the EU, have engaged themselves, starting with 1980, in a remarkable activity of implementing reforms consisting of corporate tax rates cuts, activity that can be suggestively characterised as *"a race to the bottom"*. Therefore, the average corporate tax rate has decreased from 45.6% in 1980 to 24.1% in 2007, according to a study comprising 32 European countries (EU-27, Croatia, Island, Norway, Turkey and Switzerland) covering the above mentioned period (Heinemann et al., 2008). The principal

reason for this evolution is represented by the tight fiscal competition among states, in order to attract the direct investments of multinational companies (Heinemann et al., 2008, Nam, Radulescu, 2007). Thus, it has reached to the conclusion that upon countries with high taxes are exerted pressures in order to lower the corporate taxes, the fiscal policy of neighboring countries having a significant impact. Therefore, countries that are geographically located close to countries with low taxes are more likely to reduce the national tax rate (Heinemann et al., 2008). Seeking means of reducing the unemployment and/or accelerating the economic growth is another rationale for which, starting with 90s, almost all OECD countries have engaged themselves in fundamental reforms of their fiscal systems (Michaelis, Birk, 2006). The tax rates cut in developed countries, as part of the fiscal reforms undertaken, was accompanied, in some countries, by measures aiming at enlarging the tax base (Nam, Radulescu, 2007, Michaelis, Birk, 2006).

Within the corporate sector, the SMEe constitute a special category. At EU level, in 2005, from about 20 million of active enterprises, the SMEs represent the majority (99.8%), they offering jobs for 67.1% of the total employment in the non-financial sector and contributing by 57.6% to the creation of added value within the same sector (Schmiemann, 2008). In the light of these statistical reasons, which show the importance of the SMEs sector for the EU' economy, we wonder if it should benefit from a preferential fiscal treatment, as compared to the big enterprises. There is theoretical and empirical evidence that can warrant, from an economic perspective, such a policy? If the answer is affirmative, it should be paid a special attention to the designing of preferential measures, in order not to distort the competition and the economic decisions of the enterprises. There are supporters of both sides, among the policy makers, academic researchers, practitioners and, of course, SMEs. To such questions we will try to give answers, by presenting the arguments for and against such options, as they emerge from the dedicated literature.

2. The taxation of SMEs' profit in Europe

The provisions regarding the corporate profit taxation differ significantly among EU countries, with respect to the level of standard tax rate and also the existence of special provisions for SMEs. We present in table 1 these provisions for EU-27 and Norway, for 2008.

Taxation of SMES' profit in the EU, 2008

Table 1

Country	Standard rate (%)	Reduced rate for SMEs
Belgium	33.99	24.98%[1)]
France	34.4	15%, for the first € 38,120 of profit
Lithuania	15	- [2)]
Luxembourg	29.6	20% if the taxable profit ≤ € 10,000; € 2,000 + 26% of taxable profit greater than € 10,000, if the profit ranges from € 10,000 to € 15,001.
Portugal	26.5	20% (according to the simplified system)
Romania	16	Micro enterprises can choose to be taxed at a rate of 2.5% (3% for 2009) from turnover[3)]
Spain	30	25%, for the first € 120,202.41
UK	28 (starting from April 2008)	21%, starting from April 2008 (22% starting from April 2009), for firms with profit lower than GBP 300,000 (€ 44,500)

Source: „Taxation trends in the European Union. Data for the EU Member States and Norway", *Eurostat Statistical Books*, European Commission, 2008.

[1)] The quota is applied for taxable profits lower than € 322,500; a 24.98% quota applies for the bracket € 0 – € 25,000, 31.93% for the bracket € 25,000 – € 90,000 and 35.54% for the remaining part up to € 322,500.

[2)] Reduced quotas can be applied, under certain conditions, to small firms, firms from agriculture, credit unions, enterprises operating in Special Economic Areas and cooperatives.

[3)] Micro enterprises must have a turnover of maximum € 100,000 euro and not to obtain more than 50% of revenues from consultancy and management activities.

The settlements regarding the corporate taxation vary widely among EU states. Based on *Eurostat Statistical Books* (2008), a few conclusions can be derived. Thus:

- Most of the EU-27 states (20 states) and also Norway apply the same tax rate, irrespective the size of the company, and these countries can be grouped as follows: countries with a tax rate less than 20% (Bulgaria and Cyprus 10%, Ireland 12.5%, Latvia and Lithuania 15%, Poland and Slovakia 19%); countries with a tax rate between 20% and 30% (Czech Republic and Estonia 21%, Hungary 21.3%, Slovenia 22%, Austria, Denmark and Greece 25%, Netherlands 25.5%, Finland 26%, Sweden and Norway 28%, Germany 29.8%); and countries with a quota greater than 30% (Italy 31.4%, Malta 35%).
- Some countries have adopted special provisions for taxing the profits of small businesses (Belgium, France, Luxembourg, Portugal, Romania, Spain and UK); among these UK has traditionally had such special fiscal provisions. Romania is the only country that has adopted a taxing regime of the micro enterprises' revenues based on turnover.

3. Opinions regarding the preferential fiscal system for taxing SMEs

3.1. The SMEs concept

The size is only one of the attributes that characterize and differentiate one enterprise from others, besides its activity, the industrial sector, the legal form etc., so that the typology of the enterprises is very rich. Referring strictly to the size aspect, for defining it, the legislative authorities and other interested institutions take into account various criteria, so that we don't deal with a "one-dimensional" problem (Jousten, 2007). Revenues or turnover, number of employees, total balance sheet, number of shareholders, ownership structure and the capital base, legal form and activity type represent the most used indicators for defining the SMEs (Jousten, 2007, Holtz-Eakin, 2000). At EU level, *"the category of micro, small and medium-sized enterprises (SMEs) is made up of enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro"* (Extract of Article 2 of the Annex of Recommendation 20003/361/EC from ″The New SME definition″, EC, 2003).

3.2. The contribution of the SMEs sector within the economy

With respect to the characteristics of the SMEs and the importance of this sector within the economy are often made statements that, in most cases, are not supported by the results of some theoretical and empirical studies. Even though these statements would be entitled, two questions arise. Represent them a strong base for a preferential fiscal system for SMEs? Based on the efficiency and equity criteria applicable for public policies (Crawford, Freedman, 2008, Holtz-Eakin, 2000) is the fiscal nature of a special treatment justified? Such statements are made by employers' organizations and governmental agencies set up for supporting the SMEs.

"Micro, small and medium-sized enterprises (SMEs) are the engine of the European economy. They are an essential source of jobs, create entrepreneurial spirit and innovation in the EU and are thus crucial for fostering competitiveness and employment (Günter Verheugen, Member of the European Commission, Responsible for Enterprise and Industry, EC, 2003). We have presented in the introductory section of this paper some figures showing the contribution of SMEs within the EU economy, for the year 2005. The contribution of the SMEs to job creation is often invoked in the literature (Jousten, 2007).

These are only few arguments that support the general opinion regarding the importance of the SMEs sector within the economy, at policy makers' level and SMEs community' level as well. However, although, recognizing these attributes of the SMEs is necessary, they must not be exaggerated (Crawford, Freedman, 2008).

Regarding the contribution of small firms to the job creation, it is stated that only a minority of them effectively create jobs (Crawford, Freedman, 2008; Chen, Lee, Mintz, 2002). More precisely, it is proved that, during a decade, only 4% of active small firms create 50% of the workplaces within the SMEs' sector and a common small firm is less likely to survive a decade and thus create additional jobs, over those with which it started(1). At the same time, it was proved that the new firms with rapid growth, and not all the new firms, have the highest contribution to the job creation by the SMEs, in the developed countries (Wong, Ho, Autio, 2005).

In terms of contribution to public revenues coming from profit tax paid by firms, in the UK, during the period 2005-2006, although 91% of the companies paid the corporate tax rate of small firms or even a lower one, they generated only 13% of the profit tax paid (Crawford, Freedman, 2008). In the same sense, Jousten (2007) states that, all over the world, the administrative data indicate a high degree of concentration of payments in the hands of a small group of payers. Thus, usually less than 1% of tax payers generate more than 70% of the fiscal revenues of the governments, while two thirds of the smallest tax payers generate less than 10% of the revenues. These figures are supporting the irrelevance of a preferential fiscal policy for SMEs based on their economic contribution. Also, o lower part of small firms as compared to the active ones, contribute to the economic growth (Crawford, Freedman, 2008), only the entrepreneurship with high growth potential having a significant impact upon the economic growth (Wong, Ho, Autio, 2005), and there is no clear method or set of principles to evaluate the contribution of the small enterprises *per se* to the increase of the productivity of a economy (Holtz-Eakin, 2000). Consequently, even if the SMEs sector is very important as a whole, the general opinion that small enterprises represent the engine of the economy and the source of job creation doesn't represent, *in itself,* a justification for the fiscal facilities conceived on the size principle, to the detriment of other attributes, such as, for example, the innovation (Crawford, Freedman, 2008, Jousten, 2007, Holtz-Eakin, 2000). Regarding innovation, it is often said that small firms have a prevalent innovative character and, thus, sustaining their growth leads to the acceleration of the aggregate growth in the economy. This hypothesis is based on the observation that the biggest companies started as small firms, and some of the most innovative companies started as very small firms, argument that, according to Jousten' opinion (2007) is not relevant, a big part of the SMEs not generating innovations (Chen, Lee, Mintz, 2002).

An adequate fiscal policy should encourage the developing of innovative projects, stimulate job creation and economic growth at the level of the whole economy, and not favour only some enterprises based on size criterion, because it has proved to be surprising difficult to construct a pleading in favour of systematically sustaining the SMEs (Holtz-Eakin, 2000).

3.3. Aspects regarding the growth of SMEs in the context of a preferential fiscal system

Due to the diversity of the enterprises in an economy, from the dimension perspective as well, it appears the question why some firms are small, and remain small, while others are of medium or big size, although majority of them started as small firms. Moreover, it is necessary that all small firms grow and is rational that this growth be stimulated by fiscal measures?

Referring to this aspect, based on the efficiency criterion that should characterize the fiscal policy, taxes or other fiscal measures should not distort the production decisions of the firms, which would generate inefficiency and reduce the output level in economy. Profit motivation alone should be the one to lead to a natural size and growth of the firms, and this tendency should not be altered by policies favouring small firms against the big ones (Holtz-Eakin, 2000). The growth rate and size of a firm should follow a normal distribution law, not affected by state' interferences, inclusively by fiscal policy, according to *Gibrat' law* which

states that, if the distribution of the growth rates of a business is normal and independent on the initial size, then the distribution of the firm' sizes in economy in normal (Jousten, 2007)

Moreover, besides the positive effects initially expected, but impossible to evaluate, afferent to some preferential fiscal policy measures (exemptions or reductions of taxes, subsidies) can exist even perverse effects upon the growth. Thus: (1) lowering tax rates for SMEs can discourage their growth, as the owners may try keeping the profit or turnover below certain thresholds, in order to benefit from the preferential fiscal treatment (Chen, Lee, Mintz, 2002); firms that don't want to grow won't necessarily be encouraged, they benefiting from the fiscal facilities without being constraint to grow (Crawford, Freedman, 2008) insomuch as the profitable ones that note a business opportunity will make development investments without any fiscal incentives (Lynn, 1992); (2) subsidies granted to small firms can also penalize their growth, they representing a „tax" on growth (Holtz-Eakin, 2000); (3) lower taxes can encourage the reorganization of the activity and its division in "small" firms, at least partially from fiscal reasons (Crawford, Freedman, 2008; Chen, Lee, Mintz, 2002); although fully rational, such a behaviour can be catalogued by authorities as fiscal evasion (Crawford, Freedman, 2008). Essentially, the strong argument against a preferential fiscal treatment for small firms is based on the discouragement effects induced by the removal of the same facilities, as the firm grows (Holtz-Eakin, 2000).

3.4. Rationales for a preferential fiscal treatment for SMEs

Besides the above mentioned arguments, not without doubt, regarding the significance of the SMEs sector within the economy, its advocates invoke a series of aspects elated to the functioning of the market economy, some imperfections of the fiscal systems as well as some non-fiscal disadvantages, afferent to the reduced dimension of the SMEs. We will proceed, in the following, to a short presentation of them.

a. *Market failures*. These are situations in which the free functioning of the market, based on the "*invisible hand*" principle of Adam Smith, doesn't lead to an efficient allocation of resources, requiring thus governmental intervention. Asymmetric information regarding markets or products, the monopoly of the big firms or the difficulties in raising financing can represent cases of market failure, which affect the small firms and could justify preferential fiscal measures in order to promote investments in those firms. On the other hand, the apparent inefficiency of the market through non-financing of some projects or inadequate reward of some risks can signal, in fact, its proper functioning (Crawford, Freedman, 2008). According to OECD, the justification of the special fiscal measures, based on market failures, implies a complex of circumstances, difficult to meet in practice, namely: the nature of the market failure is clear (the main difficulty is to establish it is a market failure indeed), the failure is significant, for its improvement can be used a fiscal measure, it has an important impact upon the behaviour and it doesn't induce major distortions somewhere else (Crawford, Freedman, 2008). Market failures determine external effects, positive or negative. So that, in order to warrant the support granted to small firms through fiscal measures it should be proved that they represent a primary source of positive externalities, as a result of generating and diffusing innovations in the economy, hypothesis not confirmed (Holtz-Eakin, 2000). Entry barriers represent a case of market failure that affects small firms (Jousten, 2007), one of the demands of the perfect market referring to the free entry and exit from the market. A special case of market failure, often cited, refers to the imperfections of the financial market. According to the general opinion, SMEs have limited access to capital market, both internal and external, partially because of the perception regarding the high risk, informational barriers and involvement in smaller projects (Nam, Radulescu, 2007) are disproportionately affected by the credit constraints, as compared to their bigger competitors (Jousten, 2007), the biggest part of their investments being, therefore, self-financed from internal cash-flows (Nam, Radulescu, 2007, Lynn, 1992). Even though there are theoretical hypotheses, according to which financial markets need interventions, and there is also

empirical evidence confirming the fact that market constraints lower the rhythm of initiating new firms as well as the survival rate among recently established firms, there are not strong reasons for a general policy of systematic intervention among small firms (Holtz-Eakin, 2000).

b. *Inherent size disadvantages.* Some features of the fiscal systems in the OECD countries are considered disadvantageous for entrepreneurs and SMEs (Chen, Lee, Mintz, 2002). Thus:

- Double taxation of the distributed profit (first at the company level, then at the shareholders level) can generate a double negative effect: (a) can discourage the establishment of small enterprises, investors being thus stimulated to carry on activities as self-employed, rather through a small firm; and (b) can encourage debt financing, way of financing favourable for big enterprises, to the detriment of equity financing (as a result of the price reduction and the discouragement of stock issue), the last one being most used by the SMEs (Chen, Lee, Mintz, 2002).
- Capital gains taxes exert negative influences upon entrepreneurship (Bruce, Moshin, 2006). They affect the net income and the level of the investments in the small firms (Downer, 2001) and along with the double taxation of the distributed profit can encourage the retention of the profit, affecting in this way the reallocation of funds from mature firms towards start-ups (Chen, Lee, Mintz, 2002, Downer, 2001). Their reduction will stimulate entrepreneurship and investments in SMEs by encouraging (1) the purchasing of stocks, as a result of the increased net return of the capital, and (2) the undertaking of investments by entrepreneurs, as a result of reducing the average net cost of capital for debt and equity (Downer, 2001).
- Higher taxation of distributed profit as compared to the part retained can also block the profits within companies and hamper the reallocation of funds from mature firms towards start-ups, with potential of rapid growth, which however have to rely on external sources of (Chen, Lee, Mintz, 2002).
- Asymmetry of taxable profits and losses. Relief for tax losses may imply wait until firms generates sufficient taxable profit, being thus affected especially the new firms, with rapid growth, not necessarily the small ones, and less the mature firms (Crawford, Freedman, 2008). In order not to discourage risk-taking are necessary more liberal provisions for start-ups, because they need more years to become profitable (Chen, Lee, Mintz, 2002).

c. *Inherent size disadvantages*. Among this kind of disadvantages, the most burdensome one is the regressivity of tax compliance costs (Crawford, Freedman, 2008, Jousten, 2007, Chen, Lee, Mintz, 2002). These costs – measured in terms of formalities that a taxpayer must comply with as well as the time spent on administrative matters related to tax compliance – is the major cause that hamper the firms development (PWC & World Bank, 2006). Their regressivity comes from the fact their burden is disproportionately supported by the SMEs, for which specialized employees and time available for these activities represent genuine constraints and lead to fixed costs, small firms couldn't take profit from the economies of scale and organizing methods available for big companies (Crawford, Freedman, 2008). From this point of view, the practical way of helping small firms is represented by the simplified VAT regimes for SMEs (Crawford, Freedman, 2008, Jousten, 2007, Chen, Lee, Mintz, 2002), that, however, according to Jousten (2007) are not without risks (tax cascading; taking actions to influence the presumptive base rather than optimize the resource allocation; heavily affecting the base for the payroll tax system and implicitly the income distribution in the economy; perverse effects consisting of situations of lock-in, split-up and re-registration of tax-payers). Sometimes it gets to a trade-off between tax compliance costs and tax evasion (the case of registration threshold for VAT, in Romania

being of € 35,000), and reduction targeted measures can degenerate in increasing tax compliance costs (Crawford, Freedman, 2007). The necessity of a relief for tax compliance and associated administrative costs, through efficient simplifying measures of the fiscal systems, for the advantage of all taxpayers, is widely accepted, although it is admitted the possibility of designing special regimes for the smallest taxpayers, the only case that meet a large support (Crawford, Freedman, 2008; Jousten, 2007, Chen, Lee, Mintz, 2002). In the scope of helping SMEs, at the EU level is allowed for a reduction of 25% of administrative burden generated by the EU legislation by the year 2012 (European Commission, 2008).

4. Case study

The majority of states that have adopted preferential fiscal systems for SMEs have opted for o reduced profit tax rate, which leads to a lower tax for enterprises recognised as SMEs. Romania is the only country that adopted a system of taxing the income of the micro enterprises based on revenues, optional for them, and which doesn't always leads to a lower due tax for taxpayers. Thus, when an enterprise fulfil all the requirements (obtain revenues, others than those from consultancy or management, in a proportion greater than 50% of total revenues; employs between 1 and 9 employees inclusively; has realised revenues of less than the RON equivalent of € 100,000; the capital base of the juridical person is owned by persons, others than government, local authorities and public institutions) in order to be micro enterprises' revenues taxpayer, it has the possibility to minimize the tax due to the public budget. Therefore, a micro enterprise can choose between being a micro enterprise' taxpayer or a profit taxpayer. For 2008 the quota for micro enterprises' revenues tax is 2.5% and is applied upon the realized revenues (with few exceptions). Profit taxpayers due to the budget a tax of 16% from the taxable profit (the difference between taxable revenues and deductible expenses).

In order to highlight the fiscal advantage and to retain the optimum choice, we consider the following hypothetic example for an enterprise qualified as micro enterprise:

TR – total revenues realized (totally taxable when calculate profit tax due);

RR (ORR) – revenues realized (other revenues realized), totally taxable when calculate the profit tax and that can (cannot) be included in the base for calculating micro enterprises' revenues tax;

TE – total expanses made by the enterprise;

UDE – undeductible expenses;

DE – deductible expenses made by the enterprise.

The economic agent will opt for paying micro enterprises' revenues tax (MRT) when it estimates that this will be lower than the profit tax (PT).

$MRT < PT$

$0.025 \times TR < 0.16 \times (TR - TE + UDE)$

$0.025 \times RR < 0.16 \times RR + 0.16 \times ORR - 0.16 \times DE$

$0.16 \times DE < 0.135 \times RR + 0.16 \times ORR$

$DE < 0.84375 \times RR + ORR$

Thus, when the enterprise estimates a situation similar to that from the above example, it should opt for paying the micro enterprises' revenues tax, otherwise, being recommended to remain profit taxpayer. The choice between profit taxpayer and micro enterprises' revenues taxpayer is possible regardless of the equality of the two terms.

To exemplify, we suppose the case of three enterprises, A, B and C, which realize the same revenues level in the same structure, namely: TR = RON 304,000, RR = RON 250,000 and ORR = RON 54,000. Total expanses related to the revenues are of an amount of RON 275,000, with the following structure: "Enterprise A": DE = RON 250,000 and UDE = RON 25,000; „Enterprise B": DE = RON 264,937.5 and UDE = RON 10,062.5; „Enterprise C": DE = RON 270,000 and UDE = RON 5,000. In these conditions, the profit tax due in the

three hypotheses will be: RON 8,640 lei (A), RON 6,250 lei (B) and, respectively, RON 5,440 (C), while the micro enterprises' revenues tax due will be in a constant amount of RON 6,250 and the option of being either profit taxpayer or revenue taxpayer belong the taxpayer.

5. Conclusions

As a result of the fiscal competition, generated and driven by globalization, we assist, in the last decades, at vast fiscal reforms, consisting of reducing the profit tax rate. Therefore, national systems regarding the taxation of companies' profits vary significantly. Within the EU, the amplitude of the variation in the standard profit tax rate is of 25%, in 2008. Some countries have adopted even special fiscal provisions regarding SMEs. The necessity of a preferential fiscal system for SMEs is widely debated in the literature. The advocates of such a system invoke, first of all, arguments showing the contribution of SMEs to the job creation, economic growth and productivity of the economy, generation and also the generation and diffusion of innovation in the economy. Moreover, there are brought into discussion the cases of market failures (especially that of the financial market), some features of the fiscal systems disadvantageous and discriminating for SMEs (double taxation of the distributed earning, asymmetric treatment of profits and losses etc.) as well as inherent size disadvantages (regressivity of the tax compliance costs). In spite of these arguments, there is not consistent theoretical and empirical evidence that could warrant the neither the necessity of a special support granted to SMEs, based strictly on the size criterion, nor its fiscal nature. On the contrary, it is stated that governments should not distort, by fiscal interventions, the natural growth and size of firms and should adopt measures targeted at stimulating innovation and employment and reducing the tax compliance and afferent administrative costs for all the firms, regardless their size.

Note

(1) According to Crawford and Freedman (2008). Apud Storey David J., „A Symposium on Harrison's „Lean and Mean": A Job Generation Perspective", *Small Business Economics,* 7/5, 1995, pp. 337-340.

References

Bruce, D., Mohsin, M., „Tax Policy and Entrepreneurship: New Time Series Evidence", *Small Business Economics,* 26, 2006, pp. 409-425

Chen, D., Lee, Fr.C., Mintz, J., „Taxation, SMEs and Entrepreneurship", *OECD Science, Technology and Industry Working Papers,* OECD Publishing, 9, 2002

Downer, Pauline, „International appraisal of effect of capital gains tax on investment in small business", *Journal of Financial Management & Analysis,* 14/2, 2001, p. 32

Crawford, Claire, Freedman, Judith, ″Small Business Taxation″, *the Institute for Fiscal Studies – IFS,* 2008

Heinemann, F., Overesch, M., Rincke, J., „Rate Cutting Tax Reforms and Corporate Tax Competition in Europe", *Centre for European Economic Research,* 2008

Jousten, A., „SMEs and the tax system: what is so different about them?", *CESifo Forum, ABI/INFORM Global,* 2007

Michaelis, J., Birk, Angela, „Employment- and growth effects of tax reforms", *Economic Modelling,* 23, 2006, pp. 909-925

Nam, C. Woon, Radulescu, Doina Maria, „Effects of Corporate Tax Reforms on SMEs' Investment Decisions under the Particular Consideration of Inflation", *Small Business Economics,* 29, 2007, pp. 101-118

Neeley, Lynn, „Small Business, Capital Investment and Tax Reform", *Journal of Small Business Management,* 30/3, 1992, p. 30

Schmiemann, M., „Enterprizes by size-class – overview of SMEs in the EU", *Eurostat - Statistics in focus,* 31, 2008

Tanzi, V., „Globalization and the need for fiscal reform in developing countries", *Journal of Policy Modeling,* 26, 2004, 525-542

„Taxation trends in the European Union. Data for the EU Member States and Norway", *Eurostat Statistical Books*, European Commission, 2008

„A *Small Business Act* for Europe", European Commission' Communication no. 394, 2008

„Paying Taxes. The Global Picture", *PriceWaterhouseCoppers & World Bank*, 2006

„The new SME definition. User guide and model declaration", *Enterprise and Industry publications*, European Commission, 2003

Wong, P.K., Ho, Y.P., Autio, E., „Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data", *Small Business Economics,* 24, 2005, pp. 335-350

OPTIMIZATION OF MORTGAGE LOANS GRANTING PROCEDURES

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Abstract. *The regulation of Romanian banking system credit activity is the subject of an ample adjusting process, its final objective being the elaboration of a rigorous, and in the same time flexible legal framework, individualized for each credit institution. Therefore, it is desired to keep management responsible for the clear establishment of their business strategy and for the accurate evaluation of their activity's risk profile. In the context of increasing banking competition and of the dynamics recorded on credit market, credit institutions proceeded to the elaboration of internal credit regulations, validated by NBR, in order to optimize their credit granting decision, both from the standpoint of financial products supplied, and of eligibility criteria involved.*

Keywords: mortgage loan; eligibility criteria; optimization process; Data Envelopment Analysis; Principal Component Analysis.

REL Classification: 3C, 10B, 11C.

1. Banking strategies for promoting and optimization of mortgage loans in Romania

In a broader interpretation, optimization represents the selection from different scenarios and application of the optimal economic solution. At bank level, the process of credit activity optimization aims to maximize profits from this activity, in the context of an appropriate risk management, especially credit risk, and of conformity with prudential regulations imposed on by central bank and with banking activity best practices.

In the last years, in order to reach these objectives, credit institutions that grant mortgage loans have adopted a set of measures meant to attract a higher number of customers and to offer a large range of financial products, concomitant with relaxing the credit requirements. The most important tendencies were:

- Expanding the maturity of a mortgage loan to 40 years and the credit period until the age of 70 years. These measures were possible in the context of the labor law, which stipulates a gradual increase of the retirement age in the next years.
- Providing credits denominated in exotic currencies, as CHF or JPY. These currencies have benefited of a better stability than the currencies usually used to grant a credit in our country, such as EUR and USD. The small level of interest rates and their relative stability are the main reasons for the continuous growing attraction exerted by loans expressed in these currencies. Yet, the exchange rate risk implied by these loans is still high, because of the volatility of national currency.
- The increase of the degree of indebtness from 30% to 70% has determined a significant growth in the number of eligible customers for mortgage loans.

- The acceptance of other incomes than the traditional ones (salaries, retirement pensions), such as: rents, dividends, intellectual property rights, liberal activities, collateral cash, each income category being weighted with a coefficient, according to bank's credit policy.
- The development of special credit products, addressed to particular applicants: students, notaries, lawyers, doctors.
- The acceptance of co-debtors, without taking into account their age.
- Providing credits with a period of grace, during which there is no reimbursement or it will be repaid only interest and fees.

The process of mortgage loans optimization can be tackled from two perspectives:

1. The choice of an optimal loan for each client, by comparing the characteristics of several banking products, in terms of currency, interest rate, fees, maturity, accepted incomes, the maximum age until which it is allowed the repayment. In the last years, this activity had been taken over by credit brokers, being free for clients and receiving fees only from partner banks. These services are possible via internet too, allowing applicants to have an easy access to information and obtaining an online scoring.
2. Optimization at the credit institution level, which consists in establishing clear credit requirements, in order to allow risk diminution and the obtaining of estimated incomes from fees and interests. In this respect, banks have developed internal credit frameworks and stages to fulfill in the process of credit analysis and granting, all of them being subject of the validation by National Bank of Romania.

The main criteria that lie at the core of comparative studies concerning loans are: credit destination, currency, credit value, maturity, minimum advance, interest rate type (fixed or variable), real or personal guarantees, types of insurance, eligibility criteria, taxes and fees. We have studied mortgage loans provided by six credit institutions: Alpha Bank, Banca Românească, Banca Transilvania, ING Bank, Unicredit Țiriac Bank, Volksbank, over the period July - September 2008.

a) From the *credit destination* standpoint, most mortgage loans are granted for land or houses purchase, the building of new dwellings or modernizations.
b) The main *currencies* of mortgage loans are RON and EUR. From the analyzed banks, only Volksbank grants loans in CHF, which emphasizes both banks and customers reticence to resort to currencies less employed in residential transactions. Generally, in the Romanian banking system, only small banks, that attempt to increase their market share, have granted credits in CHF or JPY. The preference for euro is explained by the fact that the majority of the residential prices are expressed in this currency and also by the fact that the future adhesion of Romania to euro zone will cancel the exchange rate risk.
c) *Credit value* ranges between a minimum of 1.500 € and 10.000 € and a maximum between 200.000 € and 500.000 €.
d) From the *maturity* viewpoint, we observed periods between 3-5 years and 25-30 years. Besides, the repayment period has continuously increased, at Millennium Bank being the possibility of granting a mortgage loan on two generations.
e) *Minimum advance* ranges between 15% (Alpha Bank and Banca Transilvania, for housing loans) and 25% (Unicredit Țiriac Bank, for housing and mortgage loans).
f) Concerning the *interest rate,* there is a great variety of practices, both in terms of currency of denomination and its fixed or variable character. It is important to mention that the interest rate policy is completed by the tax and fee policy, the annual effective interest providing a more reliable and accurate image on loans financing costs.
g) The *guarantees* accepted are a rank I mortgage on the purchased building or land, in favor of bank, an insurance policy for the building or land and life insurance for

debtors, both released for the bank. For housing loans there are real guarantees, other than purchased land or building, banking deposits or letters of guarantee issued by another bank than the creditor one. In the case of mortgage loans granted for dwellings building, it is accepted as a mortgage the future dwelling on stages of execution, but the financing will be provided also on a staggered basis.

h) *Types of insurance* claimed by banks are the debtor's life insurance and the insurance policy for the building or land mortgaged.

i) *The eligibility criteria* are composed mainly by: applicant's minimum monthly income, age, the income categories accepted. With small differences across banks, the accepted incomes are: salaries, retirement pensions, rents, dividends, collateral cash, liberal activities, intellectual property rights. These incomes can be obtained in Romania or in other countries and it is necessary to present justificatory documents.

j) *Taxes and fees* are different from a bank to another, being expressed as a percent or fixed amount. The tax for file analysis and dwelling evaluation are fixed. Some banks have a fee for credit administration, in amount of 0.2% monthly, as is the case for Unicredit Țiriac Bank. In the case of an anticipated repayment there are larger fees, in order to discourage refinancing, Alpha Bank perceiving 4% and Banca Românească 3% for an anticipated repayment in the first 4 years.

2. The mortgage loan optimization function: premises and stages

This part of the study aims to find a quantitative dimension for the efficiency of mortgage loans granting process, by identifying the most representative variables that could optimize it. We have considered two types of variables:

- Variables that indicate the characteristics of the mortgage product: value, maturity, minimum advance, interest rate, fees, currency, life insurance, endorsees.
- Variables that belong on customer's eligibility criteria: income, age, length of service, degree of indebtness.

The research comprised a sample of 25 customers that have obtained a mortgage loan, and was developed on two stages.

Stage I was meant to assess the correlations between the variables considered, in order to maintain only the most significant ones for the mortgage loan granting process. For this purpose, we have applied Principal Component Analysis (PCA), which is a factor analysis technique developed by Karl Pearson. PCA is a statistical method used for explaining the variability of an initial dataset of variables observed for a process, which emphasizes those variables highly correlated. Thus, it is possible to remove redundant information incorporated in those particular variables. From a statistical standpoint, PCA decreases the initial dataset dimension, by gathering highly correlated variables into one single factor, without a significant loss of financial information. Yet, the results' final accuracy is conditioned by the quality and reliability of data.

Before starting the analysis, we have applied the Kaiser-Meyer-Olkin (KMO) adequacy sample test and the Bartlett sphericity test to determine if PCA technique is suitable for the variables chosen. Consequently, we have dropped from the initial dataset the following variables: minimum advance, endorsees, life insurance, fees and customer's length of service. Moreover, the values available for these variables were relatively homogeneous and hadn't a significant contribution to the discrimination between different categories of applicants for a mortgage loan.

To extract the factors and to facilitate their scores' interpretation, we have chosen the varimax rotation method. The essence of this method consists in axes rotation, so that to maximize both factors' variance and the initial variables' variance. Once we have extracted the first factor, will be defined another one, in order to maximize the remaining variance. Keeping in mind that a factor is defined so as to maximize the variance uncaptured by the

previous one, the consecutive factors are independent one from another, and, therefore, uncorrelated.

If the variables' dataset is large, one should question about the optimum number of factors to be extracted, in order to minimize the remaining variance and to properly model the economic phenomenon. Economic literature has consecrated several selection criteria. We have chosen the proper value criterion or eigenvalue, developed by Kaiser, because it is widely accepted and supplies the best results. It indicates the quantity of the total variance in all variables that is explained by a factor.

The eigenvalue criterion must be carefully applied because, when the number of variables is small, will be extracted fewer factors than really exist, meanwhile when the dataset is very large, also the number of factors will be large, to the prejudice of results' accuracy.

Variance of the extracted factors

Table 1

Component	Initial eigenvalues			Extraction sums of squared loadings		
	Total	% of variance	% cumulative	Total	% of variance	% cumulative
1	3.306	41.324	41.324	3.306	41.324	41.324
2	1.887	23.588	64.912	1.887	23.588	64.912
3	1.228	15.355	80.267	1.228	15.355	80.267
4	0.873	10.908	91.175			
5	0.323	4.043	95.218			
6	0.234	2.924	98.142			
7	0.148	1.852	99.994			
8	0.001	0.006	100.000			

Extraction Method: Principal Component Analysis.

The total column indicates the eigenvalues as a measure of the variance captured by each factor. Next column these values are expressed as a percent of total variance. The third column presents the cumulative percents of eigenvalues in total variance for each factor. We have imposed on the condition that only those factors with an eigenvalue that surpasses the threshold of 1 should be kept for a further analysis. Consequently, we have obtained three principal factors. Factor 1 holds 41.324% of the total variance, factor 2 holds 23.588% and factor 3 holds 15.355%. As it is illustrated in table 1, the cumulative variance of the three factors is 80.267%, therefore the information loss is of 19.733%.

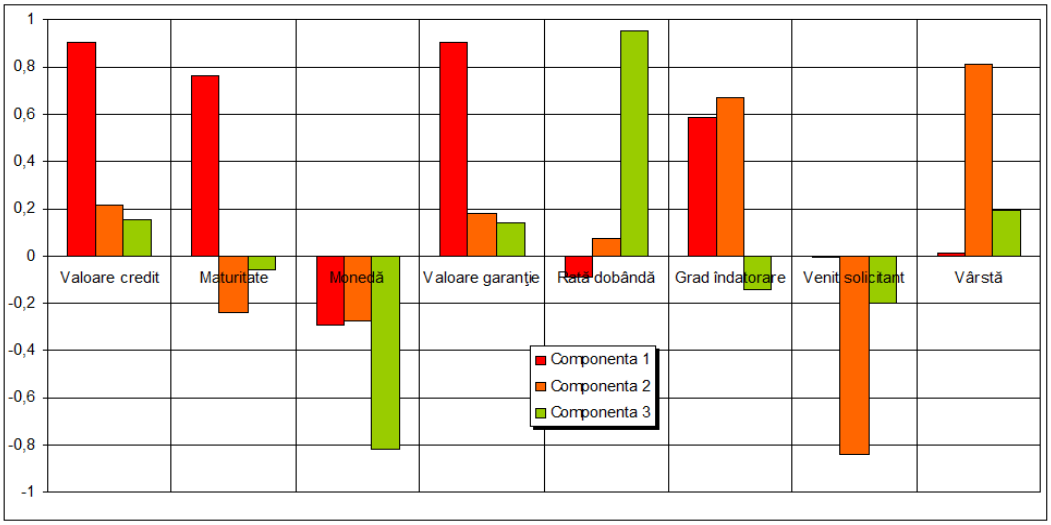

Figure 1. *Correlations between variables and the three principal components*

We have found that:

1. Factor 1 is highly correlated with variables: credit value, guarantee value and maturity.
2. Factor 2 is significantly correlated with customer's degree of indebtness, income and age.
3. Factor 3 is correlated with the interest rate and the currency.

Therefore, we can conclude that factor 1 indicates the fundamental characteristics of a mortgage loan, factor 2 reflects the applicant's eligibility criteria and factor 3 synthesizes the financing cost, which varies according to the currency and the interest rate considered.

Stage II consisted in developing multi input - multi output models, on the basis of the variables identified in the previous stage, and in obtaining the efficiency scores for each model considered, by applying the Data Envelopment Analysis (DEA) technique, created by Charnes, Cooper and Rhodes in 1978.

DEA is a non-parametric technique used both in operational research and economy, its initial purpose being that of estimating the production's limits. In microeconomic theory, the inputs and outputs of an economic agent are included in the production function. By optimizing this function, one can obtain the maximum production that can be achieved in any input combination. DEA method lyies on the assumption that there isn't possible to determine exactly all the possible inputs and outputs values, and tries a partial approach. In table 2 we have illustrated the input and output variables for each model proposed.

Input and output variables

Table 2

Model	Input variables	Output variables
M1	Applicant's disposable income	Credit value
M2	Applicant's disposable income, currency	Credit value
M3	Applicant's disposable income, currency, degree of indebtness	Credit value
M4	Applicant's disposable income, currency, degree of indebtness, interest rate	Credit value
M5	Applicant's disposable income, currency, degree of indebtness, interest rate, age	Credit value
M6	Applicant's disposable income, currency, degree of indebtness, interest rate, age	Credit value, guarantee value
M7	Applicant's disposable income, currency, degree of indebtness, interest rate, age	Credit value, guarantee value, maturity
M8	Applicant's disposable income	Credit value, guarantee value, maturity
M9	Applicant's disposable income, degree of indebtness	Credit value, guarantee value, maturity
M10	Applicant's disposable income, degree of indebtness, interest rate	Credit value, guarantee value, maturity

M 1, the initial and simplest model, consists of an unique input variable (applicant's disposable income), while the output variable is the credit value. To examine the influence of other variables in the credit granting process, we have successively included in model M1 a series of input variables. As the research's goal is that of optimizing the results, we have included also several output variables.

For each model have been estimated the efficiency scores, under the assumption of variable returns of scale. This hypothesis is justified by the imperfect competition, asymmetric information and legally and financial requirements.

Keeping in mind that our models are output oriented, and thus aiming to maximize the results, we have considered that the most efficient model, for which the input-output combination allows the adoption of a credit decision pursuant to best banking practices, is

that with the efficiency score closest to 1. The bigger from one the score, the more inefficient is the model concerning its outputs. Models M1 and M2 reached the highest score (2.9462), thus being the most inefficient. This result suggests that, in the process of analyzing a mortgage loan demand, credit analysts should consider an increased number of factors, in order to reflect in a comprehensive manner the applicant's financial behavior and its ability to generate future cash-flows. Another observation that can be extracted from the equal efficiency scores obtained by the two models is the insignificant importance of currency for the overall efficiency of the model.

As we have introduced several variables, the efficiency scores improved, being closest to the optimal value of one.

Conclusions

The implementation of optimization strategies for granting mortgage loans in the Romanian banking system had been tightly connected to the evolution of the general legal framework, of requirements imposed on by central bank, of residential and banking market. Especially after 2000, Romanian credit institutions continuously adjusted their activity to changing economic climate and became more inventive as the banking competition increased.

Our research conducted to the minimal set of variables that should be at the origin of a valid credit granting decision, composed by: applicant's disposable income, degree of indebtness, credit value, guarantee's value and maturity. The new legal framework and the evolutions on the international financial markets could change in future the weights of these variables in the process of mortgage loans optimization.

References

Budişteanu, Ileana, „Long-term implications of the housing finance arrangements in Romania", *Metropolitan Research Institute*, Budapest, 2004

Chiquier, Loïc, *Housing Finance for Lower-Income Groups*, OECD, Paris, 2004

Dübel, H.-J., „Managing the Risks of Mortgage Lending in Transition Countries", *Metropolitan Research Institute*, Budapest, 2004

Feigelfeld, H., „Assessing the impact of the extension of the EU on the housing market – an example from Austria", *ENHR*, Ljubljana, 2006

Hegedüs, J., Somogyi, Eszter, „Failure or Success of the Mortgage Subsidy Program in 2000-2004 in Hungary", *Metropolitan Research Institute*, Budapest, 2004

Lambert, Annick, *Trends in European Housing Finance*, OECD, Paris, 2004

Stephens, M., „The role of housing finance in the housing policy of the transition countries", *Metropolitan Research Institute*, Budapest, 2004

Struyk, R.R., Hegedüs, J., „Housing Finance-New and Old Models in Central Europe, Russia, and Kazakhstan", *Open Society Institute*, Budapest, 2005

THE LIQUIDITY ON THE MARKET GOVERNED BY ORDERS

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Abstract. *This paper proposes a new method based on stochastic calculus in order to analyze the liquidity on the market governed by orders in the presence of the informed agents. The paper proposes a new formula in order to compute the market liquidity. This analytical formula is obtained from the options valuation methods following the fact that an agent who places a limit order offers an option to the rest of the market which can be exercised against him. The analytical formula of the liquidity cost for a market governed by orders depends on four parameters: the risk-free interest rate, the transaction price of the financial asset, the volatility of the financial asset and the limit price.*

Keywords: microstructure; information asymmetry; liquidity; stochastic calculus; limit order.

JEL Classification: G10, G13, G14.

1. Introduction

Information asymmetry on financial markets represented an important starting point for two distinct research fields. First field, initiated by Bhattacharya (1979), Ross (1977) and Leland-Pyle (1977), analyzes how the asymmetry of information between investors by using the signal theory can be solved. The analyses of some variables that characterize the financial asset (such as dividend) allows for less informed agents to obtain some information about the value of the security in which they wish to invest. Second field, initiated by Grossman (1976), studies the information asymmetry that exists between agents that possess privileged information about the value of the asset and other agents (uninformed) using the concept developed by rational expectations. The explanation of this phenomenon is intuitive. If an agent has some information that a stock is undervalued then he can make a profit by giving his broker an order to buy. This increase in demand can induce a rise in the price which can signal out that some agents consider that the stock is undervalued. If uninformed agents correctly anticipate the relationship between price and information held by well informed agents then they can extract the appropriate information included by the price.

Grossman-Stiglitz (1980) prove that this result raises a problem when there are costs for getting informed. When prices include all the private information, well informed agents cannot realize profits superior to the uninformed agents. Under this consideration no agents would accept to bear a cost to get informed and the prices will cease to transmit any private information. Market efficiency (defined by financial theory as the situation in which prices reflect all the information available including that held by well informed agents) is inconsistent with financial market equilibrium. Grossman-Stiglitz (1980) demonstrated that in order for equilibrium to exist on a market with a given fraction of informed agents it is necessary that prices do not reveal the whole information contained. There are some variables that influence the prices and that cannot be observed by the uninformed agents. In the models of Grossman (1876) and Grossman-Stiglitz (1980), informed agents disregard the information they reveal on the market. This is the same as assuming that these agents have a competitive behavior, because they do not take into consideration the impact their transactions have on the equilibrium prices. Further research regarding information transmission through prices of Kyle (1985), Kyle (1989) or Laffont-Maskin (1990) don't include the assumption of a competitive behavior of informed agents. Kyle's articles (1985 and 1989) show that, when

the informed agents are aware of their impact on prices, the information efficiency of prices is diminished. He also shows that information asymmetry is an important factor which influences the liquidity of the market.

Other studies, like that of Glosten (1989), Bhattacharya-Spiegel (1992), Bossaerts-Hughson (1991), emphasize the fact that the existence of information asymmetry can lead to situations in which the market is completely illiquid. Madhavan (1992) compares the price formation (spread, volatility and information efficiency) on a market governed by prices to that on a market governed by transactions orders, also considering the information asymmetry. He raises the question of the existence of an optimum market structure.

2. Measuring the liquidity on the market governed by orders

The theory of the financial market microstructure uses the game theory like an instrument of the analyses. The main critical of this type of analyses is the missing of the time in which the market arrives to equilibrium. By definition, the game theory is non-time dependent and, therefore, it cannot develop a forecasting model. This paper uses the stochastic calculus in order to analyze the equilibrium on the financial market and its microstructure. Whatever the market structure is, the liquidity comes from the prices quoted by the agents, the market maker in a market governed by prices or the final investors in a market governed by orders. In the continuous market, a limit order is risky because the order execution depends on the changes of the market facts. Let suppose that an agent gives a limit order to sell at 100 euro. If new information arrives in the market justifying the price at 101 euro and the agent doesn't change quickly the order, he offers to the others agents the possibility to obtain one euro profit. This phenomenon can be described using the options theory. The agent who gives a limit order offers an option to the rest of the market which can be exercised against him in the case of an unfavorable evolution of the market.

From now on, the options theory is used in order to deduce a formula of the market liquidity cost. Following, a continuous market governed by orders is taken into consideration. In this market the duration of the limit orders execution is unlimited (that is the case of the stock exchange from Romania, France or Japan). A buying order limit will give the right, but not the obligation to sell the asset at the limit price offered with perpetual maturity. Therefore, the liquidity cost supported by the agent who gives the limit order is the price of an American perpetual put. The liquidity cost is defined by:

$$L = \max_{\tau_t} E_Q\left[e^{-r\tau_t}\left(K - S_{\tau_t}\right)\right] \quad (1)$$

where K is the limit price offered by the buying limit order, and $E_Q\left[e^{-r\tau_t}\left(K - S_{\tau_t}\right)\right]$ is the expected value under a risk neutral probability, Q, of the option payoff discounted at the free interest rate, r. τ_t is the stopping time. In a risk neutral world, the stochastic dynamics of the transaction price and of the equilibrium price are defined by:

$$dS_t = rS_t dt + \sigma S_t dW_t \quad (2)$$

$$dP_t = rP_t dt + \sigma\sqrt{1-\rho^2}P_t dZ_t \quad (3)$$

where σ is the volatility of the financial asset market price. Also W_t and Z_t are two Brownian motions defined under a risk neutral probability, Q. ρ is the instantaneous correlation coefficient between the Brownian motions. Let X a positive level of the equilibrium price (P) so that X<K. If the initial transaction price (S) is equal or lower than X, the buying order is immediately executed (the put option is immediately executed). The value of the American perpetual put option will be K-S because $\tau_t = 0$. If the initial transaction price (S) is higher than X, then the option will be executed at the stopping time τ_t defined by:

$$\tau_t = \min\{t \geq 0; S(t) = P(t) = X\} \quad (4)$$

Using these hypotheses and the stochastic calculus, an analytical formula of the liquidity cost can be derived. After some calculus, the final formula of the liquidity cost on the market governed by orders for a limit price K under asymmetrical information is as follow:

$$L = \begin{cases} K - S, & if\ 0 \le S \le \frac{2r}{2r+\sigma^2} K \\ \frac{\sigma^2}{2r+\sigma^2} \left(\frac{2r}{2r+\sigma^2}\right)^{\frac{2r}{\sigma^2}} K^{\frac{2r+\sigma^2}{\sigma^2}} S^{-\frac{2r}{\sigma^2}}, & if\ S > \frac{2r}{2r+\sigma^2} K \end{cases} \quad (5)$$

3. Empirical results

In order to analyze empirically the liquidity cost formula, we used a database which contains the intraday trading prices of the Transilvania Bank shares (TLV). Also, the database contains the ask and bid prices. The database includes the trading prices from 10 May 2007 to 31 July 2007. The sample contains 7076 records. The Figure 1 shows the evolution of the intraday trading prices during the study period. Also, the database contains the 3-month interest rate at the money market on the period 10 May 2007 - 31 July 2007. We consider that the 3-month maturity is the most liquid on the market. The Figure 2 shows the evolution of the daily interest rate. The mean interest rate during the study period was 0.0187%.

For every trading day the asset volatility is computed like standard deviation of the trading prices. The mean daily volatility during the period 10 May 2007 - 31 July 2007 was 0.4792%. The Figure 3 shows the evolution of the daily volatility during the study period. The evolution of the mean trading price is shown in the Figure 4.

Figure 1. *The intraday trading prices*

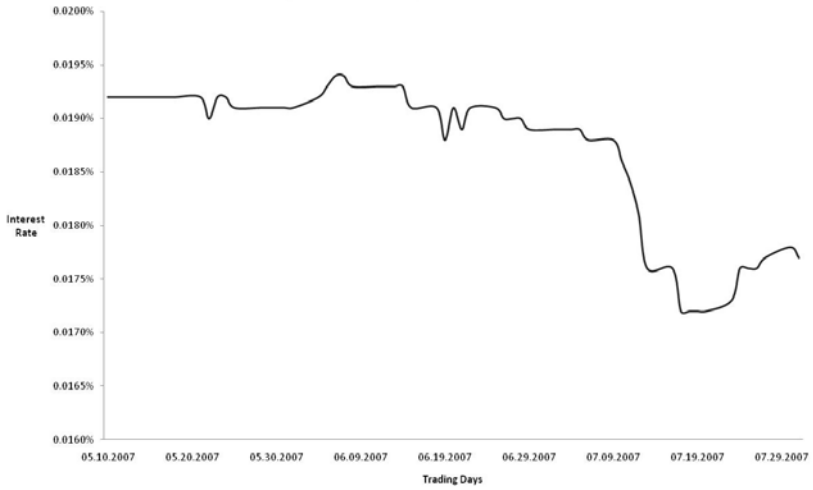

Figure 2. *The daily interest rate*

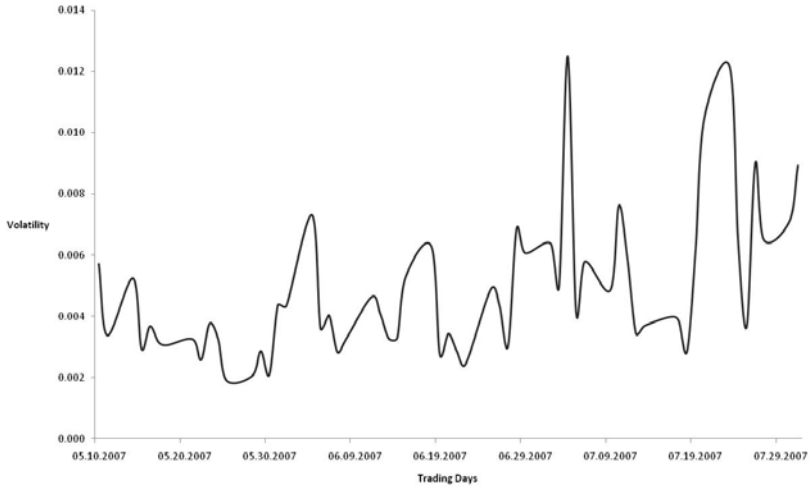

Figure 3. *The daily volatility*

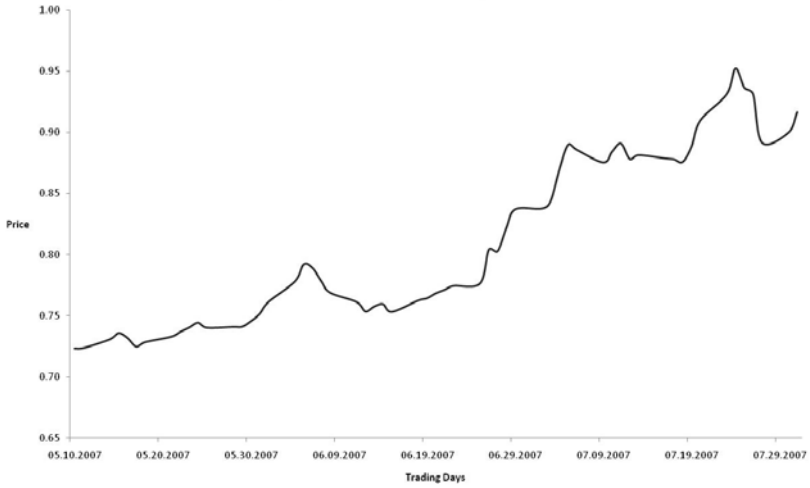

Figure 4. *The mean trading prices*

In order to use the liquidity cost formula, we suppose a 0.5%, 1%, 3% and 5% market depth. The market depth is computed like a percentage of the limit price from the trading price.

The Figures from 5 to 8 show the evolution of the mean liquidity cost for the four arbitrary values of the market depth.

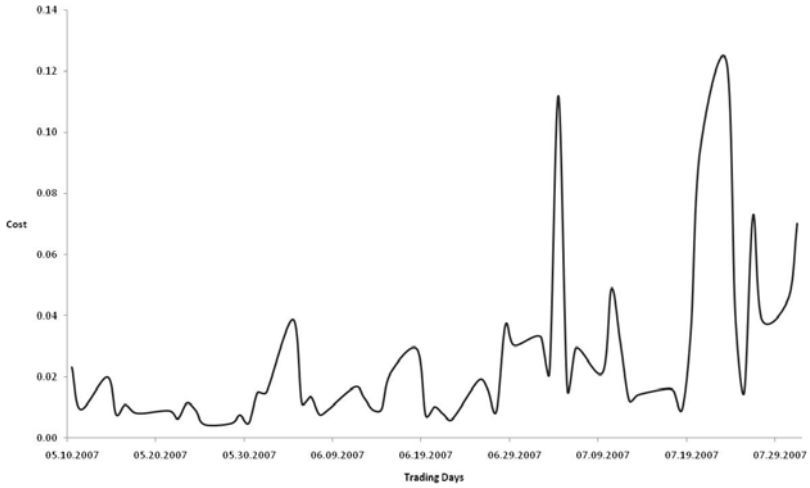

Figure 5. *The mean liquidity cost for 0.5% market depth*

The Figures 9 and 10 compare the liquidity costs for the different values of the market depth. The conclusion is that the increasing of the market depth implies the increasing of the liquidity cost for agents on the market. The differences between the liquidity costs for the

0.5% and 1% market depth are always positives. The maximum difference between the two liquidity costs is 70%.

