

The Decline of Modernity

“The paradigm of rationalized materialism, as an expression formaking progress economical which has reached the stage where the increase of wealth is pursued at any cost, has depleted its consistency; the global crisis representing the point of collapse of the economic systems which were generated by the first modernity.”

The pervading feeling today, especially among economists, is that the direction taken by scientific research is a debatable one. The voluntary restraining of thematic fields to the mainstream theory's sphere of significance, in order to insure guarantees when certifying relevance, and the creation of exclusive circuits for presenting the results of research, in order to obtain acceptance in the field of information, are the practices most suspected of negative consequences. Associating these means with the one for recognizing the performance of various careers, as it happens in academic education, complicates even more the negative perception, despite a certain voluntary conformation. This is because, even though sociologically argued, that which is considered the right of a scientific community to standardize understanding and to validate explicative models has become a mean for supporting the exclusivism of a theory or of a trend in research.

The situation as such pertains to a true paradox of the infancy of the knowledge society, which manifests itself in discordance with the thematic openness and the emancipation from the ideologizing authorities which ruled thought, especially in the Dark Ages. Frankly speaking though, fixating the defining references of cognitive performance into reductionist institutional constructions, such as the monopoly over the criteria for establishing the factor of influence, represents a handicap in the birth of a new cycle of modernity. And this is because, essentially, the system can be manipulated because its rules are exclusive.

The extension is also manifestly forced for the cycle of the second modernity of the evolutional path of the content and form of Baconian scientific knowledge, blocking its specificity. The sense of the method of knowledge continues to be parsimony. The cognitive context is still structured on materialism, heterodox instrumentation is marginalized, while holistic perspective is avoided. In other words, knowledge continues to be trapped in the deviant vortex of non-anthropocentric, physicalist empirism, with the societal being the proving ground for the projections of mechanical determinism and for the extrapolation-justified imaginary. The resulting situation resembles one where the child's level of intelligence is explained in accordance with the epistemic proficiency of the parent.

In fact, a drastic limitation of the initiative and of freedom of thought occurs. There even takes place a blocking of the intuition, as the motor of ideaistic breakthroughs. Undoubtedly this is a reduction of diversity as a reason for the force of scientific knowledge to not close itself, to not become a postmodern scholastic. The conceptual rarefaction, sold as a deepening of knowledge, wrapped in the dogma of quantitative testing and promoted as a standard for recognizing the merits of research is also evident, despite the material logistics for imposing the calculation of the factor of influence as principle of quality testing for instance, while the practice of granting conditional access to articles is in effect.

What happens with the validation of research performance is not all too different from the goings-on in the field of risk evaluation on the global economy by the rating and auditing companies who have created an oligopoly predisposed to forgery and fraud in certifying real value, in order to insure their own profit.

Economic research is firmly established on the path treaded before it by the experimental sciences. The peremptory proof is the setting of the recourse to knowledge models based on measurement and calculus as a rule for certifying the right to recognize professional performance. This is how the themes centered on microeconomic functionalism and the formulas for dissecting reality derived from a managerial perspective of the economy came to be employed with prevalence. Most of studies focus on the disfunctionalities of efficiency mechanisms and compete in suggesting solutions for correcting the failures.

What seems to lie outside the area of interest is the evaluation of the state of energy depletion of certain mechanisms, and even of certain formulas for building economic systems. From this point of view, economic research shows an autistic behavior in relation with the example set forth by the experimental sciences, which are predisposed to periodically test the consistency of their fundamentals and to question their mainstream theories. It looks like Economics, by seeking to consolidate its epistemic status, has fallen prey to a dangerous assumption: to safeguard the image of a self-confident science it has eliminated the competition of ideas – the confrontation of theoretical perspectives - from its conceptual universe

The most critical aspect is the lack of interrogation of the human action fundamentals of an efficiency type and the neglecting of the understanding of the dynamic in the area of conceptualization. Somewhat significant for the confusion of the epistemic moment in which Economics lingers is the restraint shown by theoreticians in evaluating the degree of maturity as a science, by rechecking the cognitive valences of the concepts considered to be fundamental, and of the basic hypotheses of Economics.

One evidence of this strange attitude is the almost zero chance of acceptance, by the top-notch editorial network for Economics research, of a text describing the results in analyzing the fundamentals of the theory; sometimes even Economics works of logic are refused. Of course that, in essence, even the form for the communication of research becomes a constraint. The standardization of the presentation is, in the end, an exaggeration of the normalization of correctitude to the detriment of content and a reduction of innovation potential.

The uncertainty of exiting the present crisis is itself a symptom of a spiritual disease in the shape of the conceptual fixation in the sphere of significances of a model of understanding and of explanation specific to the old cycle of modernity. The acute deficit of understanding and of explanation for what happens in reality belongs to this malady which has struck Economics. The failed series of advanced solutions is justified by the inappropriate origin of the cognitive initiative – the use of mental constructions specific to a way of structuring reality which is not relevant today.

The paradigm of rationalized materialism, as an expression for making progress economical which has reached the stage where the increase of wealth is pursued at any cost, has depleted its consistency; the global crisis representing the point of collapse of the economic systems which were generated by the first modernity. To correct these systems is to stay in perpetual crisis.

The path is for the trends of inclusiveness to be encouraged, as a signal for the emergence of other economic systems, belonging to second modernity generation, permissive to the principle of the equality of chances with regard to the access to wealth and with a propensity for internalizing the costs of wealth. In this perspective, economic research must follow the path of making itself socially responsible, breaking the shackles of the networks for controlling the content and the means for exposition and public certification of its performance.

Contents

Characteristics of Criteria for Selecting Investment Projects under Uncertainty Dan Armeanu, Adrian Enciu, Dorina Poanta.....	5
Online Services Management Support for an Intelligent Locality Lorena Bătăgan, Adrian Pocovnicu.....	19
The Meanings of “Made in Romania” among the Romanian Consumers Cătălin Mihail Barbu	31
Forms and Strategies of the Banks to Enter on a Foreign Market Nicoleta Hurduc, Alin Nițu	43
Effects of Macroeconomic Variables on the Stock Market: The Case of the Czech Republic Yu Hsing.....	53
The European Recovery Economic Plan and Quality of Public Finances – Instruments for Monitoring and Improving Fiscal and Economic Systems Mircea Soroceanu, Carolina Daniela Lupașcu (Soroceanu)	65
An Optimization of the Risk Management using Derivatives Ovidiu Șontea, Ion Stancu	73
Towards to the Respiritualization of the Economics Constantin Popescu, Mihaela Comănescu	85
Financial Crisis from the Trust and Loss Aversion Perspective in Emerging Romanian Capital Market Antoniade-Ciprian Alexandru, Nicoleta Caragea	101
The Contribution of the Neo-Schumpeterian Approach to the Development of the Economic Theory: Emphasis on the Meso-Economic Level Radu Herman, Remus Avram	111
Dobrogea as Romanian Tourism Micro-destination Aurelia-Felicia Stăncioiu, Nicolae Teodorescu, Anca-Daniela Vlădoi, Ion Pârgaru, Daniel Moise....	133
The Rethinking of the Economic Activity Based on Principles of Eco-Efficiency Daniela Virjan.....	143
The Correlation between the Conceptual System of the Political Economy and that of the Accountancy – a Solution for Reducing the Risks Connected to the Administration Activities in any Stage of the Economic Cycle Aurelian Virgil Băluță	155

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

Text revision:

Gabriela Ochiană

Computerized drawing up:

Nicoleta Bobocea

Cover:

Nicoleta Bobocea

Subscriptions distribution:

Mircea Dinu

Tel./Fax: 021/210.73.10; 021/210.63.07
021/210.63.08

Data base indexation:

EconLit

<http://www.aeaweb.org>

Research Papers in Economics (RePEc)

<http://www.ideas.repec.org>

<http://econpapers.repec.org>

Directory of Open Access Journals (DOAJ)

<http://www.doaj.org>

EBSCO Publishing

<http://www.ebscohost.com>

International Consortium for the Advancement
of Academic Publication (ICAAP)

<http://www.icaap.org>

CNCIS B+

www.econometeoreticasiaplicata.ro; www.ectap.ro

Reception of texts: economia.ta@edeconomica.com

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

Characteristics of Criteria for Selecting Investment Projects under Uncertainty

Dan ARMEANU

Bucharest Academy of Economic Studies
darmeanu@yahoo.com

Adrian ENCIU

Bucharest Academy of Economic Studies
secretariat@fin.ase.ro

Dorina POANTA

Romania Banking Institute
dorina.poanta@ufb.ro

Abstract. *Within financial theory and practice, there are used five main criteria for selecting investment projects: the net present value (NPV) criterion, the internal rate of return (IRR) criterion, the return term (RT) criterion, the profitability ratio (PR) criterion and the supplementary return (SR) criterion. The essay will emphasize several new properties of said indexes for investment assessment, having as starting point the hypotheses of (approximately) normal repartition of cash-flows generated by an investment project. The obtained results point to the fact that the NPV indexes (the analysis of this criterion was carried out in the article "The NPV Criterion for Valuing Investments under Uncertainty", Daniel Armeanu, Leonard Lache, Economic Computation and Economic Cybernetics Studies and Research no. 4/2009, pp. 133-143), IRR, PR, RT and SR register normal repartitions, therefore simplifying the investment analysis under economic uncertainty, by the capacity of building confidence intervals and assessing probabilities for the inferior limits of said investment assessment indexes.*

Keywords: internal rate of return; cash flow; topical rate; uncertainty; normal repartition; confidence interval; mathematical expectation; square mean deviation of the net present value.

JEL Code: G10.

REL Codes: 11D, 11E.

Within the present article, we intend to emphasize a new property of the selection criteria of the investment projects, namely the IRR, PR, RT and SR value distribution normality of an investment project under the conditions of uncertainty, the probability that said project be accepted by investors and, the confidence intervals for these indexes with different occurrence probabilities. In this regard, we will consider the following scenario for an investment project:

- the investment initial value is $I_0 = 1,000,000$ EUR;
- the longevity of the investment project is $N = 10$ years;
- the used topical rate is $k = 12\%$;
- the investment scrap value is null ($SV = 0$).

The internal rate of return represents, by definition, that value of the topical rate (discounting rate) for which the net present value of the investment project is equal to 0. IRR results as a solution of the equation:

$$\sum_{i=1}^n \frac{CFD_i}{(1+k)^i} - I_0 = 0 \quad (1)$$

The IRR calculation is based on the hypothesis that the future cash flows can be reinvested at this rate of return, yet a less plausible hypothesis. In case of our project, the rated values of available cash flows generated by the project are:

No.	p_i	CFD	CFD ₂	CFD ₃	CFD ₄	CFD ₅	CFD ₆	CFD ₇	CFD ₈	CFD ₉	CFD ₁₀
1	0.02	46.3	52.95	63.54	74.13	79.42	95.40	100.6	76.78	70.23	52.95
2	0.03	80.2	91.72	110.0	128.4	137.5	160.5	174.2	132.9	123.3	91.72
3	0.04	101.	115.8	138.9	162.1	173.7	202.6	220.0	167.9	149.7	115.8
4	0.05	110.	126.0	151.2	176.4	189.0	220.5	239.4	182.7	161.0	126.0
5	0.06	118.	135.6	162.7	189.8	203.4	237.3	257.7	196.6	172.9	135.6
6	0.07	125.	145.8	172.3	201.0	215.4	251.3	277.7	208.1	183.1	143.6
7	0.09	165.	189.0	226.8	264.6	284.0	330.7	363.1	278.3	241.0	189.0
8	0.15	175.	200.5	239.5	283.4	301.5	353.2	380.1	291.0	255.7	199.9
9	0.12	191.	220.1	266.4	305.9	329.9	383.2	414.9	316.8	278.6	218.5
10	0.1	204.	232.5	279.0	325.5	348.7	406.8	441.7	337.1	296.4	232.5
11	0.09	208.	237.0	284.4	331.8	355.5	414.7	450.3	343.6	302.2	237.0
12	0.07	217.	246.8	296.1	345.5	370.2	431.9	468.9	357.8	314.6	251.3
13	0.06	247.	283.3	340.0	396.7	425.0	495.8	538.3	410.8	361.2	284.1
14	0.04	254.	288.9	348.3	406.4	435.4	508.0	551.6	420.9	370.1	290.3
15	0.01	261.	299.0	358.8	418.6	448.5	523.3	568.2	433.6	381.3	299.0

The IRR rating involves the use of numerical analyses (for instance, Newton-Rhapson procedure). Without entering into details, we present the results obtained for each of the 15th nature conditions:

No.	RIR _i (%)	p _i
1	-5.5582	0.02
2	3.7667	0.03
3	8.336	0.04
4	10.1196	0.05
5	11.7369	0.06
6	13.1279	0.07
7	19.8989	0.09
8	21.4612	0.15
9	23.9674	0.12
10	25.6886	0.1
11	26.2572	0.09
12	27.5321	0.07
13	31.9274	0.06
14	32.7213	0.04
15	33.7700	0.01

The mathematical expectation and risk (square mean deviation) of the IRR variate are evaluated by using the formulas:

$$E(RIR) = \sum_{i=1}^{15} p_i \times RIR_i \quad (2)$$

$$\sigma(RIR) = \sqrt{\sum_{i=1}^{15} p_i \times [RIR_i - E(RIR)]^2} \quad (3)$$

After evaluation, we obtain:

$$E(RIR) = 20.7721\%$$

$$\sigma(RIR) = 8.2429\%$$

We now intend to test the normality of distribution for IRR values. In this sense we will use the well-known Kolmogorov-Smirnov normality test, whose mechanism we will briefly disclose in the followings.

The econometrical Kolmogorov-Smirnov (KS) test is centered on the idea of building an empirical probability distribution based on the data in the sample. This distribution, noted $F_N(x)$, has the following definition:

$$F_N(x) = \frac{1}{N} \sum_{k=1}^N I_{X_k \leq x} \quad (4)$$

where S_k represents the carried out observations, and $\mathbb{I}$ represents the indicator⁽¹⁾ distribution (or Heaviside function).

Starting from this empirical probability distribution and, from the supposition that the rates or values in the sample come from a normal probability distribution, whose probability distribution is $F(x)$, the KS statistics is thus defined:

$$KS_N = \max_x |F_N(x) - F(x)| \quad (5)$$

The KS_N statistics-test is 0 concurrent when the carried out observations come from a distribution whose probability distribution is $F(x)$. This also represents the null hypothesis of the KS test. It can be demonstrated that, if the two probability distributions tend to “overlap”, then, at limit, the following relation takes place:

$$\lim_{N \rightarrow \infty} \sqrt{N} \times KS_N = K \quad (6)$$

where K represents the tabled rate of Kolmogorov probability distribution. The decision of accepting or rejecting the null hypothesis if the KS test is based, as in case of any econometrical test, on the comparison between the statistics rate-test and the critical rates of K .

In our case, the KS_N statistics rate-test equals 0.10287, and K (for a significance threshold of 5%) is $K_{0.95} = 1.3581$. As $KS_N < K$, we accept the null hypothesis of the test, namely the normality of distribution for IRR variate.

As IRR follows a normal distribution, we may establish the probability that the internal rate of return for the investment project exceed the topical rate k (this represents one of the main selection criteria of investment projects):

$$P(RIR > k) = P\left(\frac{RIR - E(RIR)}{\sigma(RIR)} > \frac{k - E(RIR)}{\sigma(RIR)}\right) = 1 - N\left(\frac{k - E(RIR)}{\sigma(RIR)}\right) \quad (7)$$

where $N(x)$ represents the theoretical probability distribution of standard Gaussian distribution $N(0,1)$. On our example, wherein $k = 12\%$, we obtain:

$$P(RIR > 0,12) = 1 - N\left(\frac{0.12 - 0.207721}{0.082429}\right) = 0.856381$$

Therefore our project has over 85% chances to succeed. This value is very close to the probability that NPV be positive ($P(NPV > 0) = 84.1345\%$), which represents an empirical reasoning of the fact that, in case of the present project, NPV and IRR criteria are equivalent.

The Table below presents different possible values for the inferior IRR limit, along with the associated probabilities⁽²⁾:

RIR ₁ (%)	P(RIR > RIR ₁) (%)
5	97.2153
7	95.2618
10	90.4366
12	85.6381
13	82.7130
15	75.8115
16	71.8683
18	63.1678
20	53.7313
21	48.8971
22	44.0790
23	39.3471
25	30.4004
27	22.4959
30	13.1463

Proceeding in the same manner with the confidence interval for NPV (Armeanu, Lache, 2009, pp. 133-143), there can be established a similar interval for the internal rate of return. Thus, for a significance threshold $\alpha = 1 - \delta$, we have:

$$\left[E(RIR) - z_{1-\frac{\alpha}{2}} \times \sigma(RIR), E(RIR) + z_{1-\frac{\alpha}{2}} \times \sigma(RIR) \right]$$

For different δ probabilities there are obtained the following IRR confidence intervals:

Probabilities δ (%)	confidence intervals (%)
60	[13.8347 – 27.7095]
65	[13.0684 – 28.4758]
70	[12.2289 – 29.3153]
75	[11.2899 – 30.2543]
80	[10.2084 – 31.3358]
85	[8.9062 – 32.6380]
90	[7.2138 – 34.3304]
95	[4.6163 – 36.9278]
96	[3.8433 – 37.7009]
97	[2.8843 – 38.6599]
98	[1.5963 – 39.9479]
99	[-0.4602 – 42.0043]
99.5	[-2.3659 – 43.9101]

I. Return term criterion

The Return Term (RT) expresses the number of years for return, by means on annual cash flows, of the sum allotted for carrying out the investment. RT is evaluated taking into consideration the number of years r for which, starting with year $r+1$, the cumulative value of cash flows generated by the investment exceeds the value of the initial investment. Assuming that the cash flow generated by the investment in year $r+1$ is evenly cashed along the entire year, the number of days in year $r+1$ necessary for the return of the investment is evaluated weighting the 360-day of the year with the ratio between the sum of the investment that is to be returned and, the available cash flow of year $r+1$:

$$TR = \max_{1 \leq r \leq 10} \left\{ r \mid \sum_{i=1}^r CFD_i \leq I_0 \right\} + \frac{I_0 - \sum_{i=1}^r CFD_i}{CFD_{r+1}} \quad (8)$$

that is r years and $\frac{I_0 - \sum_{i=1}^r CFD_i}{CFD_{r+1}} \times 360$ days.

Within the specialty literature⁽³⁾, there was ascertained the idea according to which the investments having a return term as short as possible, are preferred. Yet, as it was demonstrated by the financial practice, there are numerous cases on investment projects which, although they are characterized by relatively long return terms, generate an NPV which is superior to other projects with a more reduced RT, thus contributing at maximizing the enterprise vale. In such cases, it is recommended the use of the NPV criterion for selecting investments, although, in the end, said selection process is undoubtedly influenced by the company management vision and by the specific objects the management has in view on said business line.

The values obtained for the investment return term, in the 15th considered nature conditions, are:

No. i	p_i	TR _i (years)	TR _i (years and days)
1	0.02	0.00	0
2	0.03	7.88	7 years 318 days
3	0.04	6.48	6 years 143 days
4	0.05	6.11	6 years 40 days
5	0.06	5.80	5 years 288 days
6	0.07	5.56	5 years 200 days
7	0.09	4.54	4 years 196 days
8	0.15	4.34	4 years 122 days

9	0.12	4.05	4 years 18 days
10	0.1	3.87	3 years 315 days
11	0.09	3.82	3 years 294 days
12	0.07	3.69	3 years 250 days
13	0.06	3.32	3 years 117 days
14	0.04	3.27	3 years 97 days
15	0.01	3.19	3 years 70 days

In order to evaluate the mathematical expectation and RT standard deviation, the following formulas are used:

$$E(TR) = \sum_{i=1}^{15} p_i \times TR_i$$

$$\sigma(TR) = \sqrt{\sum_{i=1}^{15} p_i \times [TR_i - E(TR)]^2} \quad (9)$$

Applying the formulas (9), we obtain:

$$\begin{cases} E(TR) = 4.34 \text{ years or } 4 \text{ years } 157 \text{ days} \\ \sigma(TR) = 1.24 \text{ years or } 1 \text{ year } 85 \text{ days} \end{cases}$$

We now propose to test the RT distribution normality. In this regard, we will use again the Kolmogorov-Smirnov test, for which we obtain a statistics value-test $KS_N = 0.1896$, whereas the quantile of range $0.95^{(4)}$ of the Kolmogorov theoretical distribution is $K_{0.95} = 1.3581$. As in case of IRR, we accept the null hypothesis of the test: the RT variable is normally distributed. Therefore, we may speculate all properties resulting therefrom.

The probability that RT be superior to a randomly selected RT_1 equals

$$P(TR > TR_1) = 1 - N\left(\frac{TR_1 - E(TR)}{\sigma(TR)}\right) \quad (10)$$

The confidence intervals $\delta = 1 - \alpha$ are thus determined:

$$\left[E(TR) - z_{1-\frac{\alpha}{2}} \times \sigma(TR), E(TR) + z_{1-\frac{\alpha}{2}} \times \sigma(TR) \right] \quad (11)$$

The table below presents the confidence intervals for the investment return term at different levels of evaluation δ accuracy:

Probability δ (%)	confidence intervals TR (years)
60	[3,39,5,47]
65	[3,28,5,59]
70	[3,15,5,71]
75	[3,01,5,86]
80	[2,85,6,02]
85	[2,66,6,21]
90	[2,40,6,47]
95	[2,01,6,86]
96	[1,90,6,97]
97	[1,75,7,11]
98	[1,56,7,31]
99	[1,25,7,62]
99,5	[0,96,7,90]

II. The profitability ratio criterion

The Profitability Ratio (PR) measures the relative return of an investment project, taking into account the entire lifetime thereof. Practically, PR shows the profit obtained for an invested monetary unit. It is evaluated by using the formula:

No. i	p_i	IP_i (%)
1	0.02	-61.1775
2	0.03	-32.9329
3	0.04	-15.5273
4	0.05	-8.1423
5	0.06	-1.1614
6	0.07	5.0577
7	0.09	38.1171
8	0.15	46.2935
9	0.12	59.8210
10	0.1	69.5200
11	0.09	72.7781
12	0.07	80.1543
13	0.06	106.5070
14	0.04	111.4439
15	0.01	117.9219

$$IP = \frac{VAN}{I_0} \quad (12)$$

The results obtained for the profitability ratio, within the 15th nature conditions, are disclosed in the following table:

The mean value and the square mean deviation of the profitability ratio is evaluated by using the relations below:

$$\begin{aligned} E(IP) &= \sum_{i=1}^{15} p_i \times IP_i \\ \sigma(IP) &= \sqrt{\sum_{i=1}^{15} p_i \times [IP_i - E(IP)]^2} \end{aligned} \quad (13)$$

The obtained results are as follows:

$$\begin{cases} E(IP) = 45.7379\% \\ \sigma(IP) = 40.4737\% \end{cases}$$

As seen before, NPV represents a normally distributed variate, from relation (12) we conclude that PR also has a normal distribution. Thus, we can determine the probability that PR be superior to a PR_1 value:

$$P(IP > IP_1) = 1 - N\left(\frac{IP_1 - E(IP)}{\sigma(IP)}\right) \quad (14)$$

In the particular case when $PR_1 = 0\%$, the relation (14) becomes:

$$P(IP > 0) = 1 - N\left(-\frac{E(IP)}{\sigma(IP)}\right) \quad (15)$$

The obtained results are:

IP_1 (%)	$P(IP > IP_1)$ (%)
0	87.0776
10	81.1380
15	77.6210
20	73.7585
25	69.5808
30	65.1304
40	55.6369
50	45.8067
65	31.7067
80	19.8629
90	13.7065
100	9.0013
110	5.6171
135	1.3712
150	0.4997
180	0.0455

From the table it results that the probability for PR be positive is of about 87%, namely very close to the probabilities that NPV be positive (about 84%) and IRR be superior to the topical rate k (approximative 85%), which demonstrates the equivalence of NPV, IRR and PR criteria for our project.

At the same time, we may determine confidence intervals δ for PR, based on the formula:

$$\left[E(IP) - z_{1-\frac{\alpha}{2}} \times \sigma(IP), E(IP) + z_{1-\frac{\alpha}{2}} \times \sigma(IP) \right] \quad (16)$$

The confidence intervals, for different levels of accuracy δ , are disclosed in the table below:

Probabilitatea δ (%)	Intervalul de încredere pentru IP (%)
60	[11.6744 – 79.8014]
65	[7.9117 – 83.5642]
70	[3.7897 – 87.6862]
75	[-0.8209 – 92.2968]
80	[-6.1312 – 97.6070]
85	[-12.5252 – 104.0010]
90	[-20.8353 – 112.3112]
95	[-33.5890 – 125.0648]
96	[-37.3848 – 128.8607]
97	[-42.0936 – 133.5694]
98	[-48.4179 – 139.8937]
99	[-58.5153 – 149.9912]
99.5	[-67.8730 – 159.3488]

The fact that the confidence intervals are not compact, even for lower levels of δ probability, may be explained by means of the large standard deviation of the profitability ratio.

III. The supplementary return criterion

The supplementary return (SR) represents another measure of the investment return and is evaluated by using the following formula:

$$RS = \sum_{j=1}^{10} \frac{CFD_j - I_0}{I_0} = \sum_{j=1}^{10} \frac{CFD_j}{I_0} - 1 \quad (17)$$

The investment selection criterion is constituted, the way it was expected, by the maximization of the supplementary return. For the 15th nature conditions considered in case of our project, the obtained supplementary returns are:

No. i	p_i	RS_i (%)
1	0.02	-28.7630
2	0.03	23.0886
3	0.04	54.8302
4	0.05	68.3013
5	0.06	81.0779
6	0.07	92.4532
7	0.09	153.2138
8	0.15	168.0181
9	0.12	192.5916
10	0.1	210.5030
11	0.09	216.4936
12	0.07	230.1193
13	0.06	278.3648
14	0.04	287.4402
15	0.01	299.2451

The evaluation of the mathematical expectation and supplementary return volatility is based on the already known formulas:

$$E(RS) = \sum_{i=1}^{15} p_i \times RS_i$$

$$\sigma(RS) = \sqrt{\sum_{i=1}^{15} p_i \times [RS_i - E(RS)]^2}$$
(18)

After performing the evaluation, the following results are obtained:

$$\begin{cases} E(RS) = 167\% \\ \sigma(RS) = 74.1201\% \end{cases}$$

As the available cash flows represent normally distributed variates, from the relation (17) also results that the SR variable has a normal distribution. Thus, the probability that SR be superior to an indefinite SR_1 value has the expression:

$$P(RS > RS_1) = 1 - N\left(\frac{RS_1 - E(RS)}{\sigma(RS)}\right)$$
(19)

In the particular case wherein $SR_1 = 0$, we have:

$$P(RS > 0) = 1 - N\left(-\frac{E(RS)}{\sigma(RS)}\right) = 98.7874\%$$

The table below discloses the probabilities that SR be superior to SR_1 lower limits, arbitrarily selected:

SR_1 (%)	$P(SR > SR_1)$ (%)
-30	99.6068
-10	99.1530
0	98.7874
20	97.6331
30	96.7724
40	95.6684
50	94.2777
60	92.5575
75	89.2739
90	85.0564
100	81.6986
120	73.6994
140	64.2173
170	48.3857
200	32.8079
220	23.7288

The confidence intervals for SR (for different levels of the α significance threshold) is thus determined:

$$\left[E(RS) - z_{1-\frac{\alpha}{2}} \times \sigma(RS), E(RS) + z_{1-\frac{\alpha}{2}} \times \sigma(RS) \right] \quad (20)$$

The table below contains the confidence intervals for the supplementary return SR:

Probability δ (%)	confidence intervals RS (%)
60	[108.5826 – 225.4174]
65	[108.0512 – 225.9488]
70	[107.5307 – 226.4694]
75	[107.0210 – 226.9790]
80	[106.5225 – 227.4776]
85	[106.0350 – 227.9651]
90	[105.5586 – 228.4415]
95	[105.0934 – 228.9066]
96	[105.0017 – 228.9983]
97	[104.9105 – 229.0896]
98	[104.8197 – 229.1804]
99	[104.7293 – 229.2707]
99.5	[104.6843 – 229.3157]

Grounding the decision of investing within the probabilistic environment is carried out by evaluating the cash-flow-states afferent to each year, based on the variations registered in previous years or by subjectively evaluating the investors and the use thereof in the net present value formula. Given the determinist environment, when cash flows were known for sure, in the non-determinist environment different values of cash flows are assumed as known, on different nature conditions with particular occurrence probabilities. The probabilities of occurrence are quantified either given a history thereof, when such a history exists, or based on the previous frequency, or they are subjectively estimated by specialists. The novelty of the present article consists in the fact that we succeeded to prove the IRR, PR, RT and SR values distribution normality and determine the probability that said project be accepted by investors, as well as the confidence intervals for said ratios with different occurrence probabilities, allowing the investors the rigorous grounding of the decision of investing under uncertainty.

Notes

- (1) This indicator function has the following expression: $I_{X_k \leq x} = \begin{cases} 1, & X_k \leq x \\ 0, & X_k > x \end{cases}$.
- (2) The probability evaluation methodology is, $P(RIR > RIR_1) = 1 - N\left(\frac{RIR_1 - E(RIR)}{\sigma(RIR)}\right)$.
- (3) See Stancu (2007), and other studies.
- (4) We considered the same significance threshold of 5%.

References

- Armeanu, D., Bălu, Florentina, "Interest Rate Risk Measurement as a Component of Interest Risk Management in Commercial Banks", *Economic Computation and Economic Cybernetics Studies and Research*, nr. 3-4/2007
- Armeanu, D., Lache, L., "The NPV Criterion for Valuing Investments under Uncertainty", *Economic Computation and Economic Cybernetics Studies and Research*, nr. 4/2009, pp. 133-143, 222 pg., ISSN 0424-267X
- Bădin, Luiza, "Some Remarks on Nonparametric Estimation of Conditional Efficiency Measures", *Economic Computation and Economic Cybernetics Studies and Research*, nr. 3-4/2007
- Cenușă, Gh. (coord.) (2005). *Matematici pentru economiști*, Editura Cison, București
- Fulga, Cristina, Șerban, F., "Multi-Item Inventory Model With Constant Rate of Deterioration and Assurance Stock", vol. 42, *Economic Computation and Economic Cybernetics Studies and Research*, nr. 3-4/2008

- Helfert, E. (2001). *Financial analysis tools and techniques – a guide for managers*, The McGraw-Hill Companies
- Hitchner, J. (2006). *Financial valuation: applications and models*, Wiley
- Keck, T., Levensgood, E., Longfield, A. "Using Discounted Flow Analysis in an International Setting: A Survey of Issues in Modeling the Cost of Capital", *Journal of Applied Corporate Finance*, 11(3), Fall 1998, pp. 82-99
- Lakonishok, J., Shapiro, C. "Systematic Risk, Total Risk, and Size as Determinants of Stock Market Returns", *Journal of Banking and Finance*, 10, 1986, pp. 115-132
- Lessard, D., "Incorporating Country Risk in the Valuation of Offshore Projects", *Journal of Applied Corporate Finance*, 9(3), 1996, pp. 52-63
- Livingstone, J.L., Grossman, Th. (2002). *The portable MBA in finance and accounting*, 3rd edition, Wiley
- Morard, B., Bălu Florentina, "Developing a Practical Model for Calculating the Economic Value Added", *Economic Computation and Economic Cybernetics Studies and Research*, nr. 3/2009
- Palepu, K.G., Bernard, V.L., Healy, P.M. (1997). *Introduction to Business Analysis and Valuation*, South-Western
- Pettit, J., Ferguson, M., Gluck, R., "A Method for Estimating Global Corporate Capital Costs: The Case of Bestfoods", *Journal of Applied Corporate Finance*, 12(3), Fall 1999, pp. 80-90
- Pratt, S., Reilly, R., Schweihs, R. (2000). *Valuing a Business: The Analysis and Appraisal of Closely Held Companies*, 4th edition, McGraw-Hill
- Stancu, I. (2003). *Finanțe*, volumul II: *Investiții directe și finanțarea lor*, Editura Economică, București
- Stancu, I. (2003). *Finanțe*, volumul III: *Gestiunea financiară a întreprinderii*, Editura Economică, București
- Stancu, I. (2007). *Finanțe*, ediția a patra, Editura Economică, București
- Stancu, I. (2007). *Finanțe*, volumul I: *Piețe financiare și gestiunea portofoliului*, ediția a doua, Editura Economică, București
- Van Horne, J., Wachowicz, J. (2008). *Fundamentals of financial management*, 13th edition, Prentice Hall

Online Services Management Support for an Intelligent Locality

Lorena BĂȚĂGAN

Bucharest Academy of Economic Studies

lorena.batagan@ie.ase.ro

Adrian POCOVNICU

ISA Consulting, USA

pocovnicu@gmail.com

Abstract. *As the number of habitants of large cities is expanding, put greater pressure on city infrastructure delivering vital services, such as health, education, public safety and transport. These efforts are added to changing public demands for better information, better education, environmental programs, a more open government, lower maintenance costs and other housing options for older people. Therefore, to achieve these goals, it must take into account the quality of all services, but especially the quality of online services based on the use of modern information and communication technologies.*

The management of service quality on-line offers a performance evaluation and comparative analysis of indicators. He also works as a decision support to improve the quality of online services and increasing customer satisfaction, essential elements in an intelligent city.

