

The Consensus of Hierarchy

“Post-communist countries have become the success story of the model of hierarchical economic globalization, with the accelerated liberalization and privatization offering, on the one hand, the politically correct explicative formula for the transition and, on the other hand, the path for conformation to the waves propagating from the powerful summit of the global economy.”

In the past two decades a powerful logical inversion has occurred in the creative algorithm of Economics: the referentials of the explicative framework most often stem from the geostrategic vision of globalization. The most relevant assertions in the world of economic ideas are marked today by hypotheses of political thinking which are specific to the Washington Consensus.

Economic policy arrangements target values inspired by the theory of free international commerce and reach their peak with the liberalization of the capital account, reacting thus to the advantages of highly developed economies. The immediate consequence of this unexpected inversed economic determinism – with the effect generating the cause – is that the usual economic theory offers adverse solutions to the democratic objectives of economic development. The achievements of transition economies are not found, as it would have been expected, in spreading the effects of wealth, nor in the “forward leap” assumed by the concept of a global world on which the promises of the Washington Consensus are based.

The stated destination of the Consensus of being the reservoir for sustaining the exit of underdeveloped countries from the poverty trap, by resorting to the harmonization of existing policies with those of Western world economies’, remains a deceiving assumption. The increasingly pervasive sentiment in society is that the post-communist countries have remained still between two mirrors with opposed reflections.

For instance, the Consensus did not favor Central and Eastern Europe’s real transformation of the economic mechanism especially because it did not provide the framework favorable to the market with regard to the decision and action of the individual. The leading actor of the capitalist dramaturgy, the entrepreneurial-inclined individual, not only did he not discover – as was natural – the first scene of the transformations leading to the market economy, but didn’t even get to insinuate himself into, and survive on, a free market; the roles were assigned to the Western stars.

Visibly, in post-communist Europe the forming of private property has largely been represented by the acquisition of public assets almost exclusively by foreign capital, with the creation of new companies being situated in the marginal area of added-value creation. The processes of economic liberalization did not push into a critical mass the entrepreneurial behaviors which were founded on the acceptance of investment risk and neither did they bring about functional markets.

The indigenous contribution to capitalization remained too insignificant to offer the necessary potential for a natural plug-in of post-communist economies into the global markets. Due to the economy being rather taken over by the forces of the mature markets, the process of transition was an effect of communicating vessels, the abundant liquid of western markets entering and covering the empty economic space of the post-communist orient.

Thus, what are considered to be the own market-creating forces have succumbed under the pressure of the free flowing capital originating in the economies with centuries-old functional markets. It was, essentially, the takeover of the forming markets by economies with consolidated competitive capacities. In fact, the success of the Consensus was limited to breaking the dependency on communist ideology and on external political control, while economic independence remained an unsolved issue.

It is interesting that were the orthodoxy in applying the ideas of the Consensus has been broken, especially with regard to the keeping of a more consistent segment of indigenous capital, be it either public or private, the post-communist economy's capacity of dealing with the market forces was beneficial in this crisis. The economies with a balanced capital structure, both by sectorial criteria centered on favoring the manufacturing industry and also by criteria of allocating profit based on the owner's location, have shown better resilience to external shocks and a proven predisposition for attenuating disequilibriums.

The obvious consequence of applying the policies inspired by the Washington Consensus is that the post-communist countries have become the success story of the model of hierarchical economic globalization, with the accelerated liberalization and privatization offering, on the one hand, the politically correct explicative formula for the transition and, on the other hand, the path for conformation to the waves propagating from the powerful summit of the global economy.

The conceptual pattern of the Washington Consensus has mostly established a mechanism for converting the local economic trends into a support for the efficient performance of the capitalized economies.

The reality of post-communist transition shows that economic dependence is proven under the new conditions as well to be a force which blocks the exit from the periphery, emergence remaining still an atypical case of dealing with development – a heroic formula for dissidence to the Consensus of hierarchical globalization.

The forward leap, of yesterday and of today, forced in the mirrors of ideologies, was proven to really be a leap backwards, and if it won't be fatal it is because nature hesitates in making deadly jumps.

In ontology, commonsense and the well-done job function as unbendable law.

Marin Dinu

Contents

Optimal Labor Contracts with Asymmetric Information and More than Two Types of Agent Daniela Elena Marinescu, Dumitru Marin.....	5
Inflation Targeting in the Romanian Banking Brushwood Georgiana Balaban, Dorel Ailenei.....	19
Oligarchy versus Democracy and Regulation versus Deregulation under the Globalization Effect Dumitru-Alexandru Bodislav.....	33
Short Term Relationships between European Electricity Markets Rafik Jbir, Lanouar Charfeddine	47
Using Garch-in-Mean Model to Investigate Volatility and Persistence at Different Frequencies for Bucharest Stock Exchange during 1997-2012 Iulian Panait, Ecaterina Oana Slavescu	55
Preparation of Financial Statements for Sme's in Romania. Interest for Cash-Flow Statement Nicoleta Farcane, Sorinel Căpușneanu, Sorin Briciu	77
Value-at-Risk Analysis for the Tunisian Foreign Exchange Market: A Comparative Study Aymen Ben Rejeb, Ousama Ben Salha, Jaleleddine Ben Rejeb	93
The Biblical Matrix of Economics Grigore Piroșcă, Angela Rogojanu.....	115
The Sustainable Development Model Cristina Burghilea	125
Household's Financial Behavior during the Crisis Bogdan Chiriacescu, Luminița Tătărici, Cristina Vișan.....	137
Education and Crisis Marius-Cristian Pană.....	145
The Post-Crisis Healthcare System: Effects of the Economic Crisis in Romania Marta Christina Suciu, Cristian Adrian Stan, Luciana Picioruș, Cosmin Ionuț Imbrișcă.....	157
Business Incubators – Favorable Environment for Small and Medium Enterprises Development Camelia Moraru, Alexandru Rusei	169
Procedural and Systematic Crisis Approach and Crisis Management Dragoș Ionuț Tănase.....	177

Note: The authors are responsible for the content of their articles and for obtaining necessary permissions.

Text revision:
Gabriela Ochiană
Computerized drawing up:
Nicoleta Bobocea
Cover:
Nicoleta Bobocea
Subscriptions distribution:
Mircea Dinu
Tel./Fax: 021/210.73.10; 021/210.63.07
021/210.63.08

Data base indexation:
EconLit
<http://www.aeaweb.org>
Research Papers in Economics (RePEc)
<http://www.ideas.repec.org>
<http://econpapers.repec.org>
Directory of Open Access Journals (DOAJ)
<http://www.doaj.org>
EBSCO Publishing
<http://www.ebscohost.com>
International Consortium for the Advancement
of Academic Publication (ICAAP)
<http://www.icaap.org>
CNCSIS B+

www.econometeoreticasiaplicata.ro; www.ectap.ro

Reception of texts: economia.ta@edeconomica.com

ISSN 1841-8678 (Print)
ISSN 1844-0029 (Online)

Optimal Labor Contracts with Asymmetric Information and More than Two Types of Agent

Daniela Elena MARINESCU

Bucharest Academy of Economic Studies
daniela.marinescu@csie.ase.ro

Dumitru MARIN

Bucharest Academy of Economic Studies
dumitrumarin@hotmail.com

Abstract. *In the paper we discuss the optimal labor agreements between workers and firms in the situation of asymmetric information. Using a standard adverse selection model, we analyze the optimality of the labor contracts when it is the firm which has private information affecting the results of the contractual relationship. We propose an alternative procedure to solve the optimization problem, using the informational rents as variables. In the last part of the paper we derive and comment the features of the optimal labor contracts in asymmetric information.*

Keywords: optimal labor contract; incentives; adverse selection.

JEL Codes: D82, D86, L21, J41.

REL Codes: 7J, 12F, 17C.

1. Introduction

When firm hire workers, they have a lot of instruments to optimize the return on labor: bonuses, profit sharing, promotions etc. A remuneration schedule must be based on a set of verifiable results of the employee's activity. Hence, the features of labor contracts depend on whether or not these results are observable and verifiable and can be included in those contracts.

The theory of labor contracts started with the papers of Azariadis (1975), Baily (1974) and Gordon (1974), who presented models in which the workers performance is verifiable and explained the rigidity of real wages, but their models failed in explaining underemployment and unemployment.

Moving away from the classical situation of symmetric information, the theory of optimal labor contracts in asymmetric information was devoted, generally speaking, to solve the problem of risk sharing and optimal incentives. Azariadis (1983) proved that when entrepreneurs are better informed about the state of nature than are their workers, this private information generally results in a suboptimal allocation of both risk and worker's effort. Using different models, Green and Kahn (1983), Grossman and Hart (1983), Chari (1983) and Cooper (1983) assumed that workers cannot observe the values of some uncertain variables affecting the relationship; in such a situation the existence of asymmetric information generated some possible explanation for underemployment and involuntary unemployment. Hart (1983) showed that the Principal has an incentive to reveal the true state of nature if a long working time is linked to higher wages.

Ito (1989) extended the model of Grossman and Hart (1983) of optimal labor contracts in asymmetric information about firm's profitability and proposed a model allowing employment to vary over time. He described the impact of ex-post Pareto improving renegotiations on the optimal contract.

When both participants – employee and employer – have different risk aversions, Rosen (1985) and Malcomson (1999) analyzed the optimal risk sharing and pointed out that the workers remuneration and the firm's profit always vary in the same direction. Lazear (1986, 1999, 2000) analyzed the evolution of compensation schemes and the influence of financial incentives on the behavior and the performance of workers. Other authors (Fehr, Falk, 1999, Fehr, Schmidt, 2000) suggested that explicit incentives can also have counterproductive effects.

Recent developments concerning the problem of optimal labor contracts dealt with the design of incentive schemes in risk and uncertainty situations such as: the link between the consumption level and the design of optimal labor contracts (Postlewaite et al., 2008), the influence of incentive contracts on the

total factor productivity (Bental, Demougin, 2006), incentives, promotions and tournaments (Kvaloy, Olsen, 2006, Gurtler, Krackel, 2010, Hart, Ma, 2010), incentives and multitasking (Schottner, 2008).

Our approach is somewhat similar with that described by Green and Kahn (1983). They analyzed the optimal labor agreements and the dependence of workers wages on employment when this level is completely controlled by the firms. The purpose of the present paper is to extend this analysis for the case where the firm having private information can have one of three types of profitability levels. We also propose an alternative procedure to solve the optimization problem, using the informational rents as variables.

The paper is organized as follows. In Section 2 we outline the basic assumptions used in the paper. In the next section the features of the optimal contracts in symmetric information are detailed. In Section 4 we define the optimization problem in the situation of asymmetric information and we propose a procedure to solve it. The Section 5 presents a full characterization of the optimal incentive contracts. The paper ends with the main conclusions and discusses some possible future developments.

2. The basic assumptions

Our approach is based on a standard Principal-Agent model, analyzed in both situations, symmetric and asymmetric information. We assume that one of the participants has private information about some characteristics affecting the results of the contractual agreement. This situation corresponds to an adverse selection problem.

In Green and Kahn (1983), the principal is represented by a union or a set of workers providing labor force to a firm. For simplicity, we consider a labor contract between one firm and one worker, the basic framework being the same with that of the cited authors.

The model is a monopiod one, and the principal (the worker) has the preferences represented by the following utility function:

$$U(l, w) = u(w) - v(l)$$

where:

l is the labor force provided by the worker;

w is the wage paid by the employer (the firm);

$v(l)$ is the worker's disutility of providing l units of labor (working time).

Note that the principal's utility function is additive separable in wages and effort, and the functions $u(\cdot)$ and $v(\cdot)$ have the properties: $u' > 0, u'' < 0$ (the principal is risk averse) and $v' > 0, v'' > 0$ respectively.

The firm (the Agent) has the following objective function:

$$\Pi(l, w) = \theta f(l) - w$$

where:

$f(l)$ is the firm's revenues obtained by the firm using l units of labor, with $f' > 0, f'' < 0$;

θ represents an efficiency parameter characterizing the firm's technology (the profitability level) and is the firm's private information.

We also assume, with any loss of generality, that the Agent has an outside opportunity utility level $\underline{u} = 0$ (zero reservation utility).

The principal has all the bargaining power in determining the labor contract with the firm.

The economic contractual variables of the problem to be solved are then: the labor force l and the worker's wage w .

3. The optimal contract in symmetric information

In the situation of symmetric information, the Principal knows the firm's technology, here characterized by the efficiency parameter θ . The optimization problem to be solved is written as:

$$\begin{aligned} & \max_{l, w} [u(w) - v(l)] \\ & \text{s.t.} \\ & \theta f(l) - w \geq 0 \\ & l \geq 0, w \geq 0 \end{aligned}$$

The Lagrangean for the above problem is:

$$L(l, w, \lambda) = u(w) - v(l) + \lambda [\theta f(l) - w]$$

The optimal solution (assuming an interior solution) satisfies the following first order conditions:

$$\frac{\partial L}{\partial l} = 0 \text{ or } -v'(l) + \lambda \theta f'(l) = 0 \quad (1)$$

$$\frac{\partial L}{\partial w} = 0 \text{ or } u'(w) - \lambda = 0 \quad (2)$$

$$\frac{\partial L}{\partial \lambda} = 0 \text{ or } \theta f(l) - w = 0 \quad (3)$$

We get from (2) that $\lambda = u'(w) > 0$ and hence the Agent's participation constraint is binding at the optimum.

Using the conditions (1) and (2), we get the features of the optimal contracts in the situation of symmetric information (the first best solution), denoted by (l^*, w^*) :

- at the optimum, the firm (Agent) gets no more than his reservation utility level:

$$\theta f(l^*) - w^* = 0$$

So, the firm's technology is perfectly known by the Principal, he can extract the Agent's informational rent.

- at optimum, the marginal profit of the firm is equal to the worker's marginal rate of substitution, i.e.:

$$\theta f'(l^*) = \frac{v'(l^*)}{u'(w^*)}$$

Therefore, the resulting contract satisfies the Pareto efficiency condition.

4. The optimal contract in asymmetric information

Suppose now that the efficiency parameter θ describing the firm's technology is the firm's private information. Moreover, we consider that this parameter can take one of three possible values, $\theta \in \{\theta^G, \theta^M, \theta^B\}$, with $\theta^G > \theta^M > \theta^B$ and the corresponding probabilities are $P(\theta = \theta^i) = \pi^i, i = G, M, B$. We also have $\Delta\theta = \theta^G - \theta^M = \theta^M - \theta^B > 0$.

In this case the Principal offers a menu of contracts $\{(l^G, w^G), (l^M, w^M), (l^B, w^B)\}$, one for each type of Agent, hoping that each Agent will select the contract designed for him. The Principal's optimization problem is now:

$$\max_{l^G, w^G, l^M, w^M, l^B, w^B} \left\{ \pi^G [u(w^G) - v(l^G)] + \pi^M [u(w^M) - v(l^M)] + \pi^B [u(w^B) - v(l^B)] \right\}$$

with the following constraints:

▪ participation constraints:

$$\theta^G f(l^G) - w^G \geq 0 \quad (4)$$

$$\theta^M f(l^M) - w^M \geq 0 \quad (5)$$

$$\theta^B f(l^B) - w^B \geq 0 \quad (6)$$

▪ incentive compatibility constraints:

$$\theta^G f(l^G) - w^G \geq \theta^G f(l^M) - w^M \quad (7)$$

$$\theta^G f(l^G) - w^G \geq \theta^G f(l^B) - w^B \quad (8)$$

$$\theta^M f(l^M) - w^M \geq \theta^M f(l^B) - w^B \quad (9)$$

$$\theta^M f(l^M) - w^M \geq \theta^M f(l^G) - w^G \quad (10)$$

$$\theta^B f(l^B) - w^B \geq \theta^B f(l^M) - w^M \quad (11)$$

$$\theta^B f(l^B) - w^B \geq \theta^B f(l^G) - w^G \quad (12)$$

▪ sign constraints:

$$l^G \geq 0, w^G \geq 0, l^M \geq 0, w^M \geq 0, l^B \geq 0, w^B \geq 0$$

Definition. A menu of contracts $\{(l^G, w^G), (l^M, w^M), (l^B, w^B)\}$ is incentive feasible if it satisfies both sign constraints, participation constraints and incentive compatibility constraints (4)-(12).

The model transformed using the informational rents as variables

Let:

$$U^i = \theta^i f(l^i) - w^i, i = G, M, B$$

be the *informational rent* of the Agent having the profitability level θ^i .

With this change of variables, the participation constraints (4)-(6) become simple sign constraints:

$$U^G \geq 0 \quad (13)$$

$$U^M \geq 0 \quad (14)$$

$$U^B \geq 0 \quad (15)$$

The incentive compatibility constraint given by (7) can be rewritten as:

$$\begin{aligned} \theta^G f(l^G) - w^G &\geq \theta^G f(l^M) - \theta^M f(l^M) + \theta^M f(l^M) - w^M \\ &= \Delta\theta f(l^M) + \theta^M f(l^M) - w^M \end{aligned}$$

$$\text{or } U^G \geq U^M + \Delta\theta f(l^M) \quad (16)$$

Similarly, the other incentive constraints are transformed:

$$U^G \geq U^M + \Delta\theta f(l^M) \quad (16)$$

$$U^M \geq U^B + \Delta\theta f(l^B) \quad (17)$$

$$U^G \geq U^B + 2\Delta\theta f(l^B) \quad (18)$$

$$U^M \geq U^G - \Delta\theta f(l^G) \quad (19)$$

$$U^B \geq U^M - \Delta\theta f(l^M) \quad (20)$$

$$U^B \geq U^G - 2\Delta\theta f(l^G) \quad (21)$$

The objective function expressed in terms of informational rents and effort levels is given by:

$$\begin{aligned} \max_{\substack{l^G, U^G, l^M \\ U^M, l^B, U^B}} F(\cdot) = & \left\{ \pi^G \left[u(\theta^G f(l^G) - U^G) - v(l^G) \right] + \pi^M \left[u(\theta^M f(l^M) - U^M) - v(l^M) \right] + \right. \\ & \left. + \pi^B \left[u(\theta^B f(l^B) - U^B) - v(l^B) \right] \right\} \end{aligned}$$

Due to the huge number of constraints, the new optimization problem, even simpler than the first one, is still complex. Before solving, we will try to reduce it. The next section presents a sequential procedure to determine which of the constraints are the relevant ones and relevant at the optimum.

Reducing the problem

Analyzing the participation constraints, only that one assigned to the least efficient technology is relevant. The following proposition states this result.

Proposition 1. If the constraint $U^B \geq 0$ is satisfied, then the constraints $U^M \geq 0$ and $U^G \geq 0$ are also true.

Proof

The upward local incentive constraints (17) and (18) together with $U^B \geq 0$ yield to:

$$U^M \geq U^B + \Delta\theta f(l^B) \geq \Delta\theta f(l^B) \geq 0$$

and,

$$U^G \geq U^B + 2\Delta\theta f(l^B) \geq 2\Delta\theta f(l^B) \geq 0$$

Note that if $l^B > 0$, then the constraints hold strictly.

The above result has a straightforward economic interpretation: if the Agent with the type B accepts the contract and the worker supplies labor (the labor is strictly positive), then the profit for the other types of firm, M or G, is positive; these types of firm get more than their reservation utility level.

Next, we state a well known result of the incentive theory, the *implementability condition*, which is used to compare the optimal values of the economic variable involved (the worker's effort).

Proposition 2. If the set of incentive feasible contracts is nonempty, then:

$$l^G \geq l^M \geq l^B \text{ (The Implementability condition CI)}$$

Proof

We use the upward local constraints and adding them we get:

- from $U^G \geq U^M + \Delta\theta f(l^M)$ and $U^M \geq U^G - \Delta\theta f(l^G)$ it follows that:

$$\Delta\theta f(l^G) \geq \Delta\theta f(l^M)$$

$$\text{or } l^G \geq l^M;$$

- in the same way, from $U^M \geq U^B + \Delta\theta f(l^B)$ and

$$U^B \geq U^M - \Delta\theta f(l^M) \text{ it follows that:}$$

$$\Delta\theta f(l^M) \geq \Delta\theta f(l^B)$$

$$\text{or } l^M \geq l^B.$$

In what follows we ignore the downward global and incentive constraints. Later on we will prove that the solution derived for the reduced problem satisfies these constraints. Hence, the optimization problem to be solved has only one relevant participation constraint (that one corresponding to the type B) and the upward incentive constraints (16)-(18). But we are now interested in determine which of the remaining constraints are binding at the optimum.

Proposition 3. At the optimum, the participation constraint $U^B \geq 0$ is binding.

Proof

Suppose this is not true and $U^B > 0$. Let $\varepsilon > 0$ be a small positive value such that $U^B - \varepsilon \geq 0$. We define the menu of contracts $\{(l^G, U^G - \varepsilon), (l^M, U^M - \varepsilon), (l^B, U^B - \varepsilon)\}$ and this menu is incentive feasible.

Using that the function $u(\cdot)$ is strictly increasing we get:

$$\begin{aligned}
F(l^G, U^G - \varepsilon, l^M, U^M - \varepsilon, l^B, U^B - \varepsilon) &= \pi^G \left[u(\theta^G f(l^G) - U^G + \varepsilon) - v(l^G) \right] + \\
&+ \pi^M \left[u(\theta^M f(l^M) - U^M + \varepsilon) - v(l^M) \right] + \pi^B \left[u(\theta^B f(l^B) - U^B + \varepsilon) - v(l^B) \right] > \\
&> F(l^G, U^G, l^M, U^M, l^B, U^B)
\end{aligned}$$

And this contradicts the optimality of the solution $\{(l^G, U^G), (l^M, U^M), (l^B, U^B)\}$.

Therefore, at the optimum, the profit obtained by the firm B is equal to its reservation value.

In conclusion, we have:

$$U^B = 0 \quad (22)$$

In addition, we have already shown that the remaining participation constraints (for types M and G) are also satisfied.

Proposition 4. The upward global constraint (18) is implied by the local incentive constraints (16) and (17).

Proof

Combining the constraints (16) and (17) and using the monotonicity of the function $f(\cdot)$ and the implementability condition we get:

$$\begin{aligned}
U^G &\geq U^M + \Delta\theta f(l^M) \geq U^B + \Delta\theta f(l^B) + \Delta\theta f(l^M) \geq \\
&\geq U^B + \Delta\theta (f(l^B) + f(l^M)) \geq U^B + 2\Delta\theta f(l^B)
\end{aligned}$$

Hence, we can ignore the upward global incentive constraint when solving the problem.

Next, we show that the two remaining incentive constraints of the optimization problem are binding at the optimum.

Proposition 5. The upward local incentive constraint (17) is binding at the optimum.

Proof

Indeed, suppose that strict inequality holds, i.e.: $U^M > \Delta\theta f(l^B)$.

The solution $(l^G, U^G - \varepsilon, l^M, U^M - \varepsilon, l^B, 0)$ is feasible for a small positive value $\varepsilon > 0$. The constraint (16) can be written as:

$$U^G - \varepsilon \geq U^M - \varepsilon + \Delta\theta f(l^M)$$

On the other hand, we now have:

$$U^G \geq U^M + \Delta\theta f(l^M) > \Delta\theta f(l^B) + \Delta\theta f(l^M) \geq 2\Delta\theta f(l^B).$$

Then, the constraint (18) is also satisfied (for a small value $\varepsilon > 0$). But we have already stated this result in the Proposition 4.

Since the objective function has a higher value for the new allocation:

$$\begin{aligned} F(l^G, U^G - \varepsilon, l^M, U^M - \varepsilon, l^B, 0) &= \pi^G \left[u(\theta^G f(l^G) - U^G + \varepsilon) - v(l^G) \right] + \\ &+ \pi^M \left[u(\theta^M f(l^M) - U^M + \varepsilon) - v(l^M) \right] + \pi^B \left[u(\theta^B f(l^B)) - v(l^B) \right] > \\ &> F(l^G, U^G, l^M, U^M, l^B, 0) \end{aligned}$$

this contradicts the optimality of the solution.

Therefore, at the optimum, the following holds:

$$U^M = \Delta \theta f(l^B) \quad (23)$$

Proposition 6. The upward local constraint (16) is binding at the optimum.

Proof

We can prove the proposition in the same way we did above.

Suppose that $U^G > \Delta \theta (f(l^B) + f(l^M))$.

Then, the feasible solution $(l^G, U^G - \varepsilon, l^M, \Delta \theta f(l^B), l^B, 0)$ is strictly better than the optimal solution $(l^G, U^G, l^M, \Delta \theta f(l^B), l^B, 0)$, and this is a contradiction.

Therefore, at the optimum, we have:

$$U^G = \Delta \theta (f(l^B) + f(l^M)) \quad (24)$$

5. Characterizing the optimal contracts in asymmetric information

Taking into account all the results from the previous propositions and ignoring for a while the downward local and global constraints, the optimization problem is significantly reduced. Next, we use the expressions for the informational rents given in (22)-(24). The principal's problem becomes:

$$\max_{\substack{l^G, U^G, l^M, \\ U^M, l^B}} F(\cdot) = \left\{ \pi^G \left[u(\theta^G f(l^G) - U^G) - v(l^G) \right] + \pi^M \left[u(\theta^M f(l^M) - U^M) - v(l^M) \right] + \right. \\ \left. + \pi^B \left[u(\theta^B f(l^B)) - v(l^B) \right] \right\}$$

s.t.

$$U^M = \Delta \theta f(l^B)$$

$$U^G = \Delta \theta (f(l^B) + f(l^M))$$

The constraints are binding at the optimum and hence we can replace the variables U^M and U^G into the objective function. We finally get an unconstrained optimization problem:

$$\max_{l^G, l^M, l^B} F^R(\cdot) = \left\{ \pi^G \left[u(\theta^G f(l^G) - \Delta \theta (f(l^B) + f(l^M))) - v(l^G) \right] + \right. \\ \left. + \pi^M \left[u(\theta^M f(l^M) - \Delta \theta f(l^B)) - v(l^M) \right] + \pi^B \left[u(\theta^B f(l^B)) - v(l^B) \right] \right\}$$

The first order conditions are the following:

$$\frac{\partial F^R(\cdot)}{\partial l^G} = 0 \text{ or } \pi^G \left[u'(\cdot) \theta^G f'(l^G) - v'(l^G) \right] = 0 \quad (25)$$

$$\frac{\partial F^R(\cdot)}{\partial l^M} = 0 \text{ or } -\pi^G \Delta \theta u'(\cdot) f'(l^M) + \pi^M \left[u'(\cdot) \theta^M f'(l^M) - v'(l^M) \right] = 0 \quad (26)$$

$$\frac{\partial F^R(\cdot)}{\partial l^B} = 0 \text{ or } -\pi^G \Delta \theta u'(\cdot) f'(l^B) - \pi^M \Delta \theta u'(\cdot) f'(l^B) + \pi^B \left[u'(\cdot) \theta^B f'(l^B) - v'(l^B) \right] = 0 \quad (27)$$

Later on, we will use these conditions in order to characterize the optimal menu of contracts. We must now show that the ignored constraints are also satisfied at the optimum.

Since the informational rents are given by the relations (22)-(24), the downward local constraint (19), $U^M \geq U^G - \Delta \theta f(l^G)$, becomes:

$$\Delta \theta f(l^B) \geq \Delta \theta (f(l^B) + f(l^M)) - \Delta \theta f(l^G)$$

$$\text{or } \Delta \theta f(l^G) \geq \Delta \theta f(l^M)$$

and this is true, using the implementability condition and the monotonicity of the function $f(\cdot)$.

In a similar manner, the downward local constraint (20), $U^B \geq U^M - \Delta\theta f(l^M)$, can be written as:

$$0 \geq \Delta\theta f(l^B) - \Delta\theta f(l^M)$$

or $\Delta\theta f(l^M) \geq \Delta\theta f(l^B)$, which is also true.

The downward global constraint (21), $U^B \geq U^G - 2\Delta\theta f(l^G)$, becomes:

$$0 \geq \Delta\theta (f(l^B) + f(l^M)) - 2\Delta\theta f(l^G)$$

or $2f(l^G) \geq f(l^B) + f(l^M)$, which is also true from the same implementability condition and the increasing function $f(\cdot)$.

We can now fully characterize the second best solution. The main features are summarize in the following theorem.

Theorem. In the situation of asymmetric information, the optimal menu of contracts $\{(\bar{l}^G, \bar{w}^G), (\bar{l}^M, \bar{w}^M), (\bar{l}^B, \bar{w}^B)\}$ entails:

A. The *optimal level of labor* assigned to the firm G, $\bar{l}^G$, and the corresponding *optimal wage* $\bar{w}^G$ satisfy the efficiency condition:

$$\theta^G f'(\bar{l}^G) = \frac{v'(\bar{l}^G)}{u'(\bar{w}^G)}$$

This type of firm gets a positive *informational rent*, which is dependent on the optimal labor offered to the firms with types B and M:

$$\bar{U}^G = \Delta\theta [f(\bar{l}^B) + f(\bar{l}^M)]$$

B. The *optimal level of labor* assigned to the firm M, $\bar{l}^M$, and the corresponding *optimal wage* $\bar{w}^M$ satisfy the first order condition:

$$\theta^M f'(\bar{l}^M) = \frac{v'(\bar{l}^M)}{u'(\bar{w}^M)} + \frac{\pi^G}{\pi^M} \Delta\theta \frac{u'(\bar{w}^G)}{u'(\bar{w}^M)} f'(\bar{l}^M)$$

This type of firm gets a positive *informational rent*, which is dependent on the optimal labor offered to the firm:

$$\bar{U}^M = \Delta\theta f(\bar{l}^B)$$

C. The *optimal level of labor* assigned to the firm B, $\bar{l}^B$, and the corresponding optimal wage $\bar{w}^B$ satisfy the first order condition:

$$\theta^B f'(\bar{l}^B) = \frac{v'(\bar{l}^B)}{u'(\bar{w}^B)} + \frac{\pi^G + \pi^M}{\pi^B} \Delta \theta \frac{u'(\bar{w}^G) + u'(\bar{w}^M)}{u'(\bar{w}^B)} f'(\bar{l}^B)$$

This type of firm gets no informational rent, $\bar{U}^B = 0$.

6. Conclusions

In this paper we extended the problem of designing the optimal labor agreements first introduced by Green and Kahn (1983). We adapted their model to the case where the adverse selection parameter characterizing the firm's private information is represented by its profitability level. The central goal of the paper was to derive the features of the optimal labor contracts in the situation of asymmetric information when the parameter takes three possible values. If the firm has high profitability level, the optimal contract is Pareto efficient, while the firm gets a positive informational rent due to the informational advantage it has. The principal must give up this rent in order to determine the agent to reveal his private information. On the other hand, the optimal contracts designed for the firm with medium or low profitability level are not longer Pareto efficient. The inefficiency is directly dependent on the spread of uncertainty regarding the efficiency parameter and of course on the functional form of the objective functions.

We showed that the presence of asymmetric information affects the form of the optimal labor contracts, but our analysis is not complete. We here assumed that the union has full bargaining power, but it is also plausible that the firm has the bargaining power. We could be interested if the short term contract can be extended or adapted for a longer period of time and if a long term contract is Pareto efficient. Of course, further work should be done concerning these problems.

Acknowledgements

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

References

- Azariadis, C., „Employment with asymmetric information”, *Quarterly Journal of Economics*, 98, suppl., 1983, pp. 157-172
- Bental, B., Demougin, D., „Incentive contracts and total factor productivity”, *International Economic Review*, 47 (3), 2006, pp. 1033-1055
- Chari, V., „Involuntary unemployment and implicit contracts”, *Quarterly Journal of Economics*, 98, suppl., 1983, pp. 107-122
- Cooper, R., „A note on overemployment/underemployment in labor contracts under asymmetric information”, *Economic Letters*, 12, 1983, pp. 81-87
- Fehr, E., Falk, A., „Wage rigidity in a competitive incomplete contract market”, *Journal of Political Economy*, 107 (1), 1999, pp.106-134
- Fehr, E., Schmidt, K., „Fairness, incentives and contractual choices”, *European Economic Review*, 44, 2000, pp. 1057-1068
- Green, J., Kahn, C., „Wage employment contracts”, *Quarterly Journal of Economics*, 98, suppl., 1983, pp. 173-187
- Gurtler, O., Krackel, M., „Optimal tournament contracts for heterogeneous workers”, *Journal of Economic Behaviour and Organization*, 75(2), 2010, pp. 180-191
- Hart, R.A., Ma, Y., „Wage hours contracts, overtime working and premium pay”, *Labor Economics*, 17(1), 2010, pp.170-179
- Hart, O., „Optimal labour contracts under asymmetric information: An introduction”, *Review of Economic Studies*, 50, 1983, pp. 3-35
- Kvaloy, O., Olsen, T.E., „Team incentives in relational employment contracts”, *Journal of Labor Economics*, 24(1), 2006, pp.139-169
- Laffont, J.J., Martimort, D. (2002). *The Theory of Incentives. The Principal-Agent Model*, Princeton University Press, Princeton
- Lazear, E., „Salaries and piece rates”, *Journal of Business*, 59, 1986, pp. 405-431
- Lazear, E., „Personal economics: Past lessons and future directions”, *Journal of Labor Economics*, 17, 1999, pp. 199-236
- Lazear, E., „Performance, pay and productivity”, *American Economic Review*, 90, 2000, pp.1346-1361
- Milgrom, P., „Employment contract, influence activity and efficient organization”, *Journal of Political Economy*, 96, 1988, pp. 42-60
- Postlewaite, A., Samuelson, L., Silverman, D., „Consumption commitments and employment contracts”, *Review of Economic Studies*, 75 (2), 2008, pp. 559-568
- Prendergast, C., „The provision of incentives in firms”, *Journal of Economic Literature*, 37, 1999, pp. 7-63
- Schottner, A., „Relational contracts, multitasking and job design”, *Journal of Law, Economics and Organization*, 24(1), 2008, pp.138-162

Inflation Targeting in the Romanian Banking Brushwood

Georgiana BALABAN

Bucharest Academy of Economic Studies
gina.balaban@gmail.com

Dorel AILENEI

Bucharest Academy of Economic Studies
dorulilenei@gmail.com

Abstract. *As a result of joining the global trend of the monetary policy modernization, Romania has adopted the inflation targeting strategy in August 2005. Although the implementation conditions have been prepared in advance on the background of a medium-term disinflation process, the National Bank of Romania (NBR) succeeded in reaching the inflation target only in one year (2006). Beyond the inevitable difficulties specific to emerging countries, the implementation of this strategy, that has proved to be effective even in conditions of crisis, was hampered by an unfavourable economic and political environment. In this paper, the authors aim to analyse the responses of the Romanian banking system to the signals of monetary policy sent by the NBR. In order to do this, the dynamics of the non-governmental domestic credit and the interest rates channel have been econometrically tested. The results of the analysis showed a chaotic growth in lending over the last years (2005-2011) in Romania, respectively an uncooperative attitude of the commercial banks on reaching the objectives of the monetary polic.*

Keywords: monetary policy; inflation targeting; Granger causality tests; interest rate; commercial banks.

JEL Codes: E52, E58, C22.

REL Codes: 8F, 11B.

Introduction

The strategy of inflation targeting, which was introduced in 1990 by the Central Bank of New Zealand as an innovation of the monetary policy instruments, is considered by literature and practitioners to be a framework that allows central banks to exercise a “constricted discretionarism”, in which the role of the nominal anchor is played by the inflation targets. Thus, the inflation targeting achieves conciliation between the discipline and the responsibility imposed by the rigid rules, on the one hand, and the flexibility allowed by the discretionary approach, on the other hand. Beyond the undeniable successes achieved by both developed and emerging countries as a result of applying this monetary policy strategy, there are a number of difficulties and risks that led to missing the inflation target, especially during the first years of implementation.

The difficulties of applying the inflation targeting strategy are linked to a series of minimal conditions that describe the monetary policy framework (Mishkin, 2001):

- a commitment of the institution running the monetary policy to price stability as its main objective on long term, and to the inflation target achievement. However, many countries practice a flexible inflation targeting and give a certain degree of importance to the output stability (the macroeconomic outcome) around the potential level and even pursue other objectives to some extent;
- an explicit objective of the monetary policy through the publication of numerical targets for inflation rate in a specific time horizon, either as points (2 percent annually), or as an interval (1-3 percent), or as a point with an accepted error (2 percent $\pm$ 1 percentage point);
- an internal process of decision in which the target variables have a prominent role and the central bank sets its instruments (the nominal interest rate on short-term) so that the objective is achieved;
- an increased transparency of the monetary policy and of the accountability of the central bank in relation to the achievement of its main objectives. Openness and transparency enable the monetary policy makers to be publicly accountable for the decisions they take. This stimulates them to achieve their goals, increasing the public confidence in the central bank and therefore its credibility.

A high degree of euroization/dollarization may create potential problems for the inflation targeting regime: this requires flexible exchange rates, as the exchange rate fluctuations are inevitable in this case. Steep depreciations may increase the burden of the debt denominated in foreign currency, causing a massive damage to the balance sheets of the economic agents and an increase in

the risks associated to a financial crisis. This suggests that emerging market economies cannot afford to ignore the exchange rate when setting the monetary policy stance in accordance with the inflation targeting strategy, but the role that it assigns should be clearly subordinated to the inflation objective (Mishkin, 2001).

One of the problems that the central bank is facing refers to the defective control that it has on inflation because of the lags that arise in the transmission mechanism of the monetary policy, the uncertainties related to this mechanism, the current state of the economy and the future shocks related to it, as well as factors that are not related to the monetary policy. The solution proposed for this problem involves using inflation forecast as an intermediate target (inflation forecast targeting). The use of the inflation forecast targeting implies that the people running the central bank should develop a range of possible paths for inflation and the GDP deviation, corresponding to different trajectories of the main monetary policy instrument (the interest rate) from which the one that leads to a minimized variation of the two variables of the loss function will be chosen.

On the other hand, economic agents react with some delay to the signals sent by the central bank, delay that is caused by the check of the information received, or by the efforts to review the business plans. From this perspective, an increase in the central bank's credibility is an indispensable requirement to the successful implementation of the inflation targeting strategy. Nevertheless, one should not overlook the fact that economic agents pursue their own interests, which are not always convergent with the interests of the central bank. Of course, this is also true in the case of the relationship of the central bank with the commercial banks, which leads to a great amount of delays in propagating the effects of the monetary policy measures, or it can even cause side effects.

The empirically proven delay with which the interest rates are adjusted is supported by a series of theoretical statements. The first argument assumes that banking is facing costs generated by the information asymmetry, which could lead to adverse selection phenomena and moral hazard. In case the interest rates on credit increase, there is a possibility that banks can attract borrowers with a higher risk profile (adverse selection). Concurrently, the entities that counter loans are encouraged to choose riskier projects (moral hazard). Therefore, the expected income of banks can actually decrease along with the increased funding costs when the default probability of the borrowers increases sufficiently. In this situation, banks choose not to increase interest rates on loans proportional to a shock on the monetary market interest rate, but rationalizing the credit supply (credit rationing).

