

The economic antinomy

“The strategy of considering that there is an academic science, meant for teaching, interested in the discourse, respectable but out of touch with reality, on the one hand, and a living science, centred on fact and practiced by way of an expertise which is sensitive to ideological preferences, on the other hand, opens a conceptual rift and produces the proof for the epistemological immaturity of Economics.”

Economics builds its credibility in an improper manner: it is forced to answer to challenges from outside its field of relevance, and the solutions forwarded for specific problems are applied through political programs.

If we admit that Economics has fixed its methodological universe within the human action's perimeter of rationality, it seems clear that its cognitive performance does not support its practical one. For things to be in their right place, Economics would have to be able to limit itself to its sphere of meaning, while the solutions to problems of rationality should not be intermediated by political means.

The mix-up is somehow more complicated because the presence in practice of economic ideas takes the composite form of economic policies, especially at a macroeconomic level. The scientific constitution claimed by Economics remains murky, in any way different from that of any other social science, not just the natural sciences.

The split between the condition assumed by Economics – somewhat attested by its journey throughout the history of science – and the way in which economic solutions become reality through their employment by the political practice is explained by ideologies. Out of all the social sciences, Economics has the strongest predisposition for the ideological distortion of the process of implementation of its ideas in reality.

In fact, standard Economics is Political Economics: meaning a complex of theoretical perspectives with ideological propensities which insure the practical fundamentals sought by Politics with regard to development objectives. As a paradox, Economics tends to be more of a package of ideas destined for political purposes. In practice the goal is to administer resources made available by fiscal means and to politically distribute them towards sources circumscribed to interests filtered by ideologically restrictive criteria. In this situation, efficiency becomes a value structured by guidelines from outside of Economics. Proven efficient is only that which cannot interfere with political objectives.

The overturn of meaning is an epistemic defiance. The maximal extension of this perspective, which came to be the usual state for the understanding of Economics' position as Political Economics, makes even more evident the split between what Economics pretends to be and its pragmatic phenomenology. The strategy of considering that there is an academic science, meant for teaching, interested in the discourse, respectable but out of touch with reality, on the one hand, and a living science, centred on fact and practiced by

way of an expertise which is sensitive to ideological preferences, on the other hand, further enhances the epistemic rift.

The splitting of Economics is a proof of its epistemological immaturity, despite the call for the righteousness of imitating the model of experimental sciences, which have an elevated level of theory and a dynamic level of technology. It must be noted that on both these levels the experimental sciences keep their epistemic unity, while in the case of Economics the criteria are disjunctive. On the academic, pure-science level, there's rationality in an environment of consistency between hypotheses and conclusions, while on the level of factual reality the inconsistency between causes and effects is an ideological condition. Economic policies grow from the pool of ideologically defined interests and, in the end, not from the one of economic rationality.

Thus we can talk on a practical level about some economic ideas mixed with political ideas in a proportion which favours the latter. The delicate problem is to what extent can the contribution of Economics still be considered as representative.

There is no doubt that we find ourselves in a situation without an answer, even embarrassing for a theoretician, as long as the ingredient provided by Economics to solve real-life problems is seldom present.

What we can say is that we find ourselves in the dilemmatic situation of the existence of two Economics, rather similar to the existence of a Theoretical Physics and of an engineering, Experimental Physics. However, in the case of Economics the two perspectives are almost fully separated, both from the point of view of the object, as well as from a methodological standpoint.

Practically, we can speak about two economic sciences: one in accordance with the theoretical principles and another one consistent with ideological rules. The first is recognised as Economics, while the other as Political Economics. Economics asserts rationality as the space of economicity, while Political Economics focuses on the means necessary for managing the resources used in attaining certain social objectives defined by ideological terms.

Economics explains rationality with logic, while Political Economics describes pragmatically, in terms of possible rationality in the public space, the political action. Economics is science, Political Economics is action. The economic science has a large dose of ideal hypotheses; Political Science has a large dependency on political practice.

Economics has normative pre-eminence; Political Economics has positive prevalence.

Accepting the antinomy would correctly place in the equation of knowledge both the understanding and the explanation of ideas about rationality in the economy, as well as the possibility and the necessity of the presence of genuine economic ideas in the social action.

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Estimating the probability of stock market crashes for Bucharest Stock Exchange using stable distributions

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Abstract. *In this study we analyse the evolution of BET Bucharest Stock Exchange through an AR-GARCH model and we estimate the likelihood of extreme events using stable distributions.*

Using the time series of the Bucharest Stock Exchange main index BET we argue that stable distributions can significantly improve the prediction of an extreme event.

Keywords: stable distribution; financial crisis; stock market.

JEL Codes: G01, C10.

REL Code: 11B.

Introduction

Knowing the probability distribution of returns is essential for any statistical inference made about the stock market. In general, it is considered that major distribution characterizing the evolution of returns is the normal distribution (Gaussian) or its derivatives (e.g. log-normal distribution).

More recent papers (Rachev, 2007) show that stable distributions are a much better approach than classical distributions in financial modelling. The fact that the observed distribution of returns is heavy-tailed cannot be explained by a normal distribution.

The relationship between stable distributions and financial crisis has been addressed by Barunik, Vacha and Vosvrda (2010). In this study, they are estimating the parameters of stable distributions for US and Central Europe stock markets, using daily and intraday data. Analysing the distribution of returns for 2005-2009, and separately for the periods 2005-2007 (before the financial crisis) and 2007-2009 (the crisis), the authors conclude that there is a significant difference between the probability distribution of the returns before and during the financial crisis. Thus, the pre-financial crisis period has a small deviation from normal distribution, while the crisis period is characterized by a significant deviation from normality.

In our study we investigate the behaviour of Bucharest Stock Exchange index BET during 2000-2010, using daily data.

The study is structured as follows: first section contains a theoretical presentation of the stable distributions and their estimation methods, in the second section is estimated a model for prediction of extreme negative returns of BET and the last section is for conclusions.

1. Stable distributions

Stable distributions are a class of distributions which have the property of being invariant under linear combinations; Gaussian distribution is a special case of stable distributions.

The difficulty that occurs for stable distributions is that in most cases is not known an explicit form of the probability density function, but only the expression of the characteristic function. Thus, a random variable X follows a stable distribution with parameters $(\alpha, \beta, \gamma, \delta)$ (Nolan, 2011) if exists $\gamma > 0, \delta \in \mathbb{R}$ such as X and $\gamma \times Z + \delta$ have the same distribution, where Z is a random variable with the characteristic function

$$\phi(t) = E[e^{itZ}] = \begin{cases} \exp(-|t|^\alpha [1 - i\beta \tan(\frac{\pi\alpha}{2}) \text{sign}(t)]), \alpha \neq 1 \\ \exp(-|t| [1 + i\beta t \frac{2}{\pi} \text{sign}(t)(\ln(|t|))]), \alpha = 1 \end{cases}.$$

In the above notations $\alpha \in (0, 2]$ is the stability index, controlling for probability in the tails (for Gaussian distribution $\alpha = 2$), $\beta \in [-1, 1]$ is the skewness parameter, $\gamma \in (0, \infty)$ is the scale parameter and $\delta \in \mathbb{R}$ is the location parameter.

A random variable X follows a stable distribution $S(\alpha, \beta, \gamma, \delta; 0)$ if his characteristic function has the form

$$\phi(t) = E[e^{itX}] = \begin{cases} \exp(-\gamma^\alpha |t|^\alpha [1 + i\beta \tan(\frac{\pi\alpha}{2}) \text{sign}(t)(|t|^{1-\alpha} - 1)] + i\delta t), \alpha \neq 1 \\ \exp(-\gamma |t| [1 + i\beta t \frac{2}{\pi} \text{sign}(t)(\ln(|t|))]) + i\delta t, \alpha = 1 \end{cases}.$$

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The parametrisation $S(\alpha, \beta, \gamma, \delta; 1)$ has the advantage that it is more suitable for algebraic manipulations, although his characteristic function is not continuous for all parameters.

The parametrisation $S(\alpha, \beta, \gamma, \delta; 0)$ is suitable for numerical simulations and statistical inference, although the expression of characteristic function is more difficult to utilise in algebraic calculus.

Nolan (2011) shows that the two parametrisations are equivalent; if

$$X \sim S(\alpha, \beta, \gamma, \delta_1; 1) \text{ and } X \sim S(\alpha, \beta, \gamma, \delta_0; 0), \text{ then } \delta_0 = \begin{cases} \delta_1 + \beta \gamma \tan \frac{\pi\alpha}{2}, \alpha \neq 1 \\ \delta_1 + \beta \frac{2}{\pi} \gamma \ln \gamma, \alpha = 1 \end{cases}.$$

The behavior of stable distributions is driven by the values of stability index α : small values are associated to higher probabilities in the tails of the distribution.

2. AR-GARCH model for BET returns

It is generally known that the time series of financial asset returns exhibit special characteristics such as volatility clustering phenomenon, the presence of heavy tails, deviation from normality, stochastic volatility.

Stochastic volatility models could capture the real properties of time series of returns, particularly the phenomenon of stochastic volatility and volatility clustering.

Also, many empirical research shows that there is a correlation structure in the time series of returns, meaning that the daily returns have a memory of at least one day.

To analyse the impact of financial crisis on Bucharest Stock Exchange, we used daily data of BET Index, for the period 2000-2010.

We have computed the logreturns $r_t = \ln P_t - \ln P_{t-1}$, P_t being the closing price of BET index at time t .

To model the evolution of BET returns, we have used an AR(1)-GARCH(1,1) model, reflecting both the temporal memory and the stochastic volatility.

Thus, let's assume that the logreturns r_t have the following expression:

$$\begin{cases} r_t = \mu + \phi_1 r_{t-1} + \varepsilon_t \\ \varepsilon_t = \sigma_t z_t \\ \sigma_t^2 = \omega + \alpha_1 \varepsilon_{t-1}^2 + \beta_1 \sigma_{t-1}^2 \end{cases} .$$

In the above model, z_t is a sequence of *iid* zero mean random variables.

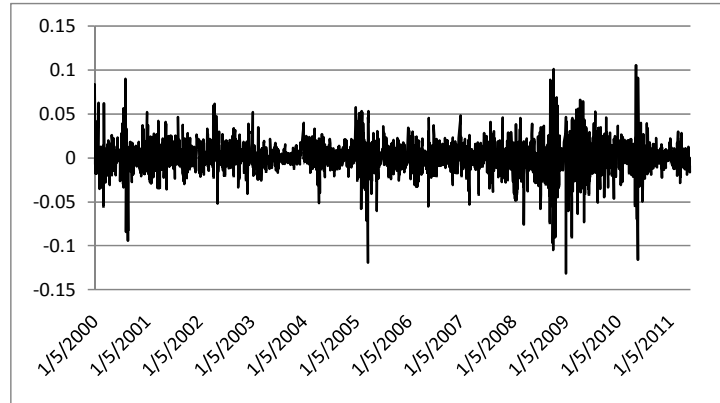


Figure 1. Daily logreturns of BET Index

The AR-GARCH model could be a tool for estimating the probability of extreme negative values of returns.

In the following we consider as negative extreme value of daily return any value less than -10%; from 2000 to 2011 were four such extreme events.

Table 1

Extreme negative values of BET returns (2000-2011)

Date	BET Closing Price	Logreturn r_t
1/7/2009	2741.46	-0.13117
3/28/2005	4504.4702	-0.11902
5/25/2010	4365.9902	-0.11612
10/10/2008	3187.77	-0.10454

In order to estimate the probability of a stock market crash at the time t^* , we are using the following strategy (Kim, Rachev et al., 2010):

- Estimate the parameters of AR-GARCH model with Maximum Likelihood, using data for period $[1, t^* - 1]$, and assuming that ε_t follows a normal distribution;
- Estimate the parameters of AR-GARCH model with Maximum Likelihood, using data for period $[1, t^* - 1]$, and assuming that ε_t follows a t distribution;
- Residuals from the model with Student distribution are used to estimate the parameters of a stable distribution $S(\alpha, \beta, \gamma, \delta; 0)$;
- Probability of a stock market crash at moment t^* is computed as:

$$P(\varepsilon_t \leq \varepsilon_{t^*-1}^*);$$

- The recurrence interval of such extreme events is estimated as $\frac{1}{250P(\varepsilon_t \leq \varepsilon_{t^*-1})}$.

Table 2

Parameters of the stable distribution estimated from AR-GARCH residuals

Date	BET Index	BET return	α	β	γ	δ
1/7/2009	2741.46	-0.13117	1.5969	-0.0202	8.72E-03	5.43E-06
3/28/2005	4504.47	-0.11902	1.5385	0.1069	7.64E-03	-1.71E-04
5/25/2010	4365.99	-0.11612	1.5776	-0.0189	9.32E-03	2.98E-05
10/10/2008	3187.77	-0.10454	1.6348	-0.0169	8.65E-03	-1.29E-05

The parameters of the estimated stable distributions for the four extreme events show extreme deviations from normal distribution.

Also, the estimated volatility of the model AR-GARCH with stable innovations has a more significant temporal memory than the model with Gaussian innovations.

Table 3

AR-GARCH parameters

Date	Model	μ	ϕ_1	ω	α_1	β_1
1/7/2009	Normal	0.001	0.159	0.00001	0.189	0.783
	Stable	0.001	0.135	0.00001	0.252	0.719
3/28/2005	Normal	0.001	0.170	0.00001	0.142	0.839
	Stable	0.001	0.147	0.00001	0.228	0.755
5/25/2010	Normal	0.001	0.132	0.00001	0.204	0.780
	Stable	0.001	0.117	0.00001	0.235	0.753
10/10/2008	Normal	0.001	0.158	0.00001	0.176	0.800
	Stable	0.001	0.133	0.000	0.239	0.733

Table 4

Probability of stock market crash

Date	r_{t^*}	Model	$P(r_t < r_{t^*})$	Recurrence interval (years)
1/7/2009	-0.13117	Normal	1.210E-16	3.31E+13
		Stable	0.0021	1.910
3/28/2005	-0.11902	Normal	5.402E-14	7.40E+10
		Stable	0.0025	1.618
5/25/2010	-0.11612	Normal	2.154E-10	1.86E+07
		Stable	3.283E-03	1.218
10/10/2008	-0.10454	Normal	1.953E-10	2.05E+07
		Stable	0.0022	1.804

Estimating the probability of an extreme negative return, it appears that the normal distribution model gives overly optimistic predictions. Thus, on 10 October 2008, when BET had a negative correction of 10% and the Stock Exchange activity was stopped, the estimated probability of Gaussian model is $1.953 \cdot 10^{-10}$, much smaller than the probability of winning the lottery (at Lotto 6/49 this probability is $7.151 \cdot 10^{-8}$). In addition, the recurrence interval of such an event is estimated with normal distribution in $2.05 \cdot 10^7$ years, while, for comparison, the age of the universe is estimated to be around $13.75 \cdot 10^9$ years.

The models based on stable distributions of these extreme events gives a more realistic probability of occurrence and the recurrence interval is about 1-2 years, which gives a better fit to the empirical reality.

Conclusions

Modelling the stock market has long been based on Gaussian paradigm, that returns follow a normal distribution. Although it has many useful properties, the normal distribution severely underestimates the probability of extreme events.

In this study we have shown, using the time series the BET Index from Bucharest Stock Exchange that stable distributions can significantly improve the prediction of an extreme event.

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Analysis of the Romanian employment rate. A panel data approach

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Abstract. *This paper examines the evolution of the employment rate in Romania. I employ a panel data approach, considering the 42 counties, in order to explore the relationship between labour productivity, average earnings, investments and employment. The results reveal a positive impact of the average wage and gross investments and a negative impact of the labour productivity on employment rate.*

Keywords: employment; average earnings; labour productivity; panel data; regional analysis.

JEL Codes: C23, E24, J21.

REL Codes: 12G, 12I.

1. Introduction

This paper examines the evolution of the employment in Romania. The analysis is conducted over the 42 counties in Romania, for the period 2000-2008. I use a panel data approach to explore the relationship between labour productivity, average earnings, investments and employment.

Technology is important in explaining income levels across countries. Recent work has shown, however, that the major sources of technical change leading to productivity growth in OECD countries are not domestic, but abroad (Keller, 2004). One of the sources of technical change is the level of the investments, especially the foreign direct investment (Montes-Rojas, Santamaria, 2007). Therefore, if the level of the investments is growing, the labour productivity might increase, leading to different changes at the labour force market level: wages can go up and the employment down.

There is a vast literature regarding the sources of labour productivity and concerning the effects on the employment rate. A number of studies – Gali (1999), Francis and Ramey (2002), and Basu, Fernald and Kimball (2004) – have reported that favourable technology shock may reduce total hours worked in the short run. On the other hand, Mollick and Cabral (2009) examined the effects of labour productivity and total factor productivity on employment across Mexican manufacturing industries, employing panel data methods. They observed that productivity exerts a procyclical, positive effect on employment. Chang and Hong (2006) test whether technological improvement of an industry raises or lowers employment in US manufacturing; they discovered that the effect varies vastly across industries (there are far more industries in which both employment and hours per worker increase in the short run).

For the Romanian case, Aparaschivei, Vasilescu and Pirciog (2011) have tested the effect of labour productivity on employment considering 12 major activities in Romanian economy. Their results suggested a negative impact of the labour productivity on employment.

The rest of this paper is organized as follows: Section 2 explains the methodology used and Section 3 describes the data and presents the empirical results. Section 4 presents the main conclusions of this paper.

2. Methodology

The econometric analysis is based on panel data estimation, using the Stata software. A panel data regression has the form:

$$y_{it} = \alpha_i + x_{it}' \times \beta + \varepsilon_{it} \quad i=1...N, t=1... T \quad (1)$$

The i subscript denotes the cross-section dimension and t denotes the time-series dimension. Most of the panel data application utilizes a one-way error component model for the disturbances (Baltagi, 2008):

$$u_{it} = \alpha_i + \varepsilon_{it} \quad (2)$$

There are several different linear models for panel data. The individual fixed effects may be either assumed to be correlated with the right hand side variables (fixed effects model: FEM) or be incorporated into the error term (random effects model: REM) and assumed uncorrelated with the explanatory variables (Baum, 2001).

The first step when working with panel data is to test whether the data series can be estimated through a panel data model or through a pooled OLS. Baltagi (2008) considers that the question is “To pool or not to pool the data?”

A very simple poolability test has the null hypothesis the OLS model and the alternative hypothesis the FE model. The test practically tests the presence of the fixed effects.

The next step would be to decide whether a FE model or a RE model is more appropriate. The decision between the two models can be made based on different tests, economic reasons and/or information criteria. Baltagi suggests all of these methods; hence one can estimate both models and choose between them according to the information criteria and/or based on economic arguments. When one cannot consider the observations to be random draws from a large population – for example, if the data refers to states or provinces – it often makes sense to think of the individual effect as parameters to estimate, in which case one should use fixed effects methods (Wooldridge, 2002).

Considering the case of the fixed effects model, the estimator that is mostly used is called the within estimator. It performs OLS on the mean-differenced data. Because all the observations of the mean-difference of a time-invariant variable are zero, using a time-invariant variable is not recommended.

The fixed-effects α_i can be eliminated by subtraction of the corresponding model for individual means $\bar{y}_i = \bar{x}_i' \beta + \bar{\varepsilon}_i$ leading to the within model or mean-difference model:

$$(y_{it} - \bar{y}_i) = (x_{it} - \bar{x}_i)' \beta + (\varepsilon_{it} - \bar{\varepsilon}_i) \quad (3)$$

The within estimator is the OLS estimator of this model. Because the fixed effects have been eliminated, OLS leads to consistent estimates of b even if α_i is correlated with x_{it} as is the case here.

This result is a great advantage of panel data. Consistent estimation is possible even with endogenous regressors, provided that x_{it} is correlated only with the time-invariant component of the error, α_i , and not with the time-varying component of the error, ε_{it} .

For the random-effects model, the α_i from (1) is incorporated into the error term and assumed uncorrelated with the explanatory variables. Considering this assumption, and the relations (1) and (2) we have:

$$y_{it} = x_{it}'\beta + u_{it} \quad i = 1 \dots N, t = 1 \dots T \quad (4)$$

Because the α_i is incorporated in u_i in each time period, we might say that we have to deal with autocorrelation of the error. Therefore the general least square method is used for the estimation of a RE model.

An advantage of the RE model is that it allows the use of explanatory variables that are constant over time, but a great disadvantage is that if the FE model would be more appropriate those estimates would be inconsistent.

The default standard errors assume that, after controlling for the fixed effects α_i , the error ε_{it} is independent and identically distributed (i.i.d) (Cameron, Trivedi, 2009).

Also, the model is estimated assuming the homoskedasticity of the residuals. When heteroskedasticity is present the standard errors of the estimates will be biased and one should compute robust standard errors correcting for the possible presence of heteroskedasticity. The most likely deviation from homoskedastic errors in the context of panel data is likely to be error variances specific to the cross-sectional unit. When the error process is homoskedastic within cross-sectional units, but its variance differs across units we have the so called groupwise heteroskedasticity.

Another problem is the serial correlation of the idiosyncratic error term in a panel-data regression. Wooldridge proposed a test for checking the autocorrelation of the residuals.

In order to account for these problems, one should estimate the regression model using robust standard errors. Some authors have provided a number of tests in order to identify the problems encountered (Drukker, 2003, Baum, 2001, Green, 2000). Thus, the *xtserial* command in STATA tests for the autocorrelation of the residuals and the *xttest3* command tests for the homoskedasticity.

For the fixed effect model, the *xtscc* command in STATA, implemented by Hoechle (2007), corrects the error structure of a model, assuming that the errors are heteroskedastic, autocorrelated up to some lag and possibly correlated between the groups (panels).

For the random effects model, the STATA command *xtgls* fits panel-data linear models by using feasible generalized least squares. This command allows estimation in the presence of AR(1) autocorrelation within panels and cross-sectional correlation and heteroskedasticity across panels.

3. Empirical results

The data

The data used in this study are: the employment rate (*empl*), the gross average earnings (*earn*), the gross investments (*invest*) and the labour productivity (*prod*). The source of the data is the National Institute of Statistics, the main collector and publisher of statistical data in Romania.

The labour productivity is considered here as the ratio of gross domestic product to labour. The data expressed in Lei – the Romanian currency – were deflated with the consumer price index (2000=100). The time period ranges from 2000 to 2008. The data refers to the 42 counties in Romania.

Descriptive analysis

Figure 1 presents the gross investments and labour productivity for each county in 2008, against the employment rate.

As can be noticed, Bucharest receives the most investments in Romania. Also, in Bucharest the labour productivity and the employment rate are relatively high. Ilfov is placed second, but far behind the capital city. As a conclusion, I cannot say that in counties with high labour productivity or high investments level, the employment level is also high.

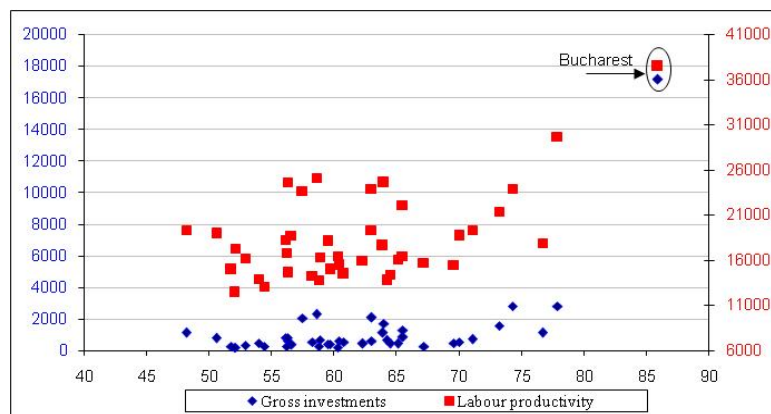


Figure 1. The gross investments and labour productivity against the employment rate, county level, 2008

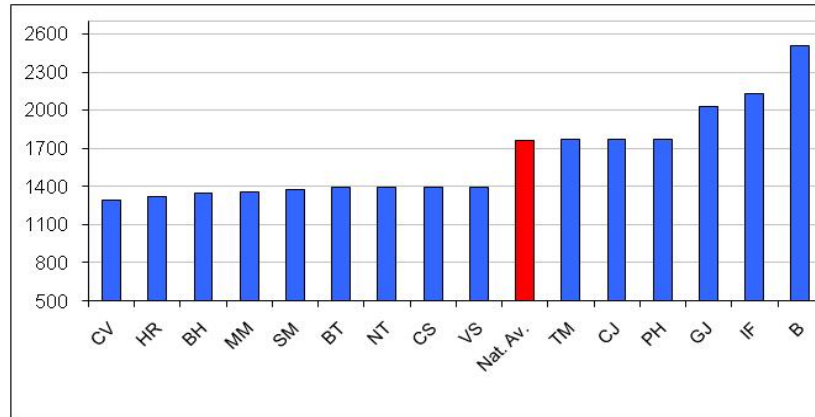


Figure 2. The level of the average wage in 2008, current prices

In Figure 2 I plotted the wages in current prices, sorting the counties and highlighting the national average wage. As expected, in Bucharest are earned the highest wages. In Timis, Cluj, Prahova, Gorj and Ilfov the wages are above the national average, which was 1,761 Lei in 2008. The smallest wage is registered in Covasna, being 50% lower than the average wage in Bucharest.

In Figure 3 I represented the level of wages (current prices) against the employment rate. It is easy to observe that, once again, the capital city and Ilfov County have high wages and employment rates.

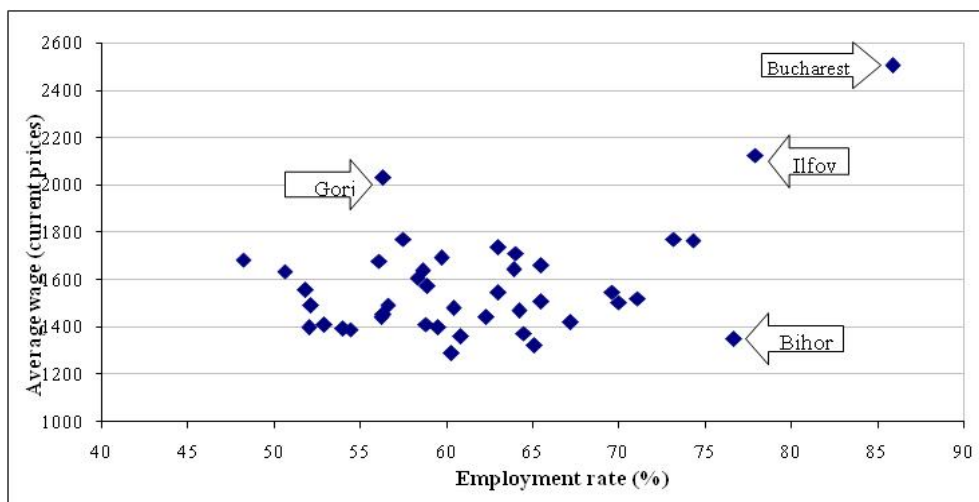


Figure 3. The average wage (current prices) against the employment rate, 2008

Furthermore, for counties like Gorj and Bihor I encountered a different situation: on one hand, in Gorj the employment rate is low, but the wages are high, on the other hand in Bihor the employment rate is high, but the wages are low. Once again, I cannot say if the relation between these two variables is positive or negative.

Table 1 presents the growth rates for the variables used in the analysis. For the variables expressed in Lei I used real values. One can easily observe that the employment rates did not change much in the analysed period, but I must say that in Romania the effects of the economic and financial crisis started to feel from 2009. Under these conditions, the largest decrease in the employment rate was registered in Botosani, with 19% and the highest increase was registered in Bucharest, of 47%.

Concerning the average monthly gross earnings, the variations are relatively similar between counties. The smallest increase was 78% registered in Hunedoara County and the highest in Iasi (151%).

Labour productivity growth has values between 64% (in Bucharest) and 163% (in Calarasi County). It might be surprising the fact that although in 2008 Bucharest registered the highest productivity, in terms of growth rate the capital city registered the lowest one in the analyzed period.

Regarding the evolution of the gross investments, they dropped by no more than 30% (Dolj County) and increased up to 622% (Ilfov). In Bucharest they grew by only 30%.

Table 1

Growth rates, 2000-2008				
County	Employment rate	Average real wage	Gross investments	Labour productivity
Alba	-0.06	1.21	0.83	1.58
Arad	0.05	1.16	-0.08	0.94
Arges	-0.10	1.29	2.17	1.88
Bacau	-0.12	1.26	1.23	1.26
Bihor	-0.04	1.02	1.27	1.32
Bistrita-Nasaud	0.03	1.10	3.03	1.04
Botosani	-0.19	1.29	1.35	1.46
Braila	-0.10	1.23	-0.15	1.59
Brasov	-0.01	1.07	3.21	1.11
Buzau	-0.07	1.10	2.09	1.23
Bucharest	0.47	1.28	0.30	0.64
Calarasi	-0.12	1.34	1.51	1.63
Caras-Severin	-0.11	1.11	2.21	1.37
Cluj	0.10	1.30	3.54	0.97
Constanta	0.09	0.91	1.27	1.01
Covasna	-0.05	1.02	-0.02	0.66
Dambovita	-0.13	1.07	2.83	1.34
Dolj	-0.08	1.02	-0.30	1.55

County	Employment rate	Average real wage	Gross investments	Labour productivity
Galati	-0.12	0.84	1.06	1.15
Giurgiu	-0.17	1.22	4.14	1.59
Gorj	-0.15	1.07	0.02	1.50
Harghita	-0.08	1.09	1.57	0.93
Hunedoara	0.00	0.78	0.26	1.28
Ialomita	-0.03	1.06	2.06	1.12
Iasi	-0.10	1.51	1.64	1.38
Ilfov	0.20	1.23	6.22	1.32
Maramures	-0.09	1.10	2.43	1.32
Mehedinti	-0.10	1.05	3.60	1.37
Mures	-0.06	1.09	1.43	0.92
Neamt	-0.17	1.16	1.20	1.09
Olt	-0.11	0.96	2.87	0.98
Prahova	0.01	1.13	2.78	1.47
Salaj	-0.09	1.14	2.81	1.41
Satu Mare	-0.08	1.19	2.33	1.00
Sibiu	0.06	1.31	4.31	1.41
Suceava	-0.15	1.29	1.98	1.23
Teleorman	-0.16	1.01	2.62	1.32
Timis	0.07	1.48	2.61	1.37
Tulcea	-0.08	1.20	1.08	1.50
Valcea	-0.07	1.09	1.20	0.99
Vaslui	-0.18	1.18	2.39	1.59
Vrancea	-0.15	1.18	1.69	0.94

Econometric analysis

The relation estimated in this analysis has the following form:

$$empl_{it} = c + \beta_1 \times learn_{it} + \beta_2 \times linvest_{it} + \beta_3 \times lprod_{it} + \alpha_i + \varepsilon_{it} \quad (5)$$

where:

$empl_{it}$ = the employment rate for county i in year t ;

$learn_{it}$ = the natural logarithm of the average real gross earnings for county i in year t ;

$linvest_{it}$ = the natural logarithm of the real gross investments for county i in year t ;

$lprod_{it}$ = the natural logarithm of the labour productivity (real values) for county i in year t ;

c = the constant;

α_i = individual effects;

ε_{it} = the error of the model.

As Baltagi (2008) mentioned, the question is whether to pool or not to pool the data. So, a poolability test is necessary. The results initially obtained in Stata suggests the rejection of the null hypothesis that all α_i are zero (the OLS

estimator is biased and inconsistent and I must accept the presence of the individual effects and therefore a panel data estimation is better than a pooled OLS).

The next step was to run a Hausman test in order to decide whether I have a random-effects model or a fixed-effects one. The probability is less than 0.01, so I reject the null hypothesis that individual effect are random and that RE provides consistent estimates. Although the Hausman test (Figure 4) suggests the use of the FE model for this data set, I will estimate both type of models (FE and RE model). The decision to estimate both models is based on Baltagi's suggestion to also use the information criteria in order to choose between FE and RE models.

	Coefficients		(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
	(b) f	(B) r		
learn	14.65966	10.89781	3.761848	.6851313
linvest	1.018033	1.741926	-.7238936	.1596067
lprod	-18.62437	-15.77012	-2.854251	.5082089

b = consistent under Ho and Ha; obtained from xtreg
B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

chi2(3) = (b-B)'[(V_b-V_B)^(-1)](b-B)
= 76.14
Prob>chi2 = 0.0000
(V_b-V_B is not positive definite)

Figure 4. The Hausman test

The standard error component model assumes that the regression disturbances are not serially correlated and are homoskedastic. I tested both the FE and the RE model and the results are presented in Table 2.

Table 2

Results of the autocorrelation and heteroskedasticity tests

Models/Tests	Autocorrelation Ho: no autocorrelation	Heteroskedasticity Ho: homoskedasticity
The FE model	F(1, 41) = 63.861 Prob > F = 0.0000	chi2 (42) = 1855.86 Prob>chi2 = 0.0000
The RE model	F(1, 41) = 63.861 Prob > F = 0.0000	chi2 (42) = 9332.87 Prob>chi2 = 0.0000

As can be seen from Table 2, the errors of both models suffer from heteroskedasticity and serial correlation. To ensure the validity of the results, I must obtain robust estimations.