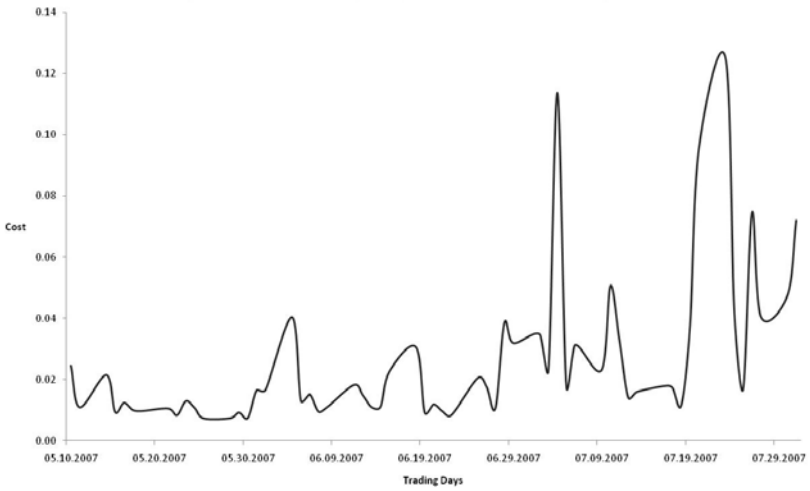

Figure 6. *The mean liquidity cost for 1% market depth*

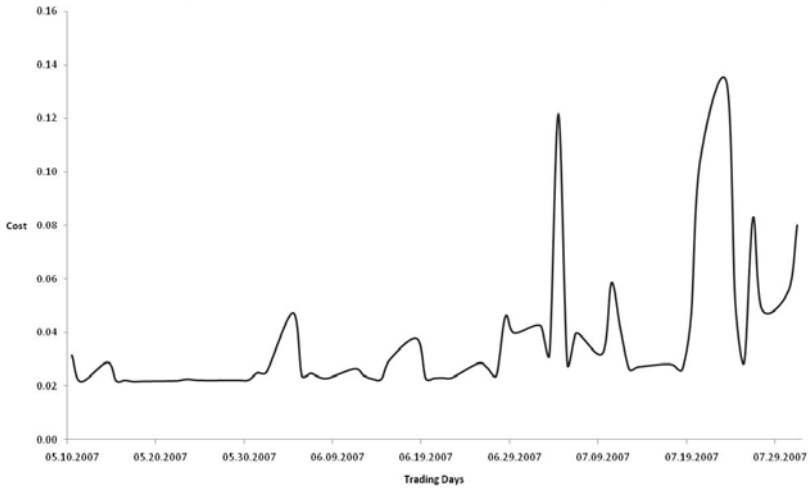

Figure 7. *The mean liquidity cost for 3% market depth*

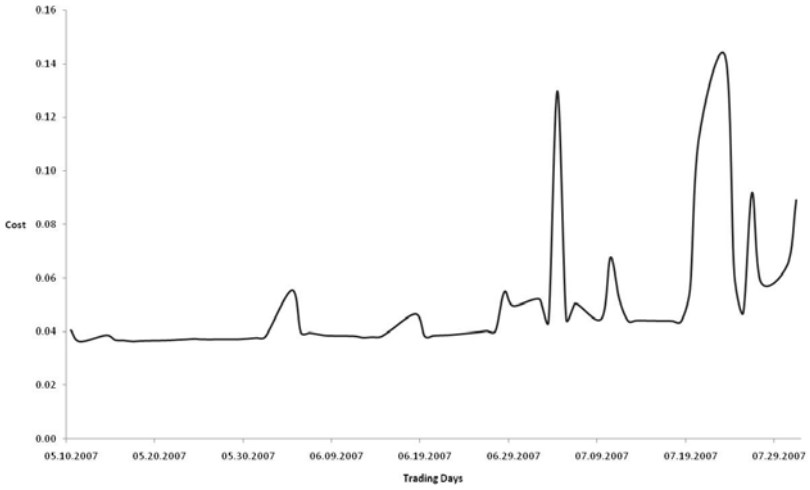

Figure 8. *The mean liquidity cost for 5% market depth*

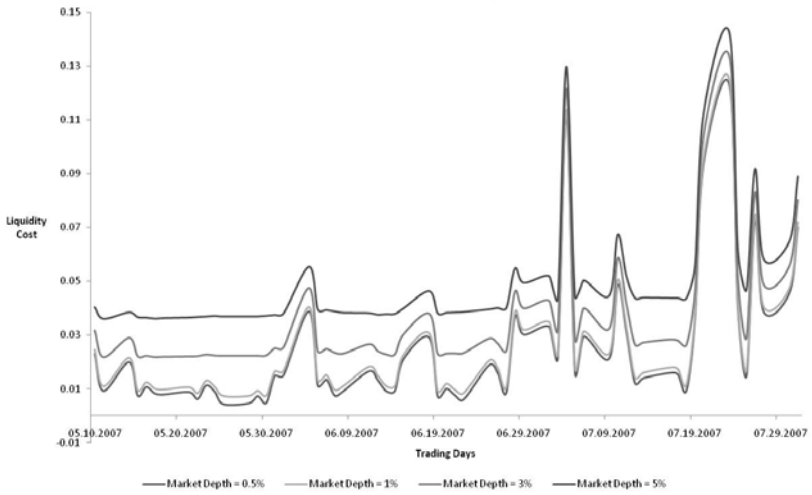

Figure 9. *The mean liquidity cost*

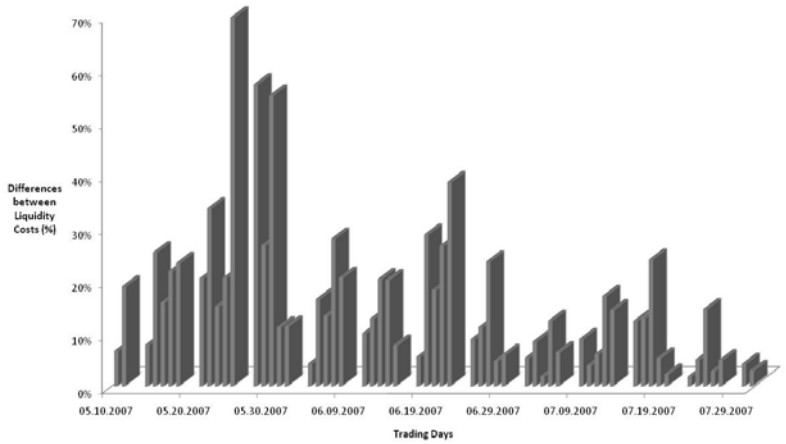

Figure 10. *Differences between the liquidity costs with 1% and 0.5% market deptht*

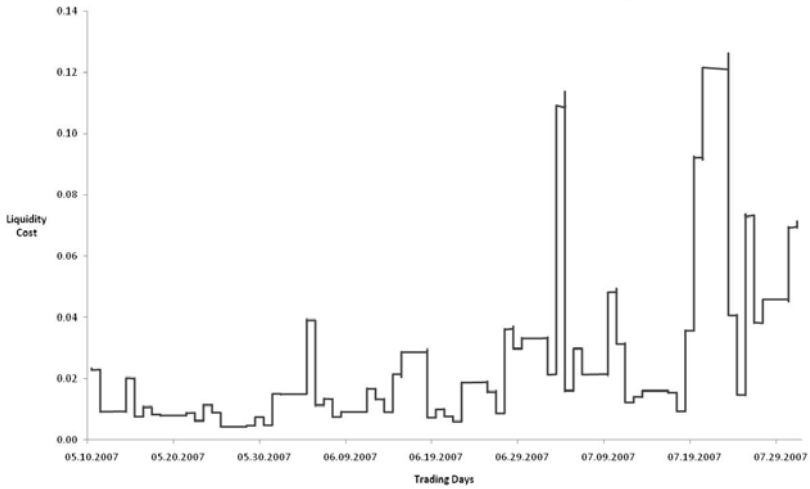

Figure 11. *The intraday liquidity cost for 0.5% market depth*

The Figure 11 shows the evolution of the intraday liquidity cost during the study period, from 10 May 2007 to 31 July 2007. The liquidity cost is computed for a market depth equal to 0.5%. The mean value of the liquidity cost varies from 0.0256 ron for a market depth equal to 0.5% to 0.0500 ron for a market depth equal to 5%. Also, the extreme values increases with the market depth. Instead, the standard deviation of the liquidity cost decreases if the market depth increases. Finally, the liquidity cost of the market governed by orders represents about 3% (average) from the trading price during the period of the study.

Conclusions

The paper proposes a measure of the liquidity cost in a market governed by orders. The analytical formula of the liquidity cost for a market governed by orders depends on four parameters: the risk-free interest rate (or the yield to maturity of the public bonds), the transaction price of the financial asset, the volatility of the financial asset and the limit price offered by the buying limit order.

References

Bhattacharya, S., „Imperfect information, dividend policy and the bird in the hand fallacy", *Bell Journal of Economics*, 10, 1979

Bhattacharya, S., Spiegel, M., „Insiders, outsiders and marketbreakdowns", *Review of Financial Studies*, 4, 1992

Bossaerts, P., Hillion, P., „Market microstructure effects of government intervention in the foreign exchange market", *Review of Financial Studies*, 4, 1991

Grossman, S., „On the efficiency of stock markets where traders have different information", *Journal of Finance*, 31, 1976

Grossman, S., Stiglitz, J., „On the impossibility of informationnaly efficient markets", *American Economic Review*, 70, 1980

Kyle, A., „Continuous auctions and insiders trading", *Econometrica*, 53, 1985

Kyle, A., „Informed speculation with imperfect competition", *Review of Economic Studies*, 56, 1989

Laffont, J., Maskin, E. „The efficient market hypothesis and insider trading on the stock markets", *Journal of Political Economy*, 98, 1990

Lamberton, D., Lapeyre, B., „Introduction au calcul stochastique appliqué à la finance", *Ellipses,* Paris, 2004

Leland, H., Pyle, D., „Informational asymetries, financial structure and financial intermediation", *Journal of Finance*, 32, 1977

Madhavan, A., „Trading mechanisms in securities markets", *Journal of Finance*, 47, 1992

Shreve S., (2004). *Stochastic Calculus for Finance,* Springer, New York

FINANCIAL CRISIS AND ITS IMPLICATION ON OBTAINING FOUNDS ON THE CAPITAL MARKET

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Abstract. *Issues emerged on the subprime mortgage market in United States lead to a very important global financial crisis. In this frame, Romania its affected by the problem of the financial accessibility of having a house and that's why the mortgage offer linked with a reasonable interest rate it's not enough to support the market. Right now, taking into account the prices on the locative market and the interest rate of the mortgage credits, the percent of population which can afford monthly payments for this types of credits is under 10%. Romanian banks are offering mainly basics mortgage products, for the clients with high earnings. The question is which is the best way of crediting, the best method for Romanian market's conditions?*

Keywords: capital market; crediting; financial crisis; mortgage market.

JEL classification: F34, G15.

The financial crisis which is still developing seams to be created because of a lack of information regarding the location and size of investment's risk in the subprime mortgage market. The subprime mortgage is a financial innovation meant to offer opportunities to buy houses to the borrowers loving risks. Addressing the risk there support requires a particular characteristic linked to the fair appreciation of house's prices. The creation in 2006 of ABX indexes, as synthetic indexes linked with subprime bonds portfolios, brought a light over the risk's effects, providing centralized prices and a mechanism for the short sales. To enhance the lack of information we need take into account: the information's transmition asymmetry between the seller and the buyer emerged because of the complexity of this particular mortgage, the way in which the correlated security's chain is influenced by the house's prices, the mechanism of risk propagation in a very opaque way and the way in which ABX indexes allowed information to aggregate and to be discovered. We can strongly say that this are in fact the main motives of the 2007's financial crisis arise.

Subprime mortgage is a financial innovation build to provide the poorer population and the risk taking borrowers with a way to access the financing of house buying. Its true that this type of mortgage knew a raising popularity. Subprime mortgage was closed in 2005 and in 2006 arrived to numbers closed to 1 trillion dollars, 80% of this being secured. The main characteristic of this type of mortgage is the possibility of borrower to finance and refinance his house based on the earnings from the raising house's price on short term and than changing this gain in a collateral for a new mortgage. Unique characteristics of this mortgage lead to a specific structure of securization. More ever, the bonds which resulted from securization were often part of borrower's collateral bonds portfolios; plus, it was synthetic created an additional risk of subprime securization through swaps. This actions, specific structures and derivatives links lead to a hole in information chain and in the end to the losing of trust. In time this links made possible that the risk spread between the capital market's participants, it lead to lose of transparency regarding the one who is really taking the risks.

Roughness of subscription standards for subprime mortgage and the falling of United State's real estate market lead to a rising of embezzlement, and starting with 2007, to a sharper fall of prices of indexes based on related securities. This caused losses and margin calls for the borrowers that held products based on subprime mortgages. The problems raised on subprime market lead to the beginning of global changes in assuming market's risk.

While banks reoriented to fundamental liquidity engagements, they tried to consolidate the liquid resources and became unwilling to provide liquidity to others. This lead to a sever contraction of short term interbancar market activity and also to a substantial rising of term risk premium especially in United States and Europe, concurrent with the apparition of dysfunctional behaviors in various short term financial markets.

Low risk premium, reduced financing costs and loose debt to equity ratio feed credit's and liquidity rising in the past. Quick reduction of financing disponibilities and debt ratio accentuated the contractions that followed. The fear of quick selling reinforced the rising pressure on existent credits and generate in some countries consistent loses in fundamental securities classes evaluation regarding their quality. When the primary and secondary liquidity for structured credit products vanished, big banks and financial institutions were faced with difficult problems, including the one of evaluating ones foundlings and became less confident in declaration regarding risk exposure of credits and power of their capital. This stop of financing sources stand longer than a lot of bank predict.

While turbulences spread, rising risk aversion, reducing liquidity and rising market's trust regarding some major financial institutions, questions about quality of structured credit products and about insecurity of macroeconomic situation became more evident. Number of new issuers low risk securities market dropped, while big banks reduced their activities and sustained big evaluation loses, their balance sheet being affected and their resources diminished. This lead to roughness' of credit conditions. The intermediary channels of banks based credits and the ones of capital market slowed.

Now, months after the rising of turbulences, debt ratio continuous shrinking leads to important loses to important parts of financial system in a large number of countries. Although some financial institutions tried to revitalize the capital, the faith in the financial system is braked by the uncertainty which is held about the state of health of key financial institutions, by the great actives held by banks and also by the quality of this actives. Weakness of financial system contribute to deterioration in real economy perspectives but in different ways for different countries.

On a first look we can say that the real estate market in Romania is developing. Financing the house's constructions market is in difficulty, difficulties like lack of a legal frame, reduced possibilities of saving for population or non-existence of a secondary mortgage loan market which can bring in function a coherent mechanism of long-term found mobilization.

Concordant with PAL program which our country closed with Mondial Bank to complete the structural reforms realized with PSAL programs, should adopt the primary and secondary low regarding the mortgage market. The emphasis should be placed on the consolidation of primary market of mortgage's loans and also on the need to build and to assure on medium and long term the premises of a good function of the secondary mortgage market.

Not being the first country faced with difficulties in financing the mortgage market domain, Romania can benefit from example and the efficiency of specific systems of financing applied a long time to European and global level. Now, to a global scale, we can distinguish three specific systems used mainly in financing the building of houses, the saving-financing system, the issue of mortgage bonds and the issue of a variety of securities – Mortgage-Backed Securities.

The saving-financing system for building houses offers the possibility of lending money by savings made in a previous period, in a collective system. The saving in collective system for houses it's a modern system of saving with the purpose to obtain long-term financing with lower

interest rate and most of the time with fix installments set in the moment of lease closure which are not influenced by fluctuation in efficiency on capital market.

The main feature of this financing system is the closing of a lease of saving-financing through which the person applying became the member of a saving collective. Through initial savings the person applying gains the right of a later loan, a loan for house activities domain, with a favoring interest rate. The founds for this loans are coming from savings made by others which are part of the same collective, especially from the saving installments and the „real" installments. With this purpose, the person applying is closing an saving-financing lease four house domain, for a certain amount.

When the person applying had saved the minimum amount required and the time for saving passed, a specialized institution will restore the saved amount and will grant the loan, an amount which can be used by him starting with loan phase. The state meddles, usually, in this financing scheme, when the person applying had already obtained the loan with an additional amount, a prize for the savings made.

All the countries that had this system, the number of loans asked is impressive, usually 30% of country's population. In Germany were closed over 33 millions of such loans, in Austria 5.14 millions and in Czech Republic over 6 millions. Countries such as Slovakia, Hungary, Croatia, India and China closed a significant number of such loans. In Romania, as sustained by the National Bank of Romania, the actual potential of the loan market for houses in saving-financing system is considerable, respective 34% (almost 2,652,000 houses).

A study of the Economic Comity for Europe of UNO, published in January 2005, shows that the saving-financing system is a viable solution for the developing economies, especially thanks to the transparency and the multitude of ways to access founds.

The specialized banks in saving-financing activities meant for houses have a high degree of certainty and performance regarding the financing process, obtaining a level of non performant loans of only 0.02%, allowing them to significantly reduce the costs of intermediating, but also the spread of interest rate.

The mortgage bonds are securities issued for a refinancing activity of an issuer of mortgage loans, based on a portfolio of mortgage loans upon which the investors are granted a first level guaranty and special rights over the others creditors of the issuer. Sadly, in Romania it doesn't exist a specific legislation regarding such financial instruments.

The issuing of mortgage bonds grant the barrower the access to a long-term capital with a fix interest rate. The loan is usually financed through a bond issue with the same maturity date. Through this financial instruments, usually the mortgage loan's banks can attract considerable amount of capitals, which they can transmit to the market of houses building.

We can see in Table 1 that regarding the weight of mortgage loans in GDP, Romania is in one of the last places, together with other former socialist countries, but with a big potential to develop.

Weight of mortgage loans in GDP

Table 1

Country	Weight of mortgage loans in GDP (%)
Austria	41.2
Belgium	28.3
Cyprus	26.8
Denmark	87.5
Estonia	15.6
Finland	35.8
France	24.8
Germany	54.3
Greece	17.3
Ireland	44
Italy	13.3
Latvia	27.7

Country	Weight of mortgage loans in GDP (%)
Lithuania	12.7
Luxemburg	32.7
Malta	24
GB	70.3
Holland	99.8
Poland	3.5
Portugal	51
Czech Republic	4.9
Romania	**1.5**
Slovakia	4.1
Slovenia	2.3
Spain	42
Sweden	50
Hungary	8.1

The mortgage loan's banks are build to pass the conditions to act both on primary market of mortgages loans (as a borrower) and on the secondary market (as an issuer of mortgage bonds), the same way as the universal banks are build.

So the mortgage loan's banks imitate a lot of the universal bank's characteristics, but they can't be the same for the simple fact that their activity is narrowed to grant loans for which a guaranty is made from a real right of mortgage, and attracting deposits is barred.

Regarding the competition, the mortgage loan's banks in European countries had the advantage of a quicker and more efficient adaptation to the needs of persons applying to this loans, reaching in some cases over 90% of the primary mortgage market. Taking into consideration that the mortgage loan's banks are bereaved of the possibility of attracting deposits, they are surely interested to gain founds from the capital market, becoming in countries with a developed capital market the initiators of the secondary mortgage loan market, with real benefic consequences over the diversity and liquidity of specific financial instruments as ell as initiator of the developing of the capital market.

Although this kind of financing system has positive effects over the developing of the mortgage loans, the issue of mortgage bonds is only 20% of the total mortgage's loans in central and est European countries.

Mortgage-Backed Securities (MBS) is a financing system based on issuing specific financial instruments. This system implies the existence of a secondary mortgage market, the first that developed such a market being United States, as a selling method of the mortgage loans, with the purpose to diminish the risk associated with mortgage loans closed with a fix interest rate.

On such a secondary market, are sold mortgage's loans or MBS guaranteed by a mutual fund of mortgages. This is made for a bank of mortgages with alike characteristic as: the interest rate, the date of payment, etc. Each common fund of mortgage later form the base of a issue of credit financial instrument, the fund being the source of financial flows which will be guaranteed by the issued financial instruments. The payments made by the mortgage debtors are transmitted to owners of credit financial instruments.

Regarding the United States, this financial instruments were brought with an active participation of the government through securities issued by a special kind of companies (Government Sponsored Enterprises – GSE). The federal government grounds explicit or implicit assistance to such companies, as: Government National Mortgage Association (GNMA), Federal Home Loan Mortgage Corporation (FHLMC) and Federal National Mortgage Association (FNMA).

The first authorized company, Government National Mortgage Association (GNMA), or Ginni Mae, guarantees commune funds of mortgages generated by the mortgage banks. This mortgage loans are mainly for ones with small or medium incomes and are guaranteed by the Federal Housing Administration (FHA). Ginnie Mae is a company sustained by the

government, which guarantees the periodical payment of the principal and of the interest rate to the investor. An MBS Ginnie title has the same payment risk as the treasury bond of Federal Reserve, which is zero.

Besides GNMA, are two others federal agencies that are sharing most of the market: Federal Home Loan Mortgage Corporation (FHLMC), or Freddie Mac, and Federal National Mortgage Association (FNMA), or Fannie Mae. MBS's issued by this agencies have an non payment risk of only 20% for investors, a lot smaller than the accepted average on a global scale, of 50% for houses mortgages.

In developed economy's countries (such as United States), the secondary market seems to be the most efficient way to reduce credit risk and transaction's costs, both for barrowers and borrowed ones. The loans can be arranged based on the same risk structure and later sold on the market to investors who are prepared to accept that risk level. None the less we should say that the secondary market of mortgages can't function without gaining a certain level of development on primary market which can provide a sufficient volume of quality mortgages that can meet the institutional investor's expectations.

Due to implicit governmental guarantees the above mentioned agencies can offer cheaper capital sources relative with other methods and can function with a lower capital-to-assets rate then universal banks. Taking into account the possibility of conversion of some non tradable and no liquid mortgages in tradable and liquid securities, the advantages of MBS can be easily seen.

Conclusions

After the 2007 crisis we can see some errors in market's way of function:

1. Weakness in public disclosure made by financial institutions damaged the market confidence during turbulences. Public disclosures which were asked by financial institutions have clearly not show enough about the type and magnitude of risk associated with off balance exposure. There also been some short comings from others information provider companies about the market and exposure of credits to risks and mainly about their link with structured products. Also, there were situations when information's were made public, but were not published in a useful and accessible way.

2. Turbulences shown the adverse interaction potential between a high leverage rate, market liquidity, loss in evaluation and the capital of financial institutions.

3. Public authorities acknowledge some vulnerabilities emphasized in the financial sector, but felled in assuming some actions for an efficient contra-attack, mainly because they overrated the financial system resistance. Restrictions in regulator arrangement, as some linked with the pre-Basell II frame, contributed to the rising of non-regular exposures, excessive risk assuming and a week liquidity risk management.

Following the 3 systems analysis and the errors shown by the global financial market we can't say that there is some guaranteed model. In choosing a national financing system for houses domain we should consider some specific conditions: macroeconomic evolutions, banking legislation, banking system's size, taxation and other subsidiary programs of maintenance and the structure of the locative system. Taking into account this factors we can draw coordinates of specific financing system for locative projects, causing the weight of funds obtained from the banking system and ones obtained on the capital market.

Each of the above systems implies taking some positions and functions on market, complementary actions. The issuing of mortgage bonds system and MBS appeal, mainly, to institutional investors to refinance mortgages. Regarding the capital market with reduced development, as ours, there are alternatives schemes of collective saving, but also the possibility of getting mortgage loans from universal banks.

Concluding, we can say that a viable variant for Romania will be adopting a system of financing of locative projects combined with saving-financing system. In what our country concerns, this combination could have the biggest probability to mobilize financial sources

and, additional, to provide an excellent frame of the capital market development through enhancing the numbers and types of trade financial instruments. This will surely stimulate the involving of institutional investors on capital market, with numerous positive effects on Romanian economy.

References

Van Order, R. (2001). *The Structure and Evolution of American Scondary Mortgage Markets, with Some Implications for Developing Markets,* Housing Finance International

OECD Workshop on Housing Finance in Transition Countries. Country notes for Romania, Bulgaria, Slovakia, Poland, Slovenia, Estonia, Latvia, Lithuania, Hungary, Czech Republic, 2000

UNECE, *Housing Finance Systems for Countries in Transition,* New York, Geneva, 2005

UNECE, *Housing Finance: Key Concepts and Terms,* New York, Geneva, 1998

UNECE, *Country Profiles on the Housing Sector for Poland, Bulgaria, Romania, Moldavia,* Lithuania, Slovakia and Albania

SOME ASPECTS OF THE NEW WAVE OF GLOBALIZATION

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Abstract. *Globalization, as a phenomenon of our days with it's social and economic parts, has a positive and negative influences for all world's states, rich or poor. Financial flows between the states, between the states and financial institutions present new trends especially in financial banking system crisis.What are the caracteristics of this new wave of globalization, how foreign direct investments are presented in world's states, the impact of this crisis for world's states, these are some questions appreciated as important and which will try to answer.*

Keywords: globalization; financial crisis; social protection; foreign direct investments; human development.

JEL Classification: F13, F15, H53, I38.

1. Globalization – phenomenon of the contemporary world

Globalization is appreciated as a natural manifestation of changes in the society. It becomes a universal law for a new stage of civilization. Globalization is more than a flow of cash resources and products worldwide. It means belonging to all individuals and corporations in a single system of human values, with all relevant rights and responsibilities (Roman, 2006, p. 75).

Globalization integrates not only the economies, but also the culture, technology and governance, having the effect of increasing interdependencies between world's states (Roman, 2006, p. 75). Globalization is a complex of structures and economic, social, technological, political and cultural processes that result from the permanent changes due to the level of production, trade and consumption. Among *the features of globalization* are obvious: the integration of national economies into global markets, economy's evolution to upper level of quality, increasing freedom's levels of the individual. But there are also negative sides of globalization, as follows: defective allocation of the resources between public and private goods, between developed countries and those in transition or developing countries, the need for greater involvement of the state in the social security system because of increasing fired, caused by increased competition and, the most serious of all, the propagation of the financial banking crisis and its effects.

Given the results of globalization, J.E. Stiglitz believes that „globalization in itself is neither good nor bad. It can do much better, and for countries in East Asia that have embraced globalization under imposed conditions by them, in the pace imposed by them, it was extremely useful, despite the back step given by the crisis in 1997. But in many areas of the world it has not brought comparable benefits. For many, globalization looks like a total disaster." (Stiglitz, 2003)

An important role in globalization has the World's Trade Organization, the agreements and the other regulations promoted by this are methods, rules of participation in globalization. All over the world, antiglobalization movements fight against global level decisions, the national states remaining without authority of certain decisions, such being limited their sovereignty.

Regarding the influence or contact of the globalization with the international finance, contemporary world shows a great concern about the volatility and the destabilizing impact

of movements of capital in the short term, and about the new phenomenon emerged in the global economy: propagation of crises and their effects.

2. The world economy in the face of great challenges

The world's economy after several years of substantial growth is facing some big challenges. The housing bubble in the United States, the crisis loans generally, the decline of the US dollar versus other currencies, the persistence of global imbalances, the oil price fluctuation are some of the causes that affect and will affect the economic growth. After the statistics of United Nations through its specialized institution, the United Nations Conference on Trade and Development (UNCTAD), the global output growth was moderate in recent years: from 1.9% in 2002 rose to 2.7% in 2003 and 4.0% in 2004 (See Table 1).

Rates of growth of world output and world trade in the period 2002 - 2008 *

Table 1

No.	Annual Growth Rate	2002	2003	2004	2005	2006	2007*	2008*
1.	World output. of which:	1.9	2.7	4.0	3.4	3.9	3.7	3.4
1.1.	Developed economies	1.3	1.9	3.0	2.4	2.8	2.5	2.2
1.2.	Economies in transition	5.0	7.2	7.6	6.6	7.5	8.0	7.1
1.3.	Developing economies. including:	3.9	5.2	7.0	6.5	7.0	6.9	6.5
1.3.1.	Least developing economies	6.3	6.6	7.9	8.4	8.1	6.7	6.9
2.	World trade	4.4	5.8	10.7	7.0	9.9	7.2	7.1

*Estimated Values
Source: United Nations, UNCTAD, DESA.

In 2005 it was registered a decrease of 0.6%, and in 2006 the annual rate of increase was 3.9%. According to the estimates, the growth rates for 2007 and 2008 are 3.7% and 3.4%. Comparing the annual growth rates of states from the points of view of their level of development we can see that the highest values are recorded in the transition economies, from 5.0% in 2002 and increasing to 7.6% in 2004. In 2005 the rate of growth fell to 6.6%, then rose to 8.0% in 2007 (the part). The 2008 forecast to an annual growth rate of 7.1%, but in the end may be lower due to the adverse effects of the financial banking crisis. States with the lowest level of development have seen annual growth of between 6.3% in 2002, 8.4% in 2005 and 6.9% in 2008 (the estimate). These increases are due not only domestic measures, but also to expansion of foreign direct investments (FDI) in these countries. Comparing the annual rates of growth of world trade with the annual rates of growths of world output, it seems that FDI are almost twice as large, this increase is one of the essential features of the economic globalization. Exports volume of China and India increased with 20% annually from the previous years (ONU, UNCTAD, 2008, p. 12).

According to the prospects for 2008, it is expected to keep increasing the volume of foreign trade at a moderate rate of approximate 7%. The financial turbulences in the third quarter of 2007 reported some risks for the global perspective:

- the link between problems in the real-estate market in the United States and the global imbalances;
- the increase in financial markets that have become more integrated, but less transparent;
- the discourage of the household consumption who in the last years has been the most important instrument of world economic growth.

The estimates of the same institution for 2008 indicate that are expected to continue the trend of the decline of the US dollar compared with the other currencies, devaluing being

approximative 5%. In terms of growth of world trade, it considers that in 2004 registered the highest rate of increase compared with the previous period, both the volume of exports of goods as well as that of imports by 11% and 12% (See Table 2).

Evolution of growth rates of exports and imports by region and level of economic development during 2001 – 2006

Table 2

No	Region, the development level	Activity	2001	2002	2003	2004	2005	2006
1.	World	Export	-1	5	6	11	5	8
		Import	-1	5	7	12	6	7
2.	*Developed countries*, of which:	Export	-1	3	3	9	5	9
		Import	-1	3	5	9	6	6
3.	Japan	Export	-8	8	9	13	5	9
		Import	1	1	6	6	2	2
4.	United States of America	Export	-6	-4	3	9	7	10
		Import	-3	4	5	11	6	6
5.	European Union	Export	1	4	3	9	5	9
		Import	1	3	5	9	6	7
6.	*South - Eastern Europe and the Commonwealth of Independent States*, of which:	Export	5	10	10	13	0	6
		Import	17	14	22	20	12	12
7.	South - Eastern Europe	Export	10	15	22	22	6	10
		Import	17	17	26	20	7	13
8.	*Developing countries*, of which:	Export	-1	9	12	17	6	9
		Import	-1	7	12	19	7	10
9.	China	Export	8	24	34	32	26	25
		Import	13	23	34	25	8	13
10.	India	Export	5	17	13	19	15	14
		Import	4	11	18	19	19	9

Source: United Nations, UNCTAD.

The countries of South East Europe recorded the highest growth rates: 22% and 26% in 2003 compared with the previous year, and between developing countries is notable in particular, China with 34% for exports and for imports in 2003 compared with 2002, and India with 19% in 2004 compared with 2003.

3. Trends in foreign direct investments (FDI)

According to UN-UNCTAD, FDI increased worldwide, being estimated in 2007 at approximate US dollar 1.5 thousand billion exceeding the record level achieved in 2000. In the three large groups of countries: developed, developing and in transition, FDI flows have increased, not affected (to the second half of 2008) by the credit crisis manifested in the US since the end of 2007. Transnational corporations had sufficiently liquidities for financing their investments, including FDI, thereby limiting the impact of the crisis on the real economy. Loans crisis in the US accelerated decline of the dollar and this has stimulated the FDI flows to the US, especially from these countries with appreciated currencies (ONU, UNCTAD, 2008, p. 77).

The absorption of foreign capital and abroad acquisitions in the first half of 2007 increased by 53% compared with the same period in 2006, these flows decreasing towards the end of 2007 (See Table 3)

Foreign direct investments flow by region and level of development in the period 2006 - 2007 *

Table 3

No	Region, the category of economy	*Flow of foreign direct investments*		
		Volume (billion USD)		
		2006	*2007**	*Growth Rate (%)*
1.	World level, of which:	1,305.9	1.479.9	13.3
2.	*Developed economies*, including:	857.5	962.3	12.2
3.	-Europe, of which:	566.4	628.2	10.9
4.	European Union, of which:	531.0	580.8	9.4
5.	- EU - 15 of which:	492.1	543.6	10.5
6.	• France	81.1	116.6	43.8
7.	• Germany	42.9	28.5	-33.6
8.	• Netherlands	4.4	125.6	2,754.0
9.	• UK	139.5	171.1	22.6
10.	- New EU Member States (10), of which:	38.9	37.2	-4.3
11.	• Czech Republic	6.0	6.4	8.0
12.	• Hungary	6.1	-0.2	-103.3
13.	• Poland	13.9	16.7	20.2
14.	- United States of America	175.4	171.4	-2.3
15.	- Japan	-6.5	34.3	-626.6
16.	*Developing Economies*, of which:	379.1	422.0	11.3
17.	• Africa	35.5	36.5	2.8
18.	• Latin America and Caribbean	83.8	105.3	25,8
19.	• Asia and Oceania, of which:	259.8	280.1	7.8
20.	South Asia, East and South - East of Asia, of which:	199.5	223.7	12.1
21.	-China	69.5	92.9	-9.4
22.	-India	16.9	16.3	-3.7
23.	*Economies in transition*	69.3	95.6	38.0

*Preliminary data

Source: UN – UNCTAD.

Of the three categories of economies are found the highest rate of increase of 38% to economies in transition, volume of FDI increasing from 69.3 billion USD to 95.6 billion USD. In developed economies the growth rate was 12.2%, the European Union accounting for 9.4%, the levels are (some selected): France: 43.8%, Germany: 33.6%, Netherlands: 2754.0%, United Kingdom: 22.6%. Of the 10 countries that joined in 2004, the Czech Republic registered a growth rate of FDI of 8.0%, Poland: 20.2% and Hungary: 103.3%. Decreases were registered in the US: 2.3%, but in Japan: 626.6%. In developing economies

the growth rate was 11.3%, with considerable increases in the regions: Africa: 2.8%, Latin America and the Caribbean: 25.8%, Asia and Oceania: 7.8%, but the volume of FDI in China dropped from 69.5 billion USD to 62.9 billion USD with 9.4% and in India with 3.7%. Transnational corporations have remained the predominant source of FDI, accounting for approximate 84% of global flows (ONU, UNCTAD, 2007).

Goods and services output of transnational corporations outside their countries have increased greatly in 2006 compared with the previous years. Sellings, value added and exports of approximative 78,000 transnational corporations and approximate 780,000 foreign affiliates operating abroad are estimated to increase by 18%, 16% and 12%. They have the equivalent of 10% of world GDP and third place in world exports. China continues to support a large number of foreign affiliates abroad, while the rate of increase in the number of transnational corporations in developing and in transition countries over the past 15 years has exceeded the number of those in developed countries. The present period is characterized by *changing of the geographical area* to conduct FDI. The occurrence, development FDI in developing and in transition countries, and increased FDI in South-South zone are the latest trends (World Trade Report 2007). Also, it notes *a change in paternity bilateral FDI flows*. Thus, in the year 2005 there is on the first place (from 50 pairs of bilateral relations) FDI from the UK to the US in volume of 282 billion USD compared with 44 billion USD in 1985. Flows from the US to the UK, located on the third place in the hierarchy have been 234 billion USD in 2005 compared with 48 billion USD in 1985. In second place are FDI from Hong Kong (China) to China amounting to 242 billion USD in 2005, compared to FDI from China to Hong Kong amounted to 164 billion USD (place 8). Japan-US flows amounting to 190 billion USD (place 4) exceed the amount of U.S. FDI in Japan – 44 billion USD (place 37). Volume of FDI from Germany to the United States (5 place) of 184 billion USD exceeds of FDI volume from US to Germany (place 26) amounting of 68 billion USD in 2005. Other pairs of flows are:

FDI from the US to Canada – 177 billion USD (place 6) compared with the flows from Canada to US-144 billion USD (place 10);

FDI from the Netherlands to USA: 171 billion USD in 2005 (place 7), compared with flows from the U.S. to Netherlands: 84 billion USD (place19).

Of FDI flows among the major EU states in 2005 include:

- FDI from the Netherlands to Germany (place 14) = 111 billion USD from Germany to the Netherlands (place 29) = 58 billion USD
- FDI from the Netherlands to France (place 15) = 102 billion USD from France to the Netherlands there is not in the top of 50 pairs relations ranked over to 35 billion USD
- FDI from the United Kingdom to France (place 16) = 96 billion USD from France to the United Kingdom (place 20) = 80 billion USD
- FDI from Netherlands in the UK (place 17) = 93 billion USD from United Kingdom to Netherlands (place 27) = 67 billion USD
- FDI from Germany to the United Kingdom (place 18) = 86 billion USD from United Kingdom to Germany (place 32) = 49 billion USD
- FDI from Germany to France (place 23) = 79 billion USD from France to Germany (place 28) = 59 billion USD
- FDI from Belgium to France (place 25) = 73 billion USD from France to Belgium – flows below 35 billion USD (UN, UNCTAD, WORLD INVESTMENT REPORT 2007, p. 20).

It notes that Italy there is not among the home countries from of FDI and there is only once as a host country, the volume of FDI received from Netherlands is 40 billion USD in 2005 (41 place from 50).

Some bilateral relations have grown significantly in importance compared to the year 1985: Japan – USA, Germany – USA, China – Hong Kong (China) and the Virgin Islands – Hong Kong (China). From 50 pairs of the first bilateral relations generated by FDI in 2005, 41 of pairs of countries were only relations between developed countries and 9 pairs of countries were involved in developing countries, especially China and Hong Kong (China). FDI over the world, the USA is found nine times as a host country with a volume of FDI into its territory in the amount of US dollar 1397 billion and nine times throughout the home country of transnational corporations that generate FDI over USA orders by volume of 906 billion USD, with 491 billion USD less than the USA due to FDI from other countries.

One of the UNCTAD report's conclusion was that FDI flows will increase during 2007 - 2009, although growth rates will be lower (ONU, UNCTAD, WORLD INVESTMENT REPORT 2007). Until now transnational corporations have regarded as the most attractive countries such as China and India and the East Asia, South and South-East of Asia.

4. Some aspects of the impact of the current financial crisis

Financial crises makes turmoil around the world to the states, leading governments to resort to specially measures destinated the great entrepreneurs situated in the economic decline: General Motors, AIG, Ford (USA), ING (the Netherlands), a.s.o.

The signal held in January 2008 on the internationalization of European banking giants more exposed to such crisis of system had not lead to increase of prudence in front of enlargement risks. Bank's capital lost their nationality in favor of europeanization and globalization.

There is no national or European authority that holds information on the decisions, activity and disruptions of the European banking giants that had internationalized and thus can not be known in advance those situations that lead to triggering crises thus diminishing the effectiveness of the future measures.

The accelerate of financial integration and economic output and sales has the effect, during the crisis, reducing the business or bankruptcy of banks, and for transnational corporations which invest abroad the urgent measures are to restrict business or closing foreign affiliates to protect their populations.

The unemployment generated by the lack of credits or generated by the reducing of number of buyers in the affected areas: banking, machine building industry, housing market, a.s.o.. entail and disposal unemployment at the level of related services, which put national governments to other problems, of which by far the most important, is the social protection funds. National budgets are forced to not collect revenue because of low economic activity, and, on the other hand, to spend more for insurance, social protection.

G20 meeting (November 2008) had in mind to achieve more control over lending practices and investments policy with the crossing of borders and the creation of an global authority to oversee financial markets has not been approved by some participants. To not raise any new barriers to worldwide trade was a decision agreed by participants in conditions of the emerging states had divergent views on the Doha Round (WTO) against the developed countries on agricultural subsidies and customs duties.

Economic degradation given by loans and real estate crises and crises of confidence in the banking system has been in the US, Spain, Portugal, United Kingdom, Ireland, Japan, Italy, the Baltic, Canada, Mexico, France, Iceland, Hong Kong (difficulties in making payments). And currency debtor countries are affected: Hungary, South Africa, Vietnam, a.s.o.

The impact of the current crisis strongly propagated in a globalize world there is at the level of population in various forms:

- ✓ *increase poverty* at a certain category of the population, increase the number of unemployment which leads to lower living standards;

- ✓ *inequality in the category of the poor* in countries with different levels of development, and in countries with high inequalities between different social categories poor can live better than those in countries with low inequalities;
- ✓ *heterogeneity character of human development* determinate by the reduction in GDP, which leads to reducing budgetary allocations for health and education (opportunity costs) and increase infant and adult mortality, early abandonee school increases, decreases the degree of coverage in education. Falling household incomes decrease consumption, access to credits, limit access to food, to health care, to education;
- ✓ *psychological effects manifested differently* depending on the perception of human beings, men and women, on shortcomings of the crisis, depending on the level of development of countries and of the urban or rural area.

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* *

Instead of conclusions...

Passed through the turmoil crisis in early ’70,’80,’90, developing countries in Africa, Asia, Latin America and the Caribbean have established and have resorted to loans from regional development banks whose primary objective is the financing of economic growth so on-the-application development loans from international level to regional level, or sub-regional level.

In a globalized world, the regional efforts of strong financial cooperation can be together with international financial institutions and can better meet the needs of governments’ states from in the area. International financial institutions as another level of funding can refinance regional institutions and can be a basic tool during in systemic crises.

IMF and World Bank are becoming more involved in limiting the spread of the crises, helping the applicants. Thus, the IMF has provided assistance to countries like Brazil, Chile, Argentina, Zimbabwe, a.s.o. The World Bank recently announced the granting of financial support to developing countries, new commitments amounting to US dollar 100 billion over the next three years through IBRD, IDA-15 by 42 billion USD for the next 3 years the poorest countries in order entrance of firms on the capital market and by IFC the amount of U.S. dollar 30 billion to stimulate the private sector.

In the present context we appreciate that governments should consider the following: *balanced politics* in the banking and financial system to cover the financial needs of long-term resources*; responsible social* policies in order to lead to increase resources needed to meet the needs of the poor; *adoption of adjustment programs* imposed by the new aspect of economic and social life; *resizing the budged expenses*, *changing their structure*, giving priority to social and economic areas closely with fiscal facilities according to persons and firms are in deadlock.

References

Brezeanu, P. şi colectivul (2005). *Instituţii financiare internaţionale,* Editura Economică, Bucureşti

Ferreira, F., Ravallion, M. (2008). *Poverty and Inequality: The Global Context,* in *Oxford Handbook of Economic Inequality,* Oxford University Press

Honohan, P., Laeven, L. (2005), *Systemic Financial Crisis: Containment and Revolution,* Cambridge University Press

Neagu, I.C., Schiff, M., „The Stability and Stabilizing Impacts of Remittances and Other Capital Inflows to Developing Countries”, Development Research Group, World Bank

Roman, Daniela Lidia (2006). *Finanţe Publice Internaţionale,* Editura Economică, Bucureşti

Văcărel, I. (2008). *Studii de istoria gândirii şi practicii economico-financiare,* Editura Academiei Române, Bucureşti

***, „Inequality is Bad for the Poor", in *Inequality and Poverty Re-Examinated*, Oxford University Press, 2007

ONU, UNCTAD, „Trade and Development Report, 2007, Regional cooperation for development", Geneva, 2008

ONU, UNCTAD, „World Investment Report 2007, Transnational Corporations, Extractive Industries and Development", New York, Geneva, 2008

ONU, UNCTAD, „World Economic Situation and Prospects 2008", Geneva, 2008

World Trade Organization, „World Trade Report 2007", Geneva, 2008

- www.imf.org
- www.un/unctad.org
- www.wto.org
- www.eu.info.org
- www.worldbank.org
- www.un.org

COST OF CAPITAL CONSIDERATIONS

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Abstract. *This article has the purpose to present the common models used in practice for cost of capital estimation. Along with models presentation we made recommendations for a better use of them.*

Keywords: weighted average cost of capital; premium risk; volatility coefficient; cost of equity; cost of debts; capital structure.

JEL Classification: G3.

1. Introduction

The cost of capital is a very important topic for the companies' financial management. Financing decision have to be made by considering the criterion of minimization the cost of resources and other constraints regarding the risk exposure of the company (lack of liquidity or solvability risks). The company's activity is profitable only when the return of its investments in assets exceed the cost of resources used to finance these assets. This constraint the company's management should pay attention is reflected in the following formulas:

$$ROE = ROIC + (ROIC - Rd)\frac{DAT}{CPR} \quad (1)$$

where: ROE = return on equity;

ROIC = return on invested capital;

Rd = interest rate of company's loans;

DAT = interest bearing debts;

CPR= shareholders' equity.

$$EVA = (ROIC - WACC) \times CAP = EBIT(1 - \tau) - \cos t\ net\ capital \quad (2)$$

where: ROIC = return on invested capital;

WACC = weighted average cost of capital;

From the perspective of these very known formulas:

- The shareholders can get a higher return by adding the financial leverage effect to the return from company's operational activity, only if the return on invested capital is higher than the interest rates of company's loans;
- The company's management creates value for its shareholders (economic value added) only if the ROIC is higher than the weighted average cost of capital.

2. The cost of capital – the determinants

The average cost of capital used by the company's management to finance the investments depends not only on the cost of each financing source but also on the weights of

them in total sources. If the company is financed from *m* sources, each in amount of S_i and cost of k_i the company's weighted average cost of capital will be:

$$WACC = \sum_{i=1}^{m} k_i \frac{S_i}{\sum_{j=1}^{m} S_j} \quad (3)$$

If we consider only two aggregate categories of sources, equity and interest bearing debts, the previous formula become:

$$WACC = k_{CPR} \frac{CPR}{AE} + k_{DAT} \frac{DAT\ financiare}{AE} \quad (4)$$

From this cost of capital formula we can identify its determinants:

(1) cost of equity;

(2) cost of debts;

(3) capital structure.

Further we will analyze different approaches used to estimate the cost of capital determinants.

(1) Cost of equity estimation

In order to estimate the cost of equity (k_{CPR}) we can use a specific model:

(a) build-up model

In this model the cost of equity is estimated by adding at risk free rate different risk premiums to consider divers risks that the shareholders bear by investing in company's stocks:

$$k_{CPR} = Rf + RPm + RPs + RPu \quad (5)$$

where Rf = risk free rate;

RPm = market risk premium;

RPs = small company size premium;

RPu = unsystematic risk premium.

The risk freea rate is the minimum return an investor should get from an risk free investment; any other investment characterized by risk should offer a higher return thant Rf; risk free assets are considered the investments in bonds issue by state and risk free rate represents the yield to maturity offers by these bonds. The financial analysts recommend as a refrence for Rf the YTM of the bonds issued by state with a maturity of 20 years. The reasons behind are: long maturity of bonds is matching with the long maturity of the investments; YTM of bonds with long maturity is less fluctuant.

Market risk premium is the excess of return an investor can get over Rf by investing in market portfolio: Rm-Rf, and its value is estimated by using historical date. The market risk premium estimated by using historical data is considering that the future will replicate the past. For that reason the financial analysts recommends the use of long series of historical data to assure stability in market risk premium value.

Small company size premium is taken into consideration as the result of inverse correlation between the size of the company and the risk of the investment in company'stocks. Apart of size premium we have to make also adjustments to reflect in company's cost of capital the impact of industry risk, financial leverage or other specific

determinants (customers' structure, lack of negotiation power with suppliers/clients; competitors' force).

Company/industry specific risk premium is estimated in order to reflect the differential in risk that characterize the company compared to other with the same size in the same industry.

(b) Capital assets pricing model (CAPM)

$$k_{CPR} = Rf + \beta i \times (Rm - Rf) \quad (6)$$

where βi = the volatility coefficient that characterize the investment in company' stocks;

Rm = market portfolio return.

Many of the theoretical developments of the model have been proposed in financial practice. The use of CAPM is wide in practice field (Graham, Harvey, 2001, Ryan, Ryan, 2002) but very criticized in academic circles (Fama, French, 1992).

The volatility coefficient beta measure the sensitivity of investment return in company' stocks at the variation of market portfolio return (the most representative market index).

$$\beta_i = \frac{\sigma_{iM}}{\sigma_M^2} = \frac{\rho_{iM}\sigma_i}{\sigma_M} \quad (7)$$

In order to estimate beta 2-5 years of weekly, monthly historical returns are needed to be analyzed. This way the value estimated for beta includes also the impact of companies' financial risk. If the company's leverage is different compared to its peers, an adjustment of the beta to consider the company's different leverage is needed. The value of the beta for unlevered companies (βu) in the same industry can be estimated by using the following formula, where DAT_1/CPR_1 is the leverage of the peer company:

$$\beta_U = \frac{\beta_L}{1 + (1 - \tau)\frac{DAT_1}{CPR_1}} \quad (8)$$

By considering the leverage degree of the analyzed company (DAT_2/CPR_2) its specific beta coefficient (βu) can be estimated:

$$\beta_L = \beta_U \left(1 + (1 - \tau)\frac{DAT_2}{CPR_2}\right) \quad (9)$$

(c) Gordon-Shapiro model

From the perspective of this model the current price of company' stocks (P_0) is present value of future cash flows (dividends, Div_t, the resale price, P_n) that the shareholders can get from their investment in company' stocks. The cost of equity is the discounting rate from the following model:

$$P_0 = \sum_{t=1}^{n} \frac{Div_t}{(1 + k_{CPR})^t} + \frac{P_n}{(1 + k_{CPR})^n} \quad (10)$$

Gordon-Shapiro model has one of the assumptions that the company can generate dividends that will increase with a constant growth rate $g<k_{CPR}$ and if we take into consideration an undetermined life of the investment in company' stocks k_{CPR} can be estimated with the following formula:

$$C_0 = \lim_{n\to\infty}\left(\sum_{t=1}^{n}\frac{Div_1(1+g)^{t-1}}{(1+k_{CPR})^t}+\frac{C_n}{(1+k_{CPR})^n}\right)=\frac{Div_1}{k_{CPR}-g}$$
$$\Rightarrow k_{CPR}=\frac{Div_1}{C_0}+g=\frac{Div_0(1+g)}{C_0}+g \quad (11)$$

This way, the cost of shareholders' equity can be estimated as a function of current dividend, constant growth rate and current price of company' stocks.

One of the problems in applying this model is represented by the estimation of the constant growth rate value. In this sense Ehrhardt (2001) suggest a way of estimation by applying time series analysis on historical data representing dividends offered until now by the company:

$$Div_n = Div_t(1+g)^n \quad (12)$$

(2) Cost of debt estimation

The cost of debts is estimated by considering the average interest rates of company's loans. If the interest expenses can be deducted from company's profits the tax shield will decrease the cost of its debts:

$$k_{DAT}=\frac{Interests - Fiscaleconomy\ \ generated\ \ by\ \ interests}{DAT\ financiare}$$
$$=R_{dob}(1-\tau) \quad (13)$$

When the interest rate on the company's loans is different than the market interest rate, an adjustment is needed to reflect the current interest rate at which the company can renew its loans. We have also to consider the impact of company' size and its leverage (small companies can face constraints regarding their maximum leverage and higher interest rate the can get from banks as a result of their superior risk).

(3) Capital structure estimation

All financial resources considered in the estimation of company's cost of capital are shareholders' equity and interest bearing debts. Their amount can be considered in book or market values. Financial analyst usually recommends the use of market values in order to estimate the capital structure. On the other hand the company's capital structure can be optimized in order to minimize the liquidity and solvability risks and as a result the cost of capital. From this perspective the optimal structure can be considered to estimate the future company's cost of capital (for further details see Dumitrescu, Braşoveanu, Obreja, Ciobanu, 2001; Dumitrescu, Obreja, Ciobanu, Braşoveanu, 2002, Troung, Partington, Peat, 2008).

If we want to estimate the value of equity from the perspective of minority shareholders we should use the current structure of company's capital, as the minority shareholders don't have the decision power in this matte:

$$V_0(CPR) = V_0(AE) - V_0(DAT) \quad (14)$$

On the other hand, if we estimate the value of equity from the perspective of major shareholders the optimal structure or the industry average structure is recommended in the calculus. The major shareholders can decide to modify the company's capital structure to be closer to the industry average or the one of closer competitors. Any adjustments can be made in order to reflect the characteristics of the company (for a detailed analysis see Dragotă, Dragotă, Obreja Braşoveanu, Semenescu, 2008).