Furthermore, customers may support the switching costs when they choose to change the bank they have been working with. Such costs may be

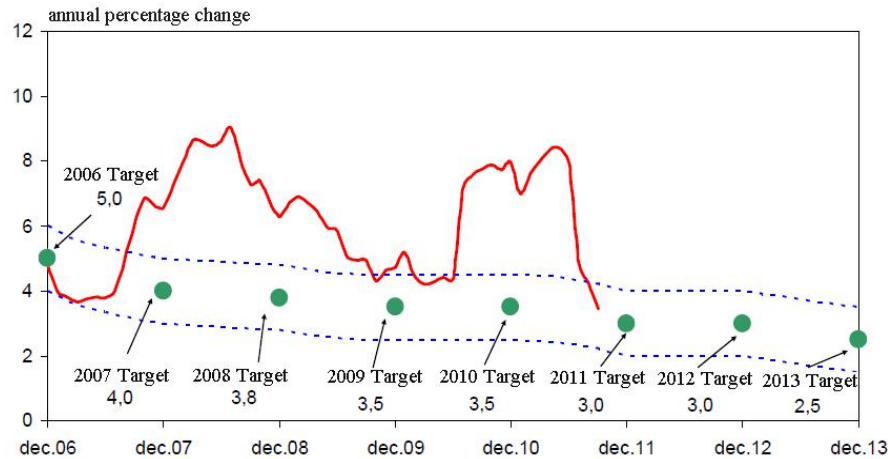
administrative or they can be related to collecting the information and they are also expected to be significant in the markets that are dominated by long-term banking relationships and repeated transactions (Sharpe, 1997). According to this theory, switching costs contribute to the segmentation of the market, reducing the elasticity of the deposit demand/supply depending on the interest rate. A low elasticity could introduce in return, *ceteris paribus*, an asymmetry in the transmission of interest rates. The reaction of the interest rates on loans, for example, would be stronger in case of an increase in the interbank interest rates and weaker if the latter decreases.

Another argument is that the banks are facing adjustment costs when the interest rates of the monetary market change. A bank that aims to maximize the profit will make a change in the interest rate on credits only when the adjustment costs are lower than those induced by maintaining interest rates unchanged. The latter are directly proportional to the elasticity of the demand for bank loans, which is lower in markets characterized by a smaller number of competitors, greater barriers at the market entry or the absence of non-bank financing alternatives or on the external market. Moreover, banks will choose not to change the interest rates when they perceive the interest rates variation of the monetary market as temporary.

Leuvensteijn Van et al. (2008), Groppa et al. (2007) emphasize the fact that the intensity of competition affects the transmission of interest rates in the Euro area. Sander and Kleimeier (2004) conducted a study involving eight countries that joined the EU in 2004, and concluded that the transmission process is determined by several variables such as the banking market concentration, the health of credit institutions, the foreign participation to their capital and the monetary policy regime. Based on this result, the authors argue that there is a high potential for convergence of the interest rates pass-through in these economies in accordance with the convergence progress of the macroeconomic financial structure.

In Romania, the central bank officially adopted the inflation targeting strategy in August 2005. The decision to shift to inflation targeting was adopted only after the preconditions specific to this kind of change have been met. The main preconditions considered were the following: (i) lowering the annual inflation rate below 10 percent, (ii) strengthening the independence *de jure* and *de facto* of the NBR; (iii) restricting the fiscal dominance and a better coordination between the fiscal and the monetary policies; (iv) the recovery and strengthening of the banking system and increasing the banking intermediation.

Nevertheless, the inflation target was reached in only one year (2006), while the period 2005-2010 was dominated by failure. It seems that in the second semester of 2011 the inflation target might be reached (Figure 1).



Note: Variation band is 1 percentage point around the central target

Source: NBR.

Figure 1. Dynamics of the inflationary process in Romania according to the targeted interval

Of course, there are many possible explanations regarding the NBR's failure to reach the inflation target. Thus, the levels of the annual inflation targets are considered to be set so that they meet the requirements arising from both the implementation of the monetary policy in the context of inflation targeting strategy and the need to conduct the nominal and real convergence process of the Romanian economy. Under these circumstances, there is a question arising among specialists - whether one of the obvious reasons for missing the target is the very ambitious level to which it has been set. However, we should not overlook the fact that the NBR dealt with this dilemma that was generated by the increase in the inflationary pressures of the demand, on the one hand, and on the other hand, with the amplification of volatile capital inflows as a result of allowing the non-residents to access term deposits in Ron.

Moreover, because Romania is an emergent economy, with many prices that are still administered, the prices advance at a higher rate than in the rest of the Euro area is a natural process. If inflation targeting around 2% in the Euro area can be considered an anchor in the past, for Romania, the choice of target can be seen either as an anchor transfer, or a spurt of ambition. The anchor transfer is more like a reference to the foreign reality, rather than the Romanian one. Furthermore, the NBR influences only part of the consumer basket that it aims, which means that in order to force the achievement of the target, it should produce deflation in the prices that it can affect. Forcing the process of reducing inflation affects economic development (Isar, 2011).

Without exhausting the long list of causes that contributed to the inflation target misses, the authors intend to address this problem in terms of the relationship between the central bank and the commercial banks.

Methodology

Our analysis focused on the dynamics of the domestic non-government credit and the factors that influence it, but also on the interest rate channel. In the analysis of the dynamics of the domestic non-government credit we took into consideration the lags existent in the monetary transmission mechanism and, therefore, in the propagation of the shock effects that appear in the case of some endogenous variables, by using an autoregressive form of the econometric equation (equation 1). Regarding the interest rates channel, we took into account the correlations between the monetary policy interest rate and the average commercial banks interest rates, respectively the average interest rates for loans in Ron granted on the interbank market (Robor) at different terms (one month, three months and twelve months). Given the double direction of the transmission channels, we performed Granger causality tests (Tables 2 and 3) to identify the direction and intensity of the causal relationship. The null hypothesis (H0) of no causal relationship was verified with F-test. The symbols and the meaning of the variables used in the econometric analysis are presented in Table 1.

Table 1

The variables of econometric model

CIN	The non-government domestic credit
M2	Intermediate money
RD_PM	The monetary policy interest rate
RDA	The average active interest rate applied by credit institutions
RDP	The average passive interest rate applied by credit institutions
ROBOR12M, ROBOR3M, ROBOR1M	(Romanian Interbank Offer Rate) The interest rate of deposits on the interbank market
IPC	The consumer price index

In order to ensure the consistency of the model and of the time series stationarity, the variables have been transformed into logarithms and we worked with first-order differences. Taking into account the main variables considered in the literature as being responsible for the dynamics of the non-government domestic credit, we used the following form:

$$\begin{aligned}
 DL_CIN = & C(1) + C(2)DL_M2 + C(3) DL_M2(-1) + \\
 & + C(4) RDA(-1) + C(5) RD_PM + C(6) RD_PM(-1) + \\
 & + C(7) DL_IPC + C(8) DL_IPC(-1)
 \end{aligned}
 \tag{1}$$

Data

The data used in the econometric analysis correspond to the period January 2005 - June 2011, with a monthly frequency (for the analysis of the non-government domestic credit growth and testing the causal relationship between the monetary policy interest rate and the average commercial banks interest rates) and a daily one (for the analysis of the causal relationship between Robor rates and the monetary policy interest rate). The econometric estimation was made for the period following 2005, as this was the year in which the NBR adopted the inflation targeting strategy. In order to test the time series stationarity, we used the ADF test (Augmented Dicky Fuller), and in the case of the first-order differences the results were positive.

Empirical results

Between January 2005 - June 2011, the non-government domestic credit increased more than four times (from less than 50 billion Ron to more than 200 billion Ron), outpacing the growth of the intermediate money in the second half of the interval (Figure 2).

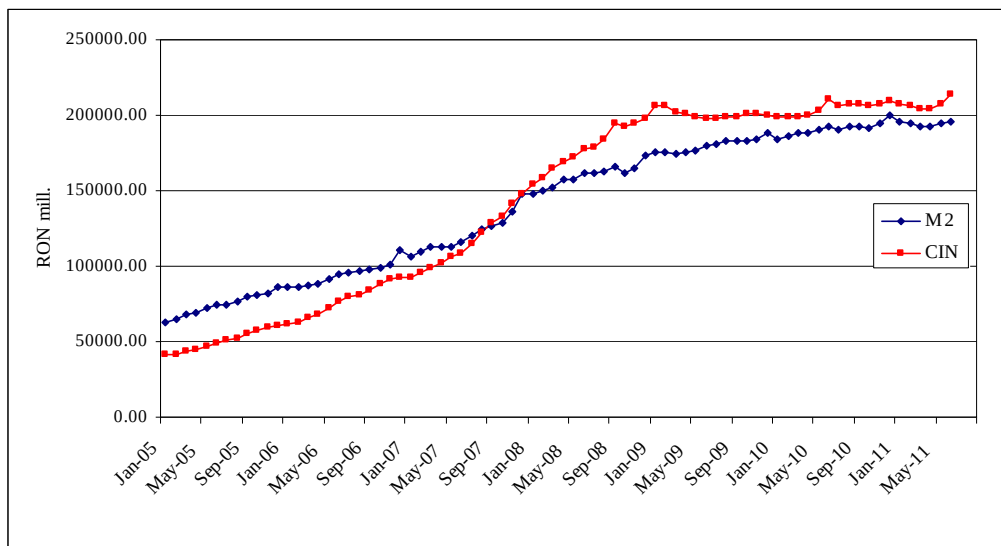


Figure 2. The evolution of the non-government domestic credit and of the intermediate money between January 2005-June 2011

The intermediate money variable is the only common influence factor in the literature that proved to be econometrically consistent in terms of the statistical data in the Romanian economy, and therefore, after successive tests, we chose the most consistent econometric estimation (the exogenous variables have to be restricted to the most significant group, thus avoiding the multicollinearity).

The econometric estimation:

$$\begin{aligned} \text{DL_CIN} = & 0.0380 + 0.7183 \text{DL_M2} + 0.3281 \text{DL_M2}(-1) - \\ & - 0.0030 \text{RDA}(-1) \end{aligned} \quad (2)$$

Considering the results, it is particularly interesting that the influence of the monetary policy interest rate is not significant and the average active interest rate applied by credit institutions has very little influence. This shows a chaotic development of the domestic non-government loans based on the excessive stimulation of the consumer credit. That means that NBR and other banks in the system adopted divergent positions:

- Private banks created pressure to relax lending conditions, speculating the increasing trend of the population income and developing a wide range of lending instruments.
- NBR has failed to hold back the enthusiasm of credit through the monetary policy interest rate (the econometric tests associated with this variable are not significant). The high value of the coefficient associated with broad money reveals that the growth of the non-government domestic credit was significantly supported by the monetary expansion as well.

These results made us to test the consistency of the interest rate channel. As it can be seen (Figure 3), there is a certain similarity between the dynamic forms of the monetary policy interest rate and the average active and passive interest rates of the banking system.

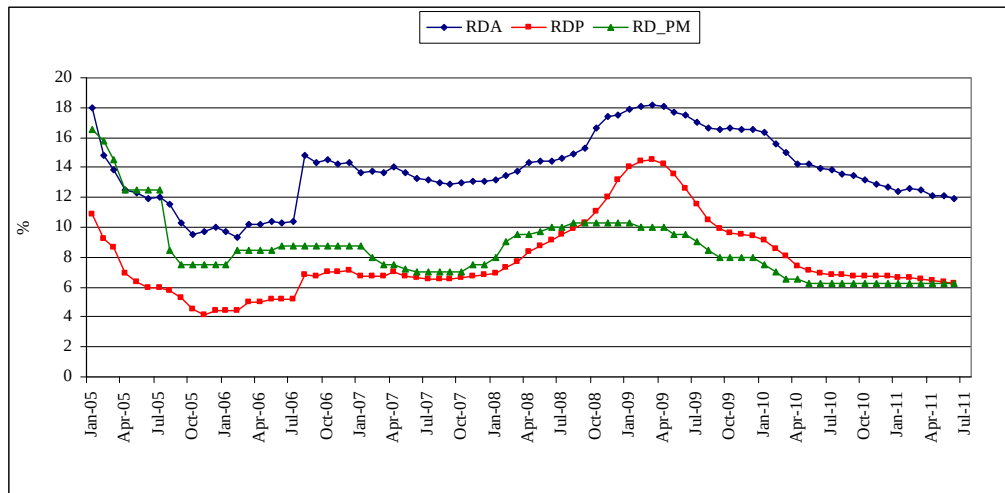


Figure 3. Monetary policy interest rate and the average interest rates applied by credit institutions

However, considering the dual direction of the causal interactions in such a transmission channel, we tested the mutual correlations between the monetary policy interest rate and the average interest rates on deposits and credits, applied by credit institutions, using the Granger causality tests (Table 2).

Table 2

The results of the Granger causality tests between the monetary policy interest rate and the average interest rates (active and passive) in the Romanian banking system

Null Hypothesis:	Obs	F-Statistic	Probability
RDA does not Granger Cause RD_PM	76	0.31949	0.72756
RD_PM does not Granger Cause RDA		5.03068	0.00905
RDP does not Granger Cause RD_PM	76	0.92170	0.40255
RD_PM does not Granger Cause RDP		2.98602	0.05687

It seems that the monetary policy interest rate does not determine (cause) the average interest rate on bank deposits. This proves the divergence of the credit policy of banks in the system in relation to the objectives of monetary policy. Instead, the average interest rate on bank deposits has a significant influence on the monetary policy interest rate, as a consequence of the reaction that the monetary authority has to the actions of the commercial banks. Similar results are also obtained in the case of the correlation between the monetary policy interest rate and the average interest rate on loans, with the only difference that the response of the NBR to the credit policy of the commercial

banks is much stronger (the null hypothesis is rejected with very high probability). This reveals the decision of the monetary authority to hold back the expansion of the non-government domestic credit. Thus, the results of previous studies in monetary economics are verified, results that highlight the lack of effectiveness of the monetary policy transmission through the interest rate channel on the real sector in Romania. The poor performance of this transmission channel may be caused by the inflexibility of the real sector regarding the monetary changes/shocks, as a result of the structural causes behind the economic development.

In order to get a more complete picture of the effectiveness of the interest rate channel we extended the analysis on the correlations between the monetary policy interest rate and the average interest rate for loans in lei (ron) granted on the interbank market (Robor) at different terms of one month, three months and one year.

The following graphics (Figures 4, 5 and 6) reveal that the ROBOR 1M-12M rates followed a descending trend starting with the third quarter of 2009, as the descending evolution of the interbank quotes is also reflected in the dynamics of the average interest rates on deposits and credits (they had a similar evolution – Figure 3).

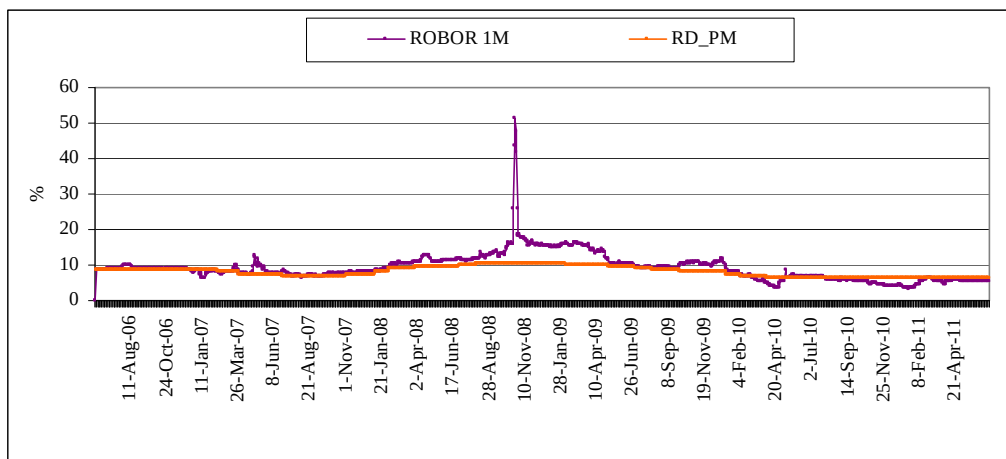


Figure 4. Robor 1M and the monetary policy interest rate

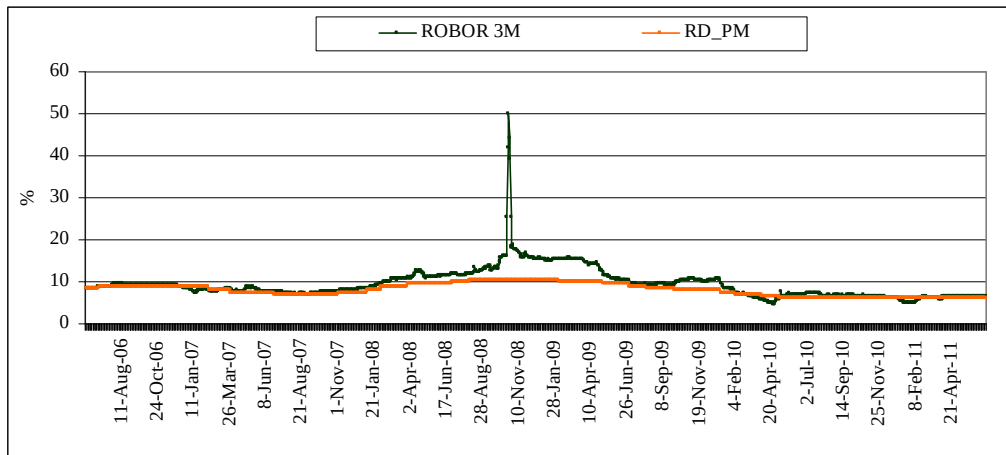


Figure 5. *Robor 3M and the monetary policy interest rate*

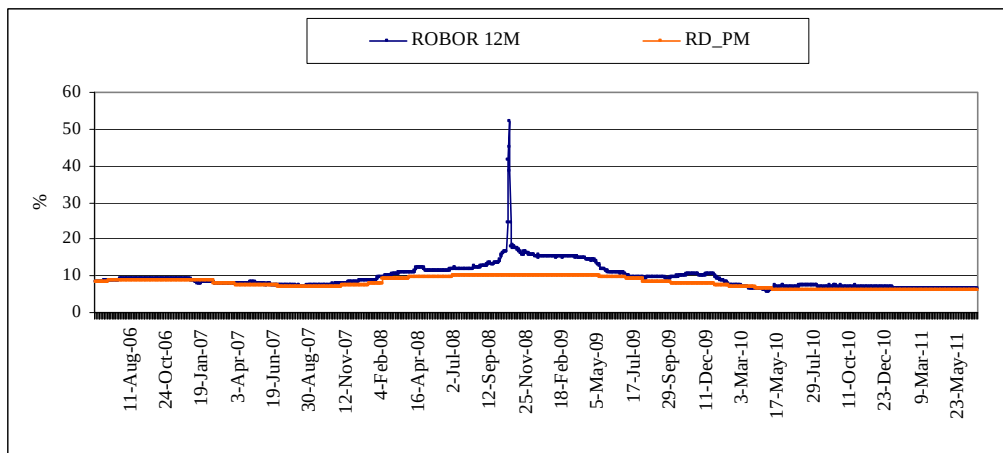


Figure 6. *Robor 12M and the monetary policy interest rate*

A particularity of the analysed time interval is the fact that it covers two periods: (i) a period of sustained economic expansion that begun in 2000, accompanied by a decrease of the interbank interest rates – due to a continuous process of disinflation and the downward trends of the risk premium and the nominal appreciation of the domestic currency, but also by the gradual intensification of competition in the banking sector (gaining market shares is one of the main objectives of the credit institutions); (ii) the second part of the

analysed period of time is characterized by an increasing trend of the interbank interest rates, which reflected deterioration of the inflation evolution under the influence of powerful economic and financial shocks on foreign and domestic markets and the subsequent rapid growth of the risk premium in the context of a deepening global financial and economic crisis and the accelerated spread of its effects on the Romanian economy. This was associated with a radical change in the behaviour of credit institutions, whose main objective became the management of the loan portfolio quality and the structure of balance sheets in general. At the end of the analysed period, the interbank yields showed a relative normalization, followed by a downward trend. There is a very sharp and sudden increase in the Robor rates between September-November 2008, as an attempt of the commercial banks to adopt a preventive protection against the effects of the global financial and economic crisis propagated in the Romanian economy. This episode ended with a determined intervention of the NBR, supported by the European Central Bank (ECB), which brought the dynamics of the Robor rates on a normal trend.

In the case of the Granger causality tests on the correlation between the monetary policy interest rate and the interbank interest rates (ROBOR 1M, ROBOR 3M, ROBOR 12M) similar results are obtained with significant nuances on different time dimensions of the interbank credit (Table 3).

Table 3

Granger Robor causality tests (1M, 3M, 12M) – the monetary policy interest rate

Null Hypothesis:	Obs	F-Statistic	Probability
ROBOR1M does not Granger Cause RD_PM	1294	0.49322	0.61077
RD_PM does not Granger Cause ROBOR1M		60.8183	5.8E-26
ROBOR3M does not Granger Cause RD_PM	1294	0.51530	0.59744
RD_PM does not Granger Cause ROBOR3M		57.7377	9.7E-25
ROBOR12M does not Granger Cause RD_PM	1294	0.42746	0.65226
RD_PM does not Granger Cause ROBOR12M		57.4768	1.2E-24

The results of the causality tests explain very well why the NBR had to turn to other instruments of monetary policy in order to hold back the expansion of the consumer credit (tighter credit conditions, improvement of the prudential banking regulations etc.).

Under these circumstances, the econometric equations that describe the correlations between the monetary policy interest rate and the average interest rates (active and passive), respectively the interbank interest rates (Robor) proved to be inconsistent in relation to the significance tests of the coefficients associated with the causal variables. Thus, the econometric analysis of the causal relationships between interest rates indicates a strong inertia of the

commercial banks that do not cooperate with the central bank in order to ensure the stability of the monetary market. Reasons for profit maximization aside, we believe that this is largely due to the fact that most commercial banks in Romania are subsidiaries of foreign banks and/or with a majority foreign capital, thus pursuing the objectives of other economic strategies, foreign to the interest of ensuring a financial and monetary stability of the Romanian economy.

Conclusions

Based on an increased economic boom, we have witnessed an unprecedented increase in lending during the last decade. The econometric analysis of the dynamics of the non-government domestic credit in the period January 2005-June 2011 revealed its chaotic development in Romania. The phenomenon was largely determined by the pressures exercised by the commercial banks to relax lending criteria mainly because of a fierce competition to increase market share. Furthermore, the monetary expansion (M2) sustained the accelerated growth of the non-government domestic credit as well.

Granger causality tests on the interest rates channel have shown a sustained effort of the NBR to hold back the credit expansion, but also a quasi-opacity of the commercial banks system that, more often than not, have ignored the signals sent by the monetary authority. We can assert that the ineffectiveness of the interest rates channel highlights the need for a strong local player (with domestic capital) on the monetary market in Romania, respectively the more hostile position rather than cooperating of the commercial banks with foreign capital that dominate this market. Far from having a hostile attitude towards the foreign capital in the Romanian monetary market, we believe that a balance between the foreign and the domestic capital is imperative, especially now that the global economic crisis does not seem to have come to an end and the international banking system is still recovering.

Acknowledgements

This article is a result of the project POSDRU/6/1.5/S/11 „Doctoral Program and PhD Students in the education research and innovation triangle (DOC-ECI)”, a project co-financed by the European Social Fund through The Sectorial Operational Programme for Human Resources Development 2007-2013, coordinated by Bucharest Academy of Economic Studies.

References

- Boțel, C., Antohi, D., Udrea, I., Grosu, T. Copaciu, M., Gălățescu, A., „Țintirea directă a inflației în România”, *BNR Caiete de Studii* Nr. 25, 2009
- Cozmâncă, B. (2008). *Modele pentru fundamentarea politicilor monetare și valutare*, Editura Economică, București
- Gropp, R., Sorensen, C.K., Lichtenberger, J., “The dynamics of bank spreads and financial structure”, *ECB Working Paper*, No. 714, 2007
- Isar, L., „Revizuirea țintei de inflație, un imperativ pentru economie”, editorial, 2011, www.wall-street.ro
- Isărescu, M., „Țintirea inflației. Raport trimestrial asupra inflației, noiembrie 2011”, *Prezentare cu ocazia conferinței de presă organizată de Banca Națională a României*
- Mishkin, S.F., Savastano, M.A., „Monetary Policy Strategies for Latin America”, *Policy Research Working Paper*, 2685, 2001
- Radu, R., „Mecanismul de transmisie al ratelor dobânzilor”, *BNR Caiete de Studii*, Nr. 28, 2010
- Sander, H., Kleimeier, S., “Interest rate pass-through in an enlarged Europe: the role of banking market structure for monetary policy transmission in transition countries”, *Maastricht Research School of Economics of Technology and Organization Research Memoranda*, No. 045, 2004
- Sharpe, S.A., “The effect of consumer switching costs on prices: a theory and its applications to the bank deposit market”, *Review of Industrial Organization*, Vol. 12, 1997, pp. 79-94
- Van Leuvensteijn, M., Sorensen, C.K., Bikker, J.A., Van Rixtel, A., “Impact of bank competition on the interest rate pass-through in the euro area”, *ECB Working Paper*, No. 885, 2008

Oligarchy versus Democracy and Regulation versus Deregulation under the Globalization Effect

Dumitru-Alexandru BODISLAV

Bucharest Academy of Economic Studies
alexandru.bodislav@infinitemgroup.com

Abstract. *On capitalism that is created under the pressure of globalization there are created many economic systems that derived into a new model: the asymmetric model created from propriety rights' perspective and the influence of interest groups, an asymmetric model that is called "oligarchy"⁽¹⁾. For a better understanding of oligarchy we consider an oligarchic society, where the political power is in the hands of the producers of goods, that tend to protect their propriety rights, but this way they create entry barriers, destroying the propriety rights of future potential producers.*

Capitalism was and is stressed by the (de)regulation phenomena created by the competition which is shaped through globalization. With ease we can go from (de)regulating to oligarchic pressure, which from the globalization's perspective can give birth to the lagging or decoupling in the global economic system. This paper researches these two cases and inserts them into the global framework to result the evolution of society's members' welfare.

Keywords: democracy; de/regulation; governance; oligarchy; social welfare.

JEL Codes: A13, B22, C70, D23, G38, H70, K21, L13, L51, P51.

REL Codes: 5J, 13H.

Introduction

For the first part of the paper it was chose not to compare capitalism with oligarchy because from the epistemological point of view these two are in parallel conceptual plans. Capitalism has as foundation the economic view on the state, while oligarchy includes the government, the economic and the social component; this way we can observe as a possible comparison between oligarchy and socio-economic governance of capitalism, the democracy. Democracy, where political power is generally distributed, imposes 2nd distribution taxes on producers (to maintain competition at a sustainable standard for new companies) and doesn't permit the creation of entry barriers. When taxes that are applied in a democracy are at a high level, and the distortions created through entry barriers don't exist, oligarchic system gains followers for better internal efficiency, but this efficiency is based on a win – lose model⁽²⁾.

1. The comparative analysis of the oligarchic society versus the democratic society from the perspective of globalization

In this moment we find consensus on the protection of property rights of producers, an essential deliverable for obtaining sustainable economic growth on the long term (Acemoglu, Johnson, Robinson, 2001, pp. 1369-1401). There isn't any understanding on the phenomenon of the protection of property rights or on the benefits of strengthening the legal and economic framework of any types of property rights. The oligarchic society is designed on the control of the political power by the "economic elite" (the big producers/investors from the economy)⁽³⁾. The model of the organizing of the interest group assures the big producers their ruling, represented through low taxation, but with inefficiencies based on creating monopoly positions by them, destroying propriety rights of potential future producers. The alternative is democracy, where political power is distributed based on equity, this way results a leveling of budgetary incomes through different taxation depending on obtained incomes, this way the idea of propriety rights is kept safe for the future producers, but what is happening if the transition between democratic societies and oligarchic ones appears. This model creates two distortions in the economic policy of the state: the taxation and entry barriers (Acemoglu, 2008, pp. 1-41). Taxes that shuffle the income between entrepreneurs and workers are not directly implemented because they discourage investment. Entry barriers, which shuffle the income in the favor of the entrepreneur by lowering the demand of labor and the level of wages, create

a distortion in the allocation of resources because they can block the entrance of other economic agents that can have a higher productivity⁽⁴⁾.

The exchange between the two types of distortions determines a bigger efficiency for oligarchy or for democracy and generates a bigger aggregate output. The oligarchy isn't influenced by the negative effects of taxation, but suffers from the created entry barriers. Democracy imposes higher taxation, but creates a better "playground" (without entry barriers). When the taxation from a democracy is at a high level, and the created distortions from entry barriers are low, oligarchy has a better efficiency and generates a bigger output; when "the democratic taxation" is low and entry barriers create a better allocation of resources, this way it obtains a better distribution of income from the oligarchic model. In addition, the democratic society generates a more equitable distribution of income than the oligarchic society, because it shuffles the income between entrepreneurs and workers, while the oligarchic society adopts policies that reduce the labor demand, lower the wages and increase the profits for the entrepreneurs.

It is interesting the exchange dynamics between the political regimes (political, but with economic targets). Primary, the entrepreneurs will be the ones that have higher productivity; this way they acknowledge the fact that they are in a better position if they are part of the producing class, not from the working class, and as a result the distortions created by the oligarchic society will be limited. Although, the advantage that creates the enterprise is eroded through time and it will be lost by the producer that entered the market, but entry barriers created by the oligarchy will maintain the business working although the advantage (the core idea of the business) was lost. An algorithm is seen between the two types of societies: although at the beginning they are identical, the oligarchy will become richer faster, but on the long run will tend to create a lower wealth level than the democratic society, this way the model suggests that democracy, without considering economic distortions, has bigger efficiency on the long run from the economic perspective than the alternative.

Democracy has the potential to benefit more from new technologies than the oligarchic society. This fact is explained through the idea that democracy permits agents to have a comparative advantage based on technology that can be entrepreneurial implemented, while oligarchy blocks these implementations. This way the political regime and the distribution of political power shows if a society is oligarchic or democrat. Can a society be oligarchic if maintains high costs? Social groups that get rich through a political regime will sustain this regime and protect their privileged position⁽⁵⁾. In the oligarchic system, the big producers have the political power and manipulate entry barriers with one

purpose: high profits. These profits are in direct convergence with the political power, creating the transition from oligarchy to a difficult democracy, even if entry barriers are proved to be inefficient.

Explained on the graphic through the marginal difference between oligarchy and democracy is the resulted output (Figure 1). If the potential output Y^* is the one from a democratic society (understood as capitalism) it results the oligarchic output Y_o , that can have results that are under or above the sustainable level. If we have a medium time gap it will result an equilibrium between the oligarchic output and the democratic one in the t' area, but on the long run the oligarchic one tends to be under optimal (under potential). Another component that creates under-optimal output for the oligarchic system is a derivate resulted from the implementation of entry barriers: the deterioration of the way of allocating skills (6) (a simplified model starting from Acemoglu, 2008, pp. 1-41).

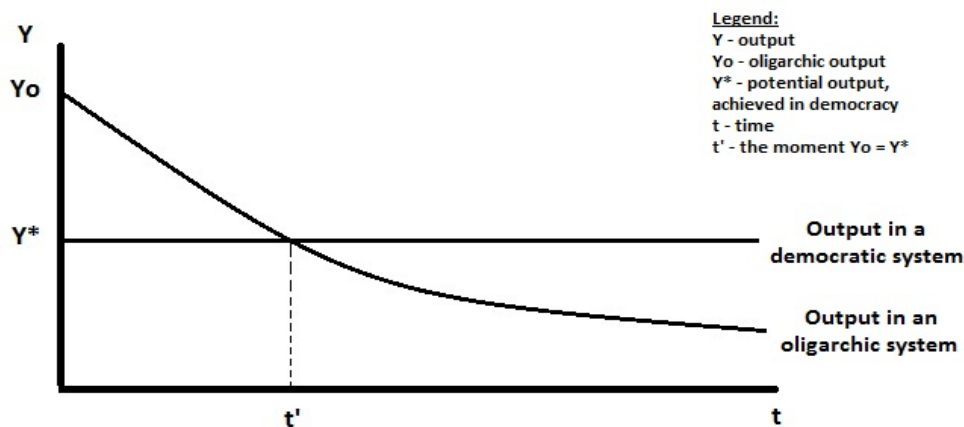


Figure 1. *Oligarchy' output versus democracy' output*

2. The comparative analysis of economic models based on regulating versus deregulating the market

Economists gave the spotlight to the phenomenon of regulations. The founder of modern economics, Adam Smith, debated in his main thesis, "Wealth of Nations", the problems of regulation, based on the benefits created for an economic agent, but with a negative development the large audience (Smith, 1994, p. 69).

2.1. The economy of regulation

Before 1970 the economy of regulation was focused on antitrust laws, but could some regulating agencies to achieve the objective of lowering the cost of energy? Stigler had shown “the inability of creating some significant effects of regulating the price of energy” (Stigler, 1971, pp. 3-21).

In 1971 Stigler stressed the idea that regulations have two substantial consequences:

- It reallocates wealth;
- It creates ballast – costs in the economy.

Interest groups demand regulations from the government and try not to achieve a goal on the expense of the “public good”, but try to involve the government to impose regulations through which they can benefit despite others. “When an industry gets a flow of power from the state, the benefit of the industry will be weak, but the losses will be bigger for the rest of the industry” (Stigler, 1971, pp. 3-21). Politicians create regulations, not to ameliorate the imperfections of the market linked to natural monopoly or to smaller social inequalities; actually they want to answer the needs of interest groups that are in the situation to exchange with other benefits offered to politicians⁽⁷⁾. The purpose and character of regulations reflect the interests of groups that are in the situation of influencing politicians. Stigler modeled regulation like an “enterprise that searches profit, where the self interest of the group and individual try to win through the use of coercion”.

Companies like Chicago Commonwealth Edison and AT&T invited the US govern to supervise and regulate the electric energy and telecommunications industries in the desire to assure on the long run market share for their companies. They were the first members of corporate environment that demanded the creation of regulation agencies for the industrial sectors, for regulating market sharing and for regulating entries in regions or in the monopolies market (Schwarz, 2001, pp. 669-684).

In 1976, Sam Peltzman sustained the idea that politicians “sell” regulations to the one that “bids” the most, on a market where “auctions” take the form of bribery, votes or other valid quantifiable sources for politicians or other decision makers (Peltzman, 1976, pp. 211-240). He admits the possibility that the government can create regulations to attract the benefit and interest of producers, and the interests of consumers. Not all producers and not all consumers benefit from niche regulation, but sub-groups are positively discriminated by regulations, these being molded on their interests. The regulators allocate benefits to producers and consumers, but through the

marginal maximizing of the regulators utilities. All politically involved groups have a behavior of rent seeking on the dispositions given by the regulator. The competition effect between groups of interests creates an accelerated pressure on economic efficiency and on government regulations. Gary Becker sustained the limits created through the inefficiency of regulations in the economy, because the groups create pressure on politicians from the desire to obtain benefits⁽⁸⁾ (Becker, 1983, pp. 371-400).

They observed a parallel between the flow of the regulation regime through continuous investment in lobby to counter attack any attempts of successful anti-regulations and to reduce the pressure of the negative elements of regulations, resulting in the problem of deregulating the economy. Peltzman and Becker extended their economic theory on niche sectors versus relaxed regulation to obtain marginal benefits and to shift the pressure on the initial interest groups. In the past there were some examples of deregulating that led to the decrease of the marginal benefits, through regulations on producers and growth of marginal costs for consumers (Schwarz, 2001, pp. 669-684). This way the political equilibrium shifts, the shift creates a recalibration effect on the regulation regime – the re-reregulation.

We can post here as an example in the favor of the regulated – re-regulated regime from the actual economic environment the solution of the Obama' administration to (re)regulate the banking and financial services' system through extra supervising only for those that have a certain income or their assets are above a certain value, fact that can be considered as being inefficient because not regulating those who have a small income creates an inefficiency volume through their failure – the “snowball effect” (we can consider that this system can be compared with the CNS – the central nervous system that is under the Alzheimer illness: banks represent the neurons, and financial services' companies represent the synapses, these being the ones that are affected and create the perturbation or systemic inefficiency, and the evolution of the disease).

The followers of the Chicago School supported the economics of regulation idea, having as ground base the methodological individualism and with an extent on market rationality seen as a whole, this way the problem of irrational behavior of governments and the interest of economic agents resulted. This approach is at the foundation of Austrian economics, but the fundamental difference is the existence of unrestricted competition that creates a bigger marginal benefit than the regulated competition.

2.2. The trap of total deregulation

The most spectacular case from the resulted lessons perspective was the case of California through its electric energy component. The deregulation of the energy market in the state of California led to the establishment of direct market deployment by the creation of the energy price at the point where the demand meets the offer (9). The contracts on the long run between the producer and the consumer were banned, this way the obligation of contracts conceived on the spot market was created, but through a monopoly company (the ISO – Independent System Operator) (Schwarz, 2001, pp. 669-684). The selling wasn't executed directly, but only when an up-front volume was achieved, this micro-pseudo-market was created⁽¹⁰⁾.

The Deregulation Law drove to the excessive growth of prices for energy. These costs were determined by the classic regulation system of the energy industry. Practically, the law strengthened regional monopolies (they created entry barriers for new "players" on the energy market and especially for the "green players"). This law represented the emergency brake for energy producing facilities building in the state of California, the interval 1985-2005 represented the period of under-development of electric energy utilities⁽¹¹⁾, fact that evolved in importing electric energy from Quebec to satisfy the increasing consumption of the state (the lower consumption established after the 2007-2010 crisis, for the year 2011 the consumption being at the same level with the one from 2007).

The deregulation law abrogation took part in 2001, by re-validating the "black swan" theory (Taleb, 2010), that year was vector of many negative factors: an extremely hot summer, an extremely cold winter, the growth of the prices for natural gas (because of unstable production flow) and the exaggerated greed of Enron, this way the effects of the crisis were accelerated. The regulated price for the consumer (ceiled) was surpassed and this way the suppliers stopped the sale of electric energy (Schwarz, 2001, pp. 669-684). That is why the law that should "have destroyed the monopoly and open the electric energy market" (Zajicek, 2001, p. 104) was a total failure⁽¹²⁾. The failure to implement (the deregulation was more an implementation of industry micromanagement) and the approach path of regulation establishment led to the failure of the "law of deregulation", representing a clear example of inefficiency of the deregulation case facing the regulating failure⁽¹³⁾.

The de-politicization of public utilities companies would be done to create an efficient economic hybrid (private governance for state-owned entities). As a result, the consumers can benefit from the new technologies, market development and services quality (Becker, Becker, 2007, pp. 18-20).

Politics plays an important part in influencing nature and the performance of regulation, and the speed of implementation of regulation and deregulation (Peltzman, 1989, pp. 1-41). Politicians and their actions will decide if the actual regulation de-satisfaction will lead to deregulation or to re-regulation, but, unfortunately, these have a lag in implementation, representing solutions brought to asymmetries that appeared in the past (Schwarz, 2001, pp. 669-684).