For the FE model, the STATA command *xtscc*, *fe* performs fixed-effects regression with Driscoll and Kraay standard errors (the error structure is

assumed to be heteroskedastic, autocorrelated up to some lag and possibly correlated between the groups). For the RE model, the command is *xtgls, panels (correlated) corr (ar1)* (the error structure is assumed heteroskedastic with cross-sectional correlation and common AR (1) coefficient for all panels).

The robust estimation results are presented in Table 3.

Table 3

Estimations through FE and GLS		
$emp_{it} = cons + b_1 \times learn_{it} + b_2 \times invest_{it} + b_3 \times lprod_{it} + \alpha_i + \varepsilon_{it}$		
Models	FE model	RE model
b_1	14.66* (5.06)	-0.30 ^a (-0.15)
b_2	1.02*** (1.78)	1.16* (3.58)
b_3	-18.62* (3.04)	-2.74** (-2.08)
cons	129.96* (5.93)	67.28* (5.79)
AIC	1823.772	2471.209
SC	1839.511	2486.948

Note: The fixed effects term (α_i) is included in the estimation but is omitted in the table. The symbols *, ** and *** refer to levels of significance of 1%, 5% and 10%; “a” denotes no significance. In parenthesis are reported the t-statistics for the FE model and z-statistics for the RE model.

For the FE model all the coefficients are statistically significant at 1% level, except the coefficient of the investments, which is significant at 10% level. For the RE model, the coefficient of the investments and the constant are significant at 1% level, the coefficient of the labour productivity is significant at 5% level. The coefficient of the average wage is not statistically significant.

The Hausman test suggested that the FE model is the appropriate model in this case, but because Baltagi recommends attention when choosing between the two models, I decided to choose between them according to the information criteria. The analysis confirmed the Hausman test result. Moreover, I cannot consider that the observations are random draws from a large population and therefore the fixed effects model is the best model to use.

Considering the FE model, I obtained that if the average wage will increase by 10%, the employment rate will also increase, but with only 1.46%. The relation between the two variables indicates that when wages are going up, more individuals are willing to search for a job and eventually get employed.

The impact of the gross investments upon the employment rate is also positive, but far smaller than that of the wages. Thus, if the investments increase by 10%, the employment rate will increase with only 0.1%.

Regarding the effect of the labour productivity, this effect is negative, in other words increases in productivity lead to labour-saving decisions as in Galí (the countercyclical productivity case). The coefficient obtained through the model was -18.62, so if the labour productivity will increase by 10%, the employment rate will decrease by 1.86%. Price rigidity prevents demand from changing (even if the marginal costs gets lower due to productivity gains) therefore firms tend to produce the same output with less labour.

4. Conclusions

This paper analyzes the relation between the employment rate and average wage, gross investments and labour productivity, considering the 42 counties in Romania. The period analyzed in this study is 2000-2008.

I decided to estimate a panel data model and the decision between the FE and the RE model was made based on the Hausman test and information criteria. In the end, the FE model was the model that fit the data properly.

The econometric results showed a positive impact of the average wage and gross investments and a negative impact of the labour productivity on employment rate, considering the panel data used.

I hope to make a contribution by using data from an emerging country to investigate the relationship between productivity, wages, investments and the employment rate.

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Consumer characteristics influencing milk consumption preference. The Turkey case

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Abstract. *The objective of this study was to investigate packed and unpacked fluid milk consumption and preferences among Turkish households using the data from a consumer survey. Multinomial logit procedure was used to investigate the selected socioeconomic and demographic characteristics of consumers that determine households' fluid milk consumption choices among packed, unpacked and both packed-unpacked milk consumption choices. Based on the results, 30.5% of respondents consumed only unpacked fluid milk, 36.3% consumed only packed fluid milk and 33.1% of respondents consumed both unpacked and packed fluid milk. Empirical results indicate that better educated household heads, higher income and larger households, and households with children under seven years of age consumed more packed milk than others. A similar result was found for unpacked milk consumption, except for a negative effect of education, working wife and income. Milk production and manufacturing firms are increasing in Turkey; results of this study provide some relatively new information about the consumers' fluid milk consumption decision.*

Keywords: consumption; consumer preference; household survey data; multinomial logitanalysis; Turkey.

JEL Codes: D12, C35.

REL Code: 7B.

1. Introduction

Milk is the most essential food to humans and contains nearly all nutrients. Milk and milk products are an important source of many nutrients as protein, calcium, phosphorus, vitamin B2 and vitamin B12. Those products should be consumed especially by adults female, children and young people and all ages each day (Unal, Besler, 2006).

Milk provides calcium necessary for strong bones, proteins needed for brain development and tissue growth, vitamin A for normal vision, and vitamin D for absorption of calcium (Black et al., 2002, Lonnerdal, 2003). People are advised to consume two glasses of milk a day. It is reported that a child who drinks a glass of milk every day meets 35 per cent of protein requirements, 52 percent of the calcium requirement, 98 percent the requirement of vitamin B12 (Setbir, 2009).

Although intake of a sufficient amount of fluid milk and milk products is recommendatory for healthy lifestyle of humans, consumers' fluid milk consumption behavior and preferences may vary among countries. There is a significant gap between developed and developing countries in terms of fluid milk consumption.

Consumption of fluid milk in Turkey is quite low compared to those of European countries. Economic reasons often limit fluid milk consumption in Turkey. Annual per capita consumption of fluid milk in Turkey is about 24 liters whereas it is above 100 liters in European Countries. In developed countries, consumption of this important food source is given a special importance. Annual per person consumption of fluid milk is 139 liters in Finland, 100 liters in England and 63 liters in Italy (Setbir, 2009).

Annual per capita consumption of dairy products, with fluid milk consumption is 255 in the US and 262 kilograms in the EU. In Turkey a total of 166 kg milk per capita is consumed annually, 26 kg of which is fluid milk and 140 kg is dairy products. Consumption of dairy products (as equivalent milk) is 85 kilograms cheese, 31 kilograms yogurt, 21 kilograms butter, 1.36 kilograms ice cream and 1.54 kilogram milk powder (TOBB, 2010).

In Turkey, dairy sector has developed, but there are various problems in the sector from production to last link of the consumption. The number of animals per farm and milk yield obtained per animal is low. Most farmers do not produce milk to sell at the market. Milk is collected from small scale businesses and this situation increases the cost of the industrialists. This is reflected in consumer prices. Under these conditions, low income groups cannot afford milk and decrease their demand (TZOB, 2008).

According to statistics, approximately 20% of raw milk produced in Turkey is consumed at the source. The milk supply to the market is processed by modern enterprises (27%) and by medium-sized enterprises or dairies (33%). 20% of milk is sold as open by hand seller. However, in developed countries, more than 90% of raw milk is sold in modern factories (TOBB, 2010).

Looking at these rates; milk consumption pattern in developing countries such as Turkey is quite different from more developed countries. As a developing country in Turkey, fluid milk is still consumed as unpacked milk, which is often unhygienic. Recent researches results showed that unpacked fluid milk contained pathogenic organisms above tolerable limits in Turkey (Altun, Besler, Unal, 2002).

There are several reasons why some consumers prefer unpacked milk whereas others prefer packed milk. Unpacked milk is preferred by some consumers because it is cheaper than packed milk and delivered at the doorstep with no additional cost. Unpacked fluid milk is mainly delivered to consumers directly by individual farmer-distributors in Turkey. The milk sellers deliver unpacked fluid milk directly from farms to residential areas, doorsteps and come to the same delivery point every day or certain days of week. This marketing structure enables farmer-distributors to avoid paying tax and sale fees. More importantly, unpacked fluid milk is delivered to consumers without having any safety controls. Furthermore, milk sellers incur no packing costs since consumers supply their own milk containers. Hence, the price of unpacked fluid milk is much lower than processed milk, and this might stimulate households, especially those with a low income, to select unpacked fluid milk as their primary fluid milk source. In addition to price concerns, processing fluid milk into yogurt and some other usages are also important factors with respect to purchasing unpacked fluid milk (Hatirli et al., 2004).

Consumers prefer packed milk because of its guarantee of quality, long shelf life, and packaging to carry and store. The desire to purchase a safe food product is also a reason to prefer packed fluid milk. In fact, not only education, age, income, and other demographic characteristics of consumers influence pasteurized and sterilized milk consumption choices but also factors such as increasing consumer awareness and concerns about health and food safety, and advertising play important roles (Akbay, Yildiz Tiriyaki, 2008).

Today, in developed countries, fluid milk consumption pattern has changed. Due to health concerns, aging of the population, increased education and income level factors in developed countries, low-fat milk consumption has shown an increase but per-capita consumption of whole-fat milk has decreased (Jensen, 1995). In contrast, consumption of fluid milk in developing countries

has not peaked yet and unpacked fluid milk takes a significant share of fluid milk consumption (Hatirli et al., 2004).

The study focused on socioeconomic and demographic factors influencing consumers' different fluid milk consumption preferences. Our study includes two types of fluid milk: unpacked milk and packed fluid milk.

There is a considerable literature on the effects of socioeconomic and demographic characteristics on milk consumption patterns and preferences. Many studies have investigated consumers' attitudes toward aggregate fluid milk purchases and consumption (Ward, Dixon, 1989, Gould et al., 1990, Reynolds, 1991, Cornick et al., 1994, Gould, 1996, Watanabe et al., 1997, 1998, Green, Park, 1998a, Hsu, Kao, 2001, Celik et al., 2006, Pazarlioglu et al., 2006, Gunden et al., 2011). One finding of these studies is that socioeconomic and demographic factors can be important in determining consumer's preference and milk consumption.

There are several studies which have focused on aggregate consumption of individual milk such as whole milk, low-fat milk, and skim milk (Briz et al., 1998, Cornick et al., 1994, Gould, 1996, Gould et al., 1990, Green, Park, 1998a, Jones, Akbay, 2000, Schmit et al., 2002), on aggregate milk consumption (Capps, Schmitz, 1991, Ward, Dixon, 1989) and on private and national brands milk (Akbay, Jones, 2005, Green, Park, 1998b, Jones et al., 2003).

However, investigation of the characteristics of consumers who exhibit preference specifically toward unpacked and packed milk, such as sterilized and pasteurized milk, are more important for Turkey. Because in Turkey other functional uses of the milk is not yet widely.

A few studies focused on milk consumption decisions of consumers for a specific region, effects of socioeconomic and demographic factors on milk consumption decisions in Turkey. Hatirli et al. (2004) studied the factors affecting fluid milk purchasing sources with respect to packed and unpacked fluid milk products in Turkey, Simsek et al. (2005) investigated drinking milk consuming habits of 1,000 interviewers representing four different social and economic groups, Akbay and Yildiz Tiriyaki (2008) investigated unpacked and packed fluid milk consumption patterns and preferences among Turkish households. Another study of Yildiz Tiriyaki and Akbay (2008) related consumers' fluid milk consumption and preference in Turkey Kilic et al. (2009) analyzed unpacked and packed fluid milk preferences using consumer survey data from Samsun province of Turkey.

2. Data and method

Data used in this analysis were based on household cross-sectional data collected by the research team, conducted in September 2011 for the urban area of Tokat province in Turkey. The survey was carried out on consumers using face to face questionnaire. In this study, proportional stratified sampling method was employed. Proportional stratified sampling was based on geographical location of households for each district in the population. The major advantage of this sampling method is that it guarantees representation of defined groups in the population. Hence, it improves the precision of inferences made to the full population. For this purpose, Tokat province was divided into four geographical locations for survey data. There are significant socioeconomic differences among the households across these districts. Before collecting data, a pilot survey was carried out by a group of randomly selected households and these pre-tested surveys were not included in the final data set. There are around 137,000 households living in Tokat province.

A random sample of 347 households was surveyed. In the questionnaire form, households answered questions about their choices of purchasing fluid milk alternatives and provided socioeconomic information.

Multinomial logit model was used for analysis of households' fluid milk choices. According to the objectives of this article, multinomial logit model was used to analyze households' packed and unpacked milk consumption decisions as a function of socioeconomic and demographic factors. Multinomial logit model describes the behavior of consumers when they are faced with a variety of goods with a common consumption objective. However, the goods and choices must be highly differentiated by their individual attributes. The multinomial logit model has been used widely in some studies such as Wei et al. (2004); Pundo and Fraser (2006); Chidmi (2007); Timothy (2007); Akbay and Yildiz Tiriyaki (2008); Burda et al.(2008); Antonopoulou et al. (2009); James et al. (2009); Bajari et al. (2010); Caglayan and Dayioglu (2011); Christopher et al. (2011); Moser and Raffaelli (2012); Pulina, (2010); Matin et al. (2012); Moser and Raffaelli (2012); Aprile et al. (2012).

To analyze households' fluid milk consumption behavior, we applied chi-square test of independence and multinomial logit model. Chi square test of independence was used to investigate the effects of socioeconomic and demographic characteristics on consumers' packed and packed fluid milk consumption behavior. Multinomial logit procedure was used to determine the extent to which selected socioeconomic and demographic characteristics of consumers influence these fluid milk types.

A different sort of model is necessary to deal with unordered responses. The most popular of these is the multinomial logit model, sometimes called the multiple logit models, which have been widely used in applied work (Davidson, MacKinnon, 2004).

According to the responses, dependent variables were created from the data, which indicated the consumption of unpacked fluid milk (1), packed fluid milk (2), and both unpacked and packed fluid milk (0) (Greene 2002).

The multinomial logit model for fluid milk consumption preference is

$$Prob(Y_i = j) = \frac{e^{\beta_j' x_i}}{\sum_{k=0}^J e^{\beta_k' x_i}} \quad \text{for } j = 0, 1, \dots, J. \quad (1)$$

where:

i index the observation, or individual, j and k index the choices, Y_i is the predicted probability of fluid milk consuming households selecting the J^{th} alternative, x_i is a vector of variables including education level and age of household head, household size, having working housewife, presence of children less than seven years old, and household income and β_j are vectors of unknown parameters.

The estimated equations provide a set of probabilities for the $J + 1$ choice for a decision maker with characteristic x_i . Before proceeding, we must remove indeterminacy in the Multinomial logit model which is under identified in the current form in Eq. (2). In order to identify the parameters of the model, it is required to remove indeterminacy in the model. We normalized the model assuming $\beta_0 = 0$ that is reference choice is “packed and unpacked fluid milk”. Eq. (2) can be expressed as:

$$Prob(Y_i = j | x_i) = \frac{e^{\beta_j' x_i}}{1 + \sum_{k=1}^J e^{\beta_k' x_i}} \quad \text{for } j = 0, 1, \dots, J, \beta_0 = 0. \quad (2)$$

Multinomial logit model (2) can be estimated by the maximum likelihood method. The coefficient estimates for the β_j vectors that maximize the log likelihood function can be obtained using the Newton method using LIMDEP computer software (Greene, 2002). Estimated coefficients β do not allow direct determination of marginal effects in multinomial logit models but measure the marginal change in the logarithms of odds alternatives j over the reference alternative.

The coefficients in Eq. (2) are difficult to interpret. The marginal effects and predicted probabilities give better indications and represent changes in the dependent variable for given changes in a particular regressor whereas holding the other regressors at their sample means. These are obtained from the logit regression results by the following equation (Greene, 2002):

$$\delta_j = \frac{\partial P_j}{\partial x_i} = P_j \left[\beta_j - \sum_{k=0}^j P_k \beta_k \right] = P_j [\beta_j - \bar{\beta}]. \quad (3)$$

We include several demographic variables, namely dummy variables for having working woman and the household with child less than seven years old, two dummy variables for household size, and three dummy variables for age of the household head, three dummy variables for education of the household head, two dummy variables for household income. These variables are common variables that have been used in previous papers (Cornick et al., 1994, Gould, 1996, Hatirli et al., 2004, Hsu, Kao, 2001, Watanabe et al., 1997, Bus, Worsley, 2002, Akbay, Yildiz Tiriyaki, 2008, Alwis, Athauda, 2009, Kilic et al., 2009, Lefevre, 2011).

The explanatory variables, their definitions, arithmetic means, and standard deviations are presented in Table 1. All the variables used in model are discrete variables. According to the survey results, the average household size was found to be 4.19 people that are more than the average household size (3.8 people) of Turkey (TurkStat, 2009). The survey results illustrate that 21.9% of household heads were elementary school or less graduates, 18.7% were secondary school graduates, 28.0% were high school graduates and 31.4% were university graduates. Survey results revealed that 30.5% of households purchased unpacked milk, 36.3% of households purchased packed milk and, 33.1% of households purchased both of them.

The main hypothesis is that the preference for packed and unpacked fluid milk consumption is influenced by socioeconomic and demographic characteristics of the households, in particular household size and income, and the age, and education of the household head. The higher education levels of family members are often included in cross-sectional studies, but with varying results. Generally, higher education and economic status may be positively correlated with the healthy dietary patterns (Watanabe et al., 1998, Akbay, Yildiz Tiriyaki, 2008). It is hypothesized that better educated consumers have higher preferences for packed milk than less educated consumers.

Table 1

Definitions and descriptive statistics of explanatory variables

Variable definitions	Variable name	Mean	Standard deviation
Education level of household head	EDU		
Elementary school or less=1; otherwise=0	EDU1*	0.219	0.414
Secondary school = 1; otherwise = 0	EDU2	0.187	0.391
High school = 1; otherwise = 0	EDU3	0.280	0.449
University degree= 1; otherwise = 0	EDU4	0.314	0.465
Age of the household head	AGE		
Less than 31 years old=1; otherwise=0	AGE1*	0.277	0.448
Between 31 and 45 years old=1; otherwise=0	AGE2	0.334	0.472
Between 46 and 55 years old=1; otherwise=0	AGE3	0.259	0.439
Older than 51 years old=1; otherwise=0	AGE4	0.130	0.336
Number of the members in the family	SIZE		
Less than 4=1; otherwise=0	SIZE1*	0.296	0.458
Between 4 and 5=1; otherwise=0	SIZE2	0.548	0.498
More than 5=1; otherwise=0	SIZE3	0.156	0.363
Child less than 7 years of age (yes=1; no=0)	CHILD	0.265	0.442
Household with working wife (yes=1; no=0)	WEMP	0.254	0.436
Household income groups	INC		
≤ 1000 TL=1; otherwise = 0	INC1*	0.386	0.488
1001 TL-1999 TL=1; otherwise = 0	INC2	0.435	0.496
≥ 2000 TL=1; otherwise = 0	INC3	0.179	0.384

* Reference category from the models to avoid multicollinearity problem.

Age of the household head is included in the analysis. Age has also been included in previous studies, again with varying results (Cornick et al., 1994, Gould, 1996, Gould et al., 1990, Hatirli et al., 2004, Akbay, Yildiz Tiryaki, 2008). We expect that younger household heads may be more informed. It is hypothesized that the younger household heads are more likely to consume packed milk, and older household heads are more likely to consume unpacked milk.

We expect that household size and the number of the children in the household influence households' milk choices. It is hypothesized that unpacked milk consumers live in larger families than packed milk consumers. Packed milk consumers are also more likely to have a child under seven years living in their families than others.

Labor participation often found to be a significant (positive) determinant of milk consumption. It is hypothesized that households with a working wife are more likely to consume packed fluid milk.

In this study, household income is included in the model as a series of dummy variables. We expect that households with higher incomes are more likely to consume packed milk. Similar to education effects, it is hypothesized that higher-income households are more likely to consume packed milk over

unpacked milk, and lower-income households are more likely to consume unpacked milk.

3. Empirical results

In this section, findings from chi-square and logistic regression analysis are discussed.

The summary statistics of socioeconomic and demographic variables used in chi-square are presented in Table 2.

Table 2 shows the cross-tabulations of unpacked fluid milk, packed fluid milk and unpacked-packed fluid milk choices considering households' socioeconomic and demographic characteristics. All of the socioeconomic and demographic variables were statistically significant at the 5% level of probability or better, with the exception of the one variable (CHILD).

Table 2

Socioeconomic and demographic characteristics of households and milk consumption

Variable definitions	Unpacked milk	Packed milk	Unpacked and packed milk	Chi-square	p-values
Education level of household head					
Elementary school or less	56.6	21.1	22.4	66.541	0.000
Secondary school	47.7	21.5	30.8		
High school	22.7	36.1	30.8		
University degree	9.2	56.0	34.9		
Age of the household head					
Less than 31 years old	20.8	44.8	34.4	15.647	0.016
Between 31 and 45 years old	36.2	32.8	31.0		
Between 46 and 55 years old	25.6	33.3	41.1		
Older than 55 years old	46.7	33.3	20.0		
Number of members in the family					
Less than 4 persons	21.4	43.7	35.0	13.237	0.010
Between 4 and 5 persons	31.6	37.4	31.1		
More than 5 persons	44.4	18.5	37.0		
Household with children less than seven years of age					
Households without child	31.8	33.3	34.9	3.715	0.156
Households with children	27.2	44.6	28.3		
Household with working wife					
Unemployed	38.2	31.3	30.5	28.984	0.000
Employed	8.0	51.1	40.9		
Household income groups					
Lower-income	46.3	31.3	22.4	30.451	0.000
Middle-income	23.8	35.8	40.4		
Higher-income	12.9	48.4	38.7		

Results also point out that better educated consumers had higher preferences for packed milk than less educated consumers. This finding implies that higher educated household head are more concerned about safety and hygienic conditions of milk. This result is consistent with the prior expectation that consumers with higher education were more likely to consume packed milk than those of less educated consumers.

In this study, the preference of packed milk consumption varies according to age. The choice of unpacked milk consumption was statistically meaningful.

Chi-square test of independence showed that unpacked milk consumers lived in large families, and packed milk consumers lived small families. The results suggest that larger families were more likely to consume unpacked milk, and small families packed milk.

Employment status of housewives may affect consumers' packed or unpacked milk consumption preferences. The results pointed out that non-working housewives were more inclined to choose the unpacked milk, while those working housewives were more inclined to choose packed milk.

Survey results revealed that higher-income consumers tended to consume packed milk. In contrast, lower-income consumers consumed unpacked milk.

Packed fluid milk consumers were more likely to be less than 31 years old, from households with less than four persons, had at least a high school or university degree level of education, and higher household income. Unpacked fluid milk consumers were more likely to be between 31 and 45 years old or older than 55 years old, from households with more than four persons, had at most elementary and secondary school level of education, and lower household income.

The results of the multinomial logit models for households' preference for fluid milk with respect to socioeconomic and demographic factors are presented in Table 3. The model has been estimated by the maximum likelihood method.

A likelihood ratio test that tests whether all the coefficients in the binomial logit model equal zero is highly significant at the 0.000 level as indicated by the chi-square value of 113.8. The model predicts 51.6% of the observations correctly.

In this study, the fluid milk choice of unpacked, packed, and packed-unpacked milk consumption choices can be considered as distinct categories.

Table 3 shows the results from the multinomial logit models for households' preference for the fluid milk consumption choices. Six variables, EDU3, EDU4, AGE2, AGE4 WEMP, and INC2 have statistically significant coefficients for the unpacked fluid milk category.

The marginal effects and predicted probabilities gave better indications of how changes in the regressors affected the probability of a particular event. The

marginal effects in Table 3 represent the change in the dependent variable for the given change in a particular regressor while holding the other regressors at their sample means.

Education level of the household head affects the household's packed fluid milk consumption positively. The positive and statistically significant coefficients imply that the individuals with a higher than secondary education were the most likely to consume packed fluid milk than those of less educated individuals. Households with a more educated household head are more likely to consume packed milk. The results indicate that education level of the household head, on the other hand, was related negatively to the probability of unpacked milk consumption, *ceteris paribus*. The negative and statistically significant coefficients imply that household heads with more than elementary school education were less likely to consume unpacked milk than households with less-educated heads. For example, the estimated coefficient for the university-graduated household head was -1.582, which is lower than the corresponding coefficients for high school (-1.230) education. These findings are in line with the findings of Rauniker and Huang (1984), Cornick et al. (1994) and Gunden et al. (2011). Armagan and Akbay (2008) found a negative relation between education and milk consumption as the milk consumption was aggregated in their analysis. Marginal effects of the education variables indicate that a household whose head was university graduate was about 31.3% more likely to consume packed milk. Similarly, a household headed by a high school graduate was about 12.7% more likely to consume packed milk.

Multinomial logit results indicate that household size had a negative impact on the probability of packed fluid milk consumption versus unpacked fluid milk consumption. Large household had 21.3% higher probability of consuming unpacked milk. This means that as the household size increased, the household tended to consume unpacked fluid milk instead of packed fluid milk. This result is consistent with our prior hypothesis that larger households are more likely to consume unpacked milk and smaller households are more likely to consume packed milk.

The results were consistent with previous findings obtained from analysis of household demand patterns for different milk type products (Ratnam, Spielmann, 1972, Gould et al., 1990, Cornick et al., 1994, Gould, 1996, Yen et al., 2004, Akbay et al., 2007, Armagan, Akbay, 2008, Pazarlioglu et al., 2006).

Table 3

Multinomial logit results for fluid milk consumption preferences of the households

	Unpacked milk vs. both packed and unpacked milk		Packed milk vs. both packed and unpacked milk		Packed milk vs. unpacked milk	
Variables	Coefficients (SE)	Marginal effects	Coefficients (SE)	Marginal effects	Coefficients (SE)	Marginal effects
EDU2	-0.545(0.453)	0.115	-0.468(0.520)	-0.057	0.077(0.465)	-0.058
EDU3	-1.230*** (0.443)	0.107	0.034(0.458)	-0.234	1.264*** (0.440)	0.127
EDU4	-1.582*** (0.548)	0.049	0.673(0.496)	-0.362	2.255*** (0.531)	0.313
AGE2	0.809** (0.419)	-0.064	-0.070(0.355)	0.158	-0.880** (0.416)	-0.095
AGE3	-0.388(0.468)	0.045	-0.068(0.397)	-0.066	0.320(0.475)	0.021
AGE4	1.358** (0.567)	-0.239	0.823(0.532)	0.175	-0.535(0.538)	0.064
SIZE2	0.145(0.382)	-0.014	0.009(0.314)	0.026	-0.136(0.373)	-0.012
SIZE3	-0.035(0.483)	0.131	-0.912* (0.485)	0.082	-0.877* (0.524)	-0.213
CHILD	0.099(0.385)	-0.078	0.492(0.329)	-0.029	0.393(0.376)	0.107
WEMP	-1.356*** (0.517)	0.115	0.058(0.347)	-0.260	1.415*** (0.521)	0.145
INC2	-1.023*** (0.351)	0.210	-0.831** (0.344)	-0.111	0.193(0.355)	-0.098
INC3	-0.676(0.606)	0.169	-0.768* (0.479)	-0.524	-0.092(0.611)	-0.117
Constant	1.033** (0.516)	-0.144	0.355(0.493)	0.159	-0.677(0.502)	-0.016

Note: Log likelihood: -323.462. Restricted log likelihood: -380.352. Chi-square (24): 113.7807; *P*-value: 0.0000.

Correctly prediction: 51.6%.

*, ** and *** indicate statistical significance at the 10%, 05%, and 1% levels, respectively.

WEMP was used as a dummy variable equal to 1 when a household had a working wife and zero otherwise. As expected, the results indicate that fluid milk consumption decisions were statistically influenced by the employment status of the household wife. Households with a working housewife were more likely to consume packed fluid milk than the households with an unemployed wife. As shown in Table 3, for a household with working housewife, the probability of consuming packed fluid milk increased by 14.5%. This is consistent with the finding of Dong and Kaiser (2001) who reported that employment status of the female-headed household is negatively related to fluid milk consumption. Kilicet al. (2009) found that households with a working housewife are more likely to consume packed fluid milk than the households with an unemployed wife.

As expected, the results show that income had a negative impact on unpacked fluid milk consumption. Middle income coefficient was statistically significant, indicating that the households with middle incomes were less likely to purchase unpacked fluid milk than lower-income households. As income increased, the probability of choosing the same alternative increased rather than substitution for other alternatives. Marginal effects of income variables indicate that households in the middle-income group were about 21.0% more likely to

consume unpacked milk, but 11.1% less likely to consume packed fluid milk compared to those lower-income households.

This is consistent with the findings of Bus and Worsley (2003), Watanabe et al. (1998), Dong and Kaiser (2001) and Celik et al. (2006), who reported that income influences positively the probability that household consume fluid milk. Akbay and Yildiz Tiriyaki (2008) and Kilic et al. (2009) reported that household income is positively related to unpacked fluid milk consumption.

The influence of the age of the household head was examined to give some ideas of tastes among the relatively young who could have a greater bearing on consumption patterns in the future. It was also considered because consumers' life cycles affect food consumption patterns. Results of multinomial logit indicated that increasing age of household head increased the probability of consuming unpacked fluid milk, but decreased the probability of consuming packed fluid milk. This finding implies that fluid milk consumption preferences were strongly linked to cultural, psychological, and behavioral factors. The results of the marginal effects suggest that for a household head more than 55 years old, the probability of consuming unpacked fluid milk was 23.9% lower than household head younger than 31 years old. This is consistent with the finding of Akbay and Yildiz Tiriyaki, (2008) and Kilic et al. (2009) who reported that increasing age of the household head is positively related to unpacked fluid milk consumption.

These results suggest that the socio-economic and demographic characteristics of the household and household head play an important role in fluid milk consumption among the Turkish households. Similar results have been reported on other study areas.

4. Conclusions

In this study, we examined the impact of various factors affecting on households' choices of packed and unpacked fluid milk consumption. Multinomial logit model was used to analyze the household data.

The findings of this study suggest that the socioeconomic and demographic characteristics of the households and their heads play an important role in fluid milk consumption choices.

Results revealed that better educated household heads, higher income and larger households, and households with children under seven years of age were associated with the use of packed milk. A similar result was found for unpacked milk consumption, except for a negative effect of education, working wife and income.

Income and education were primary reasons for purchasing unpacked milk, as it was perceived to be quite cheap compared with packed milk. When substantial increases in income and education level of consumers take place, a marked shift in preference from unpacked to packed milk could probably occur.

Empirical findings of our study have important implications and strategies for milk producers and companies. Because milk production and manufacturing firms are increasing very rapidly in Turkey, results of this study provide some relatively new information about the consumers' fluid milk consumption decision.

Research findings are quite consistent with the expected behavior of Turkish consumers and provide a clear picture of the fluid milk consumption behavior. It is hoped that the findings of this study help to both domestic and foreign companies in Turkey to design pricing and promotion strategies and other marketing strategies for fluid milk consumption. Unpacked fluid milk marketing has been prohibited by law. Despite the legal prohibition of unpacked milk market, a significant share of fluid milk in Tokat is delivered to consumers as unpacked fluid milk without having any inspection. It is suggested that the Turkish government should take necessary actions to prevent marketing of unpacked fluid milk. In order to improve fluid milk marketing system, Turkish government needs to establish some standards in the fluid milk marketing system and impose high amount of charges for unpacked fluid milk sellers.

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A regional analysis of the effects generated by the economic crisis and its impact on the outstanding loan portfolio in Romania

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Abstract. *Known as the biggest crises since the Great Depression, the actual global crisis has modified the economical structures of many countries and a vicious circle of tightening credit, has reduced demand and rapid job cuts occurred. In Romania, the situation evolved with rapidity based on a series of snow-ball effects and the economy suffered severe damages in terms of intensive growth and sustainability. The lending activity was seriously damaged and many people got in a difficult situation with no jobs and with higher interest rates on loans.*

For a better understanding of the economic crisis phenomena consequences in Romania, we will try to emphasize the main implications of the influences of unemployment and medium net wages on the banking activity using a regional econometric model for panel data.

Keywords: regional economy; banking sector; unemployment; loans arrears; wages.

JEL Codes: R15, R23.

REL Codes: 8J, 11C.

1. Introduction

At the beginning of 2007 there were some rumors supporting a negative scenario, having as main actors the holders of loans secured by mortgages. It was assumed the hypothesis that loan holders will no longer reimburse monthly obligations to banks thus determining the global financial system failure.

This potential systemic crisis seems to have had its genesis long time ago, since 1930. Unfortunately, the prediction came true and in early 2008 triggered the financial crisis in the USA and spread its effects worldwide.

The tensions exacerbated by losses following international financial institutions to subprime mortgage-backed securities have been amplified in 2008 and the Euro area banks were facing difficulties caused by the depreciation of assets, increasing expenses and credit costs and reduced income from trading.

Given the uncertainty and risk aversions the prices of financial assets fall. Many major financial institutions have lost investors confidence and some of them were forced to resort to state aid or shareholders, and others simply could not avoid bankruptcy.

According to the European Central Bank reports, in 2008, the return of banks capital in the Euro area decreased a lot under the impact of the losses in the market evaluation. Harmonization costs on loans and securities increased considerably, while fees and commissions income fell⁽¹⁾.

A number of initiatives have been taken by the member states of the European Union so as to ensure that national measures taken to manage the financial crisis will have no negative effects.