References

Damodaran, A., „*Equity Risk Premiums (ERP): Determinants, Estimation, and Implication"*, http://pages.stern.nyu.edu/~adamodar, 2008

Dragotă, M., Dragotă, V., Obreja Braşoveanu, L., Semenescu, A., „Capital Structure determinants: a sectorial analysis for the Romanian Listed Companies", *Economic Computation and Economic Cybernetics*, Volume 42, no.1/2008

Dumitrescu, D., Braşoveanu, I., Obreja, L., Ciobanu, A., „Influența structurii financiare a întreprinderii asupra rezultatelor economico-financiare ale acesteia", *Volumul Economia*, Bucureşti, 2001, pp. 59-69

Dumitrescu, D., Obreja, L., Ciobanu, A., Braşoveanu, I., „Structura optimă a capitalului: factori de influență şi dinamica acesteia", *Lucrările Colocviului financiar-monetar „Finanțele şi Dreptul"*, Editura ASE, 2002 p. 190

Ehrhardt, M.C., „The Search for Value: Measuring the Company's Cost of Capital", Harvard Business School Press, Boston, 2001

Fama, E., French, K., „The cross-section of expected stock returns", *Journal of Finance*, vol. 47, 1992

Graham, L., Harvey, C., „The Theory and Practice of Corporate Finance: Evidence from the field", *Journal of Financial Economics*, 2001

Ryan, P., Ryan, G., „Capital budgeting practices of the Fortune 1000: How have things changed?", *Journal of Business and Management*, 2002

Troung, G., Partington, G., Peat, M., „Cost-of-Capital Estimation and Capital-Budgeting Practice in Australia", *Australian Journal of Management*, 2008

FRAUD IN MOTORS' INSURANCE – PRACTICAL ASPECTS OF ROMANIAN INSURANCE MARKET

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Abstract: *Every economical field is subjected to different ways of eluding the reality. In technical words this fact is known as fraud. The specialists of the insurance market define Insurance fraud as intentional misrepresentation of material facts and circumstances to an insurance company to obtain payment that would not otherwise be made. During this research we will focus on the auto fraud in the Romanian insurance market. We will present practical situations noticed to a group of Romanian insurance companies and we will present our suggestions in order to avoid/to reduce the level of the fraud.*

Keywords: insurance; fraud; Casco; RCA.

JEL Classification: G22.

1. Introduction

Every economical field is subjected to different ways of eluding the reality. In technical words this fact is known as fraud. In the specialist literature fraud is defined as dishonest trick, or use of false representation (Fowler, 1993). American Heritage Dictionary defines fraud as a deliberate deception for unfair or unlawful gain (1999).

In the insurance field, the fraud is a common thing, existing since the beginning of the insurance techniques, and it will continue to exist as long as the insurance will function. The specialists of the insurance market define Insurance fraud as intentional misrepresentation of material facts and circumstances to an insurance company to obtain payment that would not otherwise be made (www.insurancefraud.com).

The fraud in insurance had a particular view. Financially the insurance companies support the losses generated by the fraud. It is known that these companies function under the mutuality principle. In that case, all the insured people can easily cover a loss of 100,000 Euro (if we assume that the insurance company has half a million insured persons, they will pay 0.2 Euro each). This is the way of thinking of the persons that intend to produce a fraud. But the problem is not an individual one, many insured people may think that way, and cumulating all frauds, the financial losses of an insurance company will seriously affect the financial results.

2. General aspects

In the Romanian speciality literature, insurance fraud represents the intentional increasing of the loss claiming, and loss claiming after unexisting events or feign events (Moldoveanu, 2002, p. 108). Also the real frauds represent the totallity of the penal facts commited into a country, on a determined period.

The aim of this paper is to present the fraud in the Romanian Insurance market with specific focus on motor's insurance (motors' insurance and motors liability insurance).

The fraud in an insurance company is not a thing that the company is proud of. That is why; the statistics related to fraud in the insurance field are quite approximate. For example in United States The Insurance Information Institute appreciate that every year the level of the fraud in the property insurance area is at the limit of 10% of the total incurred losses or

loss adjustment expenses. In figures that represents more than 30 billion USD every year (www.iii.org).

Following the same source the Coalition Against Insurance Fraud mention that the auto fraud in insurance sector represent the biggest challenge, because they are on the first place with a total of 14 billion USD per year, reflected in false claims.

If we follow the statistics about fraud by Insurance Fraud in United States, we can observe that the differences from the statistics of the previous source are quite small.

The total frauds are at a level of 27.6 billion USD, and the most outstanding fraud are also in auto field – 12.3 billion USD per year. The diversifications of the fraud are enhanced in the next figure (7):

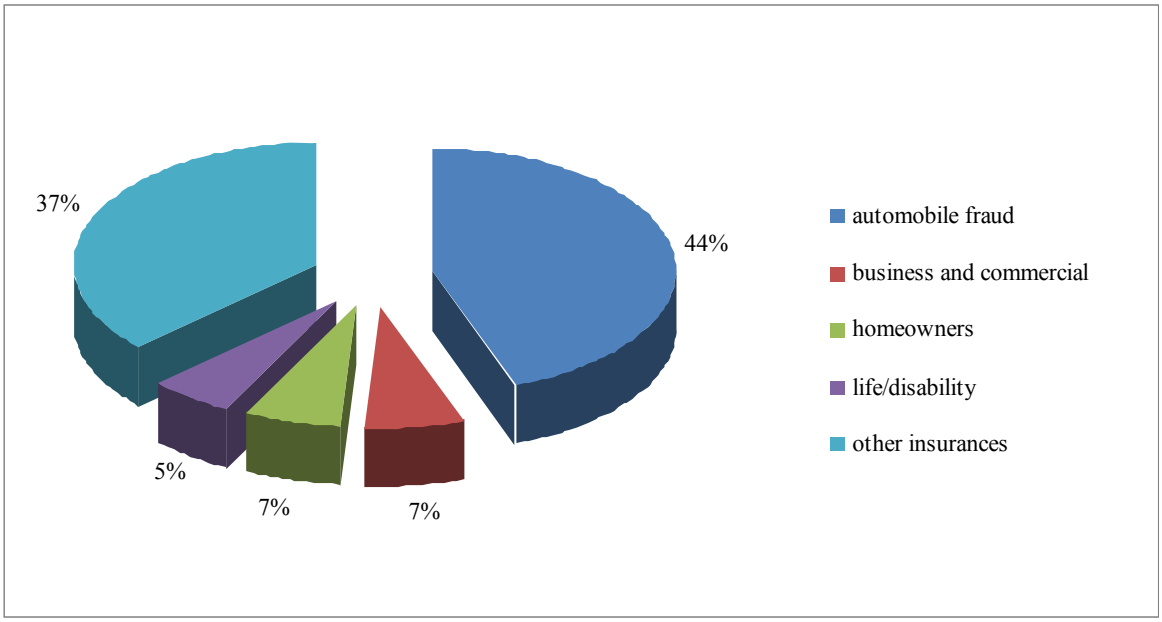

Figure 1. *The Fraud Structure in Insurance Industry in United States in 2007*

The differences between fraud in the auto insurance field and the rest (homeowners and business insurance) are quite high, and the insurance companies are focused on the measure to decrease especially auto frauds (we must mention that the other insurances are also strictly supervised and controlled in order to decrease the existing fraud level).

The specialists of the Romanian Insurance company Asitrans, estimate that at the end of 2006 the value of the financial losses suffered by Romanian Insurance companies by fraud is around 70 million USD (1), that means almost 10% of the total losses in the property and casualty insurance Romanian market. Even if these figures are high, not all the insurance companies are interested in the reduction of this phenomenon. The reasons are the accountancy transparency and the fear of the local insurance competitors. The Romanian insurance market ended the years 2006 and 2007 with financial losses, the insurance policies that generated this situation being the auto insurances – RCA/Green Card and Casco.

3. Research methodology

Taking into account these facts we appreciate that in Romania as well, the most fraudulent insurance sector is the auto one. The local mass media offered us numerous examples of auto fraud, this representing the most tempting sector, for all interested parts.

Further more all the discussion and the examples will be offered from the perspective of the insurance company, examples are real but for the protection of the insurance companies involved in these cases, we decided not to mention their names. We will present different real situations noticed at a number of three large Romanian insurance companies, and also the modalities the fraud can be observed and eliminated. Unfortunately no insurance company mentions the way they finalized the fraud in the civil or penal processes.

In order to offer a rigorous research the authors decided to make a practical classification of the auto fraud in the insurance field, taking into account the direction where the fraud is coming from:

- Internal fraud and
- External fraud.

Also the specialists in fraud, on the insurance market use the same classification, and diversify the fraud in different departments of the insurance company (Cedam.esa-isc.ro).

Internal frauds are represented by the frauds and miscellaneous actions taken by the insurance companies' employees. The personnel in the underwriting department or in the loss adjustment department do the frauds in these cases.

External frauds are represented by the fraud done by all the persons and companies that enter into contact with the insurance company (insured people/companies, auto service companies, related parties). This type of auto fraud may be also national and international.

3.1. Internal frauds – underwriting department

The establishment of the real value of the insured car represents the most usual and known fraud in the underwriting process of an auto Casco insurance policy. This problem occurs in the cases of second hand imported cars, when the insurance agent must identify the car into special catalogues (Schwacke, Nutz, APIA). There are different values for a car (the same cylinder, same power, same number of doors, same fuel type), the differences are given by the options of the car (manual/automatic gear, heated seats, number of airbags, ABS, ESP and so on).

In that case there may be consistent differences between the cars that look similar at the first look. The insurance agent may fraud the insurance system with the compliance of the car's owner (otherwise we are referring to technical mistake).

The first option is to choose a lower new value than the real one, in order to offer a lower insurance premium. In case of an expensive car the differences are significant, we may assume a Mercedes E Klasse from 2006, has a new value of 44.000 Euro (Ambience variant) and 49.000 Euro (Elegance variant), and the potential client has an Elegance option.

$R.V. = N.V. - D. = 44.000 - 8.800 = 35.200 eur$ - Ambience version

$R.V. = N.V. - D. = 49.000 - 9.800 = 39.200 eur$ - Elegance version

Where:

R.V. – Real Value

N.V. – New Value

D. – Depreciation.

The differences between the two potential insured sums are of 5.000 euro, and with a 7% percentage insurance quota, the difference in insurance premium is of 350 euro/year.

So the sub-insured car represents the fraud. The problem is solved unfortunately in case of a loss to an option or a system of the car that is not usual. In that case the loss agent identifies again the car in the same auto catalog. In the moment he notice that is affected a system that is not included in the price of the Ambiance version, he will refuse the payment of that loss.

Or in the case the loss agent is involved into the fraud with the other two persons; he will pay that loss at his risk. Every year the insurance company randomly verifies some occurred and paid losses. In case of discovering the fraud, the two agents of the insurance company will suffer the penalties under Romanian law, and also will reimburse the unjustified loss.

The second option is to supra evaluate a car value. This method is used for the situation of a next total loss (theft of the car, total damage). In this situation the client will pay 350 euro more for compensation higher with 5,000 euro. If the car is totally damaged, by checking the wreck the loss experts will observe the option of the car and will verify if the

real value was correctly determined. If there is a mistake, the insurance company will refuse the reimbursement of the entire insured sum.

In case of theft, the problem is quite difficult because on the identification papers of the car the options are not mentioned, and neither the variant of the car. If the insurance company has an international affiliation, it can verify in the origin country of the imported car (using the identification serial) if there are information about the model of the stolen car.

Another way to fraud the insurance company by the insurance agent is to declare the existence of an alarm of the car, and the car has no alarm. In case of theft, the insured person may quickly buy two remote controls, to show them.

The insurance companies improve continuously the modalities to avoid the fraud in underwriting process. In order to accept in insurance a car, they require at least 6 photo of the car (one from the each corner to see all entire parts, one with identification number on the engine, and not with the km. on the board). If there are any damages these will not be covered by the insurance company. The insurance companies have specialists in IT in order to check the accuracy of the photo.

3.2. Internal frauds – loss department

These types of frauds are very common and involve the loss agents that open and solve a loss claiming. In that case the loss agent may choose to change a damaged part instead to repair (if there are rational reasons and technical options to repair it). For a damaged door, the difference is huge – the replacement is around 1,000 Euro, and the repairing is maximum 500 Euro.

In order to eliminate these frauds the insurance companies decided to make one or more photos of the damaged part, and then a superior person in the loss department will make the righteous decision.

Other type of fraud is to allow the insured people to repair the car into an unauthorized service that practice huge prices; or to reimburse him the loss after his payment to such a service. That is why insurance companies are dealing only with a number of agreed/accepted auto services.

Loss department agents may be involved in fraud by combining parts of the external frauds – in that case auto services. They may impose insured people to go to a specific service, that practices higher prices and in the end the loss reimbursed by the insurance company will be higher. The loss agent will receive an „unofficial" commission for „good cooperation". But in the end the volume of the losses will increase for the insurance companies. The insurance companies can avoid this fraud, by good negotiations of the prices with the services; in that case they will know exactly to which service they will send the specific damaged car.

3.3 External fraud – auto service case

Beside the situation mentioned in the former paragraph, the auto service units are trying to fraud insurance companies by increasing the final value of the repairing.

In the moment of a loss, the initial damage is done by insurance companies' loss agents. With this notification the insured person is going to the service. Normally, the service must execute only that operation mentioned. In many cases they are „repairing" more, in some cases the replace a piece (even if the insurance company mentions the repairing) without any notification to the insurance company. The problems appear in the moment of the final amount that must be paid by insurance company. The loss agent cheats the insurance company by accepting the entire amount for payment. There were many losses solved in this way and there are still, the insurance companies that have efficient controlling programs make exception. These supplementary programs require more financial resources for the moment, but in time the loss claiming adjustments will be more efficient and the costs will decrease.

There are real situation when the car presents hidden damages that could not be seen on the initial examination. In that case the loss agent will be notified; he will be present at the auto service in order to make a supplementary of the loss report.

3.4. External fraud – related parties

These types of frauds are the most expensive for the insurance companies and are very hard to be proven because in many situations there are two or more involved parts. The insurance products most subjected to be fraud are RCA (compulsory motors' insurance related parties) and Casco (facultative motor insurance).

The differences between these two insurance is known, we just want to remind that RCA is cheaper because is a mandatory one (the risk is spread)- it refers to losses caused to related parties, and Casco is an expensive insurance (because the number of the insured car is not so high) – it refers to own car.

A very usual fraud is generated in the moment when an expensive car (let's assume in worth of more than 8,000 Euro) makes a small/medium loss by its fault to a cheap/old car. Normally the old/cheap car must be repaired by the RCA of the guilty car. The expensive car will be repaired using the Casco policy (if he has such an insurance) or by his personal funds. The loss is higher for the expensive car. The fraud is done by the "agreement of the involved drivers" (they will change the guilty for a sum of money that will be higher than the loss of the cheap/old car), before the Police agent to come and make the official report. In that case the expensive car will be repaired using the RCA of the old/cheap car.

This way of fraud of the insurance company is still working; until there will all insurance companies use a national database. CEDAM became active since 2006, but the information is quite inefficient. This national database will be more operative when will show the loss ratio for each driver. So when a driver will renew the RCA policy, every insurance company will verify in this database the loss history of the driver, and in that case a malus will be applied. But a malus of 10 – 50% could represent a difference of 100 – 150 Euro, that may be incomparable to the level of a fraud.

The same situation appears in the case of Green Card Insurance Policy (that is combined with RCA). Many old/cheap Romanian cars are involved in spectaculars accidents abroad – especially in East Europe countries, and the injured cars are luxury ones. Initially these luxury car recorded minor/medium losses and in order to repair them the owners need foreign insurance.

Green Card is the good opportunity because the money will come by international transfers. The Romanian car really hit the luxury car exactly in the part it was already damaged, then the Police make an official report that mention that the guilt is on the Romanian part. The old/cheap car is usually completely destroyed (the owner will receive a higher sum than its value from the other party) and the luxury car will be repaired using the Romanian Green Card. The value of the repairing will arrive to the Romanian insurance company that must pay it, otherwise Romania may be excluded from the Green Card International Convention.

As we mentioned these frauds are very hard to be proven. Insurance companies are doing different research in those countries and not only, and try to find any information about the luxury car damaged (using identification serial). In some cases different international insurance companies or Police may offer important information, in that situation the reimbursement is not paid, and all the involved persons are offered to justice in the origin country.

Another type of fraud that occurs outside of Romania is the „arranged" theft of the car. This happens for the expensive/luxury cars. The insured person "give" the car for an amount of money less than market value, to a „specialized organization", and after 1-3 days will declare the missing of the car. The insurance company will reimburse him the insured

sum, and the total received sum will be higher that the real value of the car. The thief made a good business, the insured people too – using the insurance companies' money.
Also in this situation fraud is very difficult to be proven, that is why the insurance company tries to take some prevention measures:

- In case of theft of the car the owner must present all the original declared car keys and remote controls (minimum two of each), the original documents of the car (certificate, identity car card)
- In case of theft outside Romania, they will cover only 70-85% of the insured sum of the car.

Even if these measures are taken, national insurance companies are still cheated using this technique.

Another frequent fraud in auto insurance is represented by false declaration of two drivers. One car has a serious damage after an accident (the car went off the road for example) by its driver's fault. Because the car doesn't have a Casco insurance policy, the owner must repair the damages on his own. But using another driver, whose car is not affected by the accident, the second driver will declare that he entered by his mistake on the opposite driving direction, and the first driver trying to avoid the impact get off the road and hit his car. Of course, the two drivers know each other, and make the declaration to be real. The Police agent, just notice their declaration, and the damaged car will be repaired using the RCA insurance of "his friend".

In many cases these types of fraud accidents may not be proven by the insurance specialists, the fact is possible if there were witnesses of the accident. Practice demonstrates that for these accidents there are no witnesses because the accidents occur outside the villages.

One spectacular type of auto insurance fraud is realized by the implication of the stuntmen. The luxury second hand cars are bought from abroad. The acquisition price is, usually, lower than the insured sum. For example a BMW X5 3.0D from 2006 costs on the auto market in Germany around 30,000 Euro. The insurance companies use a 20% of depreciation after 2 years, and the new value of the cheapest same model is 50,000 Euro. So the insured sum is 40,000 Euro. It can be easily noticed that there is a difference between these two values of 10,000 Euro. The difference is quite higher in cases of more expensive cars.

Once such a car is insured, the contracted stuntman generates an accident and the insurance company – total loss, will then declare the loss. Because his experience the stuntman has no corporal injury, he receives his commission, and the insured person will receive a higher amount that the car really cost. This type of fraud has a small area of action, because in the moment when a stuntman made more than one accident he will became suspicious. Unfortunately the stuntman and the insured persons are changing the insurance company after an event. This thing is possible because of the lack of a national database for such type of events, where the insurance companies should have checked the potential fraud. Anyway insurance companies are corresponding themselves in that special cases, and in different situation they find real help among them.

The same type of luxury cars makes the object of fraud theft. The owner of the car steals his own car (and then sell the car's components to the auto services) or let the car be stolen by specialized persons. The insured person will receive the insured sum that in the most of the cases are at least 20% higher than the market value.

The huge differences between insured sum and the market value represent a temptation even for the honest people that buy luxury second hand auto. In order to eliminate these frauds insurance companies introduce a compulsory deductible for total loss or theft, only for the expensive/luxury cars.

Another way of eliminating this fraud is to accept the acquisition price of the second hand luxury/expensive car, this in case the market value is lower than the real value determined by the insurance company methodology.

A real problem for these types of cars is represented by supplementary option or personalized features that are not found in the special catalogues. In the moment of subscribing the insurance is very important to determine the real value of these options (tunings, electronic devices, special alloy wheels and so on), and there is the obligation of the photo for each. The insurance for these types of cars is subscribed only with the approval of head department of the insurance company (that checked internationally the car, and determined the insured sum taking into account all special features).

4. Conclusion

In order to avoid or if it is possible to eliminate insurance fraud, a program of fraud controlled by a special organization - a National Bureau of Investigation and Avoidance of Insurance Fraud, must supervise this "battle". Probably this bureau is better to have a state authority, and to be constituted by efforts of Romanian insurance companies.

The role of this bureau should be to prevent, avoid fraud, to present all the time examples of frauds, and to constitute a national database to prevent fraud developments. Also this organization must be affiliated to similar international bureaus.

Another way to prevent the fraud from the internal causes is to offer to loss agents and to underwriting agents a higher remuneration, in order not to be attracted by the financial stimulants of the frauds.

Also there must be a very punitive legal system, with huge fines and penal consequences that may be finalized even with imprisonment. But if we like to realize these aspects there must be taken real action from all the insurance companies, they must work together for an entire industry benefit.

References

Bogdan, M.D. (2005). *Controlul în asigurări,* Editura Casa Cărţii de Ştiinţă, Cluj-Napoca, p. 112

Fowler, H. (1993). *The Concise English Dictionary,* Adaptation of Oxford Dictionary, Bucureşti

Moldoveanu, N. (2002). *Combaterea Fraudei în Asigurări,* Editura Bren Bucureşti, p.108

Mosoianu, A., „Fraudele – Drobul de sare al asigurarilor", *Săptămâna Financiară,* 27/04/2007

The American Heritage Dictionary, Dell Publishing New York, 1999

www.insurancefraud.com

www.iii.org

ARTIFICIAL INTELLIGENCE APPLICATIONS IN THE FINANCIAL SECTOR

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Abstract. *The present paper exposes some of artificial intelligence specific technologies regarding financial sector. Through non-deterministic solutions and simple algorithms, artificial intelligence could become a base alternative for solving financial problems which require complex mathematic calculations or complex optimization.*

Keywords: applied informatics; artificial intelligence; genetic algorithms; financial markets; financial portfolio.

REL Classification: 10J, 11B.
JEL Classification: C63, G11.

1. Introduction

The bases of artificial intelligence were founded in the ’50s. In 1950, Alan Turing (a famous English mathematician and one of the former scientists in informatics) wrote the paper "*Computing Machinery and Intelligence*" which analyzed the alternatives to simulate human behaviour in a computer environment. In the same article, Turing proposed one test (nowadays known as the Turing test) aiming to determinate what are the specifications and the behaviour for a computer to qualify as intelligent. In essence, the test considers a computer as an intelligent machine only when an independent observer could not make any difference between the computer’s and the human’s answers. We have to mention that, until present days, no computer or software application hasn’t passed the Turing test.

The *artificial intelligence* concept (*AI*) was introduced for the first time at the Dartmouth College Conference, in 1956, and, over the years, was a subject for scientific papers and many definitions have been formulated. We have chosen this definition: „The artificial intelligence is the science which studies the human brain simulation using computers”. In the next period of time, research in the AI domain has been increased and a diversity of adjacent specialization was set up. We could mention: knowledge model design, games theory, sound and image processing, robotics, etc.

Even until these days, *AI* has not achieved the expected results, and the optimistic prognosis presented by scientists in the ’56 were not confirmed, we have to underline some *AI* technologies that have been successfully implemented and demonstrated their efficiency into different domains as the financial.

a) *Neuronal networks* are special *AI* technology which simulates the human nervous system. The central core of a neuronal network is represented by the artificial neuron which, in the same way as the biological one, has a body, a series of inputs (dendrites) and one output (the axon). Programming a neuronal network suppose to identify the relationships among neurons and to quantify a series of coefficients which can be associated with the neurons. Depending on connexions established among neurons and the coefficients’ values for each neuron a different behaviour could result of the neuronal network.

Although the neuronal networks are simplified models of the human nervous system, they expose three main characteristics: learning, generalization, synthesize.

The neuronal networks have proved to be useful solutions for:

- Approximation and non-linear functions modeling;
- Shapes recognition, especially writing recognition;
- Voice recognition;
- Systems' controlling;
- Games' theory;
- etc.

b) *Genetic algorithms* are inspired from Darwin's evolutionist principles, according which the most representative individuals have the biggest chance to survive and reproduce. The individual is identified as a chromosome build from a series of genes describing his personal behaviour. The live expectation for a chromosome can be calculated as the result of a conformity function built on the genes foundation and is correlated with the specific problem proposed to be solved. The main chromosome's population is the solution range for the problem and the chromosome with the highest values of the conformity function will represent the best solutions. Through specific genetic operations (intersection, mutation, selection), the chromosome population will be successively transformed until the expected solution will be found (or an appropriate solution).

Genetic algorithms are successfully used for solving problems as:

- Optimization of functions with multiple variables;
- Searching in databases or in large sets of data;
- Games theory (including simulation of entrepreneurial strategy);
- etc.

c) *Expert systems* are software systems designed for using knowledge provided by a human expert to solve complex problems. An expert system has two main components: *the knowledge database* acquired from human experts and the *inference engine* which guide the program's flows. All knowledge provided about a specific domain is stored as facts; the inference engine applies some selection strategy to determine which knowledge is useful to a specific case, without any user's control.

Expert systems are the most popular *AI* application and nowadays are frequently used in many sectors:

- Finance;
- Medicine;
- Economy;
- Industry;
- etc.

d) *Multi-agent intelligent systems* represent a new *AI* technology (formerly introduced in '90s) developed to make analysis, design and implementation for complex systems as the economic systems. The *agent* concept describes an autonomic entity able to deal with specific problems in a given environment. A multi-agent systems is designed and implemented as an informatics system composed from a set of interactive agents that can do correlated actions in the purpose of solving certain problems. Certainly, when the designed system is more complex, the multi-agent system will be more difficult to implement.

Most applications of multi-agent systems are dedicated for sector as:

- Virtual organizations;
- Stock transactions;
- Shopping agency;
- Natural language processing;
- etc.

2. Genetic algorithms

The present study was centered on usage of genetic algorithms in financial application. For this reason we find useful to consider a more detailed description.

2.1. Fundamentals

Genetic algorithms were discovered as a result of the research started in the ’50 in purpose to computer assisted simulation of biological systems. In 1975, John Holland (*University of Michigan*) stated the genetic algorithms principles as are known today.

Genetic algorithms are based on Darwin's Theory of Evolution and use natural phenomena: *genetic inheritance* and *fight for survival*. A genetic algorithm generates a population of individuals in each new iteration, each individual being a potential solution. Each population is generated on the most representative individuals from previous population.

Individual are called chromosomes and consists of a certain number of genes, represented in binary values (0 and 1).

Figure 1. *Chromosome's structure*

A genetic algorithm uses three main operator, inspired from nature, as described as follows:

a) *Crossover operator* is a typically binary operator, used to create new chromosomes through combining genes from two parents-chromosomes. For example, considering X and Y the parents chromosomes with the following structure:

$X=x_1,x_2,...,x_n$

$Y=y_1,y_2,...y_n$,

through *crossing* it will be create two child-chromosomes as follows:

$X'=x_1,x_2,...,x_k, y_{k+1}, y_{k+2}..., y_{n-k}$

$Y'=y_1,y_2,...y_k , x_{k+1}, x_{k+2}..., x_{n-k}$.

The value for *k* is called „cutting point” and represent the position of the combination gene.

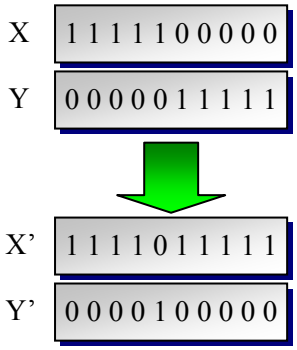

Figure 2. *Crossing after the cutting point = 4*

b) *Mutation* represents an operator that supposes a totally random change of a chromosome’s gene. Mutation is the operator that grants the creation of new individuals with new characteristics.

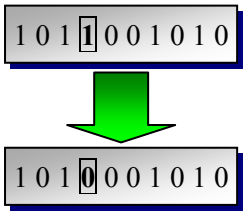

Figure 3. *Genetic mutation*

c) *Selection* is the process which chooses only the relevant chromosome for a specific problem. Through selection, the individuals’ performance is going to be maximized. Selection for individuals depends on their *fitnes*s, which is gained correlated with a conformity function according to a specific problem.

A general model of genetic algorithms could be designed as follows:

- ✓ A random population is created;
- ✓ The population is assessed;
- ✓ The most relevant chromosomes are selected;
- ✓ The crossing and mutation operators are applied;
- ✓ A new population is created.

Typically, the algorithm ends when the expected solution is gained or the number of successive population reach a particular value. In the last situation, the best chromosome from final population will be chosen as the solution.

2.2. Application for simulation of investor's behaviour

The first application we developed is concerning about graphical simulation of investor's behaviour in financial market using genetic algorithms.

For example, we propose a market with two securities, A and B, and we test the chromosome's capabilities to adapt and migrate between A and B, in different situations.

a) In the first case we supposed *A* and *B* with equal returns: starting with a random population, we have observed that, over the time, the chromosomes tend to distribute almost uniformly around the two points (A and B). The model is nearly the real situation, because the investors are "equally interested in both of them.

Figure 5. *Nearly uniform migration of investors to A and B securities*

b) The case when a securities (*B*) has a better rate of return than the other (*A*): even if in the initial population isn't a chromosome oriented to *A* or *B*, after a few iterations (four in our study), a polarization that grows constantly can be revealed for point *B*. If we consider the real world phenomena, where the trend is to migrate to the most attractive rate of return, we can consider this behaviour very natural.

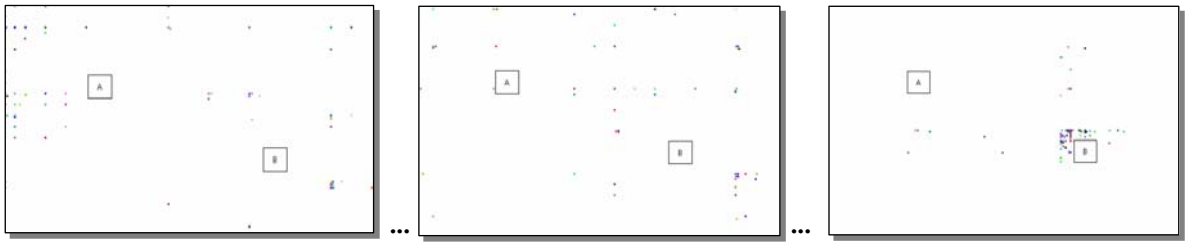

Figure 4. *Invsetors' polarization to highest rate of return (B)*

2.3. Application for a portfolio optimization

Probably the most frequent genetic algorithm applications in the financial sector are developed for securities portfolio optimization. Starting from the *Markowitz's* equations, the applications propose alternative implementations for genetic algorithms, so that the solution will be very close to the mathematical solutions based. We have to mention the research of

Chen and *Soleimani* (for reminding only the most recent), published in *Expert Systems with Applications* magazine.

During our research, we developed a program which can establish the optimal structure for a portfolio of securities considering three parameters:

- ✓ expected return of each stock (r_i);
- ✓ risk related to each stock (σi);
- ✓ total expected return (R).

The main goal is to create a low risk portfolio and a return closer or equal to investor's expectation. Each population's chromosome will be variants of portfolio, and each stock has one rate of return (w_i). Initial population include only null chromosomes (all rate per cent are 0).

The program allows specifying and changing the number of chromosomes of population, the number of genes specific for chromosomes and also the total return margin. After the experiments made, we have concluded: for reaching a high accuracy return it has to be 20 genes per chromosome and about 1,000 chromosomes. The new populations are obtained by applying intersection and mutation on chromosomes (portfolios) having the lowest risk and total return nearest to investor's expectation.

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For example, assuming we have four stocks: *A, B, C*, and *D* having the following features:

Securities	Return	Risk
A	2.00	1.00
B	3.10	2.00
C	2.10	1.50
D	2.50	1.60

Total expected return of entire portfolio (R) is 2.35. The requirement is to find the weighted mean of each securities (w) to reach R as total expected return and the lowest risk. Results generated by the application are shown in the following table. We understood that, in each generation, it shows only the most representative chromosome:

Generation	A	B	C	D	Return	Risk
1	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0000	0.0000	0.0000	1.0000	2.5000	1.6000
3	0.6667	0.3333	0.0000	0.0000	2.3667	1.3333
4	0.0000	0.2500	0.7500	0.0000	2.3500	1.6250
5	0.0000	0.2500	0.7500	0.0000	2.3500	1.6250
6	0.0000	0.2500	0.7500	0.0000	2.3500	1.6250
7	0.2500	0.1250	0.2500	0.3750	2.3500	1.4750
8	0.2500	0.1250	0.2500	0.3750	2.3500	1.4750
9	0.3000	0.2000	0.3000	0.2000	2.3500	1.4700
10	0.3000	0.2000	0.3000	0.2000	2.3500	1.4700
11	0.3000	0.2000	0.3000	0.2000	2.3500	1.4700
12	0.3000	0.2000	0.3000	0.2000	2.3500	1.4700
13	0.3000	0.2000	0.3000	0.2000	2.3500	1.4700
14	0.5000	0.2500	0.1250	0.1250	2.3500	1.3875
15	0.5000	0.2500	0.1250	0.1250	2.3500	1.3875

Generation	A	B	C	D	Return	Risk
16	0.5000	0.2500	0.1250	0.1250	2.3500	1.3875
17	0.5000	0.2500	0.1250	0.1250	2.3500	1.3875
18	0.5000	0.2500	0.1250	0.1250	2.3500	1.3875
19	0.5000	0.2500	0.1250	0.1250	2.3500	1.3875
20	0.5000	0.2500	0.1250	0.1250	2.3500	1.3875

***Note*:** From the fourth iteration (population) algorithm obtained a solution of the problem (total expected return of entire portfolio is equal to 2.35). However, this is not the best solution, because with the obtaining of new populations and chromosomes there are gained better solutions, having total risk 1.4750, 1.4700, respectively 1.3875. Finally, we consider the solution portfolio securities which have the following weighted mean (0.5000), B (0.2500), C (0.1250), return is 2.3500, and the risk of 1.3875.

3. Conclusions

Unfortunately, in our country, *AI* applications in economic sector are referring only to expert systems and the interest manifested in the '90 for these technologies is not the same. Our study aims only to generally present *AI* applications and technologies that could be applied in financial sector. *AI* technologies are improving and the researchers are particularly interested in solutions for the financial sector in particular and for economic domain in general.

References

Chen, J.S. et al., „Constructing investment strategy portfolios by combination genetic algorithms", *Expert Systems with Applications,* 2008, doi:10.1016/j.eswa.2008.02.019

Dumitrescu, D. (2008). „Algoritmi genetici şi strategii evolutive - Aplicaţii în inteligenţa artificială şi în domenii conexe", Editura Albastră, Cluj-Napoca

Groşan, C., Oltean, M., „Algoritmi evolutivi", *Ginfo nr. 8* (2001)

Holland, J. H. (1975). *Adaptation in natural and artificial systems: An introductory analysis with applications to biology, control, and artificial intelligence.,* University of Michigan Press

Leigh, W., Purvis, R., Ragusa, J.M., „Forecasting the NYSE composite index with technical analysis, pattern recognizer, neural network, and genetic algoritm: a case study in romantic decision support", *Decision Support System,* 2002

Markowitz, H. M., Arnott, R. D., „Portfolio selection", *Journal of Finance,* 1952

Soleimani, H. et al., „Markowitz-based portfolio selection with minimum transaction lots, cardinality constraints and regarding sector capitalization using genetic algorithm", *Expert Systems with Applications,* 2008, doi:10.1016/j.eswa.2008.06.007

Turing, A., „Computing Machinery and Intelligence", *Mind LIX No. 236,* 1950

Watson, M, „Intelligent Java applications for Internet and internets", Morgan Kaufmann Publishers, 1997

INCIDENCE OF LEGISLATIVE CHANGES ON THE ROMANIAN PUBLIC DEBT SUSTAINABILITY

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Abstract. *Long-term public debt sustainability can be achieved by particular public debt management measures. The changes occurred in the Romanian legislation have performed in this field both to the reduction of public debt ratio and on the public debt interests, also on the diversification of the financial instruments, the maturities and the currencies of the public debt. The aim of this study is to present the legislative changes and their incidence on public debt sustainability using the Romanian case.*

Keywords: governmental public debt; local public debt; sovereign rating; budget deficit; sustainability.

JEL Classification: H62, H63.

1. Introduction

Public debt is sustainable when the public authorities can pay back the public debt service to their creditors without any fiscal adjustment in the future as reducing the public expenditures and/or increasing the taxes. Thus, the public authorities need to obtain important primary surpluses to finance public the debt interest payment. This statement is relevant for what is called in the financial literature "government solvency".

So far, the necessity to satisfy better the collectives' needs(1) conducts to an increase in the public expenditures bigger than the public revenues. The result as Zipf (2000, p. 50), considers is due to the fact that *the governments had to borrow more money to manage themselves, not because they are spending more money than their citizens, but because the citizens preferred to receive money than to pay the taxes.*

Regardless of the reasons that the public authorities contract loans, the stock of public debt that must be reimbursed represents the public debt of that country (Moşteanu, Câmpeanu, Cataramă, Miricescu, 2008, p. 8) demonstrate that *all the financial obligations of the government or the local public authorities are included in the public debt.*

In the first capitalist stages, the public budget deficit and the public borrowing has been considered a burden for the future generations; the state intervention in economic activities that appeared after the great global recession reflects the importance of public debt as an economic instrument to influence the entire economy. An efficient management of public debt represents a real challenge for contemporary states as public loans are used for productive purposes and not for consumption needs. The positive generated effects report on the payment in time of the public debt service, the GDP increase and in final a better living standard for the citizens.

In contrary, public debt portfolio may have negative effects which conduct to illiquidity and insolvency risks. We may find many examples to illustrate this risks starting with the financial crisis(2) in Romania during the '80, the "Asian tigers" in 1997 and Argentina in 2001. Because of an exaggerate increase in interest rate, at the beginning of the '80, Romania was in partial payments ceasing and negotiated rescheduling of public debt to more than 3.8 billion USD with London Club and 0.5 billion USD with Paris Club. After that incident, Romania had an austerity policy and had paid back in advance the external debt having a large reduction in imports and investments, also increasing the exports which

generated the foreign currencies. Thus, after the elimination of the communist regime the public external debt was practically non-existent.

2. Legislative dynamics

The size, the structure, the contracting, the recording and the reporting of public debt involve precise juridical rules in order to avoid their misunderstanding by the institutions implied with the activities of public debt management. Romanian legislation for public debt reflects the dynamic of economic activities. In spite of the continuum process of contracting public loans starting with 1990, yet in Romania the specific regulation in the field of public debt has appeared with a certain delay:

- Public debt law no. 91/1993, published in the Official Gazette no. 3 from 10 January 1994, is the first act which defines the particular conditions for issuing public loans;
- Local public finance law no. 189/1998, published in the Official Gazette no. 404 from 22 October 1998, explains how local authorities can contract loans for medium and long term;
- Public debt law no. 81/1999, published in the Official Gazette no. 215 from 17 May 1999, reflects the needs of capital market;
- Public administration law no. 215/2001, published in the Official Gazette no. 204 from 23 April 2001, defines local autonomy and the opportunity that the local authorities can contract public loans;
- Government emergency ordinance no. 45/2003 for local public finance, published in the Official Gazette no. 431 from 19 June 2003;
- Public debt law no. 313/2004, published in the Official Gazette no. 172 from 29 June 2004, is approved in the context of the Romanian talks for join to the economic European structures;
- Local public finance law no. 273/2006, published in the Official Gazette no. 618 from 18 July 2006;
- Government emergency ordinance no. 64/2007 for public debt, published in the Official Gazette no. 439 from 28 June 2007, fulfils certain improvements especially in the field of the public debt management.

Public debt is reported and administrated by the following two components:

- Governmental public debt is administrated by Ministry of Public Finance;
- Public local debt is administrated by public local authorities.

In the future, there will not be a limit for public indebtedness because the maximum value for public loans will be approved by state budget law or by state guaranties laws. In order to limit public loans and the risks associated, public debtors will need to obtain the notice of the Inter ministry Committee for Finance, Guarantees and Insurances(3). So, the legislative dynamics impose new constraints in order to maintain a cautious administration of public debt.

3. Purposes of public debt

We find useful this analysis because a growing debt for consumption needs will increase on long term the risks of illiquidity.

In table 1 we present the purposes of public debt, according to the specific legislation. The law no. 81/1999 established most of the purposes for public loans. Later, the number of these purposes has been reduced as the result of the public financial requirements. In 2007 were introduced new restrictions (for example, the loans for balance of payments have been limited, Public Treasury deficit and some governmental projects(4) have been eliminated) and new actions regarding an efficient management of public debt (it was established the opportunity for previous repayments(5).

Purposes of governmental public debt

Table 1

Law no. 91/1993	Law no. 81/1999	Law no. 313/2004	G.E.O. no. 64/2007
Financing the state budget deficit			
	Financing the short term state budget needs	Financing the temporary state budget deficits	
		Financing the temporary social security budget deficits	
		Financing the temporary social security budget deficits from the previous years	
		Financing the temporary deficits of State Treasury from current year	
Refinancing the internal public debt	Refinancing the public debt		Refinancing previous repayments of governmental debt
	Sustaining the balance of payments and international reserves		Sustaining the balance of payments
	Financing the temporary needs of State Treasury general current account		
Financing the national interest investment projects	Financing the public investment projects in the main economic sectors	Financing the investment projects and other purposes established by Government decisions	Financing the investment projects and other main purposes for Romanian economy
	Financing the development of small and medium sized enterprises with Romanian capital		
	Financing the goods and services acquisitions and the import of energetic resources		
	The debts fulfillment of the state guaranties		
	Payment of the public loans and repayment of public debt		
	Financing the expenditures generated by the natural calamities		
Other financing requirements approved by special law		Other purposes	

Source: our own findings according to the legislation for public debt.

Even if the local public debt legislation had changed, we may note that the main purposes of public debt are:

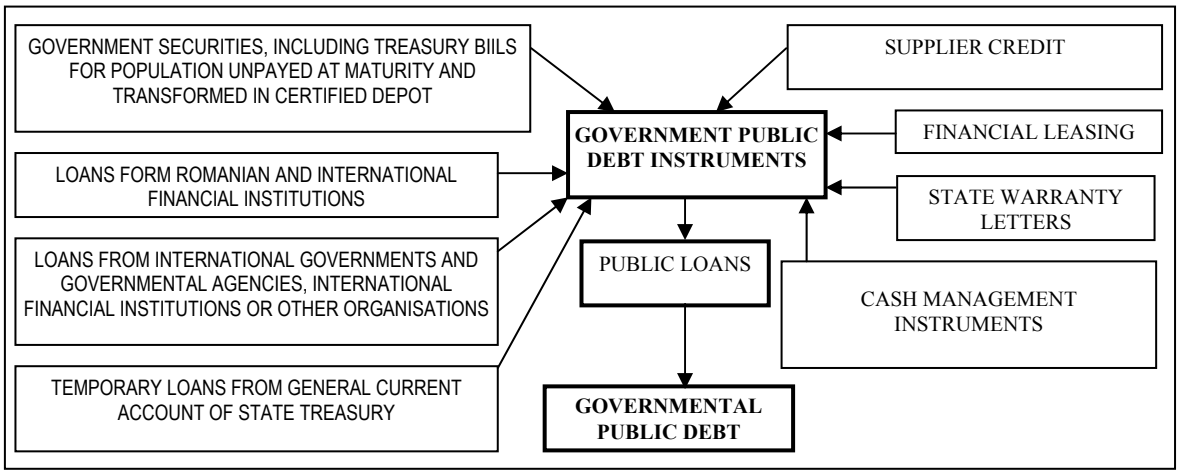
1. financing local public investments;
2. repayments of local public debt;
3. financing the temporary requirements generated by the gap between local budget revenue and expenditure.

We sustain that these purposes are suitable with the principle defined in many studies that *it is desirable that the state borrows money not for consumption needs but for investments* (Bercea, 2004, p. 18). In this way, governments avoid the accumulation of public debt for consumption needs even if these are important for political factors. For the managers of the governmental or local public loans *not to have negative effects in the future, it is important that these loans have an adequate structure to avoid the economic crises* (Călin, 2006, p. 197).

4. Investigation of Romania's public debt

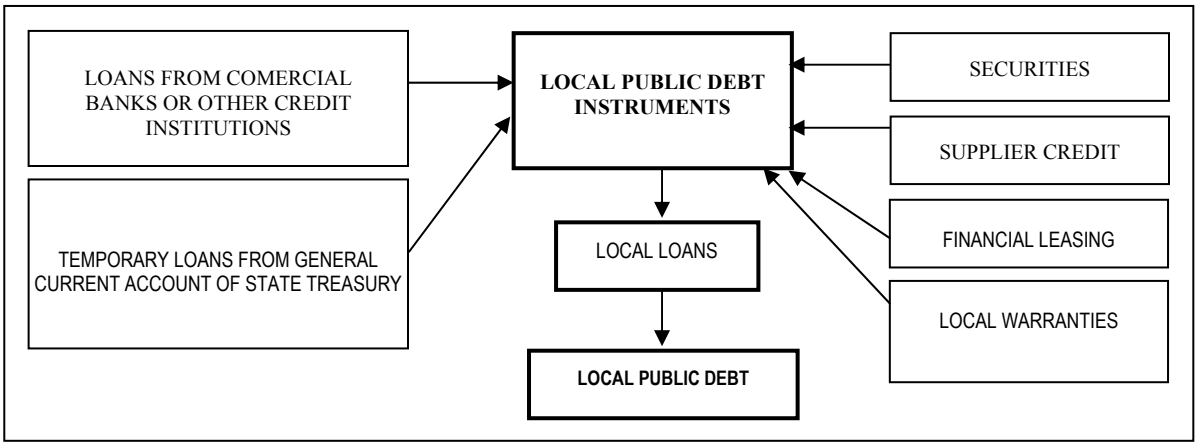
The legislative changes have generated important modifications in the management of public debt, regarding: (i) diversification of public debt instruments; (ii) issuing methods for government securities; (iii) state securities maturity; (iv) launching state securities

denominated in foreign currency (v) using the internal public loans to finance and refinance the budget deficits. These measures imposed many changes in the structure of public debt, reduction of public indebtedness and interests on public debt.



Source: our own findings according to the legislation for public debt.

Figure 1. *Government public debt instruments*



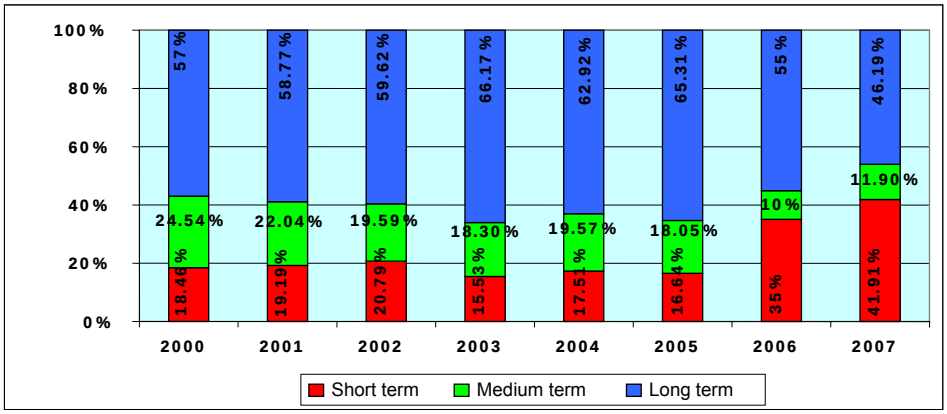
Source: our own findings according to the legislation for public debt.

Figure 2. *Local public debt instruments*

We have emphasized, in the figures 1 and 2, the forming of the governmental and local public debt starting from the instruments used by the authorities to lend the money. The government has additionally to the local authorities, the opportunity to lend money from foreign governments, financial institutions or international organizations or to use cash management instruments.

4.1. Public debt structured by initial maturity

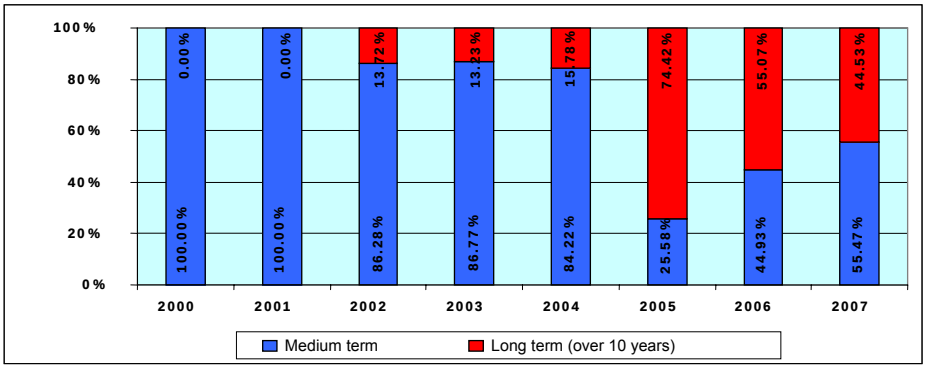
The debt maturity influences the management of the refinancing and liquidity risks. The public loans having productive destinations must have the recovery term shorter than their maturity. In this purpose we must notice the theory of liquidity preferences of (Modigliani, Sutch, 1967, p. 571), which states that *the investors are more interested by short term treasury bills because of their adversity to risk, and the debtors by long term instruments.* If an issuer takes two loans having the same features less the maturity, their cost will increase due to the maturity.



Source: our own findings based on data from the Ministry of Public Finance.

Figure 3. *Government public debt structure by initial maturity*

We find in the figure 3 that governmental public debt on short-term had an increasing trend form 18.46%, in 2000, to 41.91%, in 2007. This reflects the public authorities' preferences for temporary financing(6) based on the State Treasury surpluses, having low interests(7). Medium term debt varies from 24.54%, in 2000, to 11.9%, in 2007. Long-term debt(8) was 57%, in 2000, and reaches 46.19%, in 2007.



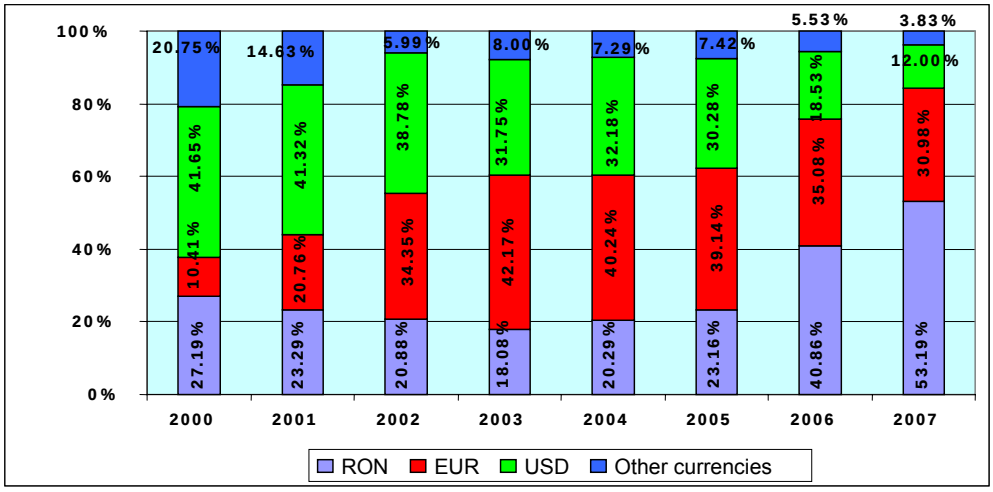
Source: our own findings based on data from the Ministry of Public Finance.

Figure 4. *Local public debt structure by initial maturity*

Debtors want to contract loans with long maturity even if they pay a large interest. So, in the eight years investigated (figure 4) local public debt is contracted more on medium term, exception 2005 – when it was 25.58% of total local public debt, and 2006 – when it reached to 44.93% of total local public debt. Local public debt on long term was accumulated starting from 2002, when it had 13.72% of total local public debt, and reached to a maximum level of 74.42%, in 2005. This is the result of the credibility of municipalities in our countries. We consider a positive aspect that the local authorities had not contract loans on short-term. This is a normal situation taking into the consideration the investment purposes.

4.2. Currency public debt compositions

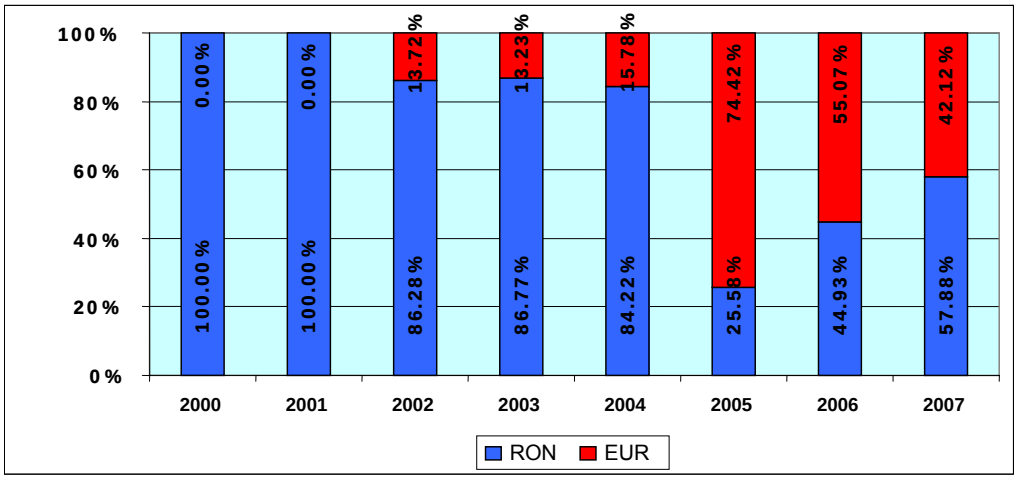
In the context of Romanian current account liberalization, the investigation of the public debt structure according to its currency composition (figures 5 and 6) is useful because it is used the residency criterion to establish and administrate the public debt components. Even so, it is necessary to analyze the proportion of public debt denominated in national currency and denominated in other currencies, in order to assure an efficient management of market risk. The public budget revenues are expressed in the national currency and any change in the exchange rate can increase the costs of the public debt service.



Source: our own findings based on data from the Ministry of Public Finance.

Figure 5. *Currency government public debt composition*

Government public debt in national currency represents 22.19% of total public debt, in 2000, and 53.19%, in 2007, which can be appreciated as a positive evolution who respects the objective fixed by government[9] (minim 45%). Government public debt in EUR has an increasing trend from a minimal value of 10.41%, in 2000, to a maximum value of 42.17%, in 2003. In 2007, it was 30.98% of total government public debt. The government debt denominated in USD has fluctuated from a maximum value of 41.65%, in 2000, to a minimum of 12%, in 2007. The largest part of the Romanian export revenues is expressed in euro and in consequence is better to have a public debt denominated in euro than in USD. In other currencies, government public debt has decreased from a maximum of 20.75%, in 2000, to a minimum of 3.83%, in 2007. We find useful the public debt currency composition in only three currencies which allows a good management of market risk, especially in the case of the adverse exchange rate evolutions, generated by the international financial crisis.