As a conclusion in the deregulation matter, beside some isolated cases, it can lead to smaller costs, improving services and opening industries to competitors that are more efficient. Those isolated cases can be taken in consideration as unregulated innovation by the banking sector (because the regulation of a problem is discovered as being a solution and not a proactive management of the situation).

3. Globalization's advantage facing the economy's peculiarity

Globalization can represent a leveling component or even a blur of the political-economic-social problems (oligarchy) or of the government problems (regulation versus deregulation).

Unions of groups that we talk about as a structural uniformity at microeconomic and macroeconomic level have as a globalized behavior without destroying identities because they innovate the identification path with performance, and reproduce the whole that is bigger than the sum of its components, while the latter ones tend to behave as a whole when we are in fragile steady state, called in the past a favorable disequilibrium (Dinu, 1987). The idea that there are individuals with common interests which form groups of interest can lead to the linear flow of democracy (opposite to oligarchy) and these through their common interest are facing global competition under the sign of deregulation will result in creating the following simplified phenomena:

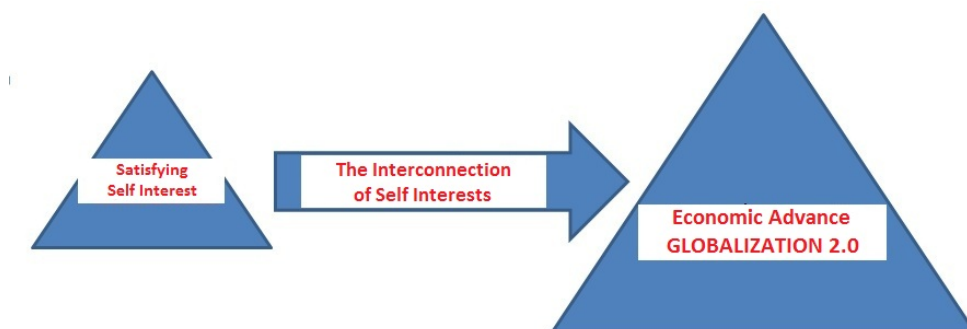


Figure 2. *The interconnectivity of self interests*

The phenomena created through obtaining the advance of own interest (under the rule of law) will lead to the advance of the entire society – social welfare. When a group (a union of states or a corporation) becomes a framework of mutual trust, interdependence and collective action, new bridges based on creativity and innovation are shaped⁽¹⁴⁾. At micro level we can find innovations and applications that give the improbability effect in forecasting the future, creating the future with alternative solutions. At this effect we can also add the appearance of leaders that break coherently and synergic the intra-corporative or intra-state limitations this way creating an energizer effect of studied' economies. Innovation is dependent of blurring the limitations (boundaries), not only internally (micro – on hierarchical levels, on the periphery transfer of decision, resulted from the center – periphery effect), but also on the external plan (macro – the relationship with other members of the group and with opinion makers from the group). For a world that is flattening, the existence of leaders that have as main purpose the blurring of limitations of any kind (be it political, economy, innovational, religious vision, etc.) represents a competitive advantage in front of other groups by offering transformational results, that create the evolution of the globalized economy as we know it – Globalization 2.0.

Conclusions

The completion of this paper touches the basic idea of the actual economy: the economic engine, from the outer perspective, is represented by the individual subatomic unit, the rational being. The rational being follows to obtain a functional economic system based on the free market – capitalism on the expense of economic suboptimal (poverty); this optimality is a result of tracking to satisfy of self interest. With all these added, the capitalist system based on the free market permits the abuse of power as a component of limited functionality after the activations of some exogenous factors. The capitalist system based on the free market emanates a high level of trust and credibility, but if it has permitted the support for some interest, these will grow their exposure in the system causing suffering for the other participants in the economic game.

At this moment the law could intervene, this could be a vehicle for releasing the asymmetric pressure created by the abuse of power in the market; we can see it as soft regulation of greed⁽¹⁵⁾. The antitrust laws, binding regulations for contract compliance, quality standards implementation,

licensing standards, transparency requirement on stock trading, rules for corporate governance – these can be considered as soft regulations for shaping the game’ framework, this way resulting the moral character of the capitalist system. Although, these soft regulations come with a cost, a cost that is supported by those that cannot handle these kind of “economic development”, such as: restricted access to capital (financial-moral) in poor countries, economic engineering that is in full development, but with the same purpose of manipulating the investor (or the elusion of the fiscal system under which the bad intentioned economic agent works), the short term vision⁽¹⁶⁾ and implementing the obtained advantages only through the marginal cost and with the thought of obtaining immediate profit⁽¹⁷⁾.

As we discussed in the section 2.1 of this paper regulations can create equilibrium, at least in the component of the economic system that is based on incentives, this way resulting a self interest that was passed through the whole’ filter, causing and creating social benefits.

The resulted incentives on the market must have a connection with the economic reality⁽¹⁸⁾; the link with reality can be made by shaping and keeping the regularity of propriety rights (for movables, real estate or patents), respecting contractual terms, stability of the exchange rate, preventing corruption, bankruptcy law, stopping information asymmetry (the punishment of insider trading practices). These incentives must not be oriented for a win-lose yielding, in the purpose to stopp the started practices against competitors. An eloquent theoretical example is given by Adam Smith through the idea that business people tend to ally for eliminating other competitors from the market (the creation of the cartel).

Beyond the law appears the need to appeal to voluntary character of the individual⁽¹⁹⁾, who could be an effective decision-making tool for the delimitation and obtaining of Social-Economic Good. This kind of synergy is resulted from the moral and enlightenment⁽²⁰⁾, generating value judgments based on the hierarchy of values that is linked with the social-economic reality.

The resulted responsibility through moral awareness of the rational being creates a relationship between protecting personal interest⁽²¹⁾ and commitment for the working terms or for the entity with which or for whom it works⁽²²⁾. Through this fact we can deduct the idea that responsibility represents a relation of reciprocity, empowerment and maintenance of self interests, but taking in consideration others’ interests.

Dalai Lama supports as definition of ethics the idea of “indispensable interface between my wish and your wish to be happy” and underlining the idea

of bilateral support between self interest that is in working connection with others' interest.

The capitalism of the future must sustain the selfish individualism braking and taking in consideration some higher goals, virtually a broader vision on the human global gearing (Dinu, 2010, pp. 96-121), assuming and awareness on the idea of global interconnectivity between all participants in the "economic game". From this vision we can extract the conclusion that the active global interconnectivity between rational individuals that aim to fulfill their own interests, where these interests intersect with the interests of other active participants at "the economic game", will result in generating personal advantages (partial fulfillment of self interests) that cumulated will generate the advance of the entire "global village"⁽²³⁾.

The future capitalism will be conceived and designed as a model with "human face", but it must be thought from "outside the box" because it cannot be implemented on the foundation of a governance state-system coordinated after present principles and of a corporate governance that tries not to cross the boundaries of regulations and morals of laws built in the moment T to a regulate the events from the moment T-1.

Acknowledgements

This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/107/1.5/S/77213 "Ph.D. for a career in interdisciplinary economic research at the European standards".

Notes

- ⁽¹⁾ Oligarchy represents the governance of the state executed by a group of interests, this being perverted through abuse of power. This form of government represents state governance executed by a segment of the society – group of interests, with similarities based on wealth, kinship, military power or political influence. The word is from the Greek language, "oligo" – few and "arkhos" – to lead.
- ⁽²⁾ Win for the few – the group of interests and lose for the people. Sounds familiar because it is similar with covering losses of the American banking system by the American people.

- (3) “Oligarchy represents ownership by some men of the government’s levers; democracy, in opposition, the nation and the people lead... When some lead from wealth’s reasoning... then we have to deal with oligarchy, and when the poor lead we deal with democracy”. (Aristotle, 1996).
- (4) Entry barriers can take the shape of direct regulations or the shape of policies that reduce entry costs, especially on capital, for those already in the market, while for those new in the market those entry costs increase. Preferential loans and subsidies are some of those potential and often met entry barriers.
- (5) Underlined phenomena also through the influence of Wall Street on the Obama Administration in our days. The same happened in the 70’s, when Main Street dictated the informal politics at the White House. We can characterize the system as being a soft oligarchic system.
- (6) Through talent we understand the knowledge component from labor’s framework – be it rough work, or be it intellectual work.
- (7) Increasing the chances to be reelected – understood as financial, informational, moral support, etc.
- (8) The benefits can be pecuniary quantified, here being included also erasing the payment of some taxes.
- (9) This relation is possible without benefit losses only on perfect markets.
- (10) These lines should be taken as a “working” warning by the future energy market from Romania created after the concentration of energy operators in only two producing players: Electra and HidroEnergetica, to which is added the secondary intermediate energy market (here can appear the real problem of deregulating).
- (11) Where producers/suppliers can manipulate prices in their advantage. The market reform moved the asymmetry from the market into the traders’ field and led to the appearance of some “players” like Enron and Dynegy.
- (12) Because of the unstable regulation/deregulation problematic.
- (13) The same purpose has in the year 2011 the deregulation of energy trading law in Romania.
- (14) The private sector can present solutions that are more efficient than the state in some cases. That is why should be encouraged the elaboration of the legal framework for the public-private partnership (a framework that is sustainable from the economic perspective, not only from the legal one).
- (15) Reinvention is a new principle with a particular character because it presents a new beginning. The new beginning is dictated by the sum of cycles endings in which we stand, including the industrial one and with the creation of the New Super-Economics (with the sole purpose of clearing the classic global economy’ limits).
- (16) Creating work thresholds: gaps in which the economic game is permitted, once this threshold is passed follows the rectification or the drastic sanction of the sustained or repeated deviation.
- (17) The opportunity cost of the competitive advantage and the collaboration cost are found only in the innovative corporations’ sector (Bodislav, 2011).

- ⁽¹⁸⁾ Reference at the incentives offered in the American banking system, where in crisis time managers with huge losses received performance bonuses of hundreds of million dollars.
- ⁽¹⁹⁾ A synergy between common sense and the responsibility of a “guardian of the Republic” (Platon, 1993).
- ⁽²⁰⁾ Here enlightenment has the meaning of mental discipline that creates added value.
- ⁽²¹⁾ It isn’t wanted to suppress personal’ interests in favor of the group ones because we won’t be part of a capitalist system and economic model, based on the democratic society.
- ⁽²²⁾ The resulted deliverable from Principal – Agent Theory: the convention between the two parts, where the Agent is empowered by the Principal to represent its interests and to take action in his name.
- ⁽²³⁾ Synergy created through the merger of the Game Theory – J. F. Nash, R. Selten and J. C. Harsanyi (the Nobel Prize in 1994) and the Global Village Theory (Cairncross, 1997).

References

- Acemoglu, D., „The Form of Property Rights: Oligarchic vs. Democratic Societies”, *Journal of the European Economic Association*, vol. 6, no. 1, 2008, pp. 1-44
- Acemoglu, D., Johnson, S., Robinson, J., „The Colonial Origins of Comparative Development: An Empirical Investigation”, *American Economic Review*, vol. 9, no. 5, 2001, pp. 1369-1401
- Aristotel (1996). *The Politics and the Consitution of Athens*, Editura Cambridge University Press, New York
- Becker, G., „A Theory of Competition among Pressure Groups for Political Influence”, *Quarterly Journal of Economics*, no. 98, 1983, pp. 371-400
- Becker, G., Becker, N. (1997). *The Economics of Life*, Editura McGraw-Hill, New York
- Bodislav, A., „Cunoaștere și colaborare pentru inovare globală”, *Analele Universității „Constantin Brâncuși”* (în curs de publicare), 2011, Târgu-Jiu
- Cairncross, F. (1997). *The Death of Distance*, Editura Orion House, New York
- Dinu, M. (2010). *Economia de dicționar. Exerciții de îndemânare epistemică*, Editura Economică, București
- Dinu, M. (2004). *Globalizarea și aproximările ei*, Editura Economică, București
- Dinu, M. (1987). *Performanțele dezvoltării. Semnificațiile binomului știință-economie*, Editura Științifică și Enciclopedică, București
- Lama, D. (1999). *Ethics for the New Millenium*, Editura Penguin Books, New York
- Peltzman, S., „The Economic Theory of Regulation after a Decade of Deregulation”, *Brookings Papers on Economic Activity*, 1989, pp. 1-41
- Peltzman, S., „Toward a More General Theory of Regulation”, *Journal of Law and Economics*, no. 19, 1976, pp. 211-240
- Platon (1993). *Republica*, Editura Antet, București

- Schwarz, J., „Deregulation vs. Regulation”, *Journals des Economistes et des Etudes Humaines*, vol. 11, no. 4/12.2001, 2001, pp. 669-684
- Smith, A. (1994). *An Inquiry Into the Nature and Causes of the Wealth of Nations*, Editura Random House, New York
- Stigler, G., „The Theory of Economic Regulation”, *Bell Journal of Economics and Management Science*, no. 2, 1971, pp. 3-21
- Taleb, N.N. (2010). *Lebăda Neagră – Impactul foarte puțin probabilului*, Editura Curtea Veche, București
- Zajicek, M. (2001). *Cohesion of Energy Markets*, Liberalni Institut, Praga

Using Garch-in-Mean Model to Investigate Volatility and Persistence at Different Frequencies for Bucharest Stock Exchange during 1997-2012

Iulian PANAIT

Bucharest Academy of Economic Studies
iulian.panait@gmail.com

Ecaterina Oana SLĂVESCU

Bucharest Academy of Economic Studies
ecaterinaslavescu@yahoo.com

Abstract. *In our paper we use data mining to compare the volatility structure of high (daily) and low (weekly, monthly) frequencies for seven Romanian companies traded on Bucharest Stock Exchange and three market indices, during 1997-2012. For each of the 10 time series and three frequencies we fit a GARCH-in-mean model and we find that persistency is more present in the daily returns as compared with the weekly and monthly series. On the other hand, the GARCH-in-mean failed to confirm (on our data) the theoretical hypothesis that an increase in volatility leads to a rise in future returns, mainly because the variance coefficient from the mean equation of the model was not statistically significant for most of the time series analyzed and on most of the frequencies. The diagnosis that we ran in order to verify the goodness of fit for the model showed that GARCH-in-mean was well fitted on the weekly and monthly time series but behaved less well on the daily time series.*

Keywords: stock returns; volatility; persistence; GARCH model; emerging markets; data mining.

JEL Codes: G01, G11, G12, G14, G15, G17, G32.

REL Code: 11B.

1. Introduction

Stock markets, in particular, and financial markets, in general, are well known for their uncertainty. Prices of stocks, bonds, commodities, all kind of traded financial derivatives, as well as interest rates and exchange rates are prone to constant variability. As a result of this variability, their returns over different periods of time are significantly volatile and difficult to forecast.

Volatility was always considered to be a key variable for assessing the condition of the financial markets and for making decisions by investors, speculators, investment managers and financial regulators. In the actual context of the years 2007-2012, characterized by a continuing financial and economic crisis, terms such as volatility forecast and risk management are very often mentioned by the scientific community and experienced top practitioners all around the world.

With time, researchers proposed many and diverse models to forecast volatility, ranging from time series based volatility models (exponential smoothening, Garman-Klass, Autoregressive Conditional Heteroscedasticity etc.) to option market implied volatility models. Also, the empirical performance of such models was investigated by many authors and for many local financial markets. Bollerslev (1986, pp. 307-327) used ARMA and EGARCH models to study US stocks from 1889 to 1990; Akigray (1989, pp. 55-80) tested GARCH(1,1), ARCH(2) and EWMA in order to identify the time series properties of US stock returns; McMillan and Gwilym (2000, pp. 438-448) investigated the performance of Random Walk, Moving Average, Exponential Smoothen, EMWA, GARCH(1,1), TGARCH(1,1), EGARCH(1,1) and FIGARCH(1,1) for stocks traded on London Stock Exchange; Franses and Djik (1998: pp.229-235) compared volatility forecasts of QGARCH(1,1), GJR-GARCH(1,1), GARCH(1,1) and Random Walk for stock indices in Spain, Germany, Italy, Netherland and Sweden; Harque et al (2004, pp. 19-42)) tested Random Walk, ARMA and GARCH-M models for ten Middle East and African emerging markets.

Also, regarding the behavior of volatility for companies listed on Bucharest Stock Exchange there were previous tests of symmetrical and asymmetrical GARCH models done by Lupu (2005, pp. 47-62, 2007, pp. 19-28), Tudor (2008, pp. 183-208) and Miron (2010, pp. 74-93). In their researches, the three Romanian authors used daily data (mainly for Bucharest Stock Exchange BET index) in order to estimate different GARCH models, with the parameters and settings. Their main aim was to test the validity of those models and to find the model that better fitted the particularities of returns for Romanian market.

In our paper we will investigate one very popular model from the GARCH family: the GARCH-in-mean model. Our choice for this model is motivated by the conclusion of previous related studies: the fact that in the financial markets risk and the expected return are correlated, and as a result of that, in the mean equation of the GARCH model there should be a reference to variance.

Our new and original contribution to the current state of research in this field is represented by three facts: (1) we calibrate the GARCH-M model not only to daily but also to weekly and monthly data; (2) in order to gain more significance for the results, we use a larger group of Romanian assets than the previous authors did, as we include in the research three market indices and seven among the most liquid listed companies; and finally, (3) we compare the values for the coefficients at different frequencies in order to see how the persistence of past shocks in mean and volatility change with time structure of the series.

To cast some light on these issues, the rest of the paper is organized as follows: section 2 presents the most relevant Romanian and international related studies; section 3 describes the data that we worked with and the data mining methodology that we have used; section 4 presents the results that we have obtained; finally section 5 summarizes the most important conclusions and proposes further studies in this field.

2. Literature review

Before the scientific community became focused on heteroscedasticity and its effects on forecasting and investment decision, researchers frequently used the Autoregressive Integrated Moving Average (ARIMA) model developed by Box and Jenkins (1976) in order to assess volatility of financial assets. Also the Black and Scholes (1975, pp. 307-324) equations for option pricing were used to determine implied volatility. These approaches are based on the erroneous hypothesis of constant variance for the time series of financial returns. As a result they failed to capture the “stylized facts” (Cont, 2001, pp. 223-236) of financial returns such as: leptokurtosis, volatility clustering, intermittency, fat tails, leverage effect etc.

In order to accommodate the empirical observation that variance is variable with time and that it seems dependent on past values, Engle (1982, pp. 987-1008) proposed the Autoregressive Conditional Heteroscedasticity (ARCH) models where variance is dependent on previous squared errors. Engle’s model successfully addressed the above mentioned issues of financial time series but its coefficients are difficult to estimate. Bollerslev (1986,

pp. 307-327) proposed a generalization of the ARCH model in which variance depends simultaneously on the squared residuals and on its own past values. It is important to mention that unlike other models, ARCH and GARCH estimate coefficients via the maximum likelihood procedure, instead of using the sample standard deviation.

The modeling of financial time series with ARCH and GARCH models received much attention in the scientific community. Bollerslev et al. (1992, pp. 5-59) realized an overview of more than 300 relevant references at that time, but more valuable research in this field continued to be made since then.

Rizwan and Khan (2007, pp. 362-375) studied the volatility of the Pakistani stock market and found volatility clustering. Dawood (2007) investigated volatility in the Karachi Stock Exchange and found that in 1990's the market has become more volatile on short and medium term (daily and monthly basis).

Chang (2006) investigated the mean reversion behavior of different series of data and concluded that mean reversion situation exists in the low-frequency data but not in the high-frequency data. Caiado (2004) found the same results by using GARCH models on the Portuguese Stock Index PSI20.

Selcuk (2004) investigated volatility in emerging stock markets and found volatility persistency. Magnus and Fosu (2006, pp. 2042-2048) found the parameter estimates of GARCH models for Ghana Stock Exchange close to unity which suggests a high level of persistence.

Donaldson and Kamstra (1997, pp. 17-46) find important differences in volatility between international markets, such as significant persistence of volatility effects in Japan relative to European and North American countries.

Nam, Pyun and Arize (2002, pp. 563-588) use asymmetric GARCH-M model for US market indices during 1926-1997 and find that negative returns on average reverted more quickly to the long term average than the positive returns.

Lupu (2005) tested a GARCH model on the main index of Bucharest Stock Exchange and found that the model manages to catch the stylized facts of the local stock market. Also, Lupu and Lupu (2007) employed a EGARCH model for the same index of the Romanian Stock Market.

Tudor (2008) used GARCH and GARCH-M models for Romanian and US market's main indices and found that the GARCH-M model performs better and confirms that there is a correlation between volatility and expected returns on both markets.

Miron and Tudor (2010) estimated different asymmetric GARCH family models (EGARCH, PGARCH and TGARCH) specifying successively a Normal, Student's *t* and GED error distribution. They found that EGARCH

with GED and Student's t errors are more accurate in the Romanian stock market.

In this paper we continue the work of previously mentioned Romanian authors by investigating the performance of GARCH-M model on a larger number of Romanian assets and also by taking into consideration lower frequencies of data (weekly and monthly time series) in addition to the daily returns already studied by those authors. We are interested to understand how persistence behaves on lower frequencies data.

3. Data and methodology

For our study we have selected the most popular, diversified and relevant three Bucharest Stock Exchange market indices: BET, BET-XT and BET-C. Also, we have selected seven of the most liquid companies (the list with their name and market symbol is presented in Table 1 at the end of this article).

For all those seven companies and for the three market indices we have obtained official daily stock prices during the period September 1997 – January 2012. The data were provided by the Bucharest Stock Exchange itself, courtesy of the Trading Department.

We were very careful to adjust all the prices with the corporate events that took place during the investigated period for some of the companies included in our study (mainly dividends and share capital increases). The price time series for three market indices was already adjusted with corporate events by the stock exchange as part of the official index calculation methods.

As we are not making correlation analysis between the companies or indices, there was no need to align the series in perfect synchronous chronologic order. This allowed us to keep in our analysis companies that were not actually traded during the whole period. The Table 1 presented at the end of this article includes information regarding the actual period and the number of daily, weekly and monthly observations for each company.

After all this preparations were accomplished, in order to eliminate the obvious non-stationarity from our data, we have transformed the price time series into return time series for all the seven individual stocks and for the three indices.

Regarding the returns estimation, as Strong (1992, p. 353) pointed out “there are both theoretical and empirical reasons for preferring logarithmic returns. Theoretically, logarithmic returns are analytically more tractable when linking together sub-period returns to form returns over long intervals. Empirically, logarithmic returns are more likely to be normally distributed and so conform to the assumptions of the standard statistical techniques.” This is

why we decided to use logarithmic returns in our study since one of our objectives was to test of whether the daily returns were normally distributed or, instead, showed signs of asymmetry (skewness). The computation formula of the daily returns is as follows:

$$R_{i,t} = \text{Ln} \left(\frac{P_{i,t}}{P_{i,t-1}} \right)$$

where $R_{i,t}$ is the return of asset i in period t ; $P_{i,t}$ is the price of asset i in period t and $P_{i,t-1}$ is the price of asset i in period $t-1$. As already mentioned above, according to this methodology of computing the returns, the prices of the assets must be adjusted for corporate events such as dividends, splits, consolidations and share capital increases (mainly in case of individual stocks because indices are already adjusted).

As a result of this initial data gathering we obtained 10 time series of log-returns for each investigated frequency: daily, weekly and monthly: in total there are 30 time series.

Before estimating the GARCH-in-mean model, we investigated all the data series, for all the frequencies, in order to identify their statistical properties and to see if they meet the pre-conditions for the GARCH-in-mean model.

The first step in this direction was to examine the descriptive statistics for the 10 time series, at each frequency. The results are presented in tables 2, 3 and 4 at the end of this article. From these tables we draw 4 important conclusions:

(1) First we can observe that average returns for all the time series and all frequencies present very low values and that the values for standard deviation are in all cases significantly larger than mean values. Further statistical tests show that we cannot reject the null hypothesis of zero mean for none of the time series or frequency. This finding will prove very important latter when we will apply the GARCH-M model.

(2) Second, we can observe that standard deviations of the series of monthly returns are higher than the standard deviations for the weekly and daily returns series. Also, the standard deviations of the weekly returns series are higher in comparison with the standard deviations of the daily return series. This is a common feature of financial assets.

(3) Most of the time series, under all the three frequencies, present negative skewness. Also, all the time series, under all the three frequencies, present excess kurtosis and fat tails. This is another common feature of financial assets.

(4) None of the 10 time series studied are normally distributed, for none of the three frequencies investigated, as proven by values for the Jarque-Bera tests shown in tables 2, 3 and 4.

Going further with our preliminary investigation of the data sample, we compute the squared returns for all the 10 time series under all the three frequencies and test for evidence of heteroscedasticity and volatility clustering. Our special interest for the squared returns come from the fact mentioned previously (and extensively documented by other related studies) that we can't reject the hypothesis that the average of the daily, weekly and monthly returns is different from zero. If we assume that the mean is zero, then the unconditional variance can be approximated by the square return of that particular day, week or month.

The clustering of volatility can be observed from the simple graphics of the squared returns as presented in figures 1, 2 and 3 shown at the end of this article. This particular stylized fact of financial asset returns is more present in the daily and weekly time series and from our data it seems less present in the monthly time series.

We investigate the heteroscedasticity of the 10 time series, for all the three frequencies, by calculating the autocorrelation (AC) and partial autocorrelation (PAC) functions, and also by performing the Ljung-Box Q-statistics. In all our calculations we used a 20 period lag. The results are presented in Table 5 shown at the end of this article. We observe the presence of serial correlation till the 20-th lag for all the daily time series and for most of the weekly time series (with the notable exception of weekly returns for BRD), as indicated by the AC and PAC values and also by the p-value of the Q-test lower than 1%. Also it is extremely important to notice that the p-value of the Q-test is higher than 1% for all the monthly time series which means that we can't reject the null hypothesis of inexistence of serial correlation for none of them. To summarize: we find heteroscedasticity in the daily returns and in most of the weekly returns. However we can't confirm the presence of heteroscedasticity in the weekly returns of BRD and also in none of the monthly returns. Since heteroscedasticity is a pre-condition for applying the GARCH models to a financial time series, we might be unable to fit such a GARCH model on the monthly returns and also on the weekly returns of BRD.

After all these preliminary investigation of the data sample were concluded, we continued with the actual estimation of the parameters of the GARCH-in-mean model for all the time series and all the data frequencies. The GARCH-in-mean model was developed by Engle, Lilien and Robins (1987), it is based on the GARCH(1,1) model introduced by Bollerslev (1986, pp. 307-327), and it consists of two equations, one for the mean and another one for the variance of the time series:

$$\text{the mean equation: } R_i = \mu + \beta_1 \sigma_i^2 + \varepsilon_i$$

$$\text{the variance equation: } \sigma_i^2 = \omega + \alpha \varepsilon_{i-1}^2 + \beta \sigma_{i-1}^2$$

4. Results and interpretations

The data from Table 6 presented at the end of this article show the values for the β_1 , ω , α and β coefficients of the GARCH-M model for all the time series and frequencies. It is important to mention that in all our estimates of the model we used the hypothesis that the errors are normally distributed. There are several conclusions that can be drawn from this table:

(1) First, we can observe that with only one exception (the daily time series for BET-C index) the estimated coefficients of the model respect the requirement that $(\alpha + \beta) < 1$, which is a crucial condition for a mean reverting process. This enables us to conclude that conditional volatilities are mean reverting for all the time series and frequencies, except in case of the daily returns for BET-C index.

(2) Second, we can observe that the case of most time series and frequencies, the estimated coefficients for the variance equation of the model (the ω , α and β coefficients) are statistically significant at the 90% confidence level. Most of them are statistically significant even at the 99% confidence level. The only notable exception is the monthly time series for AZO, where at the 90% confidence level we are not able to reject the null hypothesis that coefficients of the variance equation are zero.

(3) Third conclusion and an extremely important one for our study is that, with only four exceptions, the β_1 coefficient for the variance term in the mean equation is not statistically significant. This practically invalidates our initial hypothesis that there is correlation between risk and expected return. If that hypothesis was to be true, we should have found p-values of less the 0.1 for all (or at least most of) the Z-tests of significance for these coefficients in all our time series and frequencies. In practical terms we can conclude that our GARCH-M model applied to our daily, weekly and monthly data for Bucharest Stock Exchange during 1997-2012 failed to show a statistically significant correlation between risk and expected return. The only exceptions are the weekly and monthly time series for BET-FI, the daily time series for CMP and the weekly time series for BIO where we found that the β_1 coefficients are statistically significant at the 90% confidence level.

The latter conclusion above tells us that other models in the GARCH(1,1) family should be better for modeling and forecasting volatility behavior in the Romanian Stock Market.

Even if the GARCH-M model failed to prove appropriate, the GARCH(1,1) is correctly specified and validated by our results, which enables us to continue our investigation of the behavior of volatility persistence (or mean reverting) in different frequencies of data. In order to move forward with

this objective of our research, we have computed and presented in Table 7 (shown at the end of this article) the persistence coefficients (calculated as sum of the α and β coefficients) for all the time series and frequencies except the for the monthly time series of returns for AZO, BET-FI and SIF2 where our previous results showed that at least one of those coefficients from the variance equation of the model are not statistically significant. The values from Table 7 converge to the following important conclusions:

(1) First, as we have noticed earlier, since the persistence coefficient of the daily time series for BET-C is above 1 we can conclude that this process is not mean reverting but rather explosive.

(2) Second, in seven out of 10 cases the weekly conditional volatilities of returns tend to revert faster towards the mean in comparison with the daily conditional volatilities. Also, in six out of seven cases where the monthly persistence coefficients were statistically significant, they showed that the monthly conditional volatilities of returns tend to revert faster towards the mean in comparison with the daily conditional volatilities.

(3) Third, in four in out of seven cases where the monthly persistence coefficients were statistically significant, they showed that the monthly conditional volatilities of returns tend to revert faster towards the mean in comparison with the weekly conditional volatilities.

Over all, from the last two observations mentioned above, we can argue that our use of the GARCH model for characterizing conditional volatility at different time frequency in three indices and seven companies traded on Bucharest Stock Exchange during 1997-2012 leads us to the conclusion that often (in most cases) the conditional volatilities tend to revert faster towards the long term average for lower frequencies of data in comparison with higher frequencies of data. In particular we found that in most cases the monthly conditional volatilities of returns tend to revert faster towards the long term average than the weekly and daily conditional volatilities, and also that the weekly conditional volatilities of returns tend to revert faster towards the long term average than the daily conditional volatilities.

In order for our conclusions to be credible, we needed to fulfill one more step in the data analysis: we needed to diagnose the goodness of fit of the GARCH models in all the cases by looking into the properties of the residuals and squared residuals of each particular case. In order to do that we did the following tests for each model fitted:

(1) First we investigated the autocorrelation (AC) and partial correlation (PAC) of the standardize residuals till the 20-th lag, and also we performed the Ljung-Box Q-statistics at the 20th lag to see if there is evidence of autocorrelation of the standardized residuals.

(2) Second we investigated the autocorrelation (AC) and partial correlation (PAC) of the squared standardized residuals till the 20-th lag, and also we performed the Ljung-Box Q-statistics at the 20th lag to see if there is evidence of autocorrelation of the squared standardized residuals.

(3) Third we employed the Jarque-Bera test in order to conclude if the residuals are normally distributed or not.

(4) Fourth we calculated the statistics of the ARCH-LM test in order to detect possible remaining ARCH effects among the residuals with the help of the Lagrange Multiplier.

The tables 8, 9 and 10 presented at the end of this article show the results of these investigations into the goodness of fit of the GARCH models that we employed over the specified time series at different frequencies.

From the data presented in Tables 9 and 10 we can conclude that the GARCH model that we used to characterize volatility of the weekly and monthly time series fitted very well, because the AC, PAC and Q statistics show that there is no statistically significant trace of autocorrelation left in the standardized and squared standardized residuals. Also, the ARCH-LM tests show that there is no statistically significant trace of ARCH effect left in the residuals. None of the residuals are normally distributed, but this often happens for the residuals of the models applied to financial time series.

The data presented in Table 8 shows a different little different picture regarding the residuals from the daily time series: (1) the ARCH-LM test proves that there is no statistically significant trace of ARCH effect left in the residuals (with the exception of the time series for BET index) which is a positive outcome for us; (2) also squared standardized residuals don't show statistically significant autocorrelation till the 20-th lag (with the exception of the time series for BET-C index); (3) unfortunately five out of the 10 daily time series of standardized residuals still present statistically significant signs of autocorrelation (at the 99% confidence level); (4) as in the case of monthly and weekly data, none of the residuals are normally distributed.

Over all, taking into account the conclusions drawn from tables 8,9 and 10 we conclude that the GARCH-M models that we use are well fitted on the weekly and monthly data and as a consequence the results that we have obtained for these frequencies are statistically relevant. In general the results for the daily frequency can be considered relevant but with a lower quality since the tests showed that we should continue to test other models from the GARCH family because the GARCH-M didn't manage to eliminate all the heteroscedasticity from the daily standardized residuals (although it succeeded to eliminate all ARCH effects from the same residuals).

5. Conclusions

In this paper we use the GARCH-in-mean model to characterize volatility on Bucharest Stock Exchange for three different frequencies: daily, weekly and monthly. We use data for three market indices and seven of the most liquid companies during 1997-2012.

Most of the 10 time series used, under all the three frequencies mentioned, present the characteristics of heteroscedasticity and volatility clustering required in order to apply the GARCH(1,1) family of models.

After fitting, the model succeeded to eliminate all traces of statistically significant autocorrelation and ARCH effect from the resulted residuals of the weekly and monthly series. Also, the model succeeded to extract all signs of statistically significant ARCH effect from the residuals of the daily series, the squared standardized residuals from these series presented no statistically significant traces of autocorrelation, but the simple standardized residuals of the same series continued to show autocorrelation. None of the residuals from neither of the three frequencies were normally distributed. All these observations conducted us to the conclusions that the GARCH-in-mean model fitted well on our monthly and weekly data, but less well on the daily data where probably we should continue the research for a better model to characterize the evolution of the volatility.

In the great majority of the time series and frequencies the coefficients from the variance equation of the model proved to be statistically significant and they proved that conditional volatility tends to revert to the long term average (with only a single exception).

An important result of our research was that the variance coefficient from the mean equation of the model was not statistically significant for most of the series and frequencies. This finding leaded us to the conclusion that we can't statistically prove on our data a clear correlation between risk and future returns, as considered in theory by many authors.

Another important result of our research was that in most of the cases we found that conditional volatility on the monthly time series tends to revert faster towards the long term average in comparison with the conditional volatility from the weekly and daily time series. Also, the persistence of the weekly conditional volatility was lower in comparison with the daily conditional volatility which means that the weekly conditional volatility tends to revert faster towards the long term average in comparison with the daily conditional volatility. These findings represent the most important original contribution of our research because such behavior was not previously investigated and

documented for the Romanian stock market by other authors, especially on such a large number of liquid assets.

The research on volatility persistence behavior, at different frequencies, of the Bucharest Stock Exchange should be continued by fitting other models from the GARCH family, especially asymmetrical models.

Acknowledgements

This article is a result of the project POSDRU/88/1.5./S/55287 „Doctoral Program in Economics at European Knowledge Standards (DOESEC)". This project is co-funded by the European Social Fund through The Sectorial Operational Program for Human Resources Development 2007-2013, coordinated by Bucharest Academy of Economic Studies in partnership with West University of Timisoara.

References

- Akigray, V., "Conditional Heteroscedasticity in Time of Stock Returns: Evidence and Forecasting", *Journal of Business*, no. 62, 1989, pp. 55-80
- Black, F., Scholes, M., "Asset Speculative Prices", *Journal of Business*, no. 7, 1975, pp. 307-324
- Bollerslev, T., "Generalized Autoregressive Conditional Heteroscedasticity", *Journal of Econometrics*, no. 31, 1986, pp. 307-327
- Bollerslev, T., Chou, R.Y., Kroner, K.F., "ARCH Modeling in Finance: a Review of the Theory and Empirical Evidence", *Journal of Econometrics*, no. 52, 1992, pp. 5-59
- Box and Jenkins, (1976). *Time Series Analysis and Control*, 2nd edition, Holden Day, San Francisco
- Cont, R., "Empirical properties of asset returns: stylized facts and statistical issues", *Quantitative Finance*, vol. 1, no. 2, 2001, pp. 223-236
- Engle, R.F., "Autoregressive Conditional Heteroscedasticity with Estimates of the Variance of the United Kingdom Inflation", *Econometrica*, no. 5, 1982, pp. 987-1008
- Franses, P.H., Dijk, V.D., "Forecasting Stock Market Volatility Using Nonlinear GARCH", *Journal of Forecasting*, no. 15, 1998, pp. 229-235
- Harque, M., Hassan, M.K., Maroney, N.C., Sackley, W.H., "An Empirical Examination of Stability, Predictability and Volatility of Middle Eastern and African Emerging Stock Markets", *Reviews of Middle East Economics and Finance*, no. 2, 2004, pp. 19-42
- Lupu, R., "Applying GARCH Model for Bucharest Stock Exchange BET index", *The Romanian Economic Journal*, no. 17, 2005, pp. 47-62
- Lupu, R., Lupu, I., "Testing for Heteroscedasticity on the Bucharest Stock Exchange", *The Romanian Economic Journal*, no. 23, 2007, pp. 19-28
- McMillan, S., Gwilym, M., "Forecasting United Kingdom's Stock Markets Volatility", *Applied Financial Economics*, no. 57, 2000, pp. 438-448

- Miron, D., Tudor, C., "Asymmetric Conditional Volatility Models: Empirical Estimation and Comparison of Forecasting Accuracy", *Romanian Journal of Economic Forecasting*, no. 3/2010, 2010, pp. 74-93
- Peiró, A., "Skewness in Financial Returns", *Journal of Banking and Finance*, no. 23, 1999, pp. 847-862
- Peiró, A., "Skewness in Individual Stocks at Different Frequencies", *IVIE working papers*, Instituto Valenciano de Investigaciones Economicas, WP-EC 2001-07: V-1486-2001
- Strong, N., "Modeling Abnormal Returns: A Review Article", *Journal of Business Finance and Accounting*, vol. 19, no. 4, 1992, pp. 533-553
- Tudor, C., "Modeling time series volatilities using symmetrical GARCH models", *The Romanian Economic Journal*, no. 30, 2008, pp. 183-208
- Rizwan, M.F., Khan, S., "Stock Return Volatility in Emerging Equity Market (Kse): The Relative Effects of Country and Global Factors", *Int. Rev. Bus. Res. Papers*, no. 3(2), 2007, pp. 362 - 375.
- Selcuk, F., (2004), "Asymmetric Stochastic Volatility in Emerging Stock Markets", Unpublished Research Paper
- Dawood, M., "Macro Economic Uncertainty of 1990s and Volatility at Karachi Stock Exchange", *Munich Personal RePEc Archive (MPRA)*, Paper No. 3219, 2007
- Caiado, J., "Modelling and forecasting the volatility of the Portuguese stock index PSI-20", *Munich Personal RePEc Archive (MPRA)*, Paper No. 2304, 2004
- Chang., CH., (2006). "Mean Reversion Behavior of Short-term Interest Rate Across Different Frequencies," Unpublished Research
- Magnus, F.J., Fosu, A.E., "Modelling and Forecasting Volatility of Returns on the Ghana Stock Exchange Using Garch Models", *Am. J. Appl. Sci.*, no. 3(10), 2006, pp. 2042-2048
- Donaldson, R.G., Kamstra, M., "An Artificial Neural Network - GARCH Model for International Stock Return Volatility", *Journal of Empirical Finance*, no. 4(1), 1997, pp. 17-46.
- Nam, K., Pyun, C.S., Arize, C.A., "Asymmetric mean-reversion and contrarian profits: ANST-GARCH approach", *Journal of Empirical Finance*, vol. 9, no. 5, 2002, pp. 563-588

Table 1

The financial time series studied in this article

Series symbol	Company name	Number of observations March 2010 – March 2012		
		Daily	Weekly	Monthly
BET	Bucharest Stock Exchange BET index	3579	740	173
BET_C	Bucharest Stock Exchange BET-C index	3441	711	166
BET_FI	Bucharest Stock Exchange BET-FI index	2793	579	135
ATB	Sc Antibiotice Sa Iasi	3579	740	173
AZO	Sc Azomures Sa Tg. Mures	3579	740	173
BIO	Sc Biofarm Sa Bucuresti	3579	740	173
BRD	Sc Banca Romana de Dezvoltare – GSG Sa	2747	568	133
CMP	Sc Compa Sa Sibiu	3579	740	173
SIF2	Societatea de Investitii Financiare Moldova Sa	3045	631	147
SNP	Sc Petrom Sa – Group OMV	2585	535	125

Source: Bucharest Stock Exchange; calculations by the authors.