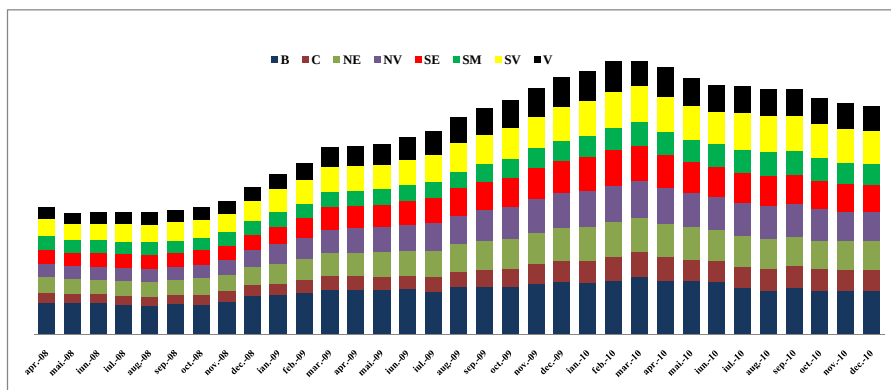
Anyway, the dimensions of the new phenomena created under the financial derivatives label in conjunction with the mortgage bubble were underestimated and in the years to come the global economic system faced a long and devastating recession.

The analysis on stability and financial integration made European Central Bank show that the banking system (including the Romanian) faces major risks due to the following⁽²⁾:

- deterioration of bank credit losses and prospects of amplification;
- interdependence between financial stability and the prospects for fiscal sustainability, fiscal stimulus packages and moderate growth;
- vulnerability of net interest income to the attenuation of the yield curve.

2. Romania's economy

Despite the efforts for a stabile and sustained economic growth the external effects and the fragile internal economy of Romania followed the descending trend of almost all the countries in the EU area.

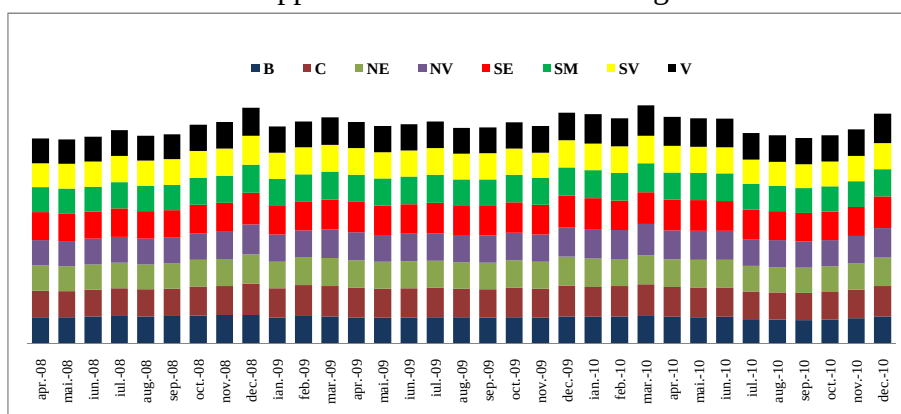


Source: www.anofm.ro; all calculations and representations were made by the authors.

Figure 1. *The evolution of the monthly regional unemployment rate in Romania*

In the above figure you can find the upward trend in unemployment coincides with the intensification of global economic crisis effects on all economic sectors in Romania. However, since June 2010 you can see a slight economic recovery, evolution explained by several local economic phenomenon.

As for the lending activity, given the fact that the majority of the Romanian banks have foreign capital, in a short period of time after the triggered of the financial crisis in the USA it was registered a change of trend. Until 2008 the economic growth was based on mass consumption (Figure 2) maintained with the support of banks relaxed lending conditions.



Source: www.insse.ro; all calculations and representations were made by the authors.

Figure 2. *The evolution of the monthly regional medium wage in Romania*

If until 2008 financial institutions strategy was to increase market share and to expand regional network, in the years that followed the aggressive lending behavior was replaced with collection activities and focused on savings and deposits⁽³⁾. Also, we mention that the percentage of overdue and doubtful loans in the total credit portfolio increased from 22% (in 2007) to 32% next year.

In 2009 there were no signs of changes in the economy, as the uncertainty in the banking system was bigger, a phenomenon accompanied by the credit cycle downturn and weak investors trust in banks liquidity⁽⁴⁾. On the other hand, the favorable evolution of revenues was partially offset by the increase in loan loss provisions.

Table 1

The evolution of arrears to loans, wages and unemployment (apr. 08-dec. 10)

Region	Arrears to loans ratio growth rate (%)	Medium wage growth rate (%)	Unemployment growth rate (%)
North West	20	10	106
Bucharest	19	20	44
West	18	21	81
Center	18	22	65
North East	17	10	61
South East	17	13	93
South Muntenia	12	10	85
South West	9	16	78
Total	17	16	77

Source: www.bnr.ro; all calculations and representations were made by the authors.

The table above shows exactly what happened to the lending activity in Romania in the years that followed after the USA financial crisis. It seems like the loan market has frozen, the fluctuations of population loans are minor in all regions.

In the mean time overdue and doubtful loans had an upward trend starting with 2009. Almost all regions followed the same ascending, worrying trend (Table 2). Due to the financial crisis, the banking system in Romania was characterized by a slowdown in business, registering a modest profit given the stagnation of credit.

Specifically, banks have had a more selective involvement and perhaps reluctance on credit market and macroeconomic climate caused especially by the uncertain prospects on the labor market.

Table 2

Top 5 versus bottom 5 counties based on the level of arrears to loans ratio

	Top 5 versus Bottom 5 based on the monthly arrears to loans ration (apr 08)			Top 5 versus Bottom 5 based on the monthly arrears to loans ration (apr 08)	
	apr.-08	dec.-10		apr.-08	dec.-10
TULCEA	0,56%	9,63%	GORJ	1,25%	6,02%
COVASNA	0,64%	11,85%	TELEORMAN	3,86%	7,75%
VRANCEA	0,96%	15,40%	MEHEDINȚI	1,49%	9,40%
DÂMBOVIȚA	1,06%	10,28%	TULCEA	0,56%	9,63%
ARGEȘ	1,07%	17,95%	CARAȘ- SEVERIN	1,75%	9,75%
BIHOR	3,12%	25,11%	BIHOR	3,12%	25,11%
ARAD	3,17%	25,24%	ARAD	3,17%	25,24%
BISTRITA- NĂSĂUD	3,30%	28,55%	BISTRITA- NĂSĂUD	3,30%	28,55%
TELEORMAN	3,86%	7,75%	ALBA	2,28%	28,72%
IALOMIȚA	4,80%	17,37%	GALAȚI	1,18%	29,73%

Source: www.anofm.ro; all calculations and representation were made by the authors.

Starting with 1991 the unemployment rate in Romania registered constant changes due to frequent economic instability. Processes as privatization and restructuring of the economy had significantly influenced on the labor market, by determining massive dismissals and higher unemployment rates. The situation affected the social life of the Romanian citizen until the end of 2003.

Table 3

Top 5 versus bottom 5 counties based on the unemployment level

	Top5 versus Bottom 5 counties based on the monthly unemployment rate (apr08)			Top5 versus Bottom 5 counties based on the monthly unemployment rate (dec10)	
	apr.-08	dec.-10		apr.-08	dec.-10
Judet			Judet		
ILFOV	1,2	2,8	BUCURESTI	1,7	2,3
TIMIS	1,3	3,7	ILFOV	1,2	2,8
BUCURESTI	1,7	2,3	TIMIS	1,3	3,7
BIHOR	2,1	5,8	CLUJ	3,1	4,9
BISTRITA	2,4	6,3	ARAD	2,6	5,2
IALOMITA	5,9	9,6	DOLJ	4,6	9,8
TELEORMAN	7,2	10,8	GALATI	5,6	9,8
COVASNA	7,5	9,6	MEHEDINTI	8,5	9,8
MEHEDINTI	8,5	9,8	TELEORMAN	7,2	10,8
VASLUI	8,8	11,4	VASLUI	8,8	11,4

Source: www.anofm.ro; all graphic representation were made by the authors.

In the following years the unemployment decreased considerably amid consecutively economic growth. Unfortunately the global financial crisis stopped the improvement of the employment rate and changed the trend of unemployment in a positive one (Table 3).

The contagion effects of the external crisis revealed many of the unresolved internal problems of the Romanian economy and produced many changes in the labor market, not only at national level but at regional level, modifying the existing patterns. The majority of the counties in the same region seems to equalize their unemployment levels and grew the gaps between them regarding the level of the medium wages (Table 4).

Table 4

Top 5 versus bottom 5 counties based on the level of the medium wage

	Top 5 versus Bottom 5 counties bases on the monthly net wage (apr08)			Top 5 versus Bottom 5 counties bases on the monthly net wage (dec10)	
	apr.-08	dec.-10			
			BUCURESTI		
BUCURESTI	1796	2145	ILFOV		
ILFOV	1614	2010	GORJ		
CLUJ	1339	1492	SIBIU		
GORJ	1321	1669	TIMIS		
ARGES	1319	1445	COVASNA		
BIHOR	949	1063	VRANCEA		
VASLUI	924	991	VASLUI		
TELEORMAN	914	1116	MARAMURES		
MARAMURES	904	987	CALARASI		
HARGHITA	811	1029			

Source: www.insse.ro; all graphic representation were made by the authors.

3. Credit consumer's behavior and the influence of unemployment rate and net average wage over banking activity

Among the main consequences of the economic recession we can find unemployment. Unfortunately, this phenomenon is very complex and its effects on the economic and social life of the population are sometimes practically impossible to prevent.

In that matter our empirical analysis of the effects of regional unemployment on the banking sector activity will try to discover and also to explain the correlation between loans arrears and unemployed population in the past three years.

a) Econometric model description

The equation used in the model was: $NPL_LOA_ = 0.735794 \times RS_(-1) + 0.000282 \times SMN_(-2)$

The variables used in the model were:

- NPL_LOA as the ratio of loans arrears in total loans outstanding (by loans arrears we mean all loans with minimum 1 day of delay);
- RS_ as the ratio of unemployed population;
- SMN_ as net average wage.

The period for the panel data has a monthly frequency and it starts with March 2008 until December 2010. The panel was build using data for all the 41 counties in Romania but because of the used method, only 40 were included in the final results. The total number of observations in this model was 1,240.

We've made use of data from three different sources:

- for the unemployment rate we have used The National Agency of labor employment statistics (www.anofm.ro);
- for the territorial profile of loans we have used the National Bank of Romania sets of data (www.bnr.ro);
- for the net average wage we have used the National Statistics Institute database (www.insse.ro).

It is also important to mention that all the data suffered modifications given the econometric model requirements.

b) Econometric regression and estimation:

Dependent Variable: NPL_LOA				
Method: Panel EGLS (Period weights)				
Date: 10/18/11 Time: 19:55				
Sample (adjusted): 2008M06 2010M12				
Cross-sections included: 40				
Total panel (balanced) observations: 1240				
Linear estimation after one-step weighting matrix				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RS_(-1)	0.735794	0.025951	28.35342	0.0000
SMN_(-2)	0.000282	2.20E-05	12.81821	0.0000
	Weighted Statistics			

R-squared	0.851883	Mean dependent var	1.450335
Adjusted R-squared	0.851764	S.D. dependent var	0.498251
S.E. of regression	0.191834	Sum squared resid	45.55863
F-statistic	7120.279	Durbin-Watson stat	1.920703
Prob(F-statistic)	0.000000		

c) Interpretation of the results

The population with loans has a specific behavior influenced by their economic situation, more precisely influenced by their wages. Therefore, in a period of economic depression, with reduction of wages and unemployment growth, the Romanian banks activity is damaged because of unperformed loans growth and also by the increased days of delay for the loan payments.

The econometric regression shows that there is a strong determination between the chosen variables and therefore a strong correlation among them, determined by the value of R-squared (85.1%).

Also, the coefficients of the explanatory variables obtained in this model show a specific modification of the dependent variable. This interpretation is very important in matter of the reasons that may explain the real situation on the lending market with unperformed loans.

In this matter, we have obtained that unemployment rate (noted here RS_) has a positive influence on the ratio of loans arrears.

We have analyzed the impact of the previous month unemployed rate and the results show that people whom are in this situation will not pay their credit rates in time. This is also a sign that Romanian people don't have savings for difficult periods and they have no alternative resources in order to pay their debts.

The same positive influence is also seen in the relation between net average wage and loan arrears with the difference that the coefficient value is very small in this particular case. An explanation could be that net average salary variable is a balance between social living levels from every county. So, maybe in one county there are a few people with big wages that have no loans and this influence the average. Therefore, the correlation between average wages and loans arrears is low because the ratio of the people with bigger wages might influence the average per county much more than the ratio of the people with loans. On the other hand, the SMN_ variable is considered with two months lag and NPL_LOA_ is analyzed in the current period. In this case, the explanation could be based on the growth rate (credit costs increase more than the wage increase).

Final remarks

In this paper we have determined and analyzed the impact of unemployment on the banking activity and using panel data we have demonstrated that unemployment rate from previous month and the net salary affects a lot the lending market in Romania.

The observations due to their county structure provided us at a temporal and cross-section dimensions a unique opportunity to study the relation between our chosen variables.

Our econometric model supports the recently results presented by The National Bank of Romania according to which the overlapping of austerity measures corroborated with the income reduction and unemployment rising, led to an increase of the loan delays payments.

The behavior of the loans consumers may be a sign of the inability to cope holder's monthly expenditure, a condition caused by the low degree of activity in companies, increased fees or job losses. Also, the results obtained in this econometric model show a specific behavior of Romanian people and their use to borrow without taking in consideration their actual wage, savings, etc.

Unfortunately, if the current economic situation persists, both the unemployment rate and unperformed loans will register bigger and bigger values and the consequences on the banking activity especially on the lending market will be very difficult to bear and many of the banks agencies will disappear all over the country. This will lead to a concentration of the banking activity, a phenomenon witch contradicts with many of the values promoted by the European Union.

On the other hand, we must pay attention to the political environment that has an important impact on the economic perspectives. Next period will be a challenging one from this point of view because many social measures are expected to be taken. To support the economic recovery, political decedents probably will act in order to sustain small and medium enterprises and they will try to reduce fees for this category. Social actions are also expected to occur, reinforced by taxes reductions, growth of budgetary wages and the decrease of unemployment rate.

Notes

- ⁽¹⁾ See Annual Report 2008, European Central Bank, pg. 169. (<http://www.ecb.int/pub/pdf/annrep/ar2008ro.pdf>).
- ⁽²⁾ See Annual Report 2010, European Central Bank, (<http://www.ecb.int/pub/pdf/annrep/ar2010ro.pdf>).
- ⁽³⁾ According to Annual Report 2008, National Bank of Romania (<http://bnr.ro>).
- ⁽⁴⁾ See Annual Report 2009, National Bank of Romania (<http://www.bnro.ro/Publicatii-periodice-204.aspx>).

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The amortization of fixed assets in terms of deferred taxes

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Abstract. *The effects of amortization on the presentation of the financial statements are quite noticeable when calculating the profit before tax as well as for its recognition in the balance sheet. Accounting amortization changes the value of the fixed assets itemized in the assets column, while the related expense changes the profit and loss account. Tax amortization does not affect the performance of the enterprise, but only the taxable amounts. The differences between accounting amortization and tax amortization generate temporary differences that are either taxable or deductible, and these are matters that will be analysed under circumstances when the deferred tax method is applied. The recognition of the value of the deferred tax in the profit and loss account for each type of temporary difference would be a step towards the separation of financial accounting from taxation.*

Keywords: amortization; revaluation; liabilities; assets; fixed assets; deferred tax.

JEL Codes: E62, M40, M41.

REL Codes: 8K, 14A, 14I.

1. Introduction

In theory, amortization stands for the systematic allocation of the depreciable value of an asset throughout the duration of its useful life. In this respect, we could argue that amortization represents the employment of the rules of accrual accounting and of the matching principle.

The amortization of fixed assets in terms of deferred taxes should be approached with respect to the International Accounting Standards, since the accounting of the enterprise is affected by two essential facts: on the one hand, the standards and regulations of general accounting and, on the other hand, the development of accounting research (Colasse, 2000, p. 20).

The international accounting standards board prescribes the accounting treatment of income taxes in the IAS 12 "Income taxes" standard. According to this particular standard, the tax rate will be applied to the taxable income in order to measure the tax to be paid at the end of the accounting period. The taxable income is measured in compliance with the regulations set by the tax authorities of each country. The differences occurring between profit before tax and the taxable income are divided into permanent and temporary differences.

Permanent differences include the following types of revenues and expenses (Morariu et al., 2005, pp. 194-200):

- Deductible expenses, for income tax purposes, that will always be non-deductible, since the tax authorities see them as exaggerated or unnecessary for the activity of the company;
- Revenues that the tax authorities will always categorize as non-taxable, since they are generated by already taxed income (dividends received from the subsidiary);
- Tax relief granted in the form of tax exemption or relief in order to encourage certain economic activities promoted by the government.

Temporary differences are those differences between the financial reporting carrying value of assets or liabilities and their income tax basis. These differences arise from the time difference between the moment when an item is carried in the books and the moment it is included in the taxable income. The temporary differences are usually recovered during the following accounting period.

There are four types of elements that are defined as temporary differences (Puentes Poyatos, 2004). These are:

- expenses or losses recognised for financial purposes prior to becoming deductible for income tax purposes;
- revenues recognised for income tax purposes prior to recognition in the financial statements;

- revenues recognised for financial purposes before being recognised for income tax purposes;
- expenses or losses deductible for income tax purposes prior to recognition in the financial statements.

Temporary differences may be taxable and deductible (Popa et al., 2007, pp. 276-294). Taxable temporary differences are those that will result in taxable amounts in the future, when the carrying amount of an asset or that of a liability will be recovered or settled. Deductible temporary differences are those differences that will result in amounts that are tax-deductible in the future, when the carrying amount of an asset is recovered or a liability is settled.

1. Deferred taxes generated by the differences between accounting amortization and tax amortization

Accounting amortization is the irreversible loss in value that is carried in the books as expenses established in compliance with certain accounting standards and regulations. Tax amortization is the amortization established according to certain taxation standards in order to replace the accounting amortization when the income tax is calculated. The differences arising between the amortization recognised in financial statements and the amortization used for calculating income tax, account for the presence of deferred taxes. The differences between financial and tax amortization arise as a result of employing different amortization methods or different timings of recognition. The way in which these taxes give rise to deferred taxes will be emphasized in the following two possible scenarios.

1st Scenario: The evolution of the deferred income tax as a result of using different financial and tax amortization methods

A business entity purchases technological equipment at the end of December N-1 at the initial cost of 50,000 lei. The asset's useful life is of five years and the salvage value is null. In terms of accounting, the company uses the straight-line amortization method and, as far as taxation is concerned, the entity uses the accelerated amortization method. We assume that the company will record a 30,000 lei profit before tax in the year N, 35,000 lei in the year N+1, 40,000 lei in the year N+2, 37,000 lei in the year N+3 and 42,000 lei in the year N+4.

Table 1 itemizes the data for the accounting amortization and for the tax amortization for the five years under consideration.

Table 1

Accounting amortization and tax amortization

Year	Initial value	Accounting amortization	Tax amortization	Book value	Tax base
N	11,000	27,500	44,000	27,500	55,000
N+1	55,000	11,000	27,500	44,000	27,500
N+2	55,000	11,000	6,875	33,000	20,625
N+3	55,000	11,000	6,875	22,000	13,750
N+4	55,000	11,000	6,875	11,000	6,875

In order to alleviate the consequences of applying accounting amortization on the taxable profit, this amortization will be added to the profit before tax and the tax amortization will be subsequently subtracted from the total value. Thus, the taxable income presented in Table 2 will be influenced both by tax and accounting amortization.

Table 2

Estimation of the taxable income

Year	Profit before tax	Accounting amortization	Tax amortization	Taxable income	Income tax
N	30,000	11,000	27,500	13,500	2,160
N+1	35,000	11,000	6,875	39,125	6,260
N+2	40,000	11,000	6,875	44,125	7,060
N+3	37,000	11,000	6,875	41,125	6,580
N+4	42,000	11,000	6,875	46,125	7,380

An analysis of the information presented in Tables 1 and 2 reveals that, at the end of the accounting period N, the book value of the asset is higher than the tax base. Consequently, we note a taxable temporary difference of 16,500 lei (44,000 lei – 27,500 lei) which generates a deferred income tax of 2,640 lei ($16\% \times 16,500$ lei). In terms of tax amortization, the business entity earns a taxable income of 13,500 lei in the year N, for which it will pay an income tax of 2,160 lei. If the accelerated amortization method hadn't been used as far as taxation goes, the business entity would pay an income tax of 4,800 lei ($16\% \times 30,000$ lei) for the year N. Therefore, the income tax paid by the company for the year N is reduced by 2,640 lei (4,800 lei – 2,160 lei). This amount will be paid in the following four years, when the business entity will have to make higher payments in terms of income tax than would have been necessary from a financial standpoint, if the amortization hadn't had taxation consequences.

The balance sheet shows deferred tax liabilities of 2,640 lei. The business entity pays an income tax of 2,160 lei for the year N, calculated in compliance with the taxation standards, but the income tax expenses amount to 4,800 lei.

This expense is two-fold: the current tax expenses of 2,160 lei and the deferred tax expenses of 2,640 lei.

If the methodology used for the N year is applied for the following four years as well, one can estimate the deferred tax liabilities for the years N+1, N+2, N+3 and N+4. The collected data is presented in Table 3.

Table 3

Presentation of the deferred tax liabilities

Year	Book value	Tax base	Taxable temporary difference	Income tax	Deferred tax liabilities	Income tax expenses
N	44,000	27,500	16,500	2,160	2,640	4,800
N+1	33,000	20,625	12,375	6,260	1,980	5,600
N+2	22,000	13,750	8,250	7,060	1,320	6,400
N+3	11,000	6,875	4,125	6,580	660	5,920
N+4	0	0	0	7,380	0	6,720
Total				29,440		29,440

As a consequence of different amortization methods in terms of financial accounting and taxation standards, the payable income tax for the year N will be lower than the income tax expenses carried in the books during the accounting period. The payable income tax for the following four years will be higher than the income tax expenses recorded in the profit and loss account. The deferred tax liability recognised in the balance sheet of the year N will be recorded in the revenues in the years N+1, N+2, N+3 and N+4. Thus, during each of the four years under consideration, the deferred tax liability will be reduced by 660 lei, and will increase the revenues from deferred income taxes. Even though the income tax calculated according to taxation regulations in each of the five years under consideration is not equal to the value of the income tax expenses estimated according to accounting regulations, it becomes evident that the amount of tax paid during the five years is equal to the total income tax expenses recorded in those five years. A possible explanation for this occurrence is the financial reporting carrying value of the deferred tax liability which occurs as a consequence of the amortization methods applied, which differ from a financial and taxation standpoint. The deferred income tax liabilities will decrease every year until they become null in the balance sheet of the N+4 accounting period.

2nd Scenario: The evolution of the deferred income tax caused by changes in the useful life of fixed assets in terms of taxation, as opposed to the useful life estimated by accounting amortization.

A business entity purchases a software programme on December 20th of the year N-1 and assigns it a useful life of two years in terms of accounting

amortization. The initial cost of the software amounts to 9,000 lei. In terms of taxation, the software will be amortised in three years. Both in terms of accounting and taxation, the software will be depreciated by using the straight-line amortization method. We assume that the business entity has recorded a profit before tax of 30,000 lei in the year N, 40,000 lei in the year N+1 and 36,000 lei in the year N+2.

After processing the data in terms of financial and tax amortization, Table 4 reveals the taxable income and the income tax. We should keep in mind that the taxable income is influenced by tax amortization and not by the amortization recorded in accounting.

Table 4

Estimation of the taxable income

Year	Profit before tax	Accounting amortization	Tax amortization	Taxable income	Income tax
N	30,000	4,500	3,000	31,500	5,040
N+1	40,000	4,500	3,000	41,500	6,640
N+2	36,000	0	3,000	33,000	5,280

The current income tax liabilities for the year N amount to 5,040 lei. However, one may wonder if this amount is equal to the carrying value of the income tax expenses recorded in the profit and loss account for the year N. The answer is revealed if we identify a deferred tax liability or deferred tax asset. Such an asset would entail an income tax expense of less than 5,040 lei. A deferred tax liability would entail the recording of a higher income tax expense than the current income tax.

In order to identify the existence of deferred tax assets or liabilities, we will compare the book value of the fixed asset with its tax base calculated at the end of the year N. The book value of the asset (4,500 lei) is less than the asset's tax base (6,000 lei). Consequently, we'll arrive at a deductible temporary difference of 1,500 lei that will generate a deferred tax asset of 240 lei ($16\% \times 1,500$ lei). The income tax expense for the year N amounts to 4,800 lei (5,040 lei – 240 lei), higher in value than the income tax established in compliance with the fiscal regulations.

If the accounting amortization had been recognised in terms of taxation, the company would have had to pay an income tax of 4,800 lei ($16\% \times 30,000$ lei) for the year N. In terms of taxation, the income tax to be paid for the N accounting period amounts to 5,040 lei. Consequently, the business entity will pay an income tax higher by 240 lei (5,040 lei – 4,800 lei) for the year N. This amount will be recovered in the following two years, when the company will

have to pay income taxes reduced by 240 lei, lower than what would have been estimated by accounting, if the amortization hadn't had fiscal consequences.

If the same logical method as the one presented above will be applied in the following two years, the deferred tax asset for the years N+1 and N+2 will be estimated. The collected data is presented in Table 5.

Table 5

Presentation of deferred tax assets

Year	Book value	Tax base	Deductible temporary difference	Income tax	Deferred income tax assets	Income tax expenses
N	4,500	6,000	1,500	5,040	240	4,800
N+1	0	3,000	3,000	6,640	480	6,400
N+2	0	0	0	5,280	0	5,760
Total				16,960		16,960

An examination of the data presented in Table 5 reveals that, at the end of the year N+1, the deferred tax assets amount to 480 lei, but this sum is not the difference between the income tax expenses and the current income tax. The explanation lies in the fact that the deferred tax assets of 240 lei is created at the end of year N+1, as the difference between the assets pertaining to year N+1 and the assets recorded in the year N. The balance sheet of year N recognizes deferred tax assets of 240 lei, while the balance sheet of the year N+1 will carry the value of this asset at the amount of 480 lei.

At the end of year N+2, the deferred tax assets will be 0, while its carrying amount will be of 480 lei, pertaining to the N+1 reporting period. The carrying forward of this asset will increase the income tax expenses of the year N+2 by 480 lei. If in each of the reporting periods, N and N+1, the income tax expenses are reduced by 240 lei less than the payable income tax, the income tax expenses for the reporting period N+2 will exceed the payable income tax by 480 lei, by resuming the deferred tax assets in expenses.

3. The occurrence of deferred taxes after the revaluation of fixed assets

The revaluation of fixed assets generally consists in replacing the net book value of an asset by its fair value. This value is established after technical experts have carried out a detailed examination of the assets. When the fair value cannot be established, if, for example, the appraised asset is seldom sold, that particular asset will be estimated at the replacement cost minus the related amortization.

Revaluation is a complex procedure that is frequently conducted in business entities that appraise their fixed assets at their historical cost. This cost

does not take into account the current value of the assets and, thus, the entity's performance and financial position as presented in the balance sheet and in the profit and loss account is misrepresented. More often than not, the decision to revalue fixed assets reflects the entity's attempt to increase its leverage ratio and to artificially enhance its self-financing capacity (Mateş et al., 2008, pp. 57-64).

Two possible revaluation procedures are accepted by British accounting (Cotleş et al., 2007, p. 233). The first provides that the revaluation must change the profit by adding the accumulated amortization until before the revaluation started, and the difference resulting from revaluation should only be enhanced by the added value that exceeds the amortization. Thus, the profit should reflect the situation that would have existed if the amortization hadn't been calculated. According to the second alternative, one should consider the fact that the purpose of amortization is to allocate the cost of the appraised assets throughout their useful life. Since the revalued assets are not new anymore, the revaluation reserve will be affected by the difference between the revalued amount and the net book value of the appraised assets. The choice between the two methods favours the misrepresentation of reality by increasing or decreasing the profit earned.

According to paragraph 32 of IAS 16, "Fixed assets", the frequency of revaluations depends on the evolution of the fair value of the fixed assets. If the fair value is significantly different, annual revaluations are necessary. However, when the fair value does not record notable changes, revaluations should be conducted every 3-5 years.

IAS 16 presents two methods of approaching the accumulated amortization at the time of the revaluation. One method would be to recalculate amortization in relation to the gross book value of the asset so that, after revaluation, the book value of the asset will be equal with its revalued amount. This method is used when the asset is appraised by applying a coefficient given by the difference between the revalued amount and the net book value of the vehicle. The second method requires the amortization to be deducted from the gross book value of the asset and thus conduct the revaluation of its net book value.

In practice, both the heads of the accounting departments of business entities and the taxation authorities deal with numerous and quite complex issues arising from the effects of revaluation on the taxable profit of companies.

In terms of fiscal regulations, the Government Emergency Ordinance no. 34/2009, that alters and completes the Fiscal Code, makes the following provisions on the revaluation of fixed assets: "[...] the reserves from the revaluation of fixed assets, including land, conducted after January 1st, 2004

and deducted from the taxable income through tax amortization or through the expenses related to the leased and/or annulled assets, are taxed at the same time with the deduction of the tax amortization, i.e. at the moment these fixed assets are deducted from accounting” (Fiscal Code, art. 22, paragraph 5).

The government Decision no. 488/2009 complements this provision by adding point 57 to the enactment standards of the Fiscal Code, stating that “the provisions of article 22, paragraph 5 of the Fiscal Code does not apply to the reserves that consist of the surplus earned from the revaluation of fixed assets, including land, conducted after the 1st of January 2004 and carried in the account 1065 until April 30th 2009, that have been deducted when the taxable profit was calculated. These reserves are rated at the time their destination changes.”

In order to avoid the occurrence of prominent differences between accounting and tax records, attention must be paid to whether the revaluation of fixed assets is recognized in terms of taxation. After a thorough examination of the Fiscal code provisions and the enactment regulations presented above, it becomes apparent that the amortization expense increment is carried as a deductible expense. The effect of this deduction is cancelled by the taxable nature of the difference resulting from revaluation and spread out as revenues. In practice, the revaluation of fixed assets is eventually recognized in terms of taxation (Istrate, 2009, pp. 64-68).

The following example emphasizes the occurrence of deferred taxes as a result of the revaluation of fixed assets.

Example: At the end of the reporting period N-1, a business entity purchases a vehicle at an initial cost of 70,000 lei. The useful life is of seven years. The amortization method accepted in terms of accounting and taxation is the straight-line method. At the end of the accounting period N+1, the vehicle is revalued and its fair value amounts to 80,000 lei. The revaluation is not accepted from in terms of taxation. The business entity calculates a profit before tax of 20,000 lei in the year N+2, 25,000 lei in the year N+3, 30,000 lei in the year N+4, 28,000 lei in the year N+5 and 34,000 lei in the year N+6.

The methods used for the revaluation of fixed assets by writing off the accumulated amortization at the end of the reporting period N+1 is presented in Table 6.

Table 6

Revaluation based on the net book value

Particulars	Before revaluation	After revaluation
Gross book value	70,000	80,000
Accumulated amortization	20,000	-
Net book value	50,000	80,000
Revaluation reserve	-	30,000

After conducting the revaluation recognized in accounting, the tax base is not adjusted, because the revaluation is not recognized in terms of taxation. Therefore, the tax base is equal to the 50,000 lei net book value before revaluation. The revised value of the vehicle (80,000 lei) is higher than the tax base, thus leading to the occurrence of a taxable temporary difference of 30,000 lei and to a deferred tax liability of 4,800 lei. In the five years of useful life left, the business entity will earn taxable benefits of 80,000 lei from using the vehicle but, in terms of taxation, it will only be able to deduct amortization expenses amounting to 50,000 lei. Consequently, in the following five years, the business entity will pay an additional 4,800 lei in taxes, more than the usual amount accepted by accounting, if the transaction hadn't had fiscal consequences.

The balance sheet for the year N+1 will recognize deferred tax liabilities of 4,800 lei, but these liabilities will not trigger any changes in the profit and loss account.

Bookkeeping will record the following entries:

▪ writing off of the amortization accumulated before revaluation:

Amortization of vehicles	=	Means of transport	20,000	20,000
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▪ recording the revaluation reserve and the deferred tax liabilities.

Means of transport	=	%	30,000	
		Revaluation reserves		25,200
		Deferred tax liabilities		4,800

At the end of the reporting period N+2, the records show the following figures:

Accounting amortization = Revalued amount/5 = 80,000/5 = 16,000 lei

Tax amortization = Tax base/5 = 50,000/5 = 10,000 lei

Profit before tax = 20,000 lei

Taxable income = Profit before tax + Accounting amortization – Tax amortization = 20,000 + 16,000 – 10,000 = 26,000 lei

Income tax = 16% × 26,000 = 4,160 lei.

The income tax expenses that will be carried in the books as part of the profit before taxes amount to 3,200 lei. The difference between the current income tax (4,160 lei) and the income tax expenses (3,200 lei) is of 960 lei and it accounts for the 5th part of the deferred tax liabilities of 4,800 lei that have been recorded at the end of the year N+1. These liabilities are carried forward in equal parts in the years: N+2, N+3, N+4, N+5 and N+6.

For the year N+2, the recording of the current income tax and the carrying forward of some of the deferred tax liabilities is conducted as follows:

%	=	Current tax liabilities	4,160
Income tax expenses			3,200
Deferred income tax liabilities			960

The summary of the data related to the recognition of the deferred tax liabilities in the years N+2, N+3, N+4, N+5 and N+6 is presented in Table 7.