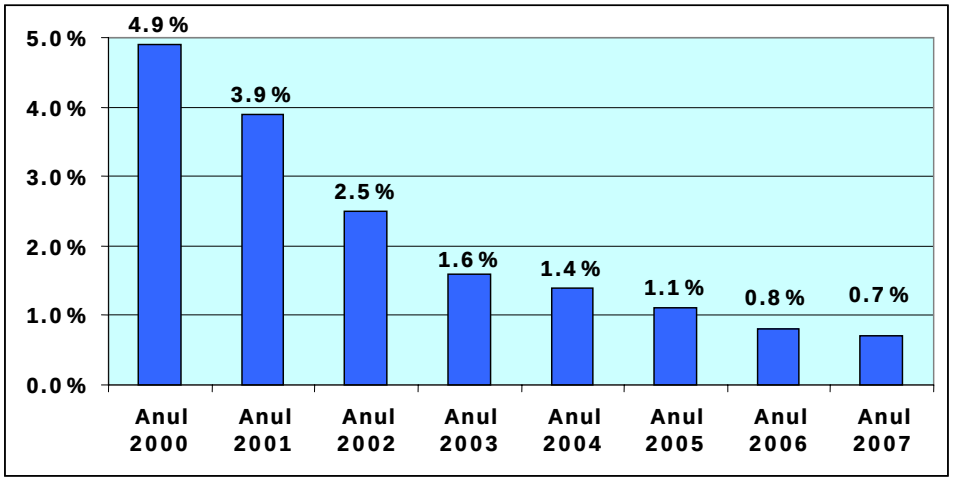
Source: our own findings based on date from the Ministry of Public Finance.

Figure 6. *Currency local public debt compositions*

Analyzing the currency local public debt composition we find many similarities with the structure of local debt according to initial maturity, exception 2007. During 2000 - 2006, local loans had maturity between one and five years, and local loan in other currency – more than ten years.

4.3. Investigation of public debt costs

The main objectives for the Ministry of Public Finance are to reduce the burden of public debt interest payment and to roll over the public debt principal without supplementary costs. Those have an important impact on public debt sustainability.



Source: our own findings based on data from the EUROSTAT and the Ministry of Finance.

Figure 7. *Evolutions of public debt interest payments (% of GDP)*

Even if public debt growth rate is 116%[(10)] during the eight years investigated, the interest payments of public debt decreased from 4.9%, in 2000, to 0.7%, in 2007 (figure 7), because:

- GDP growth rate (GDP expressed in EURO) attains 236.4%, which outruns the public debt growth rate;
- Romania has made important costs reduction for interest payments on domestic[(11)] and external[(12)] public debt.

Nominal interest rate on government bonds expressed in national currency (without any risk) must outrun inflation rate and it is a reference value for other interest rate in economy. For external public debt, interest payments are influenced by the evolution in international interest rate which is correlated with the debtor sovereign rating. (Dedu, 2003, p. 169) says that *the sovereign rating expresses the country risk, that is the losses occurred in a business made with a foreign partner which may be due to specific events caused totally or partially by the partner country.*

5. Conclusions

The investigation on legislative changes is important to show that public institutions which manage public debt (such as Ministry of Public Finance and local authorities) had reached their specific objectives regarding diversification of borrowing instruments and reducing the financing costs for public loans. These conduct to an important reduction to public expenditures for public debt. With a public debt ratio of 12.9% of GDP according to EUROSTAT, Romania has a sustainable public debt policy according to the fiscal criterion of Maastricht Treaty. So, in the future period of time, our country can pay the public debt service without any adjustments in public revenues and expenditures.

Notes

(1) There are private institutions that can not deliver the goods and the services available to a respectful living standard of their citizens, thus the state intervention is necessary in order to supply those types of goods and services.

(2) Romania had also an important volume of payments to service public debt in 1999, when it was near of insolvency risk.

(3) The notice is obtained only after debtor risk degree examination by the EXIMBANK.
(4) There will be normative acts which establish issuing new public loans for important programs or projects for Romanian economy.
(5) It is used when on the secondary market, the face value of government bonds is below a certain limit.
(6) This situation is according with the objective of minimizing the short term costs, but increases the long-term risks because of the growing not financed budget deficits, which will be financed in the future by higher loan costs.
(7) According to the Medium term Strategy for governmental public management debt during 2008 – 2010, the interest rates where 0.5% in 2006.
(8) The maximum maturity of the Romanian public loan is 15 years, below the maturity of the USA public bonds - 30 years.
(9) Medium term Strategy for governmental public debt during 2008-2010.
(10) Starting from 10463.2 billion euro in 2000 to 22599.4 billion euro in 2007.
(11) Those have a decreasing trend, same as the inflation rate.
(12) Those decreases were the result of investors' confidence improvement in Romanian economy reflected also by a positive evolution of sovereign rating.

References

Bercea, F. (2004). *Consideraţii privind raportul dintre datoria publică internă şi datoria publică externă,* Editura ASE, Bucureşti
Călin, M. (2006). *Datoria publică,* Editura Didactică şi Pedagogică, Bucureşti
Dedu, V. (2003). *Gestiune şi audit bancar,* Editura Economică, Bucureşti
Modigliani, F., Sutch, R., „Debt management and the term structure of interest rates", *Journal of Political Economy 75*, 1967
Moşteanu, T., Câmpeanu, E., Cataramă, D., Miricescu, E. (2008). *Gestiunea datoriei publice,* Ediția a II-a, Editura Universitară, Bucureşti
Zipf, R. (2000), *Piața obligațiunilor* – Ediția a II-a, Editura Hrema, Bucureşti
Ministerul Finanțelor Publice, „Raportul legii bugetului de stat pentru 2003"
Ministerul Finanțelor Publice, „Raportul legii bugetului de stat pentru 2002"
Ministerul Finanțelor Publice, „Strategia privind managementul datoriei publice guvernamentale pentru perioada 2008-2010"
Legea privind datoria publică nr. 91/1993, publicată în Monitorul Oficial nr. 3 din 10 ianuarie 1994
Legea privind finanţele publice locale nr. 189/1998, publicată în Monitorul Oficial nr. 404 din 22 octombrie 1998
Legea datoriei publice nr. 81/1999, publicată în Monitorul Oficial nr. 215 din 17 mai 1999
Legea administrației publice locale nr. 215/2001, publicată în Monitorul Oficial nr. 204 din 23 aprilie 2001
Legea datoriei publice nr. 313/2004, publicată în Monitorul Oficial nr. 172 din 29 iunie 2004
Legea privind finanțele publice locale nr. 273/2006, publicată în Monitorul Oficial nr. 618 din 18 iulie 2006
Ordonanța de urgență nr. 45/2003, privind finanțele publice locale, publicată în Monitorul Oficial nr. 431 din 19 iunie 2003
Ordonanța de urgență nr. 64/2007, privind datoria publică, publicată în Monitorul Oficial nr. 439 din 28 iunie 2007

THE PERFORMANCES OF INDUSTRIAL FIRMS FROM ROMANIA. CORRELATION DIMENSION – INDICATORS OF RESULTS

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Abstract. *The work of the market economy in a modern and efficient way depends on the existence of an as large as possible number of competitive enterprises, both on the internal and external market. In order to make a global assessment of the economical and financial performances of the Romanian industrial companies, in this paper we set as a goal to analyze the dynamics of their number, the number of employees, as well as the main result indicators. The analysis is made both on the whole industrial companies and on types of size and this further allows pointing out the sectors with the highest level of the economical and financial performances.*

Keywords: performance; correlation; indicators; financial; analysis.

JEL clasification: G32, G34.

1. Introduction

The work of the market economy in a modern and efficient way depends on the existence of an as large as possible number of competitive enterprises, both on the internal and external market. Due to their position, the companies have a decisive part in the economical development of a country. The economical power and the living standard of the population depend on the capacity of the companies to carry on their activity in an efficient way. In the economy of a country, the companies play a double role: economical and social.

The economical role of the companies consists in gathering and combining the production factors in order to generate products and services. They try to obtain the best result at the specific cost and in this respect they try to optimize the combination of the production factors they owe.

The social role of the companies is determined by the current social context they run in. The company exists and runs due to its employees and costumers and it has a specific social role against them, as:

- providing proper working conditions and wages for employees. The managers of the company have to implement a policy so as to encourage the employees' promotion and their participation in training programs, which is a necessity if we consider the occur of new techniques and technologies;
- the company has to find the best way to produce the goods and services so as to meet the costumers' needs; it has to provide a complete and neutral information on its products using proper publicity and advertising policies.

In this paper, a study regarding the level and dynamics of the performances of the Romanian industrial companies has been realized. The necessary data was provided by the Official Statistics Reports (The Romanian Statistical Yearbook, The Monthly Statistical Review for Industry) and the study aimed the period between 2000 and 2007.

2. Objectives and methodology

The objectives of the current study are:

- the analysis of the dynamics of the companies' number;

- the analysis of the employees' number;
- the analysis of the main result indicators.

The methodology used was mainly the statistical one and was utilized for processing the extracted data.

The result indicators used to appreciate the performances of the companies are [(1)]:

a) *The turnover (T)* represents the sum of the incomes resulted from selling the goods, the merchandises and the services, without the discounts offered to the customers.

b) *The industrial production (IP)* represents the value of the produced finished goods, of processing the customers' raw materials and materials, of the services with an industrial character made for the third part, of the industrial services performed for third parties, of the intangible production, and also of the variation of finished goods and ongoing production.

c) *The direct exports (DE)* represent the turnover obtained by the company as a result of foreign sales of own products and services, without the intervention of a foreign trade company.

d) The gross value added (GVA) represent the sum of wages and other labor costs, of profit and subsidies;

e) *The gross result (GR)* represents the difference between the sum of the operational, financial and extraordinary revenues and the sum of the operational, financial and extraordinary expenses. If the difference is positive the company has profit and, if the difference is negative, the company posts losses.

f) *The gross investments (GI)* comprise the value oh the investments made in all the tangible goods, either they are bought from the third parties or are produced in the company, with a utilization period longer then one year.

g) *The net investments (NI)* represent the expenses made for construction, installation and assembling works, for the acquisition of equipments, means of transportation, other expenses made for purchasing new fixed assets, for developing, modernizing, reconstructing the existing ones and also the value of the services made for transferring the ownership of the existing fixed assets and lands (notary charges, fees, transport expenses, uploading-unloading expenses) etc.

Considering these indicators, the following financial rates, which were appreciated as being relevant for analyzing the performances of the Romanian industrial companies, were calculated in this paper:

- *The labor productivity* $W = \frac{T}{\overline{Ne}}$

  $\overline{Ne}$ - the average number of employees;
- *The efficiency of the tangible assets* $E_{TA} = \frac{IP}{TA} \times 100$
- *The degree of the production integration* $DPI = \frac{GVA}{T} \times 100$
- *The weight of the net investments in the gross investments* $W_{NI} = \frac{NI}{GI} \times 100$
- *The weight of the gross result in the value added* $W_{GR} = \frac{GR}{VA} \times 100$
- *The weigh of the exports in the turnover* $W_{DE} = \frac{DE}{T} \times 100$
- *The profit margin* $PM = \frac{GR}{T}$

3. Results

In order to analyze the dynamics of the number of industrial companies and also of the number of employees who are working in industry, we used the statistical data published by the National Institute of Statistics, which are presented in the tables 1 and 2:

Table 1

The number and the dynamics of the active companies in industry

Branch	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007**
Extractive industry	276	321	379	502	616	676	734	782
Index (2000=100%)	100	116.30	137.32	181.88	223.19	244.93	265.94	283.33
Processing industry	41547	42787	46517	50863	55305	57900	58878	59872
Index (2000=100%)	100	102.98	111.96	122.42	133.11	139.36	141.71	144.11
Electrical and thermic energy, gas and water	334	346	388	453	478	484	507	525
Index (2000=100%)	100	103.59	116.17	135.63	143.11	144.91	151.80	157.19
Total industry	42157	43454	47284	51818	56299	59060	60119	61179
Index (2000=100%)	100	103.08	112.16	122.92	133.55	140.10	142.61	145.12

* Estimated values

Source: Processed data from the Romanian Statistical Yearbook, 2007.

Table 2

The average number of the employees in industry (thousands pers.)

Branch	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007***
Extractive industry	140	141	136	128	118	114	95	80
Index (2000=100%)	100	100.71	97.14	91.43	84.29	81.43	67.86	57.14
Processing industry	1560	1590	1594	1581	1491	1425	1409	1338.9
Index (2000=100%)	100	101.92	102.18	101.35	95.58	91.35	90.32	85.83
Electrical and thermic energy, gas and water	173	170	161	139	132	133	128	128.3
Index (2000=100%)	100	98.27	93.06	80.35	76.30	76.88	73.99	74.16
Total industry	1873	1901	1891	1848	1741	1672	1632	1547.2
Index (2000=100%)	100	101.49	100.96	98.67	92.95	89.27	87.13	82.61

*- values at 31 of December 2007

Source: Processed data from the Romanian Statistical Yearbook, 2007, and The Monthly Statistical Review – December 2007.

The number of the companies in industry became larger and larger every year, from 42,157 in 2000 to 61,179 in 2007. Most of the companies run in the processing industry (97.8% from all the industrial companies), as their number grew up from 41,547 in 2000 to 59,872 in 2007. The extractive industry and the electrical and thermic energy industry also posted significant increases. These increases were determined by the privatization and division of the most of the state owned companies, and, on the other hand, of also by setting up many private companies, in the processing industry branch especially. We positively appreciate the increase of the number of industrial companies, as the basis for developing the economical activity is set.

The average number of the employees had an opposite evolution against the number of companies. Thus, in 2002, 1,873 thousand persons were working in industry, out of which 1,560 thousand in the processing industry. In 2002, the average number of the employees, who were working in industry, grow up to 1,891 thousand persons, out of which 1,594 thousand persons in the processing industry. After this, a decrease was recorded for this number, down to 1547,2 thousand persons at the end of 2007, out of which 1,338.9 in the processing industry. The reduction of the employees' number from industry was determined by migrations towards other sectors (trade, services), by the appearance of the "small entrepreneurs" category, that lost the employee status, and also by the emigration of the labor force.

The difference evolutions of the companies' number against the employees' number generated major changes of *the average size of a Romanian industrial company*. By calculating the average size of an industrial company depending on the average number of the employees, the following results occur:

The average size of the active companies from industry (no. of employees)

Table 3

Branch	2000	2001	2002	2003	2004	2005	2006	2007
Extractive industry	507,25	439,25	358,84	254,98	191,56	168,64	129,43	102,30
Index (2000=100%)	100.00	86.60	70.74	50.27	37.76	33.25	25.52	20.17
Processing industry	37,55	37,16	34,27	31,08	26,96	24,61	23,93	22,36
Index (2000=100%)	100.00	98.97	91.26	82.78	71.80	65.55	63.73	59.56
Electrical and thermic energy, gas and water	517.96	491.33	414.95	306.84	276.15	274.79	252.47	244.38
Index (2000=100%)	100.00	94.86	80.11	59.24	53.31	53.05	48.74	47.18
Total industry	44.43	43.75	39.99	35.66	30.92	28.31	27.15	25.29
Index (2000=100%)	100.00	98.47	90.01	80.27	69.60	63.72	61.10	56.92

Source: Processed data from the Romanian Statistical Yearbook, 2007.

In early 2000s, in the Romanian industry, the big companies were still existing in the extractive industry, where the average size was 507,25 employees, and also in the electrical and thermic power branch, where the average size of a company was 517,96 employees. In the processing industry, the small and medium enterprises were preponderant, with an average size of a company of 37,55 in 2000.

The decreasing trend of the average size of a Romanian industrial company carried on after this date. Thus, by the end of 2007, an industrial company had an average of 25,29 employees against 44,43 employees in 2000, which means a diminution of 43.08%. On branches of activity, the most significant diminution was posted by the extractive industry, with an average size of 102,3 employees at the end of 2007, 79.83% lesser against 2000. In the branch of the electrical and thermic energy, the average size of a company was 244,38 employees by the and of 2007, 52.82% lesser against 2000. In the processing industry, the average size reached 22,36 employees, 40.44% lesser against 2000.

The diminution of the average size of an industrial company can be considered as an advantage, due to the increase of their flexibility and adaptability on market changes. But, in the same time, the companies face bigger challenges, especially when the multinational companies enter their market.

The changes occurred in the level and the dynamics of the average size of the Romanian industrial companies must be correlated with their economical-financial results. In order to assess the economical-financial results, we shall use the following indicators: turnover, industrial production, direct exports, gross value added, gross result of the exercise, gross investments and net investments.

Table 4

The level of these indicators for the period 2000-2007

– Million lei –

Indicators (current prices)	2000	2001	2002	2003	2004	2005	2006	2007*
Turnover	58819.3	84564.6	115513.3	143522.6	183329	200445	232594	271162.9
Industrial production	63203.2	96644.5	128642.6	157836.3	186831.6	211081.9	247373.1	273350.6
Direct exports	9840.4	14955.9	26136.9	30289.8	43278	50841	58122	68917.6
Gross value added	17305.1	21399.3	25129.5	30141.1	44695	48858	55823	63265.3
Gross result of the exercise	-2570.2	-1289.9	-1469.4	116.9	7609	7973	13474	15270.3
Gross investments	17599.9	23714.7	19796.5	19872.0	31582	26182	35004	41375
Net investments	4939.4	8173.6	10463.4	13394.0	17992.4	17702.5	23728.0	27682
Tangible assets	68383.4	98226.1	118531.3	148597.2	165472.9	181958.0	197254.7	209873
Price Index (previous year = 100%)	*	134.5	122.5	115.3	111.9	109.0	106.56	104.84

Indicators (prices 2007)	*2000*	*2001*	*2002*	*2003*	*2004*	*2005*	*2006*	*2007*
Turnover	152259.8	162754.0	181484.3	195568.1	223243.5	223932.2	243851.5	271162.9
Index (2000=100%)	100.0	106.9	119.2	128.4	146.6	147.1	160.2	178.1
Industrial production	163608.0	186003.2	202111.9	215072.4	227508.7	235815.4	259346.0	273350.6
Index (2000=100%)	100.0	113.7	123.5	131.5	139.1	144.1	158.5	167.1
Direct exports	25472.9	28784.3	41064.0	41273.8	52700.5	56798.3	60935.1	68917.6
Index (2000=100%)	100.0	113.0	161.2	162.0	206.9	223.0	239.2	270.6
Gross value added	44796.0	41185.4	39481.3	41071.2	54426.0	54582.9	58524.8	63265.3
Index (2000=100%)	100.0	91.9	88.1	91.7	121.5	121.8	130.6	141.2
Gross result of the exercise	-6653.2	-2482.6	-2308.6	159.3	9265.6	8907.2	14126.1	15270.3
Gross investments	45559.2	45641.6	31102.5	27078.2	38458.1	29249.9	36698.2	41375.0
Index (2000=100%)	100.0	100.2	68.3	59.4	84.4	64.2	80.6	90.8
Net investments	12786.1	15731.0	16439.2	18251.1	21909.7	19776.8	24876.4	27682.0
Index (2000=100%)	100.0	123.0	128.6	142.7	171.4	154.7	194.6	216.5
Tangible assets	177017.5	189047.1	186225.9	202482.9	201499.8	203278.9	206801.8	209873.0
Index (2000=100%)	100.0	106.8	105.2	114.4	113.8	114.8	116.8	118.6

* Estimated values

Source: Processed data after the Statistic Yearbook of Romania, 2007.

As the analyzed indicators are expressed in current prices and they are influenced by the prices' change, we have used the price index, published by the National Statistics Institute, in order to eliminate the influence of inflation.

Relying on the indicators expressed in constant prices (from 2007) we have made the following remarks:

- *The turnover* increased during the period 2000-2007 by 78.1%, with increases for every year of the time horizon, which is favorably appreciated;
- *The industrial production* had an ascending trend, with a growth of 67.1% from 2000 to 2007;

- *Direct exports* also had an increasing trend, as they were with 170.6% higher in 2007 against 2000;
- *The gross value added* decreased in 2001 and 2002, but increased in the following years of the analysis horizon, in 2007 being by 41.2% higher against 2000;
- *The gross result of the exercise* was negative in 2000, 2001 and 2002, which means that the industrial companies posted losses. Starting 2003, it is positive and growing, a situation favorable appreciated;
- *The gross investments* decreased in 2002, 2003 and 2005, down to 60% from the level posted in 2000, which is considered to be unfavorable. In 2006 and 2007 they had an ascending trend, but they never reached again the level from 2000;
- *The net investments* had an ascending trend on the whole period, in 2007 their level being by 116.5% higher against 2000.

Relying on these indicators, a series of new indicators, used to assess the performances of the industrial companies, can be calculated (see Table 5).

Table 5

Indicators	2000	2001	2002	2003	2004	2005	2006	2007
Labour productivity (thousand lei)	81.29	85.61	95.97	105.83	128.23	133.93	149.42	175.26
Efficiency of tangible assets (%)	92.42	98.39	108.53	106.22	112.91	116.01	125.41	130.25
Degree of production integration (%)	29.42	25.31	21.75	21.00	24.38	24.37	24.00	23.33
Weight of net investments in gross investments (%)	28.06	34.47	52.85	67.40	56.97	67.61	67.79	66.91
Weight of gross result in value added (%)	-	-	-	0.39	17.02	16.32	24.14	24.14
Weight of exports in turnover (%)	16.73	17.69	22.63	21.10	23.61	25.36	24.99	25.42
Profit margin (%)	-	-	-	0.08	4.15	3.98	5.79	5.63

The labor productivity is calculated as a ratio between the turnover and the number of employees. Its level is growing during the period 2000-2007, both as a result of the increase of the turnover, and of the diminution of the number of the employees.

The efficiency of the tangible assets was calculated as a ratio between the industrial production and the value of the tangible assets. Its level increased year by year, from 92.42% in 2000 to 130.25% in 2007.

The degree of production integration expresses the weight of the gross value added in the turnover. Its level decreased from 29.42% in 2000 to 21% in 2003, respectively to 23.33% in 2007, which means a lower degree in processing the materials. This situation is unfavorably appreciated, because the companies used more materials in order to get a certain level of the turnover.

The weight of the net investments in the gross investments increased from 28.06% in 2000 to 66.91% in 2007, which means that most of the investments made in last years were meant to create new fixed assets.

The weight of the gross result in the value added was not calculated for the first three years, because the Romanian industrial companies posted losses during this period. But, starting 2003, there generated profit and its share in the value added was continuously increasing, reaching 24.14% in 2007, a favorably appreciated aspect.

The weight of the exports in the turnover is growing, from 16.73% in 2000 to 25.42% in 2007, a favorably appreciated situation if we consider the positive effect on the balance of external payments. However, by correlating this indicator with the degree of production integration, we conclude that more raw materials or primarily processed products were exported, with an unfavorable influence on the Gross Domestic Product.

The profit margin is determined as a ratio between in the gross result of the exercise and the turnover. The level of this indicator is negative in the first three years of the horizon, because the industrial companies posted losses in this period. In 2003, the profit margin was positive, but the level was very small (0.08%), reflecting difficulties in achieving profit for the industrial companies. Following this year there was an increase of this indicator, with a stable level around 5.7% in 2006 and 2007.

In order to get an accurate characterization of the level of the performances of the Romanian industrial companies, we are going to analyze the level of the indicators previously presented on different sizes of enterprises. When classifying the enterprises, we considered the intervals proposed by EUROSTAT, respectively:

- Small enterprises 0 – 49 employees;
- Medium enterprises 50 – 249 employees;
- Big enterprises 500 employees or more.

The indicators were calculated for 2006.

Table 6

– Year 2006 –

Indicator	Small enterprises 0-49	Average enterprises 50-249	Big enterprises 250 -	Total
Turnover (mil. lei)	32644	44129	155821	232594
Turnover structure (%)	14.03	18.97	66.99	100
Direct exports	2388	8509	47225	58122
Exports structure (%)	4.11	14.64	81.25	100
Gross value added	6364	10165	39294	55823
GVA Structure (%)	11.40	18.21	70.39	100
Gross result of the exercise	2309	2857	8308	13474
Structure of the gross result (%)	17.14	21.20	61.66	100
Gross investments	6551	6875	21578	35004
Investments structure (%)	18.72	19.64	61.64	100
Personnel of the active units from industry (thousands persons)*	388.6	504.8	879.1	1772.4
Personnel structure (%)	21.92	28.48	49.60	100
Labour productivity (thousand lei)	84.01	87.42	177.26	131.23
Degree of production integration (%)	19.50	23.03	25.22	24.00
SWeight of exports in turnover (%)	7.32	19.28	30.31	24.99
Profit margin (%)	7.07	6.47	5.33	5.79

** the staff of the active units of industry comprises the total number of personnel (employees and non-employees) who worked in the company during the reference period, including the detached staff (who work outside the company), remunerated by the company.*

Most of the turnover from 2007 was realized by the big enterprises (67%), while the small and medium enterprises had a total share of 33% only. Regarding the staff of these enterprises, 49.6% work for big enterprises, 28.48% for medium enterprises and 21.92% for small enterprises.

The different structure of the turnover, respectively of the staff on types of enterprises, determines different levels of the labor productivity. Thus, the average labor productivity in the big enterprises is twice bigger than in the small and medium enterprises, and this fact is mainly due to the different technical endowment of these categories of enterprises and to a better work organization in the big enterprises.

As concerning the exports, the big enterprises have an 80% share, while the small enterprises have a share of 4.11% only. In these circumstances, the big enterprises export 30.31% of the total turnover, while the small enterprises only export 7.32% of the production. The gross value added and the gross investments have a structure close to the one of the turnover, while the degree of production integration is higher in the big enterprises.

The profit margin is different from one type of enterprises to another. Thus, in 2006, the small enterprises post the highest level (7.07%), the small enterprises post a decrease to 6.47%, while the big enterprises encounter a level of 5.33%.

4. Conclusions

Considering the previously done analysis, we can draw the following conclusions regarding the activity of the Romanian industrial companies, for the period 2000-2007:

- The number of the Romanian industrial companies increased year by year, being by 45.12% bigger in 2007 as compared with 2000;
- The average number of employees of these companies was decreasing in the analyzed period, leading to a diminution of the average size;
- The biggest companies run in the electrical and thermic branch and in the extractive industry, while the small and medium enterprises especially run in the processing industry;
- The result indicators had an ascending evolution, favorably appreciated, excepting „the degree of production integration" which decreased, meaning the diminution of the degree of processing the raw materials;
- According to the results, the big enterprises proved to be more profitable than the small ones.

The study of the economical-financial performances posted by the Romanian industrial companies is important to understand their capacity to generate positive financial results during a specific period of time, so as to allow an adequate remuneration of the stakeholders. Taking into account that this study overlapped a period of economic growth, the posted results emphasize the improvement of the performances of the Romanian companies, reflected by the improvement of most of the financial rates. We consider that this study is useful for the decisional making process of these companies, as well as for the potential investors.

Note

(1) Definitions taken from the Romanian Statistical Yearbook, 2007.

References

Berceanu, D. (2006). *Deciziile financiare ale firmei, ediţia a doua,* Editura Universitaria, Craiova

Buşe, L., Siminică, M., Cîrciumaru, D., Marcu, N. (2007). *Analiza economico-financiară a firmei,* Editura Sitech, Craiova

Gheorghiu, A. (2004). *Analiza economico-financiară la nivel microeconomic,* Editura Economică, Bucureşti

Niculescu, M. (2003). *Diagnostic economic,* vol. 1, Editura Economică, Bucureşti

Ştefea, P. (2002). *Analiza rezultatelor întreprinderii,* Editura Mirton, Timişoara

Vâlceanu, G., Robu, V., Georgescu, N. (2004). *Analiză economico-financiară,* Editura Economică, Bucureşti

THE MARKET OF FOREIGN DIRECT INVESTMENT IN MOLDOVA AND ITS IMPACT ON NATIONAL ECONOMY

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Abstract. *A particular role in ensuring the efficiency and modernizing the national economy to foreign investment returns. Presentation investment phenomenon requires a broad analysis of the volume and structure of foreign investment, the dynamics and orientation of the trade flows of capital. For this purpose we turned to data provided by various national and international concerns in the quantification and statistical records as part a series of indicators that characterize the national economy and extensive phenomenon investment in Moldova.*

Keywords: foreign direct investment; national economy.

JEL Classification: H62.

A particular role in ensuring the efficiency and modernizing the national economy to foreign investment returns. Presentation investment phenomenon requires a broad analysis of the volume and structure of foreign investment, the dynamics and orientation of the trade flows of capital. For this purpose we turned to data provided by various national and international concerns in the quantification and statistical records as part a series of indicators that characterize the national economy and extensive phenomenon investment in Moldova.

The legal framework to attract foreign investment is the „Law on foreign investment, in 1992, which in recent years was perfect on several occasions. And now we have a new law on investition in business *(the Republic of Moldova on investment in the enterprise/Official Monitor of the Republic of Moldova from 23.04.2004 N 64-66).* Moldavian economy has undergone some radical changes and reforms on political, social and economic fields. Achieving reform in Moldova has been directed primarily towards economic liberalization. The first steps have included the reform of banking, fiscal and monetary and starting wide process of privatizing state property, and creating a strong base of private property. The events that followed have shown, however, impertinent, and inefficiency reforms implemented, and therefore the country has established an economic stagnation long.

Start the transition in Moldova has been more difficult than in other former socialist countries of southeast Europe. The economy was almost entirely centralized state on and the disintegration of centralized command system has resulted in a first stage with harmful adîncirea of structural imbalances, which add to insufficient training of managers and the general population to act in terms of democracy and market mechanisms. However, although it was adopted „Law on foreign investment" and have been granted some facilities by law foreign investors in the first years of implementation of economic reforms, FDI in the economy of the Republic of Moldova were insignificant. Stagnation of the economy has been determined largely by economic policy in the early years of transition to market economy. Governments in the transition were based on economic activity, primarily on loans to Moldova by various financial organizations and international banks of various countries on the liberalization of external trade, the mass privatization of assets of the state. Using reckless, irrational and professional methods and macroeconomic means led to a decline in production continued in all branches of national economy and the GDP as a summary indicator of economic development of countries. In Moldova and the foreign nationals, enjoy equal rights without discrimination based on origin of investment, type of

activity, state of origin or any other reason. Investors are protected by international agreements to protect investments and insurance. To improve the investment climate and increase foreign direct investment in Moldova and take the following actions:

- Creating Organization Export Promotion of Moldova; In 2001, Moldova joined the World Trade Organization;
- There were bilateral agreements with 35 countries in the protection of investments;
- Implementation of regulatory reform in order to minimize the dependency of administrative institutions, minimizing costs and time to obtain permits, notices and other certificates;
- In 2006 was approved two strategy of attracting investment and promoting exports for the years 2006-2015 adopted by the Government of Moldova;
- The adoption and deployment of national programs to stimulate economic growth;
- In 2007 was established the National Agency for Protection of Competition to promote the state policy in the field of competition.

The main macroeconomic indicators of the Republic of Moldova

Table 1

Indicators	U.M.	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
The GDP in current prices	mil. lei	8917	9122	12322	16020	19052	22556	27619	32031	37652	44068
	mil. USD	1929	1698	1171	1288	1480	1663	1981	2598	2917	3380
GDP in real terms (compared with the previous year)	%	101.6	93.5	96.6	102.1	106.1	107.8	106.6	107.4	107.5	104.6
GDP per capita	USD	528	465	321	354	408	459	548	721.1	831.3	936.0
Gross fixed capital formation	mil. lei	1774	2012	2272	2472	3190	3682	5127	6955	6848.2	8983.4
(compared with the previous year)	%	94.7	109.2	76.9	91.3	117.3	105.7	113.3	107.6		
The volume of agricultural production (from the previous year)	%	111	88	92	96.7	106.4	103.4	86.4	120.8	100.8	96.0
The volume of industrial production (from the previous year)	%	110	85	88.4	107.7	113.7	110.8	115.6	108.2	107	93.1
Investment in fixed capital (from the previous year)	mil lei	1202	1444	1592	1759	2315	2805	3622	5140	7189	5003
	%	92	110	78	85	111	111	107	108	112	116.9
Inflation rate at the end of the year	%	11.2	18.3	43.7	18.4	6.3	4.4	15.7	12.5	10.0	14.1

Source: Balance of Payments of Moldova in 2005, BNM: Quarterly Bulletin for the quarter 2006.

Analysis of macroeconomic indicators in previous periods shows that both major transformations occurred in the economic and social as well as delays in promoting market mechanisms in the preparation of premises to ensure sustainable development of society. Only since 2000, it is a clear trend of improvement of the situation, the GDP registered some increases from year to year. Economic growth in the size of 6 percent reflected in the work schedule of the Government in increasing the volume of industrial production and investment has recorded a real 6.6% in 2003 and in 2004 this indicator made up 7.6% . Gross domestic product over the past six years has seen an increase of 33.6% or about 6 percent per year on average.

Industrial output and has strengthened the tendency of increase. In 2004 industrial production of all forms of ownership has been in current prices 17,533 million lei, recorded an increase in real terms of 6.9% compared with 2003. In 2005, industrial production recorded an increase of 6.3 percent over 2004 and accounted for 21123.5 million lei. Mainly due to increased manufacturing industry, whose contribution was 6.8%, and operating a business career whose volume increased by 17.5%. In 2006, industrial production amounted to 16,759.6 million lei in current prices, registered a decline of 6.9 percent compared to 2005. This was determined mainly by reducing the volume produced in the manufacturing by 8.5 percent in real terms, contributing to the total industrial output decreased by 7.7 percent.

In 2003, under the impact of adverse climatic conditions, agriculture had a very negative development, the volume of agricultural production being 13.6 percent decline compared to 2002. The situation is changing in the next year, the value of agricultural production was 11,819 million lei. And in the years 2005 and 2006 will see an increase in agricultural production, increased to 2005 by 1.0 percent from 2004 and summing 12,688 million lei, and in 2006-13695.0 million lei.

There have been changes in the formation of GDP –the share of gross value added services produced in the area has increased which can be explained both by increasing the priority of charges for services as well as the emergence of new types of financial services and insurance.

Results obtained in recent years have seen an increase but less quantitative and qualitative. Sure this is at least plausible taking into account any increase that occurs through the creation and contribution of factors and conditions favorable for development. Had positive dynamics and is to some extent and on current transfers of citizens employed abroad who have registered increases from one year to another. In 2003, these transfers have made 152 million dollars in 2004 - 221.37 million. In 2005, according to official estimates, these transfers have reached over 850 million dollars, but experts point to a larger number of 1-1,2 billion dollars. This leads on the one hand to improve the situation of balance of payments, to an increase in production activity, on the other hand, lead to increasing flows directed towards consumption. Taking into account this last aspect and analysis using GDP easily observed a clear trend is that the increase in final consumption expenditure and aimed at reducing the gross capital formation. Thus, if in 1997 the share of final consumption accounted for 97.4% of GDP, and since 2000 recorded values exceeding PIB. Only household consumption occupies over 89% of the value PIB. We conclude that consume more than anything what we produce.

In such conditions the state policy should be based on clear development strategy designed to ensure sustainable economic growth and quality and a parallel rise of living standards of the population and long-term. For this purpose was developed and approved in 2004 "Strategy for Growth and Poverty Reduction." As part of taking significant priority and to ensure sustainable development of national economy and is attracting investments, including those abroad.

Foreign investment flows at the national level may be asked by analyzing Balance of Payments Affairs and International Investment Position of the country. Entries major FDI took place in 2000-2002. Increasing their considerable was conditioned primarily by the pursuit of privatization and energy complex development of communications. The largest foreign investor in Moldova remain Spanish company Union Fenosa, which has purchased shares in the privatization of the electric network 3 distribution center, south and Chişinău city. This company has invested in Moldova over 40 million dollars and conducted an activity for the modernization of electric networks and personal training. Union Fenosa company is a transnational organization, which operates in 43 countries in different areas. Participation to this company in the republic's economy is estimated positively by specialists in that field.

The foreign investors are also SA Gazprom in the Russian Federation, which holds 666.4 million lei in the capital of the Moldovan-Russian joint Moldova-Gaz, the German Sudzucher, who purchased shares of the four sugar factories: Alexandreni, Falesti, Donduşeni and statutory Drochia. Capital of these factories is 94 million lei. 49% of shares of the company's factories are „Sudzucher", which has conducted an activity for the purpose of reorganization and modernization of production at the factories concerned to ensure their competitiveness.

The French „France Telecom" was the first who organized and carried out largely in the Republic. Together this company, it was organized SA Joint Moldovan-French „Voxtel. The company has placed French investment amounting to 115.5 million lei. They owns 92.3% of the total number of shares of SA „Voxtel". Among foreign investors and the company is „LUKOIL" of the Russian Federation, which has invested into the republic from 50 million U.S. dollars.

Continuous growth of the annual volume of foreign investments allocated in the national economy, and led to increased share investors foreign fixed capital formation. During 1993-1998 the republic were drafted and adopted three state privatization. Third privatization program adopted by the republic and for the years 1997-1998 and later extended for the years 1999-2000, will aim to complete enterprises privatizations. In this stage of privatization, the main emphasis was not placed on the amount collected after privatization, but on the investment plan proposed by the investor for a period of 5 years, providing a radical restructuring of the operation, increasing jobs and of economic efficiency of production.

In 2005 the total foreign direct investment entering the national economy has made - 266.52 millions USD, of which investments in equity were 98.81 millions USD. Analyzând this chapter notes that since the second half 2001 foreign direct investment in social capital are continually declining and that neglecting that in 2002 the non packages were purchased control „Moldcatron", „Topaz", „Vismos, Calarasi-Divin". The situation is influenced by the increased investment risk and slow the privatization of state assets. A more detailed statement is given below:

Entries and exits of foreign direct investment in Moldova (mil. USD)

Table 2

	2003			2004			2005			2006		
	output	input	net	output	input	net	output	input	net	output	input	net
Direct Investment	**99.8**	**26.2**	**73.6**	**241.1**	**95.4**	**145.7**	**268.1**	**69.3**	**198.9**	**343.7**	**139.2**	**204.5**
abroad		0.1	-0.1	1.8	5.0	-3.2	1.6	1.4	0.2	7.2	7.7	-0.6
In the national economy	98.8	26.1	73.7	239.3	90.3	148.9	266.5	67.8	198.7	336.5	131.4	205.0
ubscribed capital	47.4	7.8	39.6	126.4	12.3	114.1	98.8	19.1	79.6	111.0	6.8	104.2
Banking sector	3.7	2.0	1.6	6.3	1.2	5.1	2.2	4.4	-2.2	30.5		30.5
Other sectors	43.7	5.7	38.0	120.1	11.1	109.0	96.6	14.8	81.8	80.5	6.8	73.7
Income reinvested	15.3		15.3	38.1		38.1	32.1		32.1	42.3		42.3
banking sector	6.1		6.1	6.8		6.8	8.4		8.4	6.4		6.4

Source: Balance of Payments of Moldova for 2005, Quarterly Bulletin: 2006 quarter.

After a continuous decline from 2001 onwards, until 2004, there were felt some benefic changes for improving the investment climate and that as a result of working consistently and effectively the governing bodies, some constructive changes and additions of the legislative in-law tax and customs EGPRSP approval by the World Bank (Figure 1).

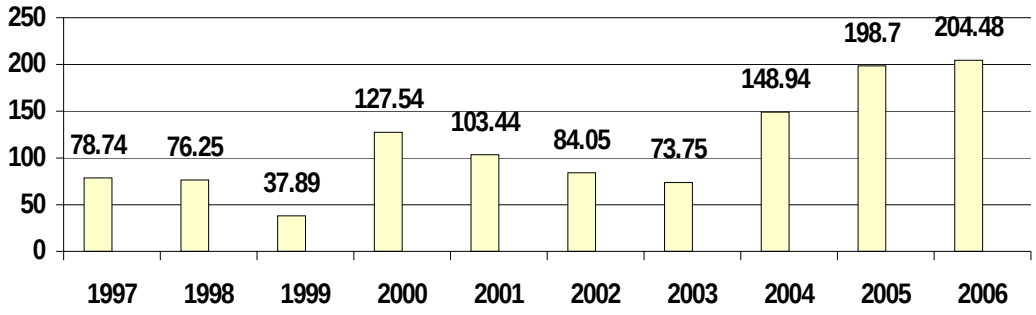

Figure 1. *Foreign direct investment flux into the Republic of Moldova (Mil. USD)*

Foreign investment entering into the Republic of Moldova in 2004 increased more than 2 times, recorded the 241.1 million dollars. Take back the major share of investment in social capital - 53.6% (126.4 mil.U.S.dollars). Only in 2004, for the first time, was recorded a major increase in both income reinvested, of 2.2 times compared with 2003, constituting 38.1 millions dolars. It is also an argument that foreign investors want to maintain the position and, moreover, to develop their business locally. In 2003 the volume of FDI was 99.81 million US dollars in 2002-119.80 million dollars, and in 2001-114.89 million dollars.

In 2005 it was attracted the largest volume of foreign direct investment over the past 15 years, 268.1 million US dollars, or nearly 9% of GDP. Compared to 2004, the FDI has recorded an increase of 7.7%. The entries of foreign direct investment were directed energy, transport, communications, food industry. Investments in non-capital constituted 104.2 million dollar value of that investment in the form of goods – 8.75 million dollars. Reinvested income was estimated at 32.1 million dollars. In total 46.0% investment return of the European Union countries, 22.0% - the NIS, 3.4% - the countries of Central and Eastern Europe (Figure 2).

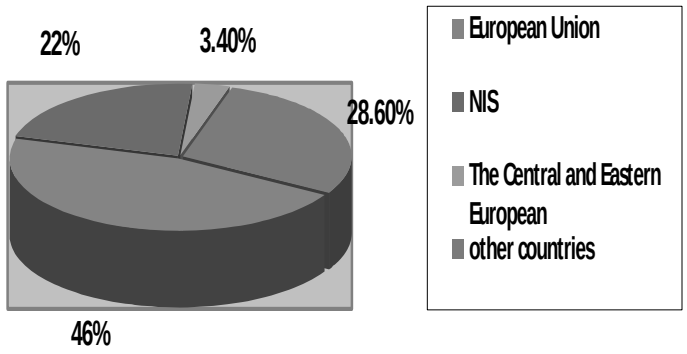

Figure 2. *Assignment the stock of FDI by region*

The informations of National Bank indicates that, in the first quarter 2006, Moldova has recorded the lowest level of net volume ISD recent years - 34.23 millions dollars. Comparative with the same period in 2005, the net volume of FDI fell by over 43%.

BNM states that the accumulated FDI in the national economy up to 31 March 2006 was 1161 billion dollars of which subscribed capital - 750 mil.dolari, income reinvested - 165.6 millions dollars, another capital - 245.4 millions dollars[(1)]. This was an amount almost equal to the annual earning of Moldavians employees that work abroad. The bad things is that the money workers are heading for consumption, which creates certain discrepances resulted in economy. People have to put money into corporate actions and for this state should simplify access to securities markets.

Despite record of successes related to improving the business climate and investment capital inputs in Moldova are still relatively low in comparison with the countries of Central and Eastern Europe and the post-Soviet space.

Starting from this situation a little optimistic, the Ministry of Economy and Commerce (MEC) has developed a new draft strategy to attract investment and promote exports for the

years 2006-2015, which is the second attempt to push these vital areas. There are therefore required a number of concrete actions to redress sitatuției which will find reflection in national politics

It is necessary to close a mix of policies to attract investments to the promotion of exports that would contribute to real economic growth and increase welfare population attracting foreign investment in the national economy which would ensure innovation and transfer of know-how, high added value and create an economic and technical infrastructures effectively.

The development of foreign trade by attracting foreign investment. Moldova focused its efforts on achieving the new strategic directions of activity and actions of those specified in the strategy of attracting investment and promoting exports for the years 2006 to 2015.

Attracting foreign capital and promoting exports are done through a complex range of activities:

- Promoting the image of the Republic of Moldova as attractive destination with a favorable investment climate for foreign investors by providing a complete and accurate information on investment opportunities and to attract increased foreign investment in the economy;
- Providing information and assistance specialist for local companies and foreign investors already in the process of information, initiation, implementation and post implementation of projects;
- To facilitate and promate collaboration and cooperation between foreign investors and public institutions for investment projects;
- Coordinate strategies to promote foreign direct investment and projects to attract foreign investment in the economy, in collaboration with the private sector and central and local authorities.
- Conduct analysis and assessment procedures and presentation of business proposals to improve the investment climate.

References

Strategia Republicii Moldova de atragere a investițiilor şi promovare a exporturilor, aprobată prin Hotărârea Guvernului Nr. 234 din 13.10.2006// Monitorul Oficial al Republicii Moldova nr. 43-45 din 30.10.2006

Legea Republicii Moldova cu privire la investițiile în activitatea de întreprinzător, Monitorul Oficial al R. Moldova N 64-66 din 23.04.2004.

Ciornîi Nicolae „Tranziția la economia de piață şi investițiile străine în Republica Moldova", Editura Prut Internațional, Chişinău, 2002, pp. 180-181, p. 195, p. 197, p. 198, pp. 198-199

Belostecinic, G., „Investițiile străine şi competitivitatea națională", *Administrarea Publică,* nr. 4, 2005, p. 61

Caraganciu, A., *Bazele activității investiționale*, Editura ASEM, Chişinău, 2004

Cistelecan, L.M., *Economia, eficiența şi finanțarea investițiilor*, Editura Economică, Bucureşti, 2002

Vasilescu, I., Românu, I., Cicea, C., *Investiții,* Editura Economică, Bucureşti, 2000

http://www.bnm.md/md/docs/rapoarte/17_5086.pdf. (data accesării:23.03.2007)

http://www.moldova-suverană.md/index.php?subaction=showfull&id=1157465473&archi…//10.12.2006

THE FUNCTIONING OF THE EUROGROUP: PRESENT PROBLEMS AND CHALLENGES FOR THE FUTURE

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Abstract. *The Economic and Monetary Union (EMU) architecture presents a bipolar structure, being focused both on the economic and the monetary pillar. If the monetary leg is represented by the European Central Bank, the economic pole has no institutional economic governance, despite of the fact that the foreign exchange mechanism and the common monetary policy create strong interdependencies between the economic policies set-up at a national level. The creation and the functioning, in the 3rd stage of the EMU, of the Eurogroup, as an informal consultation forum of the finance ministers and of the representatives of the European Commission and of the European Central Bank can be considered as a first step towards the creation of an institution for the economic governance in the Euro zone.*

Keywords: eurogroup; economic policy; European Central Bank; ECOFIN; stability and growth pact.

JEL clasification: E58, E61, E62, F36.

According to the Maastricht Treaty, the Economic and Monetary Union (EMU) architecture presents a bipolar structure, being focused both on the monetary and on the economic pillar.

According to the Treaty stipulations, the monetary policy is characterized by a full integration, being implemented by the European System of Central Banks, having at its centre the European Central Bank, which decides the stance of the monetary policy.

Although the single currency creates strong interdependencies between the economic policies set-up at a national level through the mechanism of the foreign exchange rate and of the common monetary policy, at the level of the economic governance there is, nevertheless, no equivalence for the time being for the monetary integration.

Despite of its obvious necessity, the existence of a decision-taking institution at the economic level has been avoided both for economic and political reasons. As concerns the political reasons, many countries have refused to emphasize the sovereignty pooling inherent to a single currency through the creation of a central institution to govern the economic mechanisms. On the other side, many governments have considered that, from an economic point of view, a rule-based system as the one in place, which follow the criteria defined in the Stability and Growth Pact, does achieve better results than a centralized economic governance meant to act economically and politically independent.

Nonetheless, in the past fifteen years, more and more voices have drawn the attention on the importance of the intensification of the economic coordination for the policy coherence and the improvement of the overall economic performance in the Euro zone.

Thus, initially promoted by the French analysts and politicians, the economic governance can be defined as an institution at a supranational level having as an objective the decision-taking in the economic field. Its tasks would consist in the assessment of the economic situation in the Euro zone, the analysis of the policy options and the adoption of the main economic policy strategies to address both the structural issues and their negative effects on the economy.

Those who sustain the creation of economic governance make reference mainly to three advantages of such an organization.

First of all, an institution which would represent the economic governance could have more flexibility that the present rule-based system. Thus, the analysts that see a "deflationary bias" in the Euro zone activity consider that the Stability and Growth Pact represents, at least in its initial version, an inflexible starting point to base the economic policy on. This approach drew to Romano Prodi's controversial accusation that the Pact is "stupidly applied". An economic governance, by the enhancement of the cooperation between the European Central Bank and the European Commission, could ensure the fine-tuning of the application of the Pact.

In this respect, one must notice that, at least in its first year of functioning, the ECB had to counterbalance some inadvertencies of the national governments, through its interest rate policy. This could have been avoided by an appropriate cooperation between the monetary and the economic pillar. The absence of a political partner for the ECB has been seen, by many analysts, as an important deficiency for the Euro zone governance system that could have solved many economic crises or political instabilities.

Secondly, the centralization of the economic coordination would ensure a better coherence and efficiency by enhancing its capacity of analysis and decision-making. Beside the efforts to comply with the rules of the Pact, the EU politicians do not prove a real interest for an „European economic policy". In this context, the former French prim-minister, Dominique de Villepin, promoted the idea of an open dialog between the finance ministers of the Euro zone and the ECB meant to reach an agreement for a common economic policy position and the appropriate policy mix to defeat the unemployment and the slow down of the economic growth.

Finally, a central institution for the economic governance would enhance the legitimacy of the entire governance structure for the Euro zone. Some countries consider thus that, at least the apparent predominant role of the ECB in the leading structures of the EMU, undermine this legitimacy. In order to address this issue, it is considered that, if the decisions that directly affect the well-being of the electorate were taken by people selected through the election system, this would significantly improve the well-functioning of the entire system. This would force the politicians to explain themselves to the electorate some painful decisions, increasing thus the transparency of the system. It is worth noticing that, in the present system, some politicians blamed the ECB, both directly and indirectly, for some developments to which it sometimes hardly had any contribution.

The creation and the functioning of the Eurogroup, as a high-level informal consultation forum between the finance ministers, the Commission and the European Central Bank can be considered as a first step for the creation of an economic governance body in the Euro zone. Making reference to the need of an enhanced political coordination on the one hand, and to the special merit of the Eurogroup in all the fields of the coordination of the economic policy, on the other hand, an increasing number of personalities, among which the president on duty of the Eurogroup, the Luxemburg's prim-minister and minister of finance Jean-Claude Juncker, have supported its right to become an institution of the European Union. Nevertheless, due to certain political reasons, among which the political independence of the monetary leg, the finance ministers' meeting keeps its informal character.

Ensuring the procedural framework for the compliance with the convergence criteria defined in the Maastricht Treaty, the Stability and Growth Pact has as an objective the monitoring of the fiscal policy for the enhancement of the economic coordination in the third stage of the EMU. The Stability Pact mechanism consists both in a corrective arm, according to which the states have to diminish the public deficits representing more that 3% of the GDP, and in a preventive one that encourages the member states to reach the medium-term budgetary objectives that correspond to sound public finances.

As it concerns the overall economic coordination in the EMU, a fundamental role have also the Broad economic policy guidelines (BEPG) proposed annually by the European Commission. Having also as an objective to ensure the compliance with these Guidelines, the Pact has the authority of a second level legislation, constituting, together with the Treaty, the institutional framework of the economic governance. This makes of the ECOFIN Council the decisional body for the application of the Pact.

Despite of this formal distribution of the responsibilities, the Eurogroup is actually involved in all the phases of the decisional process, becoming the virtual political centre for the elaboration of the Broad economic policy guidelines and for the operation of the Pact.

Thus, before the formal elaboration of the official recommendations of the Commission concerning the BEPGs, their draft is discussed within the Eurogroup meetings from February and March, from the perspective of how they would satisfy the specific needs of the Euro zone. The discussions also focus on the fiscal policy orientation in the Euro zone, taking into account the new policy priorities defined in the economic guidelines. The Commission's official recommendations thus embed the results of the discussions within the Eurogroup. After their publication, the Eurogroup analyzes once again the final project of the Guidelines, before its being adopted by the ECOFIN in the month of May.

The Eurogroup also discusses the official policy objectives defined in the Stability and Growth Pact. The Pact requires that all member states should elaborate and advance national stability programs that also contain information on the national budgetary policy that is to be implemented. In the month of December, these national programs are handled over to the Commission and to the ECOFIN Council so that their coherence with the budgetary criteria defined in the Pact and with the BEPGs packet in place should be analyzed. Before the official hand over of the national programs, they are discussed within the Eurogroup which reviews the general orientation of the Euro zone fiscal policy resulting on the basis of the individual programs. The discussions also focus on the assessment of the compatibility between the foreseen national policy and the specific elements of the economies, such as a high inflation or the forecast of a strong decrease in the tax revenues.

Beside the usual activities of reviewing the national policies and analyzing the official EMU coordination instruments, the discussions related to the budgetary policy also cover reactions to unexpected events, such as important price chocks or natural calamities. These reactions could represent ad-hoc fiscal measures decided at a national level, meant to support the internal economic reconstruction, with the price of negative effects on other member states from the Euro zone or of endangering the common recovery efforts. Although the Eurogroup can not impose the individual policy of the member states in crisis situations, the finance ministers have agreed to inform each other on possible ad-hoc decisions.

One must also notice that, beside the usual debates on the economic guidelines and the compliance with the Pact, the Eurogroup has proved itself to be an active member in the orientation of these instruments, and not only in their monitoring.