Table 2

Descriptive statistics for the daily time series

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
ATB	-0.0002	0.0320	-0.45	10.86	9331.5	0.00
AZO	0.0005	0.0387	0.10	9.25	5829.8	0.00
BET	0.0004	0.0187	-0.36	9.13	5691.4	0.00
BET_C	0.0003	0.0169	-0.49	16.02	24451.7	0.00
BET_FI	0.0011	0.0268	-0.12	8.11	3047.7	0.00
BIO	0.0001	0.0374	-0.14	14.43	19507.5	0.00
BRD	0.0005	0.0255	-0.85	12.66	11009.8	0.00
CMP	0.0003	0.0357	-0.15	8.06	3827.6	0.00
SIF2	0.0013	0.0348	-0.25	10.42	7019.6	0.00
SNP	0.0006	0.0272	-0.22	9.50	4576.9	0.00

Source: Bucharest Stock Exchange; calculations by the authors.

Table 3

Descriptive statistics for the weekly time series

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
ATB	-0.0008	0.0829	-0.69	21.49	10598.7	0.00
AZO	0.0026	0.0914	0.39	8.09	817.4	0.00
BET	0.0021	0.0454	-0.30	6.44	376.7	0.00
BET_C	0.0014	0.0402	-0.67	6.45	404.4	0.00
BET_FI	0.0053	0.0639	-0.78	8.85	885.1	0.00
BIO	0.0006	0.0840	-0.89	12.14	2674.4	0.00
BRD	0.0026	0.0592	-2.32	22.60	9602.0	0.00
CMP	0.0016	0.0804	-0.02	9.26	1206.8	0.00
SIF2	0.0063	0.0852	0.46	18.82	6606.5	0.00
SNP	0.0029	0.0630	-0.57	14.58	3017.3	0.00

Source: Bucharest Stock Exchange; calculations by the authors.

Table 4

Descriptive statistics for the monthly time series

	Mean	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
ATB	-0.0036	0.1788	-1.22	10.98	501.9	0.00
AZO	0.0109	0.1988	1.93	18.56	1851.1	0.00
BET	0.0089	0.1107	-0.66	5.50	57.8	0.00
BET_C	0.0062	0.0997	-0.85	5.50	63.4	0.00
BET_FI	0.0228	0.1671	-0.54	8.68	188.2	0.00
BIO	0.0026	0.1918	-0.16	5.93	62.8	0.00
BRD	0.0113	0.1412	-1.50	9.27	268.1	0.00
CMP	0.0067	0.1834	-0.97	11.48	545.8	0.00
SIF2	0.0272	0.1902	-0.75	7.75	152.0	0.00
SNP	0.0123	0.1434	-0.85	8.76	188.1	0.00

Source: Bucharest Stock Exchange; calculations by the authors.

Table 5

Estimation of the autocorrelation (AC), partial autocorrelation (PAC) and Q-statistic with 20 lags for the squared returns with daily, weekly and monthly frequency

	Daily time series			Weekly time series			Monthly time series		
	AC	PAC	Q (p-val)	AC	PAC	Q (p-val)	AC	PAC	Q (p-val)
ATB	0.031	-0.026	1810.6 (0.00)	-0.012	-0.039	444.1 (0.00)	-0.043	-0.021	25.7 (0.18)
AZO	0.099	-0.002	1341.0 (0.00)	0.183	0.062	367.7 (0.00)	-0.036	-0.023	5.4 (1.00)
BET	0.061	-0.016	1366.5 (0.00)	-0.026	-0.056	150.2 (0.00)	-0.049	-0.024	32.3 (0.04)
BET_C	0.042	-0.022	1006.4 (0.00)	0.000	-0.024	163.4 (0.00)	-0.078	-0.062	24.4 (0.23)
BET_FI	0.102	-0.052	2086.0 (0.00)	0.011	-0.011	153.9 (0.00)	-0.069	-0.052	13.4 (0.86)
BIO	0.080	0.041	611.5 (0.00)	0.005	0.003	113.6 (0.00)	-0.087	-0.044	28.3 (0.10)
BRD	0.044	-0.034	747.5 (0.00)	0.073	0.063	17.7 (0.61)	-0.018	-0.003	12.2 (0.91)
CMP	0.066	-0.025	1322.1 (0.00)	0.071	0.087	108.4 (0.00)	-0.036	-0.039	27.8 (0.11)
SIF2	0.098	0.000	3540.7 (0.00)	0.006	0.004	48.3 (0.00)	-0.073	-0.068	20.0 (0.46)
SNP	0.057	-0.018	2530.5 (0.00)	0.032	0.008	170.5 (0.00)	-0.075	-0.033	13.4 (0.86)

Source: Bucharest Stock Exchange; calculations by the authors.

Table 6

Estimated values for the GARCH-M coefficients for the all frequencies

	Coeff value	Std. error	Z statistic	p- val	Coeff value	Std. error	Z statistic	p- val	Coeff value	Std. error	Z statistic	p- val
	Daily frequency				Weekly frequency				Monthly frequency			
ATB												
β_1	-0.105	0.773	-0.136	0.89	-0.657	0.473	-1.390	0.16	-0.524	0.502	-1.044	0.30
ω	0.000	0.000	24.379	0.00	0.000	0.000	6.216	0.00	0.005	0.002	2.485	0.01
α	0.128	0.006	22.472	0.00	0.220	0.026	8.401	0.00	0.386	0.102	3.801	0.00
β	0.847	0.004	191.215	0.00	0.760	0.023	32.815	0.00	0.564	0.095	5.970	0.00
AZO												
β_1	0.160	0.715	0.223	0.82	-0.156	0.623	-0.250	0.80	-20.736	15.981	-1.298	0.19
ω	0.000	0.000	15.527	0.00	0.001	0.000	6.390	0.00	0.005	0.003	1.626	0.10
α	0.086	0.004	20.538	0.00	0.202	0.023	8.981	0.00	0.006	0.004	1.392	0.16
β	0.882	0.005	195.961	0.00	0.721	0.027	26.611	0.00	0.869	0.075	11.577	0.00
BET												
β_1	0.719	1.242	0.579	0.56	-1.930	1.227	-1.572	0.12	-0.772	1.648	-0.468	0.64
ω	0.000	0.000	10.484	0.00	0.000	0.000	4.227	0.00	0.001	0.001	2.262	0.02
α	0.231	0.010	22.521	0.00	0.183	0.027	6.812	0.00	0.199	0.063	3.175	0.00
β	0.760	0.008	93.064	0.00	0.780	0.030	26.381	0.00	0.713	0.079	8.973	0.00
BET_C												
β_1	-0.448	1.123	-0.399	0.69	-2.516	1.610	-1.563	0.12	-1.559	1.710	-0.912	0.36
ω	0.000	0.000	10.197	0.00	0.000	0.000	4.443	0.00	0.002	0.001	2.134	0.03
α	0.233	0.010	22.452	0.00	0.223	0.035	6.306	0.00	0.371	0.127	2.927	0.00
β	0.770	0.008	96.036	0.00	0.680	0.046	14.877	0.00	0.447	0.158	2.832	0.00
BET_FI												
β_1	-0.079	1.120	-0.071	0.94	-2.986	1.062	-2.812	0.00	1.115	0.602	1.852	0.06
ω	0.000	0.000	7.157	0.00	0.000	0.000	4.528	0.00	0.004	0.004	1.255	0.21
α	0.166	0.011	14.677	0.00	0.223	0.042	5.359	0.00	0.154	0.046	3.320	0.00
β	0.823	0.010	85.738	0.00	0.675	0.049	13.669	0.00	0.693	0.163	4.260	0.00
BIO												
β_1	-1.164	0.658	-1.768	0.08	-0.282	0.907	-0.311	0.76	-0.266	0.939	-0.283	0.78
ω	0.000	0.000	36.499	0.00	0.000	0.000	6.812	0.00	0.006	0.003	2.125	0.03
α	0.181	0.007	27.111	0.00	0.106	0.019	5.520	0.00	0.206	0.089	2.324	0.02
β	0.750	0.006	132.280	0.00	0.833	0.022	37.480	0.00	0.647	0.137	4.735	0.00
BRD												
β_1	0.270	1.061	0.254	0.80	-1.200	2.115	-0.568	0.57	0.001	1.302	0.001	1.00
ω	0.000	0.000	22.541	0.00	0.002	0.000	6.750	0.00	0.002	0.001	2.324	0.02
α	0.277	0.016	16.888	0.00	0.217	0.051	4.247	0.00	0.164	0.060	2.747	0.01
β	0.663	0.014	46.275	0.00	0.323	0.099	3.265	0.00	0.722	0.054	13.349	0.00
CMP												
β_1	-0.181	0.798	-0.227	0.82	-2.117	1.026	-2.064	0.04	0.363	0.488	0.744	0.46
ω	0.000	0.000	15.477	0.00	0.001	0.000	4.258	0.00	0.004	0.002	2.217	0.03
α	0.210	0.013	16.777	0.00	0.144	0.024	5.890	0.00	0.180	0.031	5.737	0.00

	Coeff value	Std. error	Z statistic	p- val	Coeff value	Std. error	Z statistic	p- val	Coeff value	Std. error	Z statistic	p- val
	Daily frequency				Weekly frequency				Monthly frequency			
β	0.668	0.016	41.516	0.00	0.739	0.044	16.749	0.00	0.708	0.067	10.598	0.00
SIF2												
β_1	-0.792	0.796	-0.996	0.32	0.660	0.466	1.418	0.16	0.287	1.117	0.257	0.80
ω	0.000	0.000	10.184	0.00	0.001	0.000	7.262	0.00	0.008	0.005	1.564	0.12
α	0.149	0.009	15.934	0.00	0.127	0.020	6.309	0.00	0.275	0.069	4.002	0.00
β	0.824	0.008	101.628	0.00	0.754	0.028	26.812	0.00	0.532	0.160	3.326	0.00
SNP												
β_1	-0.101	1.104	-0.091	0.93	-0.636	1.050	-0.606	0.54	-0.057	1.145	-0.050	0.96
ω	0.000	0.000	10.321	0.00	0.001	0.000	4.750	0.00	0.002	0.001	2.558	0.01
α	0.158	0.011	13.867	0.00	0.250	0.050	4.970	0.00	0.302	0.066	4.562	0.00
β	0.798	0.012	66.686	0.00	0.514	0.075	6.842	0.00	0.648	0.048	13.531	0.00

Source: Bucharest Stock Exchange; calculations by the authors.

Table 7

Persistence values for all the time series and frequencies

	Daily	Weekly	Monthly
ATB	0.9751	0.9803	0.9509
AZO	0.9677	0.9239	not significant
BET	0.9906	0.9627	0.9112
BET_C	1.0033	0.9025	0.8181
BET_FI	0.9887	0.8987	not significant
BIO	0.9308	0.9392	0.8531
BRD	0.9400	0.5399	0.8858
CMP	0.8779	0.8834	0.8890
SIF2	0.9734	0.8804	not significant
SNP	0.9557	0.7641	0.9499

Source: Bucharest Stock Exchange; calculations by the authors.

Table 8

Tests for the residuals of the GARCH-M models for the daily time series

	Standardized residuals			Squared std. residuals			Jarque – Bera (p-val)	ARCH- LM (p-val)
	AC	PAC	Q (p-val)	AC	PAC	Q (p-val)		
ATB	-0.01	-0.01	29.91 (0.07)	-0.02	-0.02	7.55 (0.99)	12775.27 (0.00)	1.147 (0.28)
AZO	0.03	0.02	23.40 (0.27)	-0.01	-0.01	11.68 (0.93)	9688.15 (0.00)	4.333 (0.04)
BET	0.02	0.01	153.86 (0.00)	0.00	0.00	34.91 (0.02)	802.48 (0.00)	9.270 (0.00)
BET_C	0.01	0.00	140.23	-0.01	-0.02	40.96	2422.87	4.475

	Standardized residuals			Squared std. residuals			Jarque – Bera (p-val)	ARCH-LM (p-val)
	AC	PAC	Q (p-val)	AC	PAC	Q (p-val)		
			(0.00)			(0.00)	(0.00)	(0.03)
BET_FI	0.01	-0.01	101.35 (0.00)	-0.01	-0.01	13.39 (0.86)	467.62 (0.00)	2.485 (0.12)
BIO	0.01	0.00	27.26 (0.13)	0.01	0.01	4.70 (1.00)	52823.48 (0.00)	0.150 (0.70)
BRD	0.03	0.03	40.68 (0.00)	0.00	0.00	3.19 (1.00)	29186.56 (0.00)	0.206 (0.65)
CMP	0.01	0.01	20.81 (0.41)	-0.01	-0.01	27.04 (0.13)	2859.18 (0.00)	1.534 (0.22)
SIF2	0.00	-0.01	71.83 (0.00)	0.00	0.00	20.94 (0.40)	1385.70 (0.00)	4.442 (0.04)
SNP	-0.03	-0.04	39.92 (0.01)	0.02	0.02	22.55 (0.31)	852.27 (0.00)	3.606 (0.06)

Source: Bucharest Stock Exchange; calculations by the authors.

Table 9

Tests for the residuals of the GARCH-M models for the weekly time series

	Standardized residuals			Squared std. residuals			Jarque – Bera (p-val)	ARCH-LM (p-val)
	AC	PAC	Q (p-val)	AC	PAC	Q (p-val)		
ATB	-0.02	-0.02	31.03 (0.06)	-0.05	-0.04	27.78 (0.12)	673.03 (0.00)	0.143 (0.71)
AZO	0.02	0.02	17.80 (0.60)	0.01	0.01	15.28 (0.76)	205.97 (0.00)	2.614 (0.11)
BET	-0.02	-0.01	26.18 (0.16)	-0.06	-0.06	10.22 (0.96)	225.60 (0.00)	0.215 (0.64)
BET_C	-0.04	-0.03	28.59 (0.10)	-0.04	-0.05	7.12 (1.00)	142.86 (0.00)	0.275 (0.60)
BET_FI	-0.04	-0.04	44.96 (0.00)	-0.03	-0.03	9.61 (0.98)	106.84 (0.00)	1.805 (0.18)
BIO	0.01	0.01	24.44 (0.22)	0.00	0.00	4.99 (1.00)	9793.16 (0.00)	0.244 (0.62)
BRD	-0.02	-0.02	21.30 (0.38)	0.04	0.04	1.70 (1.00)	32154.63 (0.00)	0.023 (0.88)
CMP	0.01	0.00	38.24 (0.01)	0.04	0.03	8.72 (0.99)	781.33 (0.00)	0.166 (0.68)
SIF2	-0.01	-0.02	35.04 (0.02)	-0.03	-0.01	16.90 (0.66)	660.99 (0.00)	1.756 (0.19)
SNP	-0.02	-0.02	31.79 (0.05)	0.08	0.05	39.60 (0.01)	134.65 (0.00)	0.053 (0.82)

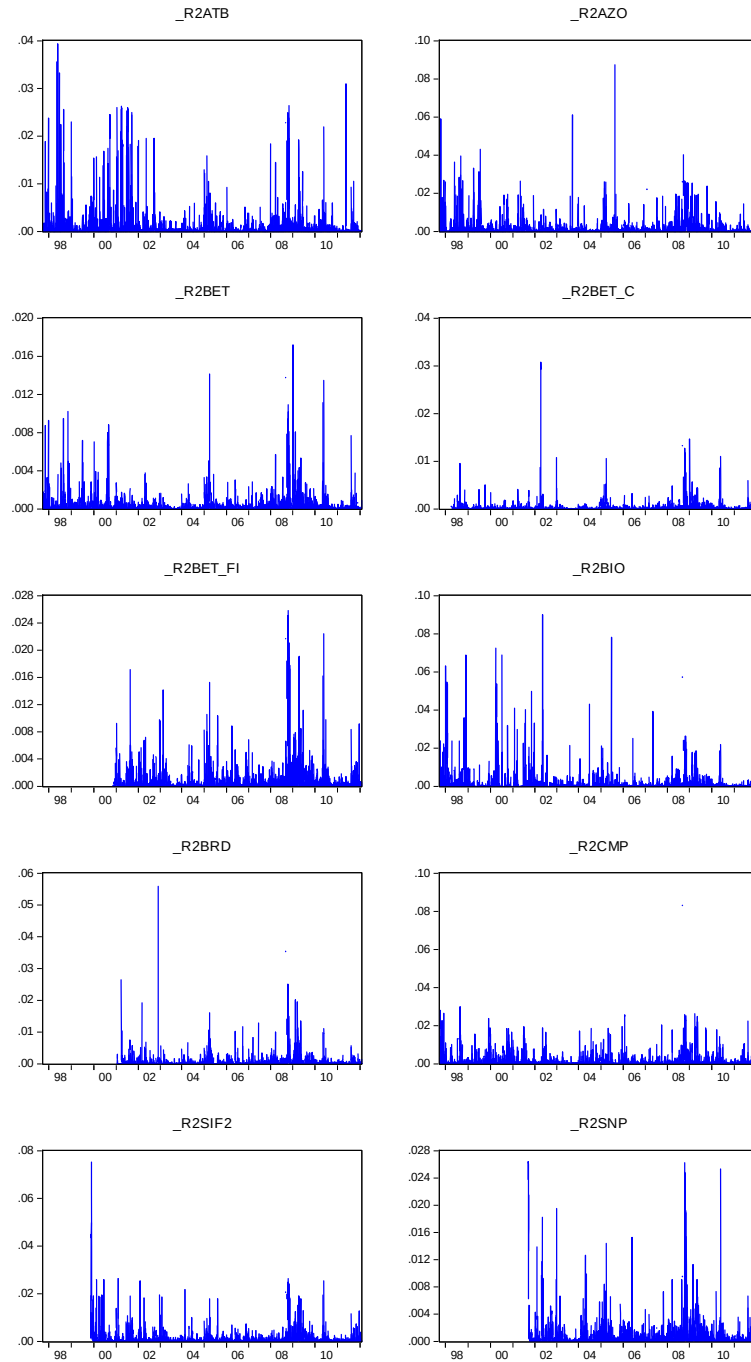
Source: Bucharest Stock Exchange; calculations by the authors.

Table 10

Tests for the residuals of the GARCH-M models for the monthly time series

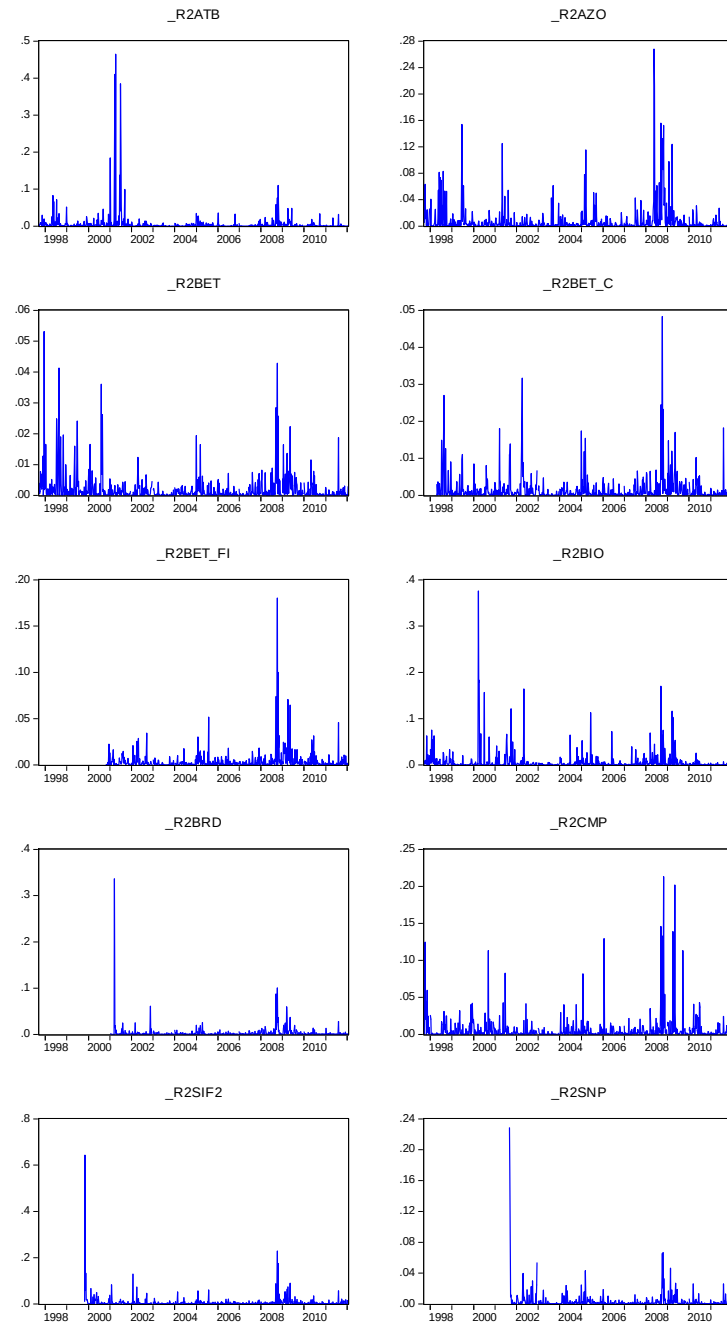
	Standardized residuals			Squared std. residuals			Jarque – Bera (p-val)	ARCH- LM (p-val)
	AC	PAC	Q (p-val)	AC	PAC	Q (p-val)		
ATB	0.14	0.14	20.28 (0.44)	-0.02	-0.03	6.17 (1.00)	427.51 (0.00)	0.237 (0.63)
AZO	0.00	0.06	14.39 (0.81)	-0.03	-0.03	1.87 (1.00)	3138.06 (0.00)	0.039 (0.84)
BET	-0.02	-0.04	15.66 (0.74)	0.04	0.08	15.27 (0.76)	23.97 (0.00)	0.109 (0.74)
BET_C	-0.01	-0.02	13.75 (0.84)	-0.01	-0.03	10.06 (0.97)	10.67 (0.00)	0.700 (0.40)
BET_FI	0.06	0.03	14.05 (0.83)	-0.05	-0.04	6.72 (1.00)	120.52 (0.00)	0.074 (0.79)
BIO	0.06	0.03	13.63 (0.85)	-0.09	-0.07	9.66 (0.97)	107.70 (0.00)	0.317 (0.57)
BRD	0.05	0.07	12.27 (0.91)	0.06	-0.02	18.04 (0.59)	29.01 (0.00)	0.406 (0.53)
CMP	0.01	0.05	35.62 (0.02)	-0.02	-0.02	14.45 (0.81)	46.65 (0.00)	2.348 (0.13)
SIF2	0.10	0.06	11.87 (0.92)	-0.04	-0.04	6.73 (1.00)	59.90 (0.00)	0.021 (0.89)
SNP	0.05	0.02	12.17 (0.91)	-0.07	-0.07	9.75 (0.97)	32.95 (0.00)	0.007 (0.94)

Source: Bucharest Stock Exchange; calculations by the authors.



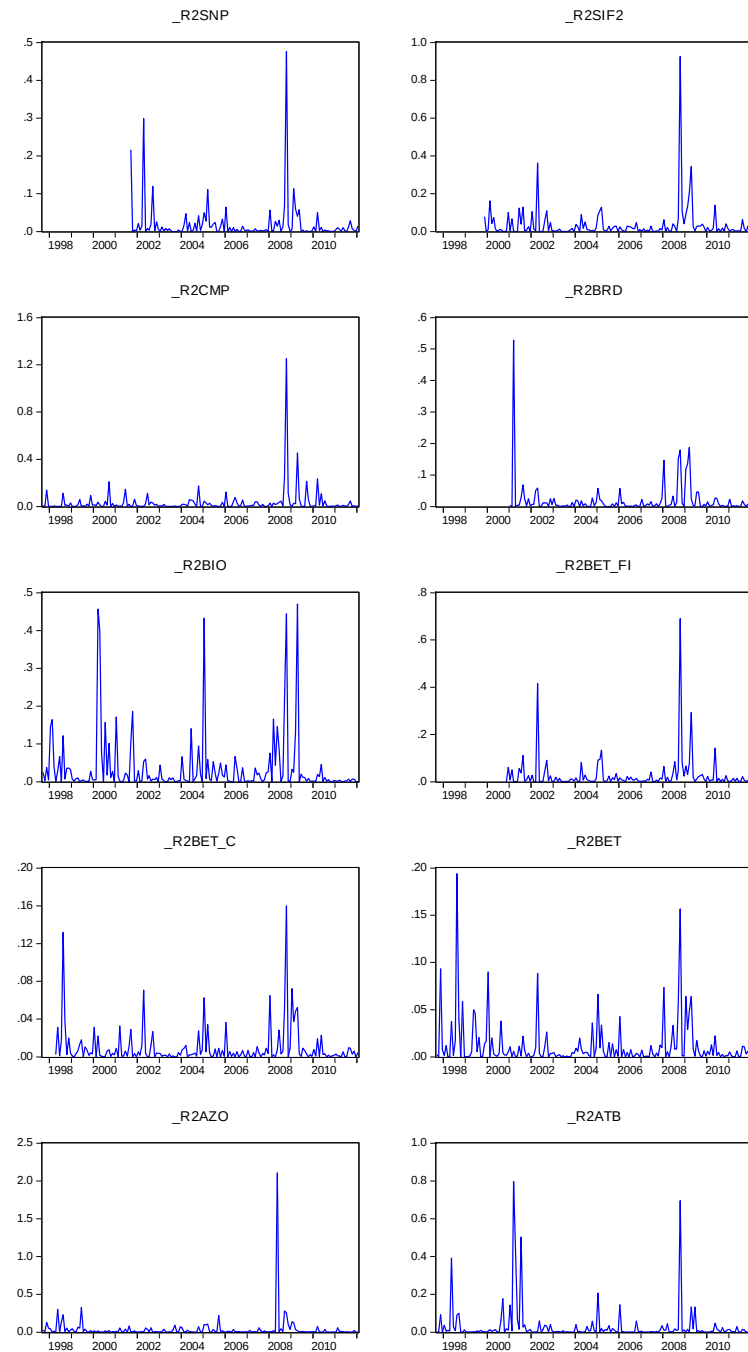
Source: Bucharest Stock Exchange; calculations by the authors.

Figure 1. *Squared returns for the daily time series*



Source: Bucharest Stock Exchange; calculations by the authors.

Figure 2. Squared returns for the weekly time series



Source: Bucharest Stock Exchange; calculations by the authors.

Figure 3. Squared returns for the monthly time series

Preparation of Financial Statements for Sme's in Romania. Interest for Cash-Flow Statement

Nicoleta FARCANE

West University, Timișoara
nicoletafarcane@yahoo.fr

Sorinel CĂPUȘNEANU

“Artifex University”, Bucharest
sorinelcapusneanu@gmail.com

Sorin BRICIU

“1 Decembrie 1918” University, Alba Iulia
sbriciu@yahoo.com

Abstract. *The purpose of this article is to obtain feedback about the transition to IFRS standards and their implementation in the context of small and medium-sized enterprises in Romania in terms of the cash-flow situation. Research methodology is based on a quantitative survey carried out in order to verify the importance and usefulness of perception on the cash-flow statement. The investigation based on testing four hypotheses has been carried out within the framework of small and medium-sized enterprises in Western Romania and the categories of respondents to the study were: upper management and accounting specialists. The results highlight the fact that there are differences between the categories of users of the cash-flow statements, fact highlighted and illustrated by our findings. The article ends with the conclusions of the authors regarding the importance and usefulness of the use and implementation of the cash-flow statement of the small and medium enterprises in Western Romania.*

Keywords: financial statement; reporting; cash flow; SME; IFRS.

JEL Codes: M21, M41.

REL Codes: 14J, 14K.

1. Introduction

The purpose of this article consists in our attempt to adapt the International Financial Reporting Standards related to the importance and usefulness of the cash-flow statement of the Small and Medium-Sized Enterprises in Romania. In order to adapt IFRS, we intended to study the pros and cons for two broad categories of respondents: information users and producers of accounting-financial information. The results obtained are those that have marked the motivation to adapt IFRS concerning the cash-flow statement in SMEs in Romania.

2. Conceptual framework

The emergence of International Financial Reporting Standards (IFRS) for Small and Medium-Sized Enterprises (IFRS for SMEs) determined us to make assessments on the extent to which Romanian companies in this category are prepared for the transition to this set of standards. Unlike the case of listed companies, in 2007 the European Union stated that there is no intention to make IFRS mandatory for SMEs (Nolke, Perry, 2007). Therefore, each country will decide individually whether to adopt this standard. IFRS for SMEs will apparently have a status similar in Europe to that of the IAS-before 2004, that is, countries may allow the companies to decide if they want to use IFRS for SMEs. Before adopting IFRS for SMEs both at national and at company level, it is very important for all parties involved to be aware of pros and cons both in the view of users and producers of accounting-financial information.

From the perspective of our study, we were interested particularly in aspects related to cash-flow statements. According to IFRS for SMEs, this statement is a mandatory reporting, being part of the financial reports. The transition to the application of IFRS for SMEs involves a different way of thinking and applying of working rules and procedures at the level of SMEs. Therefore, the role of human resources with financial and accounting knowledge and specialized studies is essential for SMEs in the context of the implementation of the new accounting standards.

3. Literature review

Eierle and Haller (2009) noted that most SMEs in Germany consider that it is necessary only in a small extent or even unnecessary to provide internationally comparable financial information. Coppens and others (2007), based on the analysis of Belgian data, have shown that adoption of IFRS for SMEs will result in a need of separate financial reporting to tax authorities by

those companies that apply IFRS for SMEs. Moreover, both studies - Coppens et al. (2007) and Haller (2003) – noted that, according to experts' opinion, after adoption of IFRS for SMEs, companies' efforts for data collection and processing will probably increase considerably due to the standard's complexity.

SMEs require assistance from external accounting specialists in order to apply IFRS, which increases the implementation costs, according to Coppens et al. (2007). The relative value of these costs will be high, especially for smaller companies, according to Evans and others (2005), but the size effect is quite rare in terms of evaluation of costs and benefits of this particular accounting standard (Eierle, Haller, 2009). Thus, Eierle and Haller (2009) argue that, in comparison to larger companies, small companies overestimate the benefits of accounting standards and underestimate their costs, probably due to the lower level of accounting knowledge in small companies, according to the authors.

The usefulness and importance of operating cash-flows in comparison with revenues in respect to: Evolution of exchange rates for securities: Beaver and Dukes (1972), Pattel and Kaplan (1977), Rayburn (1986), Bowen et al. (1987), Wilson (1986, 1987), Bernard and Stöber (1989), Papilior (1995), Wang et al. (1998), Saïd et al. (2001); Forecast of future cash-flows: Bowen et al. (1986), Finger (1994), Krishnan and Largay (1997), Barth et al. (2001), Hussain et al. Attar (2004).

International literature (Ikäheimo et al., 2010) demonstrates that specialized finance-and-accounting personnel, who have encountered various situations in their professional career, or have even prepared cash-flow statements, are more receptive to implementing the new accounting standard IFRS for SMEs.

4. Research methodology

4.1. A new perception of the Romanian accounting practitioners' idea on financial statements?

The topic of our research is structured around the main question: "How prepared are Romanian SMEs to transpose cash-flow information into mandatory financial reporting?"

Information provided by cash-flow statements can be used to increase quality and level of financial earnings, liquidities and flexibility and they help when forecasting cash-flows. Information on cash-flows should provide better guidance on the level of a company's liquidity, because no other asset is more liquid than cash. A company's financial strength and weakness is estimated best by using a set of cash-flow ratios combined with traditional financial statements – balance sheet and income statement, according to Carslaw and Mills (1991).

The main purpose of this article is to study the opinion of the management of small and medium-sized enterprises located in Western Romania in respect to the importance and usefulness of cash-flow statements for this category of companies. This results from the fact that there are no records of the views of practitioners in finance and accounting departments in respect to this initiative.

The undertaken research focuses on the necessity, usefulness, importance and usage level of cash-flow statements in the praxis of Romanian small and medium-sized enterprises. Thus, the following questions arise:

1. How do SMEs perceive the costs and benefits of cash-flow statements included in the IFRS proposed for SMEs?
2. Are there significant differences between SMEs regarding management perceptions on cash-flow statements, depending on their size?
3. What are the difficulties of SMEs' management resulting from non-preparation of cash-flow statements?
4. How do specialized personnel who prepare financial statements perceive the usefulness of cash-flow statements?

Currently, there are no defined records of SMEs perceptions and views on adopting IFRS for SMEs and on the usefulness of cash-flow statements, feasibility and benefits of its adoption and on the difficulties faced by SMEs in implementing various accounting standards and regulations. There are significant gaps in professional literature regarding the adequacy of IFRS proposed for SMEs. Also, there is no evidence on accounting issues relevant for SMEs and this would have to be covered by IFRS for SMEs. Moreover, there is a lack of empirical evidence on costs and benefits of accounting methods based on IFRS for SMEs.

4.2. Reasons for performing an analysis of practitioners' perceptions on adopting IFRS for SMEs

According to current Romanian accounting regulations, SMEs prepare simplified financial statements, where the statement of changes in equity and the cash-flow statement are not mandatory.

IFRS for SMEs provides that, besides the company's financial position, the financial statements of SMEs also have to present fairly the financial performance and cash-flows of an entity in this category.

Before their implementation it is impossible to examine directly the effects of IFRS for SMEs. Therefore, experience of those persons with knowledge on IFRS for SMEs is useful for understanding the possible consequences of its adoption.

In Romania, the new rules on IFRS for SMEs have been submitted to the Body of Chartered Certified Accountants (CECCAR) in order to be analyzed, and its members will make recommendations and notes on the practical applicability of the new financial-accounting regulations.

Although the International Accounting Standards Board headquartered in London (IASB) has issued in July 2009 the international financial reporting standard (IFRS) for SMEs, considered that SMEs represent over 95% of all companies in the world, it seems that companies have a poor appetite for adopting international financial reporting standards (IFRS) for SMEs, according to a survey conducted by NEXIA International⁽¹⁾.

Due to recent completion of IFRS standard for SMEs, since 2009 – the year of the English version and its 2010 translation into Romanian, the case studies on the practical difficulties of SMEs in Romania are very few, and literature addresses this issue more from the theoretical point of view.

4.3. Hypothesis concerning the assessment of mentality change of Romanian accounting practitioners

In our work we started from the hypothesis that will be described below. Based on various domestic and foreign studies, which showed that the size of a company is a factor that influences its behavior in terms of preparation and dissemination of financial and accounting information (Hermann et al., 1996, Ettredge et al., 2002, Haniffa, Cooke, 2002, Popa, 2008), we considered that management of small companies have different perceptions regarding cash-flow statements in comparison with managers of medium-sized companies. Therefore, the hypotheses we start from are the following:

Hypothesis 1: There are significant size differences between SMEs in respect to management perception on cash-flow statements. Regardless of whether they have used cash-flows during their career or not, specialized personnel who prepare financial statements for SMEs are aware of their importance and of the problems faced by companies, which prepare cash-flow statements.

Hypothesis 2: The specialized personnel preparing financial statements are aware of the problems faced by companies, which prepare cash-flow statements, regardless of whether they have used cash-flow statements during their career or not. Moreover, it is presumed that specialized personnel in finance and accounting departments who prepare financial statements consider that cash-flow statements provide important financial information for improving decision-making in SMEs. Performance assessment, one of SMEs' main objectives, caught attention of many researchers. This led us to a third hypothesis:

Hypothesis 3: Specialized personnel in finance and accounting departments who have used cash-flow statements during their career consider that managers face difficulties in decision-making in the absence of information resulted from the analysis of cash-flow statements, while non-users have a different perception. Usefulness of cash-flow statements for decision-making at a company's management level is a matter that has to be taken into account by

those who prepare the company's financial statements. We assume that those respondents who have not used or prepared cash-flow statements during their careers will have different perceptions about the usefulness of this statement, in comparison to the group of those who have used and even prepared it. This is the fourth hypothesis of our study.

Hypothesis 4: Specialized personnel (users and non-users of cash-flow statements) have different perceptions regarding usefulness of cash-flow statements in providing financial information for decision-making process.

4.4. Ways and means for testing our hypothesis

Research methodology is used to obtain information for answering the questions addressed in this study. This is a heated debate in the context of socio-economic sciences for research management (Starkey, Transfield, 1998, pp. 341-353). Research is based on testing hypothesis through logical empiricism, which is a positive approach. Also, in order to analyze experience in knowledge process, we have used quantitative and qualitative methods, recommended and used by many researchers⁽²⁾, these being the most used research methods at socio-economical level.

In our study, quantitative data are collected by means of a questionnaire distributed to small and medium-sized enterprises in the Western Romania. Qualitative data were obtained by means of open questions and direct interviews with some of the finance managers of SMEs in this region.

The sample represents a group of people to which we apply a study which results in a conclusion about the entire population studied (Paul, 1979, p. 32). The sample should provide a more accurate picture as to the reference population. The sample must be obtained by application of probabilistic techniques, to be representative from statistical point of view and in terms of the theoretical analyzed problem.

The sample adopted in this paper is just one of the many methods used in data acquisition. The sample methodology is used for obtaining the opinions of finance and accounting professionals on the necessity and usefulness of cash-flow statements in management and administration of small and medium-sized enterprises.