Keywords: intelligent locality; online services; Internet; virtual networks; quality management.

JEL Codes: R15, O30.

REL Codes: 8E, 18D.

1. Introduction

Technology knowledge society is an integral part of the life of any consumer, the result of exponential growth in the number of users. This is why the telecommunication networks have steadily progressed, and lately even spectacular. They are always created new services, new technologies are developed and new networks to face the market demand for telecommunications services.

For certain geographical areas, the existence of telecommunications networks offer possibilities for remote communication, remove the differences caused by lack of information and isolation. Appropriate use of modern technologies in order to increase the accessibility of quality information can lead to reduced administrative and social costs.

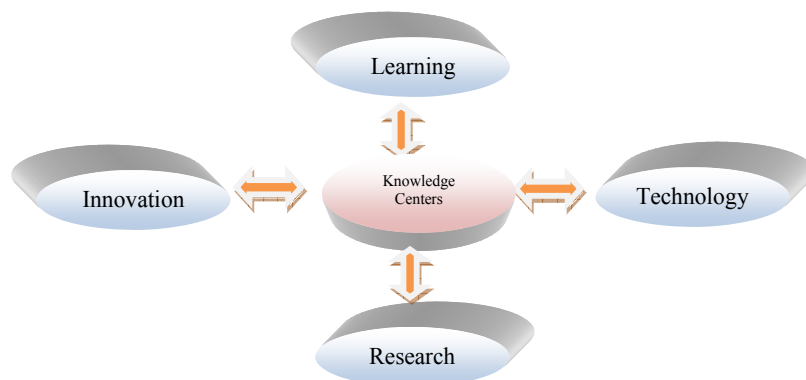


Figure 1. *Interconectarea prin intermediul centrelor de cunoaștere*

Centers of knowledge (Figure 1), an important step towards the area of intelligence, is the facility to use new technologies in a public place by members of a community. Local knowledge centers, spaces available to citizens, equipped with at least two telephone sets, two computers and a fax enable initiating and receiving telephone calls, facsimile and data communications at a data rate sufficient for functional internet access. Knowledge centers have appeared in all countries, regardless of development, following the desire of removing the negative effects: lack of training opportunities, employment, and migration of rural population to urban centers due to lack of access to information on benefits offered by new information technologies. In Peru were made in 2005 according to data provided by ERTIC (Establecimientos Rurales of the Information Tecnologias y la Comunicacion) 50 rural telecenters and are intended to be implemented in the period 2006-2009 approximately 1,050. In 2007 there were 700 rural telecentres in Hungary and

at present there are around 1,000. Important to note is that remote areas (islands) can have such access to modern information technologies. Projects and implementation of knowledge centers exist in most countries, such as those developed and the developing. For centers known to exist in time (Roşca et al., 2006) have to consider how funding and evolution of these in relation to changes that occur constantly in the society. Centers of knowledge are a real support for localities to build a smart being a window into training, training and knowledge. The next which is to be made is to increase the efficiency of these centers of knowledge thus leading to an increase in the level of training, the knowledge acquired by members of the society which opens perspectives for the knowledge society. The qualitative improvement of knowledge centers become virtual networks, within which is becoming increasingly used in today's society. Each center has its own guidance their knowledge center focused on areas of activity: medicine (eg, Knowledge Center – Texas Medical Association), education (eg, University of Illinois Educators' Knowledge Center).

We are currently talking more and more about interconnected virtual networks of local communities to provide information and online services to citizens and businesses. Networks are set up according to the needs of each community, city and ensure, through broadband connections, access to information and electronic services for the main institutions of the locality. Virtual network serving as knowledge centers provide access to telephone services, Internet and computer use, providing a great educational value. By building specific skills, students will be able to contribute actively to the value added of the educational process and to develop personal criteria for the selection and use of information. To adapt new technologies to social needs, to be able to exploit the potential, first it has to be possible staff training institutions and enterprises and the population. Appropriate use of modern technologies in order to increase communication, accessibility can lead to reduced administrative and social costs.

2. Intelligent locality

Future developments in localities will have virtual networks, the growing dependence of modern technologies (Roşca et al., 2006), but also the elimination of bureaucracy, to reduce working time in exchange increase free time. In a intelligent locality the time and space restrictions are virtually nonexistent thus contributing to reducing social division. The creation of such places requires the construction of transportation systems, government, education, health and public policy more intelligent and also uses energy and water resources in an efficient manner.

According to the latest data in the field (Pacesila, 2007, pp. 12-23), unprecedented urbanization that we face is both a symbol of economic and

social progress and a huge burden on infrastructure planet. This is particularly a problem experienced by drivers of economic departments, school administrators, police officers and other persons in positions of leadership. Tasks that these leaders have met them - educating young people, maintain safety of citizens, attract and facilitate trade, implement a safe system of public transport are particularly difficult to manage in these times of economic decline. None of these systems is the responsibility of one entity or decision maker, all involving leading institutions, companies, communities and civil society, which are interconnected. For why, we need an infusion of intelligence in how our cities work. This infusion is currently producing the systems, processes and infrastructure that make it possible for physical property to be developed, produced, bought and sold, services are provided, everything from people and money to oil, water and electrons to move and billions of people to work and live. Indeed, almost anything – person, object, process or service to any organization, large or small – can become aware of the prospects digital infrastructure and can be connected in a network.

In IBM's vision of 2009, an intelligent locality requires: a transportation system smarter, faster and more effective interventions in emergencies, a more intelligent management of water and electricity, a more intelligent administration and health and education systems more intelligent one. This vision brings a new level of intelligence on how the world works – how each person, company, organization, government, natural and artificial system interacts. Each interaction is a chance to do something better, more efficient, more productive. But more than that, as all systems are intelligent planet, we have a chance to open up significant new opportunities for progress. Thus, virtual networks, through their impact on the town, put their imprint on the individual, but also the physical environment, economic and social.

Enormous potential of modern information and communication technologies are deployed throughout the world, being implemented in many systems that are interconnected and subject to an infusion of intelligence (Alpopi, 2008, pp. 57-68), led and lead conversion important activities from a locality in operations smarter.

For some localities, the modern society which is based on the use of modern information technologies constitutes new possibilities for expression of identity and cultural traditions, and for other regions an opportunity to minimize inconvenience related to distance and isolation.

European Union uses the names of "Telecities", "Cities On Line", "Intelligent Cities", "Digital Cities", etc. for projects in the United States are known as "Freenets. Terms listed above are used for local programs to foster the idea of efficient use of modern technologies, which in turn would stimulate development.

Amsterdam, Birmingham, London, New York, like IBM view (August, 2010), are just some of the locations where they see the results of

implementation solutions to a location intelligence evolution. They have implemented various intelligent solutions. Interconnections of all intelligent systems implemented locally go to a intelligence locality.

City of Stockholm, for example, developed a traffic surveillance system, allowing its citizens to decision makers. In Germany, MVV Energie AG, a company providing electricity, created the "market" energy based on the collaboration of all elements that are part of the supply chain, from suppliers and to consumers who wanted a change. In London, the desire of citizens for improved public safety led to the installation (by groups of private and public) has over 10,000 surveillance cameras that provide information 24 hours a day.

City intelligence provides a more clear view on all local issues, on how you can communicate more intelligently the necessary information and people seeking to visit a place, giving them accurate information about climate change, health care, education and banking, those related to transport systems and water management systems and electricity supply, as well as 3D image elements of local interest. In addition, various products made available to guide how best to those who are for the first time in this village but also for those who want to quickly reach a certain point.

According to Doukidis (2004), all developed countries have developed and implemented government policies supported concerning the development and adoption of modern information and communication technologies, strengthening the national information infrastructure, training and attracting specialists in modern technologies, the adult education, cooperation with private sector and encourage investment in this new economic branch, promoting government projects designed to demonstrate the utility of current society services.

City today is the result of remarkable progress made as a result of using information and communication technologies. Economic changes caused by the transmission, storage, processing and access to information and knowledge put their imprint on society. Locality aims to become intelligence through modern information and communication technologies daily activities are carried out more easily and efficiently.

Although Romania is not in a very advanced stage on the use of modern information and communication technologies, there are some tests and some achievements which are increasingly approaching knowledge society. Projects directory computerized of prefectures and town halls, designed by professional bodies at national level, are a first point of departure in the use of modern technologies. Current national developments were due in large measure both technological advances and new economic policies of privatization and promoting competition in the market of new information technologies and communications, new technical and legal regulations in the field, new national and regional strategies of development of society.

Advantages and benefits of intelligent locality: Alignment with the latest technologies in the field of information; Example openness to modern technology; reducing costs; degree of sports in case of disasters; better communication with citizens and gain a picture; the transparency achieved; awareness of citizen participation in economic, social, cultural community life; democratization of information by providing coherent, consistent, updated data; improved access to national and universal culture by accessing databases of information and documentation; reducing the amount of work attributed to public servants and default time for solving citizens; reduce errors; higher information's security and transactions entered effectuate; training human resources on a large scale, the phenomenon of mass.

It is noted that the benefits of intelligent locality are based on access to use online services, and on interconnection. Therefore it is considered essential to assess the quality management model in the context of online services at the level of an intelligent locality.

3. The quality management framework

Quality plays an integral role in all aspects of management. Delivering good quality products and services on time and on budget is every project manager's goal. The purpose of a quality management process in a project is to ensure that its activities are appropriate for the project, to identify and report successful results, and also to identify and report those activities and processes where is still room for improvements and use this as a reference for the subsequent phases of the project and for future projects.

There is a multidimensional relationship between the quality of a service and the organization that is providing that service. Some of the factors that are making this multidimensional relationship are: business strategy, organization knowledge, available resources, etc. The Quality Management Framework (QMF) helps placing into context this multidimensional relationship between the organization and it's provided services.

The following terms and their definition are part of the Quality Management Framework (Baker, 2008, pp. 1-34):

- Object (entity);
- Process;
- Requirements;
- User;
- Evaluation;
- Measure and measurement;
- Quality.

The object or entity in the QMF context refers to any product, service, process, activity, etc. to which quality can be applied. The quality of an object (entity) is directly related to the quality of the process used to create or deliver the object (entity).

Requirements are the sole purpose of producing a product or offering a service. The degree in which the final product or service meets initial requirements affects the quality of the product or service. The user formulates requirements and is the beneficiary of the product or service. The user can provide feedback in regards with the product or service that is being offered.

Evaluation is a qualitative process to analyze the degree in which requirements have been fulfilled. Measure and measurement is a quantitative process where quality metrics are being defined and calculated to enable quantification in the quality management process.

Quality represents the degree in which the object (entity) satisfies user's requirements.

The quality documentation is a record of progress and it supports continuity of development as the development team changes.

Quality management is comprised of the following activities:

- *Quality assurance* – Establish organizational procedures and standards of quality.
- *Quality planning* – Select applicable procedures and standards for a particular project and modify these as required.
- *Quality control* – Ensure that procedures and standards are followed by the software development team.
- *Quality management* – It should be a separate process from project management.

There are many methods and standards to improve quality of services and/or products including: ISO standards, Six Sigma and PDCA (Plan, Do, Check, Act).

As an example, ISO 9000:2000 and ISO 9000:2008 standards are based on the following quality management principles:

Principle 1: Customer focus – organizations depend on their customers and therefore should understand current and future customer needs, should meet customer requirements and strive to exceed customer expectations.

Principle 2: Leadership – leaders establish unity of purpose and direction of the organization. They should create and maintain the internal environment in which people can become fully involved in achieving the organization's objectives.

Principle 3: Involvement of people – people at all levels are the essence of an organization and their full involvement enables their abilities to be used for the organization's benefit.

Principle 4: Process approach – a desired result is achieved more efficiently when activities and related resources are managed as a process.

Principle 5: System approach to management – identifying, understanding and managing interrelated processes as a system contributes to the organization's effectiveness and efficiency in achieving its objectives.

Principle 6: Continual improvement – continual improvement of the organization's overall performance should be a permanent objective of the organization.

Principle 7: Factual approach to decision making – effective decisions are based on the analysis of data and information.

Principle 8: Mutually beneficial supplier relationships – an organization and its suppliers are interdependent and a mutually beneficial relationship enhances the ability of both to create value.

4. On-line services quality management metrics in intelligent locality

A Quality Management Framework in the context of on-line services has the following components: on-line service as object (entity), on-line service development and delivery process as process, business and consumer as users, specific service request as request as requirements, evaluation and measurement of the e-service to determine its quality.

On-line service quality management process uses surveys and questionnaires to evaluate the following qualitative aspects of the e-service:

- Awareness – the degree of which users are aware of the on-line service existence and its features.
- Expectations – what users think that the on-line service offers.
- Accessibility – the degree of which all individuals can access service regardless of education, age, sex, culture, religion or the existence of any physical handicap.
- Driving reasons for use – what made the user access the on-line service instead of using the traditional method.
- Use preventing reasons – what prevents the user from using the service.
- Feedback on additional features needed – what users are requesting in order to enhance their experience while using the on-line service.
- User impact – how on-line service changes user's routine.
- Overall satisfaction – how satisfied the user is with on-line service, overall.

Qualitative characteristics of the on-line service are helping to construct an image of the current level of quality. They do have the disadvantage though that they can't be used in calculations, that they are difficult to compare or aggregate, can't be used trending analysis and targets can't be set-up for them.

The quantitative metrics of the quality management framework eliminate the disadvantages of qualitative evaluation. The following are metrics that can be included in the QMF for on-line services:

Accuracy represents the percentage of the number of times the on-line service has provided accurate results to users' requests.

The degree of satisfaction (Pocatilu, 2007, pp.122-125) can be computed as:

$$DS = \frac{\sum_{i=1}^p DSR_i}{TR}$$

where:

DSR – the degree of satisfaction for the requirement i;

TR – total number of requirements;

p – the number of requirements.

The degree of satisfaction for a user of executive requirement is a value from 0 (no satisfaction) to 1 (fully satisfied).

Repeat consumers represent the percentage of users that have used the same on-line service more than one time.

Awareness represents the percentage of targeted users that are aware of the e-service existence and its features.

Cost represents the fee that has to be paid to access the service. It can be expressed as per-use cost or per-membership cost. Per-use cost implies that the user is going to pay a fee every time he is accessing the service, where per-membership cost implies that the user pays a fee once a period, usually in advance, and gets access to the e-service for that period.

In (Pocatilu, 2007, pp. 122-125) the *cost of resources* takes into account the category of resources and the cost per unit for each category:

$$C = \sum_{i=1}^w NR_i \times d_i \times p_i$$

where:

NR_i – number of resource from the category i;

p_i – price per unit for the resource category i;

d_i – units of usage for the resource category i.

The total cost of on-line service can be defined as:

$$C_T = \sum_{i=1}^k c_i ,$$

where:

k – the number of project phases;

c_i – the cost of all resources from the phase i.

Request of satisfaction based on time represents the time consumed to access the on-line service. Depending on the e-service nature it can be expressed in seconds, minutes, hours, days, month and even years.

$$R_2 = \frac{\sum_{i=1}^n O_i}{T}$$

where:

T – period of time;

O_i – the output *i* (deliverables, results).

At a national level the following indexes are used for comparative assessment of the states' ability to deliver on-line services and products to their citizens.

Web measure index is based on a five stage model (emerging, enhanced, interactive, transactional, and connected) and ranks countries based on their position through the various stages.

Telecommunication infrastructure index is a composite index of five primary indices, each weighting 20% in the total value of the index:

1. Internet Users /100 persons;
2. PCs /100 persons;
3. Main Telephones Lines /100 persons;
4. Cellular telephones /100 persons;
5. Broad banding /100 persons.

Human capital index is a composite index of the adult literacy rate and gross enrollment ratio. Adult literacy rate is weighted 67% and gross enrollment ratio is weighted 33%.

Readiness index is a composite index comprising the web measure index, the telecommunication infrastructure index and the human capital index.

Table 1

E-Government readiness for Eastern Europe

Country	Indicator 2008	Indicator 2010	Position 2008	Position 2010
Czech Republic	0.6696	0.6060	25	33
Hungary	0.6494	0.6315	30	27
Poland	0.6134	0.5582	33	45
Slovakia	0.5889	0.5639	38	43
Ukraine	0.5728	0.5181	41	54
Bulgaria	0.5719	0.5590	43	44
Romania	0.5383	0.5479	51	47
Belarus	0.5213	0.4900	56	65
Russia	0.5120	0.5136	60	59
Moldavia	0.4510	0.4611	93	80

As we can see in table 1, Romania ranks 6th in Eastern Europe and 47 in the world in the report by the United Nations - e-Government Survey 2010.

5. Conclusions

On-line services are offering speed, efficiency, flexibility and innovation to their users. In most of the cases they are available 24/7 and accessible from any location. E-services are mostly paperless which therefore they have a lower environmental impact than traditional paper based public administration services.

The management of service quality on-line offers a performance evaluation and comparative analysis of indicators. It also works as a decision support to improve the quality of online services and increasing customer satisfaction with essential information in an intelligent city.

Acknowledgements

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

References

- Arundel, A. "From the 19th to the 21st century: Indicators for the Knowledge Economy", *Knowledge Economy – Challenges for Measurement*, December 8-9, Luxembourg, 2005
- Alpopi, C., "Oraşul prezent – Oraşul viitorului", *Cercetări practice şi teoretice în managementul urban*, Anul 1, Nr. 1, 2006, ISSN: 1842-5712
- Baker, E.R., Fisher, M.J., "Organizing for Quality Management", *Handbook of Software Quality Assurance*, 2008, pp. 1-34, Artech House Inc.
- Blakely, E.J., "NG Leigh Planning local economic development: Theory and practice", *Library Congress Cataloging-In-Publication Data*, 2009, ISSN: 978-1-4129-6093-9
- Bourdeau-Lepage, Lise, Kolarova, Desislava, "Knowledge Society and Transition Economies", *Laboratoire d'Economie et de Gestion Espace Europe Institut*, 2005
- Doukidis, G., Mylonopoulos, N., Athanasia (Nancy), P., „Social and Economic Transformation in the Digital Era" *Publisher Idea Group*, [Online], 2004
- Giffinger, R., Fertner, C., Kramar, H., Kalasek, R., Pichler-Milanović, N., Meijers, E., "Smart cities - Ranking of European medium-sized cities", Final report (October 2007). On the web: http://www.smartcities.eu/download/smart_cities_final_report.pdf
- James, M.B., "Innovation and the city: a macromarketing approach to industry development", *Marketing Intelligence&Planning*, vol. 27, issue 2, 2009, pp. 233-245, ISSN 0263-4503
- Kachroo, P. , Wadoo, S. A. , Sadeq J. Al-nasur, Apoorva R. Shende , M.P. Singh , Kaan Ozbay "Information technology requirements for intelligent evacuation systems", *World Review of Intermodal Transportation Research*, Issue: Volume 2, Number 2-3, 2009, pp. 127-144
- Komninos, N., "Intelligent cities: towards interactive and global innovation environments", Aristotle University, Thessaloniki, GR-54124, Greece, *International Journal of Innovation and Regional Development*, Issue: Volume 1, Number 4, 2009, pp. 337-355

- Matei, A., Anghelescu, S., "Models with Simultaneous Equations for Local Development", *Theoretical and Applied Economics*, Vol. XVII, No. 1, 2010, pp. 27-48
- Mendes, M.J., Suomi, R., Passos, C., Digital Communities in a Networked Society E-Commerce, *E-Business and E-Government Publisher Kluwer Academic*, [Online], 2003
- Pacesila, M., Colesca, S.E., "Orașele inteligente: perspectivă de ansamblu și implicații politice", *Cercetări practice și teoretice în Managementul Urban*, Anul 2, Nr. 5, 2007 ISSN: 1842-5712
- Pocatilu, P., "IT Projects Management Metrics", *Informatica Economică Journal*, no. 4(44), 2007, pp. 122-125
- Roșca, I.Gh., Ghilic-Micu, B., Stoica, M., Bătăgan, L., Mărășescu, A. ș.a. (2006). *Informatica. Societatea informațională. E-serviciile*, Editura Economică, București
- Teodorescu, De Horio-Nicolai, Junzo, Watada, Lakhmi, C. Jain, "Intelligent Systems and Technologies: Methods and Applications PP 296", *Springer*, 2009, ISBN 978-3-642-01885-5
- Yi-chen, L., "Global information society: operating information systems in a dynamic global business environment", *Publisher Idea Group*, [Online], 2005
- Digital Planet 2006 - The Global Information Economy Published by World Information Technology and Services Alliance (WITSA)
- European Comission, Information Society, 2010 http://ec.europa.eu/information_society/eeurope/i2010/index_en.htm [Accesat 28 Ianuarie 2011].
- European Comission, Economica land Finacial Affairs http://ec.europa.eu/economy_finance/eu/countries/romania_en.htm [Accesat 28 Ianuarie 2011].
- Europe's Digital Competitiveness Report, Volume 2: i2010 — ICT Country Profiles, Bruxelles, 04.08.2009 - http://ec.europa.eu/information_society/eeurope/i2010/docs/annual_report/2009/sec_2009_1104.pdf [Accesat 28 Ianuarie 2011].
- Government of Romania <http://unpan1.un.org/intradoc/groups/public/documents/Other/UNPAN036099.pdf> [Accesat 28 Ianuarie 2011].
- <http://www.oecd.org/dataoecd/20/41/40789235.pdf> „The Future of the Internet Economy „Organization for Economic Co-operation and Development COED [Accesat 28 Ianuarie 2011].
- E-România (www.romania.gov.ro) [Accesat 28 Ianuarie 2011].
- Amsterdam - Intelligent City <http://mytechbox.wordpress.com/2009/06/08/amsterdam-will-be-eu%E2%80%99s-first-%E2%80%98intelligent%E2%80%99-city/> [Accesat 28 Ianuarie 2011].
- Birmingham is fast becoming the UK's first Intelligent City <http://www.digitalbirmingham.co.uk/case-stories/birmingham-is-fast-becoming-the-uks-first-intelligent-city>
- IBM se pregătește pentru un deceniu al inteligenței din data de: 25.01.2011 http://www.agora.ro/index.php?qs_sect_id=126&qs_stire_id=28595&qs_f_id=5
- IBM susține construirea unei planete mai inteligente <http://www.comunic.ro/news.php/IBM-sus%C5%A3ine-construirea-unei-planete-mai-inteligente--Agora-News/1/65288/>
- Quality Management Principles [Online]. Available: http://www.iso.org/iso/iso_catalogue/management_standards/iso_9000_iso_14000/qmp.htm
- United Nations, United Nations e-Government Survey 2010. From e-Government to Connected Governance, United Nations, New York, 2010

The Meanings of “Made in Romania” among the Romanian Consumers

Cătălin Mihail BARBU
University of Craiova
catarom@yahoo.com

Abstract. *In this paper I studied the meanings of made in Romania concept among the Romanian consumers. The methodology required that respondents were interviewed about their attitudes. The results show that made in Romania has a negative connotation, and that made in Germany and made in USA are better appreciated. Still, made in Romania has obtained a better score than made in China. There are perspectives for the improvement of the meanings of made in Romania, the intentions of respondents being a guarantee. The people working in Romania obtained a better score than the results of their work, a warranty for future improvements of made in Romania appreciation.*

Keywords: made in Romania; country of origin effect; consumer behavior.

JEL Code: M31.

REL Codes: 7B, 7I.

As countries developed, they specialized in the production of goods and services, in accordance with the abundance of resources, pedoclimatic conditions, population' training, governmental policies.

Specialization favored the development of international trade, increasing production volumes, generated higher living standard for the respective economies. Once recognized at international level, the products from various countries were able to penetrate and to maintain the markets, conferring a significative economic advantage for the producing companies. The products manufactured in one country reached a notoriety that turned to other products manufactured in that country. In this way, the concept *made in* gained a specific meaning for each country.

The objective of this paper is the analysis of the *made in Romania* meanings for the Romanian public. I intend to identify the way Romanian products are being appreciated, to realize a comparison of *made in Romania* with other *made in* and to evaluate the intentions of Romanian consumers regarding the Romanian products.

Theoretical background

Usually, the products from the developed countries receive better appreciations than the products from the developing countries. The image of the products among the general public is influenced by a series of factors such as: the economic, political, cultural system, the state of economic development, political and historical events (Johansson, Ronkainen, Czinkota, 1994, p. 158).

In the marketing area, the notoriety of products coming from various countries was synthesized in the "country of origin" effect. The country of origin effect can be defined as any influence that the production, assembly or the design country has on the perception and consumer behaviour. A company that acts on the global market, produces goods world-wide; when the consumer became aware of the production place, it is possible that this element will affect the brand image (Cateora, 2006, p. 326).

The country of origin effect represents an important element that a company can bind to, in order to create a better brand image. The country of origin effect means the influence of all factors associated with a country and that plays a role on the process of evaluating the products from that country. Lampert and Jaffe (1998, p. 62) define the country of origin as the impact of the generalizations and perceptions about a country on the way a person evaluates products and brands.

The symbols and the representations act at four levels: national image of the generic product, national image of the producer, the country evocated by the

name of the brand, the production country specified by *made in* (Usunier, Lee, 2009, pp. 260-262). This multitude of information, in many cases, generates confusions for the consumers. The country of origin effect has a pronounced effect in the first phases of the buying decision-making.

A shortcut for the country of origin effect is the *made in* concept. The *made in* concept refers strictly to the production place, even if the producing company can originate from another country. For example, the Nokia (a Finn company) mobile phones are being produced in Romania, in the Cluj county. At the moment, China is recognized as a production country for many goods.

As a consequence, *made in* is a more restrictive concept, but it is more direct, meaning that can be determined with ease by examining the product or its label. The data about the country of origin of a company are harder to be identified in the lack of direct knowledge about this subject.

A. Nagashima (1977, pp. 95-100) has produced a study regarding the meanings of *made in* among the business people from Japan. As methodology the author uses the semantic differential of Charles Osgood to study five *made in*: USA, Japan, Germany, France, England, within specific fields of the economy. T. Maronick (1995, pp. 15-30) analyzed the impact of *made in USA* on American consumers. He showed that, if a product is of poor quality, *made in USA* has a negative impact on buying decision-making. If the product is of good quality, *made in USA* only helps at marginal level. Paul Patterson și Siu-Kwan Tai (1991, pp. 31-40) analyzed the attitude of Aussie consumers toward the *made in* Australia, New Zealand, China, UK. The results of the study showed that the main competition for Australia are New Zealand and UK. L.C. Leonidou and co. (1998, pp. 126-142) analyzed the attitudes of Bulgarian consumers regarding the products originating from Pacific Asia; the products from Japan have the best image.

For the companies originating from developing countries, that want to expand abroad, the internationalization strategy of choice is exporting. As a consequence, the country of origin and the *made in* country are the same. The developing countries need to produce for the external markets, because the export is one of the engine of economic growth. This can be best proven by looking at countries such as South Korea, Taiwan, etc.

In the context of the present economic crises, the fact that products originating from Romania are being appreciated can determine the consumers to reorientate toward these products and so the internal production to be stimulated, favoring the way out of the crises.

Methodology

We interviewed a number of 11 students of the Faculty of Economics and Business Administration, University of Craiova. The students were from the bachelor and master cycle. The sample is not representative but it can represent a valuable instrument to test the meanings of the *made in Romania* concept. The population that attended the study is, in general, of a young age, without having nostalgia over the communist period. The persons grew up in the period of transition to the market economy and they were exposed both to Romanian and foreign products. Though their purchasing experience is not so vast, the young people benefit from an increasing purchasing power and they intervene in the purchasing decisions of the family at a younger age. At the beginning of the study we explained to the participants that we only take into account the manufactured products and we offered examples of such products, in order to help the participants to focus their attention. The questionnaire was completed on a voluntary base. At the end a summary evaluation intended to eliminate the non-response error and the participants were thanked for their time. Using student samples is a largely used practice in the scientific research to analyze the meanings of concepts and to test certain hypotheses.

Results and discussions

There were tested nine dimensions of the *made in Romania* concept. These nine dimensions are: quality, design, innovation, after sale services, price, brand, the pride to be an owner, the satisfactory ratio quality/price, low maintenance costs. The respondents were asked to indicate a grade from 1 to 5. The results are detailed in table 1.

Table 1

The results obtained by *made in Romania*

	Average	Standard error	Standard deviation
Quality	3.00	.089	.93
Design	2.96	.093	.99
Innovation	2.45	.095	1.00
Price	2.77	.127	1.33
After sale services	2.48	.106	1.11
Brand	2.70	.093	.98
The pride to be owner	2.83	.123	1.30
Quality/price ratio	2.63	.098	1.03
Low maintenance costs	2.95	.116	1.22

	Average	Standard error	Standard deviation
Quality	3.00	.089	.93
Design	2.96	.093	.99
Innovation	2.45	.095	1.00
Price	2.77	.127	1.33
After sale services	2.48	.106	1.11
Brand	2.70	.093	.98
The pride to be owner	2.83	.123	1.30
Quality/price ratio	2.63	.098	1.03
Low maintenance costs	2.95	.116	1.22
Average	2.75		

It can be observed that the average is 2.75, on a 1 to 5 scale. This mean that the results is under half, that is *made in Romania* has obtained a rather negative result. All the nine dimensions of made in Romania obtained a score between 2.45 and 3.00, with no dimension passing into the positive half of the scale. The best score was obtained by the quality (3.00) followed by design (2.96) and low maintenance costs (2.95). The worst results were obtained by innovation (2.45) and after sale services (2.48).

According to Romanian consumers, *made in Romania* does not has a strong significance. The dimensions we tested obtained low results but these results were grouped. This means that there is no driving force to stimulate the significance of *made in Romania* concept. The score obtained by quality (3.00) is balanced by the low score obtained by quality/ratio raport (2.63). The quality/price ratio has obtained a lower score than the quality and the price taken individually. These can be explained in the following way: even if the Romanian products have a good quality or they can be found at lower prices, buying a product from abroad we can obtain a better quality/price ratio. *Made in Romania* does not means innovation (2.45) and after sale services (2.48). If innovation requires high costs, after sale services are easy to be implemented.