The finance ministers' contributions to the Pact review have reached their objectives in 2005. Thus, in an informal meeting of the Euro zone's ministers on 20 March 2005, followed by a meeting of the Eurogroup extended to all the 25 EU countries, the finance ministers have decided on the principles of the Pact's review, in order to increase the flexibility in its economical application, without endangering the 3% and 6% criteria. The reform has enhanced the preventive arm of the Pact through the pursuance of a better definition of the medium-term national budgetary objectives, the symmetric application of the Pact through the entire economic cycle by avoiding pro-cyclical policies, the taking into account of the structural reforms, as well as the introduction of the analyses of some „pertinent" factors in the assessment of a temporary overtaking of the reference value of 3%. "Stability will never disappear from our vocabulary or from our practice" declared the president of the Eurogroup at the end of the debates from March 2005.

The monitoring of the Pact application represented a permanent topic on the Eurogroup agenda also after the implementation of its reform. In 2006, the Commission studies highlighted some pro-cyclical policies of some of the member states, which determined the exceptional issue at Berlin, by the Eurogroup, of a set of fiscal policy orientations on 20 April 2007. The Berlin declaration supports thus the compliance with the Pact's provisions referring to the fiscal consolidation in an expansion period, so that most of the states should reach their 2008 and 2009 medium-term objectives. This objective should be reached by all member states by 2010.

Since 1997, the Eurogroup has been continuously reaffirming its place on the scene of the big political players in the UE, through its contributions to the economic situations analysis, to the reform and the implementation of the Stability and Growth Pact, the promotion of the structural reforms and the pursuit of solutions for crises situations similar to the present one on the world financial markets. The Eurogroup visibility has also increased at an international level, in 2007, the president of the Eurogroup, together with the European Commissioner and the ECB president having undertaken an official visit to China to discuss the issue of the foreign exchange rate.

Concerning the perspective of an economic governance, devoted to its early initiatives that finally drew to the creation of the Eurogroup, the French presidency on duty of the European Union Council has promoted the idea of an autonomic secretariat for the Eurogroup, in order to enhance its analysis capacity. Although – as the French foreign affaires secretary Jean-Pierre Jouyet has declared – the French administration would see such a gesture as a step towards the deepening of the dialogue between the governments and the European Central Bank, this initiative is not welcomed by the European Commission and Germany, which fear an increase of the Eurogroup's power against the ECB. These positions determined the president Jean-Claude Juncker to be sceptic about the success of this initiative. On the other hand, it is worth noticing that the Eurogroup's president drew the attention on another aspect of major importance for the activity of the Eurogroup, namely its representation at the international level. Thus, Juncker has repeatedly emphasized that one of the Euro zone area's priorities should be its unique representation at an international level, especially at the International Monetary Fond, Juncker criticizing France', Germany' and Italy's ambitions to maintain their representatives within the IMF and the G8.

Although of big interest for the European political agenda, the progress of the Eurogroup towards an institutionalization of the economic governance has passed today on a secondary plan, given the problems presently encountered by the Constitutional Treaty ratification. The Eurogroup president himself has expressed his worries that "Europe is not ready right now for substantial changes at the level of the economic governance". Given this reality, the analysts consider that, if the European Union decides to go towards an economic governance, this will rather be a gradual process made up of several steps, and not a one-step phenomenon. The frequency and the coherence of these steps will have an important word to say for the evolution of the European Union in the next decades.

References

Boulhol, H., „Le pacte de stabilité et de croissance à l'épreuve du ralentissement économique", *Problèmes Economiques*, No. 2755, 2002

Brunila, Anne, Buti, M., Franco, Daniele (2001). *The Stability and Growth Pact – The Architecture of Fiscal Policy in EMU,* Palgrave, Houndmills, Basingstoke

Dullien, S., „EMU Divergence is becoming a mainstream issue", May 2008, www.euro-area.org

Grosche, G., Puetter, U., „Preparing the Economic and Financial Committee and the Economic Policy Committee for Enlargement", *European Integration*, Vol. 30, No. 4, September 2008, pp. 527-543

Howarth, D.J. (2001). *The French road to European Monetary Union*, Palgrave, Basingstoke

Howarth, D., Loedel, P. (2003). *The ECB: the new European Leviathan,* Palgrave, Basingstoke

Le Monde: „Nu-ul irlandez şi criza economică îl silesc pe Dl. Juncker să rămână în fruntea Eurogrupului", 30 August 2008

Les Echos: «„Oui, l'Eurogroupe fait de la politiques". Jean-Claude Juncker au sujet de la crise financière et du rôle de l'Eurogroupe, des réformes structurelles en France et de la Présidence francaise du Conseil de l'UE» – February 2008

Office for Official Publications of the European Communities – „Consolidated Treaties. Treaty on European Union. Treaty establishing the European Community", Luxemburg, 1997

Puetter, U. (2006). *The Eurogroup. How a secretive circle of finance ministers shape European economic gouvernance,* Manchester University Press, Manchester

Regling, K. (2007). *Streghtening the Economic Leg of EMU,* Euro50 Ground Roundtable

http://ue.eu.int

http://www.ecb.europa.eu

http://www.ena.lu

http://www.eu2005.lu

http://www.eu2008.fr

http://www.euro-area.org

http://www.gouvernement.lu

www.bnro.ro

www.euractiv.ro

www.gouvernement.lu

www.wall-street.ro

INTERRELATION BETWEEN THE EXCHANGE RATE AND THE INTEREST RATE IN ROMANIA

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Abstract. *Lately, the connection between the exchange rate and interest rate has once again caught the attention of the researchers. The volatility of the two macroeconomic indicators has an almost simultaneous effect on the inflation, real income, exports and imports, which influence the long-term development. This working paper analyses, besides the UIP hypothesis, the reverse relationship of the exchange rate on the interest rate as this paper sets out to determine the role of Romanian exchange rate on achieving macroeconomic stability.*

Keywords: exchange rate; interest rate; UIP; transitional economy; monetary policy.

REL Classification: 19I.

The relation between these two indicators is not a newly found one as the first papers on the matter appeared in XIX century. The behavior of exchange rate can be influenced through interest rates. By raising domestic interest rates, the foreign exchange value of the domestic currency unit could be strengthened. Likewise, by reducing domestic interest rates, the monetary authorities can counteract an undesired appreciation of the domestic currency Isard, 1995, p. 74).

For Central and Eastern Europe Countries, as is the case with Romania, the interest for the two indicators is motivated by the fact that these countries have recently carried out changes of the monetary and foreign currency policies. Most of these countries established inflation targeting as monetary policy and as a consequence flexible exchange rate regimes. The consequence of this choice is a corroborated increase of volatility, both for the exchange rate and for the interest rate.

1. Literature review

The literature on the connection between exchange rate and interest rate is quite vast. One of the approaches is the monetary one regarding exchange rate determinants, which extends, for open economies, the Quantitative Theory of Money. According to this theory, the national and international money markets are connected through purchasing power parity, which results in an equation for establishing the exchange rate with a central role of interest rate. In the case of perfect price elasticity, the changes on nominal interest rate are reflected wholly in the expected level of inflation, thus making the connection between exchange rate and the expected inflation differential.

In 1976, Dornbusch made an extension of the Mundell-Fleming approach made and demonstrated that nominal price rigidity may lead to an overshooting of the exchange rate. This model reflected the economic realities after the downfall of the Bretton Woods System, identified a negative relation between the real exchange rate and real interest rate differential but the empirical studies did not prove the real existence of this connection.

For empirical testing for the Dornbush model, Meese and Rogoff (1998, pp. 933-948) utilized the two-step Engle-Granger co integration method applied to monthly data on USD/DEM, USD/JPY and USD/GBP during February 1974 – December 1986. They find no strong relation between the interest differential and the real exchange rate, both in the long and short term.

Edison and Pauls (1993, pp. 165-187) used co integration and error correction model and proved the absence of a systematic link between the two variables. They take into account the period 1974-1990 employing quarterly data for USD and G10 currency basket function of international trade level and interest rate for American Treasury bonds and G10 Treasury bonds.

MacDonald (1997, pp. 16-23) employs the Johansen co integration method applied on a panel data and certifies the connection between exchange and interest rate.

Except from the long and short term connection between the two variables, there is a wide literature on the link between the two volatilities. Using a panel monthly data for 39 countries from January 1970 and April 1999, Calvo and Reinhart (2002, pp. 379-408) analyzed the volatility between G3 and emergent countries. The conclusion the authors have reached was that the lack of credibility of monetary authorities corroborated with the fear of free floating has as effect a low volatility of the exchange rate associated with the high volatility of interest rate. The low volatility of the exchange rate is not caused by the lack of external shocks but by using all monetary policy instruments for the diminishing of the effect of these shocks on the exchange rate. The policy of the exchange rate replaces in emergent economies the foreign reserve policy. This conclusion is valid both for the fixed or floating exchange rate regime and the authors recommend to renounce to the fixed exchange rate.

There is a lot of literature concerning the disconnecting occurring between the exchange rate and these determinants. Obstfeld and Rogoff (2000, pp. 339-390) demonstrated that the connection between the exchange rate and the monetary policy is important, but not necessarily a bilateral one. Other variables, such as the permanent threat of speculative attacks in the case of emerging economies, can have as result a common movement of interest and exchange rates, which does not happen in the case of emerging economies.

2. The evolution of the interest rate and its impact on the exchange rate in Romania

A raise of the interest rate may be used by monetary authorities for reducing the internal absorption in order to counteracting the negative effects of the national currency depreciation. In a transitional economy, the monetary policy transmission channel through the interest rate is not so obvious because the macroeconomic mechanisms are in different formatting stages and monetary policy must be done in order to respect the economic situation for each country, not empirical studies made for developed countries.

Traditionally, four main channels for monetary policy have been identified, as indicated by Dăianu, Lungu and Vrânceanu (2004, pp. 34-35). The first channel is created by the direct effect of the intervention interest rate which affects all other interest rates such as interest on deposits with effects on spending and saving decisions of economic agents. The second channel will affect credit availability. The third channel is created through the impact of stocks and bonds and the impact on real estate. The fourth channel affects the exchange rate. In all of the above mentioned cases, the most important role is the one of expectations. The exchange rate is given by the relative price of the leu compared to that of other currencies' and as such it depends on the internal and external economic conditions. Worth mentioning that the precise impact of the change of the official interest rate on the exchange rate is difficult to estimate due to the internal and external inflation expectation. In Romania the channels of transmission for the monetary policy are still taking shape. One essential problem is identifying the factors with a key role in obstructing monetary policy transmission mechanism.

In Romania, the traditional channel of transmission of monetary policy has a secondary role, especially in the first stages of transition. Proof of that is provided by the fact that the interest rate cannot be integrated to the cointegration vector of the exchange rate determinants. This situation is due to the process of financial disintermediation of the former communist period, the population lacking banking „culture". Add to these historical motivations the realities of the transition period, characterized by the increasing depreciation

of Romanian leu, which generated the preference for foreign currency denominated deposits, in dollars at first and in euros afterwards. The savings have not been introduced in the banking system due to memories of various banks going bankrupt, with a preference for „home" savings.

All these characteristics of the Romanian financial system have favored the use of the exchange rate as monetary policy instrument. For almost the entire analyzed timeline, i.e. until the end of 2004, NBR has adopted *de jure* monetary aggregates targeting, but *de facto* the monetary policy was exchange rate targeting. The purpose of the of the NBR interventions on the foreign exchange market was to attain a balance between the decrease of the inflation level and to prevent the excessive appreciation of the national currency, which can generate the decrease of external competitiveness. The importance of the interest rate as a monetary instrument increased after 2000, especially after November 2004, when NBR adopted the decision to no longer influence the exchange rate by intervening on the foreign exchange market, action which diminished the importance of the exchange rate for the monetary policy. The evolutions recorded during the second half of the year 2008 prove however that the national bank uses the exchange rate to correct the adverse evolutions of the economy when unable to do that by using the interest rate.

As far as the interest rates evolution is concerned, as shown in Figure1, a continuous decrease can be emphasized, from a level of 81.5% in January 1994, to a single-digit rate, in 2006. The exception is represented by the beginning of 1997 when, in March, the interest rate was of 107.1%. The reason for this spectacular evolution is the liberalization of the exchange market and of the administered prices. Unlike other indicators, the shock on the interest rates has been absorbed rather quickly, since it has returned to a level of 47.3% in July the same year.

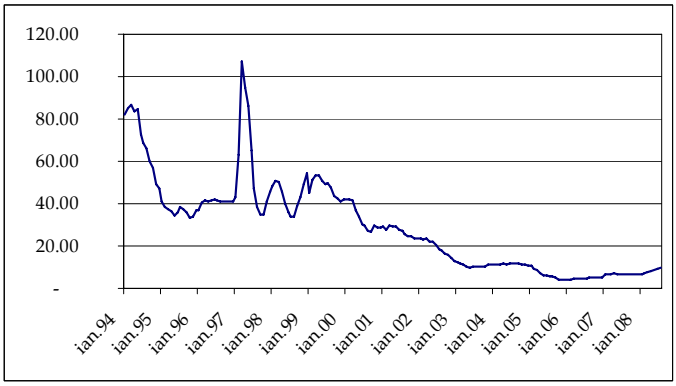

Figure 1. *Evolution of Interest Rate: January 1994-July 2008*

As for the evolution of real interest rates, it is worth mentioning the fact that as resulting from the study of Neagu, Mărgărit, Răcaru, Copaciu, Mircea şi Andrassy (2006, pp. 15) for January 2005 – October 2005, the active interest rate was positive, while the same does not apply to passive interest rates. This phenomenon of monetary illusion is explained by the low degree of banking culture and inflation volatility, but also by the reality that the guideline for the population is the nominal interest rate. The normal effect of negative interest passive rate is flattening the saving process, which affect the national money demand and the economic development, process favored by the low level of foreign direct investments in our country.

The decreasing trend of the interest rate is interrupted at the end of the year 2007, when NBR tried to correct the fact that the inflation target was missed through credits. The mentioned phenomenon was accentuated in 2008, when the possibility of global crisis added to the Romanian macroeconomic realities. The effect consisted of the outflow of the foreign funds from our market, the decrease in the liquidity and consequently the increase of the interest rates in order to attract additional funds.

3. The analysis of relation existing between exchange rate and interest rate in Romania

3.1. Testing of the UIP hypothesis

For testing the UIP hypothesis we have used the following equation as starting point:

$$s_{t+1} - s_t = b_0 + b_1 \times (r_t - r_t^*) + u_{t+1}$$

The option for this equation instead of one which included risk premium:

$$s_{t+1} - s_t = r_t - r_t^* - \xi_t + u_{t+1}$$

is due to the simplifying hypothesis according to which the constant b_0 contains the risk premium. A second hypothesis is the one of reasonable expectations, which determines the leveling of the foreseen values of the exchange rates to the future values, to which an error term is added, u_{t+1}, which is uncorrelated with the information available at the moment t.

In order to test the UIP hypothesis we have used monthly data from January 1994 to July 2008, regarding the nominal value of the USD/ROL (USDROL) exchange rate, at an average passive interest rate of the Romanian banks (IROL) for operations in lei and at an average passive interest rate of the American banks (IUSD) for USD loans.

In Romania, on July 1st 2005 the national currency was denominated and the new leu, RON, is 100,00 times less than the old one. For data comparability purposes, all the estimations have been made using the former currency, ROL.

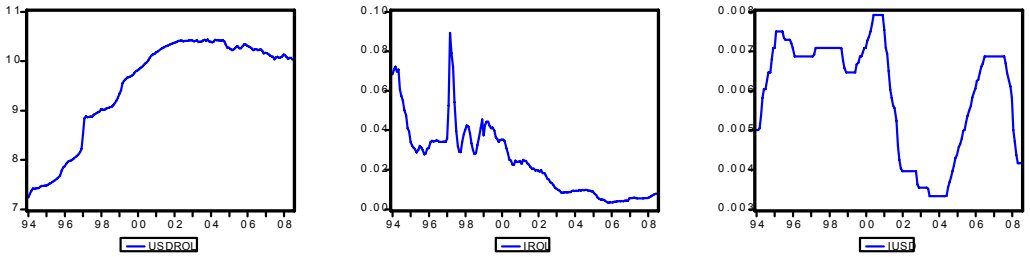

Figure 2. *Time Series*

For January and February 1997, March 1999 and January 2002 where structural breaks can be noted, dummy variables was introduced, in order to diminish the perturbations induced by the liberalization of the foreign exchange market in 1997, of the ones caused by the peaking of the external debt in 1999 and by the introducing of the euro in 2002.

In order to be able to carry out relevant econometric tests using the previously mentioned variables, we have to establish the integrability level of each of these variables. The Perron (1994) test was used for this paper, because the ADF and PP tests do not take into account the structural breaks. The exception is the USD interest rate, which as not having a structural break, was tested using the E-Views instruments.

Integration Level

Table 1

Variable	Integration Level	Significance Level (%)
USDROL	I(1)	1
IROL	I(0)	1
IUSD	I(0)	1
IDIF	I(0)	1

Source: own calculation based on NBR and FED data.

The econometrical estimations shall be carried out using the least squares method(OLS). This method minimizes the sum of squares residuals for the estimation of each equation, taking into account any restrictions imposed to the coefficients of the equation to be determined. For the UIP, the parity requirement is met if the coefficients obtained as the result of estimation are $b_0 = 0$ and $b_1 = 1$. The results of estimation are presented in Table 2.

Testing UIP for Romania

Table 2

Dependent Variable: DUSDROL				
Method: Least Squares				
Sample(adjusted): 1994:02 2008:07				
Included observations: 174 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IDIF	0.052528	0.025815	2.034774	0.0434
DUMMY97	0.29336	0.018951	15.47988	0.0000
DUMMY99	0.122225	0.026715	4.5751	0.0000
C	0.011386	0.002056	5.53733	0.0000
R-squared	0.610623	Mean dependent var		0.016063
Adjusted R-squared	0.603752	S.D. dependent var		0.042302
S.E. of regression	0.026629	Akaike info criterion		-4.390948
Sum squared resid	0.120543	Schwarz criterion		-4.318326
Log likelihood	386.0125	F-statistic		88.86496
Durbin-Watson stat	0.970642	Prob(F-statistic)		0.000000

Source: own calculation based on NBR and FED data.

The coefficient for interest rate differential is statistically significant, as shown in Table 2. The same conclusion is valid for the two dummy variables for 1997 and 1999. The dummy variable for 2002 was removed from the equation due to the lack of significance of the associated coefficient. Table 3 revealed a low probability for equaling the coefficient to 0.

Wald Test for intercept coefficient associated to the constant

Table 3

Wald Test:			
Equation: EC1			
Null Hypothesis:	C(4)=0		
F-statistic	30.66202	Probability	0.00000
Chi-square	30.66202	Probability	0.00000

Source: own calculation based on NBR and FED data.

Although the intercept coefficient is low, it can not be equaled to 0, and this arises questions as to the way in which exchange rate expectations are formed. The risk premium also has a reduced influence; an explanation for this phenomenon could be the lack of financial culture for the majority of the population, however assuming that certain risks do exist, an assumption which is reflected in the low premium level.

Wald Test for interest rate differential coefficient

Table 4

Wald Test:			
Equation: Untitled			
Null Hypothesis:	C(1)=1		
F-statistic	1347.022	Probability	0.00000
Chi-square	1347.022	Probability	0.00000

Source: own calculation based on NBR and FED data.

As for the coefficient associated to the interest rate differential, with a 1% trust interval, we can not reject the hypothesis of its equality to the unit, according to the UIP hypothesis.

As expected, the UIP hypothesis is not confirmed for Romania, but, unlike the analyses carried out for the industrialized countries, the direction of the relationship is a positive one, meaning that the interest rate is a good predicting instrument for future movements of the exchange rate level. The positive correlation between the two macroeconomic variables can be also seen in Figure 3.

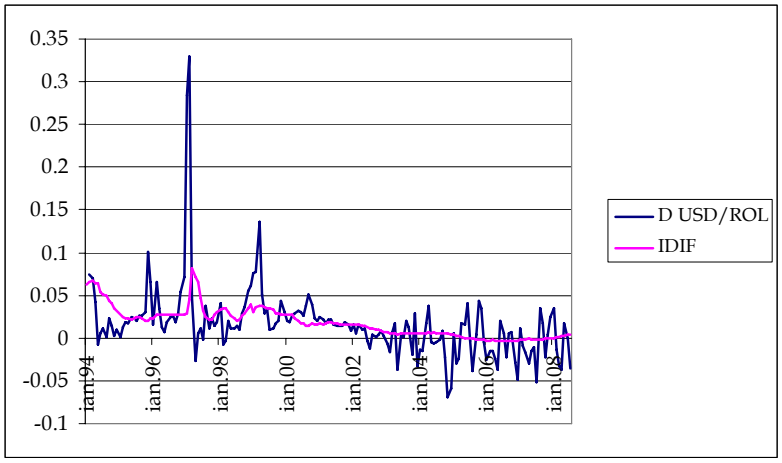

Figure 3. *Exchange rate variation and interest differential*

3.2. Testing the connection between exchange rate and interest rate in Romania

In order to study the influence of interest rate on the exchange rate, but also the reverse influence, of the exchange rate on the interest rate, we have used the chronological series for the USD/ROL exchange rate variation and for the interest rate for deposits in lei.

The first tests are the Granger causality tests. Granger causality indicates the measure in which the current values of a Y variable are explained by the former values of the X variable and if it is possible to explain more accurately the evolution of the Y variable using more lags to the X variable.

Granger Causality Tests

Table 5

Pairwise Granger Causality Tests			
Sample: 1994:01 2008:07			
Lags: 3			
Null Hypothesis:	Obs	F-Statistic	Probability
DUSDROL does not Granger Cause IROL	171	54.2089	0.00000
IROL does not Granger Cause DUSDROL		1.27923	0.28331

Source: own calculation based on NBR and FED data.

The interest rate has not a Granger causality on the exchange rate, a result consistent with the disconnection of the two variables and with the almost non-existent importance of the interest rate as a monetary policy instrument. NBR has operated almost all the time aiming at attaining the objectives through direct influence of the exchange rate, using sales and purchases according to the desired result. This is the reason why, in Romania, as opposed to other countries, the causality connection is reversed, the exchange rate determining the interest rate.

Exchange rate-interest rate relationship

Table 6

Dependent Variable: IROL				
Method: Least Squares				
Sample(adjusted): 1994:02 2008:07				
Included observations: 174 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DUSDROL	0.291275	0.042243	6.895231	0.00000
DUMMY97	-0.065150	0.016716	-3.897427	0.00010
C	0.019899	0.001314	15.14762	0.00000
R-squared	0.229377	Mean dependent var		0.023829
Adjusted R-squared	0.220363	S.D. dependent var		0.017816
S.E. of regression	0.015731	Akaike info criterion		-5.449287
Sum squared resid	0.042316	Schwarz criterion		-5.394820
Log likelihood	477.0879	F-statistic		25.44913
Durbin-Watson stat	0.325415	Prob(F-statistic)		0.00000

Source: own calculation based on NBR and FED data.

In order to estimate the connection between the interest rate and the exchange rate, we have introduced only the dummy variable which penalizes the liberalization of the foreign currency market of 1997. The reason why the other two dummy variables have not been considered for the estimation is related to the lack of statistical significance, as far as the associated coefficients are concerned. The R-squared statistics show that only 22.94% of the evolution of the interest rate is explained by exchange rate. This conclusion is consistent with the economic reality: passive interest rate is determined by the intervention of the NBR's interest rate and by the level of savings. The fact that a part of the level of the interest rate is determined by the exchange rate indicates the importance of this indicator for Romanian economy, fact which determined its usage as the most important monetary policy instrument.

As opposed to the internal interest rate, the interest rate differential has an influence on the exchange rate, which shows that the exchange rate is more sensitive to the external interest rate evolution than to the internal one. This sensitivity to the external interest is due to the dependency on the international financial markets. The internal level of savings is quite low in Romania which determined the need for external funds, especially during the first stage of the transition process.

4. Conclusions

UIP is one of the fundamental hypotheses of the determination models for the exchange rate and provides information on the degree of integration of the national market to the world market. Like in the case of other national economies, the UIP theory does not apply to Romania.

However, the difference from other empirical studies resides in the fact that an increase of the internal interest rates did not result in a depreciation of the national currency, considering the fact that NBR is controlling the evolution of the exchange rate and gradually decreases it according to the level of inflation. In exchange, the changes occurring at the level of interest rates' levels of the external financial markets have an important influence on the exchange rate. Our economy is dependant upon external loans and it results in that the interest rate differential explains the lack of significance of the national interest rate. The USD/ROL interest rates' differential could be quite significant because of the increased levels of interest rates in Romania, but this does not necessarily attract foreigner investors, who shall always consider first the macroeconomic situation of our country. This has been proven

by the 2007-2008 period, when Romanian economy had a positive perception from the investors and the incoming funds have been significant; however, when the internal and the external situations deteriorated, the funds have been withdrawn from our country, regardless of the size of the interest rate differential.

The study of the reverse relationship, namely the influence of exchange rate on the interest rate generate rather surprising results, if we consider the conclusions of the economic literature, where such relation is examined only from the point of view of the impact of the interest rate on the exchange rate. This relation is not surprising, however, if we take into account the realities of our country, where the exchange rate has been and continues to be a central indicator of the Romanian economy.

References

Calvo, G., Reinhart C., „Fear of Floating", *Quarterly Journal of Economics*, Vol. 117, No. 2 (May), 2002

Dăianu, D., Lungu, L., Vrânceanu, R., „Strategii de politică monetară şi curs de schimb în contextul aderării României la UE", *Institutul European din România, Studii de Impact* , Nr. 2, 2004

Edison, H.J., Pauls D., „A Re-Assessment of the Relationship Between Real Exchange Rates and Real Interest Rates: 1974-90", *Journal of Monetary Economic*s, Vol. 31, 1993

Isard, P. (1995). *Exchange Rate Economics,* Cambridge University Press

Krugman, R.P., Obsfeld, M., „International Economics. Theory and Policy", *The Addison-Wesley Series in Economics*, Pearson Education, 2006

MacDonald, R., „What determines real exchange rate? The long and short of it*" IMF Working Paper,* No. WP/97/21, 1997

Meese, R., Rogoff, K. „Was it real? The exchange rate interest differential relation over the modern floating rate period", *Journal of Finance*, 14, 1988

Neagu, F., Mărgărit, A., Răcaru, I., Copaciu, M., Mircea, R., Andrassy, A., „Creditul neguvernamental în România: perspective şi implicaţii", *Caiete de Studii ale BNR*, Nr. 15, 2006

Obstfeld, M., Rogoff, K., „The Six Major Puzzles in International Macroeconomics: Is There A Common Cause? ", *NBER Macroeconomics Annual,* 2000

Perron, P. (1994). *Trend, Unit Root and Structural Change in Macroeconomic Time Series,* B.B. Rao (ed), *Cointegration: Expository Essays for the Applied Economics*, MacMillan Press

Reinhart, C.M., Reinhart V.R., „What Hurts Most? G-3 Exchange Rate or Interest Rate Volatility?", *NBER Working Paper* No. 8535, 2001

ARCH TESTING HETEROSCEDASTICITY ON THE BET INDEX

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Abstract. *This article focuses on volatility modeling from a stochastic perspective, taking into consideration its variations in time, with the purpose of accomplishing a better estimation of future assets profitability. The stability in time of an evolution law describing volatility, as a precision tool, continues to represent, even today, a restrictive hypothesis for any tock market depicted by significant turbulences. The study has been developed by using heteroscedastic models applied to the Bucharest Stock Exchange BET Index.*

Keywords: heteroscedasticity; capital market, stock exchange index; econometrics.

REL Classification: 10F.

ARCH theoretical study

The ARCH model is one of the stochastic models that has proven useful in analyzing and estimating financial variables, which presents a volatile character especially during crisis periods. These models characterized by "autoregressive and dependence to different, unequal value dispersion" (Pecican, 2000, p. 273) are formed by accepting linear dependence of future values to past ones, as well as to the past errors (real value deviation from the model-adjusted values).

Numerous time series that characterize monetary and financial indicators (financial assets prices, speculative prices, exchange rates) often have significant prognosis errors on different periods of time.

This model, developed by F.R. Engle in 1982 and improved in 1986 by T. Bollerslev, includes consequent repeated sequences of significant or minor prognosis-errors observed in different time intervals. Therefore, the values of the residual variable are unequally dispersed throughout different time intervals, which form the chronological series (such dependence can be emphasized in autocorrelations).

The English econometrician F.R. Engle intended to include the residual value´s behaviour in the prognosis stochastic model. He argued that the error´s dispersion can be described as dependent to the past values of x_{t-i} or ε_{t-i}.

Taking into consideration that the density function of the x_t variable, linked to x_{t-1} (past value) is following a normal pattern, then the average and the dispersion are linked as well to the past:

$$(x_t / x_{t-1}) \approx N\left(M(x_{t-1}), \sigma^2_{x_{t-1}}\right)$$

A simple variant of the ARCH Model would be:

$$\begin{cases} x_t = a \times x_{t-1} + b \times x_t + \varepsilon_t \\ \sigma^2_{\varepsilon_t} = \alpha_0 + \alpha_1 \times \varepsilon^2_{t-1} \\ \varepsilon_t \approx N\left(0, \sigma^2_{\varepsilon_t}\right) \end{cases}$$

The estimation of the parameters from the first equation of the model can be repeatedly accomplished by using the least square method. Afterwards, the adjusted values ($\hat{x}$) are calculated, as well as the values of the residual variables and of the dispersion $\left(\sigma_{\varepsilon}^{2}\right)$. In the next stage, the α parameter from the second equation can be estimated and in the case that $\hat{\alpha}_1$ is significantly different from null, then the heteroscedasticity is confirmed by the model.

The operational approach to the ARCH Model, as well its usefulness in analyses and estimations, resorts to the mentioning of the criteria that confirm or reject the possible options for such a model. These criteria rely on the examination of the parameters´ significance from the second equation of the model or in the implementation of the F-statistical test.

The generalized expression pushed forward by Bollerslev (GARCH) shows that the „memory" of the process is based of past observed data:

$$\sigma_t^2 = \alpha_0 + \alpha_1 \times x_{t-1}^2 + ... + \alpha_p \times x_{t-p}^2 + \beta_1 \times \sigma_{t-1}^2 + ... + \beta_q \times \sigma_{t-q}^2,$$

If the delay effect is abridged in a single time unit (t-1), the GARCH model (1,1) is obtained:

$\sigma_t^2 = \alpha_0 + \alpha_1 \times x_{t-1}^2 + \beta_1 \times \sigma_{t-1}^2$, where: a > 0 ; $\alpha, \beta \geq 0$ and $\alpha + \beta < 1$.

Among the many advantages obtained through ARCH modeling, there is a different perspective for solving the problem of the autocorrelation of the residual variable. As long as, through the Durbin-Watson test, the autocorrelation is confirmed, this can be caused either by the fact that ε_t depends on ε_{t-1}, or because the dispersion of the residual variable's values depends on the past.

Therefore, in this last situation, the identified autocorrelation (in the D-W test) is in fact heteroscedastic.

This heteroscedasticity of the errors involves that the error-dispersions are no longer equal (but different), case in which the estimators of the econometric model´s parameters keep their position (but are no longer efficient). So, applying the least square method will lead to the estimation of the models parameters and will also significantly influence the quality of different statistical tests.

Another advantage of ARCH modeling is the fact that the prognosis is based on additional data that takes into account the different values taken in time by the dispersion of the residual values. From a statistical point of view, this creates the premises for a more accurate prediction.

Constructing an ARCH model (Tsay, 2002) takes three steps:

1. constructing an econometrical model (for example ARMA) for deleting any linear dependence of time series;
2. specifying the order of the ARCH model and building the estimations;
3. verifying the results obtained and, if necessary, making the right adjustments.

Additionally, the evolution of the Bucharest Stock Exchange BET Index is described by using the above mentioned model. (Tsay, 2002, p. 86)

ARMA (1,1) – Linear Dependence (2)

Dependent Variable: LOG_BET
Method: Least Squares
Sample(adjusted): 1/06/2004 9/30/2008
Included observations: 1188 after adjusting endpoints
Convergence achieved after 24 iterations
Backcast: 1/05/2004

Variable	Coefficient	Std. Error	t-Statistic	Prob.
AR(1)	1.000054	6.23E-05	16043.05	0.0000
MA(1)	0.152017	0.028757	5.286172	0.0000

R-squared	0.998361	Mean dependent var	3.780711
Adjusted R-squared	0.998359	S.D. dependent var	0.174257
S.E. of regression	0.007059	Akaike info criterion	-7.067440
Sum squared resid	0.059092	Schwarz criterion	-7.058888
Log likelihood	4200.059	F-statistic	722223.0
Durbin-Watson stat	1.998418	Prob(F-statistic)	0.000000

Inverted AR Roots	1.00
	Estimated AR process is nonstationary
Inverted MA Roots	-.15

The model presents all the estimators as being significant from a statistical point of view, as well as the regression indicators for validity as following normal values. The relevance degree of the described model through the determinance coefficient (R^2) is sufficiently high (0.998361) and the Durbin-Watson test presents an almost ideal value (1.998418), which shows the lack of autocorrelation between residuals.

In case of a an ARMA (1,1) model daily turnover for the BET Index, the errors do not follow a normal distribution. So, one can argue that there is a serial correlation between these errors, which leads to the conclusion that there is heteroscedasticity.

Testing Heteroscedasticity on the BET Index
GARCH (1,1) – Nonlinear Dependence

Dependent Variable: R_BET
Method: ML - ARCH
Sample(adjusted): 1/06/2004 9/30/2008
Included observations: 1188 after adjusting endpoints
Convergence achieved after 17 iterations
Backcast: 1/05/2004

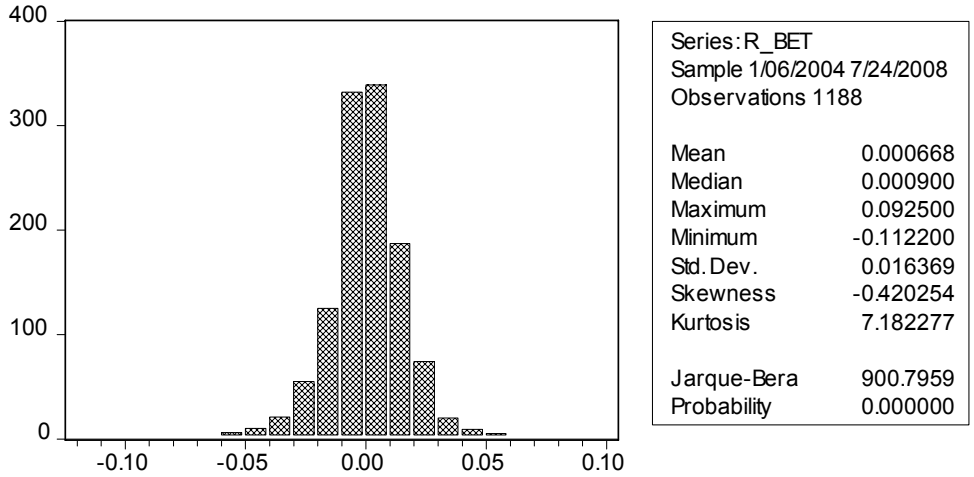
	Coefficient	Std. Error	z-Statistic	Prob.
MA(1)	0.180033	0.029826	6.036137	0.0000
	Variance Equation			
C	1.61E-05	3.10E-06	5.198147	0.0000
ARCH(1)	0.199754	0.026611	7.506476	0.0000
GARCH(1)	0.752470	0.029506	25.50228	0.0000

R-squared	0.020218	Mean dependent var	0.000668
Adjusted R-squared	0.017735	S.D. dependent var	0.016369
S.E. of regression	0.016223	Akaike info criterion	-5.605306
Sum squared resid	0.311602	Schwarz criterion	-5.588201
Log likelihood	3333.552	F-statistic	8.143837
Durbin-Watson stat	2.051051	Prob(F-statistic)	0.000023

Inverted MA Roots	-.18

From a statistical approach, the regression is significant. The MA (1), ARCH (1) and GARCH (1) have been used in the modeling. In conclusion, the values of the BET Index follow a GARCH (1,1) process, as there is nonlinear dependence between index daily turnovers.

The distribution designed in the histogram for the profitability values of the BET Index is:



Source: data processing using the Eviews program.

Figure 1. *Distribution of returns for BET Index*

Interpreting results:

❖ The *Skewness* indicator (*asymmetry coefficient*) quantizes the asymmetry of the distribution time series around its average. The calculus formula for this indicator is:

$$S = \frac{1}{N} \times \sum_{i=1}^{N} \left(\frac{x_i - \bar{x}}{\hat{\sigma}} \right)^3$$, where $\hat{\sigma}$ is a variance estimator.

A positive value for S means that the distribution presents a right side elongation, whereas a negative value shows a left side elongation. Moreover, for a symmetric distribution (normal distribution) the Skewness value is null.

As shown in Figure 1, S = -0.420254 (the profitability asymmetry of the BET Index is negative). This indicates a left side elongation. As the value of the Skewness indicator is significantly different from null, the variable does not follow a normal distribution.

❖ The *Kurtosis* indicator measures the flatness of distribution series (how sharp or flat is a distribution series) compared to the normal distribution. Its calculus formula is:

$$K = \frac{1}{N} \times \sum_{i=1}^{N} \left(\frac{x_i - \bar{x}}{\hat{\sigma}} \right)^4$$, where $\hat{\sigma}$ is a variance estimator. *K* is also called the Flatness coefficient calculated by Pearson.

The *Kurtosis* indicator for a normal distribution is 3. A value above 3 indicates a sharper distribution (leptokurtotic) compared to the normal one, whereas a K value under 3 shows a flatter distribution (playkurtotic).

The above distribution (Figure 1) proves that the time series of the daily turnover for BET Index is characterized by abnormal distribution (a kurtotic excess).

The kurtotic excess determines a higher probability for extreme events to occur (small variations of the BET Index) in comparison to a chronological series depicting a normal distribution. The graphic illustrates that the distribution of daily turnovers for the BET Index

is leptokurtotic (K = 7.182277) – the chronological series does not follow a random walk process. Moreover, the presence of a kurtotic excess demonstrates the existence of an ARCH process.

❖**Jarque – Bera** *(JB)* is a statistical test which determines whether a series has a normal distribution. In other words, the JB test verifies the degree in which a variable follows a normal distribution. This statistical test quantizes the difference between the S and the K of a certain series with the same values of a normal series. The JB equation is:

$JB = \frac{N-k}{6} \times \left(S^2 + \frac{1}{4} \times (K-3)^2 \right)$, where k is the number coefficients used to create the series.

The Jarque-Bera test is based on the hypothesis that the normal distribution has an asymmetry coefficient equal to null (S = 0) and a Flatness (Kurtosis) coefficient of 3 (K = 3).

The results of the normal distribution of the BET profitability (Figure 1) show that the value of the calculated probability is null. This means that the Jarque–Bera test leads to rejecting the null hypothesis according to which the daily turnover distribution series for the BET Index should be normal. Therefore, the use of parametric methods (specific to normal distributions) is not adequate to modeling time series measuring BET Index profitability. In conclusion, non-parametric methods should be used.

Conclusions

The econometric modeling of financial variables presented in this paper was build with the purpose of obtaining prediction models that would help to better accurately estimate their future evolution. The modeling process must take in consideration their main features (asymmetric distribution, the residual autocorrelation and the heteroscedasticity), as well as the inertial character of the analyzed processes and the relatively predictable character in response to past observed variable variations.

The main occupation of stock market investors is to anticipate the general index trend line. The singular evolution of each share held in an investor´s portfolio is bound to the general trend. When the market´ main index is bullish, the majority of shares are bullish as well, and vice-versa. The proof consists in this year´ evolution of the Bucharest Stock Exchange characterized by low liquidity, steep speculative transactions and the lack of institutional investors. All these problems lead us to the words of the XXth century economist, John Maynard Keynes, that argued that investing in shares is similar to playing at the casino.

The study consisted in applying ARCH modeling to the Bucharest Stock Market Index, by using daily sample frequencies for the analyzed variable that leads to the GARCH model. The same thing does not happen if weekly or monthly values are used. It is very difficult to estimate at what sample frequency, the chronological series present GARCH effects. Although, econometrical modeling has shown us that GARCH effects occur more often at a higher sample (daily) frequency.

Notes

(1) Daily BET Index values have been used for econometric estimations. The period of the study was 05.01.2004 – 30.09.2008. The econometric analysis was build by using Eviews 3.0.

(2) The general form for an ARMA process is:

$$x = \bar{x} + a_0 + a_1 \times x_{t-1} + ... + a_p \times x_{t-p} - b_1 \times \varepsilon_{t-1} - ... - b_q \times \varepsilon_{t-q} + \varepsilon_t$$

As one can see from the formula, the processes present two scales (p şi q). This type of process is generated by the past values of the x_t variable and the residuals ε_t.

References

Bollerslev, T., Engle, R.F., Nelson, D.B., „ARCH Models", *Handbook of Econometrics,* Vol. 4, Chapter 49, Elsevier Science B.V., 1994

Dragotă, V., Dragotă, Mihaela, Dămian, Oana, Mitrică, E. (2003). *Gestiunea portofoliului de valori mobiliare,* Editura Economică, Bucureşti

Duduleană, Liliana – *„Testarea efectelor ARCH în modelarea econometrică a variabilelor financiare",* Sesiunea internațională de comunicări științifice, „Finanțele şi inflația", Editura ASE, FABBV Bucureşti 25-26 Noiembrie 2005

Gujarati, D.N. (1995). *Basic Econometrics,* Third Edition – McGraw-Hill, Inc.

Hamilton, J.D. (1994). *Time Series Analysis,* Princeton University Press, New Jersey

Pecican, E.Şt. (2000). *Piața valutară, Bănci şi Econometrie,* Editura Economică, Bucureşti

Pecican, E.Şt., Tănăsoiu, O., Iacob, Andreea Iluzia, *Model econometric,* Biblioteca Digitală ASE 2005, http://www.bibliotecadigitala.ase.ro/biblioteca/carte2.asp?id=196&idb;

Stoica, V., Gruia, Adriana Irina (2006). *Piețe de capital şi produse bursiere,* Editura Universitară, Bucureşti

Tsay, R.S. (2002). *Analysis of Financial Time Series. Financial Econometrics,* John Wiley & Sons, Inc.

*** Bursa de Valori Bucureşti – *Rapoarte zilnice de tranzacționare* – http://www.bvb.ro/;

*** http://www.ktd.ro/;

*** http://www.kmarket.ro/;

*** Documentație Eviews 3.0 (1998) – *Help System – Statistical Views and Procedures*.

THE ANALYSIS OF LEVERAGE INFLUENCE ON PERFORMANCE

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Abstract. *The financing sources selection for an enterprise is a major issue in corporate finance because it will eventually impact on financial performance. Although there are a multitude of studies on the subject, there still has not been reached a common denominator to enable scientific research to produce certain models of capital structure management in order to achieve the major goal in finance, respectively the maximization of shareholders' wealth or market value of the enterprise. Starting from the classical principles of finance, best illustrated by the model of Modigliani & Miller, and by presenting some relevant studies conducted on the Romanian market, we offer a brief analysis approach regarding leverage influence on corporate performance.*

Keywords: degree of leverage; capital market; correlation; classical finance; financial return.

REL Classification: 11E.

Since the modern enterprise is operating in a competitive, turbulent environment, there is rightfully raised the issue regarding the assessment of the way in which an investor could obtain a higher yield than the obtainable one in another area of activity. In general, the contractor is expecting a more satisfactory payoff for the capital invested, compared to other opportunities. The return on capital shall be based on the cash-flows generated by exploiting the company's economic assets. The size of the cash-flows will influence the market value of the company, among other factors, such as risks that accompany investment in the company's assets, taxes applicable to the results, etc. (Stancu, 2003). Based on these findings, financial managers seek to identify an optimal capital structure, which minimizes the cost of capital and increases the enterprises' value.

In finance scholars' Modigliani and Miller model, that has set the foundation of modern finance, there are included findings of the utmost importance regarding the financial structure of a company (Modigliani, Miller, 1958, pp. 261-297). These findings are expressed as "propositions" and are valid under a strict system of *assumptions* about the company and the environment in which it operates:

- agents acting on the financial market are rational;
- anticipated future revenues evolve under a normal distribution law;
- companies are grouped by dividend per share into homogeneous classes;
- the financial market has the atomicity feature;
- the value of a financial security is proportional to its anticipated revenue;
- financial securities are traded on a perfect market;
- physical persons can contract debt at the same rate as the legal persons.

Starting from these hypotheses it is shown that, in an economic environment without taxation, enterprise value is independent of capital structure. The latter is but a means through which cash-flows are portioned among investors. Concomitantly, *the weighted average cost of capital* (WACC) of any firm is independent of its financing structure and equal to the cost of equity of a similar unlevered firm. We begin by using the following mathematical formalization:

$$V = CPR + DAT = \frac{EBIT}{E(R)_k}$$

The notation system is as follows: V = value of the enterprise; CPR = equity; DAT = long-term debt; EBIT = operating profit or earnings before interest and taxes, assumed constant and perpetual; $E(R)_k$ = the expected return on the company's assets, corresponding to the class of risk k. The model operates with the economic assets of the company (AE), financed by permanent sources: AE= CPR + DAT (Stancu, 2003).

The Modigliani & Miller model offers one of the most used formulas in financial theory. The relationship shows that the estimated financial return for a levered firm, from the class of risk k, is a linear function of the leverage ratio (Dragotă, 2006):

$$R_{fin} = E(R)_k + [E(R)_k - R_{dob}] \times \frac{DAT}{CPR}$$

R_{fin} is the financial return rate of the levered company, included in the class of risk k. It is determined by means of a net profit to equity ratio. $E(R)_k$ is the expected return of the company from the class of risk k, quantifiable by the firm's return on assets or the weighted average cost of capital:

$$E(R)_k = R_{ec} = WACC$$

R_{dob} is the interest rate, also called cost of debt. DAT represents the company's long term debt, and CPR – shareholders' equity. The DAT/CPR ratio is a long-term leverage rate**,** called *financial lever*, usually marked with L (Stancu, 2007).

Thus, the studying of the dependence between the financial structure of the enterprise and its performance may be reduced to the analysis of the degree of leverage impact, quantified by the financial lever, on shareholders' financial return on equity.

The formula shows that a levered company can obtain a return on equity ratio superior to that of an unlevered company, at the same cost of capital. The term that is added to $E(R)_k$ is called leverage effect and may take three forms:

a) lever effect $\Leftrightarrow$ $E(R)_k > R_{dob}$;
b) boomerang effect $\Leftrightarrow$ $E(R)_k < R_{dob}$;
c) null effect $\Leftrightarrow$ $E(R)_k = R_{dob}$.

Thus, if the intrinsic return rate of the company surpasses the debt cost, then the shareholders' earning increases directly proportional to the degree of leverage. In the opposite case, when the interest rate is higher than the company's return on assets, supplemental leverage will enhance the negative performance and will lead to a reduction in the return of shareholders.

However, the levered firm solution should not be generalized, because an increase in the financial return can be interpreted by shareholders as a motivation to require a financial risk premium, as a result of the risk induced by leverage through additional payments of interest and installments (Dragotă et al., 2003).

Based on the above it can be concluded that leverage should not be preferred by the enterprise unless the operating activity implies a profitable exploitation. Otherwise, financial results will worsen and the company is likely to lose its investors; they will seek other investing opportunities, at least at the level of market interest rate.

On the Romanian capital market, Dragotă (2006) used a sample of companies listed during 1997-2003 on the BSE. In accordance with the methodology proposed by Rajan and Zingales (1995, pp. 1421-1460), from the sample there were eliminated banks and financial investment services companies, as their financial leverage is heavily influenced by a number of exogenous factors.

Accounting and stock market data were gathered from several sources, namely: internet web sites that provide specific information; the database made available through the Reuters press agency, including firms' stock prices; financial-accounting information from

the Ministry of Economy and Finance. Although officially it is considered that the information contained in the balance sheet and the profit and loss account is public, the achievement of an empirical study is hampered by the absence of a public database.

The findings of this cornerstone research are as follows (Dragotă, 2006):

- Romanian firms have a high degree of leverage, explained to a significant extent by the weight of interest free accounts payable;
- profitable enterprises contract less debt because they have got sufficient own resources to finance investment projects;
- private companies are using increasingly more long-term sources, which is a sign that the economic environment is getting healthier.

Using information drawn from the balance sheets and the results accounts of the companies listed on BSE and RASDAQ, during 2001-2004, Robu (2005) examined the correlation between the stock price and financial accounting data, based on the following indicators in absolute size, per share: net profit, dividend, book value and sales. These indicators are relevant to investors, as they reflect corporate performances in the context of an increased variability of the equity. For each single indicator, there were computed: arithmetic mean, median, maximum and minimum limits.

According to the results obtained, the links between financial rates and stock-market performances for the companies from the sample are generally weak in intensity and can be quantified only by means of non-linear models.

To support the assertion from above we proposed to analyze a segment of the Romanian capital market, namely the securities listed on the first category at the Bucharest Stock Exchange. They are the following: ALRO SA; ANTIBIOTICE SA; AZOMUREŞ SA; BANCA COMERCIALĂ CARPATICA SA; BIOFARM SA; BRD – GROUPE SOCIETE GENERALE SA; SSIF BROKER SA; IMPACT DEVELOPER & CONTRACTOR SA; OIL TERMINAL SA; OLTCHIM SA RM. VÂLCEA; SIF BANAT CRIŞANA SA; SIF MOLDOVA SA; SIF TRANSILVANIA SA; SIF MUNTENIA SA; SIF OLTENIA SA.

We sought to analyze the dependence between leverage and performance, respectively between the degree of leverage to equity and the return on equity (financial return). Note that these two variables are two fundamental components of the Modigliani & Miller model. The data are integrally taken from the internet, namely the site www.ktd.ro.

As an exception to the model, the lever (the degree of leverage to equity) includes all debt resources (long-term debt and short-term debt): $L = \frac{Total\ debt}{Shareholder\ equity}$

The data contained in the following table are not processed, but taken as such from the internet. Thus, the proposed analysis offers a rapid testing means of the interdependence between leverage and return, in the absence of detailed information.

Financial return and leverage degree

Issuer	Leverage degree (%)	Financial return (%)	Date
ALR	62.20	15.63	30.06.2008
ATB	45.05	6.69	30.06.2008
AZO	44	13.90	31.03.2008
BIO	6.14	5.81	30.06.2008
BRK	11.23	0.90	31.03.2008
IMP	74.78	4.14	30.06.2008
OIL	18.68	0.81	30.06.2008
SIF1	15.95	11.25	30.06.2008
SIF2	8.51	16.14	30.06.2008
SIF3	11.78	11.25	30.06.2008
SIF4	7.09	3.45	30.06.2008
SIF5	15.69	9.06	30.06.2008

Source: www.ktd.ro

As one can immediately observe, from the analysis were excluded 3 securities. For BANCA COMERCIALĂ CARPATICA SA (BCC) and BRD – GROUPE SOCIETE GENERALE SA (BRD) there are not any data available, and OLTCHIM SA RM. VÂLCEA (OLT) has negative equity. We used up to date information, extracted from the last financial reporting, available at the moment this study was made, as noted in the column „Date".

We tested the correlation between the two fundamental variables (degree of leverage and return on equity) in order to detect to what extent the variations of one variable are correlated with the variations of the other variable. We obtained a correlation coefficient of about 0.157. Since it is positive it implies the existence of a direct link between capital structure and financial return, but the intensity of the link is weak.

Therefore, it can be concluded that the manner in which companies listed on the Bucharest Stock Exchange – first category decide to finance their assets has an almost insignificant impact on performance (and vice versa, because the correlation works both ways). This result partially supports the conclusions of the study conducted by Robu (2005).

References

Dragotă, M. (2006). *Decizia de investire pe piaţa de capital*, Editura ASE

Dragotă, V., Ciobanu, A., Obreja, L., Dragotă, M. (2003), *Management financiar (vol. II). Politici financiare de întreprindere*, Editura Economică, Bucureşti

Modigliani, F., Miller, M., „The Cost of Capital, Corporation Finance and the Theory of Investment", *American Economic Review*, 1958, pp. 261-297

Rajan, R., Zingales, L., „What Do We Know about Capital Structure? Some Evidence from International Data", *Journal of Finance*, 1995, pp. 1421-1460

Robu, V. (2005). *Analiza performanţelor firmelor româneşti cotate în contextul integrării în Uniunea Europeană*, Editura ASE, Bucureşti

Stancu, I. (coord.), *Finanţe (vol. II). Investiţii directe şi finanţarea lor*, Editura Economică, Bucureşti, 2003

Stancu, I. (2007). *Finanţe*, Editura Economică, Bucureşti

www.bvb.ro

www.ktd.to

THE MONETARY POLICY TRANSMISSION MECHANISM THROUGH INTEREST RATE. EMPIRICAL ANALYSIS: ROMANIA

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Abstract. *Understanding monetary policy transmission is necessary to moentary policy projection and implementation of monetary policy in a efficient manner. I consider that interest rate monetary policy mechanism is very important because the interest rate is now the main instrument used by the majority of central banks in the world in taking monetary policy decissions and by all central banks wich have inflation targeting strategy. In this paper, I analysed monetary policy transmission mechanism through interest rate and I made an empirical analysis of this on Romania.*

Keywords: monetay policy transmission; interest rate; GDP; aggregate demand, inflation.

REL Classification: 8J.

1. The effects of interest change on macroeconomic indicators. Fundamental aspects

I think that monetary policy take action on aggregate demand in economy and on inflation rate in three phases, described schematically in Figure 1.