The studied population consists of representatives of small and medium-sized enterprises (according to the definition of SMEs in Romanian legislation harmonized with European Directives) located in Western Romania, in Timiș, Caraș-Severin, Arad and Hunedoara Counties. The sample was obtained from the companies registered in the database of the Trade Register Offices of the four counties in Western Romania.

5. Results

Out of the total number of 35,204 SMEs, which were registered with Trade Register Office in 2007 in the four counties in Western Romania⁽³⁾, we made a random selection. By using a disproportionate stratified sampling technique we selected 400 companies that meet the definition of SMEs in the Romanian legislation and have an annual turnover of no more than 43 million lei. We used stratification variables for the companies' size and headquarters. We chose the disproportionate sampling technique for ensuring that all important subpopulations were represented in the sample. We used the following two size groups for selecting the sample: companies with turnover of less 8.6 million lei and companies with turnover between 8.6 and 43 million lei, respectively. The clusters for headquarters were represented by the 4 counties in Western Romania: Timiș, Arad, Caraș-Severin and Hunedoara. From each group we selected randomly a number of 100 entities. We sent questionnaires to these companies and only a number of 162 companies have returned them filled out (27%). Out of the 162 returned questionnaires, 37 were not valid because they were not complete or the companies have a turnover exceeding 43 million lei in 2009. Thus, there resulted a sample of 125 valid and usable questionnaires, and a response rate of 31.25%.

Based on the received responses and validated questionnaires, we determined the sampling error of +/- 7.28%. The sampling error or the confidence interval represents the range of values (error) for matching the percentage calculated based on the sample out of the total population.

One section presents descriptive data on examining the perceptions of respondents regarding the necessity and importance of using the cash-flow statements. Additionally, we compared opinions of persons who prepared cash-flow statements in their professional career with opinions of persons who did not use or prepare such statements, in order to determine significant differences between the two groups related to choice of preference, difficulties in implementing cash-flow statements and usefulness of information in cash-flows in the decision-making process.

Out of those who have been using cash-flow statements during their career, 9.6% said that they have only poor knowledge about its structure. Therefore, we consider that the group of persons who have used cash-flow before is better informed than the group of respondents who have not used it. 36.8% of the sample companies prepared cash-flow statements, while 63.2% of them did not. We appreciate that more than half of the SMEs do not prepare cash-flow statements.

In Romania, the General Tax Office (DGFP) is considered the main user of cash-flow statements, followed by banks and other credit institutions,

shareholders, creditors and managers. According to respondents who used cash-flow statements, all these categories have obtained an average around 2, “partial agreement”. On the other hand, those who did not use cash-flow statements are of the opinion that banks and other credit institutions, and shareholders are the main categories of users, while the General Tax Office and creditors are less interested in them, with an average of 2.74, closer to “not-interested” level. According to both groups, those less interested in cash flows are employees and suppliers, with an overall average of 4.58, respectively 4.14.

The using respondents consider that the main purpose served by cash-flow statements consists in filling out tax returns, while finding and obtaining financing ranks second in the hierarchy of purposes. Non-using respondents consider that the main purpose served by cash-flow statements consists in obtaining financing. The same group considers that cash-flow statements are necessary for transactions with clients and suppliers. We consider that the average obtained by this statement (average=1.65) is the result of a misunderstanding of the question. Both groups consider that preparation and usage of cash-flow statements does not lead to better relationships with employees. Furthermore, the respondents were asked to indicate their opinion regarding the choice for the preparation and use of the cash-flow statement in decision-making at the enterprise level or giving up of that statement.

A comparison between respondents who have prepared and used cash-flow statements in their professional career and those who did not use them shows that most of those who have used such statements (81.6%) consider it is appropriate and useful to prepare those (76%), and only 5.6% of them chose to give up preparation of such statements. The group of subjects who did not use cash-flow statements represents 24% and all of them consider that it is not necessary to prepare them. The responses suggest that those who know the cash-flow statements are aware of their importance and necessity. To get a conclusive answer as to the reasons for the choice between the two options, respondents were asked to indicate the extent to which support certain statements.

The questionnaire asked respondents to express their views on the main grounds of their preference. Respondents who prefer using cash-flow situation for reporting cash payments to SMEs and have good reasons for their choice.

The group of those persons who did not use such statements has invoked “costs with acquisition of appropriate software” and “costs with financial and accounting consultancy” as the reasons that make them unwilling to use cash-flow statements. The two statements have an average of 1.35, and 2.04 respectively, for this group. Respondents have established that the most important problem faced in preparation of cash-flow statements consists in “a low degree of acceptance from

the side of managers and shareholders in respect to the cost-benefit ratio of preparation compulsoriness", with an average of 1.84.

Also, issues have been considered as well "the low level of understanding of the terminology" with an average of 2.30 and the "low level of understanding (by some categories of users) of the method of making such statements" with an average of 2.33.

As regards the groups of users and non-users, respondents who used cash-flow statements consider that the most important problem regarding the use of cash-flow statements consists in the fact that managers and shareholders do not accept the cost-benefit ratio in terms of compulsoriness in the preparation of such statements (an average of 1.68). The difficulties related to the preparation of the cash-flow situation and understanding of terminology are also regarded as obstacles in developing cash flow picture for this category of respondents, with the average of 2.16, respectively 2. 24.

In terms of perception, those respondents who have not used cash-flow statements share almost the same opinion like those who have used such statements. They invoke especially the first problem: "low acceptance degree from the side of managers and shareholders in respect to the cost-benefit ratio of preparation compulsoriness", with an average value of 2.57 and the second one "low understanding of terminology", with an average value of 2.57.

In order to assess the necessity and usefulness of cash-flow statements in the decision-making process, respondents expressed their opinions on the difficulties faced by management in the absence of relevant information that might result from the analysis of cash-flow statements.

6. Findings

After processing the data, we can say that respondents consider that in the absence of information provided by cash-flow statements, the managers will not be able to "understand the causes of different cash-flow sizes" and they will face the "impossibility of performing an evaluation of the company's capacity to generate cash and cash equivalents from operating, investment and financial activities", these being the most important difficulties, with an average of 1.53, respectively an average of 1.76. At the same the respondents consider that the lack of information resulting from the analysis of the cash-flow leads to "incorrect assessment of liquidity and solvency amendments" and "surprise financial information to users of the enterprise to knowing the meaning of differential cash-flow generated by the three categories of activities" of the enterprise.

As regards the differences between the two groups, those who have previously used the cash-flow statement are those who appreciate the

difficulties referred to in the same trend with the entire sample, while the group of those who have never used the cash-flow statement considers that greatest difficulty of managers is “surprising the users of financial information of the enterprise in terms of knowing the meaning of differential cash-flow generated by the three categories of activities” the average of this aspect being 2.13. The other three difficulties recorded an average of around 3 “Regardless” and standard deviations ranging between 1.166 and 1.905.

We concluded that respondents agree that “cash-flow statements are necessary for planning and management of future financial engagements”, with an average of 1.63. Also, they agree with following assertions: “cash-flow statements provide additional information for financial analysis” and “cash-flow statements serve financial informational needs for assessing performances in a manner more close to reality”, with averages of 1.83 and 2.25. “Cash-flow statement serves to examine the relationship between profitability and net cash flows and impact of price changes” and “investor is required to assess financial performance in conjunction with economic performance highlighted by account” are assertions which have obtained an average of 2.78 and 2.85. Nearly 70% of respondents acknowledge the usefulness of cash flow statement, with a rating of 5 “total disagreement” assertion, “the cash flow statement presents no utility to SME”, which has accumulated an average of 4.3.

Many of the respondents partially disagreed in respect to assertion “cash-flow statements serve for comparing operating results of various companies, because they eliminate the effects of applying different accounting criteria for the same types of transactions and events” (average 3.68), considering that, in the absence of such statements, operating results of various companies can be compared only based on information included in the income statement. In the same time, respondents showed no interest with respect to usefulness of cash-flow statements for “company’s evaluation based on forecasts for a wider time horizon” and “assessment of the extent to which previous assessments correspond to cash-flows determined at a certain moment in time”, which shows that interviewed respondents did not encounter such statements, and the two assertions obtained averages close to “not-interested”, of 3.25, and 3.21 respectively.

We also highlight that respondents of the two groups do not have similar opinions in respect to most of the assertions. Unlike the respondents who used cash-flow statements, those who did not use them are not so decided in respect to their usefulness, the average of the group who did not use cash-flow statements being of only 3.74 and the standard deviation of 1.514. These respondents have an opinion close enough to “not-interested” and “strongly disagree”, which makes us assert that probably they do not have sufficient

knowledge and expertise for issuing resolute judgments about subtle aspects related to cash-flow statements.

Based on various domestic and foreign researches, which showed that company's size is a factor that influences its behavior in respect to preparation and dissemination of financial information, we considered that small companies' management have different perceptions on cash-flow statements in comparison to medium-sized companies' managers.

The results of the Kruskal-Wallis test applied to the two groups of companies – companies with turnover of less 8.6 million lei and companies with turnover between 8.6 million lei and 43 million lei – show that for certain assertions there are differences between the two groups, and for other assertions the respondents have the same opinions, regardless of the company's size (identified in Table 1). On the whole for assertions tested for 13 claims there are no differences, and for 15 claims there are differences between small and medium-sized enterprises.

Table 1

**Kruskal-Wallis test results on the existence of disparities in size between SMEs
on perceptions their leadership on the cash-flow statement**

Affirmation	(Chi-square)	p-value
2.4 The objectives of the cash-flow statement		
Better management of business enterprise	29.383	0.000*
Finding and obtaining financing	29.278	0.000*
Better relations with employees	11.052	0.001*
2.8 Additional costs on cash-flow board		
The cost of training staff in the Finance-Accounting Department	5.560	0.018*
The cost of acquisition of appropriate computer software	5.082	0.024*
Cost with Financial-Accounting Consulting	21.930	0.000*
2.9 The problems encountered by the companies that developed the cash-flow board occurring inside the entity		
Problems with the adaptation of informatics systems	6.283	0.012*
Problems with the introduction of the new accounting treatments and evaluation criteria and recognition of balance sheet items	23.702	0.000*
A low degree of acceptance by the managers and shareholders of the cost-benefit ratio in the obligation arising from	4.210	0.040*
2.10 Management difficulties in the absence of relevant information which might come off from the analysis of flows board		
The surprising of the accounting information to users of the enterprise to knowing the meaning of differential cash-flow generated by the three categories of activities	10.872	0.001*
3.1. Usefulness of cash flow statement in the decision-making process		
The cash flow statement serves the needs of financial accounting information in order to assess performance in a manner more suited to reality	6.560	0.010*
The cash flow statement is required for the planning and management of future financial commitments	9.279	0.002*
The cash flow statement can be used in the assessment of the undertaking on the basis of forecasts on a larger time horizon	4.462	0.035*

* indicates the level of significance of the Kruskal-Wallis test at significance of p-value of 0.05 or greater.

We can appreciate that there are more differences than similarities between size-based SMEs about their perceptions of the management with regard to the cash-flow statement. Therefore, it can be concluded that the hypothesis 1, related to existence of disparities on the basis of size between SMEs on management perceptions concerning the cash-flow statement, is partially confirmed because the significance which comply with the condition $p < 0.05$.

Kruskal-Wallis non-parametric test was developed for opinion testing respondents in the two. Given that the value of p (Asymp Sig.), it is only in two cases less than the maximum value of 0.05, as it can be concluded that the hypothesis 2 is not confirmed but only partially. The majority of respondents confirmed that there will be no problems encountered by companies that developed the cash-flow board.

Investigation of the analyzed variables for checking of hypothesis 4 as regards the preconditions of normalcy dispersion, linearity and homoscedasticity led to results that did not allow the application of parametric tests. Therefore to verify the hypothesis 4, Kruskal-Wallis non-parametric test was used. Kruskal-Wallis test values and level of significance, p -value, are presented in Table 2.

Table 2

**Kruskal-Wallis test results concerning the utility
of the cash-flow statement**

Advantages	(Chi-square)	p-value
1. The cash flow statement provides information for financial analysis	24.076	0.000*
2. The cash flow statement serves the needs of financial accounting information in order to assess performance in a manner more suited to reality	61.981	0.000*
3. The cash flow statement is required for the planning and management of future financial commitments	90.204	0.000*
4. The cash flow statement is necessary for investors to assess financial performance in conjunction with economic performance highlighted by results account	19.701	0.000*
5. The cash flow statement can be used in the assessment of the undertaking on the basis of forecasts on a larger time horizon	10.844	0.001*
6. The cash flow statement serves to compare the results of different mining companies because it eliminates the effects of the application of different criteria for different kinds of accounting transactions and events	7.404	0.007*
7. The cash flow statement can serve the appraisal that previous assessments meet the cash-flow recorded at a time	5.324	0.021*
8. The cash flow statement serves to examine the relationship between profitability and net cash flows and impact of price changes	28.906	0.000*
9. The cash-flow statement has no utility for SMEs	6.454	0.011*

* indicates the level of significance of the Kruskal-Wallis test at significance of p -value of 0.05 or greater.

Hypothesis 4 refers to the usefulness of the cash-flow statement as perceived by the staff responsible for the preparation of the financial statements. For examining the differences between the perception of the staff who used and the staff who have never used the cash-flow statement, the exposed poll gave the possibility of expressing the new options in the pre-identified benefits. The Kruskal-Wallis test applied presents the obtained results in Table 2 identifying that Chi-square has significant value in all cases, the first places just assertions: "Cash-flow statement is required for the planning and management of future financial commitments" (Chi-squared = 90.204, $p = 0.000$), "the statement of cash flows information financial accounting serves the needs for assessing performance in a manner more suited to reality" (Chi-squared = 61.9814, $p = 0.000$), and "Cash-flow statement serves to examine the relationship between profitability and net cash flows and impact change in prices" (Chi-28.906, square = $p 0.000$).

Therefore, hypothesis 4 in terms of usefulness and advantages of the cash-flow statement in the opinion of specialists interviewed is confirmed.

The results obtained from test hypotheses are presented succinctly in Table 3.

Table 3

**Comparative analysis of hypothesis: users and non-users
of the cash-flow statement**

Hypothesis		Results
Hypothesis 1:	There are significant differences on the basis of size between SMEs on their perceptions of the management with regard to the cash-flow statement.	Partially confirmed
Hypothesis 2:	Expert staff who prepare financial statements is aware of the problems encountered by the companies that developed the cash flows board, regardless of whether or not he used throughout his career of cash flows board.	Partially confirmed
Hypothesis 3:	Opinions of specialist personnel in the field of financial-accounting domain of the professional career of the bigger cash flow statement believes that managers have difficulty in the decision-making process in the absence of information resulting from the analysis of the cash-flow statement, while non-users have a different perception.	Confirmed
Hypothesis 4:	Expert staff (users and non-users of cash flows statements) has different perceptions regarding the usefulness of the cash flow statement in the provision of financial information for the decision-making process.	Confirmed

7. Conclusions

This study aimed at testing the addressed assumptions by means of statistical parameters, based on the theory related to the debate regarding the application of cash-flow statements by SMEs. International professional literature presents different opinions on the feasibility of applying cash-flow

statements and relevance of financial information provided by them for decision-making. A number of studies have suggested that specialized personnel who applied cash-flow statements are more responsive to changes implied by their application, than personnel who did not use such statements. Thus, we used the quantitative approach (questionnaire) in order to shape viable research tools for examining the construction of this study. The methodological research focused on the staff in the companies' finance-and-accounting departments, in order to collect data required for obtaining the main results of this study. The results show that there are differences between the opinions of specialized personnel in finance and accounting departments who have used cash-flow statements before and those who have not used such statements in respect to the difficulties faced and the usefulness of financial information provided for the decision-making process. The results reveal that there are differences between the views of the specialized personnel of financial departments who may use the cash flow statement and one that has never used these statements, the difficulties encountered and the usefulness of financial information provided in making decisions.

Notes

- ⁽¹⁾ NEXIA International is a global network of independent audit firms, accounting and consultancy with offices in over 100 countries, which at the end of 2009 has carried out a survey among its members on their views regarding the adoption of the IFRS for SMEs.
- ⁽²⁾ The National Institute of public opinion polling and Marketing (INSOMAR) (2006), qualitative Analysis, studies prepared by INSOMAR, available online at: www.insomar.ro, accessed date: 27.07.2006.
- ⁽³⁾ See CNIMMM (2007), White Book of SMEs.

References

- Bagozzi, R., „Measurement in Marketing Research: Basic Principles of Questionnaire Design”, *Principles of Marketing Research*, 1996, pp. 1-49, Blackwell Business, Cambridge
- Carslaw, C.A., Mills, J.R., “Developing Ratios for Effective Analysis of the Cash Flow Statement”, *Journal of Accountancy* (November), 1991, pp. 63-70
- Churchill, D., „A Paradigm for Developing Better Measure of Marketing Constructs”, *Journal of Marketing Research*, Vol. XIV, Feb., 1979, pp. 64-73
- Churchill, G. (1999). *Marketing Research: Methodological Foundations*, 5th Edition, Dryden Press, New York
- Coake, S.J., Steed, L.G. (2001). *SPSS Analysis without Anguish*, Version 10.0 for Windows, John Wiley and Sons Press, London

- Creswell, J. (1994). *Research Design Qualitative & Quantitative Approaches*, London: SAGE Publications
- Eierle, B., Haler, A., „Does Size Influence the Suitability of the IFRS for Small and Medium-Sized Entities? - Empirical Evidence from Germany”, *Accounting in Europe*, 6, 2, pp. 195-230
- Ettredge, M., Richardson, V.J., Scholz, S., „Dissemination of Information for Investors at Corporate Websites”, *Journal of Accounting and Public Policy*, 21, 2002, pp. 357-369
- Farcane, N., Popa, A., Caciuc, L., Blidișel, R., „Entreprise risk management and the forecasting cash-flow”, *The IV-th International conference Economy and Transformation Management*, Timișoara, 9-10 mai 2008
- Frankfort-Nachmias, C., Nachmias, D. (1992). *Research Methods in Social Sciences* (4th ed.), St. Martin's Press, New York
- Frone, F.D. (2009). Dicționar de marketing, Facultatea de Management, Inginerie Economică în Agricultură și Dezvoltare Rurală
- Greene, C., Caracelli, J., Graham, F., „Towards a Conceptual Framework for Mixed-Methods Evaluation Design”, *Educational Evaluation and Policy Analysis*, Vol. 11, nr. 3, 1989, pp. 255-274
- Hair, J.F., Anderson, R.E., Tatham, R.L., Black, W.C. (1998). *Multivariate Data Analysis*, Upper Saddle River, New Jersey Prentice Hall, p. 204
- Haniffa, R.M., Cooke, T.E., „Culture, corporate governance and disclosure in Malaysian corporations”. *ABACUS*, 38 (3), 2002, pp. 317-350
- Hermann, D., Thomas, W., “Segment reporting in the European Union: Analyzing the Effects of Country, Size, Industry and Exchange Listing”, *Journal of International Accounting, Auditing, and Taxation*, 5 (1), 1996, p. 1-20
- <http://www.managusamv.ro/cursuri%20zi/cursuri/frone/marketing/dictionar/l.htm>, accesată la data de 28.07.2006
- Ikäheimo, Seppo, Ojala, Hannu, Stening, Eeva-Maria, Riistama Veijo, „The IFRS for SMEs: Do we need it? An expert-based study in Finland”, *The 4th Annual Workshp on Accounting in Europe*, 10-11 September 2008, Lund University, Sweden
- Institutul Național de Sondare a Opiniei Publice și Marketing (INSOMAR) (2006). Analiza calitativă, Studii elaborate de INSOMAR, disponibile on-line la adresa: www.insomar.ro, accesată la data de: 27.07.2006
- Jaba, Elisabeta, Grama, Ana (2004). *Analiza statistică cu SPSS sub Windows*, Editura Polirom, București
- Jaba, Elisabeta, Grama, Ana (2004). *Analiza statistică cu SPSS sub Windows*, Editura Polirom, București, pp. 139-142
- McDaniel, C., Gates, R. (1999). *Contemporary Marketing Research*, London: South-Western Collage Publication, pp. 300-340
- Oppenheim, A.N. (1992). *Questionnaire Design, Interviewing and Attitude Measurement*, New Edition, Printer Publishers, London
- Paul, C.S. (1979). *Evaluating Social Science Research*, Oxford Press Inc. Oxford, p. 32
- Popa, A. (2008). Online Financial Reporting: an empirical study of companies listed on BVB, Quality Management of Accounting Information - Managementul calității informației contabile. Editori Georgescu I., Țuguș Al., Editura Universității Alexandru I. Cuza, ISBN 978-973-703-299-7
- Popa, M. (2006). *Analiza de itemi*, Curs avansat de statistică psihologică on-line Universitatea A.I. Cuza, Iași, ultima actualizare: 19.01.2006, disponibil și on-line la adresa:

- http://popamarian.googlepages.com/st_io_09_strategie.pdf, accesata la data de: 27.07.2006
- Popa, M. (2006). *Analiza de itemi*, Curs avansat de statistică psihologică on-line Universitatea A.I. Cuza, Iași, p. 1-7
- Popa, M. (2006). *Elemente sintetice de strategie a analizei statistice*, Curs avansat de statistică psihologică on-line Universitatea A.I.Cuza, Iași, p. 1-4
- Solle, G., Farcane, N, Saglietto, L., Stirbu, D. (2010). „Management risks, on the border between accounting constructions and cash flow forecasting tools”, *WSEAS Conference*, Timișoara, October
- Starkey, K., Transfield, D. (1998). *The Nature, Social Organisation and Promotion of Management Research*, Towards Policy, pp. 341-353

The Biblical Matrix of Economics

Grigore PIROȘCĂ

Bucharest Academy of Economic Studies
grigore.pirosca@economie.ase.ro

Angela ROGOJANU

Bucharest Academy of Economic Studies
angelarogojanu@yahoo.com

Abstract. *The rationale of this paper is a prime pattern of history of economic thought in the previous ages of classic ancient times of Greek and Roman civilizations using a methodological matrix able to capture the mainstream ideas from social, political and religious events within the pages of Bible. The economic perspective of these events follows the evolution of the seeds of economic thinking within the Fertile Crescent, focused on the Biblical patriarchic heroes' actions, but also on the empires which their civilization interacted to. The paper aims to discover the path followed by the economic doctrines from the Bible in order to find a match with economic actuality of present days.*

Keywords: economic doctrines; mercantilism; precious metals; methodological matrix.

JEL Codes: B11, B15, B16, N35.

REL Code: 5H.

„Adam was nothing but a man, what explains everything.
 He did not want the apple for its sake; he
 wanted it because it was forbidden.
 Too bad the snake was the one forbidden:
 in this case Adam would have eaten the snake”.
 Mark Twain – Pudd'nhead Wilson

The Bible or the *Holly Books* represents, without any shadow of a doubt, a work of art for the multi millennia history of the economic, social and cultural *memory experience* of the mankind. Beyond of theological and anthropologic challenges, the Bible stands for a unique milestone for economic thought, but for the birth and evolution of economic ideas as well. In the same time, the Bible is a guide for moderate behaviors. We abide to *Holly Books* for a better understanding the economic path of mankind through the power of the exercise of the beginnings.

The dedication of the Labour Law, theoretically received as mandatory for all people, originating from a divine commandment from *Genesis* 3. 17, 18, 19, when Lord commanded to man: “And unto Adam he said, Because thou hast hearkened unto the voice of thy wife, and hast eaten of the tree, of which I commanded thee, saying, Thou shalt not eat of it: cursed is the ground for thy sake; in sorrow shalt thou eat of it all the days of thy life; (*Genesis* 3.17); Thorns also and thistles shall it bring forth to thee; and thou shalt eat the herb of the field (*Genesis* 3.18). In the sweat of thy face shalt thou eat bread, till thou return unto the ground; for out of it wast thou taken: for dust thou art, and unto dust shalt thou return.” (*Genesis* 3.19).

The Bible presents labor as a commandment from God, in a growing working diversity. Adam's sons were Abel-shepherd and Cain-farmer, but Cain's followers had within Tubalcain, who was “an instructor of every artificer in brass and iron” (*Facerea* 4.22) and Noah, who has been demanded by God Before the flood: “Make thee an ark of gopher wood; rooms shalt thou make in the ark, and shalt pitch it within and without with pitch.” (*Facerea* 6.14]. After the flood, Noah “began to be an husbandman, and he planted a vineyard” (*Facerea* 9.20, Acroyd and al., 2008, pp. 27-50, Johnson, 1987, pp. 22-67).

In 1933 at Tell Harari, close to Syrian-Iraqi border, it has been discovered the ruins of ancient city of Mari, and at Tell Mardikh the ruins of ancient Ebla. Thousands of artifacts were discovered from excavated sits. Artifacts have been dated 1900-1500 B.C., having Biblical patriarch names such as Abraham, Jacob, Laban, Ishmael, but financial and economic vocabulary as well, along with credit operations made by Jews. The Bible has been studied ever since and researchers stood for historic facts from the history of Jews between 1300-1200 B.C. Within the pages of “Book of books” there are founder ideas of economic doctrines, under the influence of religious monotheism, principles and ethical

values, migrations, wars and economic cooperation. A good proof can be found in a clay tablet from Ebla, where is registered the selling of the first born right for only three sheep, just as it has happened between the two sons of Isaac, Isav and Jacob. The last one, also known as Jacob-Israel as a founder of Israeli people, bought from his older brother his first born right for a plate with potage. This can rely in an unpretending demonstration of the power of superior utility of the present consumption, economic principle which underpins the marginality doctrine and legitimates the interest paying in credit operations (Johnson, 1987, pp. 23-40).

The Bible is not cause and effect relation book, nor a book of reasons but a history book suitable to be interpreted as a history of economic thought one. From the flood and Noah's Ark, following the events from Ancient/ old test, it can be seen economic actions before and after the birth of the people of Israel. After Noah came Lot, then legendary Abraham, whose children are the ancestors of the two Semite people, Isaac for the Jews, and Ishmael for Arabs. Isaac's children were Isav and Jacob (also named Israel), whose son, Josef, will mark the milestone of the beginning of ties between people of Israel and Pharaoh's Egypt (Barrera, 1998, pp. 12-34).

In *Genesis* 24.35 Eliezer, servant of Abraham, has been searching a wife for Isaac, son of Abraham, to his special request that his son's wife should be from the same native lands. When the servant reached his destination, he exposed with great proud his master's wealth, pe care "And the LORD hath blessed my master greatly; and he is become great: and he hath given him flocks, and herds, and silver, and gold, and menservants, and maidservants, and camels, and asses". Briefing, Abraham's wealth is in fact a part of every original means of productions, labor, nature and capital: sheep, cows, camels and mules, as nature. Sheep and cows are wealth standards for further civilizations from Antic Age to Middle Age. Romans used to change merchandises through cows (*pecus*), where the term of pecuniary derives from. Meanwhile, sheep remains as standard meat source for Semitic and Indo-European people. Mules and camels are carry animals, very tough and strong for alpine deserts from North Africa and Palestine mountains, as a proof of merchandise flows, exchange and trading, labor migration force. Camel became a symbol of trading through caravans (Rogojanu, 2009, pp. 12-60).

Preaching the moderate attitude for wealth did not mean banishing it, but a way to make people understand that in life there is more than material wealth. As an example, people have the means of living, but "Abraham was very rich in cattle, in silver, and in gold" (*Genesis* 13.2), but so did "Lot also, which went with Abram, had flocks, and herds, and tents" (*Genesis* 13.5). Wealth representation through gold and silver is for the first time marked in beginning of *Genesis*: "And the gold of that land is good: there is bdellium and the onyx stone" (*Genesis* 2.12), then by Eliezer. The consciousness of gold value is one

of the most important facts of the theory of value in different ages, because is very interesting the way people became aware of it. Anchoring the wealth to gold is a proof that theory of monetary regression developed by Ludwig von Mises within Austrian School has methodological roots far deepened in time, being imported most probably from ancient Egypt. Within the pages of Bible people tend to recognize the gold as a possible etalon of value, but probably the modest gold resources from Palestine and Levant made their decision to go along with barter, using gold only for stocking value or taxes. The rigidity of gold supply could slow trading, in spite of the fact that merchandise used during barter are not always homogenous and divisible without changing their economic destination. But one of the most important issues on precious metals Eliezer had been talking about is a proof of trading flows, even most of them have been through barter system. Merchants come into possession of gold rather by trade than by mining it, which can be seen as a birth idea of mercantilism doctrine from XV-VII centuries (Kugel, 1998, pp. 10-34, Johnson, 1990, pp. 5-43, McNeill, 2000, pp. 3-22).

Human dignity is a major commitment people from Bible began to promote, following in banishing of every form of economic and social subordination, and especially of slavery, but:

- Slavery, on the one hand, is an extension of family, excepting the slaves who belong to different ethnic groups. Just like in ancient Greek, a slave is merely a family member, not an exploited human being. More slaves are equivalent with a bigger potential work number per family. Jobs are almost homogenous, low value-added, therefore the objective theory of value is the benchmark for a working family, as long as slaves are living and working side by side with their masters. Slaves are only deprived by the right of heritage, reserved to the family's first born son. In Bible, slaves are not the slaves from mercantilist era, they are simply a superior work force for a family.

- Slavery, on the other hand, is an institution of some people's domination over others, as an institution of human humiliation. God spoke to Abraham as follows: "And he said unto Abraham, Know of a surety that thy seed shall be a stranger in a land that is not theirs, and shall serve them; and they shall afflict them four hundred years" (*Genesis* 15.13); but "And also that nation, whom they shall serve, will I judge: and afterward shall they come out with great substance" (*Genesis* 15.14) (Pelikan, 2004, pp. 12-44, Rogojanu, 2009, pp. 10-32, Kugel, 1998, pp. 10-34, Johnson, 1990, pp. 5-43).

Identifying wealth through precious metals and specific deficiencies of mercantilist doctrine are related in *Genesis*, in the important 47 chapter, Jacob in front of Pharaoh. Egypt faced an awful famine, situation which forces authorities to run out of silver "which were in the country of Egypt and Canaan, in change of the wheat traded on it." At pharaoh's request, Josef took the last stock of silver and

traded it to buy wheat. As a paradox, silver which make Egyptians to feel reach is the very reason of their calamity. Instead of developing agricultural facilities for improved output, or better infrastructure to keep bigger stocks of cereals, Egyptians only keep the silver, without intending to invest it in a better life, just as centuries later happened in decadent mercantilist empires such as Spain, Portugal, Habsburg Empire or Ottoman Empire. Had they exported lesser goods, they would not become rich but starved. They have been able to buy wheat at last, but on a market with pressure of demand, which allowed them to buy less wheat with same silver. It is very possible that silver initially gained as the profit of exports to be gone by that moment.

Rage has spread, and Egyptians protested, therefore the pharaoh was forced to find another value-etalon to provide the every day bread for the citizens. This was an assignment delegated by the pharaoh to Josef, who demanded Egyptians the next thing on the scale of value: "And Joseph said, Give your cattle; and I will give you bread for your cattle, if money fail. And they brought their cattle unto Joseph: and Joseph gave them bread in exchange for horses, and for the flocks, and for the cattle of the herds, and for the asses: and he fed them with bread for all their cattle for that year" (*Genesis* 47.16-17). Within a year, entire cattle stock was entirely traded on wheat, in a vicious circle which was the origin of downgrading living standard in the Middle Age, after the fall of Rome until the end of migrations. Years of starvation exhausted the stocks of cereals, then the cattle stocks, leaving the people to farm without the power of a locomotion vector provided by domestic animals, lowering productivity and deepening the famine. Still, Egyptians had no choice, offering what has left, first the land, then their own bodies, as slaves. The economic cycle before the famine is Property + capital = wheat, which is further traded on silver. When final goal is nothing but simply to harvest more resources to trade them on gold, then economic cycle become vulnerable on the first variation, in this case the scarce output of farming. Harvested silver did not meet any asset equivalent on market, especially in a strategic stocking resources infrastructure for food, which eventually emerged in an alimentary bubble which burst causing the usual economic crisis, just as so many times history would has been to record (Berrera, 1998, pp. 12-24).

There are great expectations in state intervention to receive some help. Even the state bought all its citizens along with the land they have been living on, the state acted as a hedge fund to big to fail. The pharaoh has then been ruling upon a default declared people, who were continuously asking for food, leaving the pharaoh with an outstanding public debt which eventually stopped the money flows to treasury. In a fiscal amnesty without previous records, people have given seeds, being mandatory to return one fifth from their output in taxes, a milestone in the history of fiscal policies.

Fascination for precious metals will be further recorded. The ark of laws, the table, the candle, the tent, the altar, the holy clothes are all made from gold in *Exodus*, chapter 25. Egyptians learned to value less precious metals, probably after the great famine, or, the Israelites to keep the gold when they leaved Egypt.

In the fifth book of Moses, *Deuteronomy*, money become the exchange vector for trading, proving their most important function on the market. The Israelites sent peace messengers to Sihon, king of Heshbon, with the following message: "Let me pass through thy land: I will go along by the high way, I will neither turn unto the right hand nor to the left.; Thou shalt sell me meat for money, that I may eat; and give me water for money, that I may drink: only I will pass through on my fee". Businesses should be managed in a moral values manner, as long as an economic act is correct registered and paid. Money was enough to cover the expenses of water and demanded food, and as long as this agreement is mutually accepted both by the supplier and the consumer, nothing else should matter. But Sihon, king of Heshbon, has not granted access for Israelites, assembling their army against them. The battle of Iahat where amorous lost was a battle of total annihilation. A battle for resources followed, as many others more through the human history, leaded by European colonists and mercantilists. The Bible recorded the fact that the Israelite army destroyed over sixty keeps from the land of Vasan, in a total war where no prisoners were taken. "Only the cattle we took for a prey unto ourselves, and the spoil of the cities which we took" (*Deuteronomul* 2.35). In the following chapters of *Deuteronomy*, Israelites conquerors will also keep the cattle. The reason of extermination is anything but one, colonization.

In chapter 14 of *Deuteronomy* trading using precious metals has a deeper meaning, preparing the implementation of wealth redistribution and social security policies. Israelites were to prepare the formalities for mourning, more precisely "Thou shalt truly tithe all the increase of thy seed that the field bringeth forth year by year. And thou shalt eat before the LORD thy God, in the place which he shall choose to place his name there, the tithe of thy corn, of thy wine, and of thine oil, and the firstlings of thy herds and of thy flocks; that thou mayest learn to fear the LORD thy God always" (*Deuteronomul* 14.22-23). Should several logistic issues interfere to accomplishment, it is allowed a payment in money for the demanded tenth: "Then shalt thou turn it into money, and bind up the money in thine hand, and shalt go unto the place which the LORD thy God shall choose: And thou shalt bestow that money for whatsoever thy soul lusteth after, for oxen, or for sheep, or for wine, or for strong drink, or for whatsoever thy soul desireth: and thou shalt eat there before the LORD thy God, and thou shalt rejoice, thou, and thine household" (*Deuteronomy* 14.25-26). Related on Levites, who are not entitled to heritage, Israelites should have a social assistance behavior. They are encouraged to gather three years these

tenths in a strategic reserve fund, for them as well as for Levites, widows and orphans. Redistribution of wealth is one of the most important economic policies of assistance state. Mercantilist doctrine was the first true state doctrine, proving interest in chrysohedonism, regulated trade balance, control over trade and industry, colonial and maritime exclusivity, nationalism and international envies, interventionism (Rogojanu, 2009, p. 146). Biblical origins of mercantilist doctrine were specific for bullions mercantilism of Portugal and Spain. Advanced ancient civilizations, which valued better agricultural work and crafts, conquered one after another Palestine, such as Babylonians, Greeks and Romans. Israel has been also occupied by Byzantines, Arabs, Franks, Mamelouks and finally by Ottomans (Braudel, 1994, pp. 3-32, Johnson, 1987, pp. 23-87, Johnson, 1990, pp. 5-65, Reventlow et al., 1994, pp. 25-76).

In the first book of kings, things begin to change in the Israelites' way of economic thinking about precious metals. After his way back from river of Jordan, Joshua spoke to people of Ruben and Manasse: "And he spake unto them, saying, Return with much riches unto your tents, and with very much cattle, with silver, and with gold, and with brass, and with iron, and with very much raiment: divide the spoil of your enemies with your brethren". (*Joshua*, 22.8). Along with precious metals, more goods with consumer direct utility are used by people, like cattle, clothes, but especially iron and other metals capital goods are made from. Until Adam Smith's perspective on wealth, according which a king is rich if he rules a rich state, and a state is as rich as its citizens are, a man from Bible could be taken as rich if he has thousands of cattle, like the man from Maon "very rich, having heards in Carmel; he had three thousands sheep and goats" (*1 Kings* 25.2). Acceptance of wealth exclusively through precious metals will be no more of high methodological priority.

Except Benjamin, all other Jacobs' children were born in Mesopotamia. The very beginnings of civilization are marked there, in a vast area known as Fertile Crescent. Economic knowledge from Bible is therefore not entirely Jewish, but as well Egyptian, Acadian, Sumerian, Babylonian. Israelites left Egypt during the time of Ramses the second, who ruled during 1304-1327 B.C., in an extraordinary political, religious and economic act. Exodus is a progress from the perspective of economic thought. Israelites reached the desert, struggling to survive in a hostile environment. Even their status looked desperate, they recovered at least the property to their own bodies, being slaves no more. Apparently a superior civilization, ancient Egypt was immature from the religious perspective, through its polytheism-animism, without specific notions about concepts as life/death, heaven/earth, good/evil, with repercussions on law appliance, as long as a god-pharaoh controlled this field (Johnson, 1987, pp. 23-87, Johnson, 1990, pp. 5-65, Reventlow and al., 1994, pp. 25-76).



Source: <http://resourcesforhistoryteachers.wikispaces.com/7.4>.

Figure 1. Fertile Crescent

The first Hebrew code is known from 1250 B.C., inspired from the first Sumerian code about the works of Ur Nammu, king of Summer and Akkadia around 2050 B.C. This third dynasty from ancient town of Ur, was the first which imposed etalons for physical weight measure of merchandises. Another source for the Hebrew code was the Hammurabi code (1728-1686 B.C.), king of Akkadia, discovered in Susa, near Babylon. Practically, the mythical territories where the Biblical events took place are limited between Egypt, without written laws, and Asia, with rigorously structured n laws. Differences derived from here can be systematized as follows:

Table 1

Comparative clerical/laic analysis between law codes from biblical times

Israelites	Codes of Hammurabi and Ishtar
- divine inspiration laws	- laws managed by administration and king
- God oriented code	- property oriented code
- life has holy origins	- material life is as important or more than religious life
- death is the ultimate and only penalties, other intermediate punishments as torture, being forbidden	- heavier penalties for property violation, and lower penalties for the rest of law violation

Even this synthesis is focused on religious aspect of economic biblical events, Israelites are guided in their actions by the idea that all people are equal in front of God, being all created by Him, therefore the equality in abiding the God's laws. Property is a gift from God to men, to be used accordingly to their needs. When God appeared in Abraham's dream to foreseen his fate "In the same day the LORD made a covenant with Abram, saying, Unto thy seed have I given this land, from the river of Egypt unto the great river, the river Euphrates" (*Genesis 15.18*).