With globalization, consumers have a large portfolio of products to choose from products originating from different countries. The offer of products from abroad is now diverse and the Romanian products are in competition with the foreign products to be bought by local consumers. In these conditions I decided to appreciate the way Romanian consumer evaluates the products originating from different countries. For the purpose of this study, I choosed products manufactured in USA, Germany and China.

The three countries were not randomly chosen. They correspond to the three major economic centers of the world: North America, West and Central Europe and Far East. Germany is a good proxy for the European Union country because is the main commercial partner of Romania from the European Union and it is a recognized standard regarding the production. China is at present the largest manufacturer of the world, many multinational companies having production facilities in China. The results are presented in the Table 2.

Table 2

Results for Made in Germany, Made in China și Made in USA

	Made in Germany		Made in China		Made in USA	
	Average	Standard deviation	Average	Standard deviation	Average	Standard deviation
Quality	4.46	.072	1.81	.875	4.00	.82
Design	4.11	.087	2.75	1.153	4.15	.83
Innovation	4.18	.084	3.18	1.36	4.15	.82
Price	3.45	.089	3.81	1.31	3.46	1.01
After sale services	3.94	.097	2.30	1.17	3.68	.95
Brand	4.27	.085	2.28	1.19	4.18	.88
The pride to be owner	4.29	.086	1.93	1.011	3.99	1.02
Quality/price ratio	4.15	.084	2.74	1.28	3.67	.97
Low maintenance costs	3.19	.099	2.70	1.21	3.23	.97
Average	4.00		2.61		3.83	

From the perspective of the Romanian consumer, the most appreciated production location is Germany (4.00), followed by USA (3.83) and China (2.61). China has obtained a lower score than Romania and this proves that Chinese products are associated with low quality (1.81) and low pride to be owner (1.93). The score for quality in case of the Chinese products is the lowest of all dimensions tested, for all countries. The products realized in Germany are the most appreciated regarding the quality (4.46), the pride to own such product (4.29), the brand (4.27). USA has obtained a score closed to the score of Germany, the most appreciated dimensions being the brand (4.18), design (4.15) and innovation (4.15). High maintenance costs (3.19 Germany and 3.23 USA) and the high price (3.15 Germany and 3.46 USA) have obtained the lowest appreciation from the Romanian consumers.

The perception of the products made in Romania is still better than the perception of Chinese products. It is true that in China are produced low quality

products having a low price, but, in the same time, China produces high-tech products, sophisticated medical devices, even artificial orbital satellites. In these conditions, the Romanian producers can speculate this appreciation and to propose quality products on the market, having a good quality/price ratio and low maintenance costs. Being close to the client is a major advantage for the Romanian producers.

Made in Romania obtained the third place in overall standings. But are there any dimensions where *made in Romania* has obtained a better score? The answer is negative, *made in Romania* not being able to obtain better results than *made in Germany* and *made in USA* for any evaluated dimension. *Made in Germany* has obtained the best result for seven of the nine dimensions tested, being taken by *made in USA* at design (4.15) and *made in China* at price (3.81). The results are detailed in Figure 1.

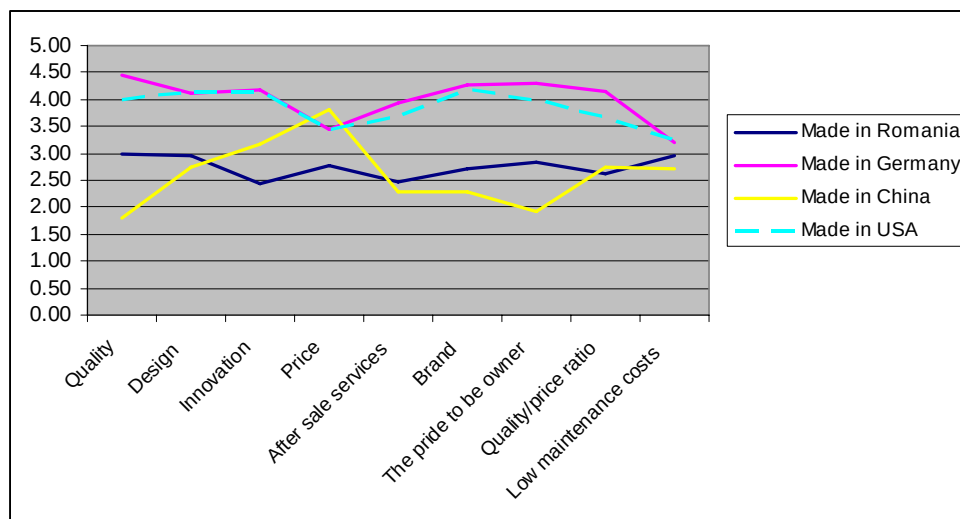


Figure 1. *Made in Romania vs. other made in*

Though I did not investigate this in my paper, it is probable that the attitudes toward the made in Romania to have been formed directly from the usage experience and social engagement: friends, press, etc.

Beside the closed end question regarding the concept *made in Romania*, we addressed the question *What is your opinion about Romanian products* offering five response possibilities. The results are detailed in the Figure 2.

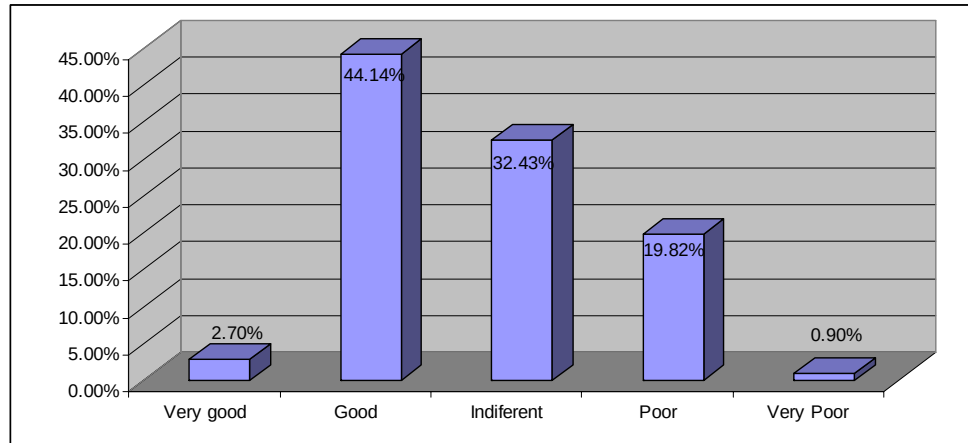


Figure 2. Percentage frequency for perception of the Romanian products

It can be observed that the percentage of those who have a good and very good opinion about the Romanian products is bigger than those who have a poor and very poor opinion. This can be explained by the fact that, at least at declarative level, certain patriotism is manifested. On the base of positive appreciations the attitudes toward Romanian products can lead to products that have internal and international notoriety. There is certain: in order to export products, Romanian brands, firstly they have to be consumed in the country, appreciated by the Romanians. The opinions of Romanian consumers about Romanian products must reflect the pride to be producers and consumers of such products. Otherwise it will be very difficult to convince the foreigners about the quality of Romanian products.

Searching for explanation about the *made in Romania* attitude, I decided to evaluate the attitude of respondents toward the Romanians, those being the persons who realize the Romanian products. I analyzed three characteristics of Romanian people: the education, the abilities and the work orientation. I consider that at the base of quality products there are the three characteristics mentioned above. The respondents had to express their attitude toward certain affirmations, using a Likert scale from strongly disagree to strongly agree (Table 3).

Table 3

The respondents attitude toward Romanians

	Average	Standard deviation
<i>Education</i>	3.23	
The Romanians are well trained within the educational system	2.99	1.06
The Romanians have a good specialization	3.38	1.06
The Romanians are smart	3.34	1.04
The Romanians like to learn	3.21	1.06
<i>Abilities</i>	3.54	
The Romanians can produce good products with lower costs	3.52	.89
The Romanians are innovative	3.46	.96
The Romanians are efficient	3.67	.87
The Romanians are flexible	3.52	1.08
<i>Work orientation</i>	2.81	
The Romanians like to work	2.68	1.05
The Romanians are fair	2.88	1.02
The Romanians are helpful	2.90	.92
The Romanians are serious about the work	2.81	.90
The Romanians likes the work well done	2.77	1.01
<i>Average</i>	3.16	

Cronbach's Alpha = 0.865

The respondents appreciate that the Romanians have the skills to succeed, by innovation and creativity (3.54), have a good education (3.23) but they don't have a strong work orientation (2.81).

We can say that the people (3.16) are better regarded than the products (2.75). What are the implications for this? An explanation can be that the Romanians have the capacity to learn and are quite innovative, but work ethics is deficient. It seems that the Romanians don't like to learn (2.68) and they don't strive for the well done job (2.77). As a possible public policy measure in order to increase the acceptability of the Romanian products might be the offerings of work stimulus that will determine a change in the mentality, in the way that the work it will be appreciated, and the results of the work, both as output and as reward, to be significant.

I also intended to test the Romanian consumers' intentions about the Romanian products. The results are detailed in the Table 4.

Table 4

Romanian consumers' intentions

	Average	Standard deviation
In the future I will buy more Romanian products	3.25	.78008
In the future I will change positively my opinion about Romanian products	3.35	.79371
Globalization will intensify	3.32	.96448
In the future will not matter the country of origin but the brand	2.86	.97688
Romanian products will have a positive image in the world	3.15	.92636

The respondents indicate that they will buy more Romanian products (3.25) and that in the future they will have a better opinion about the Romanian products (3.35). The results are sensible higher than the results obtained by *made in Romania* (2.75). I did not searched explanations and justifications for this change in attitude. Probably, the respondents appreciate that a series of characteristics of Romanian products will become more competitive: the quality, the price, the after sale services, the brand. The respondents remain reserved when they appreciate that the Romanian products will better perceived by the foreigners (3.15).

Conclusions

In this paper I tested the signification of *made in Romania* concept among Romanian consumers, this being the first approach in this way. I showed that *made in Romania* does not enjoy a strong appreciation from Romanian consumers. I tested nine dimensions of *made in Romania* concept. In the descending order of results these are: quality, design, low maintenance costs, the pride to be an owner, the price, the brand, the quality/price ratio, innovation. From the point of view of the Romanian consumers, the Romanian products display good results for quality and design and worst results for brand, quality/price ratio and innovation. Because both the quality and the price have a better score than the quality/price ratio, this mean that the Romanian quality products are too expensive and the cheaper Romanian products are of poor quality. Comparing *made in Romania* with other *made in* we showed that most appreciated concept is *made in Germany*, followed by *made in USA*, *made in Romania* and *made in China*. At the declarative level, the respondents appreciate that in the future they will buy more Romanian products than at the present and that their attitude toward Romanian products will positively change. This is amplified by the fact that the people from Romania have a better image

than the products from Romania. A strong work ethics recognized at national level can be the solution for improving the attitude toward *made in Romania*.

The limits of the study remain the unrepresentative sample and the lack of an experiment that will strengthen the declarative evidence with the proved evidence. Further developments can identify the modalities of attitude formation toward the *made in Romania*. Also, the attitude toward the concept *made in Romania* can be linked with other elements such as the economic nationalism, building the national brand image, the intention to buy Romanian products in case of a "Buy Romanian" call.

References

- Agrawal, J., Kamakura, W., "Country of Origin: A Competitive Advantage?", *International Journal of Research in Marketing*, Vol. 16 (4), 2000, pp. 255-267
- Balabanis, G., Diamantopoulos, A., Mueller, R.D., Melewar, T.C., "The Impact of Nationalism, Patriotism and Internationalism on Consumer Ethnocentric Tendencies", *Journal of International Business Studies*; First Quarter; 32, 1, 2001, pp. 157-175
- Barbu, M.C., Ogarcă, R.F., Barbu, M.C.R., "Branding in small business", *Management & Marketing*, Vol. VIII, special issue 1/2010, pp. S31-S38
- Burns, A.C., Bush, R. (2006). *Marketing Research*, Prentice-Hall, Inc., Englewood Cliffs, NJ
- Cateora Ph. (2006). *International Marketing*, Canadian Edition, McGraw Hill
- Czerniawski, R., Maloney, M. (1999). *Creating Brand Loyalty: The Management of Power Positioning and Really Great Advertising*, Hudson House Publishing
- Dekker, H., Malova, D., Hoogendoorn, S., "Nationalism and its Explanation", *Political Psychology*, Vol. 24, No. 2, 2003, pp. 345-376
- Hair, J., Black, W., Barry, J.B., Anderson, R., Tatham, R. (2008). *Multivariate Data Analysis*, Prentice-Hall, Inc., Englewood Cliffs, NJ
- Kaynak, E., Kara, A., "Consumer perceptions of foreign products. An analysis of product-country images and ethnocentrism", *European Journal of Marketing*, Vol. 36, No. 7/8, 2002, p. 928
- Keller, K. (2008). *Strategic Brand Management*, Pearson Education, New Jersey
- Johansson, J., Ronkainen, I., Czinkota, M., "Negative Country-of-Origin Effects: The case of the New Russia", *Journal of International Business Studies*, Vol. 25, No. 1, 1994, pp. 157-167
- Lampert S., Jaffe E., "A dynamic approach to country-of-origin effect", *European Journal of Marketing*, Vol. 32 No.1/2, 1998, p. 61-78
- Leonidou, L., Hadjimarcou, J., Kaleka, A., Stamenova, G., "Bulgarian consumers' perceptions of products made in Asia Pacific", *International Marketing Review*, Vol. 16, No. 2, 1999, pp. 126-142

- Lindquist, J., Vida, I., Plank, R., Fairhurst, A., The Modified CETSCALE: Validity Tests in the Czech Republic, Hungary, and Poland, *International Business Review*, Vol. 10, 2001, pp. 505-516
- Maronick, T., "An empirical investigation of consumer perceptions of 'Made in USA' claims", *International Marketing Review*, Vol. 12, No. 3, 1995, pp. 15-30
- Nakashima, A., "A Comparative Made In Product Image Survey Among Japanese Businessmen", *Journal of Marketing*, July, 1997, pp. 95-100
- Patterson, P., Tai, S.K., "Consumer Perceptions of Country of Origin in the Australian Apparel Industry", *Marketing Bulletin*, (2), 1991, pp. 31-40
- Piron, F., "Consumers' perceptions of the country of origin effect on purchasing intentions of (in)conspicuous products", *Journal of Consumer Marketing*, vol. 17, no. 4, 2000, pp. 308-321
- Olins, W. (2006). *Despre brand*, Editura Comunicare.ro, București
- Usunier, J.C., Lee, J.A. (2009). *Marketing Across Cultures*, Prentice Hall
- Zeynep, G.C., Maheswaran, D., "Cultural Variations in Country-of-Origin Effects," *Journal of Marketing Research*, 37, August, 2000, pp. 309-317

Forms and Strategies of the Banks to Enter on a Foreign Market

Nicoleta HURDUC

Bucharest Academy of Economic Studies
hurduc.nicoleta@gmail.com

Alin NIȚU

Bucharest Academy of Economic Studies
eduardnitu2000@yahoo.com

Abstract. *Main forms of entry on a foreign market are greenfield investments and acquisition of a control position from a local institution. Both forms, Greenfield and acquisition entry strategies, are specific to CEE. In selecting the entry mode, one bank's objective is to maximize its risk-adjusted rate of return.*

Search for new markets strategy means that by some reasons banks are always looking for new international market.

Keywords: international banks; cross-border lending; banking services; Greenfield investments; acquisitions; expansion of banks.

JEL Codes: E51, E52, G21.

REL Code: 11C.

1. Entry strategies

One of the ways to enter a new market is to make foreign direct investments. In fact, banks may prefer to engage in cross-border lending without being physically present abroad. The only way this can be done is through a correspondent bank. This may be appropriate for services/transactions already consumed, but not for expanding the business opportunities. It is also not suitable for serving existing clients, even if they have a strong and long-term relationship.

The relationship built through a correspondent bank is therefore just the first step to internationalize operations (Khoury, 1998, pp. 154-155). It is true that there are numerous correspondent banking relationships. However, these relationships are focused on relatively standardized products, in particular on the collection or payment of foreign funds, usually within trade finance arrangements. It can be argued that correspondent banking relationship is not so much an entry strategy as an alternative to genuine competition in foreign markets, particularly in areas which do not warrant full scale entry. The “sales approach” proposed by Franklin Root (see Table 1) is not as relevant to an international bank as it would be to another trader. Banking services are not easily provided without having a trader in the target market. So making a direct investment in a branch is a viable alternative. Entering a new market by using the traditional foreign direct investments approach might mean ignoring the fact that the foreign direct investments decisions are irreversible and they are made in uncertain circumstances.

In banking, the issue of irreversibility of investments arises because access to a branch network is crucial for the attraction of deposits and for establishing long-term customer relationships, thus for starting building the lending business. When deciding whether to enter a new market, banks have to take into account three cost components: fixed costs to enter the new market (which increase depending on the importance of legal entry barriers), fixed costs to leave the new market, and operating costs.

The optimal investment policy of a bank must thus consider the value of the real investment option: as information about the economic environment improves over time, it pays to wait and to postpone investment. Entry and exit costs create a state of inaction: revenues have to increase sufficiently before the bank enters the non-traditional market, but once having entered the new market, the bank can't leave unless revenues decrease substantially.

Table 1

Short-term vs. long-term internationalisation approach		
	External sales approach	Entry strategy approach
Time horizons	Short term	Long term (min. 3-5 years)
Target markets	No systematic selection	Selection based on the potential of the market
Dominant objective	Immediate sale	Build permanent bank-client relations
Resources used	Resources needed for immediate sales	Resources needed for positioning on the market
Entry mode	No systematic choice	Systematic choice
New product development	Exclusive sale on the domestic market	For both domestic and foreign markets
Product adjustments	Mandatory adjustments to meet legal/technical requirements	Adjusting products to the local preferences of the clients, to the income level and to the demographics
Sales channel	No control	Full control given by marketing strategies
Price	Depending on the domestic market with some adjustments to specific sale situations	Depending on the demand and supply existing in the host country and on the marketing policy of the bank
Promotion	Sales made by subcontractors	Direct promotion

Source: Khoury, 1998, p. 155.

It is impossible to discuss about the organizational structure or about the activity level of the foreign bank without referring to the banking legislation. Dale (1986) points out that in almost all banking systems regulation starts from the early stage of market penetration. Some countries limit the entry of foreign banks to branches, while others prefer subsidiaries. The issue is with the compromise that has to be done between the local regulation and that from the country of origin and the support of the local central bank.

Banking rules can discriminate between countries of origin, based on bilateral treaties, reciprocity reasons or industry structure. Alternatively, a country may restrict the expansion of its banks abroad.

There are two forms of entry on a foreign market:

1) greenfield investment, which involves setting up an institution from scratch. The newly established institution may require a capital infusion from the beginning, but in some cases (a representative office or a branch) the transfer is very limited or replaced only by the transfer of human capital;

2) acquisition of a control position from a local institution. Acquisition size can range from a 100% purchase of the social capital of a given institution to a minority stake.

Entering a market via greenfield investment allows the foreign bank to take advantage of its international reputation, especially in less developed

countries or less stable economies, where the depositors are looking for secure placements. It also gives foreign banks the opportunity to address those market segments that would not be reachable via a simple acquisition of a local entity.

By acquiring a control position from a local institution, foreign banks get access to the profiles of the old local banking clients that might be incompatible or at least inconsistent with the market positioning of the mother-bank, thus requiring adjustments that might be expensive. However, inflows through mergers and acquisitions have their advantages. For example, this type of foreign bank entry provides access to local knowledge. Moreover, if the mother-bank's strategy calls for a global retail network, acquisition may be the most feasible alternative, especially if a rapid growth is desired. In addition, the acquisition also provides immediate access to deposits, which allows an immediate signing up for local currency lending. Finally, acquisitions may be advantageous for multinational banks where little is known about host markets.

Foreign banks are better positioned to offer products and services that require a global platform, a considerable amount of capital that have a strong technological content, as well as the experience and skills needed to provide sophisticated products. Domestic banks are good in providing products and services that require local abilities and knowledge, access to local currency, possession of a branch network. The acquired banks are more able to capture these capabilities than their greenfield counterparts.

As a result, foreign banks tend to focus on corporate banking, while the local banks concentrate on operating in retail banking and SME-s. Foreign banks offer a wide variety of products: trade finance, project finance, syndicated loans, foreign exchange services, risk management products, cash management services, financial advisory services, while the presence of the banks on the local market can be used for working capital accreditation and long-term investment loans granting (Pomerleano, Vojta, 2001).

Both greenfield and acquisition entry strategies are specific to CEE and have different characteristics. First of all, changing the mono-banking system into a two-tier banking system led to the first wave of greenfield entries. Later, the beginning of the privatization process created opportunities for the foreign banks to acquire local banks, thus leading to the second wave of market penetrations and economic concentrations resulted from acquisitions.

The most attractive way of entering a new market is either by setting up a new branch or by acquiring an existent bank. However, in the specific case of Czech Republic, the up-most entry strategy is by establishing a branch. This reflects the permissive legislation from Czech Republic. In fact, since 1992 the Law of Banks has opened the door to foreign branches, thus allowing the release of operating licenses under less restrictive conditions. Expectation

approach was pursued by a number of investment banks and some specialized banks have preferred to open a bank's representative office.

From the institutional point of view, the foreign investment is associated with establishing or acquiring one of the following organizational structures: a local representative office, a branch office or a subsidiary. These "institutional" vehicles for entry have different attractiveness for various types of banks. Specialized banks, such as investment banks, will tend to operate through a number of representative offices or may even set-up a non-banking company. The reason for this is that they usually do not perform typical banking activities (at least in the host country) that require a banking license. Regulators tend to treat banks as special entities when they conduct typical activities i.e. collection of bank deposits, money transmission etc.

When operations are limited to certain consulting services, the risk is lower and thus the host market regulation is becoming less important. Representative offices of foreign banks do not perform self-independent activities, they rather attract and set up businesses abroad for the mother company.

Often, the representative offices of foreign banks also negotiate correspondent relationships with domestic banks. It offers the banks a low cost entry mode, allowing them to establish their brands without having any capital costs related to setting up a branch or subsidiary. This activity provides a particular advantage when the entry value on the local market has yet to be proven or the regulatory frameworks have a degree of uncertainty. Should market development exceed expectations or certain profitable deals be granted only to those banks present on the market, opening a representative office is definitely an entry strategy.

For a wide range of industries, the lowest cost option to enter a foreign market is to have a low level of ownership. In selecting the entry mode, one bank's objective is to maximize its risk-adjusted rate of return. The degree of transaction control is seen as the single most important determining factor both for risk and return. Cost is just one of the several elements determining the most efficient level of the

Investment, the others might include financial infrastructure, foreign exchange risk, competition and market size. A small market can lead to a less optimal investment and to the impossibility of reaching an appropriate return on capital employed.

A foreign bank representative office is the most limited form of organization and the less expensive one. Still it can not perform any kind of activity. That is why it is mainly used for exploring business opportunities from a foreign country.

A branch is not an independent legal entity, but an integral part of the mother company. It can offer a complete range of banking services. The decision making process is not fully delegated to the foreign branch and the activities of the branches are based on the social capital of the mother company. Foreign banks' branches are subject to banking supervision both at home and in the host country.

Subsidiaries of foreign banks are legally independent from their mother company and use their own capital for performing their activities. Hence, foreign banks need to invest more capital abroad if they want to facilitate the same level of lending activity through a subsidiary rather than through a branch. Branches are an integral part of the mother company. A branch cannot fail unless the mother-company fails. Subsidiaries and branches are separate entities. A subsidiary may fail even if the mother company is solvable and vice versa, a subsidiary can be solvable even if its mother company is not. Under the Basle agreements, the supervisory authorities from the host country are responsible for prudential supervision of subsidiaries and the authorities from the country of origin are responsible for the branches of the mother company. If a foreign affiliate bank doesn't have control over its subsidiary, it has a clear exploring role and doesn't express a long-term commitment.

Table 2

Forms of external presence				
	Representative office	Branch	Subsidiary	Minority stake
Legal status	Dependent	Dependent	Independent	Independent
Investment costs	Not necessary	Necessary	Necessary	Necessary
Control capacity	Direct	Direct	Direct and substantial	Low control
Business intermediation	Promoting	Promoting	Promoting	Low
Flexibility	Low	High	High	Low
Number of employees	Low	Depending on the level of activity	High	N/A

Source: Bosch 2000, p. 38.

Foreign banks usually follow two different positioning strategies for clients in emerging countries:

a. Making the most of the foreign banks status, mainly devoted to their international clients and to the top segment of the local market, like the large local companies that need corporate banking, bonds issues or share listing. Most are not active in retail banking outside their home market. Competition can sometimes be very tough, because most foreign banks prefer to remain in this foreign bank position and the niche market becomes overcrowded.

b. Making the most of the local banks status, especially in countries that allow foreign banks to get a license providing the same treatment as to domestic banks. There are only a few international banks active in retail banking sector, due to high barriers to entry in this segment, compared to, for example, corporate banking. The distribution network is very different when a bank serves a hundred of clients (one branch), or tens of thousands of clients in retail banking or millions of customers (the need for infrastructure is huge).

2. Strategies used for banking expansion overseas

Depending on the strategy used for entering new markets, we can distinguish the following strategies used for banking expansion overseas:

- 1) follow the client strategy,
- 2) lead your client overseas strategy,
- 3) look for a new market strategy,
- 4) follow your leader strategy.

We have already discussed about the first strategy in the chapter about ways of entering new markets. This is a reactive strategy. If banks do not follow their customers abroad, the clients might establish new banking relationships in order to replace the already existing relationships with the domestic bank. A banking relationship consists of a flow of information. This flow of information enables the bank to assess any new loan proposal at a low marginal cost, as most of the assessment work has been done previously. The lower marginal cost gives a bank's offshore subsidiary a competitive advantage over its traditional competitors.

Following the client behavior leads to new business opportunities (take as example the expansion of banks from Austria, Germany and Netherlands). Austrian and German banks were among the first to enter the CEE countries and now they have a predominant number of representatives. In Hungary, Austrian banks tend to buy low-risk customers with a high volume of transactions, such as state-owned banks, former monopolies (Majnoni et al., 2003). Citibank, ING and ABN AMRO follow their customers in these countries, and then, after start-up phase, they tend to develop a portfolio of services using local customer base, engaging in competition with local banks.

Another reason for following customers was to simply make sure that the bank had an initial position on the foreign market and then look for extension in the near future. This expectation approach is pursued, for example, by Deutsche Bank in Hungary (Majnoni et al., 2003.). There are also specific factors that led to the entry of foreign banks through mergers and acquisitions. For example, in

Poland, a number of foreign banks have agreed to take over certain Polish banks with problems, simply to "buy" a license to operate in this market.

These actors were not interested in these banks and therefore they will not engage effectively in restructuring and managing the problems of the banks. For example, in December 1994, Westdeutsche Landesbank agreed to buy 29% of the new issue of shares of Morski Bank in exchange for a license given by the National Bank of Poland in February 1995. A similar procedure was later applied by other German banks. In order for them to get an operating license, they had to either support banks facing difficulties or to take over bankrupt banks (Konopielko, 1999).

While banks may merely follow their customers into foreign countries, they may, as well, be present in foreign markets prior to their corporate clients, pursuing the so called "leading the customer" strategy (Buch, 1997, p. 344). Often a bank can act as an external agent for its domestic clients through the newly developed contacts abroad. Especially small- and medium-sized enterprises, which are the clients of large international banks, are being helped by their bank's expansion abroad, as they have access to information about the external markets and are also provided with proper advisory services.

This fact gives the possibility for internationally operating banks not only to improve and enlarge their range of products and services, but also to expand their portfolio of clients. Small and medium enterprises are often able to obtain adequate detailed information on their own. Clients of banks operating abroad, SMEs can take over trade relationships with foreign companies through information obtained from the bank. Through these services the credit institution helps the medium clients to enter new and unknown markets, and the small clients and companies with no prior foreign experience to expand abroad. Such information and consultation services are known as "banking consultancy". They help building customers' loyalty for their banks.

Search for new markets strategy means that by some reasons banks are always looking for new international markets. According to this strategy, the bank is trying to find a new niche on the international market. The strategy presumes to search for better returns adjusted to some greater risks than those present on the home market, even in uncertain circumstances. Mainly experienced and strong international banks follow this strategy because they can bear greater risks. Such banks aim to achieve a global service network that should be multicultural and in order to achieve cost and sales synergies.

"Follow your leader" strategy explains why banks chose to open branches in other countries, even though they do not have clients there. On an international scale, oligopolistic rivalry leads to some typical patterns of conflict, be it between banks originating from the same country or from

different countries. The scheme most often referred to in literature is undoubtedly “follow your leader”. When a bank has an interest in a foreign country, all its competitors tend to move in that country too, as they are all concerned that the advantages gained by the first arrived will change the configuration of the competitive home market (Bouteiller, Marois, 1999, p. 6). Competition in the banking sector is usually very intense, and only due to a steady development it is possible for a bank to remain competitive. This strategy is associated with lower risks than the previously mentioned strategy. The market which was already penetrated by a competitor has an acceptable risk level and a thorough market analysis is no longer needed.

As in the general case of emerging countries, the most important fields of activities of the foreign banks in CEE countries are corporate banking, trade finance and foreign exchange transactions. Retail activities are perceived as the least important. The main reasons are low income levels of the population and the high costs of setting up branch networks. However, in the second half of the 1990s, some foreign banks began to realize the potential of the retail market and began to actively operate in this market. Other corporate services that complement the existing corporate products are non-financial services (such as consultancy), market trading services and leasing services. These services enable banks to use their know-how and liquidity resources to generate some extra income.

In the Czech Republic, as far as the assets structure is concerned, the weight of credits and debt securities in the balance of foreign banks is smaller than in the balance of large local banks. On the liabilities side, foreign banks depend heavily on inter-bank markets, with a much lower level of customer deposits in their portfolios. This emphasizes the corporate-oriented approach of the foreign banks. In Poland, foreign banks employ around 40% of their assets in inter-bank operations and trade finance. Another important differentiation of foreign banks is their reduced weight of fixed assets in the total assets. This is caused by the reduced number of branches of these banks. In most cases, the headquarters of the banks are rented and therefore they make a contribution to the operating costs. In some banks (UniCredit, ING and Société Generale) recently involved in the development of their own office buildings, there might be registered an increase of the weight of fixed assets in the total assets and a decrease of operating costs.