The transmission of central bank interest rate changes in Phase 1 (from central bank interest rate to financial markets indicators) is made by three link channels of the financial markets:

1. Modifications in central bank interest rate affect all interest rates practiced by commercial banks on loans granted, on deposits placed by clients in banks, and other interbanks interest rates.
2. Changes in central bank interest rate can transfer to other financial assets prices (stocks and bonds). In Romania, owing to a reduce capitalisation of capital market, I think that it can not talk about NBR monetary policy transmission to capital market developments.
3. Foreign currency is an asset for wich, its price (exchange rate) is affected by the central bank interest rate change(1). The exact effect of central bank interest rate on exchange rate is ambiguous because it depends on agents expectations about inflation rate and interest rate from domestic and foreign countries.
4. The changes in central bank interest rate may affect expectations about future development of real economic activity and confidence to mantain these expectations. Such perception changes will affect participants decisions in financial markets and the direction of these expected effects work is difficult to predict and may vary from a time period to other time period. An increase of the central bank interest rate may be view by the economic agents as monetary authority think that it is a high probability that the economy grew faster in the future than in the past and present, increasing in this way economic expectations about economic growth. However, it is possible that an increase of the central bank interest rate be perceived in economy as a decission taken by monetary authority for the purpose of decelerate the economic growth to achieve proposed inflation target. The

possibility of the achievement of such effects produce some „uncertainty" concerning the consequence of central bank interest rate change and, in this way, it is necessary a transparent and credible monetary policy(2).

Resuming the aspects of four financial markets link channels showed above, it can be said that although the monetary policy strategists have a direct control only to a short-term interest rate (an interest rate that show the signal concerning monetary policy feature), this short-term interest rate affect other financial markets indicators.

In Phase 2 (from the financial market indicators to the two components of aggregate demand – domestic demand and net foreign demand) of monetary policy transmission, changes in interest rates practiced by banks and exchange rate produce effects on households and companies demand.

Households demand. Households are affected by a monetary policy change in two ways: 1) in the case of households deposits and loans, banks interest rates will change as a result of monetary policy interest rate modification. In this way, disposable income of debtors households (they had taken loans from banks) or creditor households (wich have deposits placed in banks) registered changes as it decide to consume or save money at present. 2) any ajustment of exchange rate produce changes in goods and services relatives prices. Thus, interest rate change has adverse effects on debtors or creditors households, while domestic currency appreciation generate deduction in imports goods prices.

Companies demand. The economic activity of companies is influenced too by interest rate and exchange rate changes. An increase of central bank interest rate will have a major effect on every company wich use banking loans. A rise of interest rates will grow loan cost and will reduce company profit. The costs with interest affect the cost of diverse current assets of companies (inventories, for example). An increase of central bank interest rate may generate, after a while, a reduction of employment. However, some companies ar positive affected by the interest rate growth. For example, the companies wich have money in current account or deposits are positive affected by an interest rate increase. The changes in exchange rate may have a major effect on many firms economic activity.

The relationship between aggregate demand and GDP. In economy, aggregate demand is equal to sum between domestic demand (investments expenditure + consumer expenditure + government expenditure) and net foreign demand (exports-imports). Aggregate demand is equal to GDP.

In Phase 3 of monetary policy transmission, exchange rate affect inflation rate by imported goods prices and aggregate demand affect inflation rate by domestic products prices.

The relationship GDP – inflation rate. In the long run, real GDP increase as a result of supply factors such as: technical progress, capital accumulation, volume and quality of labor supply. It is possible that fiscal policy be capable to affect the supply factors in a some manner, but monetary policy can not affect economic growth trend. Real GDP growth trend (potential GDP) is that level of real GDP growth when the firms in economy develop their activity at normal production capacity, without inflation pressures.

When the difference between effective real GDP and potential GDP(3) is positive, it works in economy above normal capacity of production. GDP gap (or demand excess) may show a current account deficit and generate inflation pressure in economy. In the case when the GDP gap is negative, there is no inflation pressure in economy from the demand side.

Imported inflation. The exchange rate exert influences on net export (and, consequently, on economic growth), but exchange rate affect imported inflation too. For example, an appreciation of Romanian leu generate a reduction of imports goods prices; conversely, a depreciation of leu cause an increase of imports goods prices.

The monetary policy transmission lags. Any change in the central bank rate takes time to have its full impact on the economy. It is possible that time lags of monetary policy transmission vary and be characterised by uncertainty because a lot of factors, such as: 1) bussines climate, 2) the response modality of consumer behavior after the changes in

interest rate, 3) global economic developments, 4) expectations about future inflation.

In section 4 of this paper, I determined, through an empiric analysis, possible time lags for full impact of National Bank of Romania (NBR) interest rate transmission to macroeconomic indicators (exchange rate, GDP, GDP components and inflation rate).

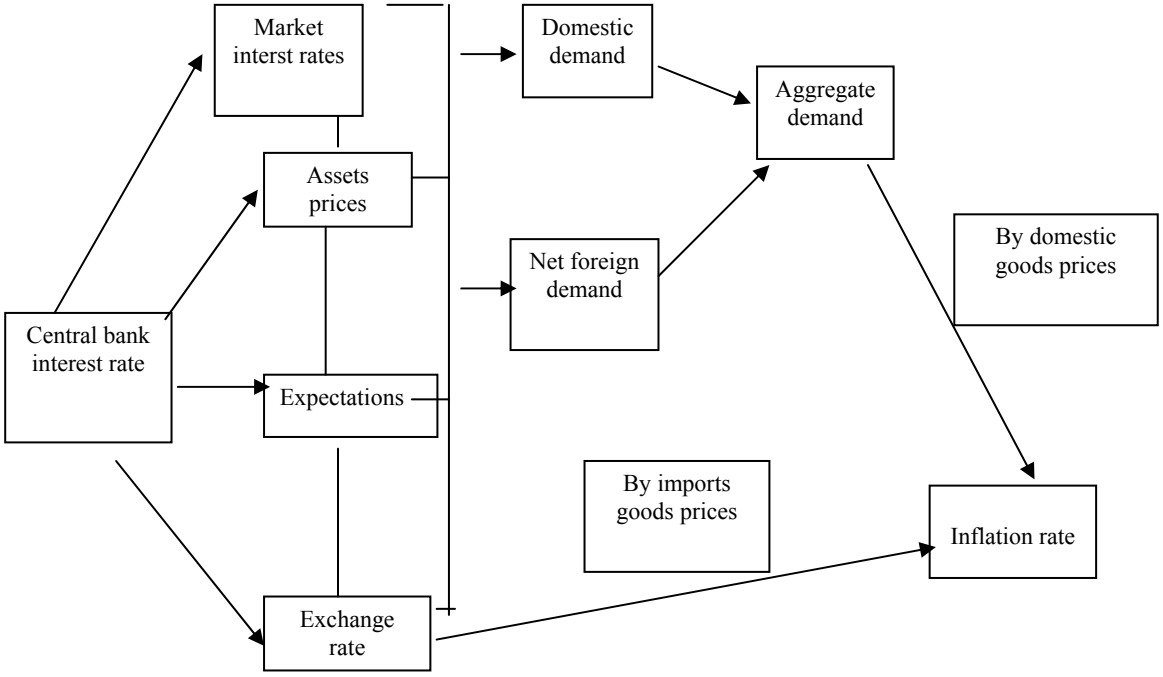

Figure 1. *Monetary policy transmission*

2. Studies of monetary policy transmission through interest rate

Monetary policy transmission mechanism represented and represente now too a theme of monetary macroeconomics research because the average number of monetary policy transmission lags is variable, the monetary policy transmission channels are interdependent and the results of research works are differents from a country to another and from a period to another.

In the most of research papers in monetary transmission field, the empiric analysis is made by VAR – Vector Auto Regressive – (VAR with error correction, structural VAR or unrestricted VAR in first order differences of data series). Another modality to catch monetary policy transmission is using macroecomic models of equations (the so-called structural macroeconomic models)[(4)].

In the following phrases, I will present some of results obtained by researchers for Euro Area and central Est-European countries: Angeloni Ignazio, Kashyap Anil, Mojon Benoit and Terlizzese Daniele (2002) analysed monetary policy transmission mechanism in Euro Area and they found that interest rate channel work and the transmission of central bank interest rate change to gross fixed capital formation is fastest than to other components of GDP and the total Euro Area GDP. Balazs Egert and Ronald MacDonald (June 2006) made a survey of monetary policy mechanism in market economy transition countries. From authors survey, result the followings: (i) on the background of prices rigidity, an innovation (a shock) in short-term nominal interest rate will induce changes in short and long run real interest rate and, because the dynamic of real interest rate is reflected in capital costs, corporate investments expenditure will be affected by interest rates changes; (ii) the expenditures made by households for durable goods and houses are sensitive to interest rate changes because these expenditures have a substantial investment constituent parts; (iii) real interest rate change produce the following effects too: – a rise of real interest rate induce an disposable income increase of economic agents wich hold interest rate bearing assets (income effect), – the

substitution of consume with saving in the case of higher interest rate (substitution effect); (iv) changes in investments and expenditures for durable goods and houses will cause changes in GDP; (v) monetary policy transmission to GDP and inflation is characterised by unpredictible and variable lags for many periods of time analyzed. Chatelain and co. (2001) used panel micro data and empiric estimated the investments sensitivity of firm from manufacture industry as a response to capital cost, and they found that firms investments in France, Germany and Spain are sensitive to capital cost change. Similar results with Chatelain and co. found Katay and Wolf (2004) for Hungary. Kiss and Vadas (2005) investigated mortgage loans market in Hungary and they found that changes in mortgage loans interest rate have only a limited impact to disposable income because of institutional factors (such as government subsidies).

3. Technical aspects for empirical analysis of monetary policy transmission in Romania

In my empirical analysis, I used as an econometric procedure the cross correlation coefficients. Cross correlation coefficient between two variable x and y I estimated in the following way:

$$\tau_{xy}(l) = \frac{c_{xy}(l)}{\sqrt{c_{xx}(0)} \times \sqrt{c_{yy}(0)}}, \text{ where: } l = 0,+/-1,+/-2,... \text{ and}$$

$$c_{xy}(l) = \begin{cases} \sum_{t=1}^{T-l} ((x_t - \bar{x}) \times (y_{t+l} - \bar{y}))/T & l = 0,1,2,... \\ \sum_{t=1}^{T+l} ((y_t - \bar{y}) \times (x_{t-l} - \bar{x}))/T & l = 0,-1,-2,... \end{cases}$$

Cross-correlation coefficients allow the possibility to analyse the relationships between macroeconomic variables on a time horizon. With cross correlation coefficients, it can quantify the required number of periods that a change in interest rate transfer in economy.

4. Empirical analysis of monetary policy transmission mechanism through interest rate in Romania

For the purpose of estimating cross correlation coefficients necessary to monetary policy analysis in Romania, I used a sample of quarterly data from 2000 first quarter till 2008 second quarter. All data series are in percentages per year. I presented these data in Figure 2. The macroeconomic data series used in analysis are: ▫I_NBR = nominal interest rate at deposits taken by NBR from banks (balances), ▫I_NBR_R = real interest rate at deposits taken by NBR from banks (deflated with inflation rate from the end of quarter' s month**(5)**), ▫RGDP = pace of economic growth (annual pace of real GDP growth), ▫DOMESTIC_DEM = annual pace of real domestic demand growth, ▫GFCF = annual pace of real gross fixed capital formation growth (the investment in fixed capital in economy), ▫HOUSEHOLD_CONS = annual pace of real households consumption growth, ▫INFLATION = annual inflation rate calculated by NSI from consumer prices index, ▫INFLATION_CORE2 = annual inflation rate CORE2 (determined by NSI excluding goods with volatile and administered prices from consumer basket of households), ▫I_NBR_R_GAP = the gap of NBR real interest rate I_NBR_R, ▫DOMESTIC_DEM_GAP = the gap of annual pace of real domestic demand growth DOMESTIC_DEM, ▫RGDP_GAP = the gap of annual pace of real GDP growth, ▫INFLATION_GAP = the gap of inflation rate INFLATION, ▫INFLATION_CORE2_GAP = the gap of INFLATION_CORE2, ▫GFCF_GAP = the gap of annual pace of real gross fixed capital formation growth GFCF, ▫HOUSEHOLD_CONS_GAP = the gap of annual pace of real households consumption growth, ▫NET_EXP_GAP = the gap of annual pace of real net export, ▫ER = annual pace of nominal exchange rate RON/EUR change (an increase of ER signify a depreciation of leu as compared with euro), ▫ER_R_GAP[(6)]= the gap of annual real

pace of RON/EUR exchange rate (a fall of the variable is an appreciation of leu as compared with euro).

I calculated the gap of economic variables in the following way: variable gap = variable – trend of variabile. I determined the trend of every variable using univariate filter Hodrick Prescott.

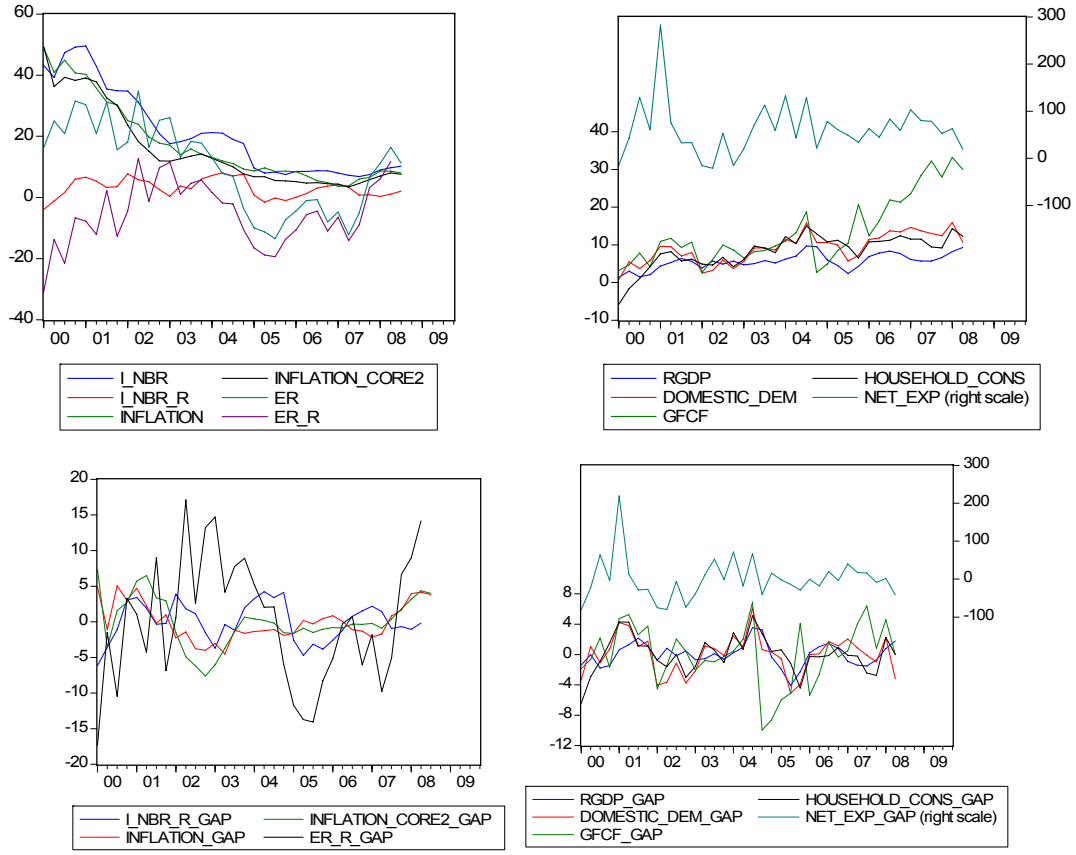

Figure 2. *Data series used in empirical analysis*

In Table 1, I presented the cross correlation coefficients for 17 values of the *lead i,* (17 quarters = 4 years + quarter 0 for the beggining time). In Table 1, on grey background, there are cross correlation coefficients with the highest economic importance, in my view. I mention that a higher cross correlation coefficient between two variables (with 1 as a maximum level) implies a higher link between the two variables and the transmission of economic impulses is better. In my analysis, I pursued that coefficients signs be in line with economic judgement. The „ - “ sign of coefficient point out the opposite relationship between the two variables and the „ + ” sign signify the same sense relationship between the two economic variables.

From the cross correlation coefficients analysis, it result the following relevant aspects:

►positive and high value correlations (reaching 0.96 as a maximum value at lead i=0) between NBR nominal interest rate and inflation rate (both headline and core2 inflation) show the fact that a high NBR nominal interest rate imply a high inflation rate and conversely, or it can say that a higher inflation rate generate a higher NBR interest rate at the same time.

►the impulse of growing NBR restrictive monetary policy described by a rise of NBR real interest rate (I_NBR_R) produce a fall in annual real growth of GDP (RGDP) from the four quarter to seven quarter after the real interest rate increase. Five quarters after the increase of real interest rate, real GDP reduce the most (at i=5, the cross correlation coefficient is maximum and it is equal to -0.2423).

The other component parts of RGDP react to the change in monetary policy real interest rate in the following way:

Table 1

Cross correlation coefficients

	Pair of variables (X,Y(+i))							
i	(I_NBR_R,RGDP(+i))	(I_NBR_R,DOMESTIC_DEM(+i))	(I_NBR_R,GFCF(+i))	(I_NBR_R,HOUSEHOLD_CONS(+i))	(I_NBR_R,INFLATION(+i))	(I_NBR_R,INFLATION_CORE2(+i))	(I_NBR_R_GAP,DOMESTIC_DEM_GAP(+i))	(I_NBR_R_GAP,RGDP_GAP(+i))
0	0.2941	0.1288	-0.1731	0.3027	0.0166	0.0518	0.4579	0.4769
1	0.3275	0.0939	-0.1593	0.2142	-0.0004	0.0372	0.3696	0.5076
2	0.2460	0.0395	-0.2090	0.1285	-0.0697	-0.0471	0.2142	0.3490
3	0.0105	-0.1735	-0.2402	0.0162	-0.0921	-0.1176	-0.1982	-0.0209
4	-0.1973	**-0.3469**	-0.2686	**-0.1068**	-0.0994	-0.1599	**-0.5552**	-0.3490
5	**-0.2423**	-0.3171	**-0.2946**	-0.0590	**-0.1000**	**-0.1796**	-0.5263	**-0.4078**
6	-0.1778	-0.2700	-0.2755	-0.0476	-0.0882	-0.1652	-0.4533	-0.2938
7	-0.0366	-0.1335	-0.1909	-0.0183	-0.0994	-0.1439	-0.2281	-0.0780
8	0.1551	0.1154	-0.1252	0.1158	-0.0995	-0.1112	0.1739	0.2110
9	0.1712	0.2222	-0.1538	0.1886	-0.1273	-0.0929	0.3166	0.2214
10	0.2126	0.3409	-0.0446	0.2459	-0.1445	-0.0979	0.4555	0.2419
11	0.1070	0.3332	0.0158	0.2427	-0.1658	-0.1156	0.3431	0.0282
12	-0.0181	0.2558	0.1698	0.1524	-0.1920	-0.1545	0.1398	-0.2110
13	0.0403	0.2743	0.3722	0.1865	-0.1899	-0.1836	0.0670	-0.1860
14	0.1687	0.2108	0.4140	0.2142	**-0.2170**	-0.2183	-0.1134	-0.0264
15	0.2370	0.1958	0.3197	0.1684	-0.2160	**-0.2294**	-0.0624	0.1301
16	0.1912	0.1000	0.1610	0.1114	-0.1764	-0.1896	-0.1552	0.1129

	Pair of variables (X,Y(+i))							
i	(I_NBR_R_GAP,INFLATION_GAP(+i))	(I_NBR_R_GAP,INFLATION_CORE2_GAP(+i))	(I_NBR,INFLATION(+i))	(I_NBR,INFLATION_CORE2(+i))	(I_NBR_R_GAP,ER_GAP(+i))	(I_NBR_R_GAP,NET_EXP_GAP(+i))	(RGDP_GAP,INFLATION_GAP(+i))	(RGDP,INFLATION(+i))
0	-0.1644	0.0900	**0.9641**	**0.9612**	0.3113	0.3018	-0.0746	-0.6559
1	-0.1232	0.1252	0.8548	0.8449	0.1592	0.1679	-0.2389	-0.5792
2	**-0.3232**	-0.0830	0.7696	0.7624	0.0124	-0.1628	-0.4057	-0.5359
3	-0.2601	-0.2405	0.6585	0.6546	**-0.1179**	-0.2835	-0.2587	-0.4502
4	-0.1321	-0.2993	0.5582	0.5415	-0.0542	**-0.5176**	-0.1874	-0.3934
5	-0.0235	**-0.3112**	0.4535	0.4232	0.0228	-0.1594	0.0295	-0.3094
6	0.0346	-0.2694	0.3550	0.3046	0.1057	-0.1112	0.1375	-0.2423
7	-0.0745	-0.2185	0.2706	0.2078	0.2103	-0.0207	0.0718	-0.1844
8	-0.1027	-0.1074	0.1814	0.1210	0.0889	0.1003	-0.0154	-0.1174
9	-0.2362	-0.0148	0.1086	0.0558	-0.0593	0.1619	-0.1879	-0.0806
10	-0.2216	0.0453	0.0382	0.0084	-0.1613	0.2365	-0.2561	-0.0408
11	-0.1560	0.1006	-0.0186	-0.0322	-0.3302	0.2710	-0.1658	-0.0259
12	-0.0869	0.0871	-0.0676	-0.0675	-0.3219	0.1633	0.0070	-0.0309
13	0.1357	0.1111	-0.1152	-0.1043	-0.1725	0.0655	0.1738	-0.0063
14	0.2140	0.1130	-0.1522	-0.1476	-0.0869	-0.1228	0.2440	0.0187
15	0.2352	0.0596	-0.1974	-0.1931	-0.0201	-0.0887	0.1766	0.0837
16	0.2114	0.0477	-0.2260	-0.2308	-0.0152	-0.1749	0.0837	0.1454

	Pair of variables (X,Y(+i))							
i	(DOMESTIC_DEM_GAP,INFLATION_GAP(+i))	(RGDP,INFLATION_CORE2(+i))	(ER,INFLATION(+i))	(ER,INFLATION_CORE2(+i))	(HOUSEHOLD_CONS_GAP,INFLATION_CORE2(+i))	(I_NBR_R_GAP,GFCF_GAP(+i))	(I_NBR_R_GAP,HOUSEHOLD_CONS_GAP(+i))	(RGDP_GAP,INFLATION_CORE2_GAP(+i))
0	0.0697	-0.6118	**0.7215**	**0.6978**	0.2275	0.2106	0.6384	**0.1085**
1	**0.1563**	-0.5260	0.6576	0.6518	**0.3392**	0.2037	0.4332	0.0039
2	0.0220	-0.5142	0.5919	0.5952	0.0310	-0.0077	0.2149	-0.2344
3	0.0946	-0.4763	0.5355	0.5294	-0.1619	-0.1678	-0.0518	-0.3148
4	0.0901	-0.4336	0.4599	0.4541	-0.3660	-0.3292	**-0.3510**	-0.3310
5	0.1152	-0.3644	0.3865	0.3537	-0.4465	**-0.3909**	-0.2674	-0.2658
6	0.0511	-0.2642	0.3078	0.2595	-0.4120	-0.3076	-0.2447	-0.0877
7	-0.0345	-0.1659	0.2273	0.1759	-0.3457	-0.0827	-0.1820	0.0163
8	-0.0979	-0.0696	0.1559	0.0976	-0.1306	0.0568	0.0857	0.0730
9	-0.2021	-0.0074	0.0923	0.0477	0.0325	-0.1116	0.2049	0.0645
10	-0.2220	0.0148	0.0282	-0.0037	0.1442	-0.0134	0.2764	-0.0218
11	-0.1130	0.0097	-0.0288	-0.0500	0.2715	-0.1166	0.1989	-0.0309
12	-0.0400	-0.0136	-0.0835	-0.0924	0.2524	0.0396	-0.0266	0.0426
13	0.0289	-0.0143	-0.1480	-0.1515	0.1785	0.2392	-0.0268	0.0812
14	0.0853	0.0112	-0.2027	-0.2004	0.1240	0.1303	-0.0123	0.1301
15	0.1028	0.0672	-0.2498	-0.2471	0.0382	0.0077	-0.0197	0.0657
16	0.0776	0.1303	-0.2916	-0.2867	-0.0248	-0.2901	-0.0515	-0.0022

1) an increase of NBR real interest rate is transmited to a reduction of real domestic demand (DOMESTIC_DEM) during the period from i = +3 quarters to i = +7 quarters and the highest effect of changing NBR interest rate to DOMESTIC_DEM is after 4 quarters from the change – when the correlation coefficent equal to -0.3469; 2)the transmission of a change in NBR real interest rate to real gross fixed capital formation is the fastest of all GDP components parts: an increase of NBR real interest rate produced a cut of GFCF during the period from i=0 to i=10 quarters after the change of NBR interest rate, the highest influence of NBR interest rate is at i=5 quarters. 3) when NBR interest rate increase, the households consumption in real terms (HOUSEHOLD_CONS) reduce during the interval [+4 quarters, +7 quarters], the maximum influence is 4 quarters after NBR interest rate change. ►nominal depreciation/appreciation of the leu as compared with the euro is transmited to a rise/ reduction of inflation rate (both headline and core2) from i = 0, when correlation coefficient is maximum and is equal to 0.72 and 0.70 respectively, to i = +9 quarters; the result is plausible because the high Romania' imports of both consumer goods and raw material (used for production of consumer goods in Romania) from Euro Area.

►analyzing the relationships between NBR real interest rate, real GDP and real GDP component parts in gap terms, the informations result are almost similar with those result from the analysis of the economic variables in annual paces: 1) a rise/a reduction of NBR real interest rate gap is transmited to a reduction/a rise of real domestic demand gap (DOMESTIC_DEM_GAP) and to a reduction/a rise of real GDP gap (RGDP_GAP) during the period [+3 quarters, +7 quarters] after NBR real interest rate change, having a maximum correlation coefficient at i = +4 and i = +5 quarters, respectively; 2) the increase /decrease of NBR real interest rate gap induce a decrease/increase of real net exports (NET_EXP_GAP) during the period [+2 quarters, +7 quarters] after the change in NBR real interest rate gap and the cross correlation coefficient has a maximum level at i = +4 quarters; 3) an increase /decrease of real interest rate gap is transmited to a decrease/an increase of real gross fixed capital formation gap (GFCF_GAP) and to households real consumption gap (HOUSEHOLD_CONS_GAP) during period [+2 quarters, +7 quarters] and [+3 quarters, +7 quarters] after a real interest rate change; the transmission of real interest rate change to real gross fixed capital formation is the fastest (it begin from the quarter 2 after the change of central bank real interest rate). A higher weight of nonfinancial corporations credit in total nongovernment credit than households credit can be one of the causes for a fast transmission of real interest rate to gross fixed capital formation.

►the rise/cut of real interest rate is transmited to a reduction/an increase of inflation rate (INFLATION) during the period from i = 1 to i = 16 quarters. The gap analysis indicate that the whole shock of real interest rate change is absorbed by core inflation (INFLATION_CORE2) after 9 quarters, having a maximum impact 5 quarters after a change in real interest rate.

It is possible that NBR monetary policy transmission through interest rate lose in efficiency due to the following factors (see Appendix 1, for a quick view of recent and future macroeconomic and financial indicators in Romania):

- low financial deepening (nongovernment credit to GDP ratio),
- aproximatively 50% of non-government credit granted by credit institutions in Romania is in foreign curency,
- a catching –up process of Romanian economy which generate a high degree of volatility for economic indicators,
- a high current account deficit which imply a large dependency to foreign countries (especially to Euro Area countries) and a large credit in foreign currency,
- NBR is net debtor of banking system,
- because of the aspects mention above, the effect of a NBR interest change to economy is amplified when it pass through exchange rate.

Notes

(1) In Romania, the exchange rate link channel is important and it has an ample effect in the transmission of central bank interest rate change to inflation rate because a lot of goods from consumer basket proceed from import.

(2) The transparence and credibility of monetary policy regime rise by a good communication of central bank to public on the reasons placed back of monetary policy interest rate decision.

(3) This difference is named real GDP gap (*output-gap*).

(4) Batini and Haldane (1999) and other structural macroeconomic models used by Bank of England.

(5) I_NBR_R = (100 + I_NBR)/(100+INFLATION) × 100 – 100

(6) ER_R = annual real percentage change of leu /euro exchange rate; ER_R = annual nominal percentage change of leu/euro exchange rate – annual inflation rate in Romania + inflation rate in Euro Area.

References

Angeloni, I., Kashyap, A., Mojon, B., Terlizzese Daniele: „Monetary Transmission In The Euro Area: Where Do We Stand", *ECB Working Paper*, Ianuarie 2002

Arnostova, K., Hurnik, J., „The Monetary Transmission Mechanism In The Czech Republic (Evidence from VAR Analysis)", *Czech National Bank Working Paper Series no. 4*

Balazs, E., MacDonald, R., „Monetary Transmission Mechanism In Transition Economies: Surveying The Surveyable", *CESIFO Working Paper no. 1739*, Iunie 2006

Banca Națională a României: *Rapoarte anuale, Caiete de studii, Rapoarte asupra inflației*.

Bank of England, The Monetary Policy Committee: "The Transmission Mechanism Of Monetary Policy", *Bank of England Report*

Peersman, G., Smets, F., „The Monetary Transmission Mechanism In The Euro Area: More Evidence From VAR Analysis", *ECB Working Paper no. 91*, 2001

Appendix 1: Macroeconomic and financial indicators in Romania

Macroeconomic and financial indicators	2006	2007	2008f	2009f
Economic activity:				
Nominal GDP (billion RON)	344.5	404.7	505	593
Real GDP growth (% per year)	7.9	6	9	6.7
Private consumption (% per year)	11.5	10.5	13.4	9.6
Government consumption (% per year)	-9.8	7.8	4.2	6.1
Gross fixed capital formation (% per year)	18.5	28.4	28.1	24.6
Exports of goods and services (% per year)	10.6	8.5	29.8	19.8
Imports of goods and services (% per year)	22.4	25.8	34.8	22.6
Contributions to real GDP growth (in % GDP):				
Domestic demand (- changes in inventories)	14	17.4	21.7	18.8
Net exports	-9.6	-14.8	-16.2	-13.2
Changes in inventories	3.5	3.5	3.4	1.1
Real GDP gap (% of potential GDP, average of the year)	0.5	0.3	1.1	0.1
Unemployment rate (% of labour force)	7.3	6.4	6	5.9
Trade balance (goods and services, % of GDP)	-12	-14.6	-15.5	-13.7
Current account (% of GDP)	-10.4	-14	-13.5	-12.2
Government finances:				
General government balance (% of GDP)	-2.2	-2.5	-3.1	-4.1
General government gross debt (% of GDP)	12.4	13	11.5	12.1
Prices and costs:				
Consumer price index (annual percentage change)	6.6	4.8	7.9	4.7
GDP deflator (annual percentage change)	10.9	10.1	12	5
Unit labour cost (variație % pe an)	12.2	16.2	13.4	8.7
Labour productivity (GDP/No. of occupied persons, annual percentage change)	5.9	5.6	8.2	6.4
Financial markets and monetary developments:				
Exchange rate RON/EUR (year average)	3.53	3.34	3.65	3.55
3 months ROBOR (% per year, end of period)	8.75	8.27	12	9
Monetary policy interest rate (% per year, end of period)	8.75	7.5	10.25	8
10 years government bond yield (% per year, end of period)	7.23	7.13	7.5	6
Nongovernment credit / GDP(%)	26.82	36.61	42.07	53.66
Foreign currency nongovernment credit / Total non-government credit (%)	47.35	54.30	55	50
Nongovernment credit (annual percentage change):	54.46	60.41	43.39	49.76
Nongovernment credit in lei (annual percentage change)	79.53	39.22	42.68	49.76
Nongovernment credit in foreign currency (annual percentage change)	33.71	83.96	43.99	49.76
Total households credit / Total nongovernment credit (%)	42.51	48.26	49	49
Households credit in lei / Total nongovernment credit (%)	24.99	22.66	22	22
Non-financial companies credit in lei / Total nongovernment credit (%)	27.97	27.25	26	26

Sources: NBR, MEF, NFC, Eurostat, ECB, author' own calculations; f=forecast.

PECULARITIES OF CEE COUNTRIES EXCHANGE RATE VOLATILITY. EMPIRICAL EVIDENCE UNDER THE INTERFERENCE BETWEEN TRANSITORY AND PERMANENT DIMENSIONS

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Abstract. *This paper focuses on CEE countries volatility captured by exchange rate dynamic. The spillover phenomenon is analyzed from the perspective of the actual financial crisis where cross-border capital flows strenghthened the premises of the financial contagion. Volatility will be approached bi-dimensionally, from the perspective of the permanent and transitory dimensions. We conclude that volatility is long-term nature at the level of CEE countries, with a certain degree of pecularity in terms of shock reaction. The key result of the research consists of a deep correlation at the level of the exchange rate volatility between CEE countries and EURO zone, implying the necessity to develop strong financial management strategies at the macroeconomic level, capable of annihilating the transmision belt crisis mechanisms.*

Keywords: volatility; component; transitory; permanent; spillover.

Introduction

Exchange rate volatility is perceived as a macroeconomic barometer. It represents the link between financial and real economy, being deeply rooted into economic fundamentals.

CEE countries have followed up a transition process, from fixed exchange rate regimes to flexible ones, most of them concentrating on the inflation targeting strategy. Moreover, exchange rate fluctuations represented an important source of volatility. The key issue is represented by the nature of the volatility, precisely if it is determined by structural mutations, rooted into economic fundamentals or by intrinsic structures, specific to these countries.

Previous studies concentrated on exchange rate volatility both at the level of emerging (Pramor, Tamirisa, 2006, Kobor, Szekely, 2005, Horvath, 2005) and developed countries (Black, MacMillan, 2004). Analysts agreed on the fact that from both perspectives there can be assessed a volatility correlation reflected by the exchange rate dynamic.

Horvath (2005) highlighted out that excessive exchange rate volatility triggers macroeconomic instability, being perceived as a bad signal by investors. Thus, policy makers are preoccupied with limiting exchange rate variability, even if this strategy might be unsuccessful in limiting the pressures on the foreign exchange market.

Hagen and Zhou (2005) pointed out that exchange rate volatility is perceived negatively especially in the case of developing countries. Nevertheless, Calvo and Reinhart (2002) strengthened the idea that fear floating is perceived also at the level of developed countries which will strive for exchange rate fluctuation reduction. Exchange rate volatility diminishes policy credibility, triggering economic crisis. This idea is worthwhile especially in the context of the actual financial crisis when a high country indebtedness degree implies high exposure to currency and interest mismatches. Liquidity crisis determines default.

Exchange rate represents an essential anchor from the perspective of the policy makers intervention into macroeconomic fundamentals. However, Borghuis and Kuijs (2004)

presented evidence for the Czech Republic, Hungary, Poland, Slovakia and Slovenia that the exchange rate has served "as much or more as an unhelpful propagator of monetary and financial shocks than as a useful absorber of real shocks".

Devereux and Lane (2003) revealed some heterogeneity among the CEECs in terms of their exchange rate volatility and pressures. Specific features of emerging countries consist of higher exposure to external shocks, low turnover in the interbank foreign exchange market and few market makers.

Guimares and Karacadag (2004) analyzed exchange rate volatility in Mexico and Turkey from the perspective of central banks intervention. They concluded that in Mexico, foreign exchange sales have an impact on the exchange rate level and determines short-term volatility increase while in Turkey the effect is opposite.

Kobor and Szekely (2004) conducted a research on a sample of four countries – Poland,

Hungary, Czech and Slovak – during a period of three years (2001-2003), revealing that volatilities were highly variable from one year to another. The key finding consists of similar exchange rate fluctuations during high volatility periods. Cross-correlations of currency – pairs –the Polish Zloty and the Hungarian Forint, and the Czech Koruna and Slovak Koruna – increased significantly in high volatility periods. This idea has been revealed also by Forbes and Rigobon (2001).

Pramor and Tamirisa (2006) highlighted out that the transmission of volatility shocks within the region have modified over time, excepting hungarian forint which ''remained an important source of intraregional volatility shocks''. Our research confirms this assumption as well. Their study identified a lower degree of commonality within CEE area, which is less than what Black and Millan found for major industrial countries in Europe before the introduction of the euro.

Melvin and Peiers (2003) argued that Asian volatility spills over into Europe and America while American volatility spills over into Europe.

The methology of this paper originates in Pramor and Tamirisa (2006), Kobor and Szekely (2005) as well as in Black and MacMillan (2004), but what it differentiates it is exactly the deeper analysis performed at the level of the the two volatility components – transitory and permanent one- on a more extended sample (including also Romania, Latvia and Croatia) during a larger period (January 1999- September 2008). We conceive volatility on a permanent basis in terms of temporary versus permanent components, revealing correlation of volatility dimensions both at intra and inter-regional level.

Our research follows up Guimaraes and Karacadag (2004) rationale according to which volatility requires a peculiar approach at the level of every emerging country since research results „can only be interpreted in the context of specific country circumstances. '' Therefore, Principal Component Analysis will be applied both at the level of transitory and permanent volatility component specific to every country.

The spillover phenomenon is analyzed from the perspective of the actual financial crisis where cross-border capital flows strenghthened the premises of the financial contagion. The key result of the research consists of a deep correlation at the level of the exchange rate volatility between CEE countries and EURO zone, implying the necessity to develop strong financial management strategies at the macroeconomic level, capable of annihilating the transmision belt crisis mechanisms.

This paper is structured as follows: Section 2 depicts database and methodology, Section 3 includes C-GARCH estimation results and interpretation, Section 4 analyzes spillover phenomenon at the level of CEE countries, and Section 5 concludes.

Section 2. Data and methodology description

Our research is based on daily closing prices of CEE currencies (Czech koruna –CZK, Hungarian forint – HUF, Polish zloty – PLN, Slovak koruna – SKK, Romanian leu – RON,

Latvian lat – LVL, Croatian kuna – HRK) and euro, all quoted in US dollar rates, during a period of about eight years – January 1st 1999. The datasource is represented by European Central Bank site.

All the series presented unit root. Therefore, it was necessary to transform them into log-differences

$$X_t = (\ln((S_t)/(S_{t-1}))) \times 100$$

Where S_t represents the spot exchange rate.

Exchange rate volatility was approached within the generallized autoregressive conditional heteroskedasticity models (GARCH) framework elaborated by Engle and Bollerslev (1986) precisely in order to reflect the volatility clustering specifing to financial time series.

This model is depicted by the following equations

$$X_t = a_0 + a_1 \times x_{t-1} + \varepsilon_t + b_1 \times \varepsilon_{t-1}, \qquad \varepsilon_t / I_{t-1} \square\square N(0, h_t^2), \tag{1}$$

$$h_t^2 = q_t + \alpha_1 \times (\varepsilon_{t-1}^2 - q_{t-1}) + \gamma \times (\varepsilon_{t-1}^2 - q_{t-1}) \times D_{t-1} + \beta_1 \times (h_{t-1}^2 - q_{t-1}) \tag{2}$$

$$q_t = \omega + \rho \times q_{t-1} + \varphi \times (\varepsilon_{t-1}^2 - h_{t-1}^2), \tag{3}$$

where $D_t = 1$ for ε_t inferior to 0, $D_t = 0$ otherwise.

The first equation represents the mean equation, where x_t is the log-difference.

The term ε_t is supposed to be conditionally normally distributed, being dependent on past information and capturing any unexpected appreciation or depreciation.

The second and third equation reflect conditional variance (h_t^2) which is conceived as a linear function of a time-dependent intercept, the lag in the squared realized residuals (ARCH term), an asymmetric term (γ) and the lagged conditional variance (GARCH term).

This paper valorizes Component-GARCH (CGARCH) model, which breaks down volatility by two components, a permanent and a transitory one. Permanent volatility component consists of a time-invariant permanent level (ω), an AR term (ρ) and the forecasted error (φ).

The short term volatility component is obtained by the substraction of the long term volatility out of the total volatility, meaning

$$h_t^2 - q_t = \alpha_1 \times (\varepsilon_{t-1}^2 - q_{t-1}) + \gamma \times (\varepsilon_{t-1}^2 - q_{t-1}) \times D_{t-1} + \beta_1 \times (h_{t-1}^2 - q_{t-1}) \tag{4}$$

The forecasted error (φ) represents the difference between the lag in the squared realized residual and the forectast from the model (based on information available at time t-2). Engle and Lee (1993) reveal that CGARCH represents a GARCH (2,2) model, being less restrictive than a GARCH (1,1) model.

The two volatility components are extracted by the intermediary of the CGARCH setup. Once interpreted the equation statistic output, the focus will be oriented towards the analysis of the volatility components by the intermediary of the Descriptive Statistics and PCA. These preliminary findings will serve as basis for spillover phenomenon explanation in order to point out financial contagion implications in the context of the actual financial crisis.

Section 3. Empirical approach on volatility components at the level of the CEE countries

Assymetric C-GARCH model has been valorized in order to estimate the two components of the volatility – long-run and transitory one (Table 1). As for all the countries, coefficients corresponding to the long-run component are higher than the ones associated with the transitory component, which is in line with the findings of Pramor and Tamirisa (2006). Moreover, all the coeficients corresponding to the long-term component are significant in all the cases at 1%, reflecting the stability and appropriateness of the model to CEE countries.

Statistic output corresponding to the Assymetric CGARCH equation

Table 1

		Croatia	Czech	Hungaria	Latvia	Romania	Poland	Slovakia
Intercept	ω	0.014733* (22.44875)	0.116980* (56.45521)	0.236413* (33.96697)	0.011840* (44.73832)	0.288622* (26.68601)	0.165118 (0.786221)	0.104709* (62.69708)
Permanent	ρ	0.773090* (15.49850)	0.750277* (4.160574)	0.869515* (27.22296)	0.870551* (32.12386)	0.912907* (6.065624)	0.941526* (13.00412)	-0.714573* (-13.82663)
ARCH term	α	0.242090* (7.218774)	0.032940*** (2.105776)	0.108012* (5.804890)	0.152247* (8.268688)	0.005797 (0.029738)	0.135983* (261.8737)	-0.289354* (-4.970219)
Asymmetric term	Ψ	-0.243340* (-9.062694)	-0.007151 (-1.018294)	-0.102255* (-6.399910)	-0.021698* (-3.159737)	-0.004208 (-0.021745)	-0.141546*** (-0.996631)	0.273689* (4.657455)
Garch term	β	0.523997* (46.09787)	-0.624951* (2.561961)	0.758677* (127.3504)	0.460098* (5.555219)	0.906420 (1.036677)	0.801802* (104.1541)	-0.452523* (-5.229175)
Error term	ξ	-0.007189** (-0.341343)	- 0.036608*** (-2.121822)	-0.013946 (- 1.789824)	-0.125405* (-6.491054)	0.004182 (0.227202)	-0.011251 (- 0.996631)	0.057976* (6.084074)
	α + β	0,766087	-0,592011	0,866689	0,612345	0,912217	0,937785	-0,74188

Source: own processing.
*Significant at 1%.
**Significant at 10%.
***Significant at 5%.

In opposition with Pramor and Tamirisia (2006), the coefficients corresponding to the error term are in most of the cases negative, suggesting a lower shock impact on the permanent component of the volatility. This can be explained by the fact that the actual database was extended also at the level of 2006, 2007 and 2008, where East Europen countries had a stabilized macroeconomic environment, characterized by national currency appreciation. Thus, transitory dimension of shocks is obvious. Owing to a more stabilized macro environment, characterized by economic growth which is specific to the catching up process, shocks are absorbed rapidly.

The only exceptions consist of Romania and Slovakia where coefficients corresponding to the error term are positive, suggesting shocks of long term nature.

Permanent component coefficients are positive and higher than the ones corresponding to the transitory component, reflecting the fact that permanent volatility component is stronger than the short term one. Thus, volatility in CEE countries is definitely of long term nature.

Czech and Slovakia have a negative short term component (α + β inferior to 1), confirming the long term nature of shocks (especially for Slovakia).

The assymetric term is negative and significant (especially for Croatia, Hungary, Latvia and Slovakia), suggesting higher volatility in case of currency depreciation. Romania and Czech are the only countries where assymetric coefficient is non-significant, which is in line with the strong currency appreciation recorded during the four years.

Descriptive Statistics corresponding to the short-term component volatility

Table 2

	STCROATIA	STCZECH	STHUNG	STLATVIA	STPOLISH	STROM	STSK
Mean	-0,164613	0,037357	-0,295406	0,299832	0,21619	-0,05278	-0,13538
Median	-0,263395	0,116564	-0,27942	0,500037	0,277694	-0,03051	0,011205
Maximum	0,766087	0,559058	0,281371	0,753519	0,670572	0,912217	0,170413
Minimum	-0,961888	-0,983577	-0,749354	-0,57092	-0,75185	-0,95718	-0,73435
Std. Dev.	0,725411	0,559039	0,423255	0,511396	0,525002	0,554345	0,421991

	STCROATIA	STCZECH	STHUNG	STLATVIA	STPOLISH	STROM	STSK
Skewness	0,245593	-1.029	0,107102	-0,81253	-0,83327	0,154822	-0,83413
Kurtosis	1.435	2.969	1.385	2.112	2.580	3.172	2.020
Jarque-Bera	0,784078	1.059	0,773521	1.000	0,861468	0,036648	0,623744
Probability	0,675678	0,588735	0,679254	0,606494	0,650032	0,981843	0,732075
Sum	-1.152	0,22414	-2.067	2.098	1.513	-0,36946	-0,54153
Sum Sq. Dev.	3.157	1.567	1.074	1.569	1.653	1.843	0,53423

Source: own processing.
* ST = transitory volatility component

Analysis at the level of the descriptive statistics corresponding to the volatility components reveal important aspects, generally in line with the findings of the CGARCH estimates.

In all the cases, the mean corresponding to the short term component is lower than the mean corresponding to the long-term one, confirming the superior magnitude of the long-term component in comparison with the short-term one. The highest short term mean is recorded in case of Latvia while the lowest one belongs to Hungary.

As for the long-term component, the highest mean is recorded in Poland case while the lowest one in case of Hungary.

The same idea is supported by the maximum values of the long-term component which exceed the maximum values of the transitory one while the minimum values of the transitory component outperform the minimum values of the long term one. The highest short term component is encountered in Romania case while the lowest one is encountered in Czech case.

The highest long-term component has been recorded in case of Hungary followed up by Czech and Slovakia while the lowest one has been recorded in case of Croatia.

The transitory component appears to be more volatile than the permanent one. The standard deviation associated with the transitory component outperforms the ones corresponding to the long term component.

The most volatile transitory component belongs to Croatia while the lowest one to Hungary.

As for the long term component, Hungary appears to be the most volatile while Poland is the lowest one.

Romania holds a medium position in terms of transitory component volatility and almost the first position in terms of low long term volatility.

Descriptive Statistics corresponding to the-long term component volatility

Table 3

	LTCROATIA	LTCZECH	LTHUNG	LTLATVIA	LTPOLISH	LTROM	LTSK
Mean	0,595326	0,54517	0,365602	0,566276	0,839465	0,751994	0,782979
Median	0,716468	0,621277	0,642258	0,522935	0,892033	0,912907	0,809592
Maximum	0,876005	0,992707	0,99521	0,919432	0,943128	0,954318	0,982267
Minimum	-0,086171	-0,08855	-0,74074	0,057518	0,696164	0,200886	0,530466
Std. Dev.	0,321909	0,398798	0,681652	0,316859	0,11471	0,293121	0,213833
Skewness	-1.537	-0,51799	-0,72142	-0,362874	-0,27216	-1.148	-0,21932
Kurtosis	4.049	2.039	1.916	1.893.	1.208	2.684	1.339
Jarque-Bera	3.077	0,499079	0,949453	0,510922	1.022	1.567	0,491501
Probability	0,214633	0,77916	0,622055	0,774559	0,599671	0,456635	0,782117
Sum	4.167	3.271	2.559	3.963	5.876	5.263	3.131
Sum Sq. Dev.	0,621753	0,795199	2,787	0,602399	0,078951	0,515519	0,137174

Source: own processing.
* LT = long term volatility component

Leptokurtosis appeared in the case of Romanian short term and Croatian long term component. The long term component is negatively skewed at the level of the whole sample, reflecting that on long term, CEE currencies followed up an appreciation pathway.

The transitory trend is right skewed at the level of Croatia, Romania and Hungary currencies, suggesting that on short term the tendency was a depreciating one. These currencies have the highest standard deviations in terms of transitory component which is in line with the ideas depicted by Guimares and Karacadag (2004) who pointed out that in case of Mexico and Turkey a higher volatility is associated with an exchange rate depreciation.

Section 4. Spillover phenomenon at the level of the CEE countries

The connection between CEE currencies and EURO area volatility has been analyzed in order to reveal spillover phenomenon. The correlation has been analyzed at a bi-dimensional approach. There have been revealed both CEE currencies intercorrelations and EUR and CEE currencies correlations.

CEE currencies short term volatility pairwise correlation

Table 4

	EUR	STCROATIA	STCZECH	STHUNG	STLATVIA	STLEU	STPOLISH	STSK
EUR	1	0.997340052852	0.539039468651	-0.636923969585	-0.17001819704	-0.62322278348	0.655777724783	0.789874805398
STCROATIA	0.997340052852	1	0.5989987091	-0.691421922992	-0.24139384661	-0.56456254544	0.709061299964	0.743073226636
STCZECH	0.539039468651	0.5989987091	1	-0.99266362386	-0.92166419809	0.322759031245	0.98937313237	-0.090770090476
STHUNG	-0.636923969585	-0.691421922992	-0.99266362386	1	0.867991307189	-0.20595327845	-0.99969470598	-0.030305473204
STLATVIA	-0.170018197048	-0.241393846618	-0.921664198096	0.867991307189	1	-0.66469929003	-0.8554567349	0.470046415744
STLEU	-0.623222783485	-0.564562545446	0.322759031245	-0.205953278453	-0.66469929003	1	0.181711907052	-0.971870844896
STPOLISH	0.655777724783	0.709061299964	0.98937313237	-0.999694705981	-0.8554567349	0.181711907052	1	0.0549930659012
STSK	0.789874805398	0.743073226636	-0.0907700904764	-0.0303054732043	0.470046415744	-0.97187084489	0.054993065901	1

Source: own processing.

At the level of the transitory component, Euro is positevely correlated to a high extent with the Croatian, Czech and Polish currencies and negatively with Hungarian and Romanian currencies.

CEE currencies long term volatility pairwise correlation

Table 5

	EUR	LTCROATIA	LTCZECH	LTHUNG	LTLATVIA	LTLEU	LTPOLISH	LTSK
EUR	1	-0.44310415145	0.168138927961	0.158288188656	-0.45334451221	-0.78883627862	0.23996954416	-0.448974311838
LTCROATIA	-0.44310415145	1	-0.057331878473	0.484994354989	0.201367094573	0.753492691312	0.040056480733	0.650984981569
LTCZECH	0.168138927961	-0.057331878473	1	-0.0102133291389	-0.06546242544	-0.32830756516	0.054183739882	0.0936438430876
LTHUNG	0.158288188656	0.484994354989	-0.0102133291389	1	-0.18186274749	0.23626431878	0.146467788817	0.558384858667
LTLATVIA	-0.45334451221	0.201367094573	-0.0654624254466	-0.181862747496	1	0.895647293122	-0.709331024995	-0.769114430541
LTLEU	-0.788836278621	0.753492691312	-0.328307565167	0.23626431878	0.895647293122	1	-0.091591644236	0.510867429462
LTPOLISH	0.23996954416	0.0400564807339	0.0541837398828	0.146467788817	-0.70933102499	-0.09159164423	1	0.089533953
LTSK	-0.448974311838	0.650984981569	0.0936438430876	0.558384858667	-0.76911443054	0.510867429462	0.710562142946	1

Source: own processing.

Negative correlation of a lower magnitude has been remarked between EUR and Latvian currency.

The magnitude of the long term correlation between EUR and CEE currencies is definitely lower in comparison with the one corresponding to the transitory component. The average correlation between CEE currencies and EUR at the transitory component level amounts to 60% while for the long term component it slightly exceeds 20% which is consistent with Parmor and Tamirisia findings (2006) who pointed out that correlation between EUR and CEE countries is definitely lower than the one established between developed countries and EUR revealed by Black and McMillan ever since 2004.

Romanian currency is positevely correlated with the Czech and Polish currencies and negatively with the Hungarian and Slovakian currencies. Croatian currency is positevely correlated with Czech, Polish and Slovakian currencies and negatively with the Hungarian and Romanian currencies.

Hungarian currency is negatively correlated to a high extent with the Czech and Polish currencies and positevely with the Latvian currency which is strongly correlated in a negative manner with the Czech currency. Positive correlations of a lower magnitude are remarked between Latvian currency and Polish and Romanian currencies.

As for the permanent volatility component, there is a negative correlation of about 45% between EUR and a group of countries formed by Croatia, Latvia and Slovakia while the positive one includes EUR and a group formed by Czech, Hungary and Poland.

Slovakia is slowly correlated in a negative manner with Hungary, Poland and Czech while Croatia is positevely correlated with Romania, Slovakia and Poland.

Latvia is negatively correlated to a high extent with Poland and Slovakia and to a low extent with Czech. A high positive correlation has been established also between Latvian and Romanian currency.

Hungary is positively correlated with Slovakia and Croatia and negatively with Czech and Latvia.

Slovakia is slowly correlated in a positive manner with Czech while Romanian currency is positevely correlated at about 51% with Slovakia. Negative low correlation includes Polish, Czech and Romanian currencies.

In order to refine the perspective on the CEE currencies and EUR volatility, there has been performed the Principal Component Analysis both at the level of the transitory and long term component.