The Hebrew code was not laic from its beginning, but at least its laws were correct interpreted and applied. Upon social, economic and political thinking of patriarchic heroes from Bible did matter a lot the influence of laws from Canaan, with farming specific, from Summer, or from the are of ancient empires like Babylonian, Assyrian, Hittite or Egyptian (Reventlow and al., 1994, pp. 25-76). Having a primordial monotheism, first accepted by Jews, then by Christians, the Bible succeeds in focusing the attention in key points of spiritual, political and economic interest, as in the following matrix:

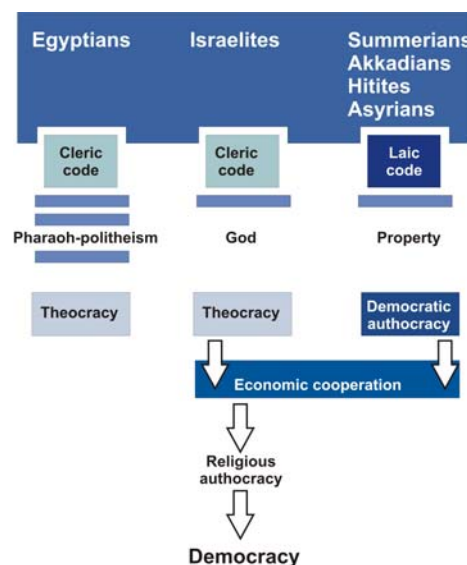


Figure 2. *The biblical matrix of economics*

Economic concepts of Bible are sometimes equivalent with an economic democratic theocracy, as a previous form of the democracy of our days. Where theocracy interfered with economic life, democracy failed and wealth of nations got different evolutions. Biblical matrix of economic thought should not be valued at present knowledge, but its methodological utility offers a secular perspective over the origins of economic ideas in a moment when divine order was offering the ultimate solutions to economic, moral and political problems.

References

- Acroyd, P.R., Evans, C.F. (2008). *Cambridge History of the Bible*, Cambridge University Press, Cambridge
- Barrera, J.T. (1998). *The Jewish Bible and the Christian Bible*, Cambridge University Press, Cambridge
- Braudel, F. (1994). *Gramatica civilizațiilor*, vol. 2, Editura Meridiane, București
- Johnson, P. (1987). *A history of the Jews*, Harper & Row Publishing, New York
- Johnson, P. (1990). *A history of Christianity*, Harper & Row Publishing, New York
- Kugel, J.L. (1998). *Traditions of the Bible*, Harvard University Press, Massachusetts
- McNeill, W.H. (2000). *Ascensiunea Occidentului. O istorie a comunității umane și un eseu retrospectiv*, Editura ARC, Chișinău
- Pelikan, J. (2004). *Tradiția creștină. O istorie a dezvoltării doctrinei. Nașterea tradiției universale (100-600)*, Vol. I, Editura Polirom, Iași
- Reventlow, H.G., Hoffman, Y., Uffenheimer, B. (1994). *Politics and Theopolitics in the Bible and Postbiblical Literature*, JSOT Press, Sheffield
- Rogoianu, Angela (2009). *Stăpânii Ideilor Economice*, vol. I, II, III, Editura Academiei de Studii Economice București, București

Biblia (1988). Societatea Biblică Confesională din România, United Bible Societies Publishing

The Sustainable Development Model

Cristina BURGHELEA

“Hyperion” University, Bucharest
crystachy@yahoo.com

Abstract. *Sustainable development concept approaches quality of life in complexity, as economic, social and environmental issues, promoting the idea of balance between economic development, social equity, efficient utilization and environment conservation.*

An essential condition for achieving sustainable development is the right mix of macroeconomic policies coherent, consistent with resources to ensure sustainability of materials and energy used for growth.

Keywords: sustainable development; economic models; sustainable growth.

JEL Codes: Q01, O41, F43.

REL Codes: 15D, 15G.

1. Introduction

Of all sub-models within the European Union, Nordic sub-model proved most efficient in achieving the objectives agreed in the Lisbon Strategy, since it generated the macroeconomic efficiency and social equity.

Northern sub-model analyzed refers to Denmark, Sweden, Finland and the Netherlands being characterized by a high degree of redistribution through social inclusion, high welfare, social dialogue and a high degree of cooperation between social partners and govern. Nordic economies are some of the most competitive European economies.

The second sub-model is the model of Central and Eastern known catching-up. This sub-model includes Czech Republic, Slovakia, Slovenia, Hungary, Estonia, Lithuania, Latvia, Romania and Bulgaria. All these economies have gone through the process of transition to a market economy; however there are significant differences in terms of national welfare systems organization. Sub-model analysis suggests a whole regulated labor markets, an institution of social dialogue and a little low developed social security. Employment rates, means the most significant growth in Bulgaria, where employment levels approached the continental sub-model.

Scandinavian model is often called the model for other countries in Europe. The fact that the Nordic welfare has become a common thing is not a coincidence.

Relatively poor in natural deposits, Denmark successfully exploit another resource, the human. This is one of the reasons why international giants invest in these countries. Economic growth in 2009 was 1.7%. GDP per capita reached \$36,700 in 2009, the IMF said. Norwegian economic growth reached 2.2% in 2010. GDP per capita was U.S. \$52,238, thus occupying the fourth place among the richest countries in the world (Socol et al., 2011, pp. 25-44).

Sweden had a growth of 4.5% in 2010; GDP per capita has reached over 37,000 dollars. The state is rich in natural resources-timber, minerals iron and huge hydropower potential. Northern people managed to direct the export industry. State's major trading partners are European countries that have dramatically reduced investment funds. But even so, Sweden has exported over one million cubic timbers in the first ten months of 2009.

The Nordic economic stability is not a coincidence or happy accident, but the result of a long series of favorable policies to stimulate industrial. Average growth in EU countries in 2010 was 1.8%. Sovereign debt crisis, the

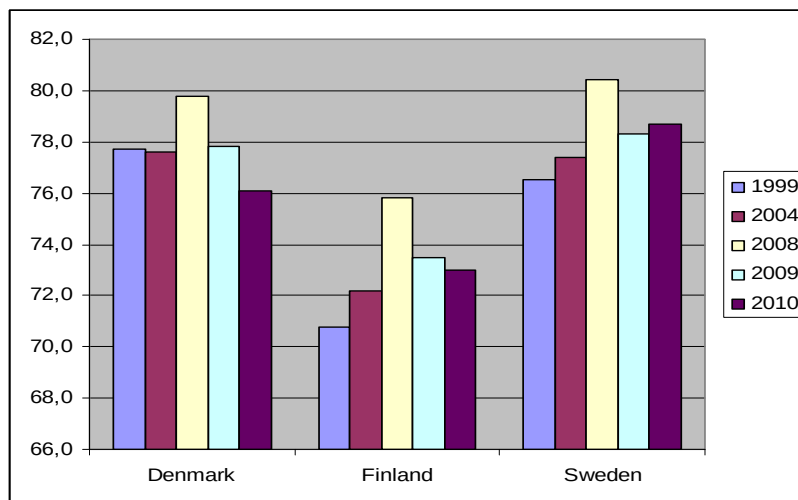
fragility of banking systems and unemployment rates has caused a huge anemic advance even within the Euro area. The inhabitants of the Scandinavian countries have escaped such problems; their living standards did not suffer major changes.

2. The indicators on employment rates in northern sub-model

Having a job does not always protect people from poverty. In 2006, 8% of employed EU citizens (over 18 years) are living below the poverty line, and thus difficult to get actively involved in society. Poverty employment is associated with low wages, low skills, insecure employment and often involves involuntary part-time employment. It is also the type of household they live in employment and economic status of other household members. In households with children, for example, the model of a single employee who maintains the family is no longer sufficient to prevent poverty. Next we analyze the situation of the Nordic countries on the employment rate among people in the age group 20-64 years.

Table 1

	1999	2004	2008	2009	2010
Denmark	77.7	77.6	79.8	77.8	76.1
Finland	70.8	72.2	75.8	73.5	73.0
Sweden	76.5	77.4	80.4	78.3	78.7



Source: www.eurostat.ro, Headline Indicators/Europe 2020.

Figure 1. Employment rate in northern sub-model⁽¹⁾

The Nordic countries are characterized by high employment; Denmark recorded the highest rates (76.1%) and Sweden (78.7%). As a result of financial and economic crisis, the employment rate for the Nordic countries has been affected, situation which was remarked in 2009 compared with same period last year. But these countries were not so severely affected than other Member States, the maximum decrease being of 2.3 percentage points for Finland.

The share of health workers in the total number of employees ranks the Nordic countries on the first three places in the European Union as follows: Denmark with percentage 18.7%, Finland (17.3%) and Sweden (17.0%), placing in the opposite side countries like Estonia (5.6%), Bulgaria (5.1%) and Romania (6.0%)⁽⁴⁾.

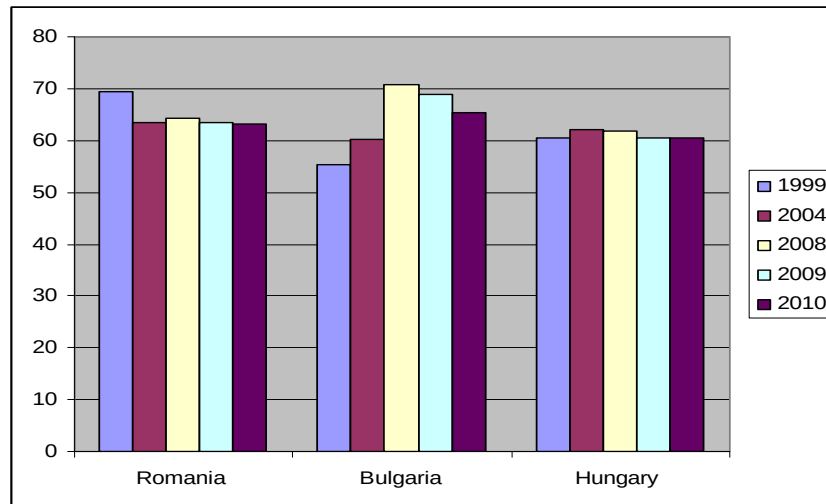
Nordic model is distinguished by the importance of their active measures to combat unemployment, high levels of expenditure for social welfare; it is a generalized system, has an intensive intervention on the work market and powerful trade unions that ensures a consistent level of wages.

3. Indicators on employment rates in Central-Eastern Europe

World economic crisis has seriously affected the labor market in the European Union, leaving behind more than 23 million unemployed who have little hope to find a job in the coming months. Only in the last year and a half it was lost 4.3 million jobs, representing 1.9 percent of total employment across the EU. In this context, the unemployment rate is expected to reach an average of 10 percent and remain at this level at least until the end of 2011.

Table 2

	1999	2004	2008	2009	2010
Romania	69.4	63.5	64.4	63.5	63.3
Bulgaria	55.3	60.1	70.7	68.8	65.4
Hungary	60.6	62.1	61.9	60.5	60.4



Source: www.eurostat.ro, Headline Indicators/Europe 2020.

Figure 2. *Employment rate in Central-Eastern sub-model*

Thus, for the countries analyzed in the graph we can remark that the highest employment rate in Bulgaria was in 2008, i.e. 70.7 percentage points before crisis beginning, followed in 2009 by a 1.9% decrease, not a collapse. But Bulgaria is facing other problems namely high unemployment and a high degree of pessimism among its citizens. Bulgarian officials will even exceed the target rate of absorption of the EU workforce by 2020 – 75 percent – and raised the bar with a percentage, at 76 percent. To achieve this, the employment rate should increase by 0.75 percent each year until 2020.

In Romania, the employment rate was 64.4% in 2008, well below the target of 70% set by the Lisbon Strategy the EU member states apply for 2010, says the National Strategy for Sustainable Development, presented by the Ministry the environment. Women, young people and people over 45 years in Romania still have problems in finding a job.

Discrepancies between men and women are higher (65.7% vs. 52.5%). These differences are even more significant in the employment rate of older people (only 34.4% for women compared with 53% for men)⁽³⁾.

The target of increasing employment rates is of paramount importance for Romania. In my opinion, this is the most important objective of Europe 2020.

Today, more than four million Romanian active populations are unemployed – at least in Romania, not in the formal economy. If this figure is

improved, revenues also will improve significantly and will decrease the need for social transfers. However, achieving this objective is not sufficient to ensure the high rates of economic growth, as the employment rate increased only marginally during the previous boom. Specifically, active policies are needed, both at central government and local level.

Fight against social exclusion is one of the objectives of EU social policy. The target set in Europe 2020 aims to reduce with 20 million the number people at risk of poverty by 2020. Measured as a share of persons with an equivalent income below the poverty risk available, which is set at 60% of national average equivalent to disposable income (after social transfers), the indicator reached 23% in Romania, the second highest in the EU.

In Hungary the government is preparing measures of employment policy work at national level, to start economic growth and improve the absorption rate of employment among their citizens, especially among young people and unemployed people. The government has promised a million jobs over the next ten years, which would allow the EU closer to the target rate by 2020.

The Romanian economy is facing a labor shortage increasingly important due to the rapid and strong migration. However, the employment rate of employment is still low and unemployment is high, so there are, in principle, important sources of unused labor. In this context, the Romanian NRP focuses on attracting and retaining more people in work, by addressing the high level of non-wage costs through flexible contractual provisions by developing education and training and enhancing public employment labor. The Commission supports this objective.

4. Indicators on gross domestic expenditures on research and development

Indicator is called GERD (Gross domestic expenditure on R&D) as percentage of GDP. "Research and development comprises creative work undertaken systematically to increase the stock of knowledge, including knowledge of man, culture and society and use this stock of knowledge to devise new applications". Research and development is an activity where there are significant transfers of resources between units, organizations and sectors and it is important to follow the flow of R&D funds⁽⁴⁾.

Science, Technology and Competitiveness key figures report 2008/2009, published by the European Commission, presents a detailed analysis and overview of the evolution of R & D investment and performance in Europe.

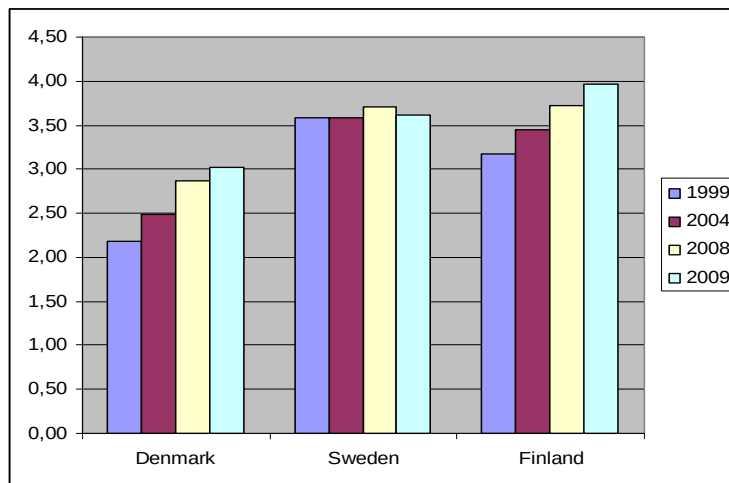
The report is considered an attempt to monitor progress and effectiveness of implementing measures performance by the European research system.

There are three main strategies of the new Europe 2020: smart, sustainable growth and inclusive growth.

Priority Area “Smart growth” is to promote knowledge-based economy. This can be measured by two of the five EU objectives: 3% of EU GDP should be invested in research and development, school dropout rate below 10% and at least 40% of the younger generation should have a specialization or a diploma⁽⁵⁾. Member States must transpose these targets into national targets and trajectories that reflect the current situation in each Member State and the level to be reached. The first target of investing 3% of GDP in research and development was established by the Lisbon Agenda, but the costs of R&D in Europe is below 2% (in comparison, the US reached 2.6% and 3.4% in Japan). Moreover, progress is extremely slow, with an increase of only 1.1 percentage points over the last decade, and only six Member States that invest more than 2% in R&D, while in most new Member States this level is less than 1%.

Table 3
% of GDP

	1999	2004	2008	2009
Denmark	2.18	2.48	2.87	3.02
Sweden	3.58	3.58	3.7	3.62
Finland	3.17	3.45	3.72	3.96



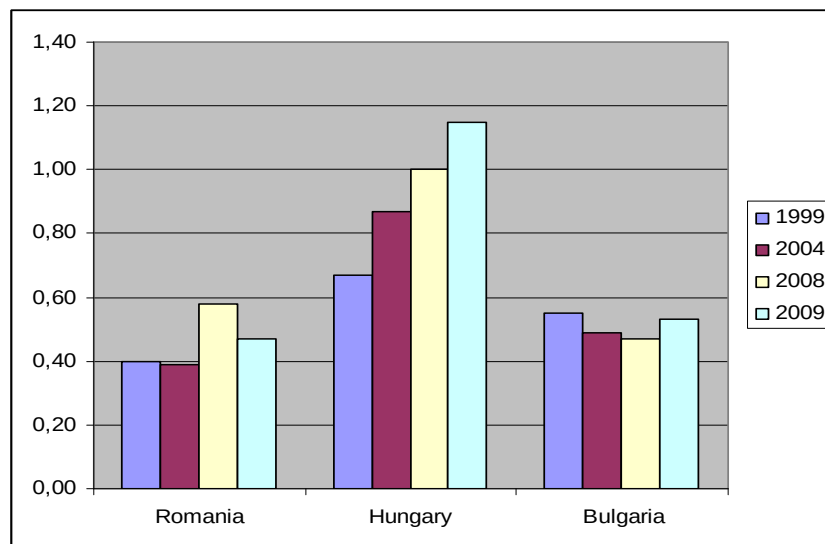
Source: www.eurostat.ro, Headline Indicators/Europe 2020.

Figure 3. GERD in Nordic countries

Gross domestic expenditure is on research and development (F&E) were for the Nordic countries amounted to about 3% of GDP in 2008, above the average of EU. Investments by foreign companies in the Nordic countries in research and development increased from 1995 until 2009 more than 6 times and stands at approximately 15% of total spending on research and development. Domestic industry spending on research and development has doubled in the last 10 years.

Table 4
% of GDP

	1999	2004	2008	2009
Romania	0.4	0.39	0.58	0.47
Hungary	0.67	0.87	1	1.15
Bulgaria	0.55	0.49	0.47	0.53



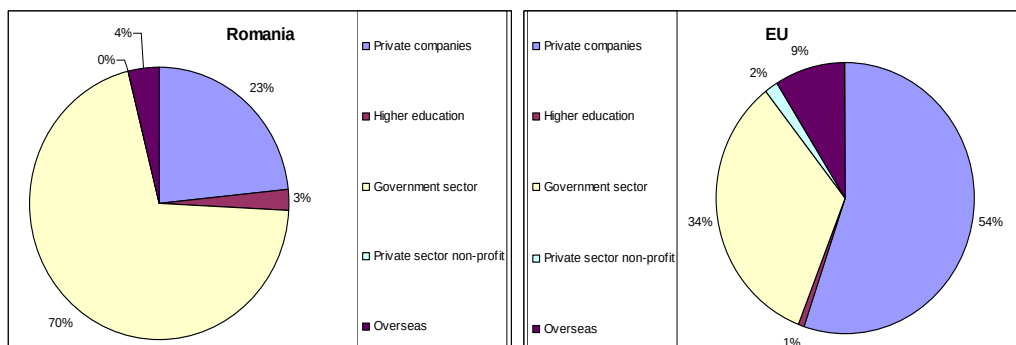
Source: www.eurostat.ro, Headline Indicators/Europe 2020.

Figure 4. GERD in Central-Eastern countries

Eastern European countries are below the EU in terms of gross domestic expenditure, the best topping Hungary in 2008, reaching 1%. In Romania I noticed a decrease from 2004 until 2008 due to weak foreign investment and due to low investment in research and development.

Romania is among countries with the lowest investment in this area, only 0.58% in 2008. The situation worsened in 2009, when public spending

returned to the level existing before the boom, 0.2% of GDP respectively. Weak contribution of the private sector (more than 30% of total investments in R&D) is explained by the type of competition on the domestic market based on price rather than innovation. In addition, public research funds are used ineffective because they fail to create an effect of spreading in the private sector. There is also a bad connection between academic research and industrial applications. In the EU, on the other hand, the main contribution comes from the business and, unlike Romania, nonprofit private sector also invests in R&D.



Source: www.eurostat.ro.

Figure 5. GERD source funds in 2008

Innovation and research category still includes indicators from a wide range of sectors: Internet access, high-tech exports or e-government – and all three sectors are underdeveloped in Romania compared to EU average. Progress in recent years in the area related to Internet use is significant. Percentage of households having internet access at home is only 38%, compared with 65% EU average, but increased steadily in recent years, at a rapid pace (only 14% in 2006). Broadband penetration (number of dedicated connections, high speed, for 100 inhabitants), on the other hand, is almost the lowest in the EU (second lowest, with 12.3%). E-commerce is also an area where the difference between Romania and the EU average is important (in 2007, only 1.2% of total turnover of the companies came from e-commerce over the Internet, while the percentage reaches 4.2% in EU), but tripled the previous year. E-government, on the other hand, is a very underdeveloped sector – rate of online availability of e-government (measured as a percentage of 20 basic services are fully available online) is only 45% to 74% average

EU (2009) and use of e-governance by individuals and businesses is the lowest in the EU, 6% and 41%, compared to 30% and 71% average EU⁽⁴⁾.

Reduced public sector investments made in areas relevant to the objective “smart growth” are also highlighted by the low rate of public expenditure on education. But despite the relatively low spending on education, Romania manages to maintain a level of youth participation in education very close to EU average (78.3% vs. 78.5%), although the level is the lowest among the new Member States (including Bulgaria). In addition, the quality of education is affected by limited funding and inefficient use.

School dropout is also a point due to interest for Europe 2020. Percentage of population aged 18-24 years with at most lower secondary education (and without further education or training) is targeted to fall below 10%. In 2008, the share was 14.9% drop in the EU and 15.9% in Romania.

The objective of smart growth is at risk due to difficult fiscal position. Increasing public debt (although it remains well below the EU average) and budgetary constraints from the IMF agreement raises questions about Romania's ability to increase public expenditure on education and innovation on short and medium term. One of the objectives set by Europe 2020 is that 75% of the population aged 20-64 be employed. A primary objective for the employment policies that are directed is that of an average employment rate for the EU of 70% overall and at least 60% for women by 2010. They do not seem very ambitious, given that in 2008 the employment rate was 65.9% and 59.1% for women, but the recession that hit the world economy in 2009 had a massive impact on the labor market. Therefore, continuous improvement of indicators in terms of employment is likely to be stopped, and the trend could be just the opposite.

5. Conclusions

I chose these two sub-models of the northern and Central-Eastern countries because there are some major differences between them, but Eastern countries including Romania tend to reach Scandinavian countries model. We see so much greater emphasis on the Scandinavian countries the employment rate in the public domain. Countries such as Denmark, Sweden and Finland ranks first in health field, with a percentage of 18.7% Finland, Sweden and Denmark followed by a role model by countries of Eastern Europe: Bulgaria has a rate of 5.1 and 6% Romania, targeting the same stage to reach the countries of northern Europe. And in terms of continuous learning we observe

that the highest rates for 2009 are in the Nordic countries, where employment rates are higher. Thus, while the European average is 9.3%, the participation of individuals in lifelong learning in 2009 was 31.6% in Denmark, 22.2% in Sweden, 22.1% in Finland, 20.1% in the UK and 17% in the Netherlands.

If we analyze the situation in terms of poverty rate in the two sub-models we see that the Nordic countries registered a percentage of about 13%, the highest rate in Finland 13.18% in 2009, ranking among the first countries in the European Union's growth. Instead Eastern Europe countries register a rather high encounter rate in terms of poverty rate, the highest rate recorded in 2009 a Romania of 22%, respectively. The explanation for this major being difference would be quite simple: the economic stability of the Nordic countries, favorable policies for the population and the state, combined with active labor market policies of national security measures.

To learn about the case of Romania, where the sustainable development is questionable, the answer would be very simple: there are viable solutions to achieve the developed countries. Romania should enter the track as fast growth, sustainable growth based on performance management in all sectors of economic and social activities. Thus we are left to achieve as quickly as the national strategy objectives in areas like education, health, investment in research and development, rural development and administrative capacity.

Notes

(1) According to www.eurostat.ro, Headline indicators/Europe 2020.

(2) "Risks and social inequalities, Presidential Commission for social and demographic risks", September 2009.

(3) See www.gea.org.

(4) See www.eurostat.ro, Employment rate.

(5) See www.gea.org/studiu, Romanian re-industrialization.

References

- Comisia prezidențială pentru riscuri sociale și demografice, „Riscuri și inegalități sociale”, Septembrie 2009
- Dinu, M., Socol, C., Marinaș, M. (2008). *Economie europeană. O prezentare sinoptică*, Editura Economică, București
- Dinu, M., Socol, C., Marinaș, M. (2007). *Modelul european de integrare*, Editura Economică, București
- Guvernul României, Ministerul Mediului, „Strategia națională pentru dezvoltare durabilă, Orizonturi 2013-2020-2030”, București, 2008
- Socol, C., Marinaș, M., Socol, A., „Sustenabilitatea fiscală și coeziune socială. Comun și specific în submodelele UE”, *Economie Teoretică și Aplicată*, vol. XVII, no. 3, 2010, pp. 25-44
- www.eurostat.ro
- www.gea.org
- www.insse.ro

Household's Financial Behavior during the Crisis

Bogdan CHIRIACESCU

Bucharest Academy of Economic Studies
io_amiralu@yahoo.com

Luminița TĂTĂRICI

Bucharest Academy of Economic Studies
luminatatatarici@gmail.com

Cristina VIȘAN

Bucharest Academy of Economic Studies
krysthina_2005vs@yahoo.com

Abstract. *This paper presents a framework for credit risk modeling of the household sector that follows a top-down approach using panel techniques. The results indicate that the determinants of default on bank loans are unemployment, exchange rate, industrial production, indebtedness and interest rate spreads. It is remarked that default events for the household sector occur with delay in case of adverse macroeconomic developments. There are two possible explanations: i) there is no personal bankruptcy law for individuals, and ii) public administration appears to adjust slower during recessions, an important part of the work force being part of this system.*

Keywords: financial stability; credit risk; panel estimation; default.

JEL Codes: C23, G21, G32.

REL Code: 11B.

1. Introduction

In recent years, one area that has emerged as an objective on which public authorities pay more attention is financial stability. An important lesson from this crisis is that price stability alone is not enough to achieve sustainable, non-inflationary growth and a high level of employment, as it is stated in the objectives of the most important central banks. Governments have spent huge amounts of money to bail out banks that were in a bad shape. The costs were important and that has also contributed considerably to the increased budget deficits in some of these countries that are troubling now governments. That is why public authorities are taking now a more proactive stance in building a new supervisory and regulatory framework in which the forward looking component is much more important.

The goal of this paper is to provide a framework for credit risk modeling for the household sector in Romania. The methodology is the one proposed by Wilson (1997) and integrated in Credit Portfolio View. This involves the development of a multifactor model for systematic default risk that captures the relationship between default on bank loans and economic cycle. Monthly aggregated data at county level is employed using panel estimation. The non-linear relationship between credit risk and macroeconomic conditions is modeled through the logistic transformation of the default rates. This is the most frequently used transformation to account for the fact that credit risk increases substantially more in times of high stress. The definition of default used in this paper follows the Basel II framework, and counts any credit obligation that is past due more than 90 days.

2. Literature review

A substantial amount of literature devoted to credit risk macro models follows the methodology proposed by Wilson (1998). In his paper he describes a new approach that tabulates the loss distribution arising from correlated credit events for arbitrary portfolios of nonfinancial corporations, both at a regional and at industry sector level. The importance of having a loss distribution rather than a single potential loss is highlighted by the fact that counterparty defaults can be predicted with a degree of uncertainty and are not perfectly correlated. Another important improvement consists in relating the loss distribution to the actual state of the economy, rather than based on the unconditional or historic averages of losses from default events, that do not reflect portfolio's true credit risk in resonance with present macroeconomic conditions.

Pesola (2001) proposed a dynamic panel model to study the period with banking crisis that affected the Nordic countries during the 1990's. Results indicate that indebtedness is the most important explanatory variable, being a proxy for the financial fragility. Kalirai and Scheicher (2002) estimate time series regressions of total loan loss provisions for the Austrian banking sector with respect to a wide range of macroeconomic variables divided in six categories: cyclical indicators, price stability indicators, household indicators, corporate indicators, financial market indicators and external variables. Baboucek and Jancar (2005) use an unrestricted VAR model to empirically investigate the transmission mechanism between a set of macroeconomic variables describing the development of the Czech economy and the credit channel. Willem, Hoeberichts and Tabbae (2006) study credit risk for the Dutch banking sector by means of panel regression estimations with fixed effects that account for bank specific characteristics.

3. Methodology

The methodology developed in this section follows the work of Wilson (1998) and Virolainen (2004) and tries to develop a framework to assess vulnerabilities stemming from the banking sector by building a credit risk model for the household sector. This is a distinctive feature of the paper, as most of the work that has been done before regarding credit risk analysis is confined to the corporate sector only.

First, average historic default rates are modeled with the logistic functional form that is extensively used in the literature to model bankruptcies. This logit transformation has the advantageous property that confines the default rates to the interval between 0 and 1. It is now widely accepted the idea that the relationship between default events and macro factors is non-linear, as the experience has shown that in high stress times extreme outcomes are more the rule than the exception (credit risk is by its nature not randomly distributed). That is represented as:

$$dr_{j,t} = \frac{1}{1 + \exp(y_{j,t})}$$

where $dr_{j,t}$ is the default rate for the count y_j at time t and $y_{j,t}$ is a county idiosyncratic macroeconomic index that stands as an indicator for the general state of the economy and whose parameters will be estimated. There is an inverse relationship between default rate and the state of the economy, represented explicitly through the macroeconomic index, in the sense that a better shape of the economy implies a higher $y_{j,t}$ and a smaller default rate $dr_{j,t}$.

Having the observed historic default rates available, but not the macroeconomic index we apply the inverse of the logistic function to the previous relationship and obtain:

$$y_{j,t} = \ln\left(\frac{1 - dr_{j,t}}{dr_{j,t}}\right) \quad (1)$$

Next, $y_{j,t}$ is assumed to be a function of various exogenous macroeconomic variables that determine the state of the economy. For the *household sector*, the model will be estimated by means of panel regressions techniques, in the form of:

$$y_{j,t} = \beta_0 + \beta_1 \times x_{1j,t} + \beta_2 \times x_{2j,t} + \dots + \beta_n \times x_{nj,t} + u_j + v_{j,t} \quad (2)$$

where β_k is the set of coefficients to be estimated, $x_{kj,t}$ are the explanatory macroeconomic factors at time t that can be either specific to each county (eg unemployment, wages, degree of indebtedness) or common at the country level (exchange rate, interest rates, industrial production). There is a composite error structure, that consists of two parts: i) $v_{j,t}$, that is the traditional random error term being independent and identically normally distributed by assumption, associated with county j at time t , and ii) u_j that stands for the individual effects (random effects for this model, according to the Hausman test performed to establish the correct estimation method) that allow for different intercepts among the 42 counties. This implies the existence of a structural default rate that varies across regions and that could be explained by a multitude of factors that generally are of a qualitative nature or can't be easily quantified (the omitted variables problem). Among these factors one could mention the degree of education (schooling), financial culture or credit standards that banks apply according to their internal lending policy that is very different from county to county (in the sense that is much harder to be granted a loan in a less developed county than in Bucharest). This is an important advantage of panel methods compared to other estimation techniques and serves reasonably well the goals of this paper. On the other hand, a somehow restrictive assumption of the model is that the sensitivity of the default rates to common explanatory variables (like industrial production) is the same in different regions of the country, which is at least debatable.

4. Data

The definition for default that will be used for the empirical work in next part of the paper will be the one suggested by Basel Committee - 90 days past due. Monthly data is used in order to model credit risk in territorial profile for households, starting from January 2006 till April 2010, which sum up to around 2000 observations (42 counties and 52 months).

The explanatory variables of the model fall into two sub-groups: a) specific to each county (indebtedness, unemployment, average wages), and b) common to all debtors in the country (industrial production, inflation, nominal exchange rate, interest rates and interest rate margins for lei and Euro denominated loans). Unit root tests indicate that the dependent variable, industrial production and the degree of indebtedness are stationary.

5. Estimation and results

Main determinants that are used in the literature to explain the dynamics of default rates are: i) interest rates, ii) exchange rates, iii) the state of the economy measured by various variables, iv) level of indebtedness or v) inflation.

When building the model, a criteria followed was to try to include at least one variable from the five categories mentioned previously and to consider time lags that have a meaningful sense in explaining the attitude towards defaulting on bank debt.

The econometric tools used to estimate the credit risk model for the household sector involve panel techniques. The steps that must be followed begin by testing the null that the intercepts are equal. This would imply that there are no structural differences from county to county with respect to systematic default risk. If the null is accepted, the data are pooled and the estimation is done by means of simple OLS. If the null is rejected, a Hausman test is performed to see if the random effects estimator is insignificantly different from the unbiased fixed effects estimator. If the null is rejected, the fixed effects estimator is used instead, otherwise if the null is not rejected the random effects estimator is used.

The outcome of these tests indicates the presence of heterogeneity among counties and that the better method of estimation is by using random effects. Error testing also indicates the presence of contemporaneous correlation and cross-section heteroskedasticity. This means that the default rates are reacting together to shocks, but this reaction has different magnitude amongst counties. In order to compute robust standard errors, a White cross-section method for the coefficient covariance estimator will be employed. Serial correlation is not present at a 10% significance level, according to a Wooldridge test for autocorrelation in panel data.

Table 1

Credit risk model for the household sector

Variables	Lag	Coefficient	Standard error	t-statistic
Constant		2.24 ***	0.50	4.41
D (Unemployment)	3	-0.22***	0.06	-3.67
Indebtedness	4	-0.60 ***	0.15	-4.05
D (Exchange rate)	6	-1.66 ***	0.42	-3.95
Industrial production	1	0.04 ***	0.004	8.90
D(Spread Euro)	12	-0.55 ***	0.13	-4.15
D (Spread Leu)	9	-0.03 **	0.01	-2.58
Adj. R-squared =0.71 DW 1.81				

Significance level: * Significant at 10% level, ** Significant at 5% level, *** Significant at 1% level.

The final model comprises unemployment, the degree of indebtedness, exchange rate, industrial production, and spreads charged by the banks over short-term markets interest rates both for the local and foreign currencies (mostly euro). Table 1 summarizes the parameter estimates, their significance and also the reported adjusted R-squared and Durbin-Watson statistics. Non-stationary variables are introduced in first differences in the model. All variables are significant at a 1% level, except interest rate spread on local currency (at 5% significance level) and show the expected sign. The explanatory power of the model is satisfactory, as measured by R-squared (just above 70%).

The lag structure of the model has some interesting features. Having in mind the definition of default (90 days past due), the model suggests that unemployment has an immediate impact, in the sense that when an individual becomes unemployed, the next day will stop repaying the debt. In case of the degree of indebtedness and movements in the exchange rate, default events are prolonged with one and three months. A possible explanation is that for a few months, debtors might consider the situation to be temporarily and maybe reversible, and when that isn't the case the default occurs. Spreads exert longer lags because variable interest rates are commonly reset every three to six months, depending on banks. Considering another couple of months to account for reasons related to expectations described previously, it makes the whole effect on defaults to take up to almost a year, also depending on the currency. Unlike the other variables, industrial production has a more contemporaneous effect, mainly due to the fact that it has the specific characteristic of being forward looking.

One way to see the performance of the model is to compare aggregate default rates (at country level) with what the model would predict. The

aggregated default rate is just the weighted average of counties' default rates. In order to eliminate some of the volatility in the data quarterly default rates were computed. Figure 1 indicates that when observing defaults on longer time periods (ie. at least quarters) the model performs reasonably well. For example, for the twelve months from may 2009 to april 2010, the default rate was 7.59% and the model prediction was 7.38%, approach that is in line with the scope of this paper (estimating the one year probability of default).

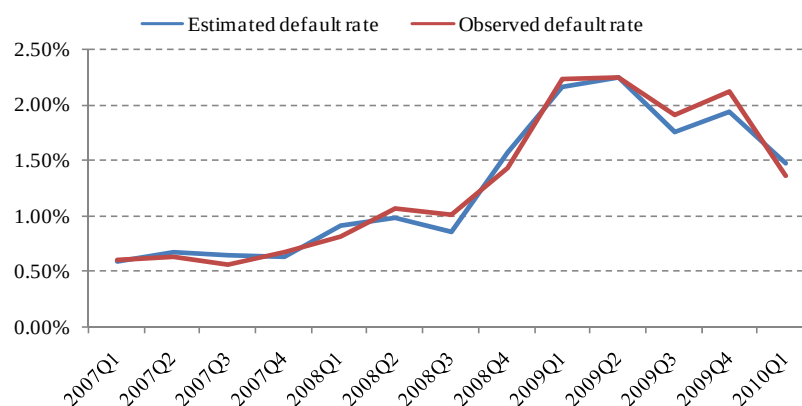


Figure 1. Performance of the model on aggregated quarterly default rates, household sector

6. Conclusions

The aim of this paper was to provide a framework for assessing credit risk for the household sector in Romania following a top-down approach. It was found that determinants of defaults on bank loans are: unemployment, exchange rate, the degree of indebtedness, industrial production, and interest rate spreads charged by banks over the market interest rate. The lag structure of the model indicates that the household sector appears to react with a delay to adverse macroeconomic developments. One possible explanation is the absence of a personal insolvency law in Romania to protect natural persons from creditors. Due to this individuals try to postpone the default event, hoping that shocks are temporary. This could be the case for exchange rate shocks. Another reason is that an important part of the population works in public administration. Regarding the macro index as the overall state of the economy, and not only the variables that stayed in the final specification, it can then be said that the public administration adjusts slower during downturns in terms of restructuring than

the real economy. This adjustment usually means layoffs and wage cuts, and therefore takes more time to affect defaults. The advantage of a longer lag in the model is that it is easier to perform a forecast.

The relatively simple approach to modeling credit risk that was employed in this study presents both pros and cons. Advantages refer to the fact that having a small number of explanatory variables it is less costly in terms of the assumptions needed to perform forecasts for the probability of default. Embarking on a top-down approach is also less costly in terms of data constraints and even time. On the other hand, the disadvantage is that a macro perspective can't capture important details that are at a micro level only. The shortness of the series is another limitation of the model.

Another drawback of the estimated parsimonious model is that second round effects of financial distress to the economy are not captured. Bridge models that connect credit risk models with DSGE models could accommodate such an issue.

Acknowledgements

This work was co-financed from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013; project number POSDRU/107/1.5/S/77213 "Ph.D. for a career in interdisciplinary economic research at the European standards".