Table 7

Current income tax and the recognition of the deferred tax liabilities

Year	Accounting amortization	Tax amortization	Profit before tax	Taxable income	Current income tax	Income tax expenses	Recognised deferred tax liabilities
1	2	3	4	5 = 4+2-3	6=5x16%	7=4x16%	8 = 6 - 7
N+2	16,000	10,000	20,000	26,000	4,160	3,200	960
N+3	16,000	10,000	25,000	31,000	4,960	4,000	960
N+4	16,000	10,000	30,000	36,000	5,760	4,800	960
N+5	16,000	10,000	28,000	34,000	5,440	4,480	960
N+6	16,000	10,000	34,000	40,000	6,400	5,440	960

At the end of the year N+6, the deferred tax liabilities recorded in the year N+1 are fully recognised in accounting and are portioned in the current tax liabilities of the years N+2, N+3, N+4, N+5 and N+6.

4. Conclusions

The actuality of both financial and tax amortization is an important step towards eliminating the effects of taxation in accounting, but accountants are often tempted to introduce the rules of tax amortization in financial statements out of sheer convenience.

The differences occurring between the income tax expenses carried in accounting and the income tax measured according to taxation regulations lead to the appearance of deferred tax liabilities.

The amortization of fixed assets can be approached in terms of deferred taxes, as they may occur when the amortization carried in the books differs from the one used when calculating the taxable income. Such deferred taxes may ensue after the revaluation of fixed assets.

The empirical situations presented in this paper have also helped emphasize the evolution of deferred taxes as dictated by the use of a different amortization method in accounting than the amortization method accepted in

terms of taxation, by the use of a period of accounting amortization that differs from the period used in tax amortization and by not recognizing the revaluation of fixed assets in terms of taxation. The three situations depicted in the present paper reveal either deductible temporary differences or taxable temporary differences. In their turn, the former trigger deferred tax assets, while the latter generate deferred tax liabilities. The information provided by accounting must include the deferred tax assets and liabilities as offset assets and liabilities, distinct from the current tax assets and liabilities.

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Impact of the economic crisis on human resources development in Greek health system

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Abstract. *Once with the recession manifesting and the society development slowing, in the European economy has taken place a series of major and irreversible economic and social changes. The influence of these changes has been reflected upon all the activity fields, more or less.*

Evidently, the major influence was and still is the one of the expenses reduction, expenses that are implying financial, human and material resources necessary for the current activities development.

The reduction of the expenses, especially the one with human resources, leads to the future approach from the development perspective of this resource, fact that has to consider the obtaining of the same effects (results) but with more reduced efforts (costs).

The main challenge is the one of reducing the efforts specific to the human resources (formation, permanent instruction, motivation and development) in a substantial degree, but to avoid the manifestation of the quality reduction of the human resources and of their labor results.

Keywords: human resources management; health system; health care system in Greece; features of the health system; the economic crisis.

JEL Code: I18.

REL Code: 14C.

1. Introduction

One of the most important resources, maybe the most important, in the Greek health system is human resources. This resource, unlike the other resources is sensitive to environmental factors: geographic, social, political and especially economic.

In this context special attention should be given to the influence of economic factors on human dimension in two aspects: objective and subjective. Thus from 2008 onwards, with the advent of the crisis, human resources in all fields were affected.

Most significant impact of crisis was remarked on the public sector, where a large number of people were dismissed, and some of the additional bonuses were stopped.

As part of public sector health system doesn't escaped from the impact of the crisis, significant adjustments were made on the expenditure of any kind. In this context also affected human resource as shown in Figure 1.

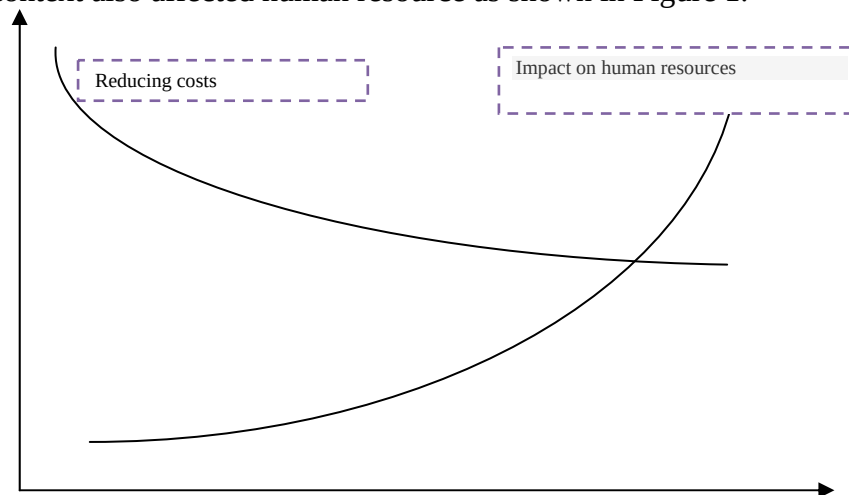


Figure 1. *Impact of reducing expenditures on human resources*

As can be seen from Figure 1, as the level of spending in the health system in Greece reduced, the negative impact on human resources is amplified exponentially. This can be explained primarily by expenditures components that have been reduced as follows:

- Direct reduction – reduction of wages and bonuses granted to staff according to the results obtained in work. The reduction of these benefits directly and indirectly affects human resources. Direct influence is the reduction in its power to satisfy a desired level.

Indirect influence is determined by the fact that hopes and individual optimism is diluted, it clearly notes that both today's and future expectations are unachievable.

- Indirect reduction – the reduction of other types of expenditure which affects the quality of hospital activities. Reduction of expenses, for example of consumables, requires more attention on the use of these resources in hospital practice. This entails, that the attention of the human resources is concentrated on these details and of course decreases mainly the medical attention and provokes medical errors. Here we give the example of the significant increase of the documents that must be completed by human resources in the health system, documents take the form of various reports which entails the reduction of the effective professional work. In this context, of the manifestation of the crisis, we can say that human resources in the health system in Greece are subjected to additional efforts for the professional and personal satisfaction.

Expenses in the health sector have been reduced in recent years in Greece, compared to European average. One explanation is related to the consideration of the health sector as one unproductive and therefore has a low priority in budget allocations. In addition the small number of medical personnel, especially of doctors led to lower costs in this sector through two mechanisms. First, personnel costs are the main costs in any health system – and the small number of health professionals in Greece has made the total budget to be reduced – and secondly, consumption and consequently medical expenses are influenced/determined by medical staff, especially by doctors. A small number of medical staff leads to a reduction in medical consumption and simultaneously to a low share of health budget to GDP. Since 2011 the situation worsened, even if the number of health professionals has increased in absolute numbers, it remains well below the EU average related to the population.

Given the long period of reduced funding and at the same time, demographic trends – an aging population – and the morbidity and mortality – one of the most precarious state of health in Europe – a reasonable expectation would be health expenditure per capita to be high at least for a time average, and this should be reflected in the multi-annual budgetary projections.

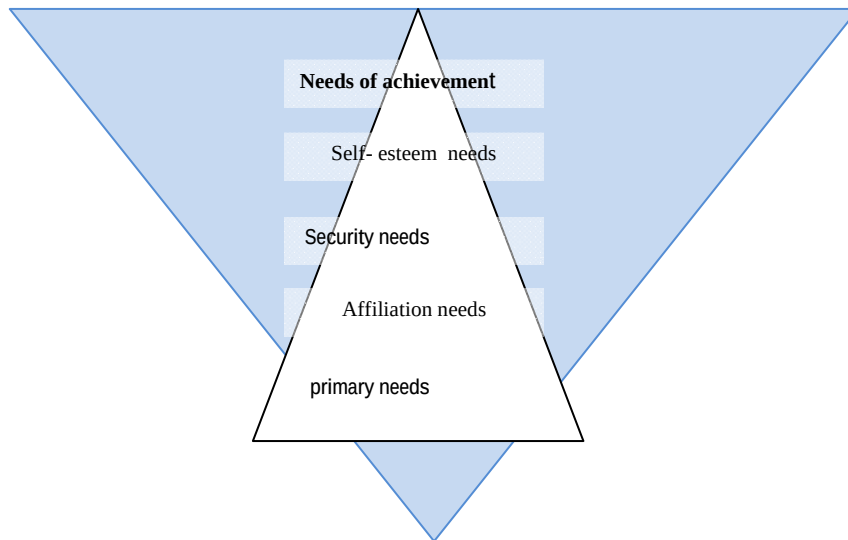


Figure 2. *The growth rate of the effort, in conditions of crisis, for the satisfaction of needs (Maslow's Pyramid)*

As shown in Figure 2, as the the professional and individual needs increase, the individual has to make efforts increasingly higher. During the economic crisis these efforts, that are necessary to meet the needs, are becoming greater.

For example, as the Greek economy is contracting and the costs must be diminished considerably, it is obvious that the health system will be affected. It is considered that in the near future we will have a reduction of human resources in public sector.

Under these conditions, human resources are forced to make additional efforts, for example to work harder just to prove that they are more necessary or more useful than their peers. This is not good for the system because a focus on the workload, on the hours worked, reduces the quality and the associated elements. It comes in a short time a quality deficit, which entails additional costs and higher negative impact on system performance.

Moreover human resources management in the health sector is weak in time of crisis, given that, compared to European countries, insurance population in Greece, by doctors and medical nurses, is below the European averages. Besides the irregular territorial distribution of medical personnel, it is also noted the shortage of specialist, especially in sectors such as preventive, medical, social, public health and health care management, inadequate staff concentration in urban areas and medical staff in urban hospitals. Other problems are related to the elimination of incentives for medical careers and the

lack of support for young doctors and nurses. It is also observed small organization process and postgraduate training of doctors, low wages and lack of connection between performance and income. Crisis also generates a disfunction in the process of planning and training of medical stuff, aspects that are controled by institutions without a coordinated policy.

Conclusions

In these circumstances it is advisable to adjust with extreme caution the health expenditures, especially those related to human resources. This is because this area is designed to maintain the society at a high level of health. Doctors and nurses are the representatives of the system and have the role to "fix" and to "maintain in good working" standards the health system. It is necessary to keep a lower rhythm of reduction of expenditures in this sector to keep a level still "optimistic" in this area higher than in other areas.

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Economics and “underground” economy theory

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Abstract. *Following examination of the theory underlying "underground" economy study I concluded that a good knowledge of the economic thought history is a must for any paper of economic analysis. Subject is sufficiently dramatic by its nature; so I consider it is necessary to bring the scientific perspective. In addition, "underground" economy is an unavoidable ingredient of any economy, the most profitable component of the economy being the "underground" one. Lack of consideration for this component can lead to severe shortfalls of economic analysis leading to the adoption of unrealistic strategies. I support since the beginning of this paper that not the quantitative side will be essentially concerned but epistemic logic. In this paper I propose to elaborate a theory that will mark the right of “underground” economy to exist as a sub-branch of economics. The main argument supporting the need for such an analysis consists of time evidence that shows that "underground" economy is a source of development, subsistence and even escape from the periphery zone for some underdeveloped economies.*

Keywords: “underground” economy; economics; economic development; globalization.

JEL Codes: A14, B22, H26.

REL Codes: 13I, 14K.

Introduction

In this paper I propose to elaborate a theory to mark the "underground" economy right to exist as a sub-branch of economics. The main argument supporting the need for such an analysis lies in the time evidence that "underground" economy is a source of development, subsistence and even escape from the periphery to underdeveloped economies. In addition, "underground" economy is an inevitable ingredient of a country's economy. The most profitable part of the economy is the "underground" part. Lack of consideration of this component can lead to severe shortfalls of economic analysis leading to the adoption of unrealistic strategies. Following examination of the theory underlying the "underground" economic study, I concluded that knowledge of the history of economic thought is a must for any work of economic analysis, such that the subject is sufficiently spectacular by its nature that I consider necessary to approximate the scientific perspective.

Methods used in economic analysis aim at highlighting the "underground" as a source of subsistence and even escape from the periphery underdeveloped economies, trying also to increase the chances of theoretical type breakthroughs in the field of scientific interest. For completeness, in the analysis for each goal I will choose an instrument. The methodology nature is deductive and what I propose to base economic theory is called "underground". This is the systemic analysis, comparative and comprehensive approach to the topic investigated, according to the endpoint and the stage considered. It will use specific tools such as classification, synthesis, static and dynamic comparative analysis, correlation analysis, methods of induction and deduction, the graphical representation of events and phenomena investigated. There is a need for this approach because of the nature of the topic investigated, so we can say that the investigation of economic phenomena may have a quantitative resonance only if scientific instruments are accompanied by an ongoing analytical deductive healthy logic.

Research results are to develop a theory of "underground" economy based on a map of arguments that come to support the need for such a scientific approach, especially since there are consistent proofs that the "underground" economy is a source of development, support and even escape from the periphery to underdeveloped economies.

To meet the above requirements, in a fair, uncorrupted way from a scientifically point of view, I passed a series of relevant researches to the topic, as can be seen in the reference list, of which I recall, the following priority: Marin Dinu, *Economia de dictionary. Exerciții de îndemânare epistemică*, Editura Economică, București, 2010, and Emil Dinga, *Studii de economie. Contribuții de analiză logică epistemologică și metodologică*, Editura Economică, București, 2009.

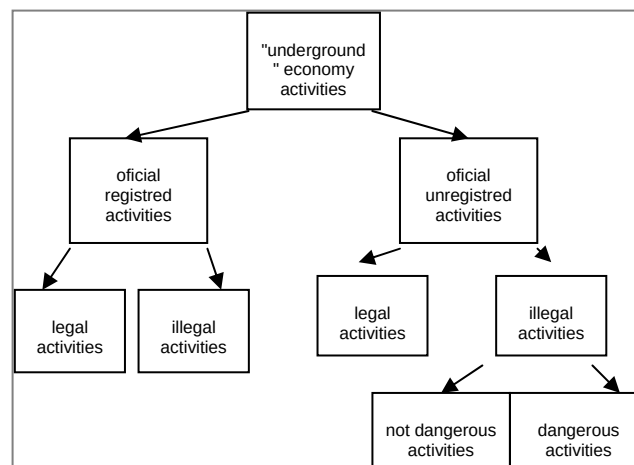
Getting close to "underground" economy by knowledge

Conceptual identifying "underground" economy is the first and most important step to be made for knowledge "underground" economy. This step is already marked by previous scientific efforts; I will go on to close the "underground" economic phenomenon by its definition and delimitation of its area of coverage.

→ How do I define "underground" economy?

Starting with the obvious purpose of "underground" economic activities and to maximize income regardless of means and methods to be used for this, and heterogeneous activities attracted in its scope, the staff of the Department of Economics and Economic Policy accepted definition of "underground" economics as it means all organized economic activities, in violation of social norms and economic laws, aiming to generate revenues that cannot be controlled by the state.

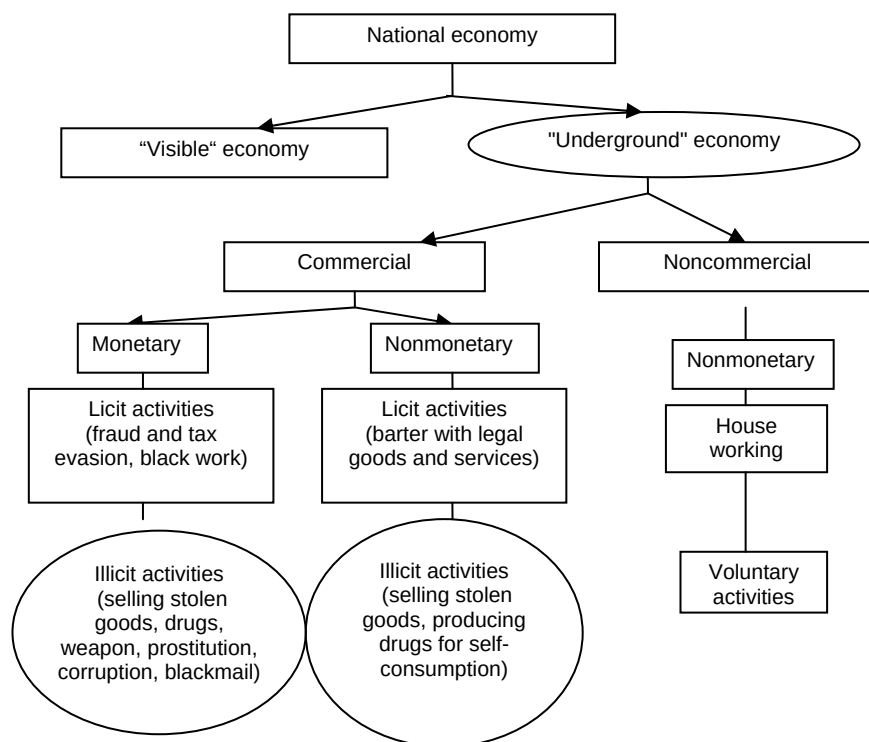
I think that this definition may assume in addition the economic activities that require self-consumption, self-consumption economy and nonmonetary economic activities, respectively nonmonetary economy. Worldwide, the two entities are approved as components of the "underground" economy because this is beyond fiscal records, generating the income that cannot be controlled by the state, as the above definition requests. When trying to define the "underground" economy, borders are very difficult to park and sometimes differences are imperceptible. "Underground" economy is the product of some general and specific factors, therefore can bear the structure shown below:



Source: The structure of "underground" economy shown in the above figure is the author proposal.

Figure 1. The structure of "underground" economy

A different view of researchers presents a parallel analysis of "underground" economy and "visible" economy, or in other words of informal economy and formal economy. The natural conclusion to be drawn is that we cannot speak of two types of economy because the economy is only one. The relationship that I think to be true, according to the basic principles of logic, is that between "visible" and "underground" economy there can be a relation as a part to a part, together forming a country's real economy as a whole, as can be seen from Figure 2.



Source: Figure 2 is the adaptation of the author after the scheme of Pierre Pestieau in his paper "L'Economie Souterraine".

Figure 2. *The structure of real economy*

The definition which I consider appropriate to describe correctly and completely the phenomenon is that the "underground" economy represents all informal economic activities, commercial or noncommercial, conducted in an organized form, are not officially recorded, legal or illegal dangerous or hazardous economic and civil society.

If global concerns for understanding the phenomena that lead to the perpetuation and development of "underground" economy dating from the '70s, similar studies in transition economies are scarce, estimates vary from one author to another, and data from official statistical institutes are questioned. This is because there is no unified methodology to estimate the "underground" component in economy and because of the lack of uniform definitions globally. I believe that the "underground" economy is the product of general factors and some specific.

Two types of economy as are presented in the literature, which have identical composition does not make sense to operate separately and be analyzed in place of rivalry. Both economies are part of real economic life, both are due to people's real needs, both are capable of meeting a set of their real needs. More important and necessary is to consider this component as macroeconomic policies are grounded today only for a part of a country's economic activity namely that of indicators such as GDP, inflation, unemployment rate, and so on; they take into account only the activities declared and recorded. The remaining existing value-added activities, which take considerable share of the world economies, are being left alone and not taken into account when determining strategies and macro-economic recovery strategies. This disability makes difficult the action of macroeconomic decision-makers and therefore the adopted policies don't have resonance in a country's economy.

How do I justify the existence of "underground" economy?

The need for a new explanatory model of the economy "underground" feels no doubt. "Underground" economy should be treated as part of the economy of any country, which exists with or without our will. I believe we do not have to start by searching for solutions to fight but rather seeking to understand and know the solutions. Therefore, knowledge and understanding of a phenomenon is the main way to use it for purposes beneficial to the economy.

→ What is "underground" economy?

The question "Why *underground* economy exists?" is one that very few have tried to find an answer. Trying a few responses we claim that the "underground" economy has its root in the incapacity of market agents and the inability of state representatives: 1. "Underground" economy exists because it provides economic goods which meet the real needs of society. Without the existence of component demand, bidders in the "underground" market do not exist, 2. "Underground" economy exists because there is proved to be an effective method for controlling the global powers. Global power control is achieved more easily through hidden and corrupt operations, 3. "Underground"

economy that provides opportunities exists for entrepreneurship event in a market economy. Entrepreneurship, needed by any economy that wants to be a developed market economy, is inhibited by tax burden and bureaucratic cluster in a country, 4. "Underground" economy exists because it can exist and is encouraged for that purpose. Lack of a very well thought control allows developing economic "underground" activities and the emergence of new ones, 5. "Underground" economy exists to provide those to whom the gates are closed by state authorities. Coercion is the mother of ideas, with which barriers are bypassed by the authorities, 6. "Underground" economy exists because there is a real source of development, and subsistence and even escape from the periphery to underdeveloped economies.

→ **How does "underground" economy works?**

"Underground" economy has shown a functional economic system in history. At any time and in any economy, regardless of level of development, "underground" economy was felt in different proportions. According to an article in the publication "The Economist" in 2008 most countries with high vulnerability to corruption are new entrants in EU countries: Romania and Bulgaria. Although the growth rate is shown to be strong during 2008, threats do not slow to appear, so that Bulgaria's current account deficit stood at the end of 2008 the level of 24%. Bank loans will exhibit very poor banking system failures, so it will arise the question how much from external assistance will benefit the two countries. The Baltic countries are also recognized for high levels of corruption, in this case due to inability or unwillingness authorities to control such activities.

In the context of globalization it is essentially necessary to analyze the issue of corruption. It has to be taken into account that once economy obeyed to globalization orders, corruption travels at the speed of cold air currents surrounding the planet. If we analyze the remarkable work about corruption of Susan Rose-Ackerman (1999), we find that three of the four chapters are based on consideration of corruption as "an economic problem, cultural or political one". Friedrich Schneider, Austrian expert in the field of "underground" economy, discussed the existing gap between the interests of private entrepreneurs to engage, in illegal way, immigrants as a survival strategy in the context of increasingly competitive global economy and feelings of community citizens who see their jobs threatened by unfair competition, all these in addition to the requirements of own governments to increase budgetary contributions to the funds.

To limit the development of "underground" economy there are required, along with establishing new enforcement measures and increased penalties for existing ones, enhancing economic measures that are designed to promote economic growth, to reduce the tax burden and achieve a real legislative stability.

Arguments map that explain the existence of "underground" economy

I wanted to build a map of economic arguments to explain the presence of "underground" economy in the economic structure of any country, so that I can prove that this component is a source of development, subsistence and even source to escape from the periphery for underdeveloped economies.

→ The natural liberty of Adam Smith in "underground" economy

The system proposed by Adam Smith is one in which every individual pursues his own interests to benefit the entire society. Human powers, their weaknesses, affects and provisions are given by God. Smith's project was to determine the natural principles that govern human behavior. He tried to elucidate the natural laws governing moral laws.

→ Tax burden awakes in us a sense of property

Psychological studies on the behavior of tax payer showed a considerable increase tax evasion charge only if that is perceived to be incorrect. If the citizen is aware that the fee is the result of an expressed agreement and not an arbitrary one, conscience will urge him to pay the debt to the state. This behavior, sustained by the majority, is a truth long known, so that Adam Smith in his paper "Wealth of Nations", wrote: "In those corrupted governments where there is at least a suspicion on unnecessary expenditure or misuse of public revenue, the laws are not fully respected". From here we trace the following conclusion: if the perception is general suspicious about the use of public revenue, the laws will be less respected.

→ Egoism vs. altruism

Circumvent phenomenon is not only an economic phenomenon, but rather a social one, with strong psychological implications. Economic literature has found out by the following argument: "it is human nature to gather and to avoid as much as possible parts of disposal of wealth" or "man always has an adverse reaction to authority, they are trying to deceive" or "Individualism is a trait of human behavior stronger than collectivism" (Le Bars, 1979). To protect from extreme ideological games, I felt the need to analyze by comparing selfish type and altruism type. Common understanding for selfish person expresses that person who with priority is pursuing personal interests and don't want to share the wealth or achievement with community. According to sociological studies of Anthony Giddens, which present detailed evolutionary stages of the human species, through the studies of Charles Darwin, we conclude that the human species is prone "natural selection" like animals in the same area fighting for supremacy (Giddens, 2000, p. 27). This means that to survive and perpetuate the species, human beings participate in the selection. Since the first evolutionary steps, the man has proved to be more individualist rather than

collectivist, the results from self-defense instinct. Comparing the two types of behaviors, animal's world and the human species; we can draw the following conclusion: animals attack only if they are abused intervening defense instinct, and animals are not being evil by nature and human beings as their defense instinct triggers he feels assaulted by the state, which comes to his income diminishment and discourage entrepreneurship. The conclusion is that man is not born evil, but has a highly developed sense of defense, which allows it to "perpetuate the species" in time and space, instinct without which humans would be doomed to perdition. Man is born with a default individualistic and selfish side developed, and living in the community can teach him to be altruist.

→ **Private property vs. public property**

The conclusion is that private property can lead to isolation, distancing us from social cohesion and sometimes cooperation, all of these characteristics of European model that our country embraced. Private property sense is one that stirs rush fortune. The desire to have more wealth individuals will be tempted to circumvent state contributions and contributor to such tax evasion, especially if it feels that the effort put into community service is not rewarded accordingly.

→ **Tax fraud: between property sense and awareness of private property**

Following the analysis performed on data collected through questionnaire and after consulting the literature, I concluded that there are at least two reasons that justify the opposite perception of the two categories of "underground" economic trend in Romania. The first reason is that private respondents are less confident in government's ability to provide a package of measures that may lead to the sphere of "underground" activities to pass the barrier to business written, recorded, given that they believes that tax fraud is the main component of the "underground" economy. The second reason is that the "underground" economy activities are coming from the sphere of private activities in connection with the state and as long as state institutions will not guarantee private property and will not use resources responsibly raised, "underground" economy will continue to grow.

→ **The existence of "underground" market**

"Underground" economy market has a globalized market structure in which the property is guaranteed, competition is fierce, the price is free by confronting supply and demand, free enterprise is at home and even labor division is functioning more efficient than on the visible market. To defend the values of collectivism and altruism, world entities are trying to control demonstration intervention in economic harm of "underground" economy to humanity.

The main tools are, in my opinion, the creation of coherent legislation and make citizens more responsible with the authorities that should protect us. This may be possible with high attention for the role of the Government or the institution of national security as a prerequisite for a society in continuous development.

→ **Implications of taxation level on aggregate supply and demand on "underground" economy market**

In terms of human behavior regarding taxation is that, if the tax rate increases and citizens must allocate a higher amount of payment, here comes the instinct to defend the property. Natural questions which arise here are the following: 1. Which is the optimal taxation rate and how to determine it? 2. Under what conditions reduced taxation would be benefic for Romania? Conclusion is that the benefic results of the new tax will benefit people with incomes just above average, which represents a very small percentage of Romanian population. It is certain that an increase in aggregate demand far exceeds potential GDP growth, given that labor productivity is increasing slightly. Therefore, on long term, tax revenues collected to the state budget, from the increased base of taxation, is growing with a much lower rate than the rate of decrease in budget revenues as a result of tax flat, increase the budget deficit, strong inflationary pressures appear and on long term will increase inflation. With *ceteris paribus*, a high level of current consumption means that fewer resources are available to be invested in productive capital.

→ **Will succeed a lower tax rate to unearth the "underground" economy?**

Statistics show that the taxation base has not increased in recent years, which confirms that there is no reaction of taxpayers to the tax incentive. Do you think that Romanian entrepreneur will be determined to declare income merely because the tax rate decreased by 9 percentage points? This seems impossible while the Romanian mentality is to win as much in a short time, and the responsibility to weaken rules on the day the action of distorting and destabilizing the government decision.

→ **Flat tax implications on the Romanian "underground" economy**

I believe that research on flat tax adopted by Romania in 2005 should, at least, refer to two key issues that it covers. Adoption of flat tax in Romania has brought two important changes. The first change is that it was adopted a uniform tax, eliminating the tax discrimination. Thus competitive businesses will not feel the punishment in a progressive taxation system where so does not feel rewarded. A second change is the reduction of tax from 25% to 16%. This means that 9% of the achievements will remain in the pocket of the taxpayer. A large number of studies support that: tax flat of 16% to be in company's

advantage, but not to big gains for modest employee and also deepens macroeconomic imbalances.

→ **State credibility contributes significantly to the applicability of a theory**

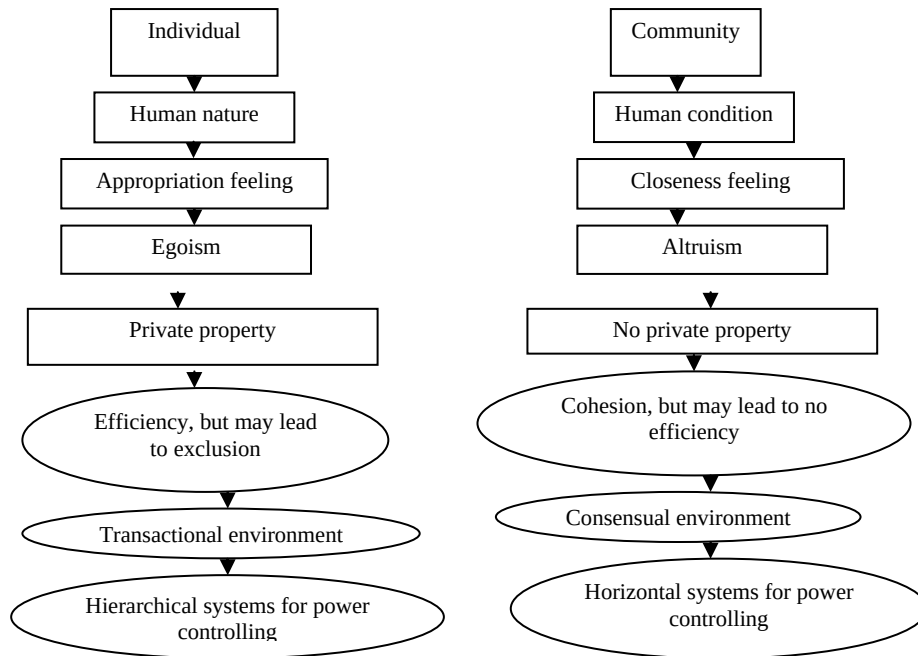
The question that arouses here is how much from Romanian "underground" economy will be unearthed due to the introduction of the flat tax? The answer varies from one source to another, trying to provide estimates for a situation which I have already shown that there is no quantitative evidence domain. If there were or were not effects on the component of Romanian "underground" economy is less relevant. Important is that this decision is not sufficient to cause the taxpayer to comply with taxation. I think that this decision should be accompanied by efforts to rebuild the responsibility to norms and institutions.

→ **Successful implementation of a theory must take into account the specificities of a nation**

Reducing corporate tax and income tax were not sufficient to significantly increase the degree of voluntary compliance. An important part of the market did not react and continued with the old behavior. The reasons are not too many, but I think there are important primarily for high levels of social contributions. Thus, individualism is at the service of public property and generates mostly "underground" economy. The fundamental cause is the attraction for wealth that people have generated from the fact that man is born individualist, selfish.

Therefore, I think that selfishness in the service of private property often generate efficiency. Communitarianism placed into service of private property generates cohesion, but may lead to inefficiency. "Underground" economy can be generated by any of us and especially by those whose altruistic feelings were not developed harmoniously in society. Selfishness, fundamental human trait, placed in service of no private property generates often corruption, the more the system is permissive and has a fragile structure.

I think the map below play its descriptive role, helping to justify the existence of "underground" economy but it should be noted that scientific analysis of the economy "underground" can be considered only in relation to the human condition since human nature is unknowable and we could not develop a model since we cannot identify a predictable behavior.



Source: Author's scheme is made based on their reasoning presented throughout this paper.

Figure 3. Arguments map that explain the existence of "underground" economy

Is "underground" economy source of economic development?

"Underground" economy explains the economic and social phenomena hard to imagine. Therefore the current problems may have resonance in the treatment of implications related to "underground" economy. The current economic system is run by a small number of people, as many believe today, it is based on a "concept that has become accepted as the last word: any growth is the benefit of mankind and higher this increase, the more popular are its benefits" (Perkins, 2007, p. 14). This belief spread the ideas that who contributes to economic growth have to be rewarded and idolized, and those who are born poor be exploited at the pleasure of those who control. The concept described above is completely wrong. As is known in most parts of the world, only a small part of the population benefits from economic growth while millions of families live with the care of tomorrow. United States spend over 87 billion dollars to carry the war in Iraq while the United Nations estimates that if we use less than half that amount, we could provide clean water, nutrition, sanitation and basic education each inhabitant of the planet.

Globalism, in view of Marin Dinu, expresses a stage in the evolution of interdependence in which an actor of international life has a role in the management of Planet resources (economic, cultural, military, scientific, political, etc...). Order resulting from the principle of polarization produces adversity (economic, ideological), closed political systems (state borders guarded by geographic, economic, ideological, and racial) or cooperation undermined national sovereignty (the divergent interests of states). Stage where we are in has a part (state) which controls the whole (world), managing discretionary global powers, exercises unilateralism and facilitates decisions leveling diversity (including cultural). It is obviously an architectural formula of life and the international regime reached by peaceful means (Dinu, 2008). Reducing extreme poverty by half till 2015 is just a wishful thinking, as beautiful as it is unattainable, because, as noted in the last decade of last century, rather than reduce poverty continued to grow, despite global income was increasing and, on the other hand, even this rate of only 0.7% of GDP of donor countries, as official aid dedicated to development, was not attained. Only five developed countries have reached and exceeded this figure in 2000, while the US contribution, the most powerful country in the world, was of only 0.24% Development Fund (Soros, 2002). The gap between rich and poor is growing both in absolute terms, the top global rich developed countries and millions of poor in less developed countries and in the relative mode in developing countries between elites and the majority made up of agricultural workers. In this respect some data are relevant: 1% of the richest people in the world as much as 57% of the poorest. Over one billion people live on less than a dollar a day. Nearly one billion lack access to safe water and 826 million suffer from malnutrition.