References

- Aliber, R.Z., „Towards a Theory of International Banking”, *Economic Review*, Federal Reserve Bank of San Francisco”, 1976, pp. 5-8
- Bonin, J. P., Mizsei, K., Szekely, I. P., Wachtel, P. (1998). *Banking in Transition Economies: The Role of Foreign Banks in Economies in Transition*, Bodmin, Cornwall, MPG Books Ltd
- Grubel, H., „A Theory of Multinational Banking”, *Banca Nazionale del Lavoro Quarterly Review*, No. 29, 1997, pp. 349-363
- Khoury, S.J., „Foreign Banks in the United States: Entry Strategies and Operations”, *Advances in International Banking and Finance*, Vol. 3, 1998, pp. 152-175
- Williams, B., „Positive Theories of Multinational Banking: Eclectic Theory versus Internalisation Theory”, *Journal of Economic Surveys*, Vol. 11, No. 1, 1997, pp. 71-100
- Williams, J., Liao, A., „The Search for Value: Cross-border Bank M&A in Emerging Markets”. *Comparative Economic Studies*, 50, 2008, pp. 274-296
- Rugman, A.M., Kamath, S.J., „International Diversification and Multinational Banking”, in *Recent Developments in International Banking and Finance*, 1987, Lexington Books
- Majnoni, G., Shankar, R., Varhegyi, E., „The Dynamics of Foreign Bank Ownership - Evidence from Hungary”, *The World Bank Policy Research Working Paper Series*, 3114, 2003
- Mohanty, S., Nolle, D., Seth, R., „Do Banks Follow Their Customers Abroad?”, *Financial Markets, Institutions & Instruments*, Vol. 7, No. 4, 1998, pp. 1-25
- Bouteiller, E., Marois, B. (1999). *Strategies of European Banks in Emerging Countries: A Comparative Approach*, HEC Foundation
- Gray, J.M., Gray, H.P., „The Multinational Bank: A Financial MNC?”, *Journal of Banking and Finance*, No. 5, 1981, pp. 33-69
- Konopielko, L., „Foreign Banks' Entry into Central and East European Markets: Motives and Activities”, *Post-Communist Economies*, Vol. 11, No. 4, 1999
- Dunning, J.H. (1975). *The Economic Theory of Multinational Enterprise*, London, Macmillan
- Pomerleano, M., Vojta, G., „What Do Foreign Financial Institutions Do in Emerging Markets?”, *Open Doors: Foreign Participation in Financial Systems in Developing Countries*, 2001, Washington DC, Brookings Institution Press
- Tschoegl, A.E., „International Banking Centers, Geography, and Foreign Banks”, *Financial Markets, Institutions & Instruments*, Vol. 9, No. 1, 2000, pp. 7-31
- Tschoegl, A.E., „Financial Crises and the Presence of Foreign Banks”, *Wharton Financial Institutions Center Working Paper*, 35, 2003
- Curry, E., Fung, J., Harper, I., „Multinational Banking: Historical, Empirical, and Case Perspectives”, in Mullineux, A.W., Murinde, V. (ed.) *Handbook of International Banking, UK and USA*, 2003, Edward Elgar
- Yildirim, H.S., Philippatos, G.C., „Efficiency of Banks: Recent Evidence from the Transition Economies of Europe, 1993-2000”, *The European Journal of Finance*, 13, 2007, pp. 123-143
- Root, F. (1982). *Foreign market entry strategies*, AMACOM, New York

Effects of Macroeconomic Variables on the Stock Market: The Case of the Czech Republic

Yu HSING

Southeastern Louisiana University, USA
yhsing@selu.edu

Abstract. *Applying the GARCH model, this paper finds that the Czech stock market index is positively associated with real GDP and the German and US stock market indexes, is negatively influenced by the ratio of government borrowing to GDP, the domestic real interest rate, the CZK/USD exchange rate, the expected inflation rate and the euro area government bond yield, and exhibits a quadratic relationship with the ratio of M2 to GDP. It suggests that the Czech stock market index and the M2/GDP ratio have a positive (negative) relationship if the M2/GDP ratio is less (greater) than the critical value of 60.0%. Hence, to promote a robust stock market, the authorities are expected to pursue or maintain economic growth, fiscal discipline, currency appreciation, a relatively low interest rate and expected inflation rate, and the M2/GDP ratio which is below the critical value of 60.0%.*

Keywords: stock market index; government borrowing; money supply; interest rates; exchange rates; foreign stock markets.

JEL Code: E44.

REL Code: 11B.

1. Introduction

Many countries have experienced declining asset values including stock prices during the recent global financial crisis. The Czech Republic is no exception. The Prague Stock Exchange Index had dropped 67.5% from 1,936.1 on October 29, 2007 to 628.5 on February 18, 2009, which was worse than the 56.6% decline of the S&P 500 index during its recent worst-performing period. Although the index has risen from the trough, as of February 9, 2011, it was still 35.4% below the all time high. The significant decrease in stock prices is expected to affect household consumption spending due to the wealth and liquidity effects and business investment spending due to Tobin's q theory and the balance sheet effect. While individual stock prices may be subject to firm specific factors, the overall stock market index is expected to be influenced by the aggregate economic conditions and the global factors such as fiscal policy, monetary policy, the exchange rate, the inflation rate, the foreign stock market index, the foreign interest rate, etc.

This paper attempts to examine the relationship between the Czech stock market index and relevant macroeconomic variables and has several focuses. First, it attempts to analyze whether the Czech stock market index and the money supply may have a nonlinear relationship, suggesting that they have a positive (negative) relationship when the money supply is less (greater) than a certain critical value. A moderate increase in the money supply would be needed to accommodate increased economic activities. On the other hand, too much money supply would cause inflationary expectations, higher interest rates, and lower stock prices. Second, other relevant variables such as fiscal policy, the interest rate, the exchange rate, major foreign stock market indexes, the foreign interest rate and other relevant variables are considered in order to estimate their respective impacts on the Czech stock market index. Third, advanced econometric techniques are employed in empirical work so that parameter estimates would be unbiased, consistent, and more efficient.

Most of the previous works examining the relationship between macroeconomic variables and the stock market are for the US or other advanced countries (Fama, 1981, 1990, Campbell, Shiller, 1988, Fama, French, 1989, Chen, Roll, Ross, 1986, Bulmash, Trivoli, 1991, Abdullah, Hayworth, 1993, Dhakal, Kandil, Sharma, 1993, Mukherjee, Naka, 1995, Ajayi, Mougoue, 1996, Cheung, Ng, 1998, Nieh, Lee, 2001, Kim, 2003, Chaudhuri, Smiles, 2004, Ratanapakorn, Sharma, 2007, Humpe, Macmillan, 2009, and others).

Several recent studies analyze the subject for the Czech Republic and related countries. Hanousek and Filer (2000) indicate that only the contemporaneous values of imports and foreign capital inflows have additional explanatory power to the Czech stock market index during the full sample period whereas the contemporaneous or lagged values of the German DAX or US DJIA do not have any additional explanatory power to the Czech stock market index. Grambovas (2003) shows that the CZK/DEM exchange rate and the German stock market index Granger cause the Czech stock market index in the short run whereas the CZK/DEM exchange rate, the Czech stock market and the German stock market do not have a long-term equilibrium relationship. Samitas and Kenourgios (2007) analyze stock market movements for the four new EU economies, namely, the Czech Republic, Hungary, Poland and Slovakia. The results vary among countries. For the Czech Republic, they find that, in the short run, the Czech stock market index is negatively affected by the domestic interest rate, the US interest rate, or the German interest rate and that the sign of the error correction term is negative and significant.

Moore and Wang (2007) and Wang and Moore (2008) reveal that the Czech stock market index exhibited relatively high volatility during the early transition stage mainly due to the Russian and Asian financial crises and has shown relatively low volatility since it joined the EU and that the stock markets in the Czech Republic and Hungary and the eurozone stock market are significantly correlated after joining the EU and during the Russian and Asian financial crises mainly attributable to the financial market developments in these two countries. Horobet and Dumitrescu (2009) find that the Czech stock market index is positively affected by real GDP, the CPI, M1 money supply and the real interest rate and negatively influenced by the real effective exchange rate. It suggests that real appreciation of the Czech currency would hurt the Czech stock market index. Kasman, Turgutlu and Ayhan (2009) analyze whether stock markets in four Central European countries may have long memory. Their results show that there is weak evidence of long memory for the Czech Republic and Hungary whereas there is support for long memory in Slovakia's stock market and short memory in Poland's stock market. It suggests that investors could still make unexploited returns in Slovakia's stock market.

These previous studies have made significant contribution to the understanding of the behavior of the Czech stock market. This paper attempts to formulate a more comprehensive model examining the relationship between the Czech stock market index and monetary policy, fiscal policy, and other relevant variables.

2. The model

Extending previous studies, we can express the Czech stock market index as:

$$C = f(Y, B, M, R, E, \pi^e, S', R') \quad (1)$$

+ ? ? - ? - + ?

where

- C = the Czech stock market index,
- Y = real output,
- B = government borrowing,
- M = the money supply,
- R = the domestic real interest rate,
- E = the CZK/USD exchange rate,
- π^e = the expected inflation rate,
- S' = the foreign stock market index, and
- R' = the foreign interest rate.

We expect that the Czech stock market index is positively affected by real output and the foreign stock market index is negatively influenced by the domestic real interest rate and the expected inflation rate, and may be positively or negatively associated with government borrowing, the money supply, the exchange rate or the foreign interest rate.

Increased government deficit-financed spending would increase aggregate demand in the short run, business opportunities, the interest rate and the price level and crowd out some of the private spending (Darrat, 1990a, 1990b, Ardagna, 2009). In the long run, deficit or debt-financed government spending may have a neutral effect on the stock market index and real GDP due to the Ricardian equivalence theorem (Barro, 1974). Hence, its net impact is uncertain.

Increased money supply is expected to increase the expected inflation rate and real output, reduce the interest rate, and increase the demand for stocks (S) due to the portfolio adjustment (Dhaka, Kandil, Sharma, 1993, Abdullah, Hayworth, 1993, Mukherjee, Naka, 1995, Cheung, Lai, 1999, Chaudhuri, Smiles, 2004, Ratanapakorn, Shamar, 2007, Humpe, 2009):

$$\frac{\partial C}{\partial M} = \left(\frac{\partial C}{\partial \pi^e} \times \frac{\partial \pi^e}{\partial M} \right) + \left(\frac{\partial C}{\partial Y} \times \frac{\partial Y}{\partial M} \right) + \left(\frac{\partial C}{\partial R} \times \frac{\partial R}{\partial M} \right) + \left(\frac{\partial C}{\partial S} \times \frac{\partial S}{\partial M} \right) > \text{ or } < 0. \quad (2)$$

In order to test a potential quadratic relationship between the stock market index and the money supply, we specify the following equation:

$$C = h(Y, B, M, M^2, R, E, \pi^e, S', R'). \quad (3)$$

The partial derivative of C with respect to M is given by:

$$\frac{\partial C}{\partial M} = \delta_3 + 2\delta_4 M, \quad (4)$$

where δ_3 and δ_4 are the respective coefficients of M and M^2 in equation (3), $\delta_3 > 0$, and $\delta_4 < 0$. Setting the first-order condition to zero and solving for the critical value of M that maximizes C, we have:

$$\bar{M} = -\frac{\delta_3}{2\delta_4}. \quad (5)$$

Currency depreciation is expected to help exports, raise import costs or domestic prices, and reduce international capital inflows because domestic assets are less attractive to international investors. Increased exports would help raise stock prices whereas increased import costs or domestic prices and decreased international capital inflows would reduce business profits or the demand for stocks and the price of stocks. Thus, its net impact is unclear (Choi, 1995, Abdalla, Murinde, 1997, Nieh, Lee, 2001, Ratanapakorn, Sharma, 2007).

A higher foreign interest rate relative to the domestic interest rate would reduce international capital inflows and the demand for stocks but may cause the depreciation of the Czech koruna and help net exports. Therefore, its net impact is ambiguous.

3. Empirical results

All the data were collected from the *International Financial Statistics* published by the International Monetary Fund. C is measured by the share price index with 2005 as the base year. Y is represented by the real gross domestic product in billions at the 2005 constant price. B is represented by the ratio of government borrowing to nominal GDP. The data for the government deficit after 2007.Q2 are incomplete. M is measured by the ratio of M2 money supply to nominal GDP. R is measured by the money market rate minus the expected inflation rate, which is the average inflation rate of the last four quarters. E is measured by the CZK/USD exchange rate. An increase in the CZK/USD exchange rate means depreciation of the Czech koruna. The choice of the CZK/USD exchange rate is because the absolute value of the correlation coefficient of -0.722 between the CZK/USD exchange rate and the Czech stock market index is greater than the correlation coefficient of 0.576 between the nominal effective exchange rate and the Czech stock market index. The German and US share price indexes with 2005 as the base year are both selected to

represent the foreign stock market index. Although the Czech Republic and Germany are closely linked economically and financially, the US stock market is expected to have some impacts on the Czech and other stock markets in the world. The euro area government bond yield is chosen to represent the foreign interest rate. Except for the expected inflation rate and the domestic real interest rate with negative values, other variables are measured in the logarithmic scale. The quarterly sample ranges from 2002.Q1 to 2010.Q2. The data for the money supply are not available before 2002.Q1.

Graph 1 presents the scatter diagrams between the Czech stock market index and selected explanatory variables. As shown, the Czech stock market index generally has a positive correlation with the US and German stock market indexes, a negative correlation with the government borrowing/GDP ratio, the CZK/USD exchange rate and the euro area government bond yield, and a bell-shaped relationship with the M2/GDP ratio. The scatter diagram for the relationship between the Czech stock market index and the CZK/USD exchange rate suggests that depreciation of the Czech koruna would cause the stock market index to decline whereas appreciation of the Czech koruna would increase the Czech stock market index. According to the fitness of the scatter diagrams, the correlation between the Czech stock market index and the German stock market index is greater than the correlation between the Czech stock market index and the US stock market index.

Table 1 presents the estimated regressions and related statistics. Figures in the parenthesis are t-statistics. The GARCH model is employed because the error variance is a function of the lagged squared error and the lagged error variance. The base model is reported in Version I. Approximately 97.3% of the variation in the Czech stock market index can be explained by the ten right-hand side variables. All the estimated coefficients are significant at the 1% or 5% level. The Czech stock market index is positively affected by real GDP, the German stock market index and the US stock market index, is negatively influenced by the government borrowing/GDP ratio, the real interest rate, the CZK/USD exchange rate, the expected inflation rate and the euro area government bond yield, and has a quadratic relationship with the M2/GDP ratio. Based on equation (5), the critical value of the M2/GDP ratio that maximizes the Czech stock market index is estimated to be 60.0%, implying that the Czech stock market index has a positive (negative) relationship with the M2/GDP ratio if the M2/GDP ratio is less (greater) than 60.0%. If the squared M2/GDP ratio is deleted from the estimated regression in Version I, the coefficient of the M2/GDP ratio is negative and insignificant at the 10% level, and a misleading conclusion that increased money supply does not affect the Czech stock market index may be drawn.

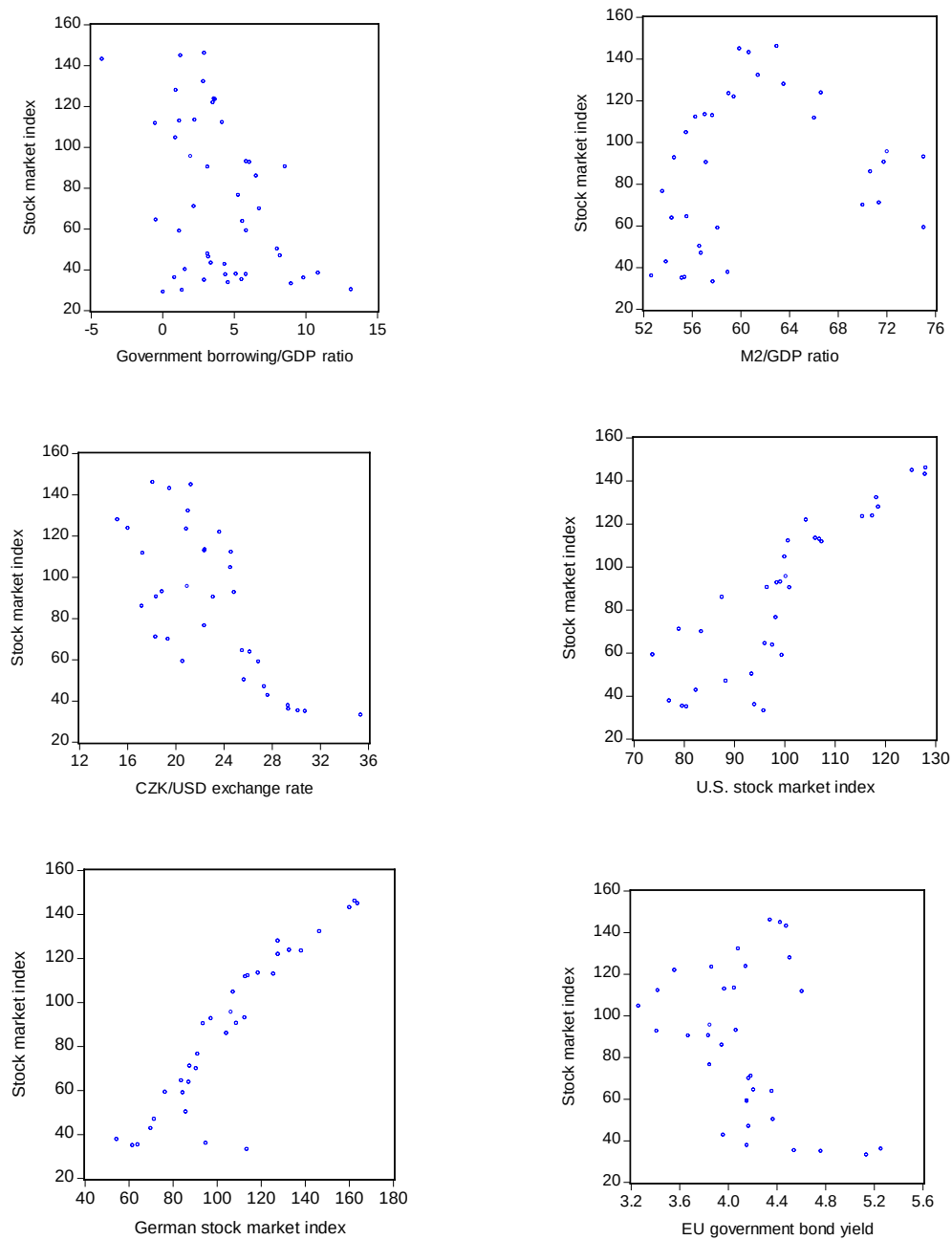
**Figure 1.** Scatter diagrams

Table 1

Estimated regressions of the Czech stock market index

	I	II	III
Real GDP	0.993 (4.230)	1.348 (3.141)	0.891 (3.192)
Government borrowing/GDP ratio	-0.017 (-11.440)		-0.013 (-3.535)
Government debt/GDP ratio		-0.057 (-0.178)	
M2/GDP ratio	26.977 (2.245)	38.943 (3.263)	
(M2/GDP ratio) ²	-3.295 (-2.268)	-4.743 (-3.273)	
M1/GDP ratio			18.069 (3.719)
(M1/GDP ratio) ²			-2.444 (-3.724)
Real interest rate	-0.084 (-4.148)	-0.106 (-3.401)	-0.063 (-2.546)
CZK/USD exchange rate	-0.473 (-4.013)	-0.423 (-1.861)	-0.283 (-2.407)
Expected inflation rate	-0.238 (-4.054)	-0.311 (-2.593)	-0.163 (-1.967)
German stock market index	0.467 (7.821)	0.333 (2.427)	0.502 (4.631)
US stock market index	0.868 (6.245)	1.166 (5.889)	0.897 (5.840)
Euro area government bond yield	-1.094 (-8.285)	-1.015 (-6.708)	-0.984 (-6.808)
Constant	-60.291 (-2.490)	-88.193 (-3.318)	-38.889 (-4.379)
Estimation method	GARCH	GARCH	GARCH
Adjusted R-squared	0.973	0.963	0.977
AIC	-2.218	-1.755	-2.297
SC	-1.590	-1.127	-1.623
F-statistic	91.929	67.252	103.300
Sample period	2002.Q1- 2010.Q2	2002.Q1- 2010.Q2	2002.Q1- 2010.Q2
N	34	34	34

Notes: Figures in the parenthesis are t-statistics. AIC is Akaike information criterion.
SC is Schwarz information criterion.

According to estimated coefficients, the Czech stock market index is more sensitive to a percent change in real GDP, the U.S. stock market index, or the euro area government bond yield than other variables. For example, a 1% change

in the euro area government bond yield, real GDP, and the US stock market index would change the Czech stock market index by -1.094%, +0.993%, +0.868%, respectively. In comparison, a 1% increase in the German stock market index would result in 0.467% increase in the Czech stock market index. If the CZK/USD exchange rate rises 1% or if the Czech koruna depreciates 1% versus the US dollar, the Czech stock market index would decline by 0.473%.

To determine whether the above regression results may be spurious, the ADF test on the regression residuals is applied. Based on the Schwarz information criterion, a lag length of zero is selected. The value of the test statistic is estimated to be -6.774, which is greater than the critical value of -2.637 in absolute values at the 1% level. Hence, the regression outcomes are not spurious, and these time series variables have a long-term stable relationship.

In comparison, the results in this paper are similar to the findings of Samitas and Kenourgios (2007), Wang and Moore (2008) and part of Horobet and Dumitrescu (2009) in terms of the relationship between the Czech stock market index and the domestic interest rate, the foreign interest rate, real GDP, and the eurozone stock market index. However, the results are different from the findings of Hanousek and Filer (2000), Grambovas (2003) and part of Horobet and Dumitrescu (2009) in terms of the relationship between the Czech stock market index and the German stock market index, the Dow Jones Industrial Average, appreciation of the koruna, the CPI, M1 money supply, and the domestic interest rate. Different results may be due to different model specifications, estimation methodologies, measurements of the variables, sample periods, and other possible factors.

Several different versions are estimated. When the government debt/GDP ratio replaces the government borrowing/GDP ratio (Version II), its negative coefficient is insignificant at the 10% level, and the quadratic relationship between the Czech stock market index and the M2/GDP ratio continues to hold. An analysis of the relationship between the Czech stock market index and the debt/GDP ratio indicates that the correlation coefficient is calculated to be a very small value of -0.060 mainly because both the positive and negative relationships are found and may cancel out each other. If the M1/GDP ratio and the M1/GDP ratio squared replace the M2/GDP ratio and the M2/GDP ratio squared (Version III), its coefficients are significant at the 1% level. The critical value for the M1/GDP ratio that maximizes the Czech stock market index is estimated to be 40.3%. Because M2 money supply is a broader measure of the monetary aggregate, the critical value for the M2/GDP ratio may have more policy implications.

4. Summary and conclusions

This paper has examined the relationship between the Czech stock market index and selected macroeconomic variables based on a sample during 2002.Q1 – 2010.Q2. More real GDP, a lower government borrowing/GDP ratio, a lower real interest rate or expected inflation rate, a higher US or German stock market index, or a lower euro area government bond yield would increase the Czech stock market index. The Czech stock market index and the M2/GDP ratio exhibit a bell-shaped relationship. A higher M2/GDP ratio would increase (reduce) the Czech stock market index if it is less (greater) than 60.0%. If fiscal policy is represented by the government debt/GDP ratio, its negative coefficient is insignificant at the 10% level. When the money supply is represented by the M1/GDP ratio, the critical value of the M1/GDP ratio is estimated to be 40.3%.

There are several policy implications. To maintain a healthy stock market, the authorities would need to pursue economic growth, fiscal discipline, moderate increase in the money supply, a relatively low interest rate or inflation rate, and the appreciation of the Czech koruna. The finding of a quadratic relationship between the Czech stock market index and the M2/GDP ratio has significant policy implications. Increased money supply to accommodate increased GDP would be conducive to the stock market as long as the M2/GDP ratio stays within the critical value of 60.0%. Too much money supply causes higher inflation expectations and is harmful to the stock market. Although the coefficient of the government debt/GDP ratio is insignificant, we should not rule out a possible negative relationship in the future when more sample observations become available. Appreciation of the Czech koruna would help the Czech stock market index because its positive impacts on increased international capital inflows, lower import costs and lower prices outweigh its negative impact on reduced exports. It appears that the impact of the US stock market index on the Czech stock market index is greater than the impact of the German stock market index on the Czech stock market index. Hence, any study which does not include the US stock market index would miss a key variable in regression analysis. The authorities need to monitor the external factors such as the German stock market index, the US stock market index and the euro area government bond yield in order to forecast their impacts when any change occurs.

References

- Abdalla, I.S.A., Murinde, V., "Exchange Rate and Stock Price Interactions in Emerging Financial Markets: Evidence on India, Korea, Pakistan and the Philippines", *Applied Financial Economics*, 7, 1997, pp. 25-35
- Abdullah, D.A., Hayworth, S.C., "Macroeconometrics of Stock Price Fluctuations," *Quarterly Journal of Business and Economics*, 32, 1993, pp. 50-67
- Ajayi, R.A., Mougoue, M., "On the Dynamic Relation between Stock Prices and Exchange Rates", *Journal of Financial Research*, 19, 1996, pp. 193-207
- Ardagna, S., "Financial Markets' Behavior around Episodes of Large Changes in the Fiscal Stance", *European Economic Review*, 53, 2009, pp. 37-55
- Barro, R.J., "Are Government Bonds Net Wealth?", *Journal of Political Economy*, 82, 1974, pp. 1095-1117
- Barro, R.J., "The Stock Market and Investment", *Review of Financial Studies*, 3, 1990, pp. 115-131
- Becker, K.G., Finnerty, J.E., Friedman, J., "Economic News and Equity Market Linkages between the US and the UK", *Journal of Banking and Finance*, 19, 1995, pp. 1191-1210
- Bollerslev, T., "Generalized Autoregressive Conditional Heteroskedasticity", *Journal of Econometrics*, 31, 1986, pp. 307-327
- Bulmash, T.G., Trivoli, G.W., "Time-Lagged Interactions between Stock Prices and Selected Economic Variables", *The Journal of Portfolio Management*, 17, 1991, pp. 61-67
- Campbell, J., Shiller, R.J., "Cointegration and Tests of Present Value Models", *Journal of Political Economy*, 95, 1988, pp. 1062-1088
- Chaudhuri, K., Smiles, S., "Stock Market and Aggregate Economic Activity: Evidence from Australia", *Applied Financial Economics*, 14, 2004, pp. 121-29
- Chen, N., Roll, R., Ross, S. A., "Economic Forces and the Stock Market," *Journal of Business*, 59, 1986, pp. 383-403
- Cheung, Y.W., Lai, K.S., "Macroeconomic Determinants of Long-Term Market Comovements among EMS Countries", manuscript, UCSC, California, 1994
- Cheung, Y.W., Ng, L.K. "International Evidence on the Stock Market and Aggregate Economic Activity", *Journal of Empirical Finance*, 5, 1998, pp. 281-296
- Choi, J.J., "The Japanese and US Stock Prices: A Comparative Fundamental Analysis", *Japan and the World Economy*, 7, 1995, pp. 347-360
- Darrat, A.F., "Stock Returns, Money and Fiscal Deficits", *Journal of Financial and Quantitative Analysis*, 25, 1990a, pp. 387-398
- Darrat, A.F., "The Impact of Federal Debt upon Stock Prices in the United States", *Journal of Post Keynesian Economics*, 12, 1990b, pp. 375-389
- Dhakal, D., Kandil, M., Sharma, S.C., "Causality between the Money Supply and Share Prices: A VAR Investigation", *Quarterly Journal of Business and Economics*, 32, 1993, pp. 52-74
- Engle, R.F., "Autoregressive Conditional Heteroskedasticity with Estimates of the Variance of UK Inflation", *Econometrica*, 50, 1982, pp. 987-1008
- Engle, R.F., "GARCH 101: The Use of ARCH/GARCH Models in Applied Econometrics", *Journal of Economic Perspectives*, 15, 2001, pp. 157-168
- Fama, E.F., "Stock Returns, Real Activity, Inflation and Money", *American Economic Review*, 71, 1981, pp. 545-565
- Fama, E.F., "Stock Returns, Expected Returns, and Real Activity", *Journal of Finance*, 45, 1990, pp. 1089-1108

- Fama, E.F., French, K.R., "Business Conditions and Expected Returns on Stocks and Bonds", *Journal of Financial Economics*, 25, 1989, pp. 23-49
- Grambovas, C.A., "Exchange Rate Volatility and Equity Markets", *Eastern European Economics*, 41, 2003, pp. 24-48
- Hanousek, J., Filer, R.K., "The Relationship between Economic Factors and Equity Markets in Central Europe", *Economics of Transition*, 8, 2000, pp. 623-638
- Horobet, A., Dumitrescu, S., "On the Causal Relationships between Monetary, Financial and Real Macroeconomic Variables: Evidence from Central and Eastern Europe", *Economic Computation & Economic Cybernetics Studies & Research*, 43, 2009, pp. 1-17
- Humpe, A., Macmillan, P., "Can Macroeconomic Variables Explain Long-Rerm Stock Market Movements? A Comparison of the US and Japan", *Applied Financial Economics*, 19, 2009, pp. 111-119
- Kasman, S., Turgutlu, E., Ayhan, A.D., "Long Memory in Stock Returns: Evidence from the Major Emerging Central European Stock Markets", *Applied Economics Letters*, 16, 2009, pp. 1763-1768
- Kim, K., "Dollar Exchange Rate and Stock Price: Evidence from Multivariate Cointegration and Error Correction Model", *Review of Financial Economics*, 12, 2003, pp. 301-313
- Moore, T., Wang, P., "Volatility in Stock Returns for New EU Member States: Markov Regime Switching Model", *International Review of Financial Analysis*, 16, 2007, pp. 282-292
- Mukherjee, T.K., Naka, A., "Dynamic Relations between Macroeconomic Variables and the Japanese Stock Market: An Application of a Vector Error Correction Model", *The Journal of Financial Research*, 18, 1995, pp. 223-237
- Nieh, C.-C., Lee, C.-F., "Dynamic Relationship between Stock Prices and Exchange Rates for G-7 Countries", *Quarterly Review of Economics and Finance*, 41, 2001, pp. 477-490
- Ratanapakorn, O., Sharma, C., "Dynamic Analysis between the US Stock Returns and the Macroeconomic Variables", *Applied Financial Economics*, 17, 2007, pp. 369-337
- Samitas, A.G., Kenourgios, D.F., "Macroeconomic Factors' Influence on 'New' European Countries' Stock Returns: The Case of Four Transition Economies", *International Journal of Financial Services Management*, 2, 2007, pp. 34-49
- Wang, G., Lim, C., "Effects of Macroeconomic Factors on Share Prices", *Journal of International Finance & Economics*, 10, 2010, pp. 113-123
- Wang, P., Moore, T., "Stock Market Integration for the Transition Economies: Time-Varying Conditional Correlation Approach", *Manchester School*, Supplement 1, 76, 2008, pp. 116-133

The European Recovery Economic Plan and Quality of Public Finances – Instruments for Monitoring and Improving Fiscal and Economic Systems

Mircea SOROCEANU

“Petre Andrei” University, Iași
mircea.soroceanu@yahoo.com

Carolina Daniela LUPĂȘCU (SOROCEANU)

“Alexandru Ioan Cuza” University, Iași
mc_soro@yahoo.com

Abstract. *“To promote a growth and employment orientated and efficient allocation of resources, Member States should re-direct the composition of public expenditure towards growth-enhancing categories in line with the Lisbon strategy, adapt tax structures to strengthen growth potential, ensure that mechanisms are in place to assess the relationship between public spending and the achievement of policy objectives, and ensure the overall coherence of reform packages”. [The Lisbon Strategy, integrated guideline no 3].*

Keywords: growth potential synergies; corrective component; preventive component; the excessive deficit; budget stimulus; sustainability of public finances; structural reforms.

JEL Codes: E62, H62.

REL Code: 8K.

1. European plan for economic recovery and quality of public finances – tools for monitoring and improving the fiscal and economic systems

Through manifestation of economic and financial crisis since 2008, the euro area and several Member States have entered a recession. The situation was further complicated by deferring investment and reducing purchases of consumer goods, leading to a vicious cycle of declining demand, business plans were revised and reduced, having held the job cuts. These has pushed the EU to a deep recession, possibly of long standing, the economy contracted and the unemployment could rise by several hundred thousand people, while the measures established by the European Recovery Plan will not find conditions to generate the desired results.

European Recovery Plan was presented, with enthusiasm, by Jose Manuel Barroso on 26 November 2008 in Brussels, under the motto "Now it is time to act", as European Commission's reaction to the economic situation of crisis.

By this, in addressing the financial crisis, the EU ensures that action at its own can be coordinated in accordance with national action in each Member State, depending on the development of relevant indicators to highlight the main negative impact (GDP) and monetary aggregates M1 and M2.