References

- Baboucek, I., Jancar, M., „A VAR Analysis of the Effects of Macroeconomic Shocks to the quality of the Aggregate Loan Portfolio of the Czech Banking Sector”, *Czech National Bank, Working paper 1*, 2005
- Cihak, M., „Introduction to Applied Stress Testing”, *IMF Working Paper 59*, 2007
- Jakubik, P., Schiemeder, C., „Stress Testing Credit Risk: Comparison of the Czech Republic and Germany”, *Financial Stability Institute, Award Paper*, 2008
- Kalirai, H., Scheicher, M., „Macroeconomic Stress Testing: Preliminary Evidence for Austria”, *Oesterreichische Nationalbank, Financial Stability Report 3*, 2002
- Pesola, J., „The Role of Macroeconomic Shocks in Banking Crisis”, *Bank of Finland, Discussion Paper 6*, 2001
- Virolainen, K., „Macro Stress Testing with a Macroeconomic Credit Risk model for Finland”, *Bank of Finland, Discussion Paper 18*, 2004
- Willem, J., Hoeberichts, M., Tabbae, M., „Modelling Scenario Analysis and Macro Stress-Testing”, *DNB Working Paper 119*, 2006
- Wilson, T.C., „Portfolio Credit Risk”, *Federal Reserve Bank of New York, Economic Policy Review 3*, 1998

Education and Crisis

Marius-Cristian PANĂ

Bucharest Academy of Economic Studies
panamarius@yahoo.com

Abstract. *The actual economic crisis reveals the problems within the public educational system. The malfunctions of this sector are augmented by the special significance of education for society and economic system. The modern theories of human capital emphasize the state's important role in financing education. On this basis, education seems to be the best solution in solving society and economy's different problems. That's why I consider that economic crisis is also the crisis of education. This paper aims to emphasize this argument underlying also the need for structural reform within the public educational systems.*

Keywords: education; externalities; economic crisis; over-accumulation; institutions.

JEL Codes: B52, D62, I22.

REL Codes: 4C, 4D.

Economic crisis reveals the actual problems of the social state in all its fields of action, including education. The real or intentionally overrated significance of education in society and economy emphasize the challenges within the public educational systems. The limited financial resources due to the economic crisis represent a serious budgetary constraint for the public education. This may seem like a situation motivated by the current economic meltdown, but contradictions may result after addressing the implications of education on society and economy.

Education is provided mainly by the public sector. The arguments stress the importance of functional social relations within some generally accepted frames which are validated by the political system. One can argue, both empirically and logically, the fact that the social results of the public education are limited or simply inexistent. But another bad result of public financed education deserves also to be noticed. Education may affect the economic performances, as can be noticed over the last decades, as long as a certain type of education, especially economic education, can stimulate the broad acceptance of economic measures which generate or extend economic crisis. This is a particular reason why the public education systems need to be reformed. The reform, in this case, is not a question of political will based on only quantitative and qualitative limits of public education.

For a better understanding and reasoning of those stated above, a distinct approach of these issues may prove useful.

1. Education, society and democracy. Outcomes of public financed education

The most important rationale for public education is based on the fact that education generates benefits for those who invests in, but also influences the life of those who interact with. This is the reason why economists have made education a major subject for the analysis based on the theory of positive externalities. According to this theory, when an individual receive educational services, the entire society will benefit not solely the individual.

The externalities' theory didn't mean, not even by far, a useful instrument in order to allow a better understanding and identification of those individual actions which create outcomes for the entire society. As almost every human action on the free market implies positive or negative outcomes for a third part, the government ought to manage the market failure either by subsidizing or taxation and regulation. Therefore, some economists as Barnett and Yandle (2005) argue that "externalities revolution" represents for

microeconomics the same that Keynesism means for macroeconomics. This theory opened the gate for government involvement in almost every corner of human life based on the reason of common good or common bad.

By placing the externalities argument into an “institutional void”, the economists have omitted the development of economic science concerning the free market and competition theory. Even further, they dismissed the importance of formal and informal institutions and property rights. As long as free markets would always fail, the efforts of identifying the proper market means to provide goods and services became useless taking into account externalities. The immediate solution offered was government intervention as an instrument to internalize the externalities.

This theory according to which individual education generates positive effects that enhance society’s wealth is very controversial. First of all, because the concept of positive externality associated with education is an abstract one. Private education can provide individuals with benefits that may prove useful to a third part. Therefore, private schools must be also subsidized.

Another limit of this theory is revealed by the fact that many other goods can provide similar effects for society. It’s merely impossible for the government bureaucrats to establish the hierarchy of the subsidized good or the level of subsidies. How can one consider education more important than food, newspapers or capital investment? They also generate outcomes for their owners and for society as well. What can be more degrading for a human being than begging daily for food to his neighbors? If food is subsidized, people can now turn to productive activities. Also, in order to avoid such disturbing situations, the government should subsidize food for all children in order to prevent malnutrition.

Identifying the external effects is a very difficult task because nobody can do that, except for the person involved. So, it’s hard to explain why public education must be provided based only on the opinion of a third party concerning the effects of such decisions.

In the category of arguments based on positive externalities’ theory is included the external benefit represented by the dissemination of sound moral values to the population. The poor people, argue those who support public education, are not able to choose rationally because they are not educated to fully appreciate the quality of goods. The common belief according to which the poor parents doesn’t have the proper cognitive or cultural ability to understand the significance of such a noble act as education encouraged economists to recommend the solution of compulsory public education.

Concerning the lack of education as an argument for individuals' inability to judge and make choices for their own, the government's bureaucrats manifest a duplicitous attitude. On the one hand, they emphasize the inability of the poor to decide in the matters concerning education but, on the other hand, they are eager to ask them to involve themselves in the democratic process of elections. This attitude raises a dilemma: If uneducated individuals can't judge for themselves and are incompetent concerning their education, then how can they decide who would be best to represent them?

The public education was meant to raise the citizens' ability to act as informed voters, able to participate in the democratic process. But this was exactly the road to indoctrination. The advantage of public compulsory education system, argue those who support it, is the efficient functioning of democracy because the voters share common social values and are better informed. Such an outcome can be reached only by instruction. Education can contribute to democracy in two ways: 1) developing a "culture of democracy"; 2) political development due to higher prosperity.

Recent studies seem to emphasize the relationship between education and democracy. Barro (1999) argues the role of education as a necessary condition for democracy to function properly. Milligan et al. (2003) identify a strong connection between level of education and participation in the election process in the US. Glaeser et al. (2006) went further arguing that the different levels of education reflect not only in the quality of democracy affecting also the political institutions.

Other authors as Acemoglu et al. (2005) argue that a relation of causality does not exist between education and democracy. If such a relation would exist, then a higher level of education should enhance the efficiency of the democratic system. But, according to the authors mentioned above, this is not happening. Besides, according to Milligan et al. (2003) the relationship between education and democracy is valid for the US but not for the UK.

Public education, argue its supporters, allow a better selection of the electoral alternatives because an educated individual becomes more interested about the evolution of the society and political matters and has the ability to understand them. Thus, he achieves all the abilities that a good citizen needs.

Data provided by the World Bank (World Development Report 2007, www.worldbank.org) show a negative relationship between the level of education and the evolution of social involvement. To put it in other words, individuals become more socially involved and more responsible as a consequence of having a family and getting a job at early ages.

It can be true that an educated person can achieve better information which can be used in the election process but education is not an indisputable condition for it. On the contrary, a certain type of education can create a misleading perception about democracy. An educated person may have a big opportunity cost concerning the gathering of all the information about the election process.

Moreover, the democratic system reflects more frequently a fractured relationship between principals and agents concerning the allocation of public resources. A particular kind of education can allow a better understanding of this evolution. Thus individuals may perceive easily the fact that collective decisions are less dependent directly of the voters will. Their role is very often limited at the simple selection of representatives, political agents who are presumed to act according to the voters' interests. This is the moment of fracture. In fact, political representatives make decisions concerning resource allocations according with their own political or elective interests.

Public choice theory emphasizes that principles of methodological individualism are valid even concerning the political matters. Politicians and bureaucrats have material and professional goals as any other people. They are sensitive to their interests despite the fact that they have become leaders of political organizations. In other words, bureaucrats can be as opportunistic as any economic agent. The principal-agent problem that arises in the political agency matters highlight the risk that the actions of political agents to be made against principals' (voters) interests. If the institutions of democracy can't prevent this fracture, then its proliferated effects can turn voters away from the democratic process (Marinescu, 2004, pp.119-121).

Voters realize the fact that democratic elective process diminishes the individual vote's significance in matters like changing political decisions. The rational ignorance phenomenon rises and its effect is that the voters are less interested by the elective process. The voter will ignore the elective process as a consequence of the perception that his vote doesn't matter or a certain goal can be achieved despite his negative vote. Fallaciously, the solution to rational ignorance problem consists in subsidizing education. It is presumed that subsidies will decrease the opportunity cost of information and, thus, individuals will be stimulated to involve themselves in the political process (Miller, 2005, p. 9). Educating voters seem to be the widespread solution to rational ignorance problem. The fallacy of this approach consists in the fact that educated individuals can become easily rational ignorant as they perceive the problems raised by the democratic process. Nevertheless, education's role deserves to be considered from another perspective: education can encourage individuals to legitimate fallacious beliefs concerning the way that economy works.

The opposite alternative to democracy is not tyranny but the market relations based on competition which constraint the arbitrary involved by the allocation of public resources through public budgets. A certain kind of economic education or the lack of economic education can induce misconceptions concerning the role and the significance of market relations. The lack of economic education can contradict the hypothesis according to which the ordinary people comprehend the economic connotations of the political actions. Under these circumstances, voters are not ignorant concerning the relation with their representatives. They have embraced misconceptions about the market significance (Caplan, 2007, p. 19). Whereas economists generally criticize markets for their inexorable and unavoidable failure, democratically accepted government intervention policies are set and implemented in the economy. From this moment on, democracy's institutions fail to limit the bureaucrats' opportunism and become an accomplice due to economic education.

This can be a plausible explanation for the rising government spending over the last decades in most of the world. The argument of wealth redistribution and market failures found supporters among educated people.

In conclusion, the functioning of educational systems based on the arguments stated above reveal the crisis of education. This consists in not achieving most of its social goals. At the same time, the extension of public education in the democratic societies is similar with the broad acceptance of political programs based on rising government spending. These were validated by the democratic process of election and can explain the rise of economic crisis and also the difficulties of recovery.

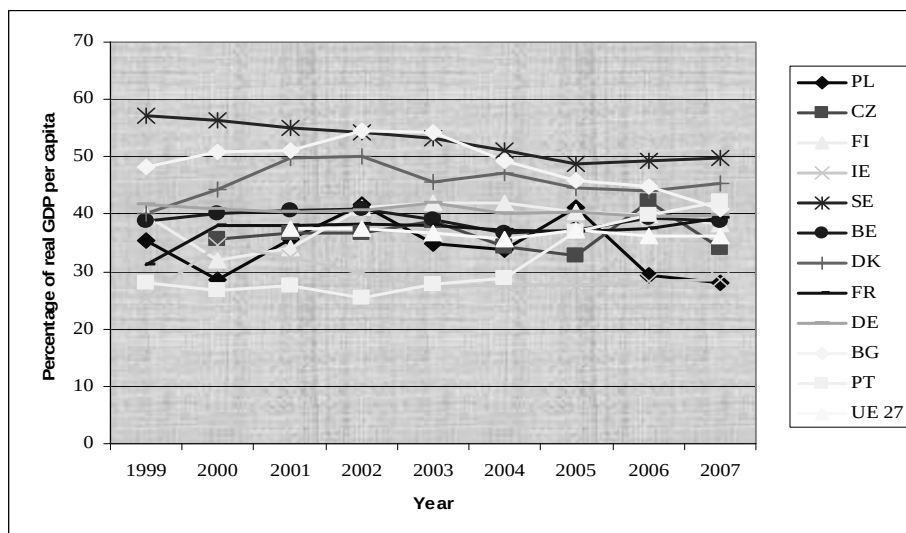
2. Education and economy. Investing in education may not be the way to economic recovery

The most optimistic conclusions of human capital investment's models rely on higher education's capacity of enhancing individuals' outcomes. Empirical evidence concerning the benefits of investing in higher education encouraged governments to implement strategies whose main goal is to raise the number of higher education graduates. Politicians and economists argue that investment in education is the unfailing solution for economic development. Despite the fact that education's role for economic performance is not very clear, still is very difficult to withstand the exaggerated optimism. Indeed, the population in developed countries is, in average, better educated than in the poor countries, at least concerning the years spent in school. But, at the same time, it would be wrong to believe that the economic performances of these countries are an exclusive consequence of this advantage they poses.

The source of this optimistic approach resides in simplified correlations between educational inputs and outputs. Lisbon Strategy is a very good example. Between 2000 and 2007 the rise of tertiary students' number was 2.5% per year. At the same time, the rise of tertiary graduates was 4.3% annually (Commission, 2009). The number of years spent in school raised along with the financial resources. Such an extension in the number of students and graduates wouldn't have been possible without growing public spending. Thus, Commission recommended the raise of public spending for tertiary education up to 2% of GDP (including private financing).

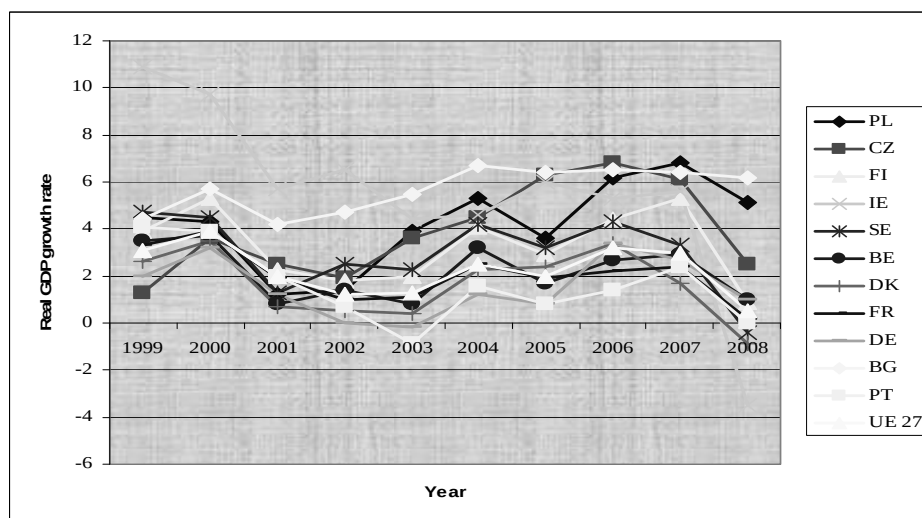
Although, EU countries extended public spending for higher education (OECD, 2007, p. 222) along with the number of students and graduates, economic performances didn't compensate the efforts. An analysis of the public and private spending per student as a percentage of GDP doesn't reveal a strong relation between educational inputs and economic growth. On the contrary it seems that the allocation of educational resources is influenced by the economic performances. As an example, one can consider the case of Denmark and Sweden, two of the most performing countries according to the Lisbon criteria.

Both states spend considerable amounts of public money for financing education in general and also for higher education. Nevertheless, Denmark's real GDP's growth was small despite massive spending for higher education during 1999-2002. In Ireland, spending per student decreased but the real GDP growth rate was bigger. Sweden adapted its spending for higher education to economic performances. Thus, the financial resources for higher education decreased (as GDP/capita percentage) during 2000-2005. This evolution is consistent with the real GDP growth rate as it can be seen in the charts below.



Source: Eurostat, Education and training, 2010, www.epp.eurostat.ec.europa.eu.

Figure 1. Annual public and private spending per student (%GDP/capita) for some EU countries, 1999-2007



Source: Eurostat, Economy and Finance, 2010, www.epp.eurostat.ec.europa.eu.

Figure 2. Real GDP growth rate for some EU countries, 1999-2008

Bigger educational inputs means a growing number of years spent in school and the effect that may occur is over-accumulation of human capital in the form of over-education. This is a consequence of the fact that over-educated workers have superior abilities comparing to those needed on the labour market. This could be the case of a qualitative over-accumulation. On the other hand, a better education may generate a quantitative over-accumulation, which resides in the growing number of diplomas or certificates obtained after graduating various forms of specialized higher education. In both cases, the education capital stock exceeds the labour market's requirements.

Qualitative over-accumulation can arise because of erroneous anticipations concerning the level of education and its compatibility with the labour market requirements. This kind of miscalculation is similar to the entrepreneurial error which generates over-accumulation of physical capital, misallocation that leads to a decrease in market price. As long as human capital theory considers the abilities obtained as a consequence of education similar to physical capital, the previous assertion is valid. The errors of anticipation generate losses for every educated individual. Nevertheless, it is possible to individuals to adapt their abilities to the new requirements. This can be a consequence of previous level of education or innate abilities. On a free labour market this scenario is not plausible as long as wage level is adjusted in a dynamic process according to marginal productivity. Thus, possible miscalculations can be adjusted and individuals can retrieve investments in their education.

Second type of accumulation can be more problematic because it is the effect of large scale incentives that some political strategies bring with, such as Lisbon Strategy. In this case, over-accumulation is the consequence of individuals' behavior to use diplomas and other certificates attesting different formal capacities to penetrate more easily labour market. Many times the reality shows they do not fulfil the specific job requirements or, even worse, they possess inadequately skills. This kind of situations can be seen especially in those areas demanding explicitly formal abilities. In that sense, the legislative effort to delimitate minimum wage depending on graduation categories is a good example.

3. Education and reform

Taking into account the ideas from above becomes evident that public educational systems require deeply reforms. The institutional changes that must be implemented have an ultimate end: dynamic compatibility of the education

system with labor market, according to its signals and needs. On the role of institutions in education process there are many theoretical approaches, but they tend to converge on the general idea that institutional incentives and constraints are strongly influencing the use of human capital. Thus, North (1990, p. 72) emphasizes the existence of a double connection between informal institutions and the stock of knowledge in a society. Education is influencing peoples' perception of the world as well as their way of thinking. Thus their actions and social interactions could be interpreted on the education ground. Similarly, the ways they see the world defines and influence the knowledge accumulation. For example, North sees the social and educational dominance of church in medieval Western countries as a factor favoring research and knowledge in some particular areas. This is why, in many countries, ideologies are rather intolerant regarding the development of theoretical knowledge.

Analyzing human behavior from the institutional perspective can also explain the tendency to use educational skills toward profitable activities such as piracy and not to social productive ones. Therefore, if opportunities offered by the existent institutional frame make piracy a profitable activity, then we could expect to a growing demand for specific skills in order to benefit. As North (1990, p. 73) indicates „the incentives of institutional frame play a decisive role in forming those profitable abilities and knowledge”.

Prichett (2004) has reached to a same conclusion. He suggests that, in many emerging countries, the institutional deficiencies are the source of shifting human behavior and cognitive abilities from socially productive activities to unproductive ones. Easterly (2002) emphasizes education plays a secondary role in development comparing to incentives that emerge from institutional structure in these countries. Hanushek and Wössmann (2007, pp. 41-43) show a positive correlation between the openness of economy and quality of education, on the one side, and economic growth, on the other one. They argue the quality of education is far more important for economic development in those countries where institutional structure favoring productive entrepreneurial activities. Accordingly, productive institutions and quality educational systems could develop a symbiotic relation, leading into an end to economic development.

Therefore, as an economy performance depends on the quality of institutions that govern goods and labor markets, on free trade and foreign investment, so the education couldn't efficiently work in the absence of a proper institutional structure. For example, if the educational organisations are rewarded or penalitied according to their performance, then can be expected an increase in education quality. But to make things happen, we must bring more competition in this field, transforming the actual monopolistic education into a

competitive market for educational services. In the absence of educational choice and parents' power, there will be no quality improvements.

From this perspective, directions of reform should cover three important areas: introduction of more competition between educational organizations, decentralization of educational system and bringing more responsibility in this market. From my point of view, the first one is fundamental, the other two could be seen as potential consequences of competition among different actors in education market.

In conclusion, in order to have a better contribution to avoid economic downturns or at least to smooth the economic recovery process, education has to be deeply reformed. The actual paradigm must be replaced by a competitive market which responds more properly to economy dynamics, avoiding in this way difficulties emerged from the lack of financial resources.

References

- Acemoglu, D., Johnson, S., Robinson, J., „Institutions as the Fundamental Cause of Long-Run Growth”, Departments of Political Science and Economics, Berkeley, 2004, Disponibil la: <http://elsa.berkeley.edu/~chad/handbook9sj.pdf>;
- Barro, R.J., „Determinants of Democracy”, *Journal of Political Economy*, University of Chicago Press, vol. 107, no. S6, December 1999, p. 170
- Barnett, A.H., Yandle, B., „The End of the Externality Revolution”, Ludwig von Mises Institute, Alabama, 2005, Disponibil la: <http://blog.mises.org/archives/003324.asp>;
- Caplan, B., „The Myth of the Rational Voter. Why Democracies Choose Bad Policies”, *Policy Analysis*, No. 594, 2007, p. 19
- Commission of the European Communities (2008) „Progress Towards the Lisbon Objectives in Education and Training. Indicators and benchmarks 2008”, www.ec.europa.eu;
- Commission of the European Communities (2009) „Progress Towards the Lisbon Objectives in Education and Training. Indicators and benchmarks 2009”, www.ec.europa.eu;
- Dolton, P.J., Silles, M.A., „The effects of over-education on earnings in the graduate labour market”, *Economics of Education Review*, No. 27, 2008, p. 129
- Easterly, W. (2002). *The elusive quest for growth: An economists' adventures and misadventures in the tropics*, Cambridge, MA: The MIT Press
- Glaeser, E.L., Ponzetto, G., Shleifer, A., „Why Does Democracy Need Education?”, National Bureau of Economic Research, *Working Paper*, No. 12128, 2006, pp. 11-13
- Hanushek, Eric A., Wössmann, L., „The Role of Education Quality in Economic Growth”, World Bank Policy Research, *Working Paper* No. 4122, February 2007, pp. 41-43
- Marinescu, C. (2004). *Economie instituțională-note de curs*, Editura ASE, București
- Miller, S.C. (2006). „Intelligence, Irrationality, and Civic Returns: Can Education Improve Democracy?”, *The 62nd International Atlantic Economic Conference*, Philadelphia, Pennsylvania. Disponibil la: <http://homepage.mac.com/freecat/iqreturns-1.pdf>;

- Milligan, K., Moretti, E., Oreopoulos, Ph., „Does education improve citizenship? Evidence from the US and the UK”, National Bureau of Economic Research, *Working Paper*, No. 9584, 2003, pp. 10-14
- North, D. (1990). *Institutions, Institutional Change and Economic Performance*, Cambridge University Press
- OECD, „Education at a Glance 2007”, OECD Indicators, 2007, www.oecd.org
- Pană, M.-C. (2011). *Educație și libertate. Repere instituționale ale dezvoltării*, Editura ASE, București
- Pritchett, L., „Does learning to add up add up? The returns to schooling in aggregate data”, Bureau for Research in Economic Analysis of Development, *Working Paper* No. 053, 2004, pp. 5-8
- World Bank, „World Development Report, 2007”, 2008, www.worldbank.org

The Post-Crisis Healthcare System: Effects of the Economic Crisis in Romania

Marta Christina SUCIU

Bucharest Academy de Economic Studies
suciuchristina@yahoo.com

Cristian Adrian STAN

“Titu Maiorescu” University, Bucharest
cristi1.stan@yahoo.com

Luciana PICIORUȘ

Bucharest Academy de Economic Studies
lusianapiciorus@yahoo.co.uk

Cosmin Ionuț IMBRIȘCĂ

Bucharest Academy de Economic Studies
imbrisca_c@yahoo.com

Abstract. *The economic crisis is still on the lips of economic and political analysts from nations around the world, even more so in places where its effects continue to make themselves felt. Romania is among these troubled countries, having to deal with not just the aftermath but also signs of a possible relapse. This paper begins with a brief presentation of the economic crisis, focusing on the national specificities along with its EU member status and their effects on the evolution of the situation. Following that, the more important elements of the presented situation are identified and individually analyzed, with the purpose of identifying useful information for any possible future crisis. The final purpose of the paper is to determine the trajectory of a future crisis by taking into account inefficient management of the economic system and the strategies used to safeguard the economy, which have up until now failed to properly deal with the situation. In order to properly achieve this purpose, the analysis will attempt to identify the impact of the crisis on the healthcare system and its post-crisis configuration as well as the steps taken at the administrative level. The results of this interdisciplinary research are meant to be used as a source for a future expansion of the study and to bring attention to certain areas that can show a possible recurrence in the future.*

Keywords: healthcare system; economic crisis; Romania; medical malpractice; public health system.

JEL Codes: I11, I18, A12.

REL Code: 13J.

I. Introduction

Romania faced its first serious economic downturn since the fall of communism in 2009, however it can be said that the first signs were visible since 2008, when the growth of the first three trimesters was followed by a significant drop as a result of the global economic slowdown.

A brief history of Romania's' economic situation since the fall of communism shows a country reshaping itself, reorienting towards services, restructuring its industrial activities. An effect of this was the growth of unemployment as a result of numerous industrial sectors, such as cars, steel or chemistry, shut down. However, overall, before the crisis, a growth pattern was present in the economy with the GDP rising on average by 6% per year⁽¹⁾, some of the leading factors for this were its status as a member of the EU since 2007, economic reforms as well as a high level of foreign investments, growth in consumption and easier access to credit.

In 2009 important economic sectors were affected, at first the construction sector as a result of the fall of the real estate market, followed by areas such as insurance, banking and the financial market in general. Consumption went down and the GDP followed. The fall was even worse starting 2010 which created room for speculation about a different crisis to hit Romania in 2012 when it will be a lot more fragile with a high level of unemployment and inflation that had already reached 8.5% by May, a level much higher than the average in the EU.

However, on top of all of this one must also add the disorganized administrative decisions, chaotic legislative system and the ever changing tax system, which were only marginally helped by decision meant to help the economic sector (among the better known being the 2009 "Prima Casa" program with the purpose of helping the troubled real estate market or the program the Mihail Kogalniceanu (2011)⁽²⁾, program through which the Government would guarantee up to 80% of the value of credits taken by small and medium enterprises (SME) and finance up to 50% of the interest). The image is completed by the results obtained by the country in terms of access to financing, infrastructure, tax level, bureaucracy, political instability and corruption, which led to the country getting reaching the 77th out of 78 places in The Global Competitiveness Report in 2010-2011⁽³⁾.

For this reason our interdisciplinary study focuses on certain problems that can work as warning signs for a future crisis: significant migration of qualified personnel, overburdening and exhaustion of local employees, and, because the papers focus is on the health system, the number of specialists working in the field and the number of malpractice cases. 2012 is an important

year for Romania as it can either stop its economic fall or it can face itself with an even more severe crisis than the one in 2009-2010, the latter perspective being supported by statistics that show a period of economic slowdown across Europe.

II. The Romanian healthcare system: past and future

The health system has always been a sensible topic in Romania because for years on end it has been underfinanced and under bad management, if not downright corrupts. This has had as a result a weakening of the system making it unable to react to present demands. However, as the economic situation made a turn for the worse, the overall pressure on the system grew even further. In the following a brief analysis of the healthcare system will be presented.

At present it is a very centralized with most of the important decision being the sole responsibility of the Health Minister. Resource allocation is mostly discretionary without clear criteria that are based on any national or international facts. Without these elements to base a decision it is virtually impossible for it they have a strong foundation.

At a central level there are also no clear guidelines with the sole purpose of improving quality, patient safety and risk management and, despite the fact that these should be monitored constantly, they usually have a secondary role.

One of the steps taken in an attempt to alleviate these problems was the creation of the National Health Insurance Agency (CNAS). However, this failed in its purpose and finally was put under the control of the Health Minister and the Finance Minister.

The organizational problem was exacerbated by incomplete and incoherent legislation. Law no. 95 of 2006 controls all the activity in the health sector and, even if it was confusing in terms of responsibilities ever since its beginning, it was modified further starting from that year sometimes changing critical aspects in its design. This situation led to further delay in establishing and secondary legislation that was required in order to put into force some elements of the law with the end result being that even now some it is not complete and enforced.

When discussing the organization of the health system, one must also take into consideration the fact that it is very hospital centric. At the moment Romania has one of the highest rates of hospital admittance in the world; this is the result of the faulty organization during the communist period when it was virtually impossible to get high quality services outside of a hospital. At the same time, due to the high costs associated with hospital treatments, reorganization was virtually impossible because hospitals make up more than 50% of the allocated health budget which has had as a result a locked-in system that cannot change due to the fact that there aren't enough resources for this to happen. In turn this leads to

underdevelopment outside of hospitals which again forces patients to go to a hospital for any kind of treatment thus creating a vicious circle.

Financing has always been a big issue for the health system. Because before 1990 it was a non-productive system it had a very low priority which led to funding not only being lower than the European average but also the average of other communist countries for a long period of time. The situation improved following 1990 but not by much.

At the present moment financing is insured through several means:

- National Health Insurance Fund (FNUAS);
- Local budget;
- Its own income;
- External credit;
- External nonrefundable funds;
- Other collected taxes.

Out of all these FNUAS represents 75% of all the available funds. FNUAS is gather from the monthly salary contributions from both employees and employers. This system was sustainable for a long time however the number of employees dropped from 9 million in 2000 to roughly 5 million in 2007 and this contribution had to sustain the same roughly 20 million people.

Funding allocation is in itself a problem because the criteria that are used are not public and there are a significant number of neclarities at the level of local authorities in terms of responsibility. The lack of procedures has had as a result the subjective direct allocation of resources. This in turn has led to certain absurd situations where considerable investments are made and expensive equipment is bought only for it to not be used because it is not necessary or because nobody followed through and allocated funding for employee trainings and so nobody actually knows how to use it.

Private insurance is itself troublesome. The main purpose for it was to allow access to above average medical services and so alleviate the pressure put on the public system. However it was impossible for this area to properly develop because, even though referenced in the legal system, there are no clear regulations for it.

However, the most important problem present in the Romanian healthcare system has to do with people. They are the key to the system and yet there is no clear politics formulated in terms of human resources. This aggravates the issue by adding problems with motivation or staff retention finally leading to serious imbalances.

A first problem has to do with salaries. International practice is in favor of the idea that a medic should have an average salary that is that of the average salary for that economy, however in Romania a specialist doctor earns between 1.5 and

2 average salaries. There are also significant differences in the same specialization, therefore the final before tax average salary in the health system was 86% compared to the national average. This situation was made even more difficult by the 25% salary reduction operated across the board for public workers.

Table 1

Professional density								
Year	Doctors		Dentists		Pharmacists		Nurses	
	RO	UE	RO	UE	RO	UE	RO	UE
1995	1.77	3.13	0.27	0.57	0.12	0.68	4.31	7.32
1996	1.81	3.19	0.26	0.58	0.11	0.71	4.41	7.40
1997	1.79	3.23	0.24	0.59	0.8	0.71	4.06	7.40
1998	1.84	3.26	0.24	0.60	0.7	0.72	4.09	7.47
1999	1.91	3.31	0.23	0.60	0.7	0.73	4.04	7.52
2000	1.89	3.37	0.22	0.60	0.7	0.75	4.02	7.60
2001	1.89	3.40	0.23	0.61	0.7	0.77	4.03	7.67
2002	1.91	3.43	0.22	0.62	0.6	0.78	4.18	7.79
2003	1.96	3.19	0.23	0.60	0.6	0.76	3.99	6.90
2004	1.98	3.21	0.23	0.61	0.6	0.72	4.01	6.94
2005	1.95	3.18	0.22	0.61	0.5		3.72	7.00

Source: “*Un sistem sanitar centrat pe nevoile cetateanului*”, Presidential Commission for the analysis and politics formulation in the area of public healthcare in Romania Report, 2008, p. 53.

As can be seen from the above table, Romania is well below the European average since 2005. This situation has become even worse now that Romania is a member of the EU and as a result medics have received the right to practice their profession abroad which has led to an exodus of qualified personnel, especially younger people or highly qualified ones. The same report shows that of all the specializations the one that will be affected the most is general practitioner because the average age is between 45 and 55 years with very few young practitioners. In the long run this will make access to basic services even harder which will in turn increase the pressure on other institutions, along with their costs.

III. Medical malpractice issue in Romania

As shown in the previous chapters it is inevitable not to discuss the economic crisis when talking about the healthcare system. And so, from the serious issues dealing with under financing and bad management, we reach another very delicate topic that shows the situation the system finds itself in: medical malpractice and the rising number of court cases dealing with this problem.

Medical malpractice represents an error done while exercising a medical procession, thus leading to a loss for the patient, implicating the civil responsibility of the medical personnel involved as well as the supplier of medical, sanitary or

pharmaceutical products⁽⁴⁾. More than that it is vital to analyze the economic effects of medical malpractice, especially in the context of financial issues raised by the post-crisis economic situation. The parties affected by these changing conditions are numerous, with the most important ones being: patients, medical personnel in general, medical institutions, insurance companies (under the current malpractice legislation, the professional civil liability insurances are mandatory for doctors), law makers and the health system as a whole.

III.1. Empirical study: objectives and methodology

The aim of this study is to create a basis for future research on the topic of medical malpractice in the context of the post-crisis economic changes as well as the steps to be taken, by outlining a direction for a general national strategy with the purpose of curbing the rising number of medical malpractice cases. The main reason for this is the significant social impact associated with such a large number of medical malpractice cases and the proper way to deal with them, no matter the chosen method, but also because the medical system as it is already affected by the consequences of a severe crisis (closing of numerous medical centers and hospitals, rising number of emigrating doctors) and now it is even further destabilized.

Also, one must take into account that while the economic implications of the present situation are very important, at the moment there is no clear quantitative analysis of the situation for Romania. As a result of this, the research will focus on the major issues that weaken the system and favor malpractice, as well as possible solutions, taking into account financial limitations.

The methodology first involved a thorough document analysis of specialty research conducted in Romania, the literature being quite limited at the moment, as well as studies in other countries. An important requirement in doing this was selecting an interdisciplinary team and selecting the proper tools.

The research was carried out by using two questionnaires, one for doctors and one for patients. Both were built by starting by reviewing specific available literature with some of the items being used directly but most being adapted or purpose built, in accordance with the purpose of the study. This instrument was chosen based on cost and data collection criteria. The retrieval and answer validation rate was of approximately 80%. The doctors involved had various specialties: psychiatry, dentistry, forensics, dental medicine, with a balanced distribution between public (43%) and private (53%) medical institutions. Because the data gather was used for another two different studies with a broader scope concerning the entire medical system, in this paper we will analyze the information that is directly linked with the medical malpractice situation in Romania and its economic implications and medical emigration, an important element that will have an impact on the future evolution.

Also, two databases were constructed using information available from the Bucharest Medical College (CMB), a legal non-governmental entity organization, with professional responsibilities, and whose membership is required in order to have a medical practice in Bucharest⁽⁵⁾. The data was selected and grouped in accordance with certain criteria: medical specialty, professional and teaching degree, medical act, official conclusions, specialists opinion on file and sanction; this was done for the 2008-2010 period. The second database was created from official records from the National Insurance and Reinsurance Union (UNSAR) ⁽⁶⁾. For the same period 2008-2010, the medical malpractice insurance contracts were also analyzed.

III.2. Major deficiencies in the Romanian medical malpractice system

Before presenting the identified issues after the data analysis, we will first present the general characteristics of the medical malpractice mechanism.

In order to file a complaint against a medical professional, the plaintiff has three methods at his disposal:

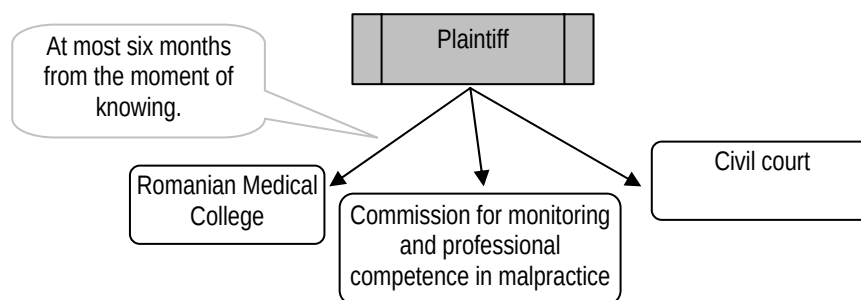


Figure 1. Medical malpractice system in Romania. Filling a complaint against a doctor

In Romania, the legislation to deal with medical malpractice cases has only recently put into place during the 2010 reform; however, key juridical doctrine is still missing. In this situation the only real beneficiaries are insurance companies, medical personnel being forced to have malpractice insurance, with patients and doctors being on the losing end. Compensations are rare and the procedure doesn't take into account the parties involved. As a result, for the duration of the trial important resources are squandered. The fact that the system is centered around court decision involves significantly higher costs. From a practical perspective, the insurance company only rarely intervenes and is actually involved in the trial.

a) The main causes of the crisis affecting the Romanian healthcare system

It is imperative to know the opinion of those active in the healthcare system, be it public or private. As such we asked them to choose one of the following:

1. Insufficient knowledge on the part of the doctor
2. The absence of proper technical equipment
3. Insufficient medication
4. Bad hospital management
5. Inefficient management of the system as a whole
6. Payment system for medical services is slow and creates blockages
7. The annual sums allocated yearly from the state budget are insufficient

b) Medical personnel emigration

In order to properly evaluate this issue, the questionnaire contains several questions for medical practitioners as well as for consumers. These are based on the statistics made available by CMB concerning the situation of medical personnel leaving the Romanian healthcare system.

Of these we draw attention to the following:

MGR 1. Do you believe that medical emigration as a phenomenon is? (single answer)

Normal	Favorable for Romania	Favorable for the EU	Can be overcome	CANNOT be overcome
1	2	3	4	5

MGR2. Would you leave Romania?

1. Yes 2. No

What is the main reason for your decision?

c) Economic implications for the present malpractice system

One final aspect that needs to be taken into consideration when evaluating the economic system by looking at the medical system is the way it deals with malpractice. Even though at the present moment there are no broad studies in this field, there must be a reference point. This is true not only for those directly involved: doctors, patients, but also for society who must also take into consideration the long term costs and implications.

IV. Conclusions and future research

a) The main causes of the crisis affecting the Romanian healthcare system

The main causes picked by the 104 answerers are: the annual sums allocated yearly from the state budget are insufficient (23%), payment system for medical services (21%), the absence of proper technical equipment (21%), and inefficient leadership for the system as a whole (13%).