→ **Who is widening gap between rich and poor, between developed and developing countries?**

Similar data are supported by international bodies. UNDP Human Development Report of 1999 stated: 'With 30 years ago the gap between the fifth of the world's rich and poor world was 30-1 in 1990 he reached 60-1, and in 1999-82 to 1. Endorses the richest fifth 86% of the world and the poorest fifth only 1%.' From the few references to help promised by international institutions we find that the benefits of globalization for developing countries are small and the price paid is too large, both in the financial report and the economic and social imbalances, the deteriorating environment, reaching even to violence. During this landscape "underground" economy finds its deserved place as long as governments are unable to offer people more of their living.

Conclusions

Researchers suggest strongly that "underground" economy can be beneficial, as long as it serves to the proper functioning of the economic environment responding to the demand for urban and small craftsmen. From this point of view the "underground" economy provides entrepreneurship that can lead to increased competition, increased efficiency and strong barriers to government activities that facilitate or inhibit the manifestation of market instruments. "Underground" sector can help create markets, increase financial resources, enhance entrepreneurship and provide reservoirs for economic and social institutions. Natural selection between formal and informal, described above, may provide greater potential for growth, leading to a positive relationship between growth and "underground" sector growth. There are obvious beneficial effect of these expenditures on economic growth and income tax. Given all the above I consider that the right of "underground" economy to exist among the other sub-branches of economics is won, and the main argument consists in the evidence that "underground" economy is a source of development, support and even escape from the periphery for underdeveloped economies.

Acknowledgements

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Entrepreneurial behaviour consequences on small and medium-sized firms' innovation

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Abstract. *The European framework regarding innovation is dominated by the assumed objectives of the Lisbon Strategy and by its major reviewing demarches. In this perspective, the paper is based on a proposed model for the entrepreneurial process in Romania, depending on the economical development stage and the competitiveness level of the country, according to which there are set, on the one hand, the relationships between the conditions of the entrepreneurial framework and entrepreneurship, and, on the other hand, between entrepreneurship and innovation output in the cases of small and medium-sized enterprises.*

Keywords: entrepreneur; entrepreneurship/entrepreneurial behaviour; entrepreneurial process; innovation; economical development stages.

JEL Codes: L26; O31.

REL Codes: 14D; 19I.

1. Introduction

Entrepreneurs are considered innovative, proactive and calculated risk-taking individuals (Caree, Thurik, 2002, p. 8). They create and develop economic activities, by identifying new opportunities in order to generate value, depending on the time and space context they act.

At microeconomic level, entrepreneurship is the process of value creation that connects entrepreneurs' skills and attitude with two types of events: seizing and/or creating business opportunities in the external environment, respectively the exploitation of identified and evaluated opportunities in terms of allocated resources and associated risks. Explicitly, entrepreneurship reflects the strategic directions implemented by a firm in order to achieve continuously superior performance. Two main components of entrepreneurship can be delimited: the first considers the attitude of the entrepreneur and his desire to pursue new market opportunities to create value, while the second is related to the entrepreneur and firm behaviour, according to their understanding of opportunity creating imbalances and the necessary resources in order to exploit them (McDougall, Oviatt, 2000, p. 903). Given the attitudinal component, entrepreneurship considers the entrepreneur perceived as innovative individual or as intermediary in relations between agents who have control over resources. From behavioural perspective, entrepreneurship emphasizes the entrepreneurs' individual effort in implementing the company's vision, respectively strategic activities and continuous learning.

At macroeconomic level, entrepreneurship implies the existence of the general conditions within the national framework and of the business environment that provides efficiency and innovation increase, and seen as the engine of economic growth (Bosma et al., 2009, p. 9).

The paper is organized as follows: section 2 contains the conceptual model of entrepreneurial process in Romania, the empirical results of the entrepreneurial frameworks' impact on entrepreneurships and entrepreneurships' effects on innovation output, section 3 highlights the data and variables used, the econometric analysis and main the results of statistical estimations, while section 4 highlights the main implications of these results and conclusions drawn from the undertook research.

2. Problem formulation

2.1. Literature review

The entrepreneur concept, as innovator, rests on the foundation of the underlying paradigm, based on which the entrepreneur is the individual

preoccupied with the identification of business opportunities in the external environment and who uses innovation as a tool for creating a new business (Schumpeter, 1930, in Stel, Carree, Thurik, 2004, p. 10). In a continuously changing dynamic external environment, entrepreneurial behaviour and innovation are dynamic and holistic processes, complementary and vital to organisational success and sustainability. In addition, organisational culture and management style are crucial factors affecting the development of entrepreneurial and innovative behaviour in organizations (Zhao, 2005, p. 29).

In the circumstances of globalization and rapid technological changes, that have fundamentally altered the importance of the innovation process, entrepreneurial small and medium-sized firms appears as engines of innovative activity (Ács, Audretsch, 2003), being in the same time factor of economic growth.

2.2. The entrepreneurial process model for Romania

The proposed conceptual model of the entrepreneurial process in Romania (Figure 1) has as its' starting point the model proposed by the Global Entrepreneurship Monitor (GEM) in 2008, to which a few reappraisals were bought (Sala-i-Martin et al., 2009, p. 8, Bosma et al., 2008, p. 10, European Commission, Innovation Union Scoreboard, 2011, p. 6). The reference GEM model highlights different economical development stages that can be assumed by a country and sustains that the activity of large firm changes based on the general conditions of the national framework, whilst the entrepreneurial activity varies considering the conditions of the entrepreneurial framework. The aim of this research constitutes the assurance of data necessary to globally evaluate the role of entrepreneurship in the growth of economies.

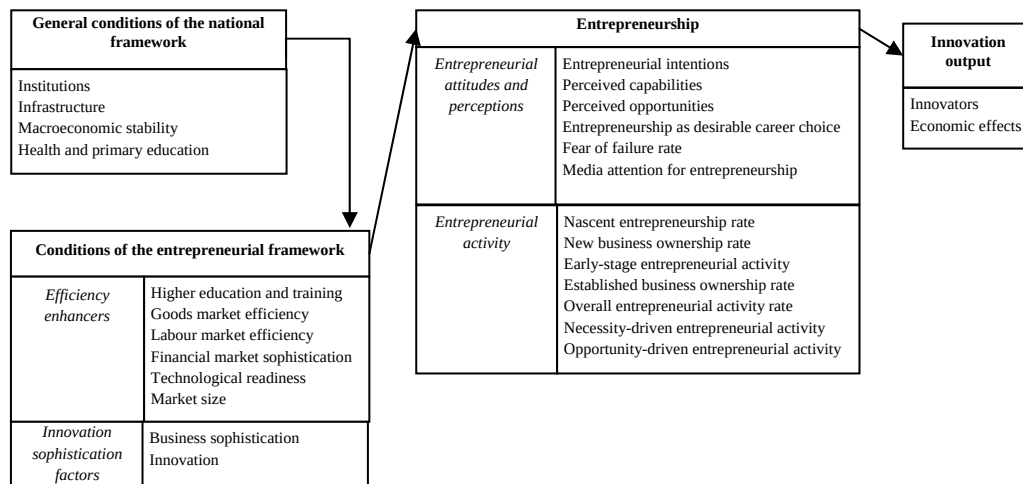


Figure 1. The proposed research model of the entrepreneurial process in Romania

Hence, as from a part of the specific elaboration principles for the reference GEM model, the proposed conceptual model of the entrepreneurial process for Romania considers only the entrepreneurial behaviour of individuals in the moment of new firm creation and administration of a business. The proposed model is not a time-lagged one, which required for the operationalisation of the entrepreneurial behaviour the elimination of the entrepreneurial aspirations. Moreover, because of the lack relevant statistical data for Romania, in the model it has been made abstraction of the entrepreneurial behaviour manifested in large firms on national and international level (intrapreneurship), considered externalising strategies practiced by these firms. Consequently, the model refers exclusively to the Schumpeterian entrepreneurs and to the owner-managers of the small- and medium-sized firms (Wennekers, Thurik, 1999, p. 442). The first are individuals, who allocate resources in order to start a new business owned by them, being motivated of opportunity exploitation from the business environment and of the necessity of self-employment (nascent entrepreneurs). In this category there are also included those entrepreneurs who motivated by the necessity of self-employment, in the sense that even if they aim to exploit opportunities, consciously or not, they might take in consideration, concomitantly but not exclusively, self-employment as well. After achieving the proposed objectives, frequently nascent entrepreneurs became owner-managers of firms, who posses and administrates new firms, active for a period between three and 42 months, or consecrated firms when they are active for more than 42 months (Reynolds et al., 2005, p. 209). It must be also mentioned that a part of the nascent entrepreneurs fail to start the business, exiting the entrepreneurial sector, but with impact on the economy, through the pressure exercised upon the existent firms. Considering the referred operational definition of entrepreneurship, in the proposed model a synonymy was regarded between the terms of entrepreneurship and entrepreneurial behaviour. This becomes operational through the entrepreneurial perceptions, attitudes and also the entrepreneurial activity. Early stage entrepreneurial activity includes nascent entrepreneurs and owner-managers of new firms, while the persistence in time of this activity is assured and provided by business owners-managers of established companies. Starting with the major economic development stages transited by aspiring countries, production factor driven economies, efficiency driven economies, innovation driven economies (Porter, Schwab, 2008, p. 7), the conditions of the entrepreneurial framework appears only in the last two stages of development. But the presence of an adequate infrastructure, of a level of primary education and a good health status, as the essential conditions of a production factor driven economy, constitutes a starting point for the actual stage of economical

development and the competitiveness of Romania (Györfy et al., 2008, p. 10). In this country, the conditions of the entrepreneurial framework depend of the increasing efficiency and innovation, reflecting the main characteristics of the economy and society (Reynolds et al., 2005, p. 206, Györfy et al., 2008, p. 8).

2.3. Research hypotheses

Depending on the economical development stage and the competitiveness of Romania, the proposed research model aims to highlight the cause-effect relationship between the conditions of the entrepreneurial framework and entrepreneurship/entrepreneurial behaviour, one hand and, on the other hand, between entrepreneurship/entrepreneurial behaviour and innovation output. Consequently, 32 pillar indicators were used, grouped as follows:

- Indicators defining the general conditions of the national framework measuring the different aspects of the basic conditions necessary for the country to pass to the next economical development stage and competitiveness, respectively institutions, infrastructure, macroeconomic stability, health and primary education;
- Indicators referring to the conditions of the entrepreneurial framework, depending on the economical development stage and competitiveness of the country. These measures various aspects of conditions and features in order to stimulate, sustain or stop the entrepreneurial process, respectively refers to: efficiency enhancers (higher education and training, goods market efficiency, labour market efficiency, financial market sophistication, technological readiness, market size) and innovation sophistication factors (business sophistication, innovation);
- Indicators for entrepreneurship, measuring the entrepreneurial activity dynamics at national level by considering the determinants of the entrepreneurial behaviour, respectively the entrepreneurial perceptions and attitudes (entrepreneurial intention, entrepreneurship as desirable career choice, fear of failure rate, media attention for entrepreneurship, perceived necessary capabilities, perceived opportunities), entrepreneurial activity (nascent entrepreneurship rate, new business ownership rate, established business ownership rate, total early-stage entrepreneurial activity, improvement-driven opportunity entrepreneurial activity, necessity-driven entrepreneurial activity);
- Innovation outcome indicators, measuring different effects of the entrepreneurial process, like innovators (number of SMEs introducing product or process innovations, SMEs introducing marketing or organisational innovations) and economic effects related to innovation

(employment in medium-high & high-tech manufacturing, employment in knowledge-intensive activities, medium and high-tech product exports, knowledge-intensive services exports, sales of new to market and new to firm innovations, license and patent revenues from abroad).

Next, the following research hypotheses were considered:

Hypothesis 1: There is a positive relationship between the general conditions of the national framework and entrepreneurship (entrepreneurial behaviour);

Hypothesis 2: There is a positive relationship between the entrepreneurial framework conditions and entrepreneurship (entrepreneurial behaviour);

Hypothesis 3: There is a positive relationship between the enhanced efficiency of the entrepreneurial framework and entrepreneurship (entrepreneurial behaviour);

Hypothesis 4: There is a positive relationship between the entrepreneurial framework defining innovation sophistication factors and entrepreneurship (entrepreneurial behaviour);

Hypothesis 5: There is a positive relationship between entrepreneurship (entrepreneurial behaviour) and innovation output;

5a: There is a positive relationship between entrepreneurship (entrepreneurial behaviour) and innovators;

5b: There is a positive relationship between entrepreneurship (entrepreneurial behaviour) and economic effects of innovations;

Hypothesis 6: There is a positive relationship between the entrepreneurial perceptions, attitudes and innovation output;

6a: There is a positive relationship between the entrepreneurial perceptions, attitudes and innovators;

6b: There is a positive relationship between the entrepreneurial perceptions, attitudes and economic effects of innovations;

Hypothesis 7: There is a positive relationship between entrepreneurial activity and innovation output;

7a: There is a positive relationship between entrepreneurial activity and innovators;

7b: There is a positive relationship between entrepreneurial activity and economic effects of innovations.

3. Problem solution

3.1. Model operationalisation and data collection

Data used in the statistical analysis are of external secondary data type, collected for the 2007-2011 period, thanks to the methodological modification for data inclusion and treatment regarding the national competitiveness starting from 2007, alike the absence of entrepreneurship data before year 2007 for Romania.

Descriptions regarding the general conditions of the national framework and entrepreneurial framework have as data source the Global Competitiveness Report. Data about the national characteristics of the entrepreneurship are derived from the national and global reports: Global Entrepreneurship Monitor, Country Report for Romania and Global Report, all based on regular inquiries. From the Global Entrepreneurship Monitor there were selected data referring the entrepreneurial perceptions and attitudes, respectively the entrepreneurial activity.

Data about innovation output for Romania were obtained by querying the European Unions' database, Enterprise and Industry section, Pro Inno Europe (European Union Scoreboard 2007, 2008, 2009; Innovation Union Scoreboard 2010, 2011).

In the conducted exploration a simultaneous equation model was applied. For operationalisation, the proposed research model includes independent and effect variables, while the statistical analysis was realised in two steps. In the first stage, correlations were made between the general conditions of the national framework and of the entrepreneurial framework (independent variable) and entrepreneurial behaviour (dependent variable). In the second stage, there were pursued the existence of correlations between entrepreneurial behaviour (independent variable) and innovation output (dependent variable).

3.2. Econometrical estimations and results

The data processing and analysis was realised with Microsoft Excel, Data analysis tools. The measuring scales are defined in the World Economic Forum and GEM Consortium methodologies, assuring internal validity, therefore the study of their reliability is not essential.

3.3.1. Correlations

In conformity with the correlation matrix (Table 1) of the main variables and considering the sign of the correlations, for Romania, within the 2007-2011 time period, there can be observed:

- a positive and moderately significant influence between the general conditions of the national framework and entrepreneurial behaviour (0.757), respectively conditions of entrepreneurial framework and innovation output (0.796);

- an acceptable degree of association between the general conditions of the national framework and innovation output (0.358), respectively entrepreneurial behaviour and innovation output (0.426);
- a weak negative influence between the general conditions of the national framework and entrepreneurial framework conditions (-0.079), respectively the conditions entrepreneurial framework and entrepreneurial behaviour (-0.187).

Table 1

Correlation matrix of the main variables for the entrepreneurial process model in Romania

	General conditions of the national framework	Conditions of the entrepreneurial framework	Entrepreneurship	Innovation output
General conditions of the national framework	1			
Conditions of the entrepreneurial framework	-0.07936943	1		
Entrepreneurship	0.757677843	-0.187020243	1	
Innovation output	0.358309539	0.796205707	0.426330574	1

3.3.2. Hypotheses testing and results

In order to test the validity of the research hypotheses simple linear regressions were imposed and made in two steps, by taking in consideration the significance level (p), the unstandardized value of the regression coefficient (β), calculated value of a t test (t). It is considered that a hypothesis is valid only if $p < 0.05$, β has high or relatively high values and t exceeds the critical value of the Student repartition, in our case 2.776445105 for four degree of freedom, because of five year data availability.

Table 2

Results for the research hypotheses testing through the entrepreneurial process model for Romania

Hypothesis	R	R ²	β	t	p	Results
1. general conditions of the national framework → entrepreneurship	0.99495	0.98994	0.05305	19,84133	0.00003	Validated
2. conditions of entrepreneurial framework → entrepreneurship	0.99231	0.98468	0.05529	16,03914	0.00008	Validated
3. the efficiency enhancing factors of the entrepreneurial framework → entrepreneurship	0.99294	0.98593	0.05366	16,74262	0.00007	Validated
4. innovation sophistication factors of the entrepreneurial framework → entrepreneurship	0.98740	0.97497	0.06506	12,48304	0.00023	Validated
5. entrepreneurship → innovation output	0.96908	0.93911	95,71166	7,85502	0.00141	Validated

Hypothesis	R	R ²	β	t	p	Results
5a. entrepreneurship → innovators	0.97852	0.95750	105,16093	8,22175	0.00376	Validated
5b. entrepreneurship → economic effects	0.95797	0.91771	91,8967	6,67907	0.00261	Validated
6. entrepreneurial perceptions and attitudes → innovation output	0.95747	0.91675	57,66606	6,63703	0.00267	Validated
6a. entrepreneurial perceptions and attitudes → innovators	0.97065	0.94216	61,55578	8,07213	0.00127	Validated
6b. entrepreneurial perceptions and attitudes → economic effects	0.94302	0.88930	55,16469	5,66877	0.00477	Validated
7. entrepreneurial activity → innovation output	0.97745	0.95541	157,52683	9,25817	0.00075	Validated
7a. entrepreneurial activity → innovators	0.98052	0.96142	166,39009	9,98406	0.00056	Validated
7b. entrepreneurial activity → economic effects	0.96939	0.93971	151,73986	7,89649	0.00139	Validated

R – multiple *R*; *R*² – *R* square; β – the unstandardized value of the regression coefficient, *t* – calculated value for Student test, *p* – significance level,

Based on the research model lacking time-lagged variables, from data analysis (Table 2) we can conclude: (i) the existence of a positive relationship between the general conditions of the national framework (independent variable) and entrepreneurship (dependent variable), because $p < 0.05$ ($p = 0.00003$), β has an acceptable value ($\beta = 0.05305$), and $t > 2.7764$ ($t = 19.84133$); (ii) the existence of a positive relationship between the entrepreneurial framework conditions (independent variable) and entrepreneurship (dependent variable), since $p < 0.05$ ($p = 0.00008$), β has a reasonable value ($\beta = 0.05529$), while $t > 2.7764$ ($t = 16.03914$); (iii) the existence of a positive relationship between the efficiency enhancing factors at entrepreneurial framework level (independent variable) and entrepreneurship (dependent variable), in the conditions of $p < 0.05$ ($p = 0.00007$), β has a tolerable value ($\beta = 0.05366$) and $t > 2.7764$ ($t = 16.74262$); (iv) the existence of a positive relationship between the innovation sophistication factors of the entrepreneurial framework (independent variable) and entrepreneurship (dependent variable), for the reason that $p < 0.05$ ($p = 0.00023$), β has a high value ($\beta = 0.06506$), whilst $t > 2.7764$ ($t = 12.48304$). In all the mentioned cases, a significant and influential ($R > 0.9$) relation can be detected between the independent and dependent variables ($R_1 = 0.99495$; $R_2 = 0.99231$; $R_3 = 0.99294$; $R_4 = 0.98740$) and in the same time over the 97% of the dependent variable variation ($R^2 > 0.97$) owes to the cumulated influence of the independent variables variation ($R_1^2 = 0.98994$; $R_2^2 = 0.98468$; $R_3^2 = 0.98593$; $R_4^2 = 0.97497$).

In addition, also from the analysis of the results (Table 2) it can be pointed out: (v) the existence of a positive relation between entrepreneurship/entrepreneurial behaviour (independent variable) and

innovation output (dependent variable) because β has a high value ($\beta = 95.71166$), $p < 0.05$ ($p = 0.00141$) and $t > 2.7764$ ($t = 0.00141$); (vi) a positive link between entrepreneurial perceptions and attitudes (independent variable) and innovation output (dependent variable) while the β value is high ($\beta = 57.66606$), $p < 0.05$ ($p = 0.00267$) and $t > 2.7764$ ($t = 6.63703$); (vii) a positive connection between entrepreneurial activity (independent variable) and innovation output (dependent variable) because β has a high value ($\beta = 157.52683$), $p < 0.05$ ($p = 0.00075$) while $t > 2.7764$ ($t = 9.25817$). In all the above situations it can be revealed a very strong relation ($R > 0.9$) between independent variables and the dependent variable ($R_5 = 0.96908$, $R_6 = 0.95747$, $R_7 = 0.97745$), and over 91% of the variation of the dependent variable ($R^2 > 0.91$) is due to the combined influence of changes in independent variables ($R_5^2 = 0.93911$, $R_6^2 = 0.91675$, $R_7^2 = 0.95541$).

Nevertheless, for hypotheses (v_{a, b})-(vii_{a, b}) there can be observed an existing positive linkage between the considered independent variable components and innovation output (innovators, economic effects). Similarly, relationships are characterised by a very strong degree of association ($R > 0.9$), with a variation in the dependent variable of over 88% ($R^2 > 0.88$) due to the influence of independent variables' variation ($R_{5a}^2 = 0.95750$, $R_{5b}^2 = 0.91771$, $R_{6a}^2 = 0.94216$, $R_{6b}^2 = 0.88930$, $R_{7a}^2 = 0.96142$; $R_{7b}^2 = 0.93971$).

4. Conclusions and research limitations

In the context of policies concerning European and national competitiveness, innovation appears as a solution to the dynamics of the economic and technological environment. At European level, the theme of innovation has been reactivated in the context of the Lisbon Strategy (2000) and through its revisions. Nationally, one of the general objectives of the 2007-2013 National Research, Development and Innovation Plan is to increase the innovation capacity, technological development and research results assimilation in the production in order to improve national economic competitiveness and the quality of life, with the specific objective of strengthening the innovative capacity of firms and enforce their contribution to create knowledge based new products and markets.

In Romania, the presence of an adequate infrastructure, the level of primary education and good health are the starting points for ensure the conditions entrepreneurial framework related to efficiency and innovation. These competitiveness factors positively influence the role of entrepreneurship and the nature of the entrepreneurial activity in the country. Checking the validity of research hypotheses emphasized an entrepreneurial behaviour

stimulated by the general conditions of the national and entrepreneurial framework would generate positive effects on innovation, in all the cases and at the same time, mostly for innovative small and medium enterprises and their economic influences. Further research using longer time series or time-lagged variables may lead to an even better validation of research hypotheses. The transformation proposed model in a time-lagged one would permit the inclusion of entrepreneurial aspirations within the entrepreneurial behaviour operationalisation. Additionally, the results of innovation portrayed by multiple indicators and the inclusion within the entrepreneurial behaviour model, of the existent large firms too, besides the newly created small ones, acting at national and international level (intrapreneurship), may lead to possible sharper results regarding the role of entrepreneurship on innovation results.

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The role of tender offer in FDI selection. Study case: Romania

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Abstract. *The present paper creates a tender model specific to FDI. We consider to be necessary to have such a tender since the effects of foreign investments in the national economy are multiple from an economic and social point of view so that it becomes necessary to emphasize a balance of the positive and negative effects. On the other hand, we also suggest two new indicators, the multiplier of foreign direct investments and the accelerator of foreign direct investments that show the way in which this type of investment spreads in the national economy.*

Keywords: foreign direct investments (FDI); balance of the effects produced; transnational corporations (TNC); host country; determinants.

JEL Codes: F23, G32.

REL Codes: 16B, 18F.

1. Introduction

Foreign direct investments have permanently generated questions both from a theoretical and from a practical point of view. Economists, politicians, environmental specialists, trade unions must respond to a number of issues raised by the economic, social, environmental and political implications that impose this form of investment and financing as well. The peculiarities of this kind of investment, the issue of relocation, the social implications, the impact on the national economy, the profit repatriation are questions to which answers must be found. In the current period, marked by strong turbulence on the financial markets, by the problem of the public debt in countries such as the USA, Greece, Italy, Spain, Portugal, Ireland, by the problems of globalization, a new question with multiple implications is added, namely the problem generated by direct foreign investments made in various forms both in the developed countries but especially in the countries with developing economies (emerging countries). The challenge of these investments is closely related to the overall effects generated on the national economies by the capital relocation or simply by the support of the parent company (country of origin) through different means: profit repatriation, branch decapitalization. Romania is not far from this complicated and unfriendly context. In this context we raise the following questions related to the FDI:

- foreign direct investments must take place freely in Romania (explicitly: investments in all fields regardless of implications) without any special regulations or without counting the positive and the negative effects generated by these investments.
- or, in the development of the FDI, to undertake their selection and channeling to specific areas of interest for our country.

The opinions might be pros and cons: opinions that argue the lower value of FDI in Romania and therefore unable to restrict this type of investment, and opinions to which I also adhere, namely that these investments should be attracted and channeled to areas of interest. If we only regard the disputes arising from Roșia Montană project we realize that we need to carefully approach the issues raised by FDI. Consequently, adhering to this idea, our intervention is trying to arouse interest which would call for tenders for FDI and the implications it generates on the national economy.

2. Fundamental theories and concepts of FDI

In time several theories on FDI have emerged. They differ according to the mainstream (American, Anglo-Saxon, and Canadian) and the approach of

different authors. In our opinion, a critical analysis of these currents highlights six fundamental theories – representative for FDI. They explain the fundamental concepts of FDI. We have highlighted the views of some prestigious specialists in this field, the most diverse opinions on these types of investments. Analyzing the various theories, from the oldest to the newest, and from the production cycle theory (Vernon, 1966) to the competitive advantage (Porter, 1979, 1980, 1985), the theory of recovery market imperfections (Hymer, 1976), the oligopoly theory (Buckley, Casson, 1976) to the eclectic theory (Dunning, 2008), all explained the way in which FDI are regarded mainly by the multinational companies that make them. Therefore, we have analyzed the determinants of FDI without putting any special emphasis on the economic, social and environmental effects felt by the host country.

The determinants of FDI are all for and against reasons that TNC take into consideration when implementing such investments.

The critical analysis of these determinants (Lall, 1997) highlights the deep concerns of TNC when implementing an investment in a country other than the country of origin (Appendix 1). There is a concern on three levels: economic, political and strategic. Each of them responds to multiple questions designed to cover the high risks generated by the investments. There are analyzed the fundamental aspects referring to market characteristics, resources and competitiveness if we refer to the economic conditions, the governmental policies that may affect the macroeconomic situation of a country as well as the capital policies. In terms of strategies of TNCs, they discuss the issues related to risk regardless of their level and origin, location strategies, resource strategies, integration and transfer.

The problems arising from FDI in the host country are not pursued with the same interest by the specialists in the field. The quantification of positive or negative effects on the national economies, environment, and social climate are briefly discussed or in some cases they are not discussed at all. Under these circumstances the question that arises is whether the governments of the host country should develop a series of matrices to measure and highlight the positive and the negative balance of FDI in different situations (optimistic and pessimistic scenarios). This should be done especially in the context of crises because they produce effects to which we add the effects generated by the problems of the multinationals in the host countries that could multiply the overall negative effect produced on the national economy.

3. The role of FDI in economic development

The relationship between investments and economic development (economic growth) is well known. It was developed by numerous economists including Keynes (1936) and Robert Solow (1956). If in the Keynesian model we consider the global income (V) as an indicator of economic development $\Delta V = \Delta C - \Delta I$, it would result that an increase in investments implicitly leads to higher consumption and income. The investment multiplier enables deeper knowledge of the effects generated by investments on income: $K = \Delta V / \Delta I$, due to the fact that it presents the revenue increase when investments are modified by one unit. But, regarding investments (I) we meet both domestic investments and foreign investments. In this situation it is required to breakdown investments according to their categories, domestic investment and foreign investment ($I = I_a + I_s$), where I_a represents domestic investment and I_s represent foreign investment. The investment multiplier could be written in these conditions as follows: $K = \Delta V / (\Delta I_a + \Delta I_s)$. Extrapolating, we can write ΔV based on the revenues generated by domestic investments (V_a) and the revenue generated by foreign investments (V_i) so $V = V_a + V_i$. Under these conditions $K = (\Delta V_a + \Delta V_s) / (\Delta I_a + \Delta I_s)$, and K may be written according to the domestic investment multiplier (K_a) and the foreign investment multiplier (K_s); $K = K_a + K_s$, where $K_a = \Delta V_a / \Delta I_a + \Delta I_s$, and $K_s = \Delta V_s / (\Delta I_a + \Delta I_s)$.

At the same time, in terms of economic growth, which also means an increase in revenue, there is an increase in investments. Under these conditions, the investment accelerator is one that highlights the growth of investment in revenue growth conditions. According to Keynes, $A = \Delta I / \Delta V$; doing similar as in the previous relationships, we can express the investment accelerator in fragments according to the domestic investment accelerator (A_a) and the foreign investment accelerator (A_s). Thus $A = A_a + A_s$, where: $A_a = \Delta I_a / (\Delta V_a + \Delta V_s)$ and $A_s = \Delta I_s / (\Delta V_a + \Delta V_s)$.

In conclusion, we can say that specific to FDI we can calculate two new indicators to help identify the FDI participation in the economic development (growth) of a country: the multiplier of foreign direct investments (K_s) and the accelerator of foreign direct investment (A_s).

Another famous model which reflects economic growth is Robert Solow's model (1956). Later on, further economists have developed this model, an important contribution in this respect being that of Charles Jones (2002). Basically, Solow's model is built based on two equations that show the production and capital accumulation. The production function is the Cobb-Dougllass type: $Y = F(K, L)$, so $Y = AK^\alpha L^{1-\alpha}$ where Y is the global production, A is the technological contribution, K – capital money (can be regarded as

money investment in achieving production), L – force labor (human resources used to achieve production). The second specific equation developed by Solow is that of capital accumulation: $K = sY - dK$, where sY is the gross investment and dK is the depreciation of capital.

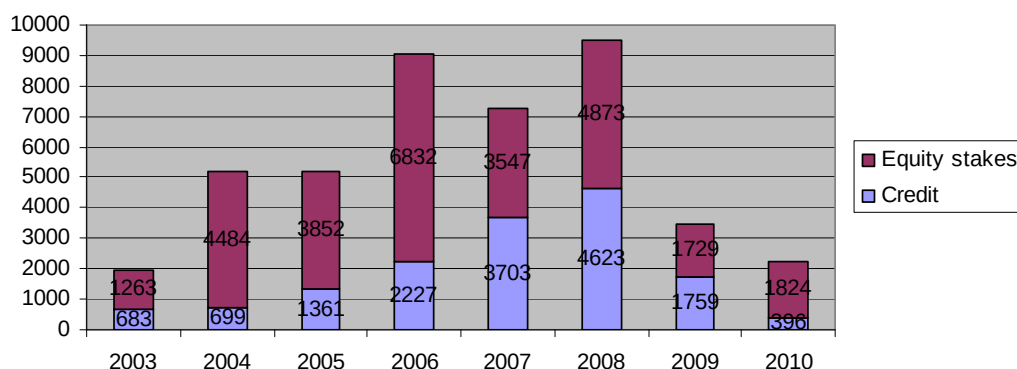
Just like in the case of the Keynesian model, we can try to split production and capital accumulation according to the production and exogenous capital (FDI) as well as production and endogenous capital. In this respect we can emphasize the participation of foreign capital in the model of economic growth.

Thus $Y = Y_a + Y_s = F(K_a, L)$ where Y_a represents the production achieved domestically and Y_s is the production made by foreign owned companies in the country. Capital accumulation would become $K = K_a + K_s = s(Y_a + Y_s) - d(K_a + K_s)$, where K_a is the domestic capital, K_s is the foreign capital, sY_a – the gross domestic investment, sY_s – the gross foreign investment, dK_a – depreciation of domestic capital, dK_s – depreciation of foreign capital.

The two models that emphasize the participation of investments and implicitly the economic growth through the indicators they propose to FDI, enabling quantitative assessment of the produced effects.

4. FDI in Romania

In Romania, foreign direct investments followed a descending path due to the economic and financial crisis. The data provided by the National Bank of Romania (BNR Report in 2010 on FDI) are eloquent in this respect.