EU action related to domestic action, normally, can help all Member States to reduce the negative effects of global economic turmoil and emerge from the crisis.

Most of the means of economic policy, in particular those which can stimulate consumer demand in the short term, is at Member States hand. Each state has different starting points in terms of budgetary discretion, which gives great importance to effective coordination of the Fourth Commission.

Normally and binding on, all Member States have taken measures to counteract the crisis.

Corresponding coordinates national efforts may target different goals in parallel. Some actions can mitigate short-term recession, but each country should promote simultaneously the structural reforms necessary to help overcome the crisis without undermining long-term fiscal sustainability.

The strategic objectives of economic recovery plan, as they were made, are:

- rapid stimulation of demand and consumer confidence;
- reducing the effective management of human cost caused by economic downturn and its impact on the most vulnerable persons;
- continue the necessary structural reforms, support innovation and building a knowledge economy;

- accelerating the transition to a low carbon economy, which will create new green jobs and open up new opportunities in the rapidly growing global markets, will keep energy bills under control of citizens and businesses and reduce Europe's dependence energy from abroad.

The primary objective of the recovery plan is to avoid a deep recession by promoting an ambitious set of actions to support the real economy.

To support the real economy and confidence building, based on the forecasts of inflation reduction over the medium term, European Central Bank (ECB) for euro area, together with other European Union central banks reduced interest rates and have argued that reductions are possible additional. European Central Bank has already proved important in stabilizing the markets by lending banks and contribute to liquidity.

At the root of problems in the real economy is financial market instability.

A reliable and efficient financial sector is the premise of a strong economy, with growing. Therefore, to stabilize the banking system is the first step towards halting the economic slowdown and promote rapid and sustainable recovery. Currently, banks have to resume its normal role of providing liquidity and support investment in the economy. Since this action could take the form of loans and financing with risk sharing, could theoretically generate a positive mobilization of additional investments from private sources.

Also, in current circumstances, fiscal policy has played a more important role in stabilizing the economy and support demand.

Europe and countries can counter the trend expected to reduce demand, with negative side effects on investment and employment, only with a significant package of incentives budget without forgetting that they are closely linked to fiscal stimulus.

To maximize impact, budgetary stimulus should take into account the starting positions of each Member State. It is obvious that not all Member States are in the same position. Those that have used the good times to obtain reliable positions of public finances and improve its competitive position have a greater margin of maneuver now. For those Member States, especially those outside the euro area, which faces significant external imbalances, fiscal policy should essentially aim at correcting these imbalances.

A budget stimulus must be well designed and structured and based on the following principles:

1. To be timely, temporary, targeted and coordinated

National budgetary incentive packages should be:

- *convenient*, to support rapid economic activity in the period when demand is low, because the delay in implementation could mean that

the fiscal impulse would arrive only when the recovery is already ongoing;

- *temporary*, to avoid permanent damage to the budgetary positions that would undermine the viability and ultimately would require further funding by the sustained growth of taxes;
- *specific*, oriented origin of the economy problem (rising unemployment, business / households facing credit restrictions, etc.), because it optimizes the stabilizing effect of limited budgetary resources;
- *coordinated*, so as to multiply the positive impact and ensure long term budget sustainability.

2. Tools include both the revenue and expenditure instruments.

It is generally considered discretionary public spending will have a greater positive impact on demand, in the short term, compared with the reduction of taxes. This is because some consumers prefer to save rather than spend, unless the reduction in taxes is limited in time.

2. Quality of public finances as a tool for improving fiscal and economic monitoring

Current economic risks increase the need for a greater emphasis on the quality of public finances in the economic and budgetary monitoring.

Quality of public finances can be seen as a multidimensional framework. It targets more than low levels of deficit and debt, which remains its central axis, including also all agreements and fiscal institutions that contribute to efficient resource allocation and supporting macroeconomic objectives, in particular long-term economic growth.

These dimensions of quality of public finances include:

- composition and efficiency of public expenditure;
- the structure and effectiveness of income tax;
- fiscal government;
- ability to effectively manage government stimulus system;
- public finance policies that affect the functioning of markets and global business environment.

Improving the quality of public finances can contribute to addressing the fiscal policy by means of two mutually reinforcing ways:

- directly, by increasing efficiency of revenue and expenditure, through a better use of public resources;

- indirectly, by reducing the social costs and distortions by fostering long-term economic prospects and strengthening the ability to adapt to shocks.

The main transmission channels of quality of public finances actions are:

- For some budget expenditures, public finances contribute to growth and economic viability of using the composition and the public expenditure efficiency and effectiveness.

Theoretical and empirical research indicates that growth can be supported when public spending is oriented towards investment, stressing also that a fiscal consolidation based on sales of investments, as was the case in some periods in some Member States, can be problematic long term.

Effects on growth is due, in general, to public investment in human capital (through spending on education and health), in technical progress (research and development expenditures) and public infrastructure.

These are key areas of European regional and cohesion policies. However, there is evidence that the link between money spent in these areas and economic growth is not automatic, it is generally subject to the ability to achieve expected results (eg. better results in education, more private investment in research and development) and to overcome existing market failures, without giving rise to new distortions. Currently, empirical estimates on the cost effectiveness of public education and health show major differences between Member States, there are ample opportunities for savings in the use of public resources or to improve the results. The first option would allow development of much needed tax base for other purposes, for example, to an aging population or tax cuts. A second option could help to establish growth through higher productivity of labor.

- *The structure and effectiveness of revenue* may also be a factor for long-term growth, mainly due to additional constraints on public policies pursued by increased competition for mobile tax bases and factors of production.

Tax structure affects the growth potential through its effects on supply and demand for labor, through investment measures, by taking risks and human capital formation. Since the overall tax burden is always desirable, it will be accompanied by reforms in spending.

Some researchers have concluded that the tax burden diminuation on labor by shifting to a broader tax base, such as VAT, could foster employment and growth. In the simulation models prepared for the euro area is estimated that in the long term, the transfer tax of 1% of GDP from pay income taxes to consumption taxes, will increase real GDP by about 0.2% and employment to

about 0.25%. The effects depend largely on institutional and structural factors, such as indexation of wages and transfer reaction. In principle, due to a shift of taxation from income tax to pay tax on consumption, income difference between the active and inactive increases.

- A good *tax governance* can enhance all dimensions of public finances.

Besides the role played by national fiscal rules and medium-term budgetary frameworks in terms of enhancing the performance budget, fiscal governance also help to encourage spending efficiency, improving public expenditure approach and supporting reforms in public finance. Implementation of long-term budget frameworks would exceed the theoretical considerations of political economy, in terms of policy development and implementation of tax revision and consolidation of economic growth, efficiency of government revenue systems by promoting tax schemes that have categories of taxes in their composition carecterizate by relatively low tax rates, aplied to the widest tax base.

- *Government capacity* tends to influence government economic growth, being closely linked to other dimensions of public finances quality.

If the state of public finances is good, maintaining a relatively large public sectors and satisfactory economic growth can coexist. However, public sector can make progress harder if the economy is characterized by high tax burdens, higher public consumption, public spending and inefficient management and the effect is deficit and debt increasing.

- Public finances, through value size of allocations on budgetary and non-budgetary items, may also have effects on the *functioning of markets and business environment*.

Along with the mentioned roles on effectiveness of public expenditure and systems revenues, public finances also play a significant role through their impact on wage growth (eg. public sector wages), regarding participation and labor market mobility work (eg. benefit systems) and, more generally, the business environment (for example, by ensuring proper functioning of the judiciary and public infrastructure). In economies with less regulated legal tasks, the total productivity of factors of production, respectively skilled labor contribution to GDP growth, is hard to quantify. In fact, there are few governments which have standardized work, particularly skilled labor, from public sector, other than production or service against cost.

Aggregation of all facets of quality of public finances would allow the development of potential synergies of the main instruments of economic policy coordination for growth and employment.

Given the need to ensure sustainability of public finances, promoting long-term growth and proper functioning of the economies of Member States, greater attention should be paid to the efficiency and effectiveness of public spending.

Although the relationship between the level of general budget expenditure and economic growth is not straightforward, there is a clearer link between the results of public finance expenditure (eg. education, health) and economic performance. One of the promising methods to increase efficiency and cost effectiveness is the establishment or improvement of institutional mechanisms, aimed at both strengthening the link between policy priorities and resource allocation, and between resources and results.

Realization of regular budget review, including analysis of efficiency, is essential in terms of prioritizing spending.

Revenues is not only budgetary expenditure counterpart, because, through their structure and level, they affect economic efficiency, income distribution and growth. A review of the current structure of revenue systems and the main challenges for the design of tax systems, in particular the high tax burden on labor and the consequences of increased economic integration, points out that there are still possibilities of transferring the tax burden from labor to other tax bases, but that these bases must be large and stable.

In summary, fiscal reforms should be further developed so as to promote growth and reduce distortion, while helping to solve problems related to distribution.

This could be achieved through simple tax rules and the identification of broad tax base, avoiding regulatory gaps or coordination of the actions alleged by good fiscal governance, avoiding inefficient spending, eliminating special tax regimes and unnecessary exemptions.

A comprehensive strategy to revitalize European economies, including the modernization of social models, must be based on a comprehensive approach, using a wide range of economic policy instruments and a strong implementation of structural reforms under the growth and employment provided by the Stability and Growth Pact and the Lisbon Strategy.

References

- Filip, Gh. (coordonator) (2006). *Politici financiar-monetare si implicațiile lor asupra dezvoltării societății*, Comunicări Științifice 2005, Editura Performantica, Iași
- Ștefura, G. (2008). *Proces bugetar public*, ediția a II-a, Editura Universității „Alexandru Ioan Cuza” din Iași, Iași
- Onofrei, Mihaela (2000). *Impactul politicilor financiare asupra societății*, Editura Economică, București
- Comisia Comunităților Europene, *Un plan european de redresare economică*, Comunicarea Comisiei către Consiliul European, Bruxelles, 26.11.2008, COM(2008) 800
- Comisia Europeană, Comunicare privind „*Finanțele publice în UEM – 2008 – Rolul calității finanțelor publice în cadrul de guvernanță al UE*”, 24 iunie 2008, COM(2008) 387

An Optimization of the Risk Management using Derivatives

Ovidiu ŞONTEA

Bucharest Academy of Economic Studies
osontea@yahoo.com

Ion STANCU

Bucharest Academy of Economic Studies
finstancu@yahoo.com

Abstract. *This article aims to provide a process that can be used in financial risk management by resolving problems of minimizing the risk measure (VaR) using derivatives products, bonds and options. This optimization problem was formulated in the hedging situation of a portfolio formed by an active and a put option on this active, respectively a bond and an option on this bond. In the first optimization problem we will obtain the coverage ratio of the optimal price for the exertion of the option which is in fact the relative cost of the option's value. In the second optimization problem we obtained optimal exercise price for a put option which is to support a bond.*

Keywords: option; bond; risk management.

JEL Code: G32.

REL Code: 11B.

Introduction

This article aims to provide a process that can be used in financial risk management by resolving problems of minimizing the risk measure (VaR) using derivatives products, bonds and options. This optimization problem was formulated in the hedging situation of a portfolio formed by an active and a put option on this active, respectively, a bond and an option on this bond.

The reasons for managing the risks are not lead by the firm's market risk magnitude, but rather by the magnitude at risk. More precisely, it is the probability and extent of the potential risks which determine speculation, especially in the case of hedging motivated by de costs of external finances and financial difficulties. An instrument used for measuring the risks is the Value-at-Risk. VaR is an estimation of the probability and scale of the loss potential which can be expected in a certain period of time. We will offer an analytical approach to the problem of optimal management of risks in a setting which is based on two key hypothesis. Firstly, the main criteria for risk management is VaR. Secondly, the coverage strategy implies the use of derived financial instruments. The problem is finding a strategy using the options that minimize VaR (given by a maximum of the coverage expenses), by determining an optimal compromise between the options that have the capacity of reducing the VaR level and the initial costs of these options. The analysis is carried out using the Black-Scholes formula and is, thus, better adapted to the problem of covering the exposure to the exchange rates and actions.

An approach to this issue is done and Dong Hyun Ahn in the article "Using Optimal risk management options" by The Journal of Finance, No. 1, 1999. This article presents an analytical approach to optimal risk management based on the assumption that financial institutions want to minimize the Value-at-Risk using options. Here it is shown that the most important factor is the conditional distribution of the underlying exposure, therefore, optimal exercise price is very sensitive to the relative size of the drift.

Considering the definition of VaR, Ahn used as risk measure

$$VaR_{t+\tau}^{\alpha} = S_t e^{r\tau} - S_t e^{\theta(\alpha)},$$

where

$$\theta(\alpha) = \left(\mu - \frac{1}{2} \sigma^2 \right) \tau + c(\alpha) \sigma \sqrt{\tau},$$

And $c(\cdot)$ is the cut-off point of cumulative distribution of standard normal.

Options situation

First, we will consider a financial active that checks a classic equation

$$dS_t = \mu S_t dt + \sigma S_t dz_t,$$

where μ is the trend, σ is the active's volatility, and z_t is the brownian motion.

For a cover operation we will use a put option defined like this $P_t = P(S_t, K, r, \tau, \sigma)$, where τ is the contract period, K is the exercise price, and r interest rate.

Obviously, the option price is given by Black-Scholes model

$$P_t = K e^{-r\tau} N(-d_2) - S_t N(-d_1)$$

$$d_1 = \frac{\ln \frac{S}{K} + \left(r + \frac{\sigma^2}{2}\right)\tau}{\sigma \sqrt{\tau}}$$

$$d_2 = d_1 - \sigma \sqrt{\tau},$$

and $N(d) = \text{Prob}(x \leq d)$ is the distribution function of the standardized normal law.

A way of using put options is by taking long positions $h_i, i = 1, \dots, n$ with n options whose exercise price $K_i, i = 1, \dots, n$ so that the total price must be lower or equal with fixed C ,

$$\sum_{i=1}^n h_i P_{it} \leq C.$$

Additionally we will put the total overdraft condition $\sum_{i=1}^n h_i < 1$.

Considering that the exposure must be observed for the next τ periods, it will be necessary the measure risk characterization, VaR. We will define $\text{VaR}_{t+\tau}^\alpha$ as loss of $\alpha\%$ of a relative monetary unit to an institution exposure (financial) to invest at t moment in an active risk.

This definition must be translated into a formula, so we will consider $Y_t = \ln S_t$ and will apply lema Ito

$$dY_t = \left[\frac{1}{S_t} \mu S_t + \frac{1}{2} \left(-\frac{1}{S_t^2} \right) \sigma^2 S_t^2 \right] dt + \frac{1}{S_t} \sigma S_t dz_t = \left(\mu - \frac{1}{2} \sigma^2 \right) dt + \sigma dz_t$$

That is

$$\ln S_t \sim N(m, \sigma^2 t), m = \ln S_t + \left(\mu - \frac{1}{2} \sigma^2 \right) \tau,$$

And we can state that, for a position without cover, we have

$$VaR_{t+\tau}^\alpha = S_t e^{r\tau} - S_t e^{\theta(\alpha)},$$

where

$$\theta(\alpha) = \left(\mu - \frac{1}{2} \sigma^2 \right) \tau + c(\alpha) \sigma \sqrt{\tau},$$

while $c(\cdot)$ is the separation point of the two regions of the cumulative normal standard distribution, *cut-off point*.

We see that the second term of the VaR formula can be interpreted as the asset's expectation of the active will return at the $\alpha\%$ level.

In order to make the calculus easier, we shall suppose that the put option will be "in money", so we obtain the future value of such assets will be covered,

$$V_{t+\tau} = (1-h)S_{t+\tau} + hK - hP_t e^{r\tau}$$

$$VaR_{t+\tau}^\alpha = S_t e^{r\tau} - \left[(1 - \sum_{i=1}^n h_i) S_t e^{\theta(\alpha)} + \sum_{i=1}^n h_i K - (\sum_{i=1}^n h_i P_{it}) e^{r\tau} \right].$$

We now can formulate an optimization problem

$$\min_{h_i, K_i} VaR_{t+\tau}^\alpha$$

$$\sum_{i=1}^n h_i P_{it} \leq C,$$

$$\sum_{i=1}^n h_i < 1, h_i \geq 0,$$

This means that we want the minimization of the VaR, using long positions with put options and hedging cost restrictions.

As usual, in order to draw some conclusions that later we can generalize, eventually, we shall consider the above problem as having a sole long position on a put option. We so can re-write the minimum problem

$$\min_{h, K} VaR_{t+\tau}^\alpha = \min_{h, K} \{ S_t e^{r\tau} - [(1-h) S_t e^{\theta(\alpha)} + hK - hP_t e^{r\tau}] \}$$

$$C = hP_t, 0 \leq h < 1.$$

If we use the cost covering restriction, we shall obtain

$$\bar{K} = \arg \min_K \{ S_t e^{r\tau} - \left[\left(1 - \frac{C}{P_t} \right) S_t e^{\theta(\alpha)} + \frac{C}{P_t} K - C e^{r\tau} \right] \}.$$

We can re-write

$$\tilde{K} = \arg \min_K \left\{ S_t e^{r\tau} + C e^{r\tau} - S_t e^{\theta(\alpha)} - C \left[\frac{K - S_t e^{\theta(\alpha)}}{P_t} \right] \right\}$$

which leads us to

$$\tilde{K} = \arg \max_K C \left[\frac{K - S_t e^{\theta(\alpha)}}{P_t} \right] = \arg \max_K \left[\frac{K - S_t e^{\theta(\alpha)}}{P_t} \right]. (*)$$

Is noticeable that $Var_{t+\tau}^\alpha$ is independent from C 's selection and K optimum is determined according to the cash-flow of the active and the cover is adjusted depending of the cover's price. VaR is a linear function in relation with the expenditures with the cover, so each added monetary unit generates a decrease of the same level in VaR.

From the last relation we can deduce that the VaR's minimize is the same thing with the maximize of the difference between exertion's price and the level $\alpha\%$ of overdraft earnings relative at the price of the option put.

Intuitive, we may say that the objective function of the optimization problem can be interpreted as the rate between the cover's price and the cost of this operation. Furthermore, if the option's exercise price will decrease we will cover a larger part of distribution, but this option will become more expensive.

The optimization problem (*) requires a maxim condition

$$\frac{\partial \left(\frac{K - S_t e^{\theta(\alpha)}}{P_t} \right)}{\partial K} = 0$$

That is

$$\frac{P_t - (K - S_t e^{\theta(\alpha)}) \frac{\partial P_t}{\partial K}}{P_t^2} = 0.$$

From here

$$\tilde{K} - S_t e^{\theta(\alpha)} = \frac{P_t}{\frac{\partial P_t}{\partial K}} = \tilde{K} - S_t e^{r\tau} \frac{N(-d_1)}{N(-d_2)}$$

The last relation leads to

$$S_t e^{\theta(\alpha)} = S_t e^{r\tau} \frac{N(-d_1)}{N(-d_2)} (**)$$

Further

$$e^{\theta(\alpha)} = e^{r\tau} \frac{N(-d_1)}{N(-d_2)}$$

$$\theta(\alpha) - r\tau = \ln \frac{N(-d_1)}{N(-d_2)}.$$

We can notice that due to the inequality $\frac{N(-d_1)}{N(-d_2)} \leq 1$ the solution's existence $\tilde{K}$ is provided solely for $\theta(\alpha) - r\tau \leq 0$.

More, we obtain

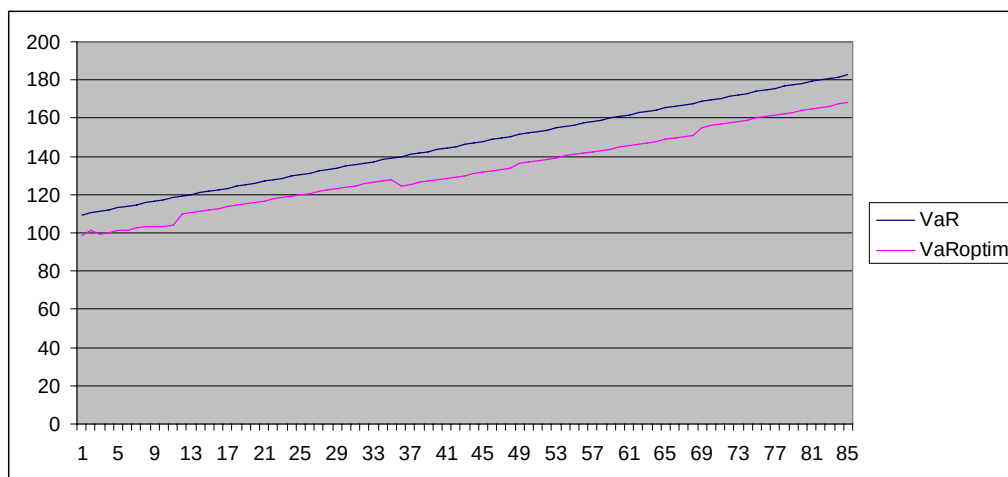
$$\tilde{h} = C/P(\tilde{K})$$

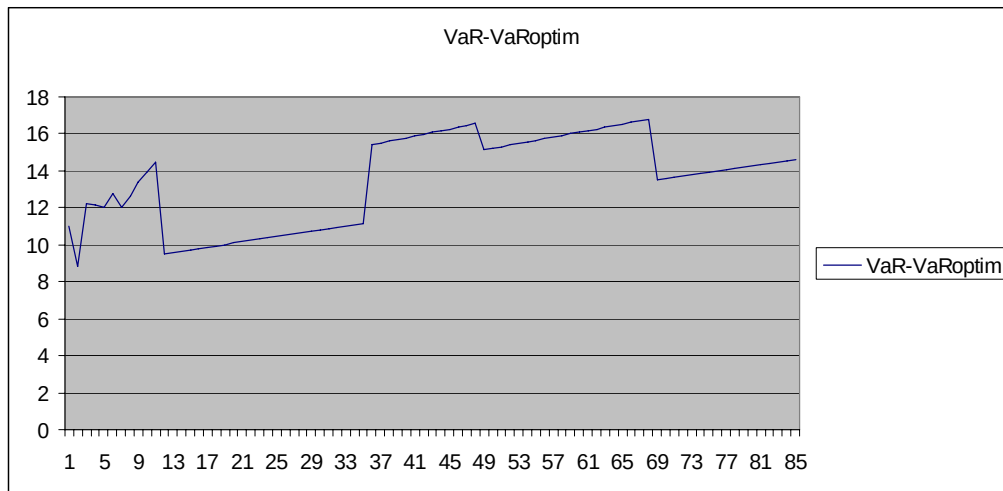
which means that we obtained the coverage ratio of the optimal exertion of the option price which is the relative cost to the option's value.

We observe that if $\tilde{h} < 1$ then solution is correct, if more than $\tilde{h} > 1$, then we consider $\tilde{h} = 1$ and $C = P(X)$.

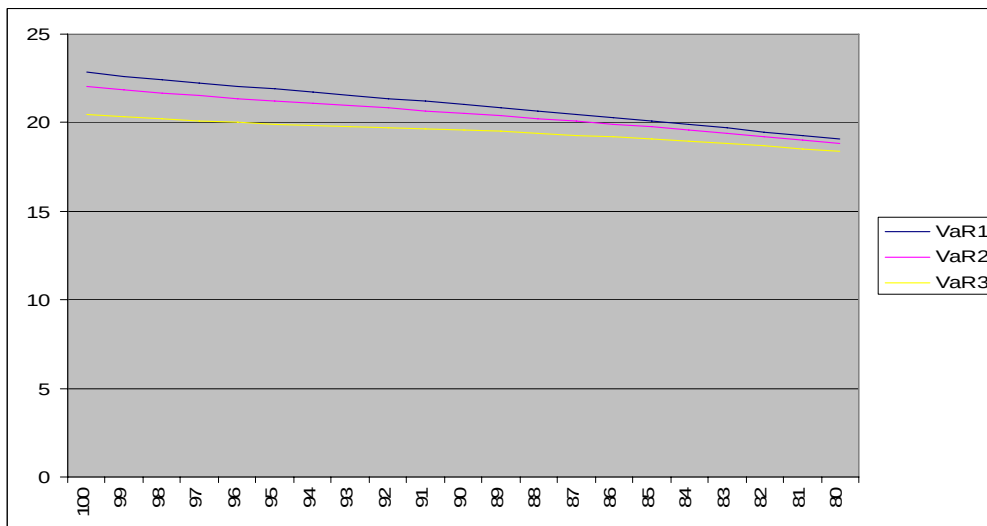
We will exemplify those stated above for a case in which: $S_t = 1000, \mu = 0.1, \sigma = 0.15, r = 0.05, \alpha = 2.5\%$. For these values we obtain $\tilde{K} = 876$ and it can be observed that the value of the option is by 12.4% more out-of-the-money. In case we do not effectuate any kind of risk coverage, the VaR value is 237, whereas with the help of hedging the value is reduced to 211. From what is stated above we can observe that in this case VaR is a linear function in relation to the expenses with the coverage of risk, and thus, for every unit, spent VaR will be reduced with 7.2.

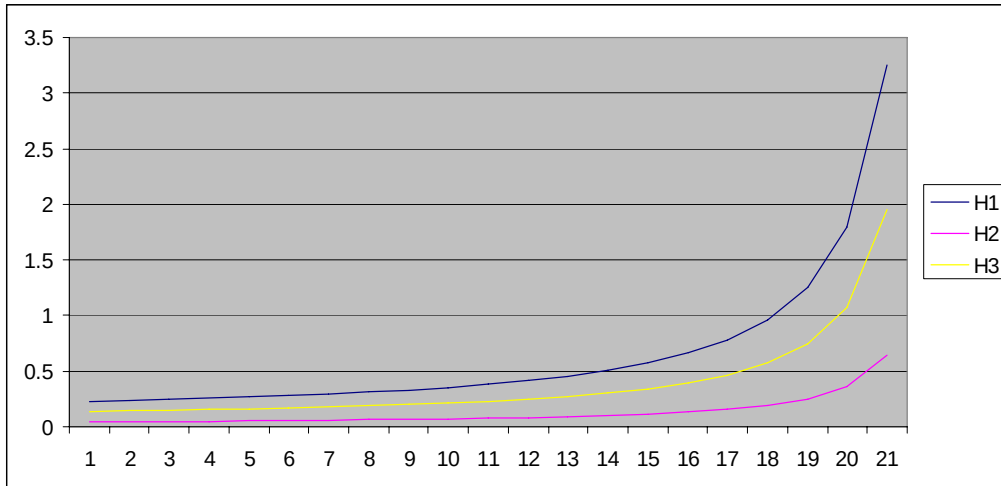
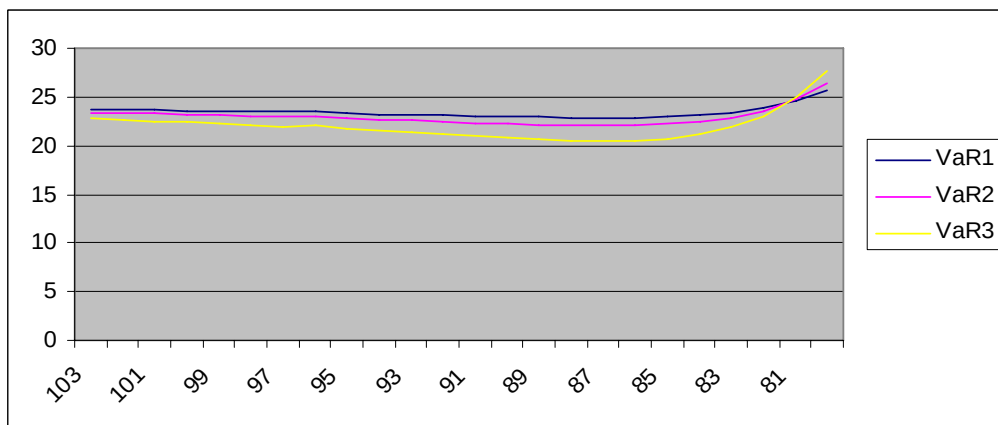
The figure below VaR and VaR optimal variation present after all the above calculated based on the above data rate, h, subunit.





If costs are $C1 = 0.2$ $C2 = 0.3$ $C3 = 0.5$ and for the above data we calculated VaR and compared the three results. The results are given in the following representations.





Bond situation

This time we will proceed almost the same, but we will use bonds.

We consider that we have a moment $t=0$, a zero-coupon bond which we can sell it at T moment.

If the interest rate will increase, the overdraft portfolio can lead to losses, therefore we can decide to do a cover of maximum C level. This cover can be made by buying a put option that is based on a bond, so, in the case of a strong decrease of the bond price, the option put can cover major losses. It remains to establish the choice of exercise price, price that can be chosen after the minimizing of VaR at a cover price of C .

Suppose we have an available bond $P(0, S)$ with the main $N=1$ and maturity at time S and we will cover this bond with a percentage $h(0 < h < 1)$ of a put option $BP(0, T, S, K)$ with the exercise price K at time $T \leq S$.

The bond price is given by

$$P(T, S) = A(T, S)e^{-B(T, S)r(T)},$$

where $r(T)$ is rate with the parameters independent of it, $A(T, S), B(T, S) > 0$.

We will consider, like usually done, the covered portfolio formed by P bond and BP option, and its value at T moment is

$$H_T = \max(hK + (1 - h)P(T, S), P(T, S)).$$

If the option ends the contract „in money”, worst case, the one that interests us, the portfolio value will be

$$H_T = hK + (1 - h)P(T, S).$$

We can express the value of the losses as

$$\begin{aligned} L &= L(r(T)) = P(0, S) + C - ((1 - h)P(T, S) + hK) = \\ &= P(0, S) + C - ((1 - h)A(T, S)e^{-B(T, S)r(T)} + hK) \end{aligned}$$

In case in which the option is “in money”

If we note

$$F_{r(T)}^{-1}(p) = \inf\{x \in \mathbb{R} | F_{r(T)}(x) \geq p\}, p \in [0, 1],$$

where $F_{r(T)}$ is the cumulative distribution of $r(T)$.