PCA applied to CEE currencies and EUR short term volatility

Table 6

	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6	Comp 7	Comp 8
Eigenvalue	2,82	1,62	0,94	0,74	0,67	0,58	0,48	0,19
Variance Prop	68%	18%	15%	9%	7%	6%	4%	2%
Cumulative Pr	68%	57%	78%	83%	92%	94%	98%	100%

Eigenvectors:

Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6	Vector 7	Vector 8
EUR	0.829900	0.108609	-0.336670	0.087289	0,138734	-0,888868	-0,340768	-0,014615
STCROATIA	0.436968	-0.010555	0.232196	-0.081051	0,109787	-0,407652	0,877351	0,114779
STCZECH	0.065667	-0.190828	-0.004905	0.133247	0,130198	0,063394	0,011428	0,732568
STHUNG	-0.049137	0.111495	0.045997	-0.127780	0,182898	0,188293	0,298836	-0,100574
STLATVIA	-0.068494	0.614238	0.352347	-0.412348	-0,197843	-0,111521	0,665874	0,277895
STLEU	-0.138280	-0.418823	-0.513607	-0.635387	0,118783	-0,024465	-0,102296	0,145534
STPOLISH	0.249684	-0.539206	0.644583	-0.328808	0,409896	0,022795	-0,112867	0,641433
STSK	0.165662	0.309519	-0.164840	-0.519487	0,131786	-0,056055	0,038668	0,084999

Source: own processing.

The transitory dimension of the volatility reveals out on the first component a bipolar structure formed by two groups which include on one hand EUR, Croatia, Poland, Slovakia and Czech currencies in line with Kobor and Szekely (2004) findings, and on the other hand Hungary, Latvia and Romania currencies. The weights corresponding to the second group are more homogenously distributed.

On the second component, Latvia outperforms the other countries, pointing out that latvian currency reacts differently to shocks. On the third, fifth and eighth component this position is held by Poland and on the seventh component by Croatia.

PCA applied to CEE currencies and EUR long term volatility

Table 7

	Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	Comp 6	Comp 7	Comp 8
Eigenvalue	4.5	3.6	2.7	0.8	0.69	0.43	0.36	0.22
Variance Prop	41%	23%	20%	17%	15%	11%	9%	4%
Cumulative Pr	41%	53%	79%	83%	85%	89%	95%	100%
Eigenvectors:								
Variable	Vector 1	Vector 2	Vector 3	Vector 4	Vector 5	Vector 6	Vector 7	Vector 8
EUR	-0.189392	-0.101708	0.725403	T-0.19316	0.517253	-0.331633	0.161567	0.154728
LTCROATIA	-0.171050	-0.354392	-0.301986	T-0.06016	0.583162	0.524350	0.321755	-0.188162
LTCZECH	0.167097	0.355359	-0.087907	T-0.05018	0.528944	0.149404	-0.716488	0.150375
LTHUNG	-0.401596	-0.541600	0.076670	0.027618	-0.125712	-0.111181	-0.576477	-0.423110
LTLATVIA	-0.293037	-0.062590	-0.602761	T-0.043416	0.208673	-0.647690	0.053297	0.284610
LTLEU	-0.324567	T-0.06751	0.076511	0.08743	0.075231	0.055699	T-0.19674	T-0.01456
LTPOLISH	0.779902	-0.576647	-0.039600	T-0.12818	0.092286	-0.196320	-0.053611	0.087924
LTSK	0.227055	0.328652	-0.064024	T-0.34516	0.211481	-0.349785	0.137751	-0.806403

Source: own processing.

Regarding the long term component of the volatility, PCA reveals out the same bipolar structure on the first component, but with more closely distributed weights. In line with Kobor and Szekely (2005), CEE currencies volatility tends to follow up a similar pathway on long term.

On the fourth component, Romanian currency acts differently in comparison with the other currencies. The fifth and eighth component reveal out a very homogenous distribution of the weights values. On the seventh component, similar patterns are shown by Czech and Hungarian currencies on one hand, and by Romanian and Polish currencies on the other hand, consistent with Borghijs and Kuijs (2004) conclusions.

As Kobor and Szekely (2004) point out, Hungarian forint proved to be very volatile, mainly explained by the speculative attack in 2003.

In order to get a more profound perspective on the CEE intraregional spillover phenomenon, we reestimate the CGARCH model using in the equation for the permanent component of the volatility for a country the lagged estimated permanent components for the other countries.

$$r_{RO,t} = c \cdot \sigma^2_{RO,t} + \varepsilon_{RO,t}, \text{ with } \varepsilon_{RO,t} / I_{t-1} \sim N(0, \sigma^2_{RO;t})$$

$$\sigma^2_{RO,t} = q_t + a_1 \cdot (\varepsilon^2_{RO,t-1} - q_{RO,t-1}) + a_2 \cdot (\sigma^2_{RO,t-1} - q_{RO,t-1}) + a_3 \cdot (\varepsilon^2_{RO,t-1} - q_{RO;t-1}) \cdot D_{RO,t-1}$$

$$q_{RO,t} = \omega + b_1 \cdot (q_{RO,t-1} - \omega) + b_2 \cdot (\varepsilon^2_{RO,t-1} - \sigma^2_{RO,t-1}) + b_3 \cdot q_{j,t-1}$$

Statistic output pointed out that Hungary and Slovakia can be figured out as two important sources of spillover. The most significant volatility spillover effect are conceived from Croat, Romania, Poland and Slovakia to Hungary and from Hungary, Latvia and Romania to Slovakia.

Spillover effects from CEE countries to Hungary

Table 8

From country i to Hungary	Coefficient b3	Standard error	Z-statistic	Prob.
Romania	0.040805	0.017097	2.386.723	0.0170
Poland	0.040805	0.017097	2.386.723	0.0170

Source: own processing.

Other significant spillover effects are conceived from Croat to Czech and from Slovakia to Poland, confirming the strong link between these currencies.

Weaker spillover phenomenons are figured out from Czech to Romania and from Slovakia to Czech in line with the PCA and pairwise correlation findings.

Spillover effects from CEE countries to Slovakia

Table 9

From country i to Slovakia	Coefficient b3	Standard error	Z-statistic	Prob.
Poland	0.040860	0.005803	7.040.928	0.0000
Latvia	0.095144	0.015205	6.257.244	0.0000
Romania	0.040860	0.005803	7.040.928	0.0000
EURO zone	0.00270	0.004083	6.129.313	0.0000

Source: own processing.

HUF and CZK have similar long term volatility component, being driven by common shock factors. The strong spillover effects reflect a higher degree of CEE currency markets integration, with a negative impact on liquidity. Contrary to previous research (Horvath, 2005, Fidrmuc and Korhonen, 2004), PLN is outperformed by HUF and CZK in terms of spillover magnitude. The direction of the spillover effect figures out both currencies not only as spillover originators, but also as important shock absorbers, confirming the increasing financial flows between them and the other CEE countries.

The spillover phenomenon has been analyzed also at the level of the CEE currencies-EUR interactions. The most significant spillover phenomenon has been remarked from EUR to HUF confirming the fact that HUF is the leading currency in the region from the perspective of the spillover phenomenon, being highly correlated not only with the other CEE currencies, but also with the EUR.

Since at the intra-regional level, HUF has the highest magnitude in terms of spillover effect, we can conclude that the spillover at the level of the CEE currencies – EUR is indirect, from the perspective of the transmission mechanism. HUF being highly linked to all currencies, acts as a belt transmission of volatility impulses from EUR to the other CEE currencies.

These findings are highly meaningful in the context of the actual financial crises where countries are deeply interrelated through the financial flows globalization. Even if opinions regarding a potential crises contagion effect from the developed to the emerging countries have been quite contradictory, many of them arguing that emerging countries are decorrelated with the developed ones and crises effects will not affect them, there have been remarked various impacts of the recent financial crisis at the level of the CEE countries, especially from the perspective of exchange rate depreciation. This impact is strengthened precisely by the spillover phenomenon for which our research results delivers very interesting assumptions such as HUF conception as a leading spillover pole within CEE area since it assimilates, stores and transmits volatility impulses.

Section 5. Conclusions

This paper focused on CEE countries volatility captured by exchange rate dynamic. The spillover phenomenon has been analyzed from the perspective of the actual financial crisis where cross-border capital flows strenghthened the premises of the financial contagion. Volatility has been approached bi-dimensionally, from the perspective of the permanent and transitory dimensions.

Permanent component coefficients were positive and higher than the ones corresponding to the transitory component, reflecting the fact that permanent volatility component is stronger than the short term one. Thus, volatility in CEE countries is definitely of long term nature, transitory dimension of shocks being obvious. Owing to a more stabilized macro environment, characterized by economic growth which is specific to the catching up process, shocks are absorbed rapidly. The only exceptions consist of Romania

and Slovakia where coefficients corresponding to the error term are positive, suggesting shocks of long term nature. Therefore, we concluded that there is a certain degree of pecularity in terms of shock reaction.

The transitory component appears to be more volatile than the permanent one. The standard deviation associated with the transitory component outperforms the ones corresponding to the long term component. The most volatile transitory component belongs to Croatia while the lowest one to Hungary.

As for the long term component, Hungary appears to be the most volatile while Poland is the lowest one. Romania holds a medium position in terms of transitory component volatility and almost the first position in terms of low long term volatility.

HUF and CZK have similar long term volatility component, being driven by common shock factors. The strong spillover effects reflect a higher degree of CEE currency markets integration, with a negative impact on liquidity. Contrary to previous research (Horvath, 2005, Fidrmuc and Korhonen, 2004), PLN is outperformed by HUF and CZK in terms of spillover magnitude. The direction of the spillover effect figures out both currencies not only as spillover originators, but also as important shock absorbers, confirming the increasing financial flows between them and the other CEE countries.

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Therefore, it is necessary to develop strong financial management strategies at the macroeconomic level, capable of annihilating transmision belt crisis mechanisms.

The conclusions of this paper must be interpreted in the context of the approached pairwise correlations. For the period so far, there have not been remarked important structural breaking points. Therefore, analysis has not been developed at the sub-period level and this might be construed as a limitation. Future research will keen especially on the last years - 2007 and 2008-in order to capture the effects of the financial crisis on the CEE volatility.

References

Aghion, P., Bachetta, P., Ranciere, R., Rogoff, K., „Productivity Growth and the Exchange Rate Regime: the Role of Financial Development", *NBER Working Paper 12117,* 2005

Bauwens, L., Sébastien L., Rombouts, J.V.K., „Multivariate GARCH Models: A Survey," Center for Operations Research and Econometrics, *Discussion Paper,* 2003/31 (Louvain-La-Neuve: Center for Operations Research and Econometrics), 2003

Beveridge, S., Nelson, Ch.R., „A New Approach to Decomposition of Economic Time Series into Permanent and Transitory Components with Particular Attention to Measurement of the 'Business Cycle'," *Journal of Monetary Economics*, Vol. 7, 1981, pp. 151–174

Black, Angela, J., McMillan, D.G., „Long-Run Trends and Volatility Spillovers in Daily Exchange Rates," *Applied Financial Economics,* Vol. 14, 2004, pp. 895-907

Bollerslev, T., „Generalized Autoregressive Conditional Heteroskedasticity," *Journal of Econometrics,* Vol. 31, 1986, pp. 307-27

Bollerslev, T., „Modelling the Coherence in Short-Run Nominal Exchange Rates: A Multivariate Generalized ARCH Model," *Review of Economics and Statistics,* Vol. 72, No. 3, 1990, pp. 498-505

Bollerslev, T., Wooldridge, J.M., „Quasi-Maximum Likelihood Estimation and Inference in Dynamic Models with Time-Varying Covariances," *Econometric Reviews,* Vol. 11, No. 2, 1992, pp. 143-72

Borghijs, A. Kuijs, L., „Exchange Rates in Central Europe: A Blessing or a Curse?," *IMF Working Paper 04/2* (Washington: International Monetary Fund), 2004

Byrne, J.P., Davis, E.P., „The Impact of Short- and Long-Run Exchange Rate Uncertainty on Investment: A Panel Study of Industrial Countries," *Oxford Bulletin of Economics and Statistics*, Vol. 67, No. 3, 2005, pp. 307-29

De Grauwe, P., Schnabl, G., „Exchange Rate Regime and Macroeconomic Performance in Central and Eastern Europe", *CESifo Working Paper* 1182, 2005

Dungey, M., Fry, R., González-Hermosillo, Brenda, Martin V., „Empirical Modeling of Contagion: A Review of Methodologies," *IMF Working Paper 04/78* (Washington: International Monetary Fund), 2004

Engle, R.F., „Autoregressive Conditional Heteroscedasticity with Estimates for the Variance of United Kingdom Inflation," *Econometrica*, Vol. 50, No. 4, 1982, pp. 987–1008

Fidrmuc, J., Korhonen, Iikka, „A Meta-Analysis of Business Cycle Correlation between the Euro Area and CEECs: What Do We Know-And Who Cares?", *BOFIT Discussion Paper No. 20,* Bank of Finland, BOFIT—Institute for Economies in Transition, 2004

Guimarães, R.F., Karacadag C., „The Empirics of Foreign Exchange Intervention in Emerging Market Countries: The Cases of Mexico and Turkey," *IMF Working Paper No. 04/123* (Washington: International Monetary Fund), 2004

Harvey, A., Ruiz, E., Shephard, N., „Multivariate Stochastic Variance Models," *Review of Economic Studies,* Vol. 60, 1994, pp. 99–111

Horváth, R., „Exchange Rate Variability, Pressures and Optimum Currency Area Criteria: Implications for the Central and Eastern European Countries," *CNB Working Paper No. 8* (Czech Republic: Czech National Bank), 2005

Klaassen, F., „Have Exchange Rates Become More Closely Tied? Evidence from a New Multivariate GARCH Model," *Discussion Paper* No. 9910, Tilburg University Centre for Economic Research, 1999

Kóbor, Á., Székely I., „Foreign Exchange Market Volatility in EU Accession Countries in the Run-Up to Euro Adoption: Weathering Uncharted Waters," *IMF Working Paper 04/16* (Washington: International Monetary Fund), 2004

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TESTING THE SEMI-STRONG FORM OF THE EFFICIENT MARKET HYPOTHESIS ON PUBLIC OFFERS FOR ACQUISITION/TAKEOVER IN THE PHARMACEUTICAL AND THE ALUMINIUM SECTORS OF THE ROMANIAN CAPITAL MARKET

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Abstract. *The efficiency of the capital market is one of the most studied hypotheses, having an important impact, both in financial modelling and real economy. The research paper is focused on the announcements for acquisitions and takeover public offers for companies acting in the pharmaceutical and the aluminium sectors listed on the Romanian capital market. After testing the semi-strong form of the efficient market hypothesis in Romania, using the event studies technique for these announcements, the result was that the capital market in Romania is inefficient.*

Keywords: efficiency; event studies; announcement; capital market; public offer.

JEL Classification: G14, G34.

The present research paper has as objective to study how the public available information is reflected in stock prices. In order to achieve this we focused on the announcements, issued during the period 2003 - June 2008, of public offers for acquisition or takeover for companies listed on the Romanian capital market and acting in the pharmaceutical and aluminium sectors.

The pharmaceutical and the aluminium sectors are represented on the BSE and RASDAQ by former state companies included in the Mass Privatization Program, companies which afterwards have been taken over by private investors (with the exception of Antibiotice SA). During January 2003 - June 2008, we note that the majority of the analyzed companies have undergone changes in the shareholders' structure, some of which being achieved through the capital market mechanisms. Table 1 from Annex 1 centralizes the acquisition and takeover public offers that have targeted, in the analyzed period, the issuers of the pharmaceutical and aluminium sectors. It has to be noted that the issuers on the Romanian capital market in the targeted sectors were also included in mergers started during the studied period but these operations have not been included in our analysis because in these cases we could not establish clearly the event dates. The interests of shareholders and mergers/ acquisitions operations have imposed for certain issuers from the analyzed sectors the delisting (one of the most known example is the retirement from transaction of Terapia SA, which had the last trading day on BSE on October 10th 2003).

Since many of the existing financial models are based on the assumption of an efficient capital market, the validation of this concept is an interesting area of study for any capital market, whether developed or emergent (Dragotă, Mitrică, 2004, p. 353). An efficient capital market is the market in which share prices are adjusted quickly to the arrival of new information and, consequently, their prices reflect all information about them. Such a market is described as an informational efficient market.

The concept of efficient capital market has been developed for the first time in an article written by Fama (1970) in which he attempted to formalize the theory and to organize the growing empirical evidence. Fama has divided efficient market hypothesis and empirical

tests of the hypothesis in three sub-hypothesis depending on the set of information involved (Reilly, Brown, 2005, p. 64):

1) The hypothesis of weak form efficient market assumes that prices of shares fully reflect all information related to the market, including historical prices, rates of return, data on the volume of trading and other information generated by the market.

2) The semi-strong hypothesis argues that stock prices adjust quickly to the issue of any public information, i.e. prices of securities fully reflect all public information. This form of the hypothesis incorporates also the weak form of hypothesis because all the information available in the market taken into account is public. In addition to this information, it is considered public information all the information that does not come from the market, such as news on profits and dividends, stock splits, news on the economy, political news, those on corporate events etc.

3) The strong hypothesis contends the assumption that the stock prices reflect all information from the public and private sources. It includes, both public information considered by the weak hypothesis and the semi-strong assumption, and the private information which are normally available to insiders.

There are many studies that tested the informational efficiency of the Romanian capital market. Dragotă, Căruntu and Stoian (2006) included in the relevant literature regarding efficient market hypothesis on the Romanian capital market the following studies (2006, pp. 8- 9):

1. Dragotă and Mitrică (2001, 2004) analyzed the evolution of six stocks traded on the first tier of BSE, that have had the best liquidity during one year and a half, respectively two years and a half (April 9th 1998 – October 10th 2000), using serial correlation tests, stationarity tests, normal distribution evidence and filter rules. The authors arrived to the conclusion that stock's return follow a random walk but they expressed their doubts regarding the informational efficiency. Romanian capital market is not efficient in the weak form due to the lack of liquidity.

2. Dragotă, Dămian and Stoian (2002) studied the evolution of 18 stocks listed on the first tier of BSE and of Romanian capital market indexes, during April 1st 1997 – July 1st 2002, with the help of serial correlation tests and normal distribution evidence and concluded that Romanian capital market is inefficient in the weak form.

3. Dragotă, Dragotă and Stoian (2004) analyzed stocks, listed on Romanian capital market, during 1993-2003, applying the event study technique and noticed relative rapid adjustments of the stocks' price to new information regarding the dividends paid or equity incorporation. As it will be seen, in the framework of the present study we noticed that the adjustments to new information are not so rapid.

4. Dumitru and Bucşa (2004) studied a sample composed from capital market indexes using stationarity tests and normal distribution evidence and established that the random walk hypothesis is rejected for BSE indexes but they identified evidence for an increasing efficiency of the Romanian capital market along with institional frame and the openess of the Romanian economy to the foreign investors.

Dragotă, Căruntu and Stoian (2006) remarked that, according to the relevant literature they had identified, there is no clear evidence for informational efficiency on Romanian capital market. Taking into account a significant and persistent difference between price and an intrinsic value for some stocks (there has been studied the differences between SIF's market capitalizations at the end of the year during 2002 – 2005 and the intrinsic values of these companies), the authors arrived at the conclusion that Romanian capital market could be inefficient.

Harrison and Paton (2004) examined the evolution of stock market efficiency on BSE from mid-1997 to September 2002 and, with the help of a GARCH model, they found evidence of inefficiency on BSE in that the lagged stock price index is a significant predictor of the current price index. According to the before mentioned authors, the level of

inefficiency appears to be diminishing over time, finding after January 2000 evidence for stock market efficiency.

Another study that had as object the weak form of efficient market hypothesis on Romanian capital market is the one realized by Dima, Barna and Pirtea (2007). They focused on the financial sector of the market reflected by BET-FI index from October 31st 2000 to October 12th 2007 and concluded that this sector can be described "up to a point" as informational efficient (in the weak form of the concept), but that the assembly of the weak form characteristics does not totally respect the requests imposed by such a characterization (Dima, Barna, Pirtea, 2007, p. 9).

Pele and Voineagu (2008) used daily data regarding the BET index for the period September 19th 1997 – January 9th 2007 in the framework of a model for decomposing the stocks return in two components (an autoregressive process and a stationary zero mean process), their conclusion being that it cannot be rejected the weak form of the efficient market hypothesis. In the same study, it is mentioned the conclusion at which Dragotă, Stoian, Pele, Mitrică and Bensafta (2007) reached analyzing the daily and weekly returns of 22 stocks and market indexes, that the stocks' prices follow a random walk so efficient market hypothesis cannot be rejected.

Analysing the before mentioned studies it can be observed that there is not a clear conclusion regarding the existence of the weak form of the efficient market hypothesis on the Romanian capital market. The last study presented, which is the most recent, contains evidence according to that the weak form of the efficient market hypothesis cannot be rejected, in this way being confirmed the trendtoward the informational efficiency of the Romanian capital market, announced by Harrison and Paton (2005) and Dumitru and Bucşa (2004).

The studies that have tested the semi-strong form of an efficient capital market hypothesis, within this study registers, are divided into two categories (Reilly, Brown, 2005, pp. 67- 68):

1) Studies which predict future rates of return using public information available outside of pure market information considered in tests on the weak form of the hypothesis. These studies are based on the idea that it is not possible to predict future returns using past returns or predict the future distribution of returns using public information.

2) Event studies which examine the speed with which stock prices are adjusted to specific economic events. An approach on the same line would be testing the potential to experience abnormal rates of return with investments made in stocks after the public announcement of a significant event. Those who support the hypothesis of efficient capital market would expect stock prices to adjust quickly so not being possible for investors to experiment superior risk-adjusted returns by investing after the announcement of a public event and paying the cost of trading.

The semi-strong form of efficient capital market hypothesis was almost unanimously confirmed by numerous event studies conducted on a series of events including stock splits, initial public offerings, events in the world and economic news, accounting changes and a variety of financial corporate events. Almost the only mixed results from studies come from the listings on the stock exchange (Reilly, Brown, 2005, p. 78).

Studies which have focused on corporate events (such as mergers and acquisitions, reorganizations, and various offers of securities) have examined two general issues (Reilly, Brown, 2005, p. 78):

1) the impact on the market of these alternative events, discovering the fact that stock prices react as one might expect based on the underlying economic impact of the action (e.g. response to mergers is that the stock of the company which will be bought increase in line with the premium offered by buyer, while the buyer usually registers a decrease in value due to the general concern regarding the paid price);

2) the speed with which the market adjusts the prices of securities, which is a fairly rapid adjustment, in the sense that the adjustment period declines as shorter interval data is analyzed (using daily data, most studies have concluded that the price adjustment is completed in about three days).

The empirical research that we conducted has as objective testing of the semi-strong form of the efficient market hypothesis in Romania. To achieve our purpose we used the event study(1) technique to analyze the effect of acquisition and takeover public offers announcements that had as target companies, in the pharmaceutical and aluminium sectors, listed on the Romanian capital market. As can be seen in Table 1 of Annex 1 in the period under review, which is January 1st 2003 - June 31st 2008, we have identified 13 such offers.

For each announcement, we determined the event date. In most cases, the date of the event, which appears as the announcement date in Table 1 of Annex 1, was considered the date of approval by CNVM (National Securities Commission) of the purchase or takeover public offer or, if it could be identified, the date when CNVM advised the preliminary announcement for takeover public offer.(2)

The abnormal return was daily measured during the event window, which is composed of twenty market trading days before the event date, the event date, and twenty market trading days after the event, with a 41 total number of days. Abnormal return has been determined as the difference between the actual return and the normal return. By eliminating that part of the return which is due to the variation of the market return, the variance of the abnormal return is reduced. This causes an increased ability to detect the effects of events.

To calculate the normal return we have used the market model, a model which relates the return of any given stock with the return of the market portfolio. For any security i the market model is the following:

$$R_{it} = \alpha_i + \beta_i \times R_{mt} + \varepsilon_i \qquad (1)$$

$$E(\varepsilon_{it} = 0) \qquad var(\varepsilon_{it}) = \sigma^2_{\varepsilon i}$$

where R_{it} and R_{mt} are the returns of the t period on the security i and the market portfolio while ε_{it} is the zero mean disturbance term. α_i, β_i and $\sigma^2_{\varepsilon i}$ are the market model parameters. The abnormal return is the disturbance term of the market model calculated on an out of the sample basis.

The benefits resulting from the use of market model will depend on the R^2 of the market model regression. Unfortunately the regression models made in this study had levels of the before mentioned coefficient quite low, however higher for the BSE issuers (between 6.24% for ALRO SA and 23.98% for Sicomed SA for the second takeover offer) and lower for those listed on the RASDAQ (between 0.02% for Farmaceutice Remedia SA and 5. 41% for Centrofarm SA).(3)

The estimation period, where t got values for determining the parameters of the market model, is made up of 250 market trading days before the event window.(4) In the analysis done we took as approximation for the market portfolio the BET index in the case of shares listed on BSE and RASDAQ-C index for the shares listed on the RASDAQ market. The prices of shares used were the ones at closing and have been taken from www.intercapital.ro and, for the delisted issuers, the average prices have been extracted from www.vanguard.ro.(5)

Table 2 of Annex 2 collects the average abnormal returns (determined with the help of arithmetic mean) obtained for all events analyzed during the analyzed period, and separately for events involving companies listed on BSE and those involving companies listed on RASDAQ. It can be noticed that the announcements regarding the acquisition or takeover public offers for companies listed on BSE leads to increases of the prices for targeted companies' stocks, the average cumulative abnormal return for all announcements regarding

these companies being 8.17%, while in the case of the companies listed on the RASDAQ the effect is inverse, the average cumulative abnormal return is negative, -17.26%. Taking into account the main weight in the total sample of the RASDAQ listed companies too, it is normal the negative average cumulative abnormal return obtained for the entire sample, – 8.54%.

To determine if the announcement had an impact, at the level of every day of the event window, we conducted the t-test that has supposed the calculation of θ_1 statistic. Table 3, below shown, centralize the data of days in which the null hypothesis H_0, according to which the information had no impact, is rejected, as the t test indicates.

Statistics θ_1 in the days when the announcements had an impact

Table 3

Event Day	Total Sample (n=13)	BSE Sample (n=5)	RASDAQ Sample (n=8)	Event Day	Total Sample (n=12*)	BSE Sample (n=4*)	RASDAQ Sample (n=8)
-17		2.554		6			
-12	-2.029			11	-1.861	-2.490	
-6	2.068			19			-3.084**
-2	2.382**	2.261					
-1		-3.411					

Notes: * the sample is smaller with an observation beginning with the second day after the announcement day because beginning with the second day after the announcement of the second takeover offer for Terapia its stocks have not been traded anymore.

** the significance level is 5% (for the other values this is 10%).

The t test completion, with all the 13 announcements included in the studied sample for each of the 41 days of the event window, led to the determination of four days when the null hypothesis H_0, stating that the information had no impact, is strongly rejected. Price adjustment to reflect the new public information regarding the purchases and takeover public offers was carried out slowly (during 24 days), which exclude the existence of semi-strong form of the efficient market hypothesis.

If the analysis is restricted only to the announcements related to companies listed on BSE, there were obtained again four days in which the null hypothesis H_0 is rejected, and the analysis done only at the level of the companies listed on RASDAQ market led to one such day (the 19-th day after the announcement). These results back the conclusion resulted from the analysis at the level of the entire sample.

The majority of the days in which the announcements have impact on the market price are before the announcement day. This can indicate the fact that the information has arrived to some of the market participants before to be issued the announcements and that they have acted based on the new information.

The present study confirms the results of previous empirical research on the efficiency of the Romanian capital market which have demonstrated the lack of the weak form of the efficient market hypothesis implying also the lack of the of higher forms of market efficiency. It must be taken into account the fact that the number of the events included in the present study is relatively small and the explicative power of the market model used for the normal return estimation is not significant. So it is necessary to be continued the research started in this study through the enlargement of the sample of events and through the identification of a model that can better approximate the normal return.

Notes

(1) We have had as model the technique of the event study presented by MacKinlay (1997).

(2) In three cases we have identified press articles posted on the internet announcing the public offer before any of the two mentioned dates and we considered the issuing date of these articles as the event dates.

(3) Dragotă et al. (2006) have also obtained values of R^2 şi F statistics which had led to the rejection of the significance of β_i parameter from the market model determined with the help of RASDAQ-C index for the 2002, 2003 and 2004 for each company from their database. The study's conclusion was that the market model is not appropriate for the estimation of stocks return on the Romanian capital market. For estimating the normal return needed to determine the control premium (the abnormal return from the day when is made an announcement of purchasing or takeover offer), they have replaced this model with an autoregressive process.

(4) For every issuer, from the 250 previous market trading days, there have been taken into consideration only the days when its shares were effectively traded. Anyway, in the FAET case it was used the interpolation method (described below) because the number of the observations from the estimation period was very small (only 9 trading days have been identified for this issuer). In the case of the event window, it were taken additionally into account the days when there were made transactions on the market but not with the targeted company too, by interpolating the returns obtained between two days of effective trading according to the method used by Dragotă et al. (2006). This technique was applied in the case of the estimation period only for the before mentioned company, because the market models' explanatory powers in this situation were in most of the cases smaller (in 9 cases from 12).

5) We collected data on different prices because we were not able to identify closing prices of stock for delisted issuers.

References

Dima, B., Barna, F., Pirtea M., „Romanian Capital Market and the Informational Efficiency", *MIPRA Paper* 5807, 2007

Dragotă, V., Mitrică E., „Romanian Capital Market – Testing Efficiency", *28th European Working Group for Financial Modelling,* Vilnius, 2001

Dragotă, V., Mitrică E., „Emergent capital markets' efficiency: The case of Romania" *European Journal of Operational Research* 155, 2004, pp. 353-360

Dragotă, V., Căruntu, M., Stoian A., „Market informational efficiency and investors' rationality: some evidences on Romanian capital market" *CERGE Foundation Project,* 2006, http://www.cerge-ei.cz/pdf/gdn/RRCV_19_paper_03.pdf

Dragotă, V., Dămian, O., Stoian, A., „Teste privind eficiente informațională a pieței financiare", publicat în volumul "Finanțele şi istoria", Editura ASE, Bucureşti, 2002, pp. 245-253

Dragotă, V., Dragotă, M., Stoian, A., „Some Considerations About Stock Prices and Fair Market Value on Romanian Capital Market" publicat în volumul Conferința economică internațională „România – exigențe în procesul dezvoltării, în perspectiva integrării în anul 2007", Sibiu, 2004, pp. 224-231

Dragotă, V., Dumitrescu, D., Ruxanda, G., Ciobanu, A., Braşoveanu, I., Stoian, A., Lipară C., „Control premium for Romanian listed companies", *CERGE Foundation Project,* 2006, http://www.cerge.cuni.cz/pdf/gdn/RRCV_19_paper_02.pdf

Dumitru, I., Bucşa, D., „Testarea ipotezei de random walk pentru indicii bursieri din România", publicat în volumul „Finanţele şi dezvoltarea durabilă", Editura ASE, Bucureşti, 2004

Dragotă, V., Stoian, A., Pele, D.T., Mitrică, E., Bensafta, M., „Development of Romanian Capital Market: Evidences on Informational Efficiency" (2007), transmisă spre publicare, Fama, E.F., „Efficient Capital Markets: A Review of Theory and Empirical Works", *Journal of Finance* 2, 1970

Harrison, B., Paton, D. „Transition, the Evolution of Stock Market Efficiency and Entry into EU: The Case of Romania", *Economics of Planning* 37, 2004, pp. 203-223

MacKinlay, C.A., „Event Studies In Economics and Finance", *Journal of Economic Literature* Vol. XXXV, March 1997, pp. 13-39

Pele, D.T., Voineagu, V., „Testing Market Efficiency via Decomposition of Stock Return. Application to Romanian Capital Market", *Romanian Journal of Economic Forecasting* 3, 2008

Reilly, F.K., Brown, K.C., „Investment Analysis and Portfolio Management", ediția a opta, 2005, extrase reproduse în CFA Program Curriculum, Volumul 5, 2008

www.vanguard.ro, www.intercapital.ro, www.cnvm.ro

Annex 1

Acquisition and takeover public offers during 2003 - June 2008 for issuers from the pharmaceuticals and aluminium fields

Table 1

No.	Ticker	Issuer	Stock Ex-change Section	Categor y	Type of offer	Announ-cement date	Period	Purchaser	Number of shares	% of Share Capital	Price (RON)	Bought Shares
1	ALR	ALRO S.A.	BSE	I	purchase	17.06.2003	19.06.2003 – 08.07.2003	MARCO INDUSTRIES BV	16,587,063	4.68%	1.6130	42
2	TER	TERAPIA SA	BSE	I	takeover	03.07.2003	18.07.2003 – 16.08.2003	TERAPIA HOLDING	303,613,680	100.00%	0.4681	278,203,800
3	TER	TERAPIA SA	BSE	I	takeover	09.10.2003	17.11.2003 - 09.01.2004	TERAPIA HOLDING	28,409,880	9.27%	0.4681	9,417,912
4	SCD	ZENTIVA S.A.	BSE	II	purchase	27.11.2003	04.12.2003 – 07.01.2004	SIF OLTENIA	50,000	0.01%	0.3800	50,000
5	FAET	FARMAVET SA	RASDAQ	III-R	takeover for delisting	28.11.2003	16.01.2004 – 05.02.2004	A&S INTERNATIONAL SRL	1,298,997	7.08%	0.1100	4,556
6	ALPO	ALPROM SA	RASDAQ	III-R	takeover for delisting	15.06.2004	19.07.2004 - 06.08.2004	ALRO SA	1,989,690	9.14%	4.3000	675,121
7	FAOY	FARMACOM SA	RASDAQ	III-R	purchase	15.07.2004	19.07.2004 – 13.08.2004	MONTERO	90,000	0.96%	0.7100	90,000
8	NAFA	PHARMAFARM SA	RASDAQ	III-R	takeover	20.12.2004	23.12.2004 – 12.01.2005	KEMOFARMACIJIA	12,317,391	40.05%	0.7918	10,609,957
9	CEOF	CENTROFARM SA	RASDAQ	III-R	purchase	28.04.2005	03.05.2005 – 14.07.2005	PLAVETI NICOLAE	1,572,246	24.00%	2.0200	n/a
10	SCD	ZENTIVA S.A.	BSE	II	Purchase	01.11.2005	09.11.2005 – 06.01.2006	ZENTIVA NV	204,390,670	49.01%	1.3700	99,771,169
11	BBGA	ALUM SA	RASDAQ	III-R	mandatory takeover	15.09.2005	29.11.2005 - 16.01.2006	ALRO SA	2,097,003	32.13%	5.6000	1,624,198
12	RMAH	FARMACEUTICA REMEDIA SA	RASDAQ	III-R	mandatory takeover	03.10.2006	10.10.2006 - 30.10.2006	TARUS NORBERT VALENTIN	1,510,730	14.24%	0.3600	415
13	NAFA	PHARMAFARM SA	RASDAQ	III-R	mandatory takeover	05.02.2008	13.02.2008 - 04.03.2008	ARMEDICA TRADING SRL	1,298,195	4.22%	1.5400	131,795

Sources: CNVM, www.cnvm.ro, www.vanguard.ro, www.ktd.ro.

Annex 2

Mean abnormal returns

Table 2

Event Date	Total Sample		BSE Sample		RASDAQ Sample		Event Date	Total Sample		BSE Sample		RASDAQ Sample	
	AR	CAR	AR	CAR	AR	CAR		AR	CAR	AR	CAR	AR	CAR
							0	-0.52%	0.88%	0.35%	3.57%	-1.06%	-0.81%
-20	-0.42%	-0.42%	-0.34%	-0.34%	-0.48%	-0.48%	1	-0.07%	0.81%	0.20%	3.78%	-0.24%	-1.05%
-19	-0.36%	-0.78%	0.83%	0.49%	-1.10%	-1.58%	2	0.22%	1.03%	1.92%	5.70%	-0.63%	-1.68%
-18	0.64%	-0.14%	-0.01%	0.48%	1.04%	-0.53%	3	-0.43%	0.60%	0.24%	5.93%	-0.77%	-2.44%
-17	1.14%	1.00%	0.78%	1.26%	1.37%	0.83%	4	-0.53%	0.06%	0.00%	5.93%	-0.80%	-3.24%
-16	-0.55%	0.45%	-0.51%	0.75%	-0.58%	0.25%	5	-0.57%	-0.51%	0.19%	6.12%	-0.95%	-4.19%
-15	1.68%	2.12%	0.21%	0.96%	2.60%	2.85%	6	-0.65%	-1.15%	0.23%	6.35%	-1.08%	-5.27%
-14	-1.13%	0.99%	-0.42%	0.54%	-1.58%	1.28%	7	-0.66%	-1.81%	-0.01%	6.34%	-0.98%	-6.25%
-13	-0.91%	0.08%	0.87%	1.41%	-2.03%	-0.75%	8	-0.59%	-2.40%	-0.36%	5.99%	-0.71%	-6.97%
-12	-1.73%	-1.65%	-0.77%	0.64%	-2.32%	-3.08%	9	-0.48%	-2.88%	-0.40%	5.59%	-0.52%	-7.49%
-11	-0.56%	-2.21%	-0.02%	0.62%	-0.89%	-3.97%	10	-0.42%	-3.30%	-0.48%	5.11%	-0.38%	-7.87%
-10	-1.15%	-3.36%	0.31%	0.93%	-2.07%	-6.04%	11	-0.76%	-4.06%	-0.98%	4.13%	-0.65%	-8.52%
-9	0.21%	-3.14%	0.05%	0.98%	0.31%	-5.73%	12	-0.32%	-4.38%	-0.12%	4.01%	-0.42%	-8.94%
-8	-0.01%	-3.15%	1.02%	2.01%	-0.65%	-6.38%	13	-0.37%	-4.74%	0.06%	4.07%	-0.58%	-9.52%
-7	-0.26%	-3.41%	-0.14%	1.87%	-0.33%	-6.71%	14	-0.38%	-5.13%	-0.13%	3.94%	-0.51%	-10.03%
-6	1.84%	-1.57%	1.67%	3.54%	1.94%	-4.77%	15	-0.25%	-5.38%	0.55%	4.48%	-0.65%	-10.68%
-5	0.77%	-0.80%	-0.47%	3.08%	1.53%	-3.23%	16	-1.63%	-7.01%	-1.09%	3.39%	-1.90%	-12.58%
-4	0.47%	-0.34%	-0.61%	2.47%	1.14%	-2.09%	17	0.11%	-6.89%	1.35%	4.74%	-0.50%	-13.08%
-3	0.30%	-0.04%	-0.45%	2.02%	0.77%	-1.32%	18	-0.04%	-6.94%	1.58%	6.33%	-0.85%	-13.94%
-2	2.12%	2.09%	1.84%	3.86%	2.30%	0.98%	19	-0.55%	-7.49%	0.82%	7.15%	-1.24%	-15.18%
-1	-0.69%	1.40%	-0.64%	3.22%	-0.72%	0.25%	20	-1.05%	-8.54%	1.02%	8.17%	-2.08%	-17.26%

Note: Abnormal returns for a event study for testing the semi-strong form of efficient market hypothesis in Romania. The sample is made of thirteen announcements, issued during January 2003 – June 2008, for eleven companies listed on BSE/RASDAQ. To determine the abnormal returns we used the market model with the BET index for BSE issuers and RASDAQ-C index for RASDAQ companies. AR is the mean abnormal return of the sample for that specific day during the event and CAR is the cumulative mean abnormal return of the sample from -20 event date up to the specified date. The time of event is the number of days up to the day of announcement.

CONSIDERATIONS ON THE IMPLEMENTATION OF COST-BENEFIT ANALYSIS IN EVALUATING THE EFFICIENCY OF INVESTING IN HIGHER EDUCATION

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Abstract. *Applying cost-benefit analysis in education is aimed at evaluating the costs and benefits of public investment in education. The costs and benefits appear both in the present and in the future. One problem encountered in applying cost-benefit analysis in education is the time factor because, in this case, most of the benefits occur in the long term. Also, it is difficult to demonstrate if productivity increases due to higher education. In this situation, taking into account the principles of cost-benefit analysis, the paper aims to address issues related to the needs of society, efficiency, equity, costs and potential benefits of public financing of higher education.*

Keywords: allocative efficiency, cost-benefit analysis, net present value; government expenditures for education; education funding.

JEL Classification: D610, H52, I220.

1. Investment in higher education

In economic terms, higher education may be considered as a mix of current consumption, more exactly a pleasant way to spend a few years before a person assumes the responsibilities of everyday life, of consumer capital formation - the development of higher standards, of a critical sense in choosing an optimal consumption altenative, and of production capital formation - human capital, its ability to provide competitive services and hope to get a higher income than that obtained in the absence of education (Johnson , HG, 1974).

Internatinal literature distinguishes four functions of higher education: the development of scientific research, training a manpower with higher qualifications, the contribution to the development of the society, the acquisition of critic social spirit by individuals (Cemmell, 2003).

Starting from these functions, higher education can be regarded as a public good, given the fact that the volume of knowledge a student acquires during university studies does not diminish the amount of knowledge available to other students. However, higher education also presents some of the features of a private good. For example, some individuals are unable to access higher education due to the practice of quite high tuition fees, or they are partially excluded from the consumption of this good as a result of a reduction of time spent on teaching a second or a third student. Also, higher education can be regarded as a „merit good" (Powell, 2005, pp. 161-162), justifying state involvement in education through the fact that society benefits from it. In this case, the social benefit of consuming higher education is greater than the private benefit felt by the consumer.

Regarded as a social investment, higher education presents a series of benefits arising from research and technological innovation, and also externalities associated with higher education, namely: an improved health, social welfare, community completing and social cohesion.

Both in developed and the developing 1 countries, governments are still influenced by higher education regarded as a social and private investment, and by the rate of return. The

World Bank has shown, since the 1980s, a concern regarding the publication of estimates for return rates for higher education together with their implications on the financing of higher education from public funds.

Analysing the messages sent by the World Bank through the reports published on the distribution of public funds allocated to finance primary, secondary and tertiary education, shows how the states have interpreted and applied the financing of various levels of education. Thus, by 2000 in most countries it was found that an U.S. dollar invested in education evolved a yield two times higher than one U.S. dollar invested in tertiary education,f act which introduced the concept of recovering the costs of higher education simultaneously with applying a policy of reallocating public expenditures for primary education.

As a result of the investment in higher education appear the positive externalities which represent the basis of social strengthening and economic development in the transition to knowledge-based economy. Also, it is found that state intervention in financing higher education is not aimed at achieving positive externalities, but rather correcting the failure of loans for studies market.

The private benefits of individuals are accompanied by long-term effects of research, technology development, political stability strengthening, improvements in democracy, the creation and transmission of knowledge. All these benefits arising as a response of the investment in higher education induce an increase in the rate of social profitability with a certain percent. However, funding for higher education must take into account two important concepts: higher education regarded from the perspective of a public investment and costs recovery.

To support the concept according to which education is regarded as a public investment various studies and papers were published to confirm the contribution of tertiary education to economic growth through creating and transmitting knowledge. *Investment in human capital* (Schultz, TW, 1961) was the first paper that discussed issues related to economics education, the way of financing education regardless the level of education, the role of education as a future investment, the rates of return analysis compared with alternative investments. The most devoted estimates that assessed the contribution of education to economic growth, are those of Theodore Schultz, the man who has based the calculations on the modern theory of rent. To underline the way in which education contributes to economic growth, Schultz considers both the costs involved in training university, as well as indirect costs, expressed as opportunity costs, ie, lost earnings - earnings that are expected to be obtained on the labour market by those with secondary education.

Comparing investment in higher education with other alternative investment, education must offer a rate of return high enough in order to be analyzed form an economic point of view. Thus, to demonstrate the importance of public investment in higher education one may resort to applying cost-benefit analysis.

2. Public choice in financing higher education

Among the traditional economic criteria used to evaluate a draft of public investment is found efficiency and equity. The studies demonstrated the function of social welfare dependence on a number of parameters such as efficiency, equity, the employment of people with higher education, the satisfaction degree of social needs and the nonmonetary benefits.

The issue of public choice between two projects for the financing of higher education, from the perspective of ensuring efficiency and/or equity, can be treated in an arbitrary manner by those who hold power in this respect.

Thus, the use of the term efficiency in education includes double meaning, namely: the internal effectiveness which concerns the effectiveness of an institution of higher education, and external efficiency - reflecting the way in which university graduates succeed in identifying their role and place in productive society, making use of the resources invested by the state in their training.

In order to review the external effectiveness, both at microeconomic level through the rate ofreturn or the net present value of the public investment draft, as at macroeconomic level-making reference to the contribution of higher education to economic growth, cost-benefit analysis is needed.

Cost-benefit analysis is a practice used in the choice of implementing a particular project which requires an assessment of the effects of the project on both medium and long term, and a comparison between costs and expected benefits.

Cost-benefit analysis was taken from the private, and its application in the public sector is very much hampered by the existence of costs and benefits of future that can not be easily quantified. Therefore, there is a need for an updated calculation of earnings generated by public programs.

$$VPN_i = -C_0 + \frac{(B_1 - C_1)}{(1+i)} + \frac{(B_2 - C_2)}{(1+i)^2} + \ldots + \frac{(B_n - C_n)}{(1+i)^n}$$

where:

VPNi = net present value of the program;
Bj = gross social benefit provided by the program in the j year;
n = life of investment;
1 / (1 + i) = factor to update at the interest rate i;
C0 = initial costs of the program;
CJ = current year costs involved in carrying out the j program.

Using cost-benefit analysis in the public sector involves a number of aspects of individualization according to the specific objectives of the public program and concerns: the inclusion of social costs and benefits in the net present value calculation, the use of different principles for assessing the costs and benefits related to the public versus the private draft, the application of different update rates.

For public choice the net present value (NPV) is considered greater than zero, but the one which has the highest value. In this way solutions less expensive or those involving the largest production will be avoided, and will be chosen those to ensure the greatest difference between the costs and benefits, measured in monetary units.

Where the NPV is zero, then will be calculated the internal rate of return, and the solution chosen should be that with the lowest rate of domestic profitability.

In education, cost-benefit analysis compares the costs of education with the benefits obtained by the society as a whole, through individuals who are enroled in higher education.

An important aspect in the correct application of cost-benefit analysis in the area of education refers to the need to consider all costs - both direct resources allocated to education from the budget or from other funds, and indirect costs, families expenses, income absence, which represents the income they would get while being engaged in an activity that would bring a win, instead of attending the courses of an institution of higher education, as well as the benefits representing the amount of revenue due to individual choice to follow higher education, calculated on the active life. Some estimates indicate that the volume of earnings which are waived in favor of education is an important social cost for higher education (Becker, 1998, pp. 95-96).

3. The costs and benefits of investment in higher education

Applying cost-benefit analysis in evaluating the effectiveness of investment in higher education involves the clear setting of two components: the costs, and benefits related to university education.

Investment in education is a key element to ensure economic growth, increased living standards and reducing social inequalities and inequities, even if it has not yet been given an explanation on how exactly the process in which education makes the economy to suffer a transformation in the meaning of accelerating and structural adjustment. At the same time is

an important factor in combating unemployment and social exclusivity. The economic reality transforms higher education system form a labor producer into a capital producer.

The issue of determining the mechanisms of economic growth through education can not prevent the authorities and individuals to choose to continue education, because education represents the way to ensure the welfare of the nation in the future.

The effects produced by attending further courses can be grouped into two categories: qualitative effects that lead to an increase in the efficiency of economic processes and quantitative/qualitative effects involving the qualitative transformations.

Taking into account the active and determining presence of the individual in the economic context and the need of considerable financial resources to increase the quantity and quality of the human factor, the company must seek the best allocation of funds leading to the obtain of the greatest benefit.

The allocation of funds for education must be consistent and continuous for a long period of time in order to record an economic addition due to education. Any interruption in the allocation of funds for education will lead to permanent loss as increased education is closely linked to certain age that the human factor runs. This is another issue that holds the identification payer for education third.

If you believe that the individual is the primary beneficiary of higher education, then it is normal for him to pay because he takes such a decision being interested in achieving higher revenue in the future. At the same time, the society also benefits from the higher education by increasing the pace of development, the general level of living.

Therefore, both individuals and society are interested in higher education, leading to the idea of funding studies based on the level of development reached by each system. Thus, if the personal budget allows, then the individual must pay studies. In cases where individuals, households can not pay the costs of higher education, then they must be borne by the state budget.

Education has an important impact on economic development, creating effects both at private and socio-economic system. The private effects refer to changes in income, to employment opportunities and to the nonmonetary effects.

Various tests (Becker, Ashenfelter, Rousse) showed that the ascending scale of university studies leads to the decreased rates of return (costs have a higher growth percentage than income), but due to increased share of high-skilled labor, there is observed an increased trend regarding the evolution of the rate of return on investment in education.

The decision to invest in education is taken before achieving wage. Prize between labor market and education is salary. Besides the advantage of a big salary, educated individuals have a greater security regarding employment and also a greater mobility of income growth.

Increasing education is also determined by the risk of being unemployed (Rees, Mocan, 1997). So it gets closer to full employment on the labor market, fact that is leading to economic growth.

Fernandez and Shioji (2001) observed three types of effects which lead to increasing economic potential by rising the level of education:

- Unemployed people with a precarious education choose to continue studies to enhance the employment opportunities after graduation;
- Psychological and social status of people facing unemployment improves if they continue studies;
- In those regions where the level of education is higher a faster economic growth can be observed due to a higher absorbing, to the labor productivity and the increased tendency of real capital concentration.

The public effects of education relate to economic growth and extraeconomic public effects as a result of continuing education.

Educate as many individuals as possible means a greater stock of knowledge for the economic system, which causes an increased efficiency of activities, so an economic quantitative growth.

Also at the social level education involves a series of changes in individual behavior in society. In this way education produces a series of effects that characterize a quiet lifestyle, without social or individual conflicts.

Beyond the benefits of a project related to education, this can be implemented only to the extent that funds are included in the state budget with this destination. Thus, all types of costs should be considered: marginal cost, direct and indirect costs, opportunity cost, fixed and variable costs, public and private costs. To obtain a more close to reality view, in education, it would be advisable to use the costs expressed in real terms.

In calculating the cost of university education several difficulties may be encountered due to different definitions of types of costs used in the analysis. Regarding the opportunity cost, if the government decides to allocate funds in a higher share for education, then other types of public investment will be affected in a negative way, aspect set arbitrarily by public choice.

With regard to the benefits of investment in education, most international studies have referred to the discrepancies between the salaries obtained during the active life of individuals with higher education and of those with secondary education.

4. Limits of using the cost-benefit analysis in evaluating the efficiency of public investment in higher education

Integration of all the costs and benefits in the calculations

This condition may not always be respected because of the fact that in the educational area appears opportunity cost and some benefits that can not be quantified, such as the benefits of scientific research, so as to ensure the principle of common unit of measurement, the currency unit.

The time factor

This factor is disturbing to some extent the implementation of cost-benefit analysis in education, thus increasing the cost of an educational project in time imposes their correction taking account of inflation.

A more significant influence appears on the benefits resulting from public investment in higher education.

Normally benefits with a nearest time horizon influence the results of cost-benefit analysis to a much greater proportion than the benefits grasped after a further time horizon. In this sense, the values assigned to these benefits should be adjusted to ensure comparability of the two sizes: costs and benefits.

The existence of complete statistical data in terms of content and period of time

Most of the time, the statistics showing the benefits of individuals consumers of higher education, in terms of salary, do not include benefits that are not expressed in monetary terms, such as providing transportation to and from work, provision of reduced or even free medical services, leisure opportunities, afterschool program for children of the employees, etc.

In terms of a series of time a more comprehensive series of statistical data is absolutely essential, so that the outcomes of cost-benefit analysis is not wrong. In this respect, economists resort to the use of statistical data that distinguishes certain parts of society at a certain time, data which skip transformations occurring in the economy in the short term.

Consider the cost of opportunity

In this category may be included the lack of earnings while individuals who are attending the courses of an institution of higher education. This cost has a significant impact

on the analysis, given the fact that the families of these students may experience significant losses caused by the reductionoccured into the family income, being expressed in monetary terms or in nonmonetary terms. In some of these cases the students who come from a family with financial problems neglect the studies considering that the opportunity cost is too high. Most times, if it is included in the analysis, the opportunity cost exceeds the entire direct cost related to the business of education.

5. Conclusions

As we reported in the paper, in the long term, education contributes to the economic growth of a country, stimulates progress and raises the standard of living of the population.

Economic development is closely related to the ability of nations to understand, interpret, select, adapt, use, transmit, disseminate, produce and commercialize scientific data and technological knowledge in line with the objectives of development and national culture. The impact depends on the following main factors: the status and level of education, request for information from the private sector, public policy to target the institutional structure of the state jurisdiction.

A recent report of the Organization of Economic Cooperation and Development (OECD) specifies: „The expanding expenses of the field of education have been globally wasted by governments who threw money in unreformed systems." Waste from the assessments of experts is recorded so great that reducing spending by 30% would have the same results as those presented with the condition of providing an effective education system. Knowing that the state is, in the field of education, the worst administrator, the conclusion would be increasing share of private education at the expense of the state. If all universities should perform at the best schools (private, mostly), educational standards could increase without any increase in funding.