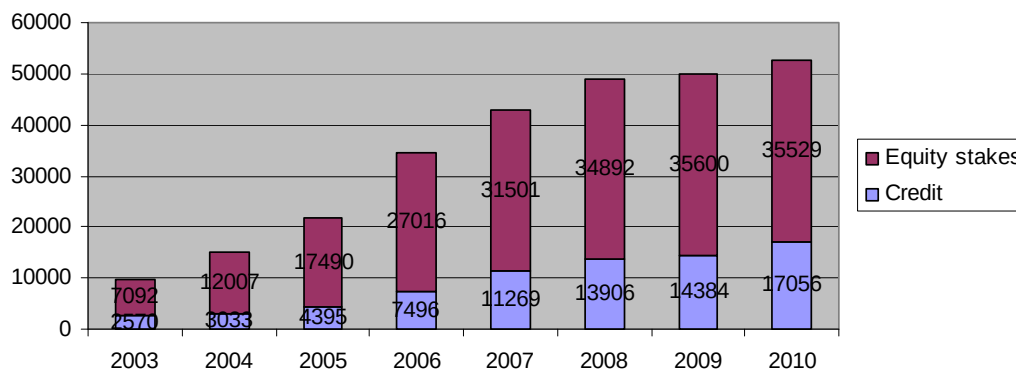


Source: BNR Report 2011.

Figure 1. FDI flows in Romania 2003-2010 (mil. euro)

One can observe a drastic reduction in FDI in 2010 compared with 2009 from 3,488 million euros in 2009 to 2,220 million in 2010 (minus 36.35%). This decrease is due, on one hand, to the global financial crisis and, on the other hand, to a sharp decline in the attractiveness which Romania presents to the foreign investors. Out of the total net inflows of foreign direct investment of 2,220 million, 1,824 million represented the net equity of foreign investors (82.16% of total net flows of FDI), while the amount of 396 million euros was the received net credit (17.84% of total net flows of FDI).

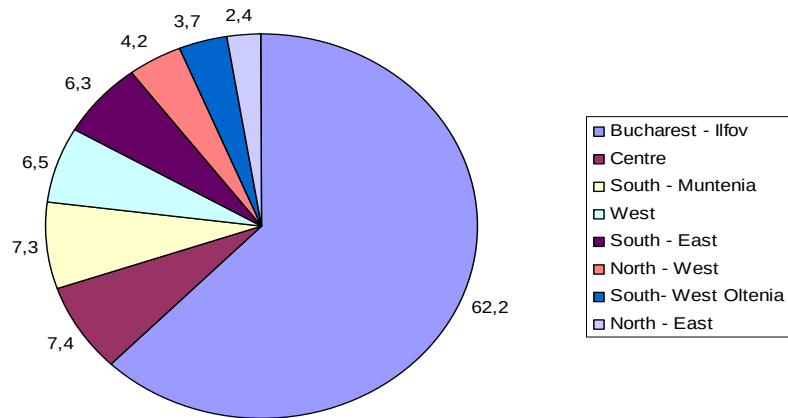
Regarding the final balance of FDI, this was of 52,585 million euros at the end of 2010, 5.2% higher than at the end of 2009. The economic sectors to which foreign investors have turned their attention to are: industry (43.9%), followed by financial intermediation and insurance (19.1%), retail and wholesale (12.4%), construction and real estate (9%), information technology (5.9%), others (9.7%, including agriculture, with 2%).



Source: BNR Report 2011.

Figure 2. FDI stocks in Romania 2003-2012 (mil. euro)

The regions that have attracted FDI show a clear dominance of Bucharest – Ilfov area, which attracted 62.2% of total FDI. At a great distance, we observe the Central Region with 7.4%, South-Muntenia with 7.3%, 6.5% for the West Region, 6.3% for the South-East region, 4.2% for the North-West, and the South-West and North-East with 3.2% and 2.4%.



Source: BNR Report 2011.

Figure 3. FDI stocks by development region (%) – 31 december 2010

The Netherlands stands out among those foreign investors that invested in Romania more than 10 billion euros at the end of 2010, which represents 20.7% of total FDI, followed by Austria with 17.8%, and Germany with 12.2%. It should be emphasized that the US accounts for only 2.6% and only 1.2% for the UK.

Table 1

Top 10 investors in romanian economy in 2010		
Countries	Total – mil. euro	
	Value	%
The Netherlands	10,903	20.7
Austria	9,346	17.8
Germany	6,398	12.2
France	4,384	8.3
Greece	3,016	5.7
Italy	2,808	5.3
Ciprus	2,550	4.9
Switzerland	2,021	3.8
The usa	1,349	2.6
Spain	1,064	2.0
Others	8,746	16.6
Total	52,585	100

Regarding the net revenues obtained by foreign investors in 2010, they were worth 491 million euros, registering a decrease with 203 as compared to the previous year.

5. Tender offer on FDI

In this context we can say that we have an overview of FDI in Romania, of the defining theories, determinants and specific motivations of TNC, but not clearly known effect on national economic, environmental and social impact created by them. If for motivation and determinants we can precisely express what TNC considers when making a decision to invest in a particular country or area, if the defining theories on FDI clearly express their options and strategies: new markets, competitive advantage, access to resources, expansion, etc., the measurable effects for the host country are less known. Within the current national and international context, it is necessary to highlight this impact at the economic level. It also requires a strategy aimed at creating a balance of the effects produced on the national economy (positive and negative effects) to guide the country's investment policy. The tender offer on FDI can have a positive effect on the level of economic and social development of a country.

When we talk about Romania and not only, the tender offer should constitute an argument for the government policies of macroeconomic development. The reasons underlying this statement are multiple and considered fully justified. These may include:

- FDI and TNC seeking resources, especially non-renewable resources that their countries of origin are either out of them or are well protected by the authorities. Romania knows the alienation phenomenon of energy resources (especially oil extraction and oil production) not quite in very advantageous terms. If for the foreign companies it was a good business deal, for our country things were not exactly the same;
- FDI and TNC seek only the areas of interest to them and they do not intend to develop further areas of interest for the host country, which could lead to mutual gain. A summary of the statistical data outlines some non-welcome aspects regarding the interest area of FDI in Romania. It appears that important sectors such as agriculture, tourism, manufacturing and high technology incorporating skilled labor are avoided, these investments being made in branches which the Romanian state through proper management could have effectively developed;
- Another argument is that some companies have not been successfully privatized and the foreign partners did not respect the contractual terms. An illustrative case is ARO Câmpulung;
- The Romanian legislation is elusive, perfectible in terms of FDI (OUG no. 92/1997 on stimulating direct investment, amended and approved by Law no. 241/1998);

- The lack of priority development areas for which the state initiate a series of legislative packages that would stimulate investment in those sectors (e.g. non-taxing the profit reinvested in those areas, differentiated tax rates on income taxation, differentiated taxation of labour force for those companies that invest in the sectors of interest or in the disadvantaged areas);
- The exports of raw materials or semi-finished products. It is well known that Romania used to be an important producer and exporter of furniture, and now it is a large exporter of timber;
- The high degree of vulnerability of the Romanian banking sector dominated by foreign owned banks (e.g. 26% share held by the banks with Greek capital).

These are just some of the arguments underlying the proposal of achieving a system of tenders for FDI. The procedure or the methodology to achieve such a tender offer would involve first of all going through several important stages.

1. Identifying the areas of interest for Romania to attract such investments. These areas should be road infrastructure, tourism of all kinds, agriculture, high technology, recycling, renewable energy;
2. Developing a national strategy to focus on the development of these sectors that could decisively contribute to the human development index and hence to economic development;
3. Elaborating a set of measures to fiscally stimulate investments, including foreign investment in priority areas;
4. Promoting Romania's economic interests abroad by organizing meetings, fairs and exhibitions in countries with potential (e.g. China);
5. Elaborating econometric models to simulate some possible scenarios regarding the effects produced by crises on foreign capital in the country, study the behavior of critical TNC, the elaborating the balance of FDI effects;
6. Regulating of public-private partnership in such situations (FDI). Example: making road access by public authorities for a factory made through FDI.

Starting from these premises, we outline the idea of an application which provides a structure that includes the issues of interest to the host country, in this case Romania. The tender offer must include standard elements, and in some cases, elements to customize it.

In terms of standard elements, they include:

1. The field/sector/branch for which they make the tender. Romania should solicit to invest in the sectors of interest or in the areas with potential

that the domestic capital cannot develop (e.g. road infrastructure, tourism, agriculture, high technology, recycling);

2. The technical details of the tender. They must obligatorily include information regarding the technologies used, the level of pollution, the technical parameters to achieve the construction, installations, etc., the operating parameters, the domestic consumption of domestic natural resources, the energy resources;

3. The financial details of the tender. The value of the investment, the type of depreciation used, the profitability, the dividend policy, the repatriation of profits, credit and employment of domestic and foreign capital;

4. The impact analysis:

- The economic impact – calculations regarding the development of the area following the investment, the contribution to the growth of the GDP, increasing exports;
- The environmental impact – the impact analysis on the environment, environmental protection measures, pollution reduction, waste policy;
- The social impact – the impact on the working population, level of training, reducing unemployment;

5. TNC's own vision on the development of each field/sector/branch;

6. The cost/benefit analysis means to make calculations of efficiency, to balance the effects produced in each branch, economy, environment and social level;

7. TNC's behavior in crisis situations, respectively explaining the TNC policy in case the economic, financial, political variables are modified from the initial situation, the TNC's reaction when the parent company suffers losses, the issue of capital relocation;

8. The deadlines aim the necessary time to produce the intended effects. Example: the operation of facilities, the achieved employment, production for export;

9. The guarantees refer to the financial guarantees offered by TNC to achieve objectives, financial solvency, contract fulfillment;

10. Special clauses.

The analysis of the tender offers also implies, in addition to the specific elements for such situations, creating some balance effects produced on the national economy. Various models are quantified by various economic, social and environmental effects related to FDI. Such a model is the model called ESP (Environmental/Systems/Policy) developed by K. Koopman and J.M. Montias in 1971, which weighs the various components and variables that contribute to the mix needed to attract FDI as well as the effects they produce, the property model wealth – accumulation – restructuring (Pavitt, 1987, Cantwell, 1989)

which highlights the consequences produced by FDI, the growth stages model (Rostow, 1959, 1979, Chenery, Balassa, 1980) that makes the link between the TNC activity and the development of a country and as well as the effects of restructuring.

6. Conclusions

FDI represents for any country a factor of growth and development under the conditions that they aim at the mutual benefit (both for the multinational company and for the host country). If for transnational corporations, the determinants and the motivations are well-known, the effects on the host country, especially in conditions of crisis are less explored. The current crisis and the generated effects impose in each national economy the calculation of some specific indicators such as the FDI multiplier and the FDI accelerator to analyze how these investments evolve under certain conditions (the effect on the total income or the growth effect of the total income on investments.). However, due to the turbulence produced by multinationals, in particular the financial ones at global level, it is necessary to create a balance of the effects produced by FDI based on various scenarios. For Romania, the tender may contribute decisively to the balanced development of the sectors of national economy, FDI being channeled through this form to the sectors of interest.

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Annex 1**Host country determinants of FDI**

Economic conditions	Markets	Size, income levels, urbanization, stability and growth prospects, access to regional markets, distribution and demand patterns.
	Resources	Natural resources, location
	Competitiveness	Labour availability , costs, skills, trainability, managerial technical skills, access to inputs, physical infrastructure, supplier base, technology support.
Host country policies	Macro policies	Management of crucial macro variables, ease of remittance, access to foreign exchange.
	Private sector	Promotion of private ownership, clear and stable policies, easy entry/exit policies, efficient financial markets, other support
	Trade and industry	Trade strategy, regional integration and access to markets, ownership controls, competition policies, support for SMEs
	Fdi policies	Easy of entry, ownership, incentives, access to inputs, transparent and stable policies.
MNE strategies	Risk perception	Perceptions of country risk, based on political factors, macro management, labour markets, policy stability.
	Location, sourcing, integration transfer	Company strategies on location, sourcing of products/inputs, integration of affiliates , strategic alliance, training, technology.

Source: Lall S., *Attracting Foreign Investment: New Trends, Sources and Policies*, Economic Paper 31 Commonwealth Secretariat, 1997.

Characteristics and drivers of venture capital investment activity in Romania

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Abstract. *The present paper aims at characterising the venture capital market and identifying factors affecting the venture capital investments activity in Romania in the period 2000-2010. With a view to assessing the intensity of manifestation of various factors on the supply and demand of venture capital we use an econometric model of macroeconomic variables already tested in the literature. We consider, however, that we bring contributions to the approach, by analysing the features of the venture capital market in Romania and impact factors, our work being, at the same time, support in assessing the types of decisions to be adopted by policymakers to the formation of an authentic market and stimulating innovation. Our results indicate that the total R&D intensity is the main determinant of the venture capitals invested in this period in the two phases (for early stages and expansion). A significant incidence, mainly on the supply side, also shows the annual long term real interest rate, while the market capitalisation, the effective marginal tax rate on corporate income, the annual inflation or unemployment rate do not impact on the venture capital. Our recommendations, in terms of formation and development of the venture capital market, look as a priority, strengthening the demand for resources, respectively encouraging of enterprises to innovate, creating of conditions for the supply to be manifested in the seed and start-up stages and the compatibilization of the need for resources with prudential rules by adapting regulations for institutional investors.*

Keywords: venture capital; innovation; enterprise; research and development.

JEL Codes: G24, O31.

REL Codes: 11E, 18F.

1. Introduction

Beginning with the work of researchers as Jaffee and Russell (1976) and Stiglitz and Weiss (1981), the arguments in favour of existing market imperfections that cause difficulty for firms to obtain external financial resources in addition to the internal ones, representing the main constraint on investment decisions, have gained a special attention in the literature. The firms involved in technological innovation may be the most affected by the financial market imperfections that characterize also bank financing (Carpenter, Petersen, 2002). In general, banks lack the skills for ex-ante evaluation and ex-post monitoring of investment projects developed by innovative enterprises. Although, in principle, adverse selection and moral hazard can be mitigated by providing guarantees to creditors (Berger, Udell, 1998), significant proportions of intangible assets in the total assets held by the high R&D intensity firms reduce their access to bank financing. Reduced access to the traditional external resources limits funding and threatens innovative companies to grow. Venture capitals are, generally, considered to be the most appropriate financial resources for the small and medium-sized enterprises (SMEs) that innovate technologically. Venture capital firms do not only provide resources for financing of projects, but they give also experience in research activities and diffusion of innovations, shaping the company's business strategy.

This study contributes by characterising the venture capital market and factors with impact on investments made in Romania. Of the later perspective, we introduce macroeconomic factors identified in the literature. However, there are few studies devoted to the identification of factors affecting the risk capital in Europe and, in particular, in Eastern Europe countries, where the relevant market is relatively young compared with the venture capital industries of Western Europe. The empirical studies in the literature proceed to test the incidence of various factors on the example of OECD countries (Jeng, Wells, 1998, Romain, van Pottelsberghe, 2004, Clarysse et al., 2009) or, of groups of states of the EU (Cherif, Gazar, 2011, Kelly, 2010) that are characterised by heterogeneous markets and institutional conditions. We consider that a nuanced approach, by tacking into account the particularities of the venture capital market, may lead to a better understanding of the incidence and intensity of manifestation of various factors, representing a useful approach in assessing the decisions to be adopted by government policy in order to attract financial resources for innovative enterprises. In principle, measures can be adopted both on the demand and supply side, depending on the factors affecting the two. The supply is determined by the ability and willingness of investors to provide financial resources to funds (limited partners), which, in turn, can be allocated

by the venture capital firms at the level of innovative enterprises. The demand is represented by innovative companies in need of funds. Objectively, the investments are attracted to countries that have developed capital markets and practice tax incentives for attracting of investors. On the demand side, tax incentives for research and development are provided and the implementation, on a larger scale, of measures to create an innovative environment.

Section 2 is allocated to the role of venture capital in the economy and to characterise qualitatively and quantitatively the venture capital market in Romania. The review of the main existing contributions in the literature on the identification of determinants of venture capital investments is allocated in section 3. From these, in section 4 we construct assumptions on the incidence of manifestation of different factors with potential impact on investment in Romania and identify indicators to be incorporated into the econometric analysis in order to highlight the main drivers on venture capital investment activity. The last section concludes and discusses on political implications.

2. The role of venture capital and the market development in Romania

The debate on technological innovation in the private sector cannot ignore the possibilities of financing of enterprises. In principle, firms can use equity, loans or a combination of the two funding resources. The term "venture capital" (or risk capital) can be used in a broad sense, to include all types of capital invested in high-risk projects, including resources from entrepreneurs. The insufficiency of resources available to the entrepreneur to cover the funding needs of projects involves attracting of external funds, equity being the most appropriate according to the innovation risk supported by various investors. This narrow meaning of venture capital is mostly invoked by researchers and practitioners, with reference to the external financial resources of companies, incorporating investments made either by individuals (business angels) by allocating their personal income or by specialised firms (venture capitalists) that carry out investments of resources made available by the various individual investors or financial intermediaries in innovative enterprises. The venture capitals as a result of financial intermediation "refers to equity investments made for the launch, early development, or expansion of a business" (EVCA, 2011, p. 7).

There is a large distinction between venture capital activity and buyout activity. The former tends to be provided to young and start up companies with high growth potential; the later generally involves investment to finance ownership changes: companies are purchased, restructured and improved to add value, and subsequently sold. Depending on the phase of development of the

enterprise, venture capitals can cover early stages (seed and start up) and expansion, excluding buyout operations. Seed capital covers the research, evaluation and development of a commercial idea or business concept, focused on determining its technical feasibility, market potential and economic viability and the start up capital is used to fund the development of a product prototype, initial market research and market-reach activities, and the establishment of a formal business organization. In turn, the expansion capital may be used to finance of production growth, product development, including increasing of working capital.

Although the venture capital firms tend to concentrate their activity in certain geographical areas located in the proximity of universities and research facilities, their geographical horizon of investment is larger than business angels' as a large part of the business plans submitted are rejected. Being in a constant contact with the technological innovation in the sectors in which they operate, the venture capitalists have assessments methods of investment opportunities with potential in obtaining of high rates of return, provide support by monitoring and their active role in the development strategy of firms in which they invest, in research activities, product development and commercialisation. Frequently, such investment opportunities are found in advanced technology sectors.

The funds collected offer investment opportunities to investors in the growing and innovative sectors of the economy and risk diversification. In the same context, the venture capital market provides connections between innovative enterprises in need of funding with sources of capital. The centre of the venture capital process consists in linking investors with innovative enterprises in which they invest. The economic theory emphasises the information asymmetry existing on the capital market that affects the financing possibility of SMEs, particularly those in high-tech industries, based on the difficulty of investors in assessing enterprises. Specialized financial intermediaries, such as venture capital firms, address these issues by professional assessments of projects before providing capital to companies and their subsequent monitoring alleviating agent conflicts between entrepreneur and investor, leading to improving efficiency (Cornell, Yoshie, 2003; Hellmann, 1998).

Kortum and Lerner (2000) showed in their study at the industrial level in the US that the financing from venture capital has a strong positive impact on innovation; on average, a dollar of venture capital appears to be three to four times more potent in stimulating patenting than a dollar of traditional corporate R&D. Diffusion of technologies in the economy leads further to higher productivity and economic and social returns. Gottschalk et al. (2007) compares

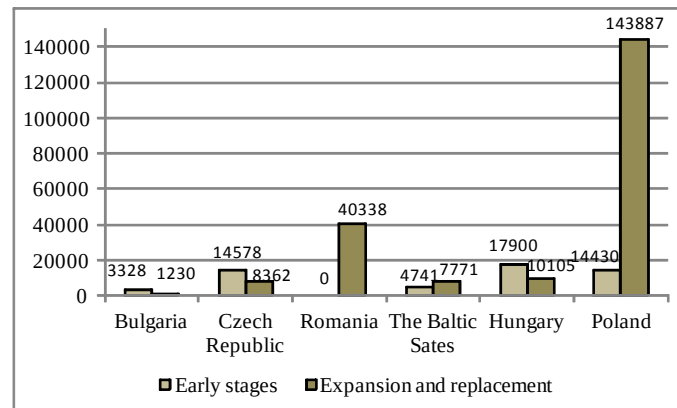
the characteristics of German enterprises that have obtained financial resources from private investors, including venture capital firms, with enterprises that have not obtained such resources. Their results show that the first register higher growth rates, allocate more funds to R&D activities, are more innovative and commercialize innovations. Achleitner and Klöckner (2005) show that the rate of employment growth is, on average, higher at the level of firms that have received venture capital financing.

Venture capital have attracted particular attention in practice and in the literature through the positive impact on firms with high growth potential, such as those that innovate in the fields of new technologies, being associated with increasing sales resulted from innovation, industrial development and employment. Most government agencies recognize the importance of mobilization and investing of financial resources in high risk activities, as driving factors of creating innovative firms and sustainable development admitting, objectively, that their access to financing innovation projects is crucial for research and development activities, for obtaining results and ability to be diffused.

Despite the positive incidence in the economy, the size of private equity market, including venture capital, varies considerably over time in the European space. Over the past decade, the total funds raised (private equity) recorded a cyclic evolution, ranging from a maximum of EUR 112.3 billion raised in 2006 to a minimum of 16 billion raised in 2009 as a result of the severe economic crisis in 2009, with an upward trend in 2010 to EUR 20 billion. Over the same period, annual investment has averaged just over EUR 40 billion, peaking at EUR 72.7 billion in 2007 and followed by a decline over the period 2008-2009, growing after at EUR 42.6 billion (EVCA 2011). As a result, the private equity investments related to the average of the 27 EU countries increased from 0.2% of GDP in 2009 to 0.3% in 2010. Venture capital investments in the early stages held the lowest proportion in the 27 Member States. In 2010 they accounted for 8.8% of the total investment (private equity), while 20.3% investments were made in expansion and 70.9% in buyout operations. 44.71% of the total investments were performed in the UK, 13.74% in France, 9.72% in Germany and the rest in other member States in 2010 (calculations by using EVCA data, 2011).

Viewed as a whole, the investment activity in the Central and East-European countries (CEE) showed a similar trend of other EU countries, but the investment size was much smaller, representing less than 3% of the total investments made in the EU. In fact, the venture capital industry in this region is still a young one, with a continuous development since its inception. As in previous years, the investment activity in this region in 2010 was concentrated

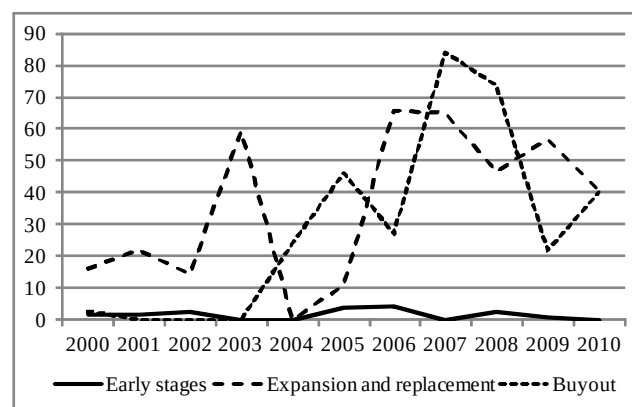
in states such as Poland, Romania, Czech Republic and Hungary. In the Figure 1, we show that the size of venture capital invested in the early stages was the lowest and this characteristic has been maintained since the inception of the market:



Sources: EVCA (2011).

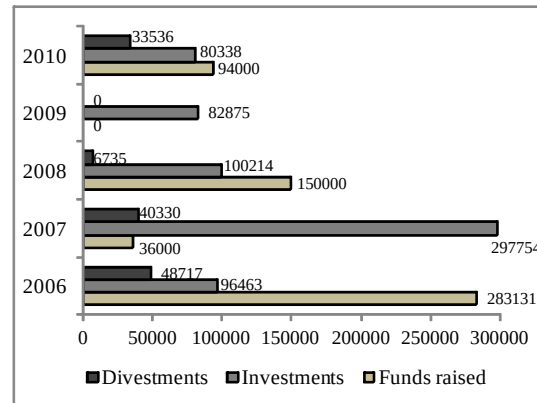
Figure 1. Venture capital investment activity in the CEE countries, year 2010 (thousands of euros)

The concentration of venture capital invested mainly in the expansion stage and buyout also is a characteristic of Romanian market in the period 2000-2010 (Figure 2). Investments in the early stages have been sporadic and maintained at a level between 0 - 15% of the total venture capital invested (15% being recorded in 2002).



Sources: Eurostat database

Figure 2. Private equity investments in Romania - evolution 2000-2010 (millions of euros)



Sources: EVCA (2011); BVK (2007-2009)

Figure 3. Venture capital activity in Romania evolution 2006-2010 (ths. of euros)

Even if the share of investments in expansion and buyout is dominant, its irregular and volatile evolution persists. Investments targeted mainly to the stages of expansion and buyout demonstrate obtaining of more attractive returns at a lower risk profiles to investors in these stages than in early (seed and start-up) stages of the small enterprises. We can admit that the later ones have been adversely affected by the lack of financing due to the absence of the (visible) market segment of individual investors (business angels) and of venture capital of specialized firms.

In general, investments in Romania have been concentrated mainly in the life sciences sectors where 49.8% of the total investment has been carried out in the year 2010, in communications – 14.9%, consumer products, services and retail – 13.6%, energy and environment – 9.7% etc. High-tech sectors have been registered sporadic investments, reflecting the effects of the industrial structure (during 2006-2010 for which we have obtained detailed data, investments in high-tech sectors accounted for 5.6 per cent of the total investment in 2009, 56.60% in 2006 and 0% in other years; data sources: EVCA, 2011 and BVK, 2007-2009).

Funds raised and divestments show also large oscillations (Figure 3) reflecting the fragility of the private equity market in Romania. This feature is even more evident the more funds raised, for example, in 2006-2010, came from European government agencies (external funds counted more than 90% of the total), while investors such as pension funds, funds of funds, insurance companies and banks have been absent from the capital providers spectrum in recent years, being inclusively the consequence of a poor adapted regulatory

framework for making high risk investments. Divestments, in turn, have been performed mainly through trade sales of the companies to strategic investors and not through initial public offering (IPO) – regarded as the signal of a successful venture capital process in terms of yields achievable by venture capital firms and investors (OECD, 2006, p. 96). This has been the dominant divestment mode to unlocking capital, obtaining earnings and their subsequent reinvestment.

3. Literature review on the drivers of venture capital investments activity

Although there are few, some studies undertaken in this area have looked at both the demand and supply side from a general partners and investee company perspective, in order to determine drivers of activity. Some of them have focused on the supply side to understand in particular what makes limited partners to provide funds.

Gompers and Lenter (1998) examine the determinants of fundraising in venture capital industry in the US for the period 1972-1994, reflecting that the demand for funds plays a dominant role, along with the capital gains tax rate. In the same context, the economic growth, the R&D expenditure and performance of firms, reflected by indicators, impact on the supply side of venture capital.

Jeng and Wells (2000) analyze the determinants of venture capital on the example of 21 OECD countries for the period 1986-1995. They use venture capital (in early stages and expansion) as dependent variable, considering also investments made in the early stages and the size of the new funds raised separately. The results obtained show that the various types of investment are affected differently by the factors considered. In this respect, while investments in expansion stage are sensitive to the size of initial public offerings, those made in the early stages are unaffected by the exit mechanisms, but other variables associated with labour market rigidities impact on them, which in turn, do not affect the expansion investments. The growth rate of gross domestic product (GDP) and market capitalisation are variables that do not have a significant impact on venture capital in the Jeng-Wells model.

In the equilibrium model considered, Romain and van Pottelsberghe (2004) test the gross domestic product growth rate, variables reflecting technological opportunities (proxied by the growth rate of business R&D outlays, the business R&D capital stock, and the number of triadic patents), and variables associated with the entrepreneurial environment (the tax rate on corporate income, the entrepreneurial activity index and the index of labour market rigidities) in terms of their impact on both the demand and supply of venture capital. From the empirical study conducted using panel data of 16

OECD countries in 1990-2000, the authors observe that increasing the gross domestic product and interest rate has a positive impact on the venture capital intensity. The indicators related to technological opportunities have also positive impact on the relative size of venture capital, while the index of labour market rigidities reduces the positive incidence of the GDP growth or of R&D spending on the intensity of venture capital. The size of funds raised in the private pension system is another determinant manifested over the time, positively impacting the venture capital invested, without observing differences between states.

In a more recent study, Felix et al. (2007) analyze the determinants of venture capital invested in 23 European countries in the period 1993-2003 using a model in two variants (with fixed and random effects), concluding that the GDP growth rate, the stock market capitalisation and the interest rate explain, by the positive and significant incidence, the amount of venture capital. In the same framework, the sizes of divestments through the IPO mechanism or sale of shares to strategic investors have the most powerful incidence. As Jeng and Well (2000), they intend to identify drivers of various types of investments performed according to the stages of business development. In the high-tech sectors, the GDP growth, the long-term interest rate, the unemployment rate, and the stock market capitalisation have significant impact on investment. In the early stages, the long-term interest rate, the unemployment rate, divestments through IPO mechanism and the price to book ratio of shares are identified to be the main determinants.

Clarysse et al. (2009) use a panel technique to identify supply and demand drivers of venture capital activity for the UK (1985-2006), Israel (1999-2007) and the US (1980-2007). They found that the amounts of early stage and total VC invested in the three countries are determined by three main factors, namely total entrepreneurial activity (as measured by the Global Entrepreneurship Monitor), the stock market capitalisation, and the R&D expenditure.

Looking purely at the supply side, and focusing on the supply of funds from limited partners to general partners, Groh and Liechtenstein (2009) undertake a study to see the attractiveness of Central and Eastern Europe for risk capital investors. Their study is based on questionnaires addressed to institutional investors, asking them about the importance of several emerging markets allocation criteria, which yields a tailored ranking of an emerging countries' attractiveness for private equity investors. In this respect, the authors show that CEE countries are less attractive than the EU-15 average. In this region, investors are attracted by a lower tax rate on corporate income arising as the strength of these countries, but they are discouraged by low liquidity of

national capital markets. In a further study, Groh and Liechtenstein (2010) present detailed results of the composite indices constructed based on the same indicators used in their 2009 paper to compare the attractiveness of 27 European countries (on the six tier groups of attractiveness, namely tax regime, protection of investors and corporate governance, human and social environment, entrepreneurial culture and opportunities, prosperity of economy and size and liquidity of national capital markets). They find that the UK is the most attractive country to institutional investors, followed by Denmark, Ireland, Sweden and Norway. Germany is more attractive than the average of EU countries, followed by France, Italy and Spain. In the same framework, by ordering states according to their index, Bulgaria, Greece, Slovakia and Romania are the least attractive. Romania is considered to present the main strengths on the low level of corporate income taxation and strong investor protection (considering adequate information provided), the low attractiveness resulting from a weak entrepreneurial culture (measured by the EIS innovativeness index, the R&D intensity etc.) and a weak activity of the capital market (low liquidity and the difficulty to identify the potential partners in exit operations).

4. Drivers of venture capital investments activity in Romania

4.1. Assumptions regarding the incidence of different factors

Existing studies in the literature on the determinants of venture capital investment activity in various countries aimed at identifying the factors with potential impact on the level and increasing investments and proceed to constructing of indicators reflecting their incidence, followed by testing them econometrically. Generally, such factors can be regarded as cyclical or structural, the last reflecting the entrepreneurial activity and culture formed in the R&D field, the capital market activity, the institutional environment and taxation on corporate income or on capital gains etc. In this section we highlight the mechanisms of manifestation of the incidence of various factors affecting the equilibrium amount of venture capital invested in Romania and opt for the constructing of indicators that subsequently introduce them into the analysis by using a multiple regression model being interested, in particular, of those as a result of fiscal policy promoted.

The evolution of the economy reflected by the GDP growth is associated with an increase on the number of start-ups (Acs, Audretsch, 1994). Also, Gompers and Lerner (1998) and Jeng and Wells (2000) argue that macroeconomic expansion reflects an increasing number of start-up enterprises that leads further to raising of the venture capital demand. In the same time, an

increasing trend of the GDP growth leads to enlarge expectations regarding the gains obtainable by divesting, with potential impact to increasing the venture capital supply. Under these assumptions, we expect a positive relationship between the increase of the annual GDP growth rate and the supply of venture capital for innovative enterprises.

The rate of return on the financial market can be considered a factor affecting venture capital investments. Gompers and Lerner (1998) show that the level of interest rates can influence the venture capital supply. Since investing in bonds can be an alternative to venture capital investments, when the interest rate increases the attractiveness of making investments in high risk activities diminishes. Thus, for a given rate of return from the high risk activities, there will be a lower supply of funds. On the other hand, if one considers the cost of bank loans to increase as the interest rate grows, this can lead to increasing demand for venture capital from innovative enterprises. Under these assumptions, in which the interest rate variation influence both the demand and supply of venture capital, the incidence on the venture capital invested depends on the net (equilibrium) effect resulted. In our analysis we use the annual real long-term interest rate and formulate the hypothesis that the effect of the interest rate on the amount of venture capital invested will be negative if the (unfavourable) effects on the supply are higher than the (favourable) effect on the demand.

At the same time, it is recognized that an economic space characterized by a well functioning of the capital market is attractive to investors. Exit operations of venture capitals require *liquid market*, allowing investors to unlock their funds and achieve gains from investments. In general, variation of indicators reflecting favourable changes of the capital market in terms of its size and liquidity facilitates the increase of venture capital supply. Also, some authors (Schertler, 2003) argue that the stock market liquidity is a prerequisite in creating skills. Entrepreneurs seeking to sale their affairs on the stock market become candidates of the venture capital firms and are able to provide managerial support and funds to other firms. These arguments have empirical support in the literature. Gompers and Lerner (2000) note that the activity of venture capital firms is enhanced in countries with developed capital markets. Clarysse et al. (2009), Kelly (2010) and Cherif and Gassing (2011) identify the positive impact of the market capitalisation on the venture capital investments.