With risk measure we can consider as we have pointed in those stated in the first part

$$VaR_{\alpha, T}(L) = \inf\{l \in \mathbb{R} | \Pr(L \geq l) \geq \alpha\} = \inf\{l \in \mathbb{R} | \Pr(L(r(T)) \geq l) \geq \alpha\}.$$

L function is an inverse function and strictly increasing, which leads us to

$$VaR_{\alpha, T}(L) = \inf\{l \in \mathbb{R} | \Pr(r(T) \geq L^{-1}(l)) \geq \alpha\}.$$

Considering dual equality we have

$$\begin{aligned} VaR_{\alpha, T}(L) &= \inf\{l \in \mathbb{R} | \Pr(r(T) \leq L^{-1}(l)) \geq 1 - \alpha\} = VaR_{\alpha, T}(L) \\ &= \inf\{l \in \mathbb{R} | F_{r(T)}(L^{-1}(l)) \geq 1 - \alpha\} = L(F_{r(T)}^{-1}(1 - \alpha)). \end{aligned}$$

From previous relations we may write

$$VaR_{\alpha,T}(L) = P(0,S) + C - ((1-h)A(T,S)e^{-B(T,S)F_r^{-1}(T)(1-\alpha)} + hK).$$

Like the situation treated in the first part of this article, we will state a minimum problem

$$\min_{h,K} VaR_{\alpha,T}(L)$$

$$C = hBP(0,T,S,K), h \in (0,1).$$

Considering function

$$\mathcal{L}(K, h, \lambda) = VaR_{\alpha,T}(L) - \lambda(C - hBP(0,T,S,K))$$

and we put the Kuhn-Tucker conditions

$$\frac{\partial \mathcal{L}}{\partial K} = -h + h\lambda \frac{\partial BP}{\partial K}(0,T,S,K) = 0$$

$$\frac{\partial \mathcal{L}}{\partial h} = -\left(K - A(T,S)e^{-B(T,S)F_r^{-1}(T)(1-\alpha)}\right)\lambda BP(0,T,S,K) = 0$$

$$\frac{\partial \mathcal{L}}{\partial \lambda} = C - hBP(0,T,S,K) = 0$$

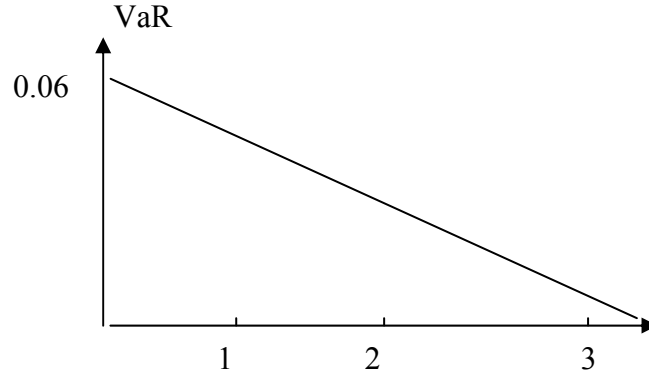
$$0 < h < 1, \lambda > 0.$$

We deduce that

$$BP(0,T,S,K) - \left(K - A(T,S)e^{-B(T,S)F_r^{-1}(T)(1-\alpha)}\right)\frac{\partial BP}{\partial K}(0,T,S,K) = 0.$$

It's noticeable that the optimum exertion price K^* is independent from the coverage cost C , which means that VaR is a h linear function.

$$\begin{aligned} VaR_{\alpha,T}(L) &= P(0,S) - A(T,S)e^{-B(T,S)F_r^{-1}(T)(1-\alpha)} + \\ &+ h(BP(0,T,S,K^*) + A(T,S)e^{-B(T,S)F_r^{-1}(T)(1-\alpha)} - K^*) \end{aligned}$$



As the function is decreasing, from the figure above, it will result that

$$\frac{\partial BP}{\partial X}(0, T, S, K^*) < 1$$

and

$$K^* - A(T, S)e^{-B(T, S)F_{r(T)}^{-1}(1-\alpha)} > BP(0, T, S, K^*).$$

From the last relation we notice that the price of exerting the optimal price K^* is greater than the maximum VaR, meaning

$$A(T, S)e^{-B(T, S)F_{r(T)}^{-1}(1-\alpha)} < K^*.$$

Conclusions

In the article's first part we obtained the coverage ratio of the optimal exercise price of options which is the relative cost at the option's value by an optimization problem of VaR in the situation of a portfolio consisting in a financial asset and a put option.

In the second part of this article we obtained the optimal exertion price of a put option in a portfolio in which is a bond and this option. And for this result it has been created a minimum problem of VaR and the obtained result leads to the idea that VaR linear depends of the h percent of the bond cover by options.

References

- Ahn, Dong-Hyun, Boudoukh, J. Richardson, M., Whitelaw, R., „Optimal risk management using options”, *The Journal of Finance*, no. 1, 1999
- Gregoriu, N.G. (2007). *Advances in Risk Management*, Palgrave Macmillan
- Kwok, Yue-Kuen (2000). *Mathematical Models of Financial Derivatives*, Springer
- Stancu, I. (2007). *Finanţe*, Editura Economică, Bucureşti
- Stulz, R. (1998). *Derivatives, Financial Engineering, and Risk Management*, South-Western College Publishing
- Whaley, R., *Derivatives, Markets, Valuation, and Risk Management*, John Wiley & Sons
- Wilmott, P. (1996). *The Mathematics of Financial Derivatives*, University of Cambridge

Towards to the Respiritualization of the Economics

Constantin POPESCU

Bucharest Academy of Economic Studies
pop.costica@gmail.com

Mihaela COMĂNESCU

Bucharest Academy of Economic Studies
mihaelacomanescu@hotmail.com

Abstract. *To reflect the economical life is a dynamic and complex process, and that means to adapt the economics to the problems generated by the evolution.*

The authors stand for the idea that in the present we are the witness of growth the complexity of problems, the emphasis of the interferences and their opening towards time and space of a living conscience belonging to the kind of the “whole integrated”

In accordance with the new trends that shaped the science, the view of the economic life should be realized from the perspective of the “whole living common”. This means to understand economics as an organic part of the natural environment and of the environment created by man, where its functional sense is brought into the harmony by the principles of rationality and hope, by the statement of the “win-win” rules for the whole participants of the living common’s life.

The new culture of the economical and social life is founded on the values of freedom and responsibilities, social community and human solidarity, as values integrated under the exigencies of the “assumed freedom”.

The value-added in economy, as a new created value is the source to understand the “win-win” principle for the enterprises, people, communities, families, and institutions, including here the keeping of the ecological equilibrium.

Keywords: the whole living; healthy economy; holistically view; re-spiritualization; ecolonomics.

JEL Code: A13.

REL Code: 5B.

1. Economics – a living organism?

The re-spiritualization of the economics is a new vision over the economical life, a total change in thinking, perceptivity, values and attitudes regarding to our choices in the conditions of using the limited resources, the dominance of uncertainty, the opening of the complexity of the interferences at the level of the whole living common, the giving up of the human behaviour and institutional determinism.

This change of the paradigm sees economics as a living organism created by man, a part of the social life, a product of the ecosystem of our microcosm, characterized by the harmonious inter-relationships that give the dynamic equilibrium at the level of the whole living common, shaped by environment, people, communities, organizations, families and institutions, as a result of the „systemic intelligence”

In a world fundamental inter-independent, as the physician Fritjof Capra says, the appliance of the systemic, holistic concepts regarding the interpretation of economical life helps us to understand that „economics is a living system, including human beings and social organisms that interact continuously among them and with the ecosystems that surround them and to which our life is linked to” (Capra, 2004, p. 496), and for this reason all our yesterday, today and tomorrow problems can be solved only if we regard their causality from the perspective of the whole living common.

In its pure core, the re-spiritualization of the economics has as a goal to replace the narrow and broken vision of „the invisible hand of the competition”- as a mechanism to regulate the economical life – with the holistic, systematic vision of “the invisible hand of the whole living common” – as a homeostasis that assures self organization, self regulation, self maintenance and self reproduction of economical life, as a part of the social life, of life at the level of the whole living common⁽¹⁾.

Such a vision over the economics takes into the understanding of our natural environment which includes our organic and economical life also, not as an element of the living microcosm where it exist, but as a wisdom “conscience”, where its supreme value is the harmony of ecosystems “that are lived by countless organisms that evaluated together for billions of years, using continuously and recycling the same molecules of soil, water and air” (Capra, 2004, p. 497). So, economics is a living organism created by man from its life’s interactions with the life of the whole living, where from the whole living forms of life take the necessary resources, integrated under the “systemic intelligence”

As a part of social sciences, economics, together with sociology, history, politics and social anthropology, study the social and spiritual-cultural aspects

of human behaviour that influence the choices generated by the transition through life⁽²⁾.

The fundamental error done by social sciences, so done by economics, as a consequence of the Chartist vision, are put into the frame of the separated economical life by the ecological and social frame, that are necessary to survive and co-exist, and that are the equivalent with the broken parts of the whole living into independent parts, and their analysis generated separated scientific subjects, self-government in cause-function explications of the economics departments, where they neglected the core: „the whole living”(Figure 1).

As a result of these separated and broken studies, the economics threw the interpretation of the effects and efforts of economical life from ecology, social and politics, and the other social sciences – politics, sociology, social anthropology etc., they neglected the basic economical forces and the interpretation of what happened in economical, political and social life of human communities. Such an interpretation led us towards criteria relative and narrow, as money profit, taken from the human, social, ecological, communitarian, profit.

From the point of view of the new paradigm⁽³⁾, economics is only an organic part of the social and ecological environment, a living organism that includes people that are in a continuous interaction, among them and with the other living organisms, under the aspect of in-puts, changes and out-puts, that are give the proper state of evolution at the level of the whole living common.

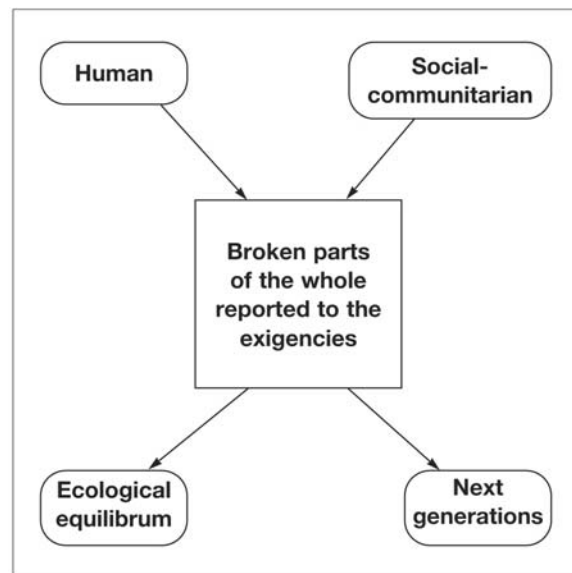


Figure 1. *Expression of the broken parts of the whole living*

In the History of Economics there were researchers of economical life who studied Economics as a living organism – as a part of the social organism, of the ecosystem, but their vision was considerate outside of traditional economics. As a result, some researchers from the social domain, as Kenneth Galbraith and Robert Heilbroner, are considered to be more sociologists and less economists. The same happened with Karl Marx, who refused to be named economist, and he considers that he was a social critic of the existent capitalist order. Hazel Henderson named himself as a futurist in a chapter of his book named „Creating Alternative Future”.

Fritjof Capra (2004, p. 219) says that mechanical usage did not take into account the fact that economics is „a continuous changing and evolutionary system that is connected and incorporated to the ecological and social systems that are changing continuous”.

As it is well-known, the phenomena of the economical life are different from the phenomena of nature, where, as physics showed, the natural phenomena are well defined and unchangeable even so the theory of relativity and the quantum mechanics brought in new contributions.

As the same time, biology studies an ensemble of phenomena of human life that changed less during the centuries, but the progress done in this domain were well known, and they were the result of the “continuous re-changing and recombination of a limited number of structures and functions” (Capra, 2004).

In the domain of the economical life, the changes are continuous and interfered as an effect of the interaction with the other systems of the whole living common to which it belongs, and this gives a related frame able to be transformed as to be adapted to cognition and understanding of new and oncoming situations. For example, the enterprise delivering economical goods nowadays is a multinational company, with a transnational profile in the world of business compared with the enterprise founded one hundred years ago, which was a local and small company!

In the given conditions, is impossible to use this new reality of the economical life, totally changed compared with the old company, the old Newton paradigm. And in case that it can be used, the results are away from the existing reality, and the conclusions can not be used for the evolution of facts, because the premise of the patterns⁽⁴⁾ is a false one, and it is unconnected to what it was happening, under the motivation of those evolutions.

Regarded from the perspective of “systemic intelligence” of the dynamic of phenomena and progress, the economics today needs new concepts and principles to help the understanding of the networks of interferences, with its positive and negative externalities that are in these interactions, where each one gets and offers at the level of the whole living common elements that are conditions for the inputs, changes and outputs, evolutions of sense, alive and conscience.

Today, the economy of the social life has a new biology as a result of the fact that people have a behavioural choice under the multiple influence of some factors that determine human biology, with roots in the interactions of social, political, spiritual, religious and ecological life that cover more and more from our common coexistence and succession of time and space⁽⁵⁾.

2. From standard values to principles of economical and social life

Accordingly with the consequences of quantum mechanics, there are included the lack of value in the research of phenomena and processes of economical and social life. Such a lack begins from the fact that the researchers from the domain of economics and sociology think that (many of them) if they take into account the problem of value this is to be a scientific barrier to know the phenomena and processes in this domain⁽⁶⁾. It is considered that the physician will not take into account the values when he does research on the natural phenomena, but its conclusions, based on this facts, can be scientific. So, from the positive point of view of the economist why we need these kind of values?

In fact, they forget the fundamental differences between the natural phenomena and social phenomena. Social phenomena, in general the evolution of society, so of the economy, are tied to the changes from the system of values which are the basics of all human actions, as human beings in the microcosm where we exist and succeed as “integrated whole”.

Human attitudes, as real expressions of social acts, reflect people vision over the world, which are based on the values that people believe, think of, live, act and hope. These are finger prints for the thoughts that we can see in the world where we live, work and love, and in the institutions that we create⁽⁷⁾, as the rules of social games and changes⁽⁸⁾ that we would like to do, belief on scientific knowledge and certainty of hope⁽⁹⁾.

Fritjof Capra says „The values that guide a society will determine the vision over the world, its religious institutions, its scientific and technical initiatives, and also the political and economical order.... So, the study of values is a maximum importance for all the social sciences.... Any analysis «without coming back to values» of social phenomena is based on tacit hypothesis of a constant value system, which is implicitly taken into account to select and to interpret the data. As a result, by avoiding the problem of values, the researchers from sociology are not so accurate from scientific point of view, because they neglect to explicitly mention the basic hypotheses of their theories” (Capra, 2004, pp. 200-221).

As the economy is an organic part of the social life which is the result of the collection of human behaviours in a special social given context, in a

determined ecological frame, at their foundation is the system of values and reported to which the human nature generates, delivers and consumes the welfare, it settles what is valuable at a given moment, and it compares the values of the changing goods and services that it generates using the limited resources under conditions of uncertainty.

As E.F. Schumacher says (1975, p. 46), the patterns and theories of economics always are based on a system of values that are connected to human nature and related to these they build the hypotheses to begin (Figure 2).

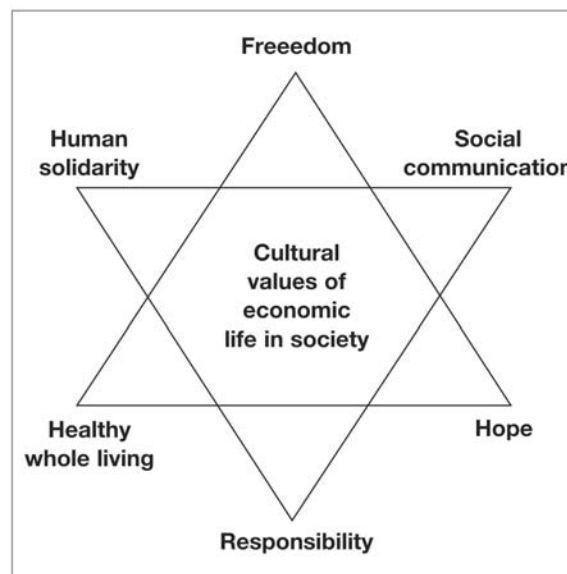


Figure 2. *Determinants of the cultural economical life as “a whole living”*

In a materialistically system, as the capitalist system, the standard of living is measured by the value of annual consume, that will be maximized by the help of an optimum production pattern. In a Buddhist economic system, the standard of living is based on a straight life, where the purpose of life is to get a maximum welfare. Both of these approaches are based on different ways of living and, from different point of view over the world, they are the results of distinct visions, built on opposite and different value systems. In a man's life, values are in fact “the vertebral column” for our behaviours. Paul John the Second, The Pope, used to say “any human activity is situated inside a culture and it interacts with it. In respect for this culture to be well done, it is necessary that every man shall be involved, to develop inside it its creativity, intelligence, cognition of people and world” (2008, p. 486).

Some fellow economists think that giving up values that are analysed, patterns of the cost-profit kind can give the solutions for the great problems that industries face today.

It is well known that an analysis for cost-profit, as a technical solution, can not have success unless it is based on some hypothesis that stand for what people think of being correct regarding costs and profits. If we break of the costs of the interference of economical life with social, ecological and political life, we do not get the real costs that are necessary for a business, as integral effort.

The situation is the same for profits. Under the circumstances of integrated values, in the interpreted economical life, the profits of the economy should be created from the prospective of the whole living common: people, environment, communities, organizations, families and institutions. An enterprise that has profit but it contaminates the environment send the message that its profit is not real. So, we need to know the integral costs and integral profits as we can compare and judge the opportunities that we have when we use limited resources, with alternative uses under uncertain terms.

The analysis of the cost-profit for an enterprise has to be done under the circumstances of the win-win⁽¹⁰⁾ principle and not win-lose, as it happens now.

When we take into account the system of values in the respect of a healthy economy it keeps close the system to its scientific character, and it gives to it a real touch of science, if we think that from the perspective of the “healthy whole living common”, is not normal, correct and legal that the enterprise gets benefit, so a profit, against the damages of the environment, human communities, that in fact have to do their best to clean the environment, when this fact is not possible by ecological self cleaning

As conclusion, we can say that the scientific analysis for cost - profit in economy, by integrating the system of values of “healthy whole living common”, is the only one that could get us close to the real value of costs and profits, of integral costs and integral profits.

Where do we head with the current broken approach to economics, where the economical patterns combine the values that could be monetary quantized?

It is obviously that the stress on the quantized economical processes and phenomena by the economics over the years is not the expression of a wrong evolution. On the contrary, the attempts to measure some phenomena and processes of economical life, although they are not perfect, they are a benefit for science if we take into account the fact that their real measure could not be find and important are the general directions that are active in time and space. The attempts of economics to quantize are founded on the fact that any phenomenon or process has a qualitative and a quantitative side, and the whole economics is always “qualitative = quantitative”. While the qualitative side of

inflation, for example, is connected to the core of this monetary-real phenomenon, the quantitative side is the expression of the size for time and space under the influence of all the economical, ecological, social, psychological and monetary factors that settle it.

To emphasize and put apart the quantized phenomena and economical processes we get the semblance that economics as a science is close to social science. But what happens with the influences of these general directions?

Besides quantitative arguments, as the results of different general directions with the respect for knowledge and understanding, evolution of causality of sense or counter-sense, the excess of economical-mathematical patterns brought severe damages to a healthy economics by the act of throwing away the qualitative aspects, that could not be quantized, breaking away the real interpretation from the normal interactions generated by the economy, as a living organism, inside a social and ecological framework where these act in time and space. So, the excess of patterns was accompanied by the loss of qualitative value made a track over some weak and even false premises!

From the point of view of the living system it looks that from the general directions shaping macro-economics that we give away the patterns of ecological, social and psychological size which in fact are the conditions for human life, we get one of the causes of economical crisis today: the remains of the broken parts of economics, as monetary aspects, besides ecological, social, human and communitarian efficiency, which severe underestimate the exigency of harmony from the perspective of “healthy of the whole living common”. The result we get is the one side criterion of economical optimum!

When we add to all these the lack of valuable facts of “healthy living common”, the economical-mathematical pattern of economics gave away totally the psychological research on human behaviour as consumers and producers, because it is difficult to quantize and integrate the quantitative patterns, and we got the real aspect of patterns: broken and abstract approach, that was far away from core, sense economical phenomena and processes of the “integrated whole”. If economy means human behaviours reported to their choices, using limited resources, with alternative usage, it is un-normal that from their interpretation we throw away the basic behaviours!

As conclusion, today we assist to the neglected structural and multi-criteria researches, systemic regarding economical phenomena and processes, the economical aspects are regarded inside, but only from monetary size, far away from social, ecological and human interactions, that gave them a sense.

In fact, each economical phenomenon, the kind of labour productivity, marginal utility, marginal cost, inflation, unemployment, etc. have in their

qualitative structure social, cultural, human, ecological factors with whom they interact in the kind of “the integrated whole”.

Let us think of an elementary example: labour productivity integrates inside its size and quality the normal interactions connected to physical effort, qualification, technology, motivation, human health, wisdom, faith, etc. So, we get a broken part between economical theory and economical reality, in the sense that we can not explain what happens in real economical life by existing patterns. Beside this, they try to integrate in these abstract patterns a dynamic and complex reality, and the result is a weak consequence of existing economical theories or, even worst, they have no relevance today.

In this respect Fritjof Capra (2004, p. 223) underlined that “Social and economical anomalies that this science can not real to approach – inflation and global unemployment, the unfair distribution of welfare and energetic crisis, among many others – in this very moment are much perceived by everyone. The failure of economical profession to approach all these problems is an accepted fact by more and more sceptical public, scientists from other domains and even by economists”.

The fact that business organizations, special North American companies are getting bigger and stronger and during a survey this made the Americans to answer that a certain trend like this is dangerous for people and environment, and for this reasons people expressed their options in respect for huge companies to be “broken” in many and small companies, more human companies. The same survey high-lightened the fact that more than a half of Americans were asking for governmental regulations regarding public services, insurance companies, petrochemical, drugs and car industry (Henderson, 1978, pp. 13, 155). In big business companies, as in big cities, one feels as being a stranger, far away from life’s value and harmony, himself, his fellows and from the whole living

3. For the re-spiritualization of economics

What happens today in economical life was installed two decades ago by some economists. Arthur Burns, as ex-President of The Federal Reserve Bank, in 1971 said “economics rules are changed until now”. Milton Friedman, when he was delivering a speech at The Americans Economists Association, in 1972 said “I consider that the economists did a huge wrong to society and special to our profession - and they pretended that we could offer more than we were able to do” (Capra, 2004, p. 224).

From the same position, but even tougher, Michael Blumenthal, in the 80’s as Secretary of Finance of the USA, says “I am convinced that economist

profession reached bankruptcy in respect of the understanding the real situation, a priori or post priori” (Capra, 2004).

Today, when the world is facing the deeper crisis of its evolution that influences all social, economical, political, cultural and ecological domains of our life, there still exists the thoughts that the current concepts, theories and variables – that have their roots in history – are facing a totally changed reality, and there is necessary to change the re-evaluation of the whole fundamental in economics, its culture of cognition and understanding from the perspective of “integrated whole”.

We define this process re-spiritualization of economics⁽¹¹⁾, as process of changing paradigm from the perspective of “healthy whole living common”. Such a change of paradigm in economics, high-lightened by the current global crisis of our evolution, influenced social sciences regarding the interpretation of phenomena from quantized vision to holistic vision. In this respect, qualitative shaping is a special premise to understand the causality of sense in the world of “integrated whole”, where we organic belong (Figure 3).

The concept that favoured the issuing and development of the current pattern of economical and social life is based on male values (“yang”) that promotes material welfare. In respect of sensuous culture, economical life high-lightens material welfare, expansionism and competence – processes driven by selfishness and avarice, greed and dominion trends, pride and supremacy.

Economics today is a “mixture” of concepts, theories and patterns that resisted the changing game during the history of economical and social evolution. The core of these theories and patterns has their roots in quantum paradigm⁽¹²⁾.

As we underlined, today the global ecological system is characterized by strong interferences, open complexities towards space and time of human business, continuous change and removed determinism⁽¹³⁾.

Under these circumstances, the repeated obsession regarding economical increase and technical development, following each economical pattern, generates an unlimited expansionism in a limited environment, and its effect is a disaster (Paul John the Second, 2008, p. 332).

Such a believe regarding the continuous development is based on “yang” values – linked to self-distinguish, development and competition – as Newton’s vision over time and space as being endless.

For these values, the whole is identified with the amount of its parts, ignoring the fact the whole could be bigger or smaller than the amount of its parts, the quantity by which amounts differ is the result of training and integrating done by the relationships among economics, sociology and ecology⁽¹⁴⁾.

Inside these relationships, competitive approach, characterized by self assertion, saw the environment as a settled business⁽¹⁵⁾, profits got by corporations are leaks of the environment, the “win-loss” principle are the supreme values of the atomic individualism⁽¹⁶⁾.

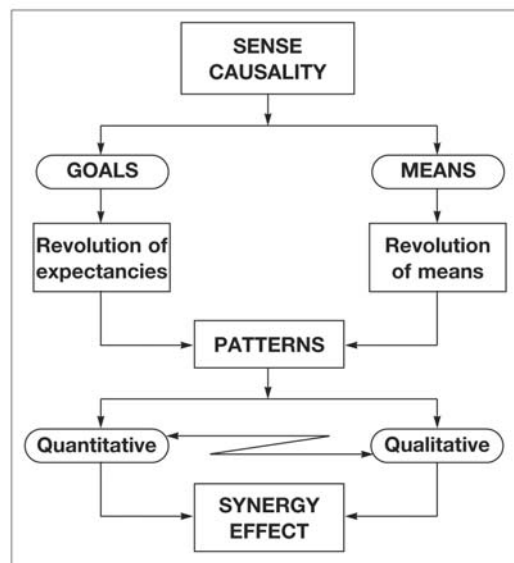


Figure 3. *The pattern of sense causality*

Obsessive criticism of economic growth inside a limited environment take into account the organic growth as a main characteristic of economic life for the whole living common. Further more, we should understand the evolution of our world which is based on changing never give up growth. What is wrong, from the point of view of new paradigm which we named “healthy whole living common”, is that, in a limited environment, the harmony of change needs a dynamic equilibrium between increase and decrease. This means the fact that not any economical growth is healthy as well that not any economical decrease means sickness (Figure 4).

An economical growth which spread away the limited resources of our limited environment means a healthy growth⁽¹⁷⁾. The Club of Roma named one of reports “Leaving the Age of Waste”⁽¹⁸⁾.

In the same way, a growing economy which pollutes the environment is still an unhealthy growth, dangerous for our survival. The sick economical growth is the one which is fed by a super consume to a minority of people, while, on the other side, the majority of people live at the limit of under consume, or even under the limit of survival.

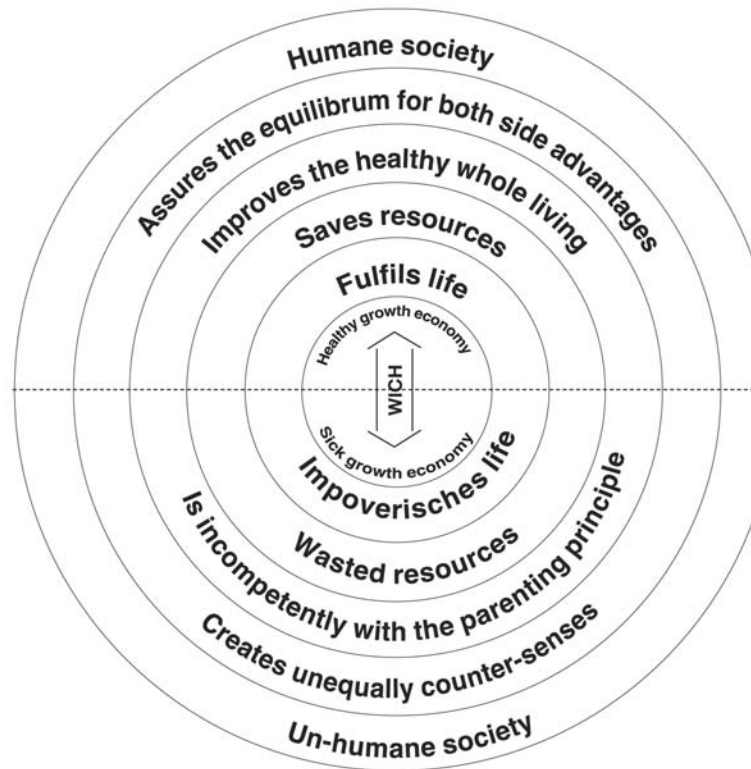


Figure 4. *An antinomian vision over the economic growth*

The wasted super consume, together with expenses for huge resources for advertisement, continuous declined quality of life, social and environment relationships bring an extraordinary increase of private and social costs, with no justified effects of integrations. Today, we are the witnesses of an unproportional evolution; as technologies we produce we head forwards, but as moral society we go back words! To be threatened by the results of our mind and hands is the paradox that we live in!

A synthesis of negative consequences of the continuous economical growth inside our limited pattern is given by the limited natural resources of our planet, special the unproductive resources. M. King Hubbert, the geologist, in the first years of the sixth decade of the 20th century, proved mathematically the relation between the economical growth and the increasing productivity, on the one side, and, on the other side, the unproductive resources, and he draw a graph for his demonstration which looked as a bell, where the curves were compared with the increasing and decreasing of civilizations (Capra, 2004, p. 258).

As Hubbert says, the curves show the relation between growth of productivity and exhausted unproductive resources underlined at the beginning by a gradual increase, then a dramatic increase, followed by an unchanging situation on the maximum level, followed by an abrupt decline and at the end by disappearance of resources!

As Hubbert, the geologist, says, the curves show the vanishing of natural resources, special coal, oil, natural gas, metals, species of fish and even worst oxygen and nitrogen as the continuous growing of economy.

From the perspective of interactions that characterize our whole living common, an element that gives the continuous growth and exhausted natural resources is the increase of world's inhabitants⁽²⁰⁾.

Demography shows that the increase of inhabitants is a complex process that is influenced by wrong connection, positivism and negativism, birth and death, and they are influenced by different biological, sociological, economical and psychological factors.

In developed countries, the increase of living and quality of life caused, mortality rate decrease, but came together with the decrease of natal rate, equilibrium of demography are at low levels of in-puts and out-puts of demography!

In emerging countries, the decrease of living brought a rapidly increase of inhabitants, this process being an expression of excessive natal and mortality rate, and the equilibrium of demography gets high levels of in-puts and out-puts!

Researchers say that the surpass of global demographic crisis needs a demographic transition from "a population with high natal and mortality rate and with a low standard of life to a numerous population with a high standard of living, who got the equilibrium point, characterized by low natal and mortality rate" (Capra, 2004, pp. 260-261).

In the spirit of this hypothesis, it is appreciated that the most efficient way to control demographic increase is the re-distribution of welfare at global level towards emerging countries. As we have the situation today, it seems that the current distribution of welfare at global level is unequal and it looks as wasted goods. They say that The USA hold 5% of world inhabitants, consume is a third of global resources, energy consume per inhabitant is nearly double in Europe!

Based on the culture of continuous growth they get stronger technological determinism, in respect with our life social organization and value system is determinate by technological development.

Even so we do not deny the important role of science in development of technology and economical growth in our social life; anyway, such a determinism of technology eliminates the system of values based on philosophy, art, culture, religious, etc. They got the up side down relation for

values-technology-economical and social life, in the sense that technology would determine the nature of our system of values, our social relationships and nit the other way! (Figure 5).

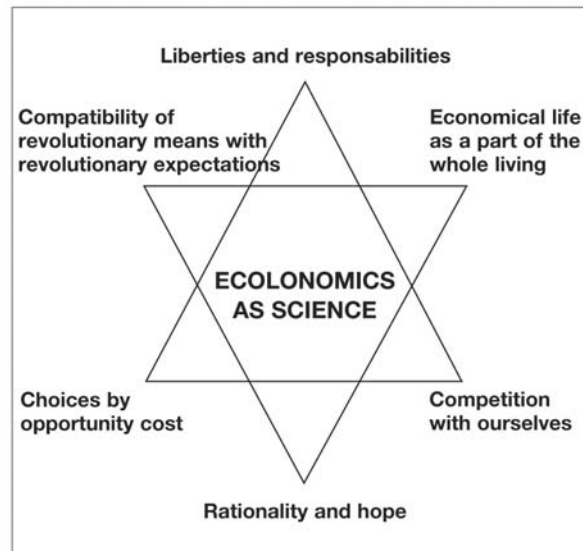


Figure 5. *Multidimensional ecolonomy*

As a product of human creativity, “hard” technology is the result of “hard” science that got the paradox of our common evolution: on the one hand, the conquests of human spirit and it is stronger and stronger in current life, from the perspective of its fulfilment, and, on the other hand, the same conquests of science, by usage of counter sense brought severe consequences on ecology and social-human life, and technology has a deep character against ecology and sociology, and they are unhealthy from the perspective of the whole living common.

As we have to combine the “hard” conquests of science with the psychological and social researches and human behaviours, Henderson says that by increasing the complexity created by man – military and industrial – there is the risk that all these systems could not be controlled and patterned, and this fact could lead our evolution towards the limits of “social, psychological and conceptual of growing, even before to reach its physical limits”⁽²¹⁾.