The doctors opinions on this topic are more focused: inefficient leadership for the system as a whole (74%) and the annual sums allocated yearly from the state budget are insufficient (19%).

b) Medical personnel emigration

Concerning migration, the main reason for it is that of better salaries, most of the answerers believe that a medical should have a higher pay, especially in the public system, and medics themselves consider that pay should be higher in both kinds of medical systems:

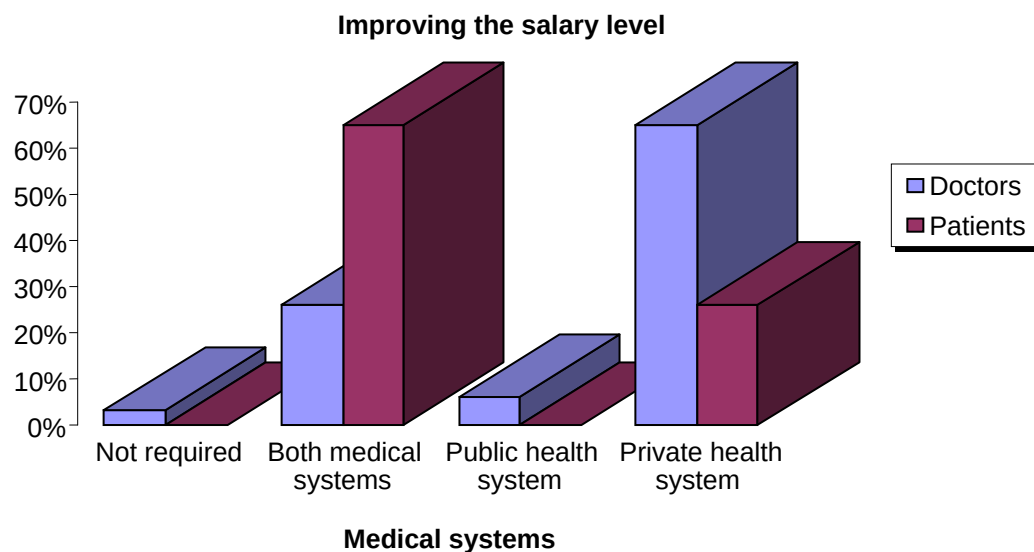


Figure 2. *Improving the salary level*

The study also showed similar issues as those brought forth by the Romanian Medical College which are: the absence of job openings, small salaries and difficult work conditions which have led to a massive medical migration. In the first eight months of 2011, 1,700 doctors have solicited conformity certificates in order to be able to practice abroad.

One must also mention that Romania was already facing personnel deficit since 2008 and, at 1.9, now has the lowest number of doctors per 1,000 people in Europe. This is also due to the fact that the government only gives roughly 6% of the annual GDP compared to the 8% European average.

Also, beyond social costs, there is also a financial cost represented by the amounts spent by the state on the training of future doctors: according to estimations, a medicine student cost around RON 8,000 per year, amount that has to be multiplied with the six years of faculty that is RON 48,000. Afterwards, there are three to five years as resident doctor, period that requires other RON 21,000 per year. Finally, a specialist doctor costs the Romanian state EUR 30,000. One step further, based on the official statistics of the Romanian College of Doctors, 20,000 doctors * EUR 30,000 = EUR 600

million is the concluding figure for ten years of medical training. However, there are European and non-European countries that benefit from Romanian doctors' expertise as they decide to emigrate abroad where, despite the economic crisis, it has chosen to invest especially in research and medicine.

In this context we analyzed the general opinion concerning the healthcare system in Romania. In the as of the general population (patients), there is a strong dissociation, statistically significant (Chi-square test, $p=0.023$), between their opinion concerning public and private healthcare systems in favor of private (Figure 3).

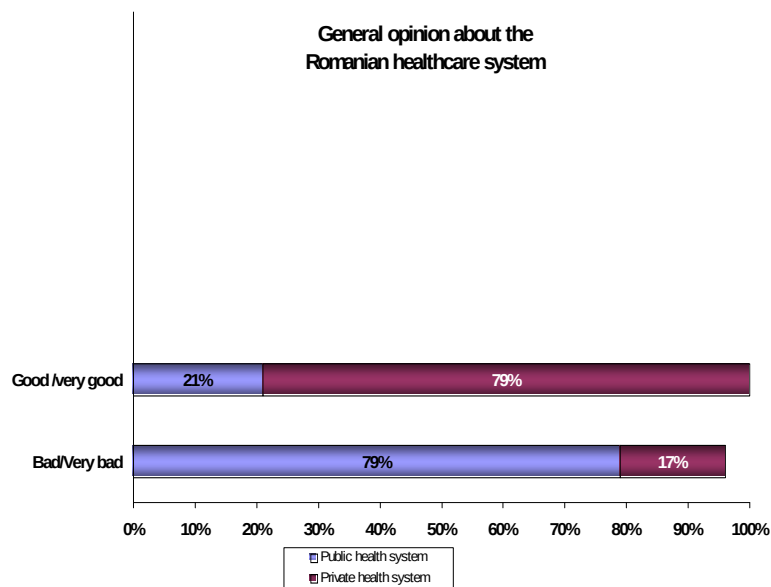


Figure 3. General opinion about the Romanian healthcare system

The bad opinion about the public system, respectively the good opinion about the private one, is generalized among the respondents and does not differ depending on age, gender, education or income. Two clear components can be identified: a direct component, based on the direct interaction of the person with private services (51% of respondents have used, in the past three years, private healthcare services) and an indirect component, an opinion based on external information (although 49% didn't use any private healthcare services in the past 3 years, 86% have a favorable opinion of the private system).

As a basis for future research, we propose the realization of a national interdisciplinary study on the topic of medical malpractice and its impact on the Romanian economic system. This scientific endeavor can have practical implications once it is transformed into reality, by identifying and evaluating

the parties involved: medical system, patient, insurer, legislator, lawyers. Also this information must be made accessible to professionals working in different fields who might also take an interest in this topic. The justification for this initiative is given by the need for clear legislative proposals with the final purpose of harmonizing the Romanian legislation with that in use at a European level and at the same time encouraging the use of alternative solutions in doctor-patient litigation, to the extent that the law allows: mediations, arbitration in order to reduce both personal expenses and the burden on the health and economic system as a whole.

Acknowledgements

The authors would like to thank Professor PhD Vladimir Beliș, president of the Jurisdiction Commission of the Bucharest Medical College, for the help given and the access allowed to a great deal of the information used in this study.

This work was co-financed from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013; project number POSDRU/107/1.5/S/77213 “Ph.D. for a career in interdisciplinary economic research at the European standards”.

Notes

- (1) See Cotetiu, R., Năsui, V., Prof. Ph.D. Eng., ‘*Analysis of the evolution of Romanian economy before economic crisis*’, ISSN 1224-3264, 2010, pp. 13-18 SCIENTIFIC BULLETIN, Serie C, Volume XXIV, Fascicle: Mechanics, Tribology, Machine Manufacturing Technology.
- (2) For more information concerning this program see the Agency for Implementing Projects and Programs for SMUs’ webpage at: <http://www.aippimm.ro/articol/programe/7.-programul-mihail-kogalniceanu-pentru-intreprinderi-mici-si-mijlocii/programul-mihail-kogalniceanu-pentru-intreprinderile-mici-si-mijlocii/>.
- (3) For a detailed analysis of the indicators see, The Global Competitiveness Report 2010–2011’, at: http://www.adevarul.ro/actualitate/Raportul-competitivitatii-mondiale_ADVFIL20110922_0001.pdf.
- (4) An exhaustive presentation in a technical and detailed manner on the topic of medical malpractice in the Romanian system as well as other systems: French, American, etc., as well as information concerning criminal, civil and deontological responsibility can be found in professor Phd. Cristian Stan’s book “*Malpraxisul Medical*”, Edit. Etna, Bucharest, 2009.
- (5) There is also a Romanian Medical College, created by the Law no 74/1995 from the 6th of June 1995 concerning the medical profession <http://www.cmr.ro>.
- (6) UNASR was constituted as a professional organization for the insurance market in 1994 at the initiative of 13 companies. It oversees representation, administration, defending professional interests, economic and social interests of its members when dealing with other entities, private or public in Romania or abroad.

References

- Cotetiu, R., Năsui, V., „Analysis of the evolution of Romanian economy before economic crisis”, *BULETIN ȘTIINȚIFIC*, Seria C, Volumul XXIV, Fascicola: Mecanică, Tribologie, Tehnologia Construcțiilor de Mașini, ISSN 1224-3264, 2010
- Daniels, S., Martin, J., „It is no longer viable from a practical and business standpoint: damage caps, „hidden victims”, and the declining interest in medical malpractice cases”, *International Journal of the Legal Profession*, Vol. 17, no. 1, martie 2010
- Polling Report, Inc. 2008b. Studiu desfășurat în perioada 13-14 decembrie 2004 condus de Schulman, Ronca & Bucuvalas (SRBI) Public Affairs. <http://www.pollingreport.com/civil2.htm>, (accesat 12 februarie, 2009)
- Stan, C. (2009). *Malpraxisul medical*, Editura Etna, București, p. 19
- Stan, C., Picioruș, Luciana, Purtan, Raluca, Imbrișcă, C.I., „Trends in the Romanian medical malpractice system: from crisis to reform”, *19th IAFS World Meeting, 9th WPMO Triennial Meeting, 5th MAFS Meeting*, Funchal, Madeira, Portugal, September 12th – 17th, 2011
- Uniunea Națională a Societăților de Asigurare și Reasigurare (UNSAR), <http://unsar.ro>
- World Economic Forum, „The Global Competitiveness Report 2010–2011”, Geneva, Switzerland 2010, http://www.adevarul.ro/actualitate/Raportul-competitivitatii-mondiale_ADVFIL20110922_0001.pdf
- „Who is paying for health care in Eastern Europe and Central Asia?”
- Lewis, Maureen, *The International Bank for Reconstruction and Development/The World Bank*, 2000
- „Un sistem sanitar centrat pe nevoile cetateanului”, Raportul Comisiei Prezidențiale pentru analiza și elaborarea politicilor din domeniul sănătății publice din România, 2008
- Xenopol, A.D. (1891). *Memoriu asupra unor îmbunătățiri economice de realizat în nordul României și în special la Iași*, ediția a II-a, în Xenopol, A.D. (1967), *Opere economice*, pp. 79-123, Editura Academiei
- Xenopol, A.D. (1887). *Situațiunea financiară a României sub guvernul liberal în 1887*, ediția a II-a, în Xenopol, A.D. (1967), *Opere economice*, pp. 207-242, Editura Academiei
- Xenopol, A.D. (1882), *Studii economice*, ediția a II-a, în Xenopol, A.D. (1967). *Opere economice*, pp. 79-123, Editura Academiei
- Xenopol, A.D. (1882), „Românii și Austro-Ungaria”, http://www.unibuc.ro/CLASSICA/Xenopol-RO_AU/cuprins.htm (accesat la 15-10-2011, ora 5.45 PM)
- Colegiul Medicilor din București, <http://www.cmb.ro/>
- Colegiul Medicilor din România, <http://www.cmr.ro/>

Business Incubators – Favorable Environment for Small and Medium Enterprises Development

Camelia MORARU

“Dimitrie Cantemir” Christian University, Constanța
cami.moraru@yahoo.com

Alexandru RUSEI

Bucharest Academy of Economic Studies
alexrusei@yahoo.com

Abstract. *The biggest problem for many small and medium enterprises (SMEs) is not the idea or the product provided and neither its customers, but their needs. High prices of production and office space are critical to the survival of a small business. Incubators come as a response to the needs of small and medium enterprises in key steps of a business, such as initiation and market penetration. An incubator aims to have a positive effect on the economic health of an area, of a community.*

Keywords: development; efficiency; business environment; survival rate; business incubator.

JEL Code: M13.

REL Codes: 14D, 14K.

1. Concept and models of business incubators

The first definition of business incubator, was given in the workshop “Best Practices in Incubator Infrastructure and Innovation Support” (Helsinki, 1998) that it is “a place where are concentrated in a limited space newly created companies. Its objective is to increase the chances of development and survival of these firms by providing a modular building that is equipped with the necessary utilities (telephone, fax, computer) and where it is provided managerial and services support. The main aim is to develop the local area and create new jobs.” (European Commission, 2002, Benchmarking of business incubators, Centre for Strategy and Evaluation Services).

Another definition of business incubators shows that “business incubators is a dynamic process of business development. This term covers a wide range of processes that help companies lower failure rate in the initial phase and accelerates the development of those who have the potential to become generators of jobs and wealth. Incubators provide three main ingredients for developing a successful business: an entrepreneurial environment and training, access to mentors and investors, visibility in the market” (National Association of Business Incubators, US).

Therefore, developing a favorable environment, sustainable, support for these companies to grow and become competitive on the market is the essential purpose of an incubator.

The concept of incubators has grown over time, these can be classified according to several criteria. After the source of financing, there are incubators financed by the state (ministries, state universities, research centers) and private (Chambers of commerce, private universities, associations). After the operational model, there are “Bricks and mortar” and virtual incubators. The first ones provide facilities related to physical infrastructure, the incubation taking place in a specially designed building. The virtual incubator, called “without walls”, do not provide a specially designed space (buildings) and services provided are offered through the Internet. If we analyze the structure of services provided by incubators, then these are divided into five categories. Traditional incubators are those who aim to develop companies that can record a quick change of production technologies (textile, shoes). Technological incubators support the companies whose products or services have appeared after some scientific research (biotechnology, computer, electronic, etc.). Cultural incubators support cultural activities (music, sculpture, photography), social incubators support activities which are coming from social projects. Business incubators in agriculture are those that encourage technological innovation in agriculture. Considering the location, there are incubators in

urban areas (usually located in cities, technology and traditional incubators), incubators in suburban areas (located around the city) and incubators in rural areas (whose development is closely linked to agriculture production centers).

“New economy” incubators are the latest types of incubators that have emerged and are based on access to modern technological means. The difference between them and the traditional ones is that the “new economy” incubators take into account the strict criteria for acceptance the companies in the incubator and are based on the highest technology.

2. Business incubators at international level

Charles Mancuso is the one who established the first business incubator in Batavia, New York, in 1959, the incubation process has become an industry in the '80s.

In North America there are over 1.400 incubators, distributed as follows: in the United States are 1.115 incubators, Mexico has 191 incubators, and 120 incubators in Canada. Most incubators are nonprofit entities, affiliated with universities. These programs have supported over 27.000 companies, creating 100.000 jobs in 2007. Incubators are designed to highlight the objectives that entrepreneur must take into account in developing a business: creating jobs, economic profitability and technology transfer. In Brazil (Latin America) there are 400 business incubators.

Table 1

The number of incubators distributed on areas

Region	Number of incubators
North America	1,400
Brazil	400
South East Asia	1,500
Germany	400
France	250
United Kingdom	300

Source: <http://www.nbia.org/>.

In Southeast Asia are 1.500 business incubators. China is the one who founded the largest incubation program among developing countries worldwide. Most business incubators in China have been financed by the Government, private funds are used very rarely. In Japan there are a total of 203 business incubators, which offers classic services.

In the European Union, the first position, considering the number of existing incubators are occupied by Germany, France and Britain. In late 2006,

according to statistics, the number of incubators in Germany was 400. On the territory of France, there were a total of 250 business incubators in 2009 and in Great Britain the number of business incubators has reached 300, covering 12.000 companies.

The table below shows the performance of business incubators according to a set of criteria.

Table 2

Incubators performance in the European Union	
Criteria	Year 2006
Public financing	48%
Incubator space – m ²	5,400
Employment rate	81%
Jobs created/incubator	48.7
Expences for work	14,000 euro

Source: www.cses.co.uk/publications/BenchmarkingBusinessIncubators.

Performance of business incubators take into consideration several criteria such as financing, incubator space, employment rate, number of jobs created by each incubator, and expenses for work.

Table 3

Survival rate of incubated companies	
Country/Region	Survival rate
US	85% continue to operate after two years
Europe	89% continue to operate after three years
Germany	90% continue to operate after three years
Brazil	80% continue to operate after three years

Source: http://siteresources.worldbank.org/INFORMATIONANDCOMMUNICATIONTECHNOLOGIES/Resources/ChapterKhalil_Olafsen.pdf.

The main objective of these incubators is increasing the period of survival, success during the first critics years. Statistics show that in Brazil, 80% of the incubated companies have survived the incubation period, while in Germany, their rate is higher, reaching 90%.

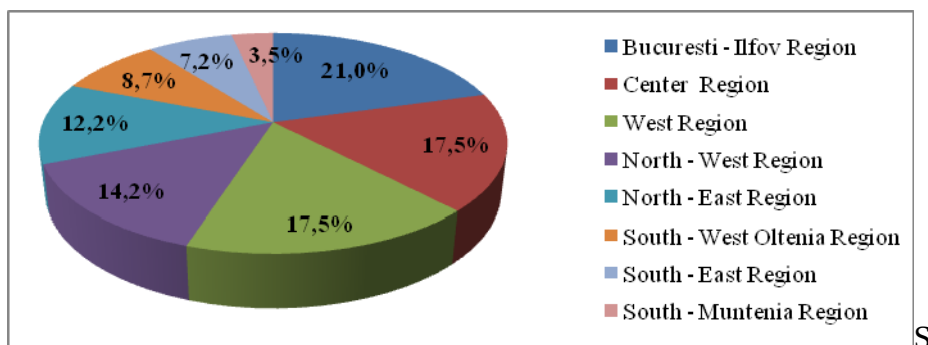
3. Business incubators in Romania

In our country, business and technological incubators are based on public sources and sources from international bodies such as the European Commission, World Bank, International Bank for Reconstruction and

Development. The latter were obtained using programs for local economic development, entrepreneurship and small and medium enterprises.

The economic and legislative situation allowed to appear business incubators since the 90s in some areas of the country, such as Sibiu and Braila. First Technology and Business Incubator Center was created in 1992, with the Ministry of Research and Research and Design Institute for Machine Building Technology. In the 90s there were created 16 incubators, but only one or two have survived until these days.

In 2010, in Romania, the number of business incubators was about 60. They work in various fields such as consulting services, IT, biotechnology, biomaterials, transfer of know-how, scientific research, transport services. The chart below presents the share of existing business incubators in our country by regions.



Source: own processing.

Figure 1. The share of business incubators by regions of development, 2010

Most incubators are location in Bucharest-Ilfov region, and another 20 are being located in the Central Region and Western Region (about 10 incubators in each area). After an analysis of business incubators, distributed over the eight regions of development, the following issues can be presented:

- services provided by incubators are consulting services, the renting office space, security and protection services, training, access to utilities (electricity, heat, water, gas), telecommunications services (telephone, fax, e-mail, internet), administrative services;
- incubators located in the eight regions of development led to the creation of 3,000 jobs, most of them being recorded in the South-West Oltenia and Center;

- 1,130 companies were hosted by the approximately 60 business incubators, they recorded a significant share in the South-West Oltenia;
- most developed area is Bucharest-Ilfov, where there are 12 business incubators, while in the South-Muntenia are located just two business incubators;
- incubation period is on average two years.

Incubator manager is the one who manages the incubator and is chosen following an assessment, taking into account a number of criteria set by a specialized committee. This is usually a company or a nongovernmental organization.

Among the tasks of the administrator are following: responsible for management and business technology incubator, provide the necessary staff for services; develop activities to attract investment, exploit all legal benefit incubation facilities, enter into contracts to provide services to residents incubator, represents the incubator in relations with local authorities. Thus, to fulfill the above tasks, an administrator must have good qualities such as entrepreneurial skills, to assume the risk, responsibility, perseverance, teamwork, and ability to manage and settle conflicts.

4. Soroca Business Incubator – a role model?

Soroca business incubator was implemented under the “Entranse 2 Your Business” by a scientific-technical organization in Norway (SINTEF) with the Organization for Small and Medium Enterprise Development (ODIMM) of the Ministry of Economy of the Republic of Moldova but also with local authorities of Soroca.

The main goal of this project was the economic recovery in Moldova, following thus reducing poverty, creating jobs, and restraint of labor migration by encouraging development of small and medium enterprises. Therefore, the incubator aims to provide entrepreneurs with business plans opportunity to achieve them in an appropriate environment.

Opened the end of 2009, the business incubator Soroca hosted 17 small and medium companies that have created 70 new jobs, specializing in: making clothes, glass processing, glass furniture production, feed grain, windows, legal service, architectural, accounting, organization of events and festivities, photographic and advertising services.

The 17 companies were chosen following a competition of business plans (viable) and for the entire incubation period, three years, will benefit from several advantages, such as office space or low-cost production, financial

support to purchase of equipment (50%), reduced administration costs, but also support from the Norwegian and Moldavian specialists in business development, the identification of markets. For example, to rent space: the firms will pay 10% of the market for a year of activity, 40% - for the second year of activity and 80% - for the third year. Also incubated companies will receive free Internet, heating, household services in common areas, and marketing consulting services. Also, Soroca Municipal Council gave the 17 companies, an old building with an area of 1,700 square meters, which has been repaired and fitted with industrial and office equipment.

Incubated companies were advised that during the incubation period, to take advantage of these benefits as they will be forced to perform, after completion of three years, entrepreneurial activity in the same conditions as other companies in the country. The desire to start a business is not enough for survival, knowledge and adequate preparation is the underlying business development.

It seems that mixed business incubator model, launched nearly two years ago, was a success because a few months after launch, some companies incubated already became prosperous, such as textile factory, North Bevera. Production capacities and volumes had increased and imposed extension of the areas of production, so the director asked the incubator's administrator additional two spaces.

The inauguration of Soroca business incubator, was a timely choice for the business environment in Moldova, stimulating the development of entrepreneurship to a competitive and sustainable economy. Thus, the incubator illustrates a perfect collaboration between Norwegian experts and the Moldovan authorities, between local and foreign business.

5. Conclusions

Business incubators have been created to support viable business ideas and to help entrepreneurs' companies to succeed in passing critical stages in the life of any company and to grow on the market.

Incubators are providing a range of facilities to the incubated companies, creating a favorable, appropriate environment to their development, consulting business plans, marketing, business management or information related to promoting the image of companies.

They are an important lever to launch the local entrepreneurial initiatives that can have a significant impact on a country's economy and can lead to the creation of large numbers of jobs. In order to have a strong network of incubators it is necessary to use available resources efficiently, therefore, to be

mobilized in enterprises productive from economic point of view, competitive, but also able to continue their work after leaving the incubator. To expand the incubators network it is necessary to improve the legal framework, to check carefully incubated companies and framing with the limits of performance parameters and diversification of business areas.

References

- Chandra, Aruna, Fealey, T., „Business incubation in the United States, China and Brazil: a comparison of role of government, incubator funding and financial services”, Report, 2009
- Drucker, P. (2004). *Managementul viitorului*, Editura ASAB, București
- Găvrea, V. (2006). *Parcuri industriale, științifice și tehnologice. Incubatoare de afaceri. Rolul lor în dezvoltarea economică locală și regională*, teză doctorat, UBB Cluj
- Khalil, M., „Olafsen, Ellen, Enabling Innovative Entrepreneurship through Business Incubation”, *World Bank*, 2010
- Nicolescu, O., Isaic-Maniu, Al. (2006). *Carta Albă a IMM-urilor din România*, Editura Olimp, București
- Schwartz, M. (2008). *Incubator Age and Incubation Time. Determinants of Firm Survival after Graduation?*, Halle Institute for Economic Research
- *** Final Report - *Benchmarking of Business Incubation*, European Commission Enterprise Directorate-General, Centre of Strategy and Evaluation Services, 2002
- *** *Innovation and Entrepreneurship through Business Incubation*, 20th Global Summit of Business Incubation Associations, 2009
- *** *Ghid de înființare a unui incubator în România*, 2010

Procedural and Systematic Crisis Approach and Crisis Management

Dragoș Ionuț TĂNASE

Bucharest Academy of Economic Studies
dragostanase09@yahoo.com

Abstract. *These approaches to crisis are a fundamental aspect of the systematic process of crisis management, but they are limited and must be accompanied by the existential side of the crisis. To live a major organizational crisis experience, if you want to think of the possibility of such a situation, may sometimes cause another intense anxiety. This anxiety, although irrational in the rational sense of the term, is nevertheless as real as possible. In order to answer the deep existential questions that occur during a crisis, there were and are applied different defensive strategies.*

Keywords: crisis, crisis management; procedural approach to crisis; systematic approach to the crisis; defensive strategies.

JEL Codes: F52, H12, O15.

REL Code: 14C.

Introduction

Today the crisis has become an everyday state and the word entered the current vocabulary of leaders of institutions, journalists and the general public.

The almost continuous presence of crises, placed in various institutions, has made that more and more political leaders, business leaders, and experts in management and public relations practitioners to talk about “crisis management” and about “crisis communication”.

It is almost an universally acknowledged truth that in the current era of globalization, social, economic life, labor, political, military life are affected by the crisis, regardless of how it is defined or felt. Also in the managerial field, the crisis is attached to economic social and political events or episodes, which are escaping from everyday life, having the tendency to become usual facts, customs, with various consequences on the situational aggression scale.

Rightly, it can be said that in the current human complex crises are accompanying us, they forms us, they can provide various models or symbols to us, in other words they can govern or “manage” our work.

Any organization may face a crisis able that could jeopardize the normal functioning and the reputation they enjoyed in a particular community. Some crises are predictable and can be avoided others cannot be predicted or anticipated correctly.

1. The concept of crisis

If the event approach features the crisis’s characteristics to surprise, unpredictability and improbably, the procedural approach gives it a progression in intensity and visibility and allows it to anticipate the existence of stages: precursor signs, triggering, increase and resolution. It transpires therefore the opportunity to anticipate crisis or to find genealogy and dynamics of its appearance. In this respect, it is moving away from the simple analysis of symptoms and opens extensive lines of investigation to study crises.

Several researchers have shown that crises typically have a genesis and a pedigree (Pearson, Judith, 1998). They believe crises are not the result of a random event, but the latest manifestation of a long gestation period. This way, crises would be the result of a cumulative and continuous organizational dysfunctions process. In this dependency report, Pauchant (1998) defined crisis as “an accumulation of likely events at the level of any part or the organization as a whole and which may disrupt its present or future operations affecting individuals and communities to a physical level, psychological and/or existential”.

This definition gives a new dimension to the concept, because the crisis is not necessarily an unexpected isolated event, but rather the result of cumulative failures and potentially iterated by the organization, but whose dynamics can brutally escape from the hands of decision makers.

In the same direction, Bowonder and Liston (1987) showed that, with a few exceptions, crises have always left their marks before the critical stage. Shrivastava (1987) illustrated this feature explaining how the accident from Bhopal in 1984 has found roots in a series of failures and strategic choices of Caribde Union as well as in a series of political and economic orientation of the Indian government of the time. Analyses of the same type are found for the explosion of Challenger spaceship or for the contaminated blood affair in France.

It seems therefore more correctly to speak of accumulation than surprise when we study the occurrence of crises. The problem is not to predict when, the probability of its appearance or the shape of the crisis in its critical phase but rather to identify latent or failure events that could lead to a crisis.

However, it is better to be cautious about this notion of precursor signs which, taken alone, is often enough to justify the positions taken by supporters of a procedural approach on the predictability of the crisis. Perrow (1994) gives us, from this point of view, a critical perspective that relates the importance given to them currently. He shows that the precursor signs are always regarded as after the crisis took place. So it makes sense only in a retrospective way.

Experience has shown that, despite all precautions taken to stop or control a crisis, usually it gets out of control and escalates.

In these circumstances, it may seriously undermine the organization, if is not managed properly, an important element in this situation being communication. In other words, good communication during the crisis can mitigate and even prevent negative public reactions.

Generally, it is considered that a crisis deeply affects the image of an organization. Typically, brand image is built in times of normality, when the set of values and representations is emerging, through which the public perceives one's organization. During the crisis there are required other representations and certain "symbols" and there are fixed some "stereotypes" that remain long time associated with the image of the organization. This is why its management, together with public relations department must prepare in advance to meet unexpected or abnormal situations. Crisis management cannot be improvised. It is based on correct assessment of the circumstances and mastering appropriate response strategies, strategies prepared and even experienced long before the beginning of the crisis.

2. The crisis dimensions

One of the most difficult issues related to the crisis management system is linked to understanding its existential dimensions.

First, a crisis may threaten the legitimacy of an industry (e.g. crises arising from events produced in Bhopal, Cernobîl, or Challenger spaceship tragedy). People's perception and the one that is created by them about an

industry seriously disadvantage the future relations between the population and this industry. A crisis does nothing more than to destabilize or disrupt these relations to disturb these perceptions.

Second, a major crisis can dramatically influence the strategic mission of an enterprise (e.g. after Challenger spaceship tragedy there were serious discussions about the aerospace industry, Perrier crisis in 1990, when a drink associated to purity of nature by advertising was suddenly linked to pollution and disease).

The third existential effect occurs at individual level. The crisis may disturb the subjective world of individuals affected by that crisis, their way of perceiving reality and life, their sense of identity, their internal cohesion. After the Challenger spaceship accident, some NASA engineers discussed their professional identity as engineers, asking questions like “Am I a good engineer?” or “Could have I been doing something to prevent the accident?”

Industrial crises do not threaten only the process “input - processing - output” organized around what is generically called “technical core” of a company, but it threatens the whole system of symbols, beliefs that individuals assigned to industries, businesses and themselves.

3. The crisis management

Crisis management is different from security management, which is focused on technical issues, crash management focuses on reactive actions and communication management, focused on the image. Crisis management takes into account two essential features of the crisis, namely the effects of physical and symbolic focus, not only on the reaction, but also on prevention and training.

It can be concluded that just as individuals, some organizations, be them economic, social, political, military or otherwise, including their “top management” are subject to or can be the subject of crises more than others. In the literature these organizations, their managers and management organizations were called “port crisis” (Pauchant, Mitroff, 1995). Similarly to “the talisman model” these port managers by their management activities are causing crises, disasters. There are of course organizations that have taken all measures to avoid being affected by major crises that are able to manage and administrate those crises that occur despite preventive means, such organizations and managers being called preventive managers (Pauchant, Mitroff, 1995).

Because the modern society is increasingly dependent on efficient technology, there appears as a primary need the design and articulation of different procedures to administrate or manage their potential risks. It is desirable to create an optimal balance between the complexity of modern technology and the complexity of people involved in these activities, which are managing these technologies. In the current organizational environment, characterized by a multitude of factors and processes, the environment in which

the speed with which information flows, the speed with which developments take place, changes, adaptations of situations are impressive, there obviously appears the need for another kind of approach to these situations. It is obvious that although we can trust engineering or research and development specialists to create and invent new products and services, financiers and chartered accountants to effectively manage capital or marketing and service professionals to develop new products and services, we cannot have the same confidence when it comes to managing large companies that produce dangerous products and technologies, neither to run directly the society and to manage its relations with the environment, meaning the society as a whole and the nature.

Field professionals are generally competent in correctly perceiving the complex technical relationships between different components of their profession. However, in general, they often ignore the relationship, causation, rather complex between the various components of their profession. At the same record we can say that these professionals often ignore the even more complex connections that exist and are manifested between different professions, the diversity of needs of society in general and relationships between human society and nature. In addition, these specialists do not manifest to the fullest as concerns the complexity of human behavior. It can be said and there are a number of studies in this regard that the inherent fragmentation of specialists, which puts emphasis on specialization and disciplines is or may be the origin of a number of organizational, social or environmental crises.

The administrative theory often refers to cognitive limits of managers and professionals to explain coherently and arguably a number of shortcomings. However, these deficiencies are not sufficient to explain how and why particular major crises occur or to understand the arising difficulties about them. It is obvious in this context the concern of the crisis port-managers to try to protect their identity, as well as the image of their organization or its leader. To recognize explicitly or implicitly that their organization could be affected by a major crisis would be to recognize that both the organization and its leader are not perfect and therefore they are not competent professionals. But even worse is that these professionals should accept that their profession is, at least in part, responsible for much different environmental damage to which the organization is related.

With reference to the Romanian society and organizations of any type that are part of it, we often did not have the opportunity to hear or take any measure that reflects concern that the institution, organization, company was, is or may be affected by a major crisis, although paradoxically there is no media product that in some way or another does not refer to the “crisis” of all kinds and of different origins.

Generally, researchers agree with the statements: crises are management situations that meet the three important necessary conditions that distinguish the crisis situation from a normal management situation; the crisis is a process of

destabilization that reveals a variety of participants and stakes, crisis has multiform consequences; crisis falls outside the typical organization frameworks and shakes its reference framework.

Some justify and explain the crisis by the factors that distort it so that it no longer faces their assumptions; others place responsibility on the person generating the crisis, considered the de facto guilty and responsible person and assigns to that person the occurrence and manifestation of the crisis; many feel the need to act or react quickly, make decisions quickly without worrying about the size and sometimes much deeper harder noticeable crisis; others clearly show a chronic anxiety, inhibition, affecting up to blocking their ability to act; others resort to technological solutions, some are completely overwhelmed, dejected, apathetic, inactive, unable to make decisions or to act.

These defensive mechanisms, once activated, will generate other crises on the principle of *perpetuum mobile* because preventive strategies are not developed, not even discussed. These new crises trigger again the need to resort to other stronger mechanisms of defense and protection, possibly more complex and certainly considered more effective and which inexorably cause, again, other crises and so on, forming vicious circles which develop and are generated one from another.

From the point of view of specialists in the management of organizations, the crisis is defined as that situation where the whole system is affected, so its physical existence is threatened. However, the core values of system members are threatened to such an extent that individuals are obliged either to acknowledge the erroneous type of these values, or to develop defense mechanisms against these values.

The crisis is the result of environmental threats, coupled with the weaknesses of the organization. It occurs when environmental threats interact with weaknesses within the organization.

In recent research, debates and practices in the field the crisis or pre-crisis situations are defined as interruption phenomena of the normal functioning of an organization and the freezing times or poor organization of exchange of information between the organization and its public, be it internal or external. Crises occur, therefore, as phenomena that can cause damage to an organization, both in terms of material losses and social prestige, by damaging the public image.

The damage caused by the 2010 earthquake in Haiti is well known. Less known is the dynamic crisis mapping effort that emerged alongside disaster relief. To visualize the crisis space, volunteers combined satellite imagery data with real-time crowd sourced crisis information using new media tools. Crisis mapping has since been used in various contexts – showing how non-state actors are using new media to provide and visualize information during crises (Table 1). State actors should invest in understanding this phenomenon and the circumstances in which crisis maps are valuable contributions to crisis management (Cavelty, Giroux, 2011).

Table 1

Selected crisis mapping initiatives

Case	Haiti January 2010	United States April 2010	Russia July-Sept 2010	Japan March 2011	Libya Spring/Summer 2011
URL	http://haiti.ushahidi.com/	http://oilspill.labucketbrigade.org/	http://russian-fires.ru/	http://www.sinsai.info/	http://libyacrisismap.net/
Crisis	Earthquake	Deep sea oil rig explosion	Wildfires	Earthquake?Tsunami	Political Crisis
Initiator	Individual/organisation	Grass root (Louisiana Bucket Brigade (LABB))	Individual	Individual/organisation	Intergovernmental Organisation (UN OCHA)
Main Partners	Emergency Information Service (EIS), InSTEDD, Ushahidi, Haitian Telcos, Tufts University & US State Department	Tulane University Disaster Resilience Academy	Russian bloggers	Georepublic Japan; Open-StreetMap Foundation Japan	UNOSAT, NetHope & Volunteer Technical Community
Aim of map	Report emergencies; Public health issues; Security threats; Infrastructure damage; Natural hazards; services	Track oil effects & response; provide visible testimony of community impacts	To link those who need help with those who want to help; listed assistance centre	Reports & notices from public and private officials; News on disasters; Evacuation centres & requests for help	Track conflict events (armed confrontations, attacks, etc.); list needs & responses; track mass displacements
Who uses the map	Emergency responders; Diaspora community; Media; Government officials	Local stakeholders (citizens, universities, businesses, etc.); Media	Local stakeholders (those needing and offering help); Media	Local stakeholders; Diaspora Community; Public & Private actors; Media	Emergency responders; Diaspora community; Government officials; Media
Role of map	Test-ground for crisis mapping; better maps of Haiti; reference point for crisis responders	Provided public insight and accountability; info on clean-up efforts	Delivery of relief	Go-to map for corporations, government, and organizations; created transparency in crisis relief	Increased situational awareness
Role of government	Core partner in the effort (US government)	Not directly involved, aware of the map; provided information	Not directly involved; After crisis, Civic Chamber of Russian Federation became involved	Not involved initially, became involved by submitting reports	Intergovernmental body (UN) involved and led the effort

Source: CSS Analysis in Security Policy no. 103, November 2011 (Center for Security Studies, ETH Zürich).

Conclusions

One of the essential differences between a port crisis management approach and a precautionary management approach is reflected in the way it is approached in the two ways of thought the concept of responsibility for its existential meaning: preventive managers are best able to confront the state of anxiety generated by the crisis and act decisively. Less restricted in terms of emotional, they are responsible ethically, emotionally, cognitively and practically to themselves, to their employees, their partners and to nature.

Specialized studies often avoid a debate on the crisis considered as an event or a process.

However, this difference exists. On the one hand, the crisis is perceived as an event and is often confused with its triggering event. On the other hand, the crisis is perceived as a process of destabilization that will brutally engage more players and more stakes, often remote from ordinary field of attention and the organization's transactions. The perception of a crisis as an event leads to privileging symptoms, whereas a procedural approach leads to coverage of the crisis in a time and a larger area.

Crisis management remains in high demand in 2011. Yet it suffers from three crises. First, there is insufficient political will to formulate a strategic vision of how to address violent conflicts in an increasingly multi-polar world. Second, there is a lack of institutional coordination among the principal providers of crisis management. Third, due to capability shortages, many operations struggle to deliver in today's complex conflict environments. These flaws must be fixed as crisis management remains an indispensable tool to secure peace and stability (CSS Analysis in Security Policy no. 103, November 2011).

References

- Bouzon, A. (2006). *Comunicarea în situații de criză*, Editura Tritonic, București
- Bowonder, B., Linstone, H.A., "Notes on the Bhopal accident: risk analysis and multiple perspectives", *Technological Forecasting and Social Change* 32(2), pp. 183-202, 1987
- Cavelty, M.D., Giroux, J., *CSS Analysis in Security Policy*, no. 103, November 2011
- Lefter, V., Deaconu, A., Marinaș, C., Puia, R. (2008), *Managementul resurselor umane. Teorie și practică*, Editura Economică, București
- Pauchant, C.T., Mitroff, I.I. (1995). *La gestion des crises et des paradoxes*, Editura Hec/Quebec/Amerique
- Pauchant, C.T., Mitroff, I.I. (1998). *Crisis prone versus crisis avoiding organizations. Industrial crisis Quaterly*, p. 49
- Pearson, C.M., Judith, A.C., "Reframing crisis management", *Academy of Management Review*, vol. 23, no. 1, January 1998
- Perrow, C., „The limits of Safety. The Enhancement of a Theory of Accidents”, *Journal of Contingencies and Crisis Management*, no. 2-4, 1994, pp. 212-220
- Petrescu, I. (2006). *Managementul crizelor*, Editura Expert, București
- Shrivastava, P. (1987). *Bhopal: Anatomy of a crisis*, Cambridge, MA: Ballinger Publishing Company, 1,4, pp. 283-292
- Center for Security Studies, ETH Zürich, *CSS Analysis in Security Policy*, no. 103, November 2011