An increase of the market capitalisation has a similar significance to the GDP growth, reflecting expectations of the investors regarding the evolution of the economy. Thus, the market capitalisation growth can lead to the increase in the available funds for venture capital investments enhancing, also, the demand for funds due to favourable expectations coming from entrepreneurs. The stock

market capitalisation can be calculated by multiplying the number of shares with their market values on the stock market. In this study, we use the stock market capitalisation to GDP as indicator of the size and liquidity of the capital market and formulate the hypothesis that the increase of the market capitalisation is a driver to increasing the venture capital investments.

Research and development expenditures. The supply of venture capitals cannot exist without a demand side came from innovative enterprises. From this perspective, innovative enterprises in early stages or expansion generate the demand for venture capitals. Innovativeness of enterprises is a result of the research and development expenses carried out at their level, and of the culture formed in the research and development field which, in turn, is fostered by the government support (public R&D expenditures), including scientific research performed in institutions of higher education and research.

There are numerous empirical evidences to the support of the above hypothesis. Gompers and Lerner (1998) and Schertler (2007) identify a direct correlation between the gross expenditures on R&D and venture capital investments. In addition, Romain and van Pttelsberghe (2004) identify a strong positive correlation between the business expenditures on R&D and venture capitals invested. Clarysse et al. (2009) obtained similar results by using a synthetic indicator of entrepreneurial activity provided by the Global Entrepreneurship Monitor.

Measuring the quality of entrepreneurship focused on innovation activities can be performed by using the R&D intensity (the gross or business expenditure on R&D to GDP) as a proxy. Statistic data of different countries provided by Eurostat show that the supply of venture capital increases to the increase of the technological opportunities of the entrepreneurial environment reflected by the amount of R&D expenditures. Thus, the indicator R&D intensity allows the activity of the high-tech enterprises to be captured. When the gross expenditure on R&D rises, that means that both the number of firms that perform R&D activities and the government support increase. In this frame, we suppose that the increase of both the efforts of the firms in research activities and the culture formed in the R&D field promoted by the government support, reflected in the gross expenditure on R&D, present a positive incidence on the venture capital investments, through the positive impact on both the demand and supply of venture capital funds.

The tax regime is an important consideration for both the funds supplied and demand for venture capitals. An increase of the amount of taxes to be paid on income leads to the reducing of the net rate of return obtainable by entrepreneurs and investors, bearing the same investment risk, with a potential impact of discouraging investments.

The size of corporate income tax, as a result of the tax rate and tax incentives practiced for research and development and diffusion of technologies, influences both the venture capital supply and demand. For instance, the decrease in corporate income taxes is stimulatory to the creation of new businesses and R&D activities, with a potential impact to the increase in demand for risk capital. The supply of funds is, also, driven by reducing the corporate income tax that diminishes the gross rate of return through the reduction of the required rate of return to investments.

Gompers and Lerner (1998) note that the reduction of capital gains tax rates increases the inclination of individuals to become entrepreneurs, including to spin out of existing businesses, leading to the increase of the demand for risk capital. Poterba (1989) notes that capital gains taxation influence both the demand and the supply of venture capital; the reduction of tax rates leads to increasing the supply as a result of the increase of the post-tax rate of return on investments and, also, stimulates the demand by the increase the number of entrepreneurs who decide to establish new businesses units. It is obvious that, from the perspective of the investee companies (general partners), whereas the largest proportion of returns results from capital gains of existing investments, their tax treatment is included as a determinant of the supply of risk capital.

The empirical evidence on identifying the impact of taxes on venture capital investments is mixed. Gompers and Lerner (1998) find the significant impact of the size of capital gains tax rate on venture capital investments. Romain and van Pottelsberghe (2004) and Felix et al (2007) introduce the corporate income tax rate as dependent variable, but their results do not confirm its impact on venture capital. Other authors, such as Kelley (2010), use sub-indicators provided by the EVCA that cover aspects of the attractiveness of tax systems for venture capital firms concerning fiscal incentives for R&D activities, technology transfer and cooperation between enterprises and research institutions, the creation of innovative firms, contracting researchers and incentives for the supply of venture capitals. Such indicators are available for Romania, but only for two years (2006 and 2008).

In Romania, the tax rates with significance regarding their influence on the venture capital investments didn't suffer major changes over the time. In this respect, the corporate income tax rate was 25% in the period 2000-2005, decreasing to the level of 16% since 2005. In turn, the tax rate on capital gains has been maintained at the level of 1% until 2007, subsequently increasing to 16% (European Commission, 2010). Given on the one hand, the significant fluctuations of the venture capital between 2000-2010 and, on the other hand, the constant size of the taxes on capital gains on long-term intervals, we assume that the latter cannot be used as explanatory variables. Therefore, we try to use

the effective marginal tax rate on corporate income (dimensioned by the European Commission, 2010) as explanatory variable of venture capital presenting, in principle, the advantage of incorporating both the tax rate and tax incentives applied with impact on the amount of taxes to be paid on corporate income.

The institutional environment. The innovative enterprises and entrepreneurial culture generate the demand for venture capital. Such an environment is a necessary condition, without shaping, however, a sufficient frame for the formation and development of venture capital. For manifesting the supply of funds, the investment made by institutional investors need, also, to be protected. The institutional environment must be a suitable one for such investments: to protect the investments made by investors and the allocation of funds to high risk activities to not be discouraged. From the supply side perspective, another condition concerns the existence of an institutional environment that allows investors to create their own investment model. Schertler (2003) notes that the supply of active involvement by experienced venture capitalists is only positive if regulations and contract law do not prevent them from having exclusive control rights (such as board and voting rights) in the enterprises they have chosen to finance.

Another area of importance concerns the pension funds regulations that are, in many countries, the major suppliers of funds for the equity capital industry. It is known, in fact, the development of the venture capital market in the US since 1979, just after changes were made in prudential rules, which allowed pension funds investing in high risk activities. The US experience suggests that a substantial pool of institutional savings, with a flexible regulatory regime, is conducive to the development of the venture capital market. Conversely, in a space with low savings or where institutional savings are affected by rigid regulations, difficulties will be registered in forming and development of the venture capital industry (OECD, 2006). Moreover, it is argued that the result of removing restrictions imposed to pension and insurance funds for investing in private equity funds may be more favourable than the government participation to the formation of these funds (OECD, 2004, p. 26). The empirical studies (La Porta et al., 1997, 1998) confirmed the incidence of the legal framework on the ability of firms to obtain financing resources, especially from abroad.

There are many specific aspects of institutional environment that would be of importance for our analysis. However, it is difficult to capture and quantify them without having the necessary statistical data. We observe, however, that the absence of the private pension funds, at least until the year 20007 (when the Pillar II of private pension funds has been launched) can shape

an explanation of the modest size of venture capital invested in Romania. However, even some countries with well developed funded pension schemes have had only a limited success with venture capital investments. For example, pension funds are important sources of institutional savings in the Netherlands and Switzerland, but the pension fund sector is not a major investor in venture capital in these countries. Many analysts attribute this to rigid regulations that limit investments carry high risk (OECD, 2006). In Romania, since 2011 the limit of the private equity investment has been increased to 10% for both types of pension funds (Pillar II and III). The discouraging regulatory context for venture capital investments is mentioned also by the EVCA (2008), referring to restrictions imposed to the pension funds to invest in unlisted companies and to the lack of tax incentives to promote innovative young firms, of contracting research activities, technology transfer and cooperation between enterprises and institutions of higher education or research.

4.2. Methodology, data and results obtained

To identify the determinants with the strongest incidence on the evolution of venture capitals invested in Romania in the period 2000-2010, we use a multiple regression model defined by the following equation:

$$Y = \alpha + \beta_1 \times X_1 + \beta_2 \times X_2 + \dots + \beta_p \times X_p + \varepsilon$$

where:

Y - the dependent (exogenous) variable is the amount of venture capital invested; $X_1, X_2, \dots, X_p$ are independent variables (predictors); β_i are the regression coefficients; ε is the disturbance term. The following table provides an insight in the variables collected and the sources of the data:

Table 1

Variables included in the model and sources of information used

Variable	Symbol	Sign expected	Sources of the data
The venture capital invested (Y)	Invest	na.	Eurostat
The annual real growth rate of GDP (X_1)	GDP_rate	+	World Bank
The real long term interest rate (X_2)	Int_rate	-/+	World Bank
The market capitalisation to GDP (X_3)	MCA_GDP	+	World Bank
The gross expenditure on R&D (GERD) to GDP (X_4)	GERD_GDP	+	Eurostat
Effective marginal tax rate on corporate income (X_5)	EMTR	-	European Commission (2010)

It is recognized that the impact of the various factors may present different intensity depending on the capital allocated according to the phase of the innovative enterprises (early stages or expansion). However, given still limited size of venture capital in Romania comparing to those recorded in other EU or Central European countries, especially in the early stages, we sought to identify factors affecting the total size of venture capital invested (seed, start-up and expansion). The descriptive analysis characterises the statistical distribution of the variables we use (Table 2):

Table 2

Descriptive statistics^a

	Invest	GDP_rate	Int_rate	MCA_GDP	GERD_GDP	EMTR
N	11	11	11	11	11	11
Missing	0	0	0	0	0	0
Mean	37473.3636	4.2182	5.9636	15.2182	0.4382	14.2545
Median	40338.0000	5.2000	6.5000	15.6000	0.4100	11.9000
Mode	0.00 ^a	-8.50 ^a	10.10	10.00	0.39	11.90
Std. Deviation	23964.05692	4.92195	3.63133	8.06348	0.06691	2.88457
Variance	574276024.055	24.226	13.187	65.020	0.004	8.321
Skewness	-0.100	-1.876	-0.291	0.015	1.059	0.257
Std. Error of skewness	0.661	0.661	0.661	0.661	0.661	0.661
Kurtosis	-1.580	4.434	-1.436	-1.140	0.420	-2.304
Std. Error of kurtosis	1.279	1.279	1.279	1.279	1.279	1.279
Minimum	0.00	-8.50	0.30	2.90	0.37	11.50
Maximum	69761.00	9.40	10.10	26.70	0.58	18.00

a. Multiple modes exist. The smallest value is shown.

The results of the Table 2 show the mean values of the variables, as well as the larger concentration of values of the variables analysed around the mean. Distributions with positive and negative values of the asymmetry coefficient (skewness) can be observed, indicating the existence of distributions with deviations in either directions (to the right or left). The values for the vaulting coefficient (kurtosis) are generally negative, indicating that the distributions are platykurtic. The value of the vaulting coefficient is bigger than 0 in a single case, indicating a stronger clustering of the values around the central value, the distribution being leptokurtic.

We started the analysis with all variables considered in the model. The correlation matrix between variables is shown below (Table 3):

Table 3

Pearson correlations matrix						
	Invest	GDP_rate	Int_rate	MCA_GDP	GERD_GDP	EMTR
Invest	1.000					
GDP_rate	-0.139 (0.341)	1.000				
Int_rate	-0.597* (0.026)	-0.516 (0.052)	1.000			
MCA_GDP	0.494 (0.061)	-0.057 (0.435)	-0.175 (0.304)	1.000		
GERD_GDP	0.599* (0.026)	0.057 (0.434)	-0.347 (0.148)	0.416 (0.102)	1.000	
EMTR	-0.525* (0.049)	0.175 (0.304)	0.150 (0.330)	-0.772** (0.003)	-0.750** (0.004)	1.000
*. Correlation is significant at the 0.05 level (1-tailed).						
**. Correlation is significant at the 0.01 level (1-tailed).						

One of the factors affecting risk capital not captured in the model is the amount of divestments (sale sales to strategic investors as exit procedure is specific to Romania), due to the difficulty of collecting suitable data for the period 2000-2005. However, we note that, in general, the assumptions we made above correspond to the results obtained concerning the statistical relationship (direct or inverse) between dependent and independent variable (except GDP_rate), registering differences on the intensity of relationships. In this respect, the level of investment is best correlated with Int_rate and GERD_GDP given the statistically significant relationship; a direct one between Invest and GERD_GDP and inverse between Invest and Int_rate. We get low correlations between MCA_GDP and Invest, as well as between Invest and EMTR. However, it follows also strong correlations between predictors as there are between GDP_rate and Int_rate, EMTR and MCA_GDP as well as between EMTR and GERD_GDP, which can give rise to multicollinearity issues. Because the purposes of our analysis is to select the best regression model able to explain the relationships established between the variables analyzed, we tried building several models in this respect. We started the analysis with all variables considered and removed the weakest predictor at every step, respectively the independent variable that determines the smallest reduction of Fisher statistics:

Table 4

Regression coefficients ^a								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-18506.240	160985.575		-0.115	0.912		
	Int_rate	-2821.153	1929.105	-0.427	-1.462	0.194	0.788	1.269
	MCA_GDP	890.613	1369.312	0.300	0.650	0.540	0.317	3.152
	GERD_GDP	125943.745	168995.942	0.352	0.745	0.484	0.303	3.305
	EMTR	285.114	5342.979	0.034	0.053	0.959	0.163	6.414
2	(Constant)	-10321.725	45291.831		-0.228	0.826		
	Int_rate	-2854.109	1692.406	-0.432	-1.686	0.136	1.878	1.139
	MCA_GDP	833.269	785.897	0.280	1.060	0.324	0.826	1.211
	GERD_GDP	118980.562	99446.247	0.332	1.196	0.270	0.749	1.335
3	(Constant)	-15027.829	45422.325		-0.331	0.749		
	Int_rate	-2918.196	1704.403	-0.442	-1.712	0.125	0.879	1.137
	GERD_GDP	159532.524	92507.137	0.445	1.725	0.123	0.879	1.137
4	(Constant)	-56532.468	42334.543		-1.335	0.215		
	GERD_GDP	214536.129	95606.249	0.599	2.244	0.050	1.000	1.000

a. Dependent variable: Invest.

We eliminate the variables of the models until a threshold of significance set for F is not reached by using the backward method of the SPSS software. Our results show that the best model that explains the variation of venture capitals in Romania incorporates GERD_GDP as the only independent variable:

Table 5

The results of the best model explaining the variation of Invest	
	Invest – venture capital invested (unstandardized coefficients)
GERD_GDP	214536.129
(Constant)	-56532.462
Model 4	
F-statistic	5.035
Adjusted R-square	0.422
(number of observations)	11

This means that the size of venture capital has the highest sensitivity to the dynamics of GERD_GDP:

$$\hat{Y} = -56532.462 + 214536.129\text{GERD_GDP}$$

According to the model held that highlights the importance of funding research and entrepreneurial culture, as the total R&D intensity increases by 0.2 units investments increase by 42.907 million Euro. Introducing the alternative variable into the analysis, respectively BERD_GDP (used as a proxy for technological opportunities), reflecting the research efforts of enterprises, did not show any impact on venture capital. Although GERD_GDP incorporates, to a large extent, especially research expenditures of enterprises, the dependence

of the venture capital on the global indicator signifies the importance of funding of public sector research that, in turn, drives innovation in the private sector.

Another variable with significant impact on the venture capital invested is the real interest rate (Int_rate); however, its using with GERD_GDP in the same model leads to unacceptable results in terms of probability. Nevertheless, the negative algebraic sign of the interest rate coefficient shows that the impact on the supply of capital has been (on average) larger than on the demand and this can be explained by a shorter vision of financial constraints (or return achievable) at the entrepreneurs than at the level of fund providers.

The venture capital insensibility to the annual GDP growth rate (GDP_rate) is not surprising, as a result of multiple influences that drive economic growth but which are uncorrelated with the size of venture capital investments. We obtain also similar results when this variable is introduced in the absence of interaction with the size of the market capitalisation (MCA_GDP).

The market capitalisation also has no impact on venture capital. We justify entering this as explanatory variable as a proxy of the size and liquidity of the capital market by a dominant proportion of investment performed to the expansion than to the early stages of the enterprise that requires exit mechanisms for investment firms. The insensibility of the dependent variable is relevant for Romanian market and highlights that IPOs have been rarely practiced.

Regarding the incidence of corporate income taxation, by considering the tax rate and incentives practiced and synthesized in the expression of the effective marginal tax rate on corporate income (EMTR), that is insignificant as a result of its constancy on long periods. A similar effect we obtain for the annual inflation and unemployment rate used as predictors (not centralised in the tables 1-4).

The adjusted R-squared obtained for the best model (Table 5) is 0.422, meaning that GERD_GDP as a predictor explains 42.2% of the variation of venture capital investments, which reflect, according to Cohen (1998), a significant incidence.

5. Conclusions and policy implications

The venture capital invested in Romania, in absolute and relative amount (as a proportion of GDP), has been one of the lowest in comparison with the EU average in the period 2000-2010, with a clear investment tendency to the expansion phase of the enterprises. The absence of individual investors (business angels) and almost no supply of venture capital coming from

institutional investors to the early stages of innovative firms have been a major impediment to the development of the R&D intensive industries. Abandoning the R&D projects due to the lack of funding can not be captured by the venture capital variation to the ratio of business expenditure on R&D (BERD) to GDP.

Our results show that the venture capital investment activity in the two segments (to the early stage and expansion) is influenced mainly by the total R&D intensity (GERD_GDP). This result has important implications for the fiscal policy, given the role of venture capital highlighted in section 2. In this respect, stimulating the supply of venture capital requires, first of all, strengthening the demand by boosting enterprises to innovate and development of attractive investment projects, both through mechanisms of direct and indirect support to access the research results funded from the state budget, including the transfer of the research results to business sector to be valued.

In the same context, supporting the supply of funds is necessary for seed and start-ups stages that are uncovered by the intermediated market of venture capital. This measure is able to meet the demand of these stages, including by facilitating development of networks for individual investors by providing of infrastructure support. Since success in each stage of development of innovative enterprise depends on perceived ability to progress to the next stage, appropriate funding mechanisms are needed for each stage. However, increasing the financial resources of innovation can not be achieved by limiting pension funds to invest. Elimination of the restrictive ceiling may be able to provide financial resources for innovative enterprises and raising, also, the expected returns of funds through harmonizing investment risk with anticipated profitability.

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Globalization – tourism – communication, competitiveness triangle on the market affected by the economic crisis

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Abstract. *Socio-economic developments of recent years has affected the world economy, hence the tourism industry as well, which within interval 2008-2009 experienced the largest drop in tourist flows, and Romania followed the same downward trend. Tourism market, after suffering the shock, is characterized by greater caution, making the efforts of the tourism industry considerably higher for the promotion of tourism products and services.*

Keywords: globalization; tourism; communication; model; tourism market.

JEL Codes: L83, O10, F02, D83.

REL Codes: 14F, 14K.

1. Tourism in the age of globalization

"Globalization is the functioning process of the global economy, which, in the global society, it is able to create global decision structures for solving global problems" (Dinu et al., 2003, p. 356) and, for the tourism industry, this is evident in most aspects of tourism activities.

International tourism and hospitality companies took advantage of the many factors to expand operations globally. Globalization imposed competitive pressure by facilitating market entry for several stakeholders and as a result companies have to "fight" in a much more complex environment.

Emerging technologies have made possible the control and more homogeneous operational systems, as well as better coordination of branches, without counting the geographical destination or distance. Changes in political and legal environment have facilitated freedom of trade and, more specifically, the deregulation of transport in tourism, and developing systems and international investment, more flexible and adaptable.

A wide range of shapes and arrangements is sought, directly to the right of ownership, partnerships with local authorities, governments up to franchise and marketing consortia. Labor mobility also allowed people to travel to different countries to manage systems and properties. Perhaps most importantly, the emergence of multi-literacy of investors' employees, generated by education, training, media reports and extensive travel experience, develops a new type of global companies offering their products to a quality standard regardless of location.

Following the emergence of globalization, new tools are needed to manage processes, multi-ethnicity and culture, to support employees and businesses to satisfy all stakeholders. In planning and managing tourist destinations and companies it must take into account a number of changes within the society and the world economy.

According to economic theory, globalization is seen as a process that evolves gradually. Etapiale models can be used to illustrate the scope and the involvement in international transactions.

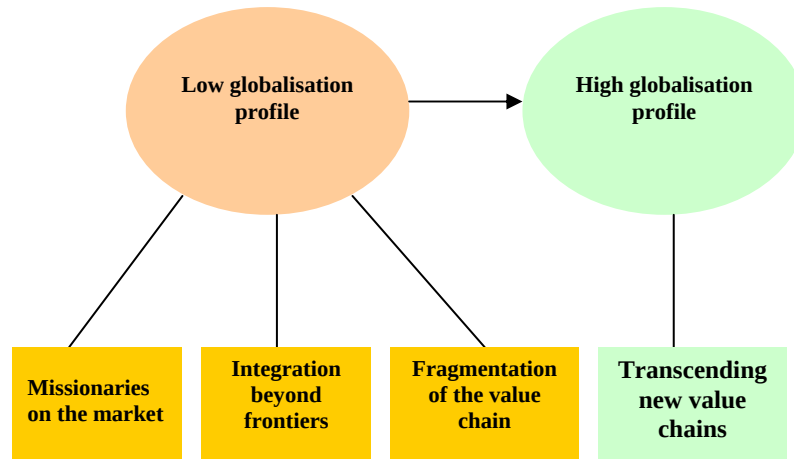
Anne-Mette Hjalager (2007, pp. 437-457) builds a descriptive model in four stages of globalization of the tourism industry in order to understand the complexity of dynamic interactions that occur across borders. The level of analysis is represented by the tourist communities and their stakeholders: companies in the field, communities, national and local authorities and others. Therefore, globalization is seen as the result of individual decisions taken by the tourism companies and the national and local policymakers. The first stage includes the national tourism system's attempts to access new markets. The

purpose of tourism "missionaries" is to attract customers to businesses, destinations or countries where the tourism product will be sold or consumed. The force of communication emerges beyond promotional campaigns across international markets for consumers, being a strong bond between tourism associations and other collaborating organizations. Communication makes it possible to overcome existing barriers in many countries where some tourism organizations are reluctant to radical changes.

The second stage describes the integration and incorporation of tourism business across national borders. Investments beyond their own country are a subject treated widely in the literature of globalization. In tourism, reproduction and external expansion of successful business concepts recognized by most consumers is a powerful globalizing force majeure. Transfer of capital and concepts is striking in this industry, and the pros and cons of cultural and economic hegemony are discussed to a large extent, mainly when the transfer is to developing countries. Two methods of global integration are developed, first business integration through investments, mergers and acquisitions, and then global trade concepts through franchises and licenses.

The third stage refers to the spatial fragmentation and relocation of production processes. In the recent years we have noted a greater emphasis on creating profitability through extensive fragmentation and optimizing the entire value chain. While much of the resources are exclusively local or national, the availability of international markets is affecting more and more the local tourism product composition and the production process. In this service with a high degree of labor absorption, the human and intangible resources supply is of major importance.

Finally, in the fourth stage, is called into question the identity of the industry and new types of markets and business concepts that will exceed the previous definitions of tourism. Many organizations and many researchers are involved in trying to define and distinguish logical and economic tourism traditional statistical categories. Although the model suggests a logical progression to the final most complex phase, in practice they overlap.



Source: own adaptation of Anne-Mette Hjalager model.

Figure 1. *Stages of globalization tourism*

The basic premise of the model is that the gradual implementation of globalization, individual companies, destinations and countries involved will be able to control costs, to increase market share and access skills and other important resources. Through involvement in international more complex networks, travel agents can cope with high pressure investment institutions and also on several levels. Globalization is increasingly emphasized by the development of communication and information technologies. In principle, the stakeholders of the tourism system will experience a gradual need, although inevitable, taking into account the following steps and to adapt future opportunities and competitive forces. Another prerequisite is that the evolutionary process takes time. Throughout this process, some organizations may become perishable, and routine and operating procedures set out above will lose their effect.

New models will appear, possibly after drastic changes, but, however, the present model will not evolve simultaneously in all countries and all continents. On the national scene, some segments of the economy will be more advanced than others in the globalization process, contributing, however, in its complexity. The pace of globalization may be adversely affected, for example, by the increased energy prices.

2. Economic motivation of tourism globalization

The general reasons why companies are expanding beyond national borders is to maximize profits and, thus, investments in other countries may be

considered like any other investment. Profit maximization criterion of an investment is that rate of return should be higher than other possible uses of capital to be allocated. Rate of return will be linked to investment costs and the income from those. So, the reason to invest in external space will include cost reductions or increases in sales from the production or supply of services abroad.

Companies involved in developing tourism products and services now have much weaker links with a particular region or national economy. The development of international trade has made the market to be much more competitive and companies more aware of the need to be leaders in terms of prices or add value to their products to increase market share and profitability. So, companies are prepared to transfer production to another location if circumstances favor it. Service sector companies wishing to expand into foreign markets have generally few options other than to invest in foreign capacity.

Specific reasons for proper multinational expansion include the following:

- reduced labor costs: to be market leaders in terms of prices, companies are trying constantly to reduce costs below those of competitors, and one of the key factors that can be reduced by globalization is the labor costs;
- additional reduces costs: multinational companies access the international capital markets and thus the local rate of interest is rarely taken into account, however, the costs of land and planning regulations can be an important factor, particularly in the "green" developments sector, and the exchange rate between the parent economy and host economy will also be significant;
- exploitation of "national diamonds": the source of competitive advantage in producing goods and services of a country whose key factors are intense competitiveness and high consumer demand on the domestic market, making firms to improve technology, quality and marketing, so the product is reworked and polished into a national diamond and allows companies to be competitive in foreign markets, where local products are competitive, as they went through a similar process;
- marketing advantages: some companies have a internationally renowned corporate image, which can be exploited by expanding operations abroad, such as the InterContinental (hospitality), ClubMed (Tourism Association) etc.;
- market economy, integration and competition: the expansion of multinational companies may be a way to increase profits through

vertical integration, such as travel companies, tour operator investments in foreign resorts; in the same time, buying foreign competitors reduces competition, making possible horizontal integration, but there are also many market economies developed through transnational partnerships;

- extending the product life cycle: product life cycle refers to different stages in the communication to promote a product, which means that products that have reached maturity in the internal market and suffer a decline can be revitalized by promoting them abroad and, especially, in developing economies;
- avoidance of charging: if a country's exports are affected by pricing, companies involved and, of course, affected can choose to produce within the charging zone;
- incentives in host economies: investment and operating costs can be reduced by international markets, taking advantage of governments' stimulus packages.

The tourism industry operates globally and many of those involved have opted for competitive advantage of internationalization. Technology, information and reducing borders have created new forms of company servants, not only multinational corporations, but also small niche organizations. The growing importance of strategic alliance business relations networking also became a trend in tourism.

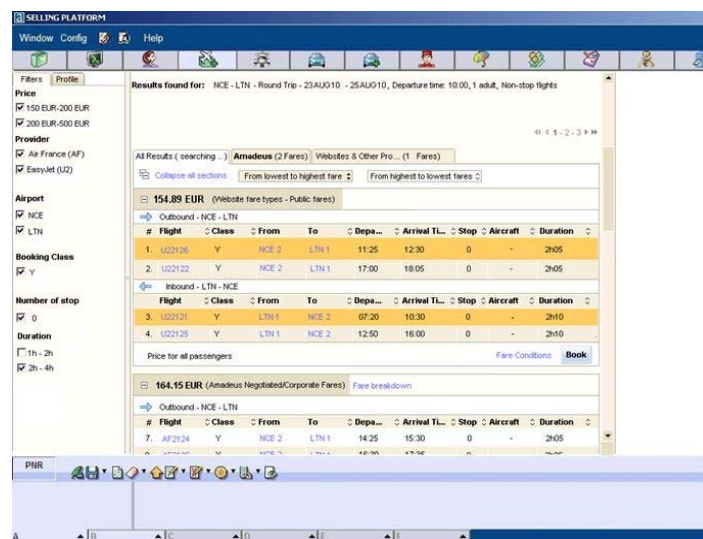
3. Globalization through communication in tourism

Globalization has created new opportunities for developing tourism industry through technological, communication and transport evolution. Globalization has affected the tourism service providers worldwide, computerized information and reservation systems, which have become more flexible and efficient in terms of costs, leading, thus, to cheaper costs of travel by plane and, hence, easier access to destinations (Peric, 2005, pp. 34-35). The rapid spread of information has improved the efficiency of industry-specific operations, and quality of services offered to consumers, generating also a growing demand for new tourism services and online booking services for hotels, car or plane tickets, brochures, video, electronic funds transfers etc.

Increasing use of internet in marketing destinations, direct sales or reservations gave rise to electronic tourism markets. Development of more sophisticated web sites allowed direct communication of tourist information to potential customers, the Internet facilitates thereby global accessibility and much lower prices, which made the demand for tourism to become more

technical. The impact of technology and the Internet have dramatically affected the tourism industry and significantly reduced the need for intermediaries (Reisinger, 2009, p. 8).

Globalization in tourism may take different forms, one example being the globalization of air transport sector. This involved liberalization of air transport, which allowed private companies to enter the market, the formation of international alliances (e.g. Star Alliance, Oneworld or Sky Team, which cooperated in promoting communication, standardization of equipment, services and suppliers or have developed a brand etc. (Dimanche, Jolly, 2006, pp. 191-208), privatization, restructuring state air companies, investments in foreign companies, strengthening the national airlines or affiliation with international regulatory bodies (e.g. IATA). Major airlines have developed computer reservation systems such as CRS (Computer Reservation System.) or GDS (Global Distribution Systems).



Source: www.traveltechnology.com

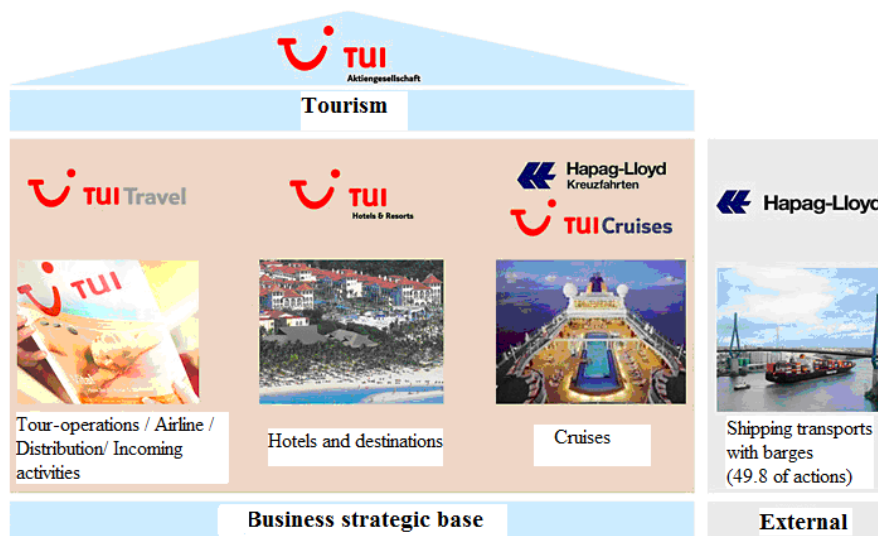
Figure 2. AMADEUS reservation and sales platform

A computerized system for reservations is a system that is used to store, to extract information and perform transactions related to air transport (e.g. Amadeus, Worldspan, Galileo, Sabre, Gabriel). Although originally used only by airlines, CRS has been extended to travel agencies.

With regard to globalization in the accommodation field, the examples include the cooperation and the creation of hotel chains, the franchises, joint

ventures, management contracts, consortia and independent hotels. Most major hotel groups include Intercontinental Hotels (UK), Accor (France), Cendant, Marriott and Starwood Hotels and Resorts (U.S.), hotel corporations that are present in various countries worldwide. Thus, Marriott International operates currently more than 1,300 hotels under various brands across the globe. Strategic partnerships and American consortium offered access to new markets, including Russia, China, Japan, Italy or Turkey. Another example is the Four Seasons Hotels, which used a strategic partnership with Regent International Hotels Ltd. to take over management of hotels in Bangkok, Hong Kong, Kuala Lumpur, Melbourne and Sydney (Reisinger, 2009, p. 9).

In the sector of tourist package trade it is highlighted, as a result of globalization, partnerships, integration and franchising. Tour operators and travel agencies have developed partnerships with hotel chains, airlines for charter tourism products distributors or cruise companies, some joining to them. At European level it highlights the German group TUI. This company, divided into three sectors (TUI Travel, TUI Hotels & Resorts, TUI Cruises), has travel agents, tour operators, airlines, cruise ships and 261 hotels in 27 countries and also a financial investment in the industry of shipping barge transport.⁽¹⁾



Source: www.tui-group.com

Figure 3. TUI Group's corporate structure

American Express, the company founded in 1850, became the biggest tour operator in the US, Canada, France, Australia and Mexico, with the largest

network of travel agencies in the world, placed in over 140 countries and territories throughout world, developing a wide range of products in different industry sectors.

Large companies have extended their influence over the operations of local firms, forcing, for example, authorities to agree with certain laws and imposing certain conditions on local suppliers. Some tour operators have exercised a strong influence on the mode of operation and the prices charged by hotels. For example, a tour operator in the UK, specializing in adventure tourism and highly committed in protecting the environment and promoting destinations, ensured that local stakeholders are subject to environmental rules and use the equipment, goods and materials not affecting nature (Peric, 2005, p. 36).

Globalization effects are observed in shaping the tourist profile and preferences towards products and tourism services. If until recently the main feature was McDonaldization, the new consumers have a totally different behavior, becoming more demanding, through multiple channels of communication and information technology, they showed them new cultures and have contributed to the development of new ideas and opinions.