References

Becker, G.S. (1998). *Comportamentul uman - o abordare economică,* Editura ALL, Bucureşti, pp. 95-96

Cemmell, J. (2003). *Public vs. Private Higher Education: Public Good, Equality, Access. Is Higher Education a Public Good?*

Dănulețiu, D.C. (2006). *Analiza cost-beneficiu pentru programele de cheltuieli publice,* Universitatea „1 Decembrie 1918", Alba Iulia

Gruber, J. (2005). *Public Finance and Public Policy,* Massachusetts Institute of Technology, Worth Publishers

Johnson, H. G. (1974). *The University and the Social Welfare: A Taxonomic Exercise. Efficiency in Universities: The La Paz Papers,* Elsevier Scientific Publishing Company

Moşteanu, T. (2005). *Economia Sectorului Public,* Ediția a II-a*,* Editura Universitară, Bucureşti

Powell, R. (2005). *AQA Advanced Economics,* Philip Allan Updates, pp. 161-162

Psacharopoulos, G., „Returns to Education: A further International Update and Implications", *Journal of Human Resources,* no. 20, 1985

Psacharoupoulos, G., Patrinos, A., „Returns to Investment in Education: A Further Update", *World Bank Policy Research Working Paper, no. 2881,* 2002

Rees, D.I., Mocan, N.H., „Labor Market Conditions and the High School Dropout Rate: Evidence from New York State", *Economics of Education Review* 16(2), 1997

Rosa M. Fernandez, Etsuro Shioji, „Human Capital Investment in the presence of Unemployment: Aplication to University Enrolment In Spain", *University of Oxford, Departament of Economics, Discusion Paper Series,* 2001

Schultz, T.W., „Investiment in Human Capital", *American Economic Review*, 1961

Văcărel, I. (2007). *Finanțe Publice,* Ediția a VI-a, Editura Didactică şi Pedagogică, Bucureşti

ROMANIA'S ABILITY TO DRAW EUROPEAN FUNDS

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Abstract. *The European funds do not represent an inward purpose, but instruments in reaching the objectives established at the level of the European Union, of the EU member state, based on the implementation documents. This research work displays diverse aspects concerning the irredeemable funds absorptive capacity, that EU member states have confronted with or they still do; starting, on one side, from the comprehension of the spirit, philosophy and reasoning of the European Union objectives, and on the other hand, from the definition and general characteristics of any program destined to engaging such funds.*

Keywords: structural funds; irredeemable financing; management authorities; National Development Plan; convergence.

JEL Classification: F36.

REL Classification: 13G, 18F, 20F.

Inspired by the will of the Europe's states and citizens to build a commune future, the European Union, in its actual shape, is the result of some ample processes of economic and political cooperation and integration started on April 18th, 1951, when the Treaty concerning the „European coal and steel community" was signed. The six initial members (Belgium, Germany, France, Italy, Luxembourg and Netherlands), were joined, in five adhesion waves along a period of almost four decades, by another twenty one new members. These integration and cooperation processes are not considered closed at present since the European Union is opened to all those European states who respect its values and undertake to commonly promote them.

One of the fundamental objectives of the European Union is the strengthen of the economic – cohesion by reducing the regional disparities. This is also the reason why the member states participate to a European regional policy financed from European funds, which confers a concrete and immediate meaning for the communitarian solidarity.

After the adhesion of Romania to the European Union, as of January 2007, the national policy for the creation of facilities is more and more tightly connected to the community policies, principles, objectives and regulations in the field, the National Development Plan (PND) being the fundamental instrument through which Romania shall try to rapidly recover the socio – economic development disparities compared to the European Union. Moreover, the 2007-2013 Regional Operational Program [1] is the program that implements important elements of the Regional Development National Strategy of PND, bringing its contribution, together with the other Sector Operational Programs, to the achievement of the general objective of the Regional National Strategy, namely to diminish the disparities among the Romania's regions and the European Union member states. The global objective includes three specific objectives:

- growth of the long-term competitiveness of the Romanian economy;
- development to European standards of the basic infrastructure;
- more effective development and use of the autochthon human resources.

The regional program shall be financed between 2007- 2013 from the State Budget and co-financed from the Regional Development European Fund – one of the Structural Funds of the European Union.

According to a paperwork by Europe Institute of Vienna concerning the impact of the enlargement of the European Union as of 2007, the benefits of the enlargement shall strongly incline above Romania. The study forecasts, for Romania, a cumulative growth of the PIB of 0.5%, due to the integration effects. Moreover, Romania propounded to use the structural assistance in order to raise the PIB by 15-20% until 2015.

In order to achieve the proposed objectives, seven operational programs have been prepared under the objective „Convergence". From the point of view of the strategic development directions that Romania has chosen, the researches in the field noticed the fact that the operational programs do not express courageous options about the future and, with one exception, they do not forecast the type of development we are heading towards. The programs are focused on structural classic interventions (infrastructure, environment protection, economic growth), without more boldly objectives as in the cases of Slovakia, Poland and Slovenia.

According to European Innovation Scoreboard 2007, Romania is ranked last among the European countries as far as the innovation capacity is concerned. The states who propounded a more explicit objective with regard to the innovation shall have the possibility to create a cohesion and concentration for the investments in the field. Romania, by not specifying the innovation, also in the case of the economic competitiveness objective, shall not register significant transformations, but it could lessen the investments effort. Comparative to other states, we chose the JROP type funds allocation model by regions, a centralized national program respectively, with financial allowances differentiated by regions depending on the development level. The regional program does not provide the possibility to differentiate the development objectives for each region, it only established a number of national priorities that are to be implemented at the regional level, allowing for a funds re-allocation depending on the absorptive capacity of each region, fact that brings into question the final objective concerning the reduction of regional differences.

The comparative analysis of the Development Regions highlights, after 1990, a rise of the economic and social development between regions. The differences between the most developed region (Bucharest - Ilfov) and the less developed region (North-Eastern Region), in terms of PIB/inhabitant, have increased almost three times. At the same time, it is to be noticed an increase of the disparities between the regions located in the Western half of the country (North-Western, Centre and Western), with positive economic evolutions and a crescent level of numerous indicators of the economic and social development, and the ones located in the Eastern half of the country (North-Eastern, South- Eastern, South and South-Western), which are less developed.

As a consequence of the apparition and dynamics of these processes, highlighted by the economic and social analysis, the REGIO global objective was established, namely, to support the regions overcome from the development point of view, while within the less prosper regions, the less developed areas, to valorize their specific resources, insufficiently exploited so far, in order to accelerate the economic growth of those areas.

The major method identified for the objective achievement is the differential allocation of the funds by regions, depending on the general development degree of the regions namely, inverse proportionally with the rate PIB/inhabitant, so that the less developed regions benefit, proportionally, from a higher financial allocation. These funds shall be used for the financing of projects having a major impact upon the regional and local development: rehabilitation and modernization of the transport, educational and health infrastructure, improvement of the business environment by developing business support structures (industrial, technological, logistical, business parks etc.) and supporting the private business initiatives, improvement of the tourism and cultural potential by supporting the tourism

infrastructure and the entrepreneurial initiatives in the field, supporting the urban development centers having an economic growth potential, in order to create conditions for them to act as engines of the regional and local development.

As far as the financial resources allocation process is concerned, public consultations have been organized for the operational programs, but the lack of prior active information upon consultations, together with the reduced number of partners invited, the short time dedicated to expressing opinions or even the lack of a feedback after consultations, all conducted to the formation of formalism-like impression.

There is also the feeling of a certain lack of authority and coordination of the structural funds absorptive process. Of curse, the engagements Romania had undertaken exist, also the engagements monitoring process exists, the action plans (unique or not), but the incertitude degree concerning the representatives decisions persists. The post-adhesion administrative funds absorptive capacity is not located at a sufficient level; there are many and numerous weaknesses that need to be solved shortly.

Coherence, coordination, lack of operational programs twinning, their focusing on really important problems, they are aspects worthy to be considered. All these cannot be achieved from the office or by a coordination institution, by means of a descendent approach. They may only be achieved by means of an ascendant approach, based on real partnerships. If all management authorities would participate to working groups organized for the purpose of general coordinating, planning of the national development, then the results would be more visible.

The Management Authorities did not prove too much of an interest in organizing the public communication activity, generally the information made available being limited, rarely updated and nonspecific by types of target-groups. Moreover, the journalistic environment is not very much specific and with clear information, often by-passing the subject named European funds, according to a study organized between April - May 2008, for a number of 40 County Councils, 100 local public authorities and 7 ministries, by the Press Monitoring Agency, Pro Democracy Association and the Romanian Journalism Center.

Among other problems the potential beneficiaries of European funds confront with we list: the change of the applicant's guide during the projects tenders; the financing requests providing only a Technical Project receive the answer in six months, and the ones providing also the Feasibility Study, the answer is received in one year; the Management Authority specialists barely breathe in the bureaucratic chaos etc.. Moreover, a study of the European Institute of Romania at the beginning of year 2008 shows that „ less than 40% of the Management Authority personnel have experience in dealing with European funds. It is mainly about experience consisting in receiving technical assistance or monitoring programs financed from European funds. It is less about actually performing economic–social analyses, preparing strategies and quantifying the development objectives.

Such problems, concerning the absorption of European funds, are not faced only by Romania. According to an EU study, 45% of the 20 million of small and middle sized enterprises in Europe had knowledge about the EU structural funds, but only 4% have actually stand for financing. From the latter category, only 25% - representing 1% of the total number – received the money.

Slovakia seconded by Check Republic and Poland are the champions of calculation errors concerning the absorption of European funds. All three have forecasted a European funds absorption degree three times higher than the real one. More specifically, Slovakia hoped for a fund absorption four times higher than the one obtained at the end of the period 2004-2006. For the period 2005, the Slovaks were hoping to draw Euro 426 million, while the actual payment value was of only Euro 112 million, and the Polish, who were hoping to attract Euro 2 billion, only managed to absorb Euro 766 million. The experience of the above-mentioned states can repeat in the case of Romania as well, that forecasted for the 2008 budget an amount of Euro 2.5 billion to be absorbed, out of which up to Euro 800

million for agriculture and one billion Euro for pre-adhesion and post- adhesion projects (ISPA, SAPARD, PHARE).

A communicate of the Ministry of Economy and Finances (MEF), dated June 15th, 2008 [5], announced that 1,287 projects were submitted for the seven operational programs, in aggregate amount of lei 15,065 billion (Euro 4,171 billion), 281 of these ones being approved for a total aggregate value of over lei 9 billion (about Euro 2,535 billion). Out of this amount, lei 6.8 billion (approximately Euro 1.88 billion) represent irredeemable funds from the de la European Union (EU). At the same time, they announced that 23 financing contracts were concluded with the beneficiaries, in amount of approximately Euro 204 million (out of which the EU funds represent around Euro 180 million), while the remaining contracts (the rest up to 281) were still in the signing process.

With regard to the actual stage of the European funds absorptive process, by regional programs, the status is as follows:

- Within the Regional Operational Program, 376 projects were submitted in amount of over lei 6.37 billion (around Euro 1.77 billion). Also, 166 projects were approved so far, in amount of lei 5.46 billion (around Euro 1.51 billion), out of which around lei 3.9 billion (more than one billion euro) represent EU funds and 12 financing contracts were concluded of over lei 207 million (approximately Euro 57 million);
- With regard to the Environment Regional Operational Program, 8 major projects were sent, until mid-June, to be approved by the European Commission, for an approximated amount of Euro 864 million, out of which, in April and May 2008, six projects were approved in the field of rehabilitation of water and spent water systems, having an eligible value of about Euro 650 million. At the same time, 48 projects were submitted in the filed of bio-diversity, for more than lei 200 million (around Euro 55 million), pending their approval;
- For the Transports Regional Operational Program it is forecasted that in the second semester of this year, three major projects are to be sent to the European Commission, which shall be co-financed by international financial institutions;
- With regard to the Program „Growth of the Economic Competitiveness" Sector Operational (POS – CCE) 569 projects were submitted, in amount of lei 2.78 billion (around Euro 772 million) in the filed of IMM investments, research and information technology, they still being under evaluation. MEF representatives anticipate that the financing contracts would be signed sometime between July - October 2008. Moreover, also within POS-CCE, the Financing Agreement between the Romanian Government and European Investments Fund for the JEREMIE program in Romania was approved: based on this agreement, Euro 100 million are to be used to finance the operation Support for the development of guarantee funds within the IMM Access to financing Major Intervention Domain;
- With regard to the „Human Recourses Development" Sector Operational Program, 276 projects were submitted, in amount of lei 2.43 billion (about Euro 675 billion). At the same time, 107 projects were approved, in amount of lei 1.23 billion (about Euro 341 billion), out of which more than a billion lei (approximately Euro 275 million) is represented by EU funds. Also, 10 financing contracts were signed, in amount of over lei 180 million (about Euro 50 million), out of which around lei 152 million (approximately Euro 41 million) represent EU funds;
- Within the „Growth of Administrative Capacity" Operational Program five projects were submitted in amount of over lei 35 million (about Euro 9.7 million);
- With regard to the „Technical Assistance" Operational Program, two projects were submitted in amount of lei 11.165 million (about Euro 3.1 million), pending for approval.

A major challenge of the subsequent period is represented by the internalization of the evaluation and monitoring capacity, in order to decrease the dependence of the external Technical Assistance, very expensive, which does not allow for too high accumulations of

institutional memory. A first step is the training, particularly training at the work place, not the theoretical training, necessary as well. The second step is the de gradual internalization towards autochthon research–evaluation–monitoring institutions. This step must not be seen as abatement from quality, but it must be thought as a normal progress towards independent evaluation and monitoring capacities, located in the private sector or the ONG type non-governmental sector.

For instance, although there are diverse econometric methods to evaluate the impact of the projects financed from din community funds, so far, it has not been proven scientifically whether the European funds are good or bad for the regions or domains where they were used. More likely, the real problem would be whether those investments for which the financing from European funds was requested was vital or, on the contrary, more adequate solutions could have been identified in order to offer viable alternatives for the beneficiaries needs.

There is a joke circulating among macro-economists saying that, the smaller the absorptive capacity, the better for the macro-economic balances. Of course that a massive injection of funds shall have effects that cannot be neglected upon the aggregate request, which may generate pressures upon the inflation, the exchange rate, the commercial balance and the current account.

However, the use of Structural Funds can only be auspicious, the amount of absorbed quantities being less important than the value of the processes they cause.

References

Androniceanu, Armenia (2006). *Managementul proiectelor cu finanțare externă,* Editura Universitară, Bucureşti

Dinu, M., Socol, C. (2006). *Fundamentarea şi coordonarea politicilor economice în Uniunea Europeană,* Editura Economică, Bucureşti

Farta, C. (2007). „Asistenta structurală. Politica de coeziune şi implementare în administrația publică locală", în: *Economie şi administrație locală*, nr. 3, 2007, pp. 22-25

Ian, B., Stephen, G. (2006). *Politics in the European Union,* 2nd Ed. Oxford: Oxford University Press

James, K. Mc Collum, Bănacu, C.S. (2007). *Management de proiect o abordare practică,* Editura Universitară, Bucureşti

Lefter, Cornelia (2006). *Ghidul Fondurilor Structurale ale Uniunii Europene,* Editura Kapital Project Coordinator

Radu, V. (coord.) (2008). *Managementul proiectelor,* Editura Universitară, Bucureşti

*** http://europa.eu/pol/reg/index_en.htm

*** http://ec.europa.eu/regional_policy/index_en.htm

STRUCTURAL AND COHESION FUNDS FROM THE EUROPEAN UNION AND THEIR USE WITHIN THE PUBLIC ORDER INSTITUTIONS

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Abstract. *The European Union is one of the most prosper and competitive areas of the world, both from the point of view of the economic development, and the development potential. The structural and cohesion funds are those important financial sources promoted by the European Union for the purpose of achieving a balanced development and for reducing the differences between different areas, for achieving the economic and social cohesion in addition to the Unique Market and the Economic and Monetary Union. The current context of the need of alignment to the European standards determine the public order institutions to continue the restructuring and reorganization process, by using structural funds*.

Keywords: structural funds; process of integration to the European Union; cohesion policy; irredeemable financing, public order.

JEL Classification: F36.
REL Classification: 20J, 13K.

The economic and social cohesion policy includes all the actions taken by the European Union for its harmonious economic and balanced development, particularly by promoting the reduction of the development disparities between different regions/states of the European Union, the equity of chances and the durable development.

This will lead to the growth of the European Union competitiveness and will generate the growth of incomes, thus bringing benefits for the economy of the entire European Union.

The economic and social cohesion policy of the European Union is a solidarity-based policy. Its purpose is to create jobs and to increase the competitiveness level, by offering support to the states from less developed regions, and to those confronting with structural difficulties. The economic and social cohesion policy of the European Union (EU) must be seen as part of the Strategy of Lisbon (2000), which proposes to transform Europe by 2010, into „the most dynamic and competitive knowledge-based economy". The Strategy of Lisbon was amended to include new objectives in 2001, during the European Council of Gothenburg, the most important one being related to ensuring a durable development. Also, on February 2nd , 2005, the European Committee presented the Integrated Strategic Lines for Growth and Occupation, which states that the EU must create an economy based on durable growth and occupation. In accordance with the Integrated Strategic Lines for Growth and Occupation, 3 priorities were established for the EU for the period 2007-2013, priorities included in the 2007- 2013 Communitarian Strategic Orientations:

1. Europe – a more attractive place for investments and work.
2. Improvement of knowledge and innovation for economic growth.
3. More better jobs.

Consequently, the cohesion policy must incorporate the objectives from Lisbon and Gothenburg, to respond to the growth and occupation strategy, and to become a key-vector for their achievement by means of the national and regional development programs.

Considering the new European context, marked by the enlargement of European Union and by the global challenges, as of 2007, a new reform of the cohesion policy took place. The reform purpose is to implement a new programming framework of the cohesion policy, to simplify the procedures and to decentralize the process of programming, implementing and making a decision. Therefore, a New Legal Framework of the Cohesion Policy 2007- 2013 has been adopted and new intervention objectives have been decided for the major financial instruments of the cohesion policy.

The development disparities have significantly increased with the integration of the 10 new member states in May 2004.

The enlargement of the European Union to 27 members, as of 2007, represents an unheard challenge for the internal competitiveness and cohesion of the European Union.

The enlargement lead to the increase of the economic development disparities between the old and new member states, whose level of development is much lower. As of the admission of the new member states to the European Union, the average Gross Domestic Product (PIB) / EU inhabitant decreased by 12.5%.

Instruments of the Cohesion Policy

Instruments of the cohesion policy, the structural funds are invested in fields capable to support the regional economic competitiveness to help the less developed area becoming more prosper. The cohesion policy is a proof of the solidarity of the European Union towards an economic growth in all its regions.

Pre-adhesion Funds

The general objective of the communitarian financial irredeemable assistance is to support the candidate states in the process of preparing themselves for adhesion. The funds are distributed by means of the Phare, ISPA and SAPARD Programs.

1. Phare

For the period 2004-2006, the distribution of the pre-adhesion funds received a more prominent strategic character, considering the key-sectors for finalizing the adhesion preparations. A 2004-2006multi-annual program has been prepared, to create the financing framework for the specific projects, defined on an annual basis. The priority domains are mainly focused on: minorities, public administration reform, public finances, agriculture, environment protection, economic and social cohesion, management of frontiers and justice.

The financial contribution of the European Community is established to a maximum of Euro 405.3 million.

2. Sapard

The Sapard Program finances projects that may have a significant environmental impact.

3. ISPA

The ISPA Program (Instrument for Structural Pre-Adhesion Policies) is one of the three irredeemable financing instruments that, together with Phare and SAPARD, support the candidate states in their preparations for the adhesion to the European Union. Between 2000-2006, ISPA finances projects in the fields of transport and environment infrastructure.

Post-Adhesion Funds

The funds available for the Member States are provided especially by means of the European Union Regional Policy. Some of the Member States contributions to the community budget are transferred to the under-privileged social regions and categories.

The financial support is concentrated in the Structural and Cohesion Funds.

Structural and Cohesion Funds

The Communitarian Structural Funds are the major instruments of the European Union meant for the promotion of the economic and social cohesion and solidarity. The Structural Funds represent an important complement of the national policies that, directly and by means of lever action, contribute to the harmonious development of the EU as a whole, and to the promotion of the environmental principles as well. Both have a great importance for obtaining a durable growth of the labor and competition market.

The necessity to invest in developing the institutional capacities is accredited by the strategic communitarian principles and orientations concerning cohesion in the member states which bring long and mid-term socio-economic development and governing forward.

The cohesion fund is meant for the infrastructure projects of the member states whose Gross Domestic Product (PIB) is less than 90% of the average PIB within the Community.

Financing of the Economic and Social Cohesion Policy. Structural Instruments and their intervention domains

The Structural Instruments represent those financial instruments through which the European Union takes action in order to eliminate the economic and social disparities between regions, for the purpose of achieving the economic and social cohesion.

The economic and social cohesion policy is financed from three funds:

- The Regional Development European Fund (FEDR)
- The Social European Fund (FSE)
- The Cohesion Fund (FC).

The Regional Development European Fund and the Social European Fund form the EU Structural Funds and together with the Cohesion Fund, they all form the Structural Instruments.

In 2007, the new generation of programs concerning the cohesion policy came into action. Within the Strategy of Lisbon, these programs are endowed with a financial package in amount of EUR 347.4 billion (in current prices) for the period 2007-2013. According to the revised Strategy of Lisbon, the programs purpose is to promote the investments stimulating the economic growth and the manpower occupation, to encourage the growth of the knowledge economics to the favor of research and innovation, the new information and communication technologies, the human capital and the entrepreneurship, as well as to draw a higher number of persons to create enterprises. The committee approved the national strategic reference frameworks prepared by the 27 member states, in compliance with the communitarian strategic orientations for the period 2007-2013. This fact opened the road to adopting the operational programs financed from communitarian structural funds. On December 31st, 2006, 302 operational programs (The Regional Development European Fund and the Cohesion Fund) were officially adopted by the Committee, which represents 96% of the number of programs for the period 2007-2013.

The period 2007-2013 represents a new structural instruments programming period based on a set of regulations containing provisions concerning the fields to be financed, and on the applicable principles and funds management and implementation mechanisms.

The European Cohesions Programs, as long term investments, are agreed for a period of seven years. For the period 2007-2013, the sector and regional cohesion policy programs support investments of approximately 347 billion euros, which places then on the second position within the Community budget, preceded by agriculture. Most of the financing is concentrated upon the regions which have a PIB below 75% of the EU average PIB (the so-called Convergence Regions). About 35% of the EU population lives in these regions.

94% of the 455 programs are now decided, following intense negotiations between the national and the regional authorities on one hand, and the Committee on the other hand.

The financial instruments of the Committee shall accurately contribute towards achieving the *three major objectives*:

1. *Convergence,* which refers to accelerating the convergence between the Member States and the under-developed regions by improving the conditions of economic growth and work force occupation using the intensification of and improving the quality of the investments in the physic and human capital, development of innovation and knowledge-based society, adaptability to economic and social changes, environment protection and administrative efficiency;

2. *Regional competitiveness and labor* **force occupation** which, except for the under-developed regions, shall concentrate upon the strengthening of the regions competitiveness and attractiveness, and the work force occupation by anticipating the economic and social changes, including those related to commerce liberalization, by increasing and improving the quality of the human capital investments, society innovation and promotion based on knowledge, entrepreneurship, environment protection and amelioration, improvement of work force and companies accessibility and adaptability, as well as the development of the inclusive labor market;

3. *European territorial cooperation,* which shall consider the strengthening of trans-frontiers cooperation by local and regional commune initiative, the strengthening of transnational cooperation by means of action leading to an integrated territorial development connected to the communitarian priorities and the strengthening of inter-regional cooperation and of the exchanges of experience at the adequate territorial level.

The allocations for the 3 objectives are :

1. *Convergence* – 81.9% for FEDR, FSE, FC for less developed regions and countries.

2. *Regional competitiveness and work force occupation* – 15.7% for FEDR and FSE for developed regions facing specific problems.

3. *European territorial cooperation* – 2.4% for FEDR in order to facilitate and promote the trans-frontiers cooperation and/or interregional cooperation with the exclusive purpose of strengthening the economic and social cohesion.

Structural funds used by the public order institutions

For the public institutions, the integration offers collaboration opportunities, partnerships and exchange of experience with the European Union member states. The fundamental element of the public structures collaboration at national and international level is incidental to the preparation, development and implementation of projects, permitting the alignment to the European commune standards and the reduction of the existent differences.

Together with other countries of the European Union, Romania benefited and still does of pre-adhesion funds considered the forerunners of the Structural and Cohesion Funds. Using the pre-adhesion funds, they managed to introduce and implement the policies that permit the participation to the Structural and Cohesion Funds.

The Phare Program was launched in 1990, being primarily meant for Poland and Hungary. A year later, the program was extended to the other countries candidate for adhesion. The Baltic Countries were integrated only in 1995. The major objective of this multilateral assistance program was to support the Central and East-European countries in their transition towards the market economy.

As of 1997, Phare was transformed into a pre-adhesion financial instrument, meant to support the institutional reforms, being the main financial and technical cooperation instrument between the European Union and the Central and East-European countries in the field of developing the legislative framework, the administrative structures, the institutional construction, the trans-frontiers cooperation, and the infrastructure investments as well.

In the public order institutions, the Phare funds are addressed to the twinning, services and acquisition projects, approximately 840 million Euros being allocated for the projects proposed to be started as of 2005 and finalized during year 2008, as per the decision of the European Committee.

Within those programs, the objectives were pertinent to the institutional and administrative reorganization in multinational context, establishing the role and the relationships compared to the national defense structures, professional training, strengthening of the cooperation between the public order structures, strengthening of the legislative systems, infrastructure adjusting to the communitarian standards.

According to the Strategy of the Ministry of Administration and Internal to achieve the public order and safety, to increase the citizen's safety and to prevent the street criminality, the methods of action is order to insure public order and safety in Romania are decided depending on the country's interests, the available recourses, the evolution of the economic and political processes, as well as the operative situation and the potential threats to the public order by the main public order forces – Police and Gendarmerie.

Therefore, aware of the fact that the twinning as a form of PHARE assistance was conceived and proved practically to be a useful instrument in supporting the development of the administrative capacities of the candidate countries institutions, the Romanian Gendarmerie benefited / benefits from the following PHARE programs:

1. RO 02/IB/JH/06 institutional twinning program - "*Modernization of the Romanian Gendarmerie Structures and Practices*" within the 2002 PHARE project "*Modernization and Reform of the Institutions In-Charged with Law Application and Enforcement of the Anti-Corruptive Structures* ", *beneficiary:* M.A.I.

2. RO 04/IB/JH/05 institutional twinning program – *„Consolidation of the Romanian Gendarmerie Structures and Practices and Training for the Full Participation to the European Police Force", within 2004 PHARE sheet „Strengthening of the Police Cooperation".* The financing was provided by the European Union, in amount of Euro 500.000, and co-financed by Romania – Euro 100.000.

3. RO 04/IB/JH/04 institutional twinning program - "*Police Cooperation*", *within 2004 PHARE sheet* "*Strengthening of the Police Cooperation*". The financing was provided by the European Union, in amount of Euro 500.000, and co-financed by Romania - Euro 100.000.

4. 2004/016-772.03.12 PHARE project "*Fight against Organized Crime - An Inter-Institutional Approach*". The financing, for the institutional twinning component, was provided by the European Union, in amount of 1.200.000 Euro, and co-financed by Romania - Euro 200.000.

5. *RO 06/IB/JH/03* institutional twinning program - *"Consolidation of the Romanian Gendarmerie Capacities in order to Ensure Interoperability with Similar Institutions of the European Union"*.

The first four programs are already finalized, while the fifth program is still ongoing. According to the Institutional Twinning Convention, the major objectives of these programs refer to the redefinition of the organizing structure and to the preparing of development proposals, preparing of legislative proposals and regulation concerning the organizing and functioning of the Romanian Gendarmerie, preparing of international cooperation instruments, redefining the personnel training systems according to the European Union standards.

The *RO 02/IB/JH/06 Program „Modernization of the Romanian Gendarmerie Structures and Practices"* took place starting with September 8th, 2003 , the main objectives being: to increase the capacities of the Romanian Gendarmerie to apply the law, in accordance with the European standards and procedures, to transform it into a modern, flexible institution, with national competence, a guarantor of law enforcement and of citizens' safety and peace, to ensure and warrant the compatibility with the Member States structures, to ensure a high interoperability capacity which, in line with the EU requirements decided at Nice, Feira, Gothenburg, Laeken and Noordwijk, to allow it to participate, within the European Police Force or within the European Gendarmerie Force, to missions under the EU command, and it ended on May 8th, 2004; following this program, the Romanian

Gendarmerie, as law enforcement instrument, accelerated the process of alignment to the EU standards, acquiring additional value following the established and developed professional contracts.

The Romanian Gendarmerie took part, as secondary beneficiary**,** jointly with the Romanian Police, during May 2006-April 2007, to the PHARE *RO 04/IB/JH/04* institutional twinning program – *„Police Cooperation",* in partnership with the Spanish National Police – senior partner and the French National Police – junior partner, the objective targeting the strengthening of the coordination and intervention capacities of the Police and Gendarmerie, at the municipal and rural level, in the context of Romania's adhesion to the EU in order to cope with the new needs of the Romanian population and in order to prevent and fight against the threats and criminal acts, which take place during the economic and social transition period.

During September 2006 – December 2007, the Romanian Gendarmerie, participated as secondary beneficiary to the PHARE *RO 04/IB/JH/09* Institutional Twinning Project - *" Fight against Organized Crime - An Inter-Institutional Approach"*, a partnership with the General Court – Ministry of Internal Affairs of Spain and the National Cooperation Service specialized in Police Technique of France, focused on the strengthening of the strategic, institutional and operational capacity of the structures involved in the law application in the fight against organized crime.

The activities performed within the PHARE projects have reached their targets, their successful implementation so far representing an important premise of the success of the interoperability, of the convergence of actionable methods and practices, with similar structures within the European Union. The programs have been developed and accomplished, with economical costs, at a high degree of performance from the point of view of the relevance of deficiency, impact and sustainability, respecting the total budget of Euro 2.6 million, namely Euro 2.2 million financed by the European Union, and Euro 400.000 co-financing provided by Romania.

Within the PHARE 2006 programming exercise, the Romanian Gendarmerie is presently running a new twinning project in partnership with the French National Gendarmerie, namely *RO 06/IB/JH/03 – „Consolidation of the Romanian Gendarmerie Capacities in order to Ensure Interoperability with Similar Institutions of the European Union",* a 18 month project, started in August 2007, with a budget of 1.000.000 euro from the European Union, plus the national co-financing in amount of 250.000 euro. The main objective is to consolidate and specialize the capacities and the personnel of the Romanian Gendarmerie for an efficient carry out of the missions (to maintain and reestablish the public order, antiterrorism and mountain interventions) and to provide inter-operability with similar institutions of the European Union. This project is structured by three components including – improvement of the daily good practices of the Romanian Gendarmerie personnel, increase of fighting capacity against terrorism and organized crime, and increase of abilities of ensuring and reestablishing the public order and managing the civil crises.

Conclusion

The necessity to invest in developing the institutional capacities is accredited by the strategic communitarian principles and orientations concerning cohesion in the member states which bring forward long and mid-term socio-economic development and governing. Considering the current context of the need to align to the European structures standards and the diversity of the investments resources available through structural and cohesion funds, the public order and national safety institutions are determined to continue the restructuring and reorganizing process of by means of investments projects orientated towards and coherent with the national policy and strategy. The perspectives of developing thorough significant investment projects are also connected with the similar results of other states, which already passed through these stages and, presently, have an advanced status. The specificity of these

projects and the experience of others in the field proved the fact that these investments are differentially performed, implemented and particularly evaluated compared to the classical projects of other organizations.

The cohesion policy means the communitarian instrument to promote the economic convergence. Therefore, a neoclassic concept – convergence – is appropriated by the European model, becoming its finality. The current cohesion policy is a compensatory one in order to ensure economic and social cohesion, but it must also target the promotion of the endogen development capacities of the regions. This re-orientation is imposed by the boosting of the regional development disparities, following the evolution of the European integration process. Less developed regions tend to have competitive disadvantages, which would not allow them to benefit in the long run from the capital accumulation, performing technologies and positive externalities generated by the increase of economic activities. The cohesion policy means the communitarian instrument to promote the economic convergence. Therefore, a neoclassic concept – convergence – is appropriated by the European model, becoming its finality.

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The current cohesion policy is essential for the construction of the European Union, and its final objective should be the back-up of the durable economic growth and development. Given the communitarian budgetary limits, obtaining the favorable effects of the cohesion policy must be also supported by an integration strategy providing the cohesion of the national and communitarian policies for the purpose of achieving a balanced development in the Community. For Romania, the major challenge is to keep making efforts in order to achieve economic and sociable cohesion, inclusively by absorbing the structural instruments of the European Union.

According to the National Communication Strategy for structural instruments 2007-2013 in Romania, prepared by the Authority for the Coordination of the Structural Instruments within Ministry of Economy and Finances, Romania is facing the most important opportunity of modernization, provided by the adhesion to the European Union and by the integration into a more and more globalize economy. The future of Romania is that of a dynamic, competitive and innovative economy, functioning within the economic, social and political structures of the European Union and of the global economy. The structural and cohesion funds will represent an agent to carry on the changes and will help accelerating the reform program, whose final result is to modernize Romania and to reach to the development level of the Member States. In this context, the management and the absorption of structural instruments becomes a priority.

Maintaining the principle national and regional allocations, as well as the increase of the intensity of the financial support per inhabitant for the less developed states of the Union, accompanied by a more efficient concentration of this support, will enable the regions to better valorize the major opportunities of the cohesion policy, contributing to the consolidation and acceleration of the convergence process.

It is considered that the cohesion policy contributes to the increase of competitiveness of the European economy, its priorities being highly correlated with the ones of the Strategy of Lisbon and considering the necessary flexibility in order to finance innovatory actions leading to new models of development in Europe. The actions of the cohesion policy oriented towards the increase of productivity must continue in order to contribute decisively to the

reduction of discrepancies at the average development level of the Union member states and at the same time, to increase the Union competitiveness worldwide.

For the next programming period, the European Commission and the member states must find real simplifying solutions, so that the implementation of the Cohesion Policy become as efficient as possible, the complex procedures and technical standards not to raise difficulties at the projects level, difficulties causing major delays in implementation.

References

Drăgan, Gabriela (2006). *Politica de coeziune economică şi socială,* Bucureşti

Moşteanu, Tatiana, Cataramă, Delia, Ţâţu, L., Câmpeanu, Emilia, (2006). *Politici fiscale şi bugetare europene,* ediţia a II-a, Editura Universitară, Bucureşti

Moşteanu, Tatiana (coord.) (2003). *Politici fiscale şi bugetare pentru reformarea economiei şi relansarea creşterii economice,* Editura Economică, Bucureşti

Padoa-Schioppa, B.T. (1987). *Eficienţa, stabilitatea şi echitatea – O strategie pentru evoluţia sistemului economic al Comunităţii Europene,* Oxford University Press

Văcărel, I. (2002). *Politici fiscale şi bugetare de ieri şi de azi,* Editura Allback, Bucureşti

Văcărel, I., Bistriceanu, Gh.D., Anghelache, Gabriela Victoria, Bodnar, Maria, Bercea, F. Moşteanu, Tatiana, Georgescu, F. (2007). *Finanţe publice,* ediţia a V-a, Editura Didactică şi Pedagogică, Bucureşti

*** „Cadrul Strategic Naţional de Referinţă România 2007-2013", Autoritatea de Management pentru Cadrul de sprijin Comunitar Ministerul Finanţelor Publice, octombrie 2006

*** „Ghidul Fondurilor Structurale – ghidul actorilor dezvoltării regionale", Camera de Comerţ, Industrie, Navigaţie şi Agricultură Constanţa, Infomest, aprilie 2003

*** „Raportul general privind activitatea Uniunii Europene 2007", Bruxelles – Luxemburg 2008

*** „Strategia Ministerului Administraţiei şi Internelor", H.G. nr. 196 din 17 martie 2005

*** www.infoeuropa.ro, „Programul Naţional Phare pentru România", 2004

*** http://ec.europa.eu/budget/reform/library/contributions

*** http://www.europa.eu.int

*** http://www.europa.eu/index.ro.htm

*** http://www.infoeuropa.ro

*** http://www.mfinante.ro

* ** http://europa.eu.int/comm/regional_policy/ns_fr.htm

*** http://europa.eu.int/comm/enlargement/index_en.htm

*** http://europa.eu.int/comm/economy_finance/index_en.html

*** http://europa.eu.int/eur-lex/

*** www.jandarmeriaromana.ro/

CORPORATE GOVERNANCE IN THE EUROPEAN UNION: A TIMELINE OF REGULATORY TRANSFORMATIONS

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Abstract. *Disclosure is a fundamental theme of the modern corporate regulatory system and involves the provision of information by companies to the public in a variety of ways. Corporate governance makes no exception, having earned a topical place in the European Union policies. This article investigates the regulatory transformations that have shaped corporate governance disclosure in Europe, starting with the emergence of governance codes and closing with the mandatory inclusion of these codes in the annual reports of listed groups.*

Keywords: corporate governance; corporate governance code; reporting; regulatory; shareholder.

Introduction

Corporate governance is a subject that is notoriously difficult to define in one sentence. Some view corporate governance in the narrow sense, dealing with the structure and functioning of the boards of directors, and their relationship to management. This narrow definition is the one often found in corporate governance codes and the *OECD Principles of Corporate Governance* (2004).

A broader definition includes a company's relationships with shareholders, especially in organisations with concentrated ownership. Finally, governance-centred academic studies broaden the definition to all internal relationships within a business, including the issues raised by the conduct of shareholders, especially institutional investors, the functioning of the general meeting and the company's relationship with the financial markets (Wymeersch, 2006).

Contemporary studies do not allow the concept of corporate governance to exist in the absence of an explicit reference to ethics and the stakeholder theory. The more generous concept of corporate responsibility and citizenship has come to encompass corporate governance and its constituencies. Thus, corporate responsibility has become closely associated with public reporting. The recent push for greater corporate accountability demands an increased corporate transparency and is being responded to by some corporations with the publication of reports that take into account the environmental and social impact of their activities, in addition to the financial impact of the corporate policies.

Disclosure is a theme of the modern corporate regulatory system and involves the provision of information by companies to the public in a variety of ways. The question is whether current European Community legal instruments provide sufficient incentives for companies to report on the social and environmental impacts of their activities, alongside the intensive financial reporting enhanced by the newest standards in the field (the International Financial Reporting Standards/IFRS).

Information and disclosure are areas where company law and accounting regulation come together. It is a key objective of accounting rules in general to ensure that users have sufficient information in order to participate in the market on an informed basis. Disclosure requirements can sometimes provide a more efficient regulatory tool than substantive regulation through more or less detailed rules. Substantive law deals with rights and duties

that are not matters purely of practice and procedure. Such disclosure creates a lighter regulatory environment and allows for greater flexibility and adaptability.

Requiring disclosure of information can be a powerful regulatory tool in company law. It enhances the accountability and the transparency of the company's governance and its affairs. The mere fact that governance structures or particular actions have to be disclosed, and therefore have to be explained, creates an incentive to renounce structures outside what is considered to be best practice. For those who participate in companies or do business with companies, information is a necessary element in order to be able to assess their position and respond to changes which are relevant to them. High quality, relevant information is an indispensable adjunct to the effective exercise of governance powers.

The Cadbury Committee (1992), for example, advocated disclosure as a mechanism for accountability, emphasising the need to raise reporting standards in order to ward off the threat of regulation. The Hampel Committee (1998) also regarded disclosure as 'the most important element' of accountability and in introducing a new code and set of principles stated that their objective was not to prescribe corporate behaviour in detail but to secure sufficient disclosure so that investors and others can assess companies' performance and governance practice and respond in an informed way. The diversity of Community legal instruments insure the fact that the complexity of disclosure requirements to date can be considered the cornerstone of a so-called 'disclosure system' that relies on both binding and non-binding provisions to achieve its goal. In any event, if the disclosure system is not designed appropriately it is likely that the costs will exceed the benefits that might be gained (Villiers, 2006).

The complex and sophisticated financial reporting regulation at Community level may be contrasted with the disclosure requirements that would support a corporate social responsibility or social contract vision of the company. Social and environmental reporting requirements are indeed relatively underdeveloped, comprising mainly an array of voluntary guides and codes, which are left to the discretion of corporate managers to follow. Companies are encouraged to follow such codes as a way of improving the company's competitive position and helping it to improve its long-term profit opportunities. Thus even this aspect of disclosure has ultimately a shareholder interest objective.

The working hypothesis is that the disclosure of accurate and timely information by the issuers of securities builds sustained investor confidence and constitutes an important tool for promoting sound corporate governance throughout the Community. To that end, it is important that listed companies display appropriate transparency in dealings with investors, so as to enable them to express their views. The Council and the diverse Committees opted, in company law regulation, to provide for a framework for competitive business, thus calling for flexible rules and forms of rulemaking, for light regulatory regimes where possible, and for less cumbersome and burdensome procedures.

The system of harmonising company law through Directives – that have to be implemented by Member States – may have led to a certain „petrifaction". Simultaneously, the „shelf life" of law tends to become more limited as society is changing more rapidly, and company law is no exception. Fixed rules in primary legislation may offer the benefits of certainty, democratic legitimacy and usually strong possibilities of enforcement. But this comes at the cost of little or no flexibility, and disability to keep pace with changing circumstances. EU Directives are in practice even more inflexible than primary legislation. That is the reason behind the diversity of legal instruments concerning corporate governance, when it comes to the binding power of each type of instrument.

Symptoms of emergence of corporate governance codes

More than fifteen years after the issue of the first governance code (Cadbury, 1992), these collections of best practice recommendations, which have proven to be extremely influential in the European Union, are still regarded as a hot topic in the turbulent

environment of the capital markets. Whittington (1993, p. 311), as well as Keasey, Short et al. (2005, p. 21), are enumerating some of the causes that have cumulatively led to devising these codes:

(a) Creative accounting, the direct consequence of multiple accounting options and policies the managers could use as a detour from the 'true and fair view';

(b) The financial scandals and famous bankruptcies – in particular of British firms – that had drawn attention to the failures of corporate governance institutions and piled up criticisms of the reporting and audit systems;

(c) Directors' remuneration schemes, which had come to be seen as an oversized expense directly extracted from investors' yield, without a fully justifiable connection to performance;

(d) The directors' short-termism, a major distraction from sustainable performance – which in turn the perfect trigger for opportunistic takeovers, erroneously considered to be the most efficient way of disciplining corporate executives.

In May 1991, The Committee on the Financial Aspects of Corporate Governance was called „to review those aspects of corporate governance specifically related to financial reporting and accountability" (Cadbury, 1992, para.1.2). The final report was issued in December 1992. In April 1993, the London Stock Exchange amended the listing rules in order to include the incumbent statement of compliance with the Cadbury Code. In July 1995, the Greenbury Committee issued a report and an attached code concerning the disclosure of director remuneration, which also became compulsory for the stock market. In January 1998, the Hampel Committee Report assessed the stage of implementation of the Cadbury recommendations, and decided to urge the adoption of a Combined Code (June 1998) that would sum up the provisions of former codes in a less bureaucratic way. In September 1999, the Turnbull Report was published, providing guidelines on the set-up of internal control. In January 2003, the Higgs Report reviewed "the role and effectiveness of non-executive directors", in the light of the U.S. capital market's downfall. The Combined Code of 2003 is still effective in the present.

The Cadbury Code introduces an already famous definition of corporate governance: 'the system by which companies are directed and controlled' (Cadbury, 1992). Governance relies on specific institutions, among which the board of directors represents the key structure. The idea of corporate „democracy", by reference to the election of directors by the General Meeting of Shareholders, reminds us of the controversial phrase „corporations are republics" (Gompers, Ishii, & Metrick, 2003). It is a fact that shareholders' votes delegate power to the representative body (the board of directors), which parts its executive responsibilities with nominated „bureaucrats" (the managers).

Key areas like reporting, monitoring and decision feed-back are clearly delineated by this tripartite collaboration: directors – auditors – shareholders. A larger audience (including the employees) is to be found next to the main corporate actors. Non-shareholders may have the liberty to access corporate information, but not the right to receive the annual reports. The Hampel Report agrees with the former definition, however considering it „restrictive", as it excludes the pivotal activities that lead to the success of an enterprise (Hampel, 1998). Hampel sets a sole objective for corporate governance: the maintenance and enhancement of capital. The relations the company develops with its stakeholders are merely means to attain success. The aim of the board is to plan, implement and monitor corporate policies that determine the firm's relations. The mentioned Report claims that accountability to interested

groups other than the shareholders cannot be defined whatsoever, case in which it can be left out of the governance practice.

The report of the high level group of company law experts

After the turn of the century, a fundamental review of company law in Europe was certainly due. Many have agreed that EU company law had not kept up with developments which had shaped its role and application, in particular the creation of a single EU market which companies and their investors wish to use to the optimum. The development of modern information and communication technologies should be facilitated and could be used to improve company law arrangements and the development of corporate governance practices and standards.

Disclosure can be a powerful regulatory tool: it creates an incentive to comply with best practice, and allows members and third parties to take necessary actions. Disclosure requirements can be more efficient, more flexible and easier to enforce. Information and disclosure requirements are at the intersection of company law and securities regulation; responses to the consultations confirmed that disclosure was particularly suited in the area of corporate governance. Thus the *Report of the High Level Group of Company Law Experts on a modern regulatory framework for Company Law in Europe* (Brussels, 4 November 2002 – Chaired by Jaap Winter) was born.

It is for these reasons that the Group has recommended that capital and control structures of listed companies should be disclosed comprehensively and that such disclosure should be updated continuously. Efficiency, both for the company concerned and for those seeking information about it, could be tremendously enhanced if the company were to put the required information on its own website. Listed companies in all Member States ought to include in their annual report a coherent and descriptive statement covering the key elements of the corporate governance rules and practices they apply.

The annual corporate governance statement should at least include the following key items:

a. the operation of the shareholders meeting, its key powers, the rights attached to shares, where applicable per class of shares, and how these rights can be exercised;
b. the operation of the board and its committees, the procedures for appointment of board members, the role and qualifications of individual board members and the direct and indirect relationships board members may have with the company beyond their board membership. Disclosure of directors' remuneration and other terms and conditions of appointment and removal should be required separately;
c. the major holdings as determined in Directive 2001/34/EC *(The Admission Directive)*, with a description of the voting rights and special control rights shareholders can exercise, and, if they act in concert, a description of the key elements of the existing shareholder agreements;
d. the direct and indirect relationships between the company and holders of major holdings beyond the shareholding itself. This last element of disclosure is particularly important in many parts of Europe, as a substantial part of the share capital of European listed companies in those areas is held by large shareholders.

The potential of conflicts of interests between these controlling shareholders, on the one hand, and the company and its minority shareholders, on the other hand, is well documented in legal and economic literature. All material transactions that have taken place between the company and holders of major holdings should be reported separately in the audited financial statements, with an explanation as to what extent these transactions are at arm's-length. The annual report should also make a reference to a national code of corporate governance with which the company complies or in relation to which it explains deviations.

Under the company laws of Member States, the responsibility for the probity of financial statements of the company is primarily a collective responsibility of the board: in a one-tier structure, this is a collective responsibility of both executive and non-executive directors, and in a two-tier structure, this is the collective responsibility of both the managing directors and the supervisory directors. This is reflected in many Member States in the requirement that all executive, nonexecutive and supervisory directors sign the annual accounts of the company. The Group has believed this collective responsibility to be an appropriate mechanism in order to avoid certain executive directors whose performance is to be reflected in financial statements, having a decisive role in determining their content.

Modernising company law

After the issue of the High-Level Group Report, the Commission considered that the European regulatory framework for company law and corporate governance ought to be modernised, particularly because of the recent, at that time, financial scandals (e.g. Enron). The growing tendency of European companies to operate trans-nationally within the internal market called for the continued integration of European capital markets, and the development of new information and communication technologies. The Communication of 21 May 2003 from the Commission to the Council and the European Parliament entitled „Modernising Company Law and Enhancing Corporate Governance in the European Union – A Plan to Move Forward" supports the above position.

With this in view, the Commission has set key policy objectives, distinguishing between short-, medium- and long-term objectives, and indicating the types of instruments to use and when to use them. The main objectives of this action plan are the strengthening of shareholders' rights and third-party protection, and the fostering of efficiency and competitiveness of business. The Commission observes that the main differences between Member States are found in different company law regimes, as opposed to the corporate governance codes – in number of forty or so across Europe – which show a remarkable degree of convergence. The existence of many codes in the EU is not generally perceived as a difficulty by issuers: many issuers continue to be active primarily on their domestic market; when they are active on other markets, they are faced with codes that are pretty similar; and in the rare instances where codes provisions are divergent, the "comply or explain" principle offers a satisfactory solution.

Strengthening shareholders' rights should be based essentially on:

a) the provision of comprehensive information on what the various existing rights are and how they can be exercised, and
b) the development of the facilities necessary to make sure that these existing rights can be effectively exercised.

This approach is fully consistent with the OECD Principles of Corporate Governance. The Commission considers that there is a strong case for aiming to establish a real shareholder democracy in the EU. Complete information and disclosure with regard to the group's structure and intra-group relations are a crucial pre-requisite to ensure that the functioning of groups remains compatible with the interests of shareholders and creditors at the different levels.

At that time, the provisions of the Seventh Company Law Directive on consolidated accounts did not sufficiently address these concerns, in that consolidated figures did not reflect the financial situation of the various parts of the group and the degree of dependence of the subsidiaries on the parent company. The need for better financial and non financial information about groups of companies is already addressed partly by a series of EU measures (i.e. the application of IAS to consolidated accounts). The Commission nevertheless observes that the scope of these measures is limited to listed companies.

The Commission therefore considers that additional initiatives aiming at improving to the extent necessary the financial and non financial information disclosed by groups are

desirable when the parent company is not listed. Since transparency is felt as the most important area of intervention with regard to groups, whether they are listed or not, the Commission regards these additional initiatives as priorities for the short term.

Present recommendations and directives

One of the main topics of disclosure regulation is director remuneration. Recommendation (2004/913/EC) demands that **s**hareholders should be provided with a clear and comprehensive overview of the company's remuneration policy. Such disclosure would enable shareholders to assess a company's approach to remuneration and strengthen a company's accountability to shareholders. This should not, however, oblige the company to disclose any information of a commercially sensitive nature which could be detrimental to the company's strategic position. Adequate transparency should also be ensured in the policy regarding directors' contracts. This should include the disclosure of information on issues such as notice periods and termination payments under such contracts which are directly linked to directors' remuneration.

Disclosure of the remuneration of individual directors of the company, executive and non-executive or supervisory directors, in the preceding financial year is therefore important to help them appreciate the remuneration in the light of the overall performance of the company. In order to increase accountability, the remuneration policy should be submitted to the annual general meeting for a vote.

The Recommendation of 15 February 2005 (2005/162/EC) on the role of non-executive or supervisory directors of listed companies and on the committees of the (supervisory) board acknowledges that two key responsibilities of the (supervisory) board seek to ensure that the financial reports and other related information disseminated by the company present an accurate and complete picture of the company’s position. The (supervisory) board should make public at least once a year adequate information about its internal organisation and the procedures applicable to its activities, including an indication of the extent to which the self-evaluation performed by the (supervisory) board has led to any material change. Another issue of capital importance is the independence of directors. Generally, corporate governance codes adopted in Member States recognise the need for a significant proportion of non-executive or supervisory directors to be independent, that is to say, free of any material conflict of interest. Independence is most often understood as the absence of close ties with management, controlling shareholders or the company itself. The determination of what constitutes independence is fundamentally an issue for the (supervisory) board itself to determine. Proper information should be disclosed on the conclusions reached by the (supervisory) board in determining whether a particular director should be regarded as independent. When the appointment of a non-executive or supervisory director is proposed, the company should disclose whether it considers him to be independent; if one or more of the criteria laid down at national level for assessment of independence of directors is not met, the company should disclose its reasons for nevertheless considering that director to be independent. Companies should also disclose annually which directors they consider to be independent.

Directive 2006/46/EC amending The Fourth Directive (on individual account of companies) and the Seventh Directive (on group accounts), provides that the corporate governance statement should make clear whether the company applies any provisions on corporate governance other than those provided for in national law. Comply-or-explain statements are regardless of whether those provisions are directly laid down in a corporate governance code to which the company is subject or in any corporate governance code which the company may have decided to apply. Furthermore, where relevant, companies may also provide an analysis of environmental and social aspects necessary for an understanding of the company’s development, performance and position.

Conclusions

The last decade of corporate governance and accounting evolution in the context of international harmonisation and Community efforts to create a stronger internal market can be analyzed from a progressive view of history. The improvement boom of financial reporting within EU borders is, at the same time, a response to the economic environmental stimuli, and the result of a continuous effort to bring cross-border uniformity to European capital markets. Amongst the 'stimuli' mentioned, the perceived gap between the US market capitalization and dynamics, and the European counterparts has been a long-lasting concern that still subsists today.

The aim of the EU policy in the these sectors was to create an integrated Europe-wide single market through a framework of legislation, co-operation and practice, within which financial services can operate as a whole across borders to achieve the free movement of capital and services. The EU policy is to implement a set of rules allowing companies to establish themselves in different Member States and operate more easily and transparently across borders.

References

Cadbury, A. (1992). *Report of the Committee on the Financial Aspects of Corporate Governance*, London: The Committee on the Financial Aspects of Corporate Governance and Gee and Co. Ltd.

Gompers, P., Ishii, J., Metrick, A., „Corporate Governance and Equity Prices", *The Quarterly Journal of Economics* (February), 2003, pp. 107-155

Hampel, R. (1998). *Committee on Corporate Governance Final Report,* London: Gee

Keasey, K., Short, H., Wright, M. (2005). The Development of Corporate Governance Codes in the UK. In K. Keasey, S. Thompson & M. Wright (Eds.), *Corporate Governance: Accountability, Enteprise and International Comparisons* (pp. 21-45). Chichester: John Wiley & Sons

Villiers, C. (2006). *Corporate Reporting and Company Law*. Cambridge: Cambridge University Press

Whittington, G., „Corporate Governance and the Regulation of Financial Reporting", *Accounting and Business Research, 23*(91 A), 1993, pp. 311-319

Wymeersch, E., „Corporate Governance Codes and their Implementation", *Financial Law Institute, Gent University, Working Paper Series*, 2006, pp. 1-14

ttp://ec.europa.eu/regions.htm

*** http://ec.europa.eu/regional_policy/atlas2007/romania/index_en.htm

*** http://anaf.mfinante.ro/wps/PA_1_1_15H/static/amcsc/fond_structural.htm

*** http://www.infoeuropa.ro

*** http://www.eufinantare.info