Regarded from the perspective of the whole living common, reshaping of technology as applied quality of human knowledge to get solutions for current life’s problems, it is organic tied by a system of values that determines its ending, that are rooted in fact in organic necessities to solve conflicts, to bring harmony in created natural environment, human solidarity and social cooperation, recycling

results and re-distribution of revenues, controlling the external negativism given by global poverty, international terrorism and systematic pollution.

The re-spiritualization of economics has as objective cognition and interpretation of economical life as organic part of social life and together with the ecological living world. Ecolonomics, as we dared to name it is the result of re-spiritualization of economics, it is based on values of “systemic intelligence”, as they unfold from the harmony between revolution of expectations and revolution of means, between liberty and responsibility, between rationality and hope in a world of choices that we have to do under limited conditions of uncertainty.

Notes

- (1) See Constantin Popescu; economical life is an organic part of social life, defined by activities of organizations, communities and families, in a given institutional framework – cultural – spiritual and in a favourable environment for survival, *Raționalitate și speranță. Paradigma întregului viu*, Editura Renaissance, București, 2006, pp. 33-42.
- (2) Human individuals have a transition through life, in the meaning of entering in when they were born, they passed different biological processes in childhood, as teenagers, active grown ups and then the end of their life, the „necessary” energy for functioning is melting down step by step, and the last step (see Constantin Popescu), *Prețul bucuriei de a trăi*, Editura Eurosay & Book, București, 1999, pp. 15-79.
- (3) The new paradigm in science, connected to the harmony of the whole living common, is a way to connect ourselves to cognition and understanding of our behaviours, where we start from lived, worked and loved life – as imperatives of the transition through life – are integrated in a living system, at its supreme value is the dynamic equilibrium, based on flexibility of factors of our world under the limits of tolerance which is the guaranty to survive. (see Alfred Adler, *Sensul vieții*, Editura IRI, București, 1995), pp. 34-52.
- (4) In economics the analysed patterns for what happened, could happen and would be happening if..., can be scientific instruments for cognition and understanding the phenomena of economical processes but they are not allowed to be broken, in logical construction of connections, by human behaviour beauty based on harmony between rationality and hope. It seems that, these qualitative aspects of human behaviour are totally neglected, as they can not be measured, even so they can be seen by eyes!
- (5) Ilya Prigogine, Nobel awarded for Chemistry, in forewords of *Limitele certitudinii*, by Orio Giarini and Walter R. Stahel, underlined that „people have memories and hopes; they have systems of value that give their behaviour”, *Op. cit.*, p. 42).
- (6) See *Problema judecății de valoare în știința economică*, Dumitru Ciucur, Constantin Popescu, *Tranziția prin criză*, Eficient Publishing House, Bucharest, 1995, pp. 357-367.
- (7) See Paul Fudul, *Teoria economică a culturilor și instituțiilor. Determinarea culturală a performanțelor economice*, Editura Universitară, București, 2007, pp. 139 – 166.
- (8) When we become the change that will be happening, change starts with you (see Constantin, Popescu. *Prețul bucuriei de a trăi*, pp. 123-131).

- ⁽⁹⁾ Certain hope is one of the four certainties of human life lived in society near by: death, change and taxes (see, Constantin Popescu. *Raționalitate și speranță. Paradigma întregului viu*, pp. 287 – 292).
- ⁽¹⁰⁾ Appreciating the evolution of our whole living common by the value of harmony given by the network of interferences at the level of each living sub system and among them at a higher level, Stephen R. Covey sees the „win-win” principle the optimum sense presented by Pareto based on the equilibrium of microcosm where we co-exist and succeeded (see *Eficiența în șapte trepte. Un abecedar al înțelepciunii umane*, Editura All, București, 1976).
- ⁽¹¹⁾ See, Constantin Popescu. *Raționalitate și speranță. Paradigma întregului viu*, pp. 245-257.
- ⁽¹²⁾ Quantum paradigm, elaborated around 1500-1700, gave to humanity a new image of the world where we live, work and love, and we passed from an organic civilisation to a mechanic civilisation, where the material universe is „a machine and not more than that. Matter has no goal, life and spirit” (see, Fritjof Capra. *Op. cit.*, p.53)
- ⁽¹³⁾ See, Alexander King, „The situation of contemporary world is characterized by complexity, uncertainty and rapid change, while at intellectual level we are the witnesses of a removal from determinism” (see *Forwards to Limitele certitudinii*, by Orio Giarini, Walter R. Stahel, Editura Edimpress Cosmo, București 1996, p. 43).
- ⁽¹⁴⁾ In the new vision of paradigm „shape is associated with process, inter-relation with interaction and contradictions are unified by oscillation” (see, Fritjof Capra. *Op.cit.*, p. 334).
- ⁽¹⁵⁾ See Al Gore. *Un adevăr incomod*, Editura Tehnica, București, 2006.
- ⁽¹⁶⁾ In this spirit we should remember what Gandhi said : *Earth has the necessary resources to satisfy the needs of all peoples, but it has no resources to satisfy their greed!*
- ⁽¹⁷⁾ See Constantin, Popescu, *Creșterea care sărăcește*, Editura Tribuna Economică, București, 2003.
- ⁽¹⁸⁾ See D. Gabor, U. Colombo, A. King, R. Galli, *Să ieșim din epoca risipei*, Editura Politică, București, 1983.
- ⁽¹⁹⁾ The two dangerous extremes of human consumes today, that are characterized by over consume – uncontrolled by the common sense and moral – and an under consume – unable to assure survival – are the result of lack of genuine and healthy values, that are based on such patterns of our evolution. (see, Pope Paul John the 2nd, *Op. cit.*, p. 322)
- ⁽²⁰⁾ Over population is considered by scholars as being one of the ways to suicide on global level (see Albert Szent Györgyi. *Pledoarie pentru viață*, Editura Politică, București, 1984, pp. 202-206).
- ⁽²¹⁾ See Fritjof Capra. *Op.cit.*, p. 265.

References

- Capra, F. (2004). *Momentul adevărului*, Editura Tehnică, București
- Henderson, H. (1978). *Creating Alternative Futures*, Putnam, New York
- Schumacher, E.F. (1975). *Small Is Beautiful*, Harper & Row, New York
- Papa Ioan Paul al II-lea (2008). *Enciclice*, Editura ARCB, București

Financial Crisis from the Trust and Loss Aversion Perspective in Emerging Romanian Capital Market

Antoniade-Ciprian ALEXANDRU

Ecological University of Bucharest

ciprian.alexandru@ueb.ro

Nicoleta CARAGEA

Ecological University of Bucharest

nicoleta.caragea@ueb.ro

Abstract. *In this paper we synthesized a study of financial crisis from the trust and loss aversion perspective on a particular case, Romanian emerging capital market. In a relative recent study we stopped with our data series at the level of 2008, November, but in this paper we continue our research until 2009, December. In a world-wide financial crisis and a global financial depreciation of stocks the emergent markets are much more affected that the lack of money and investors aversion. We study, based on efficient market theory, the evolution of portfolio structure in balanced funds. We are interesting to make an evaluation of present sentiment of investing money in capital markets and especially in stocks. Also, is necessary to determine which are the most important problems in this situation and seek an adequate stimulus for future development of direct investment.*

Keywords: market capitalization; portfolio structure; balanced funds; loss aversion.

JEL Codes: G01, G11, G12, G14.

REL Codes: 10A, 10B, 10I, 11B.

Introduction

Trust is defined by Guiso, Sapienza and Zingales (2008) “as the subjective probability individuals attribute to the possibility of being cheated”. The subjective probability is partly based on objective characteristics of the financial system: the quality of information, the investor protection, stability of direct or indirect tax on revenue and also the law enforcement.

Loss aversion is possible to be financed by a higher profit, but the impact of trust on portfolio decisions is definitely one of the causes for lack participation of individuals on capital markets and especially on stocks.

In this paper we present an important set of data about evolution of Bucharest Stock Exchange Index (BET-C) like an expression of loss-aversion generated by depreciation of the stock price. BET-C index include all listed companies on stock exchange. Also, we show the number fluctuation of investors in balanced funds and total net assets hold by institutional investors.

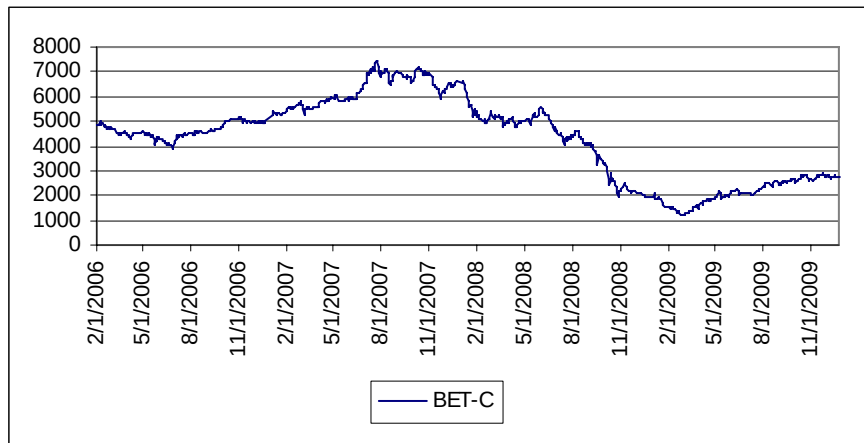
A representative image about the dynamics of investor behavior, loss-aversion and trusting sentiment is evolution of balanced funds regarding portfolio structure. For a better overview of the situation we choose a period that includes bullish and bearish market, from February, 2006 to December, 2009.

Romanian capital market overview

The Romanian capital market, in spite of the fourth teen years from its establishment, has not yet been able to accomplish one of its main tasks, namely that of attracting available investment funds for economy. After four years of strong appreciation of stocks, between 2003 and 2007, the global recession of the capital market, from 2008, show that the emergent capital market is more vulnerable to a big capital flow.

The investors that have not sell their stocks in the beginning of the crisis, in general, are blocked until the price is up again. So the capital market needs the new money, a fresh influx of capital from new investors or from institutional investors.

The highest value of BET-C index was 7,432.63 points, in July, 24 2007. To the November, 30, 2008 the value of the index was only 2,177.39 points, with 70.70% depreciation (Figure 1).



Source: Bucharest Stock Exchange (BSE), series of data from web site: <http://www.bvb.ro/>

Figure 1. Bucharest exchange trading-composite index, from february, 2006 to december, 2009

A second important level of BET-C index was recorded at October, 10 2007 with 7,208.96 points, also very close by the maximum number of investors in balanced funds 51,364, in December, 2007 (Figure 4).

The Romanian stock exchange is a heterogeneous market, with a reduced number of issuers, which belong to various sectors. In some fields of activity the number of companies is too reduced for the potential average values calculated to be representative. An example in this respect is the service sector, represented by a single issuer.

Table 1

The number of companies listed on BSE quotation, in the period 1995-february 2010

'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05	'06	'07	'08	'09	'10
9	17	76	126	127	114	65	65	62	60	64	58	59	67	71	70

Source: BSE, annual reports, 2000-2009 and public information on www.bvb.ro, feb.2010, www.bvb.ro

The Bucharest Stock Exchange (BSE) registered a good performance between 2000 and 2007, with an important increase of the capitalization value, from €15 billion in 2005 to over €24 billion in 2007 (Table 2). Practically, the most important years of the stock exchange, since it was set up and until the present, were the years 2004-2007. The financial crisis has brought the values of capitalizations to the years 2004-2005, with a small comeback in 2009.

Table 2

The evolution of BSE capitalization in the period 2000-2009

– million Euro –

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
BVB Capit.	450	1.361	2.646	2.991	8.819	15.311	21.415	24.601	11.630	19.053
Relative growth	-	202%	94%	13%	195%	74%	40%	15%	- 53%	64%

Source: BSE data after the last trading session in the respective years.

During July 2007-February 2009, based on declines in the majority of the shares, globally registered, the BSE capitalization fell by 53% December 2008 months, so in 2009 to recover 64% from year-end 2008.

Similar with the US stock exchange of depreciation for October 2008 is about 40 percent with some company with over 90% from the value registered in November 2007. The average historical decline, on global scale, in equity prices has been 55.9 percent, with the downturn phase of the cycle lasting 3.4 years (Reinhart, 2009, p. 226).

Table 3

Evolution of BSE capitalization in GDP in the period 2000-2009

– million RON –

	2000	2001	2002	2003	2004
Capit.BSE	1.101,9	3.857,3	9.158,0	12.186,6	34.147,4
PIB	80.377	116.769	151.475	197.565	246.372
%	1,37%	3,30%	6,05%	6,17%	13,86%

	2005	2006	2007	2008	2009
Capit.BSE	56.065,6	73.341,8	85.962,4	45.701,5	80.074,5
PIB	288.955	344.651	416.007	514.654	491.274
%	19,40%	21,28%	20,66%	8,88%	16,30%

Source: BSE data after the last trading session in the respective years.

Although the situation seems to be an optimistic one, the growth of capitalization resulted more from the appreciation of the share price of the already listed companies and less from the entry of new companies on the market.

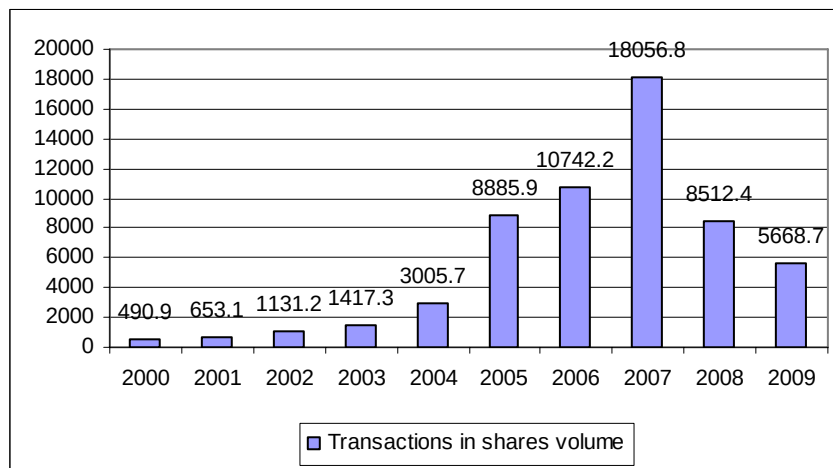
The growth rhythm of capitalization registered a slowing down trend in the years 2005-2006, mainly due to the fact that *individual ownership declined in the favor of companies controlled by groups of persons and firms, and that the level of ownership was limited to 1% of the owners' equity of the five financial investment companies (SIF-Socitate de Investitii Financiare)*. This measure also determined a slowdown of the positive trend of the BET-FI index, which registered at the end of September 2006 an appreciation of just 2.1% compared to February in the same year.

Another measure which discouraged those investors that focused on speculative trading and capital turnover at short time intervals was represented by the implementation of the provisions of the new fiscal code, which mentions that the taxation rate of incomes obtained from investments and from the transfer of alienated real estate properties in a period shorter than one year after the acquisition date increased to 16%.

The volume of transactions with shares listed on BSE + RASDAQ had a dynamic similar to that of equity market capitalization, registering an increase of 21% in 2006 compared with an increase of 196% in 2005 and a 112% in 2004.

In absolute terms, the value of transactions in shares of listed companies increased from 8.89 billion RON in 2005 to 18.06 billion RON in 2007, that being broadly similar to those dictates price: *lack of new listings to achieve fair prices for many of the "stars" stock exchange*. In 2007 was recorded an increase of 68% of the volume of transactions compared to 2006, cases are few IPOs in November and price appreciation.

2008, against the backdrop of global financial crisis, especially the withdrawal of most foreign investors from BSE was a modest volume of transactions under the 2005 (Figure 2). Also, in 2009 downward trend bring the volume of transactions bellow the 2005 level with 36%.



Source: BSE data after the last trading session in the respective years.

Figure 2. Evolution of the value of transactions in shares on the BSE during 2000-2009, million RON

Liquidity rate, calculated as the ratio between the amounts transacted annually and capitalization, recorded a decrease from 16.4% at the end of 2007 to 12% for October 2008 and drop at the lowest level by 6.1% in 2009.

$$L = \frac{\text{Turnover value}}{\text{Market capitalization}} (\%)$$

Table 4

Evolution of capitalization and turnover value in the period 2000-2009

– million RON –

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Turnover value (TV)	491	653	1,131	1,417	3,006	8,886	10,742	18,057	8,512	5,669
Capitalization (CAP)	3,180	7,226	15,265	20,106	42,141	64,273	84,049	110,372	57,801	92,420
%TV/CAP	15.4%	9.0%	7.4%	7.0%	7.1%	13.8%	12.8%	16.4%	14.7%	6.1%

Source: BSE+RASDAQ data series in the respective years.

Romania's admission to the European Union on January 1, 2007 has triggered an ascending trend in the foreign capital influx on the Romanian capital market, as it results from the data of the first quarter of the year 2007.

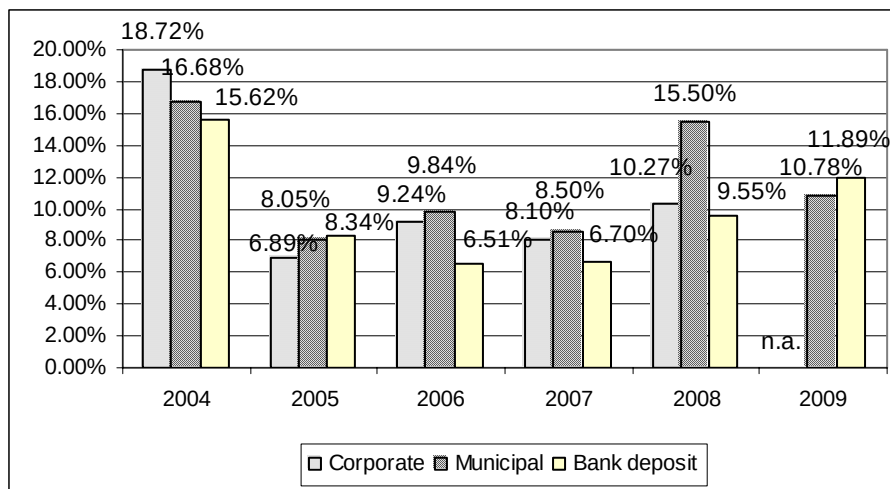
The greatest bulk in the total volume of stock exchange transactions on the capital market performed by non-residents were those for titles issued by authorities and listed on BSE, with solely a small fraction being represented by transactions on RASDAQ.

Stocks vs. bonds

Before 2004, we could not say much about a bond market within the stock market exchange system because the traded amounts were insignificant. Yet the year 2006 was a very good one for the corporate bonds sector. The International Bank for Reconstruction and Development (IBRD) has certainly contributed to those favorable results by launching in September 2006 an emission of public bonds valuing 525 million RON. This operation is even more important since it is also the first issue of an international financial institution on the Romanian capital market and, further more, the first one performed on such a large scale. Due to the issuer's credibility, the operation was a success and was quoted as AAA during the month of October. Its success is also reflected in the greater number of subscribed bonds 635,948, which show a 21% from the 525,000 allotted. Among the local bonds issues the one performed by the Romanian Commercial Bank (RCB) is an important one given its total value of 200 million lei and the fact that it has super-scribed about 21.5%.

By the value and the number of those issues, the year of 2006 ranks first on the list of traded bonds from the time the stock exchange has been created till now. The total value of the bond transactions of 281.67 million Euro, was close to the 10% entrance level of the traded shares' turnover.

The average interest rate in RON for the corporate bonds was by the end of 2006 that of 9.24% growing from 6.89% as recorded by the end of 2005. The municipal bonds' average interest was of 9.84%, by the end of the year indicating a growth as compared to 8.05% in 2005. The situation is atypical for the developed capital markets due to the higher interest rates granted for the municipal bonds as compared to the corporate ones, in spite of the fact that the former present a smaller risk than the latter.



Source: www.intercapital.ro (values for the month of December), not available interest rates for corporate bonds in 2009

Figure 3. Average interest rates for the corporate bonds, municipal bonds and the bank deposit, from 2004 to 2009

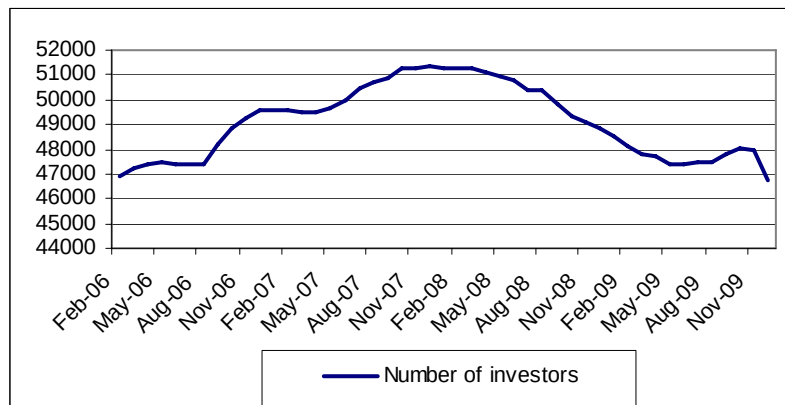
The average corporate interest was at the end of 2007 to 8.1%. The average municipal bond interest was 8.5% (compared to 9.8% in 2008 and 8.1% in 2005).

The connection between the stock exchange figures and the population's savings is not very clear, but can constitute a clue for the drop in the natural persons' interest for shares in 2006, a period of time when the populations' savings, the volume of sales towards population, as well as their real estate investments have registered a slower increase.

The balanced funds

If loss aversion can explain reducing number of investors, this is not sufficient to explain lack of participation (Barberis, Huang, Thaler, 2006). The decision to invest in stocks requires not only an assessment of the risk-return trade-off given by historical data, but also an act of trust that the current data are reliable and the capital market system is fair.

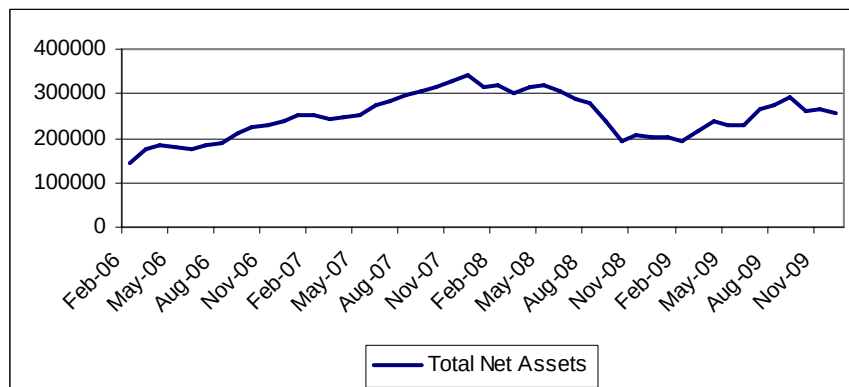
Regarding the maximum number of investors, 51,364, the value from November, 2008 is 46,762, with 8.96% less in December, 2009 (Figure 4).



Source: Romanian Association of Asset Managers, series of data from web site: http://www.aaf.ro/index.php?option=com_content&task=section&id=4&Itemid=35

Figure 4. Number of investors in balanced funds, individuals and company, from February, 2006, to December, 2009

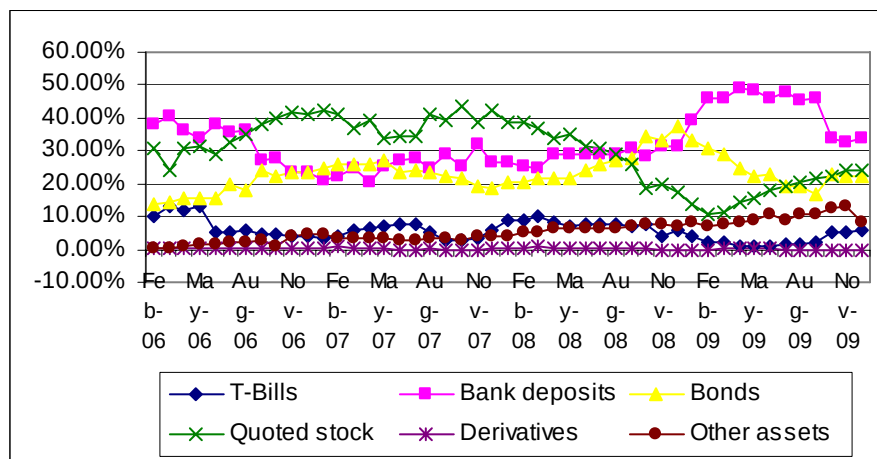
The maximum value of total net assets from balanced funds was recorded December, 2007 at 343.57 million RON, about 95.17 million Euro, with 40% higher than February 2006. In that period, the trend of total net assets is correlated with number of investors and evolution of BET-C index and show that loss-aversion is important for investors on BSE (Figure 5).



Source: Romanian Association of Asset Managers, series of data from web site: http://www.aaf.ro/index.php?option=com_content&task=section&id=4&Itemid=35

Figure 5. Total net assets from balanced funds (thousand RON), from February, 2006, to December, 2009

The dynamics of returns in stocks is reflected in sentiment of investors, as we see from Figure 6. With reducing the bank interest, stability of interest at bonds and good results from stocks, the investment shift in Aug-2006 from bank deposits to quoted stock and a small increasing in bonds. A change in this trend was recorded in July 2008, when the professional investors have returned to bank deposits. Evolutions in other assets and T-Bills were not significant changes.



Source: Romanian Association of Asset Managers, series of data from web site: http://www.aaf.ro/index.php?option=com_content&task=section&id=4&Itemid=35

Figure 6. Portfolio structure of balanced funds, from February, 2006, to December, 2009

If the professional investors, like those analyzed in this paper, have loss-aversion and they have “tools” for preserve most part of the profit, the other possible investors are not in faith that capital market could be an alternative for their investments.

Even for professional investor, legislative changes in the tax increase represent a key factor in lowering the attractiveness of investment in the capital. These changes may affect more or less interest to investors in shares, depending on the type of tax increase. Shareholders are directly affected by the increase of tax on dividends, as this diminishes tax earnings expected to end the current financial year. Another tax may affect in a quite categorically earnings expected by investors, and even if not directly affect the shareholders' dividends, net income decreases, and, consequently, the total amount of the dividends distributed.

Conclusion

The liquidity rate on the Romanian stock exchange is for the moment at the lowest level and is characterized, in general, by low and oscillating levels, which determines an aversion to this market, especially in the case of foreign

investors and portfolio investments strategy. The dominant aspect is the speculative character of the stock exchange and Romanian capital market does not fully fulfill its role in the efficient allocation of the available capital.

The companies and also the population further prefer bank deposits as a form of saving or preserving their money, during the period when the bank interest rates continue decreasing trend and especially in 2008 year, after greatest depreciation of the stock prices in Romanian capital market when interest rates goes up again.

The banking system has been perceived as by far less risky as the placements on the stock exchange markets, even if the returns are clearly superior on the capital market on short term, as compared to the banking system, on long term. The increased interest for the bonds and the deposits, in 2008, may fuel certain hopes for a slight amelioration in the trust for fix income instruments.

Fraud like Enron, Parmalat and FNI (a big fund of investment on Romanian capital market) may change not only the distribution of expected pay-offs, but also the fundamental trust in the system. The surveillance and control institutions must support the trust in capital market system and is necessary to reduce the fraud.

The main objective for the Romanian authorities, at all levels, is to create a trust and secure investment environment, fiscal stable and low tax rates for capital market investments, able to attract the foreign investors and individual investors from inside the borders.

References

- Alexandru, C., 2008, *Capital market in Romania*, Editura Libra Publisher, București
- Barberis, N., Ming H., Thaler, R.H. „Individual, monetary gambles, and stock market participation: A case for narrow framing”, *American Economic Review*, 96, 2006, pp. 1069-1090
- Guiso, L., Sapienza, P., Zingales, L., „Trusting the Stock Market”, *The Journal of Finance*, 63, 2008, pp. 2557-2600
- Fama, E., „The Behaviour of Stock Prices”, *Journal of Business*, 38, 1965, pp. 34-105
- Pratt, J.W., „Risk Aversion in the Small and in the Large”, *Econometrica*, Vol. 32, 1964, pp. 122-136
- Reinhart, Carmen, Rogoff, K. (2009), *This Time is Different*, Princeton University Press, Princeton
- *** 2000-2009, Romanian Statistical Yearbook, Bucharest
- *** 2001-2009, BNR annual reports, Bucharest
- *** Bucharest Stock Exchange, www.bvb.ro
- *** SSIF Intercapital Invest, www.intercapital.ro
- *** World Bank Group, *World Development Indicators database*, 2007

The Contribution of the Neo-Schumpeterian Approach to the Development of the Economic Theory: Emphasis on the Meso-Economic Level*

Radu HERMAN

Bucharest Academy of Economic Studies
raduhermann@yahoo.com

Remus AVRAM

Bucharest Academy of Economic Studies
remus_aim@yahoo.com

Abstract. *This article tries to show that there are alternative approaches to the economic theory, besides the well-known economic schools, Classicism, Neoclassicism and Keynesianism. The neoclassical principles allow a formalization – widely accepted by experts – that provide effective tools for measuring the effects of the economic activity. The economic science pays a special attention to the study of the economic agents' behaviors, and to the economic results obtained by them through economic activity. Any human science uses principles and works with assumptions, and the neoclassical assumptions have generated efficient tools for quantifying the economic outcomes, and for accounting the economic growth. But these hypothesis, such as the assumption of economic agents' rationality, allow a very limited understanding of the behaviors of economic agents within the markets. The recent invention of the Nuclear Magnetic Resonance device, allowed the emergence of a new scientific paradigm, the development of neurosciences. Researchers can observe at a high level of graphic detail various types of activities that occur in the human brain, and some economists have introduced in the study of the economic theory, for example, the assumption that the consumer is driven by emotions when*

* Ideas in this article were presented at the Symposium „The global crisis and reconstruction of economics?”, 5-6 November 2010, Faculty of Economics, Bucharest Academy of Economic Studies.

purchasing quantities of goods and services. So, economists may look for additional theories to explain the behavior of the economic agents. An increasingly importance is given to the theoretical contributions built on the work of the economist Joseph Alois Schumpeter, who has an original economic approach based on his own principles. It is proposed to focus the attention on a mesoeconomic vision about the industry, to understand how resources are being allocated and reallocated between companies, and to study the economic processes of evolution, which are influenced by the emergence and dissemination of the innovations. It is supposed that the price is allocating the resources in the economy, but the companies' behavior is generated by a competition and cooperation for innovation.

Keywords: evolutionary economics; mesoeconomics; economic growth; neoclassical hypothesis.

JEL Codes: B13, B15, O3, O4.

REL Codes: 2B, 5B.

Introduction

What problem does this article study?

This article tries to show that there are alternative approaches to the established economic currents, and that the economic processes can be studied at a higher level of detail at the mesoeconomic level. Several important processes are taking place here: the allocation of resources, a process of transition from one technology to another, a process of reallocating the resources between the sectors of the economy and a process of convergence of the firms in terms of productivity and behavior. The economy studies economic phenomena and processes, and any human process involves human relationships, being there an evolution (dynamic) of the human behaviors in the society, and a change in the various structures through which the studied items may be combined. The economists are simultaneously studying the methods of producing goods and services, how the people „appreciate” them through their own system of values, and the evolution in time of these methods (individual and global). They can study these aspects through a structure, and these structures represent an organized vision of the elements from a system.

Why is it important to study this topic?