The XXI century tourist is dependent on communication, information technology, on the fact that he may choose the desired services and plan their own vacations. The new self-sufficient consumer has become more individualistic, wants more products and services developed and customized in a wide range, variety and high quality, easy access to information, cheaper transport and greater flexibility in travel. Political or economic change and instability, terrorism, disease outbreaks, weather predictions, they all led to a growing desire by consumers to be safe and to have social stability. This gave rise to a new attitude of waiting, observing, facilitating the emergence of "last-minute" purchases. As a result of the message sent by the customer, the feedback of travel companies came, which led to the emergence of websites specialized in this type of "last-minute" request.

Also, searching for new experiences as motivation for holidays and high concern for the environment have forced the development of alternative forms of tourism, due to demand for new, authentic and original. A new category was developed, the experimental tourism and travel companies, in response to changes in the market, have developed new communication strategies, new partnerships with local stakeholders for the organization and promotion of tours, holidays in places that have something unique, special and specific and distinguishes them from other destinations.

4. Tourism development into the global economic crisis

Tourism has allowed people to overcome the mentality of being tied to one destination and to confront other imagined worlds. In essence, tourism is the time-space compression of companies as a result of reducing costs and increasing ease of international travel for the purposes of leisure, by enabling a growing number of people from almost all social classes to escape the routine environment to which they belong. It determined, over time, a growing number of destinations to invest in tourism development, making it a key driver of socio-economic progress worldwide, by creating jobs and companies' profile, by developing infrastructure and attracting investment.

As an international trade service, inbound tourism has become one of the major categories of trade. Inbound tourism-generated income, including passenger transport, has exceeded USD 1,000 billion in 2009. Tourism exports represented 30% of world exports of commercial services and 6% of total exports of goods and services. Globally, as the category of export, tourism was the fourth after fuels, chemicals and automotive products.

For many developing countries, tourism is the main source of income, generates employment, particularly important to the local communities, and creates opportunities for development. Tourism contribution to global economic activity is estimated to be 5% and to generate jobs 6-7% of all jobs worldwide (directly or indirectly). The contribution of tourism to gross domestic product (GDP) is, worldwide, about 5% and range for advanced and diversified economies, from 2% (in countries where tourism is a relatively small sector) to 10% of GDP (in countries where tourism is an important pillar of the economy). For developing countries or island states where tourism is a key economic sector, the percentage of GDP tends to be even higher.⁽²⁾

Important part of the global economy, tourism industry felt the full effects of the global economic crisis. The causes of this crisis are different, and the lack of communication has its role in the deterioration of the current situation. Many scientists and economists have identified different causes of the current crisis, but there has been no deep analysis of the role that communication has to the current economic situation. Communication plays an important role in achieving a system's interconnections and its lack or ineffective implementation in a way leads to system collapse.

Tourism, which plays its role in the world economy, had also a sharp decline and, as a negative effect of globalization, global recession has made 2009 to be one of the most difficult years for the tourism sector.

International tourist arrivals for business, pleasure or other purposes in 2009 totaled 880 million, corresponding to a worldwide decline of 4.2%. This

sector grew by 2% in the last quarter of 2009, after the first three quarters there were decreases of 10%, 7% and 2%, respectively.

Table 1

International tourist arrivals from 2008 to 2009				
Tourism international arrivals				
Place	Millions of tourists		Changes% compared to previous year	
	2008	2009	2008 – 2007	2009 - 2007
1. France	79.2	74.2	-2.0	-6.3
2. USA	57.9	54.9	3.5	-5.3
3. Spain	57.2	52.2	-2.5	-8.7
4. China	53.0	52.2	-3.1	-4.1
5. Italy	42.7	43.2	-2.1	1.2
6. Great Britain	30.1	28.0	-2.4	-7.0
7. Turkey	25.0	25.5	12.3	2.0
8. Germany	24.9	24.2	1.9	-2.7
9. Malaysia	22.1	23.5	5.1	7.2
10. Mexico	22.6	21.5	5.9	-5.2

Source: World Tourism Organization - www.unwto.org, August 2010.

Globally, although there were decreases caused by the economic crisis in most tourist destinations in 2009, there have been significant differences in the top ten global destinations, taking into account international tourist arrivals. In terms of tourism receipts from activities, the ranks remained unchanged compared to 2008. World's leading tourism destinations in terms of arrivals remains France (74 million tourists), while the US has attracted the highest revenue from tourism (92 billion USD).

According to World Tourism Barometer UNWTO, international tourism has recovered strongly in 2010. Tourist arrivals grew by about 7% to 935 million, after the decline of 4% in 2009, the year hit hardest by the global economic crisis. Most worldwide destinations showed positive figures, but recovery was achieved at different speeds and was driven primarily by emerging economies. Recovery given by 5% increase in developed economies and 8% in the developing countries reflects the global economic situation and will dominate 2011 and the near future.

Table 2

Receipts from international tourism from 2008 to 2009				
Receipts from international tourism				
Place	Billions \$		Changes compared to previous year (%)	
	2008	2009	2008 – 2007	2009 - 2007
1. USA	110.0	93.9	13.5	-14.6
2. Spain	61.6	53.2	6.9	-13.7
3. France	56.6	49.4	4.2	-12.7
4. Italy	45.7	40.2	7.2	-12.0
5. China	40.8	39.7	9.7	-2.9
6. Germany	40.0	34.7	11.1	-13.3
7. Great Britain	36.0	30.0	-6.7	-16.6
8. Australia	24.8	25.6	11.0	3.4
9. Turkey	22.0	21.3	18.7	-3.2
10. Austria	21.6	19.4	15.5	-10.1

Source: World Tourism Organization - www.unwto.org, August 2010.

Asia, with an increase of 13% compared to 2009, was the first region that has recovered and has known, in fact, the strongest recovery in 2010. International tourist arrivals reached a new record of 204 million in 2010 compared to 181 million in 2009. In Africa, being, in fact, the only region with positive figures in 2009, growth was 6% to 49 million and was maintained throughout the ascending trend of 2010, one of the events that contributed to this upward trend being FIFA World Cup from South Africa, while in the Middle East, almost all destinations have grown over 10%.

With regard to Europe, in 2010 was a slower growth of around 3% over the previous year, largely caused by the Eyjafjöll volcano eruption and economic uncertainty in the euro area. Although some European regions have experienced a more rapid recovery, it was not sufficient in order to overcome losses in 2009. American continent recoil of the decline of 2009 due to economic hardships of North America and the impact of A (H1N1) influenza. US economic growth has helped greatly to economic recovery in Latin America (+10%).

International tourism demand has remained on an upward trend, despite the economic uncertainties in some important markets, natural disasters, the political and social unrest in some countries etc., and thus tourism sector has proven to be very elastic.

For 2011 it was expected to maintain growth in demand in the tourism sector, with small variations compared with 2010, an increase between 4% and 5%. One of the negative effects of the global economic crisis remained in job losses, (...) not improved even in 2011.⁽³⁾

Conclusions

As we have seen, the tourism industry operates globally and many stakeholders have opted for the internationalization advantage. Technology, information and reducing borders have created new forms of services companies, not only multinationals, but small niche ones composed of specialists. The growing importance of strategic alliances in business networking relations became also a trend in tourism. Tourist destinations must establish identities that differentiate them from other destinations. It is obvious that globalization has stimulated competitiveness and created a more complex environment by facilitating market entry of several stakeholders, and this was observed in prices and quality of tourism products and services. Communication process also undergone major changes, adapting to new market requirements, with approaches tailored to the communication and information technology dependent tourist, seeking new experiences as motivation in choosing their holidays.

The rapid development of world tourism creates environmental threats, on the universal heritage, the social relationships inside and beyond the borders of a country, which has raised concern for the environment that requires alternative forms of tourism development. New strategies of communication emerge and new partnerships to promote these new forms of tourism.

Economic and financial crisis has affected the tourism industry and, however, there were increases in the flow of tourists in 2010 compared with 2009. 2010 has been named in the annual report of the WTO, "A year of recovery", the increase being nearly 7% compared to 2009, with an increase in international tourism receipts of about EUR 693 billions. For this year, it is projected to increase by 4-5% compared to 2010⁽⁴⁾. But while growth is slow in 2011 – effect of precautionary felt globally and slow economic recovery – the upward trend is kept due to the substantial efforts made by professional communicators in tourism.

Communication is essential in achieving and maintaining interconnections on which the tourism industry and operators must communicate effectively, providing accurate, clear, objective, consistent, complete information. Making known the correct message to those who are involved is perhaps one of the most important factors in determining the success of the tourism sector. This success is always related to the ability to know how to release a product to attract tourists to buy it, without failing their expectations.

Notes

⁽¹⁾ See <http://www.tui-group.com>.

⁽²⁾ According to UNWTO Tourism Highlights, 2010 Edition.

⁽³⁾ See 2010 International Tourism Results and Prospects for 2011 - UNWTO News Conference HQ, Madrid, Spain.

⁽⁴⁾ See <http://mdrt.ro/comunicare/presa/comunicate> - 10 octombrie 2011 - Comunicat privind participarea la lucrării Adunării Generale a OMT (Organizația Mondială a Turismului).

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New approaches to business cycle theory in current economic science

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Abstract. *In modern economies, current research generally acknowledges that the central issues in macroeconomics are essentially the same as those identified by Keynes in the General Theory of Employment, Interest and Money. One way or the other, economists are trying to address the same macroeconomic issues that they did seven decades ago: How can we account for the different growth rates and various fluctuations observed in national economies? Which are the economic policies most suitable to solve the issues of growth and cyclic behavior? Both the new classicals and the new Keynesians have made considerable progress within their research paradigms: to explain economic fluctuations, the new classicals focus on technological perturbations, the intertemporal substitution of leisure and real business cycles; on the other hand, the new Keynesians speak in terms of monopolistic competition, menu costs or efficiency wages. On the whole, the new classicals believe that the business cycle can best be understood within the market-clearing model, whereas the new keynesians believe that business fluctuations are due to certain market failures of various sorts.*

The present paper focuses on the main directions of research of the new classical school on the business cycle, given that the theoretical progress in this field has been significant and relevant for economic policy during the past four decades.

Keywords: monetary business cycles; real business cycles; sectoral adjustment theory; monetary neutrality; market-clearing models.

JEL Codes: E30, E31, E32.

REL Codes: 8H, 8M.

At the heart of the *rational expectations* theory and New Classical Economics lie Friedman and Phelps' predictions regarding the inflation – unemployment tradeoff: the two economists argued that sustained inflation can have no effect whatsoever, since individuals are concerned with real, rather than nominal variables: once they anticipate sustained inflation, they will adjust their decisions on prices and employment levels accordingly, which means that inflation cannot incur a permanent reduction in unemployment. They have set the ground for Lucas' monetary theory of the business cycle (Lucas Jr., 1972, pp.103-124). Thus, Friedman pointed out that agents' expectations adjust gradually to permanent shifts in inflation; still, this adjustment implies the possibility of a temporarily low unemployment rate, when the economy is stimulated say through expansionist monetary policy. In the long run however, monetary expansion will result in higher price levels and unemployment will go back to its original level.

In this context, Lucas' innovative contribution (1972) addresses a question almost as old as economic science: How do shifts in monetary policy influence inflation, production and unemployment? And though the answer to this question is still subject to lively debates, there is however an observation which seems confirmed beyond doubt by empirical evidence: during expansions, the growth rate of monetary aggregates is above average, whereas in recessions the growth rate is below average. Lucas' contribution is twofold: at the theoretical level, he formulated and analyzed a specific mechanism in which monetary instability leads to fluctuations in output and inflation rates. Within this mechanism, individuals – who possess limited information – identify monetary perturbations as shifts in relative prices, which leads to aggregate output fluctuations.

Lucas' model relies on the premise that individuals are more informed about the prices of the goods they produce than the price of the goods they purchase. Consequently, they tend to mistake movements in the general price level – which are irrelevant in the model – for movements in the relative prices – which are relevant for economic agents. In the case of unanticipated inflation, individuals infer that the relative prices of the goods they produce are temporarily high, and thus decide to increase output.

Lucas constructs his model within a framework initially developed by Paul Samuelson (1958, pp. 467-482) – where we find two generations of people, young and old, and only one commodity which cannot be stored. In this stylized model, both current and future generations must find a way to transfer part of each period's output to the old generation. For the purpose of the analysis, Lucas is interested in another instrument that can perform the same function, namely money. In this situation, the old pay the money they possess in

exchange for the goods they consume. The young, on the other hand, are willing to sell part of their production, with a view to buying goods from the future generations when they are old. In choosing the amount of output supplied, they will have to anticipate the value of money at the time they are old. And the value of money, in turn, depends on the next generation's decisions and thus on their anticipations. This means that making rational decisions by the present generation implies anticipating the anticipations of others.

In this economy, the notion of equilibrium implies that the anticipations or forecasts of future prices coincide with the actual prices prevailing over the next period; in other words, equilibrium implies such a price and such a quantity of goods supplied that the amount of money supplied by the old equals the amount of money that the young wish to possess in the future. The main feature of this market-clearing model is that monetary units have no effect on real variables, in other words, money is neutral.

Other types of monetary injections may or may not be neutral. Suppose, for instance, that the central bank decides to expand the money supply at a constant growth rate and does so by continuously giving the old generation money in a lump sum, that is independently of the amount of money each of them possesses. Such an injection will naturally have inflationary effects, leading to a constant price increase. Lucas, however, is looking for a framework in which a monetary expansion initially creates an increase in economic activity – as evidence points out – but to this aim, the above mechanism is not satisfactory.

On the other hand, there are ways of injecting money which do not alter decisions on real variables, even though they generate continuous inflation. In the above example, if the old receive the money in proportion to the amount of money they possess, money is neutral, because this type of injection preserves the purchasing power that the young will have when they retire.

In order to ground his model on the information mechanism, Lucas assumes that transfers are proportional, and therefore neutral at the real level; he constructs a model made up of two islands, each having the same number of old people. The number of the young people is fixed, but they are distributed randomly between the two islands. In addition, money supply is constant. On the island having few young people, prices will be high, since there are few producers, which will signal that they should produce more; conversely, on the island with many young people, prices will be low, which will make them produce less. In this economy, production is above average on one island and below average on the other. In this case, total output on the two islands fluctuates over time in line with the distribution of the young over the islands,

but these fluctuations have no connection to the business cycle: one of the main features of business cycles is that all economic sectors have similar evolutions.

If we go on to add monetary perturbations, then an injection of money in the economy incurs a rise in prices. For a young person, this rise can have two explanations: (i) prices may be high due to monetary perturbations, in which case the optimal decision is to maintain current production levels or (ii) prices may be high due to the low number of producers, in which case the optimal decision is to increase production. If the producers do not know for sure, then the best decision is a tradeoff between the two extremes, so that production rises on the whole. Therefore, in this economy, prices exceed their average level precisely when production is above average, and when the money supply growth rate is above average. If the extent of the monetary perturbation is known, there are no reasons for confusion about the origin of the price increase and monetary perturbations are neutral. In other words, the model implies a clear distinction between anticipated monetary fluctuations – which are neutral – and unanticipated monetary fluctuations – which influence real variables, and this is precisely the reason why the information mechanism plays the central role in the model.

Finally, Lucas' business cycle model has, at the same time, an important consequence at the policy level; in essence, this consequence is not new, it was initially formulated by Milton Friedman and it finds confirmation in Lucas' model: thus, starting from the implications of the model, the author argues that the best monetary policy rule is to fix an annual constant growth rate for money supply; this is to be accompanied by a series of rules in the fiscal and public expenditure fields, but they are necessarily minimal rules. In a way, the best economic policy, in the new classical view, is the absence of monetary policy.

This presentation of Lucas' model also requires a possible comparison with the Austrian business cycle theory, based on several similarities between the two theories; moreover, some Austrian economists argue that Hayek's theory represented the source of inspiration for the new classical model. Thus, in both Lucas' (1981) and Barro's (1981) approaches, as well as Mises' and Hayek's models, at the origin of the business cycle lie agents' difficulties in interpreting price signals. The similarity ends here though, since the two programmes of research are aimed at different goals: Hayek explains the business cycles in terms of the inconsistency of the numerous individual plans of producers; Lucas, on the other hand, attempts to make predictions about the behaviour of the representative individual agent throughout the business cycle.

Generally speaking, the business cycle can be described in a manner that corresponds to both theories, but at the same time differentiates them from Keynesian or Marxist theories. The common denominator can be identified in

the participants' reactions to a price change, whose origin may be of monetary, real or combined origin. Even though the Austrians take into consideration the price of credit, whilst the new classicals analyze the price of goods, the two theories converge to a common point: economic agents are not able to discern easily – that is costless – the real from the monetary component in the overall change.

In both theories, the way economic agents will react depends in the origin or cause of the change in prices: if this change reflects a change in economic circumstances, then a corresponding adjustment of real variables is required; if, on the contrary, the price change results from monetary perturbations, then such an adjustment is not only useless, but can also be harmful. However, until they determine the actual nature of price changes, agents will react – at least in part – as if it were real. If the price change has only monetary causes, agents will readjust their activities to their previous level, as soon as they realize the true cause. In this way, both schools admit the existence of a significant systematic non-neutrality during the period the economy adjusts to the increased money supply.

One important difference between the two theories relates to the specific pattern of the business cycle mechanism; simply put, according to the new classicals, agents' initial reaction consists of an increase in output and employment due to the increase in the nominal prices of goods. In the Austrian approach, agents are determined to start an unsustainable amount of investments in response to the artificially lowered interest rate. Once they learn the true nature of the price increase, agents either return to the initial level of employment – in the new classical vision, or they liquidate the excess malinvestments – according to the Austrian theory.

Moreover, the two theories differ in the specific way they approach the concept of equilibrium. The new classicals demonstrate that the cyclical evolution of the macroeconomic variables is consistent with the general equilibrium framework all throughout the business cycle. From a methodological point of view, the model complies with the market-clearing hypothesis: in order to be analyzed and interpreted, every phase of the cycle must be represented as a set of equilibrium prices and quantities.

The new classicals' market-clearing approach is opposed to the Austrian model, which assumes that the business cycle is precisely a form of systematic intertemporal disequilibrium. In the Austrian approach, the very language used to describe the business cycle is that of disequilibrium, and the concept of equilibrium itself is defined against the initial conditions – prior to the expansion phase – and enables the analysis of the disequilibrium induced by cheap credit.

These are the main similarities and differences between the two models. There exists, indeed, a certain resemblance – even in what regards policy implications; however, this does not mean that we can label the Austrian theory as a source of inspiration for the new classicals: not only do the two models differ in their approach, but, more importantly, in the methodological approach, which clearly distinguishes them.

To conclude, the first new classical models tried to construct a monetary business cycle and to this goal, they somewhat departed from the Walrasian paradigm, by assuming imperfect information regarding prices. In this context, new classical models postulate that supply depends upon the deviation of real inflation from its anticipated level, an assumption that Friedman and Phelps used in order to incorporate anticipations in the Phillips curve. Although this type of models generated a lot of interest in the '70s, more recently it has attracted very few supporters for reasons not altogether clear. Its opponents claim that the confusions about the price level cannot be so important as to generate the large shifts in output and employment observed over the business cycle. Moreover, empirical evidence generally inquired the monetary models, but there is no firm proof to assert the reasons for its decline.

Barro (1984, pp. 179-182) asserts that this theory based on the rational expectations hypothesis, as well as the empirical research in the field have not offered a clear analysis in what regards either monetary non-neutrality, or business cycles in general. The main shortcomings of this theory arise in the attempt to explain monetary non-neutrality, which is the most important issues in macroeconomics, still triggering lively debates.

Once monetary models were abandoned, in the '80's most new classical economists undertook several analyses that attribute cyclical fluctuations to certain real perturbations in the economy. These real business cycle theories (Long, Plosser, 1983, Barro, King, 1984, Prescott, 1986) postulate that fluctuations in the real economic activity are based on shocks in the existing technology – to this aim, they rely on the assumption that the rate of technological change is subject to large and random fluctuations. And since these technology fluctuations lead to fluctuations in relative prices, individuals rationally adjust their labour supply and consumption levels. In these conditions, the business cycle is nothing but the natural efficient response of the economy to the shifts in the existing production technology.

Real business cycles are focused on technological shocks or other types of supply-side perturbations as central determinants of cyclical behaviour and assign an important role to the dynamic elements that influence the pattern of shock propagation. As in all new classical models, these models incorporate competitive markets and agents driven by optimizing behaviour. And even

though these theories ignore monetary shocks, the analysis of the propagation patterns of business cycle phases can be successfully applied to both real business cycle models and the initial monetary models. The difference is that, in real models, any positive correlation between output and money supply reflect endogenous responses of monetary aggregates.

In what regards the empirical confirmation of these theories, the results are in many respects consistent with the observed patterns of business cycles, according to Robert Barro. For instance, real business cycle theories are able to estimate accurately the relative variations of consumption, investment, capital stocks and labour in the economy, and at the same time account for the procyclical behaviour of these variables. However, they tend to exaggerate the procyclical evolution of productivity, real interest rates and real wages.

In order to explain recessions in real business cycle theories, we must admit the existence of technological – or other type – shocks on the supply of goods, both favourable and unfavourable. In this context, some critics of these theories claim that technological regress is not possible, but this statement is easily opposable. Apart from technological shocks, other circumstances generating negative shocks on output include the cartelization of markets, failure of crops or strikes. The collapse of the financial system in the US during the Great Depression may also be regarded as a negative shock.

The initial versions of real business cycle theories reflect the Pareto optimum and demonstrate that economic fluctuations are not a feasible reason for state intervention through stabilization policies. Negative shocks and recessions are merely unfortunate or unfavourable events and public authorities cannot do anything to correct the situation.

One of the strengths of this type of theories is its firm grounding on microeconomic principles. Real business cycle models are usually standard intertemporal models of general equilibrium, traditionally used in the analysis of economic growth and adapted only slightly to incorporate random changes in technology.

In a study of real business cycle theories, Mankiw (1989, pp. 79-90) asserts that a lot of the new classical initial contributions tried to break down the classical dichotomy, without abandoning the fundamental market-clearing hypothesis (Lucas, 1973, pp. 326-334). These models – whose central element is the assumption of imperfect information regarding prices – exerted a real fascination in the '80s, but attracted relatively few adepts. The main reason identified by Mankiw: it is hard to believe that agents' confusions regarding prices are strong enough to generate the large fluctuations of real variables identified during the business cycles.

In opposition to both the Keynesian models and the initial new classical models, real business cycle theories subscribe to the classical dichotomy; first of all, they postulate the absolute irrelevance of monetary policy, thus rejecting a principle almost unanimously accepted at the end of the '70s; in addition, real business cycle theories do not assign nominal variables – such as money supply or the price level – any role in explaining fluctuations in real variables. In this manner, real business cycle theories push the Walrasian model further than any previous models.

In evaluating the validity of this theory, two main questions emerge: How can we account for such large fluctuations in production and employment? and Why do changes in some nominal variables – such as the money supply – seem to be connected to the movements in real variables?

According to the real business cycle theory, the only forces triggering fluctuations are those affecting Walrasian equilibrium – namely the set of relative prices and quantities that equate demand and supply on all markets at the same time. Consequently, in order to understand the business cycle mechanism, we must analyze the fundamental factors influencing demand and supply for different categories of goods and services. In real models, fluctuations seem to be generated in principle, by numerous types of macroeconomic disturbances, but the technological type is the most common.

One of the obvious empirical observations that the real cycle theory had to account for is that during the economic cycle consumption and leisure move in opposite directions: when recession starts, consumption decreases and leisure increases and the other way round during the expansion phase. The explanation appeared rather problematic for real cycle theorists: consumption and leisure should – at least in principle – move in the same direction, since both are normal goods. In these circumstances, the new classicals tried to explain why during recessions, individuals find it rational to increase leisure and at the same time reduce their demand for goods: the price of leisure relative to goods – namely the real wage – decreases during recessions. In this way, an essential implication of real business cycle theories is the procyclical evolution of real wages.

In the event that the production function remained unchanged and at the origin of fluctuations lay demand shocks, then generating the implication of a procyclical wage would pose serious problems. Since employment is low during recessions, we would expect the marginal product of labour and the real wage – to be high; in the situation of a constant production function, decreasing marginal returns of labour would generate a counter-cyclical real wage – as is necessary to explain fluctuations in consumption and leisure.

Under these circumstances, the new classicals start from the premise that in the rate of technological change there exist substantial fluctuations; during the recession, the available production technology is relatively unfavourable and the marginal product of labour and, implicitly, the real wage are low. In response, individuals choose to reduce consumption and increase leisure

An interesting conclusion of this type of models is that – since economic fluctuations represent a disruption in Walrasian equilibrium – these fluctuations are actually characterized by efficiency. In equilibrium, when technological possibilities and preferences are given, the levels of employment, output and consumption cannot be improved. At the same time, public authorities' attempts to influence allocative processes on private markets – such as employment stabilization policies – are, at best, inefficient, but more likely even harmful, since they obstruct the „invisible hand” mechanism.

Of all the implications of the real business cycle theories, the „optimality” of fluctuations is probably the most astonishing: there is no doubt that during a recession, the level of welfare decreases compared to the preceding expansion. Keynesian theories explain the reduction in welfare as a coordination failure: since wages and prices do not adjust instantly to equilibrate supply and demand, some mutually advantageous exchanges do not take place during recessions. By contrast, the real business cycle theories reject this hypothesis, by motivating the decline in welfare through a decline in the technological capacities of the society.

Real cycles theories' supporters rely on the premise that employment fluctuations are entirely voluntary, in other words, that the economy is at all times positioned on the labour supply curve. However, throughout the business cycle, employment varies substantially, whereas labour supply determinants – the real wage and the real interest rate – fluctuate only to a small extent. To comply with this observation, real business cycle models bring forward the premise of individuals' inclination towards an intertemporal reallocation of leisure. Under these circumstances, individuals will substantially reduce the labour supply in response to small and temporary reductions in the real wage or the real interest rate. This hypothesis, however, is not feasible, since empirical evidence documents a low inclination of individuals to substitute leisure in time. If leisure had a high degree of substitutability – as assumed by the real business cycle models – then individuals anticipating a real wage increase should work less now and more in the future and the other way round when anticipating a real wage decrease. But studies on individual labour supply show that anticipated shifts in the real wage only lead to small shifts in the amount of labour supplied: individuals do not react to anticipated shifts in real wages through a substantial reallocation of leisure in time (Ball, 1985, Altonji, 1986).

Real business cycle theories contrasts strongly with the consensual vision of the '60s regarding a series of assumptions almost ridiculous 30 years ago, and still extremely controversial in our days. First of all, the theory relies on the premise that the economy experiences sudden and large shifts in the existing production technologies. Many such models regard recessions as periods of technological regress, as declines in the technological abilities in society. Their opponents (among them we mention N. Gregory Mankiw and L. Summers) argue that the assumption of large shifts in technology – particularly in what regards technological regress – is not plausible; on the contrary, they assert that knowledge accumulation and technological progress usually occur gradually. Secondly, real business cycle theories assume that employment fluctuations reflect shifts in the amount of labour that individuals are willing to supply. Since employment varies considerably, whereas the real wage and the real interest rate – only vary slightly, these models require that leisure be highly substitutable in time. This hypothesis is inconsistent with numerous econometric studies of labour supply, which evidence a low elasticity of intertemporal substitution during recessions; moreover, it is also inconsistent with economists' belief that high unemployment during recessions is to a large extent involuntary. Thirdly, real business cycle theory assumes that monetary policy is irrelevant in alleviating economic fluctuations. Previous to its formulation in the early '80s, most economists agreed on the non-neutrality of money; and even though the ability of systematic monetary policy was a controversial issue, it was at the same time generally acknowledged that an inadequate monetary policy can destabilize the economy. In this context, real cycle theorists brought up a new challenge, by using the old Keynesian argument that any correlation between money supply and output derive from the fact that money supply is an endogenous factor.

The opponents of the theory have at the same time proved skeptical to the possibility that aggregate real shocks have such a large amplitude and frequency to trigger and account for economic cycles. In this respect, they posit that concrete examples are limited to the oil shocks and harvest failures, but subsequent empirical research demonstrate that a large dispersion of shifts in preferences and technology can lead to persistent significant effects on aggregate output and employment (Lilien, 1982, pp. 777-793). On the whole, this research points out that real cycle theories are promising in explaining sudden fluctuations in real economic activity and the tendency of rising unemployment starting with the '70s.

Another important objection to real business cycle theories is that they do not address the link between monetary and real variables appropriately (Barro, 1984, pp. 179-182). According to Barro, during the '30s, the main empirical

association between monetary aggregates and real variables derives not from the shifts in the monetary base, but rather from fluctuations in the volume of financial intermediation, namely the size of credits and of deposits. A reduction in the volume of financial intermediation is not, in essence, different from shocks on the production function, in that it may have adverse real consequences on the economy; therefore, the issue to be solved does not concern the reason why these crises had serious consequences on production and employment; rather, we need to find an explanation for the reason why occasional crises occurred during that period. Even for the post-war period, a lot of empirical data suggest that the link between money and real economic activity reflects fluctuations in the aggregate volume of loans and deposits, and not the monetary base. Under these circumstances, money appears more of an indicator of shifts in the business climate rather than an exogenous factor with major influence on real variables. However, statistical data on the interaction between the monetary base and the real variables suggests a certain monetary non-neutrality which requires further explanation. Thus, this type of connection between real and monetary variables is consistent with those rational expectations models focusing on the role of incomplete information on prices and money, and therefore it could be accounted for on this basis. A strong supporter of monetary neutrality, Barro asserts that by judging in such a manner, we could actually solve this puzzle of neutrality: thus, on the one hand, many of the empirical associations between real variables and money do not represent in themselves proofs of monetary non-neutrality and on the other hand, the remaining circumstances considered as examples of monetary non-neutrality can be explained by existing theories.

In approaching the business cycle mechanism, real models usually take into account technological changes at the macroeconomic scale, as if these occurred in a single sector. There are however, theories focusing on the technological shifts occurring in different sectors (Long, Plosser, 1983, pp. 39-69). All these models rely on an essential premise: even though shocks on different sectors are independent, the outputs of these sectors evolve together throughout the cycle. For instance, a negative shock on a sector will reduce the level of welfare for all individuals, which incurs a demand decrease for all the goods in the economy.

Theoretical research of multi-sector models have revealed a very interesting premise: in order for these models to function, it is necessary that the number of independent sectoral shocks be relatively low, and those sectors be subject to large technological fluctuations; if the number of sectors is large and labour is mobile between sectors, the aggregate effect is almost null. Thus, multi-sector models are similar to one-sector models and, in addition,

experience the same weaknesses: lack of any direct empirical evidence attesting the existence of large technological shifts, as well as lack of feasibility of the strong substitutability of leisure in time.

Finally, another multi-sector approach of the business cycle is the *sectoral shifts theory*, which focuses on the cost of labour adjustment across different sectors of the economy (Lilien, 1982, Black, 1987). Similar to the real business cycle theory, the sectoral shifts theory observes the classical dichotomy, by ignoring the role of monetary perturbations; but unlike real business cycle theory, it departs to a certain extent from the walrasian paradigm, by assuming that when workers move from one sector to another, a certain period of unemployment is inherent, while they are searching for new jobs. According to this theory, recessions are periods in which sectoral shocks are more numerous than usual, and, as a consequence, a larger sectoral adjustment is required.

This real business cycle type of models seems more plausible than those based on substantial shocks of aggregate productivity and on intertemporal substitution. In this respect, the assumption that recessions require an intersectoral re-allocation drastically seems more realistic than that of recessions being the result of a major technological regress, which renders leisure completely unattractive.

Numerous empirical studies are carried out at present in order to confirm the validity of this theory, but the available data do not seem to support the sectoral shifts theory. To the extent that during recessions we are confronted with voluntary unemployment caused by the transfer of labour to other sectors, we would expect to see high unemployment in some sectors of the economy and excess labour demand in other sectors. But in real economies, fluctuations occur in a completely different manner: the rise in unemployment in some sectors is not accompanied by vacant jobs in others (Abraham, Katz, 1986, pp. 507-522). Moreover, even though the sectoral shifts theory asserts that workers move between sectors during recessions, empirical studies point out that their movement is procyclical (Murphy, Topel, 1987, pp. 11-58). All these empirical findings suggest that a plausible reconciliation between economic realities and the theory of sectoral adjustment is rather unlikely. The supporters of the theory argue that this kind of empirical evidence is not convincing. Since the sectoral adjustment process implies a period of high unemployment and low income, there exists the possibility of a demand decrease in all sectors of the economy. Thus, it is possible to notice high unemployment in some sectors and, at the same time, few available jobs in others, despite the fact that initially the recession was caused by the necessity of labour re-allocation between sectors. To the extent

that we admit the validity of this argument, it becomes unclear how we can distinguish empirically the real business cycle theories – which focuses on technological fluctuations at the macroeconomic level – and even Keynesian theories – which bring forward fluctuations in the aggregate demand.

On the whole, we can conclude that these real business cycle theories have generated a new perspective and novel techniques for modeling the macroeconomic area and constructing economic policy. However, it is not yet very clear to what extent these theories contribute to an effective understanding of the business cycle mechanism or to the formulation of economic policy

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