In any human science, there are several possibilities to approach the human processes and relationships, and the notion of relationship is used to study different connections between the elements from a system. Therefore, economists can see the human society as a system. A system can be studied organized, and this organized study is effective through a structure. Any computer-worker knows how difficult the programming in a computer language was, without using the programming structures. For example, in Quick Basic, we can use the command „Go To” to resume some previously written instructions. The disadvantage of the structured computer programming was that a software that was making simple things reached to a very large size. Another disadvantage was that the software was being hard to understand by another computer-worker, and many times he was forgetting what exactly he wanted to do, even forgetting his own program. The economists recognize the importance of the principle of comparison, and statisticians know that it makes sense to compare in time and space only those data that are collected based on a structure. We can say that a structure allows the economist to have an ordered work, being easier to calculate the added value obtained by using the factors of

production and their market allocation at different moments of time. The relationships between elements can be reordered through theories. The economic theories represent a combination – with different percentages – of the quantitative formalization of the economic processes, and their qualitative understanding.

How exactly does the author try to answer this question?

The economists understand and study the economic reality, trying to explain through the collected data some behaviors or economic results. Some theories can better describe reality than others, meaning that they have an opportunity cost. When studying the quantitative relationships between elements, we can remain at a descriptive stage of the economy by presenting some alternative possibilities (with an opportunity cost), or we can look for some correlations between these elements. Any econometrician knows that some correlations occur more likely than others, and this implies the fact that the economic realities can be explained by alternative theories. It is possible that several events to happen in a certain context, but some will show a higher probability than others.

In the neoclassical theory, there is used a powerful tool of formalization of the economic theory: the concept of representative economic agent. After there is chosen, based on several principles, who could be considered the representative economic agent from an economy, we can econometrically model both the results obtained in an industry, and the economic results at the macroeconomic level. Basically, we can use some microeconomic principles to explain several macroeconomic results. These methods were and are used by the economists due to the lack of detailed data sets, comparable in structure, in time and space, between companies and households. Over time, we will have more detailed data sets, but the economists' problems of "fine" occur when trying to shape the social organization.

What is the link between this article and the existent specialized literature?

The symbiosis capital-labor takes place within the human organization, the economic processes are carried out here, and they have the effect of generating economic results. At least in theory, the human organization can be structured, which means that basing on the same set of rules to define an organization, so that the statistical data to be econometrically processed. We know that the economists-accountants can measure the economic results

obtained in each organization through financial or econometric tools, the economists-managers combine the organization's capital with labor, and the economists-researchers try to provide theoretical explanations as close to reality as possible, at all economic levels.

The economists-researchers can make theoretical models in a positive or a normative approach. They saw that the transformations from the economy are both qualitative and quantitative. At least in theory, the human value system can be changed, because each person can establish an objective, and according to this objective he may order some alternatives with different values, so we can structure them to some extent. Even at a society level we can order a system of values. But this system is dynamic and qualitative variations occur. Any anthropologist or historian knows that significant qualitative changes have occurred when people began to eat well, to have a shelter and to communicate better, meaning to socially interact in normal conditions. At the same time, major qualitative economic changes have occurred after the invention of the plow, the mass production and the personal computer. The Internet gives people the opportunity to play, to communicate, to socially interact, and the ability to access scientific knowledge. It represents a process of transition that occurs over time and represents an evolution. Knowledge is distributed in society through organizations, but even if we define the organization by a set of rules in order to be able to use – for example – the principle of comparison, one person can be part of several organizations simultaneously, and it may produce added value spontaneously, unpredictable. Besides the fact that it is difficult to shape the individual's behavior, it is hard to formulate a regression to quantify which event influenced more the added value, or which organization allowed to the individual to obtain a higher added value in relation to another individual. This is the reason why organizations are difficult to compare. An analytical tool proposed in the evolutionary (neo-schumpeterian) "school" of thought to measure the qualitative changes in the economy is using the concept of innovation. The concrete economic results may be innovations of products or innovations of the production process, and the highest importance is given to the technological innovations of production since it is assumed that they create the most opportunities to further develop new technologies, new products, they allow the accumulation of knowledge etc. The approach is permissible because there may be an interaction in terms of explaining some behaviors and not just the results of the new theory of endogenous growth, but also creates the economist's freedom to provide through an original econometric model, his own observation for the statistical data which are disaggregated observed.

The economists give different percentages of importance to the knowledge generated by the human capital and by the capital of production (including financial capital), and this is why more specialized studies say that now is a debate between the evolutionary economic approach and the new theory of endogenous growth.

Content

An economist researcher's work involves the combination of ideas and theories with empirical studies – in certain circumstances – in order to obtain scientific results. Depending on the chosen target, he tries to explain how exactly the economic system works. By formulating theories, methods and techniques, he can remain in the qualitative area of explaining some economic phenomena and processes, or he can try, in certain circumstances, a quantitative approach.

According to some economists, like David Cass (Samuelson, Barnett, 2007), an economic theory can be seen as a way of organizing ideas in order to give a clear image of understanding reality. Some economists adopt a style of understanding the economic system through an empirical research-oriented approach, while others prefer to rely on a strong intuition. Certainly, this theoretical intuition is formed by understanding the various theories that describe various phenomena and private processes. Economy is a human science that uses, from a form of abstraction, at least three approaches: descriptive, based on behavior or based on results.

In terms of descriptive approach, graphical statistical data are used as methods of analysis, in order to analyze some dimensions and dependences that exist between the economic variables. Initially, there was no difference between economy as a science and philosophy, many economic problems being studied in philosophical works (Cornescu, Bucur, Crețoiu, 2008). Human society exists because of human activities, and because of this issue, the economists can cooperate with anthropologists, psychologists, neurologists etc. in order to understand different economic behaviors.

The third type of approach can be achieved by quantifying, interpreting and predicting some results obtained from the economic activity, such as various indicators of productivity.

Because of the need to understand the economic behaviors and results, and to explain the possible interdependence between these two approaches, there were various economic doctrines, movements and schools of thought.

Economic science is a combination of observable data and theories, both regarding agents' behaviors and the effects obtained from the economic activity. This is why there arise some conceptual difficulties to scientifically substantiate some tools to anticipate human behavior and economic results, because these two are interdependent, both influencing each other dynamically and mutually.

In different moments of time, there are different market structures, due to various changes in economic behaviors and results. Thus, due to changes in people's needs and production processes by introducing new technologies and innovations, there are constantly appearing qualitative changes in the economic system, which are manifested by a permanent change in the economic system's structure. Structural changes may be quantified by a system of relationships that can be measured by a system of equations. This system of relationships is a symbiosis between theory and the data collected. In order to understand how the economic system works, it takes the economist's intuition and practical sense, valid for any other human science.

If the economic system did not have structural changes, its variations could be easily measured by delayed variables. In an attempt to better understand this system of economic relationships that are interdependent with the obtained results, the schools of thought presented different objectives and angles in order to understand how it works, and then to propose some ways to improve its functionality. Wassily Leontief appreciated Joseph A. Schumpeter's work as being oriented to better understand the ideas that underlie various schools of thought, and to find them scientific utility in different levels of abstraction of the economic theory: "Researchers have been at all times which stood on a top from where they were able to investigate all the ground around them rather than from a valley, and which not just from a superficial or a formal point of view, recognize the right of existence of various schools of thought. He had a real understanding of their ideas and an emotional affinity for all" (Leontief, 1950, pp. 103-110).

To understand the variation of the structural changes over the variation of the economic system, we can make a theoretical journey starting from the Marxist vision. He gave the economic system a dynamic vision determined by a continuous evolution due to „the technology embedded in capital". He tried to understand how the capitalist system managed to develop so much, in terms of the produced quantities of goods and services, unlike other forms of organization of the socio-economic life. According to some authors, such as Rosenberg (1974, pp. 90-108), Marx identified some "economic era"; he

introduced the hypothesis that science influences the productivity of the production factors, but also imposed a restriction according to which “it was necessary to satisfy any objective conditions”, so that science would not become an independent variable to the economic system. Marx does not explain what those “objective conditions” mean.

The marginalist economists studied the economic system by the vision of a more efficient allocation of a given stock of resources. It was introduced the concept of decreasing marginal utility and the stationary state of the economic system was inserted. John Bates Clark (Clark, 1908) was the first author who made a synthesis of the static and dynamic states, in the same piece of work, and he believes that when an economic system is stable, he is in a static state, and when it begins to fluctuate it becomes dynamic, as a “container with water when is shaken”.

At the beginning of the twentieth century, the stationary state was, in the view of economists, the long-term balance in classical and neoclassical economy, and the tool of formalization was represented by the comparison of several static equilibria, from different moments of time. This approach has allowed the introduction of production functions into the analysis, as a set of combinations of inputs and outputs. This analysis represented a quantification of changes in the variables capital and labor. In other words, there are not taken into account various structural changes of the economic system, but there are quantified the readjustments from the variables labor and capital, which include the structural changes of the economic system.

Even if at the beginning of the twentieth century it was considered that an economic growth can be achieved only through the ratio capital/labor (K/L), in time, it began to be taken into account the technological aspects (related to the technical progress) which are proportionately or disproportionately influencing the production factors, capital and labor. Solow (1957, pp. 312-320) built a Cobb-Douglas model, in which he decomposed different sources of the output's growth per capita, in order to quantify the influence of labor and capital accumulation. Its production function was $Y = A \times F(K, L) = F(K, L \times A)$, where the parameter A represents the technological changes (or the stock of knowledge) which proportionately influences the production factors. Through this approach, the technical progress is not built in the production factors, so it is exogenous to the model and remained in literature known as the “Solow residue”. Solow (1957, pp. 312-320) obtained in his study that 87.5% of the output's growth is due to parameter A. Although the author associated this parameter with the technical progress, he thought it might be influenced by

other factors such as “slowdowns, accelerations or improvements in workforce’s education”, which could be responsible for the output’s growth.

This study opened the door to a new line of research that had as an objective accounting the economic growths through some assumptions based on the neoclassical spirit. The econometric approach of the productivity measurement is based only on observing the amount of output and the amount of input. Although theory shows that it is a nonlinear function that describes obtaining output, often in practice, economists are constrained by the small samples to introduce restrictions such as constant returns of scale, in order to increase the estimators’ number of degrees of freedom (OECD Manual, “Measuring Productivity, Measurement of Aggregate and Industry-level productivity, Growth”, 2001) At the same time, it is questionable how the residual variable of the production function might be interpreted.

In order to be able to use these methods of measuring the results, respectively the various indicators of productivity, there were introduced some simplifying assumptions specific to the neoclassic approach:

- The economic system is studied through the concept of stationary state;
- The economic system’s approach is in terms of the general equilibrium theory and there are being used the principles of the marginal calculation, where the marginal utility is decreasing;
- The production processes can be represented by functions of production or by functions of transformation at various levels of the economy. They represent different sets of combinations of inputs and outputs. Basically, they are the optimization functions that aim to obtain the maximum of output with a set of inputs;
- The manufacturers are rational, representative firms aiming to obtain efficiency by maximizing revenues and minimizing costs;
- The markets are competitive, functioning on the assumption that the economic agents are perfectly informed;
- The price is the one that allocates the resources in a market, and every manufacturer takes this price from the market and can only make adjustments in the quantities they produce.

These conditions are important because “they guide us how to measure some parameters that would otherwise be very difficult to identify. An obvious example is the use of cost components instead of output elasticities; the first are observable, while the last are not, but theory shows that, in terms of balance, the two must be equal” (OECD Manual, “Measuring Productivity, Measurement of

Aggregate and Industry-level productivity, Growth”, 2001). But at the same time, there are some problems with the measurement of the economic performances during business cycles. During the business cycle, there are significant variations of the microeconomic aspects that have influence on the firm’s performance (scale economies, the degree of utilization of the installed capacity, the quality of the management, organizational structure, the quality of the human capital), but also of the macroeconomic issues (the price level, exchange rate, employment or various institutions). In other words, the uncertainty of the economy increases, being required a more “intuitive” interpretation of the obtained results. For example, during the recession, a lower rate of utilization of the production capacity could be accompanied by a relatively constant output, but which to be followed by an increase in the amount of inputs.

To be able to “guess” the phenomena that describes the observed data, meaning the facts, we need a theory to explain them.

Through a general vision, we can assemble some theoretical structures – reflecting pieces of that vision – and the more precisely they describe reality as they are more “realistic” made. This involves relationships of exclusion between theories, meaning that some theories are better than others because they describe better the economic reality. In other words, the positive economic science is concerned to describe the behavior of the economic agents, to measure their results and to understand some of the interactions between results and behaviors. First, the economists have to understand how the economic system works, how to measure the results, and only afterwards to propose regulatory measures to improve its functionality. Under normal conditions – excluding natural disasters, wars etc. – the limits on ways to improve the economic system are given by the uncertainty of human behavior, the scientific progresses and the new technologies. Because of these, the quantitative economy will always make a distinction between the analysis of the short-term phenomena and the analysis of the long-term phenomena. It is possible to reduce the uncertainty through a better understanding of the human behavior, and this can be done by economists working with psychologists, neurologists or anthropologists. In this regard, economists have recently started some collaborations with neurologists and founded a new science, the neuroeconomy. For example, based on recent studies from the neuroeconomy, the consumer’s theory has been extended by introducing the emotional consumer’s hypothesis.

Using the data aggregated by the National Accounts System is a method to quantify the economic results obtained in one country, but it does not allow

the understanding of the companies' behaviors, and there can be made only short-term forecasts of the economic activity, because the engine of the economic development is represented by the technological changes (with significant degrees of uncertainty). To understand in depth the adoption and harmonization of technologies within companies, it is important to process as many data series as possible at the microeconomic level. However, besides the significant expense of data collection by some of the Institutes of Statistics, these data are being processed with some delay (between 3 and 10 years), so that they might be undervalued/overvalued by managers, and this implies a measure of maintaining the confidentiality by the data provider. I have stated this things because even with the knowledge of some relevant stocks of data about companies, there are still remaining various degrees of uncertainty in economists' work.

Some economists, such as Wassily Leontief (Samuelson, Barnett, 2007), came up with the idea that it is possible, at least in theory, to align the cash flows from micro to macro level and not vice versa, as it is today. Although they are shrouded in uncertainty – regarding the new technologies, competitors' behavior and consumers' behavior – companies are trying to reduce this uncertainty by formulating strategies (maintaining their own behaviors during a certain period of time) translated into business plans. In these plans of investments are being made specific budgets, which are respected for a certain period of time, but which could be aggregated at a macro level.

Most economists agree that technology (knowledge) and science are still producing more and more added value in the economic system. But from a macroeconomic perspective of the quantitative economy, there may be significant delays between the investments made in technology and the economic results obtained, and working with aggregated sizes does not reflect how exactly the economic activities are distributed among various human organizations. Besides this, some empirical studies show that an important part of the economic growth is due to the process of dissemination of some technologies or to the process of imitation (OECD, „Work With Firm-Level Statistics: Some Key Applications”, 2001). In other words, continuous production functions cannot reflect in detail the effects of the technological changes that take place in companies. In a dynamic system, as the economic system is, it is difficult to methodologically separate the impact of the technological change from the impact of human capital or from other factors related to the structural organization of the company, management innovations, marketing etc. Some studies show that they can be successfully separated on

short-term, but there are significant difficulties when trying to make long-term changes because of the permanent changes in the economic structures. The economy is a dynamic system and various fluctuations, such as business cycles, may occur due to delays. In other words, while different investments in new technologies are being achieved with delay – even in the conditions of a low inflation rate and of macroeconomic stability – there are generated new business cycles, structural changes occurring in the economic system, as well as changes in the economic agents' behavior. At the same time, mathematically, the maximizing solution of a dynamic system is different from the solutions obtained in the case of maximizing several static systems. The only version in which the two solutions can be comparable is the situation where the two methods of analysis of the system are used in the same economic structure, an unlikely situation in the market economy.

In order to better understand the long-term economic system, respectively the formulation of approaches regarding companies' behavior in terms of how they adopt technologies and turn them into various processes of production, how they adjust their organizational structure, change their production capacity depending on the business cycle etc., it is necessary to process a large amount of data. Nowadays, at the current volume and rate of data collecting and processing, in the micro-econometric practice, when some dynamic studies are made using panel data collected at different time intervals, there are still arising several differences from the economy in real time, because of the slow data processing. There may also occur structural differences within the same country/region/industry/sector between the static moments of time in which the data took place, when studying the dynamics of the economic system. For an economist, a powerful tool is the principle of comparison, and here occur again differences between the various structures of the countries/regions/ industries/ sectors, even at the same moment of time.

The relaxation of the neoclassical assumptions

In time, some economists understood that the use of the continuous mathematical functions are – through some parameters – a very general measurement of the economic activity, and they began to relax the neoclassical assumptions by trying to propose alternative theories. At the same time, several Institutes of Statistics, World Bank, European Bank for Reconstruction and Development, OECD etc. started to constitute some series of company-level data that have the same structure, which means that they are comparable between the studied countries. Basically, continuous mathematical functions

were a method to avoid the empirical studies, as the last ones involve higher costs, because of the costs of data collecting and managing.

Some authors argued that the assumptions of the neoclassical theory are useful for some theories of economic growth accounting, but may be insufficient to explain the economic agents' behavior. Joseph A. Schumpeter (Schumpeter, 1942) argued in several papers that the engine of the long-term development would be the innovation. Dosi (1988, pp. 1120-71) tried to show that markets do not provide a perfect information of the businesses, but on the contrary, these asymmetries of information are those that create opportunities for producers to invest in research and development, and to create new technologies. For this reason, Dosi (1988, pp. 1120-71) and Nelson (1974, pp. 886-905) argue that it might be necessary to find other tools to quantify the economic growth. In other words, in terms of the neoclassical equilibrium, there would be no incentive for innovation, the observed companies would be homogeneous and there would be no improvements in their productivity.

If the producers are rational, they always know to order the available technological alternatives and to identify the best markets in which to conduct their economic activity. But this assumption reduces the importance of the economic problems faced by economists, and the identification of options to be made by the companies. Depending on the context, on the uncertainty of the technology, on consumers and competitors' behavior, the companies must dynamically learn about the new technologies, to modify the capacity, to adjust the organizational structure etc.

Instead of the assumption of producer's rationality, expressed by "optimizing behavior" and "maximizing profits", there is being introduced the concept of "limited rationality", and the companies aim to get a satisfactory profit. It is clear that they aim to achieve a higher level of profits, but because they are confronted with uncertainty, they are forced to learn by trial-and-error (Bayesian) about technologies, about the adoption of technologies, about competitors etc. Sometimes, a company tries to imitate the competitors' technologies, but even through the very process of imitation, there is accumulating a stock of knowledge in the companies that changes the organizational structure and improves the quality of the human capital. From the interaction between the knowledge about a technology and the knowledge accumulated in human capital, there may occur some innovations that may be new to the company, new to the industry or new to the world. This knowledge can be „learned" by the human capital of other companies, some knowledge stocks may be stored in databases, technical diagrams, or they can be "mixed

learned” through the activity of research and development. This knowledge does not disappear, it accumulates both in technologies and in industries.

Through incremental innovations (consecutive, on a small scale) of the production processes and of the products, and through the activity of research and development, permanent variations occur both in the company’s organizational structure and in the quality of the human capital. The future results of the scientific research are shrouded in uncertainty, and the opportunities regarding the future potential markets are unknown as well. At the same time, there is possible to appear some breakthrough technologies that will bring consistent “mutations” in the structure of the economy. These appearances of new structures of organizing the elements from reality can be compared with the concept of “scientific paradigm” of Thomas Kuhn (1962). He showed in his work that a “scientific paradigm” is a set of rules accepted by an academic community. Following the scientific approaches, some people have doubts about these sets of rules, and new scientific paradigms appear.

Dosi (1982, pp.147-162) focuses on the interaction between the economic factors and these sets of rules (economic institutions) to try to make a comparison between the scientific paradigm and the technological one. The fact is that as more and more importance is given to scientific research, the degree of interdependence between the scientific sphere and the technological one increases. Naturally, many technological components – seen as elements – can be reconstructed in several ways with other technological components, and their combination and/or discovery of new components is possible either through scientific research, either through several experiences accumulated in the human capital. Dosi (1982, pp.147-162) defined a “technological paradigm” as a “pattern of solutions” of a “selection of technological problems”, in which the solutions are being found relying on several principles derived from known sciences or from practical past experiences. In his view, technology can be regarded as a “set of units of knowledge”, of experiences resulted from successes, failures, methods, procedures, “best practices”, in which science is not just a neutral element, but it is, to some extent, endogenous to the market.

So, when a new technological paradigm appears, there are being created the opportunities for generating a new set of technologies, including the possibility of knowledge accumulation, both in the technological paradigm and within each technology separately. A new technological paradigm is, for example, using alternative fuel for cars. New technologies for cars have emerged, such as various engines that run on multiple fuels. To make these engines, several companies – both in the auto industry and other industries –

have invested in research and development in order to create new technologies, but also to adapt the existing technologies to the new fuels, or to substitute different components of the existing technologies. So, there appeared some qualitative changes in those industries, as well as in the organizational structure of each company.

Although useful in the economic models that use different neoclassical assumptions – including the representative company – in the real economy it is possible to observe that the companies are significantly heterogeneous. In a normative formulation, we can “guess” that as the amount of scientific research and the dissemination of technological knowledge through the Internet will increase, the percentage of the qualitative transformations in relation to the quantitative transformations will increase as well, in all economic levels. These “mutations” occur at the microeconomic level (company’s organizational structure), at the mesoeconomic level (sectors and industries), and at the macroeconomic level (economic policies and state institutions). In a positive approach, we know that the technologies are not adopted immediately in the company, because there are some gaps on the stock of knowledge needed to use them. Technologies’ adoption represents a process of their integration, of a permanent “adaptation” of the organizational structure, including a critical stock of knowledge so that the company to be able to survive the competition.

The economic science is a human science, and there are used some common concepts, like the process. Economic phenomena and processes are dynamic, qualitative variations taking place both within the company and within the industry to which it belongs. Any process of economic transition has two key elements: reallocation and reorganization (Blanchard, 1997). The emergence of technological paradigms may generate a process of economic transition at a macroeconomic level, at a mesoeconomic level (industries) and at a microeconomic level (company). Positively speaking, new technologies incorporate a larger stock of knowledge, and new production processes and new products will lead to obtaining a higher added value, *ceteris paribus*.

So, we can summarize two distinct economic processes, when we study an industry’s adoption of technologies. One of the processes is linked to the gradual adjustment of the new technologies within the companies, and they learn through small steps various knowledge about these technologies, and sometimes adapt them in a personalized manner from which result innovations. The second process is related to the emergence of some new technological paradigms which represent a completely new reorganization of the scientific elements, and which show both various technological solutions to some new

economic and technical issues, and the reorganization of some experiences – meaning the knowledge resulted from past experiences.

These two economic processes that arise in the economy due to innovation or technological paradigms, require companies to take part in an ongoing process of transition. We will try to present, briefly, the idea of this process in Blanchard (1997) approach spirit. He described the process of transition as characterized by two distinct processes: reallocation and reorganization. Reallocation involves transfers of resources between the sectors of the economy, because companies will focus on those industries where the added value is higher. We could describe this process as a behavior of the companies that are refocusing their resources (capital, labor) to an industry that would allow them to innovate as much as possible and to get a higher added value (results). The reorganization of the companies could mean – in the context of the emergence of new technological paradigms – different adjustments, quantitative and qualitative changes in the company, from the need to be more competitive. (Mitra, Muravyev, Schaffer, 2008) show that any process of transition is given at the same time an importance that is relative to the process of reallocation and reorganization. At the level of industry (mesoeconomic), in a certain vision of the literature it is sustained as a hypothesis the inability of the old industry to adapt to the potential market, that could be generated in our case by the new technological paradigm.

To maintain the global productivity of the economic system – in terms of disappearance of the old industry – it is said that it is necessary to develop a new industry. From this point of view, the process of transition is the ability of old companies to start working in the new industries. In this vision, the ability of reorganizing the existing companies is very important, involving some measures to adapt to the new industries. According to an alternative vision of the transition process, we may consider the companies' convergence from the old industry to the new industry as the structural adjustments of the factors of production within the companies.

An approach to understanding the vision of the neo-Schumpeterian contribution

The neoclassical current had a significant contribution to the economic theory by developing theories that can measure the effects of the economic activity, such as economic growth accounting. The economists could be grouped into three main categories: Economists-Accountants, Economists-Managers and Economists-Researchers. The last group of economists had

favorable results in developing theories of quantifying the economic results, but has always been limited in understanding the behavior of the economic agents because of the lack of available data, due to the inexistence of devices that measure the indicators of human behavior.

In the past, the economists resorted to some scientific/nonscientific studies about the human nature to explain, mostly descriptive – and not on the basis of some cause-effect correlations, validated by the theory of probabilities and by the probabilistic calculation – many theoretical discussions being about possibilities. With the invention of the Nuclear Magnetic Resonance device, researchers can observe in a precise manner several types of activities taking place in different parts of the brain and which reflects a certain degree of mental activity. Basically, this device opened the way to a new scientific paradigm, that of the neuroscientists. In economics, scientific applications could consist in a better understanding of the human behaviors. Therefore, the neoclassical assumptions can be gradually relaxed, following the neoclassical economic theory to gradually fill with behavioral theories that describe the observable reality as well as possible.

Economists can inspire from physics (capital gravity, labor gravity, rotation of the capital etc.) or from biology (selection of companies, growth rate, learning ability etc.) when certain economic theories are formulated. The Neo-Schumpeterian current borrows some concepts from biology, from the Evolutionary Theory, elaborated by Charles Darwin (Ruse, 2009, pp. 10-19).

A starting point in understanding this theory could be the fact that the economic agents are shrouded in uncertainty. The results of the evolutionary process cannot be ex-ante known, because we cannot estimate the amount of output that will be obtained with a certain amount of input. Because of this, the economic agents are forced to constantly experience in order to find out more about different technologies or the environment in which they are. The companies' permanent experiencing represents a continuous learning process, a process of selection of the companies from the market taking place, meaning the companies that managed to "adjust" to the companies that have left the market. These were some examples, but in this current we will find terms like "survival rate", "growth rate", the ability to "learn" about technologies etc.

This current is concerned about the qualitative changes in the economy in all its levels, about the way of dissemination of the innovations. The formulation of modern macroeconomic theories has been possible thanks to the concept of "representative economic agent". There have always appeared disputes between the economists, to what extent the real economy is influenced

by the monetary economy, discussions about business cycles, and even appeared concepts of “monetary economists”.

Through its principles, this current attempts to show that it is important to study the economy at a mesoeconomic level, because here occur the qualitative and structural changes within the industries (Dopfer, 2004, pp. 263-279). In industry, the added value is created and the workforce is being employed. As time goes on, the companies accumulate a bigger stock of knowledge about technologies, looking at the same time to exploit them by a higher profit. In a quantitative economic growth, the companies that gathered a growing stock of traditional factors of production, were benefiting from economies of scale, were having long-term lower total average costs of production and the price was being a sufficiently representative indicator for the allocation of resources in the economy.

With the development of electronic technologies, the invention of the personal computer and the Internet, the rate of qualitative changes in the economic system has significantly increased. Knowledge can be accumulated in an increasing rate, the companies can access them more and more in order to obtain product and process innovations that can be considered new for themselves, for the industry or for the world. A positive principle of the neo-Schumpeterian current is that the competition by innovation replaces the competition by price, and it becomes the main mechanism for coordinating the behavior of the economic agents; a basic normative principle innovations include social innovation, technological innovation, organizational and institutional (Hanusch, Pyka, 2007, pp. 275-289). In the deterministic approach of the economic system it is supposed – at least in theory – that the companies can own all the information from one market, but in practice it is observed that there is a permanent dynamic adjustment of the economic agents’ behaviors, in certain circumstances are even influenced by the information regarding an ex-ante estimated output (Taşnadi, Doltu, 2001). In an uncertain approach of the economic system, it is assumed that the deterministic approach could create some rigidities (organizational, institutional, technological) which constrain the appearance and diffusion of innovations within the economic system. For example, it is deterministically estimated a potential output, and depending on it, there is formed an economic policy of adjusting the recessionist/inflationary delay, but the economic policy affects people’s social behavior in some industries, and thus, the emergence of social innovations is inhibited.

A synthesis of some normative principles of the neo-Schumpeterian contribution is considered:

“Qualitative change affects all levels of the economy, and so we must consider not only structural changes but also the removal of constraints under the status quo and allow for development under new circumstances.

Qualitative changes do not appear continuously in time but correspond to the idea of punctuated equilibria encompassing periods of smooth and regular development as well as periods of radical change.

Finally, these processes show strong non-linearities and positive feedback effects which are responsible for pattern formation and other forms of spontaneous structuring i.e. they are not completely erratic, even if the innovative success by its very nature is characterized by strong uncertainty” (Hanusch, Pyka, 2007, pp. 275-289).

Although the neoclassical current had a great contribution in accounting the economic growth, it can explain in a small amount the behavior of economic agents and how the economic growth was generated. Zvi Griliches said in 1997 that "We can take productivity growth calculation and allocate it in great detail to the various missed components, reducing thereby the role of the «unallocated» residual. But this, while very instructive and valuable, only shifts the problem to a new set of questions: Why was there all this investment in human capital? Will it continue? Where did the improvements in capital equipment come from? [...] Real explanations will come from understanding the sources of scientific and technological advances and from identifying the incentives and circumstances that brought them about and that facilitated their implementation and diffusion. Explanation must come from comprehending the historical detail” (OECD Manual, “Measuring Productivity, Measurement of Aggregate and Industry-level productivity, Growth”, 2001).

Conclusions

The mathematical functions that summarize the macroeconomic results give an opportunity to the economists to make an “opinion” about the general condition of the macroeconomic balance, but they need a good theoretical knowledge to understand various causalities between events. The economists can be structured in economists-accountants, economists-managers and economists-researchers. By the neo-Schumpeterian contribution, it is proposed to guide the researchers’ attention to a mesoeconomic vision, meaning to focus their attention on the behavior of the economic agents and on the allocation of resources within the industry. For a better understanding of the dynamics of companies and resources, there cannot be successfully used the concept of

„representative economic agent”, because the real economic processes are heterogeneous, constantly appearing product and process innovations that can be subjectively considered by the economists-managers new to the company, new to the industry or new to the world. It is assumed that the most „fruitful” innovations are the technological ones, because they allow both the formulation of new technological processes, the emergence of new products, and new knowledge that can be accumulated to a technology, an industry or to the world. The invention of the technology of accumulating the “Internet” knowledge allows a dynamic access of the economic agents to the stock of knowledge about all existing technologies, thus creating endless possibilities to generate innovations. The economists-researchers have long intuited that changes in the economy are both quantitative and qualitative, and the neo-schumpeterian “current” proposed as a tool of quantifying the economic effects, the concept of innovation. By its tools of formalization, the neoclassical theory generated a strong theory of measuring the economic effects, but because of the restrictive assumptions (which allowed the formalization) it is difficult to shape the behaviors of the economic agents. The invention of the Nuclear Magnetic Resonance device allows the relaxation of the neoclassical assumptions regarding the rationality of economic agents’ behaviors, leaving space for the formulation of alternative theories of quantifying their heterogeneous behavior. The neo-Schumpeterians propose the guidance of attention to the industry (at a mesoeconomic level), in which the companies are not homogeneous (representative), but acquire a heterogeneous nature through the product and process innovations. These innovations are, to some extent, subjectively regarded as innovations by the economists-managers, and this involves a stochastic process of econometric modeling for the economists-researchers.

Future research

Future research may be directed to the formulation of alternative theories generated by the relaxation of the neoclassical assumptions. The economists intuited that the neoclassical models represent a powerful tool of the economic system’s formalization, and the differential equations allowed to a certain extent to quantify the variations of the economic effects. There have always been some limits in understanding the qualitative structural variations of the human organizations which modify the estimates of the parameters from the equations of economic regression. Currently, through some parameters, we understand “by ear” how does the economic system vary when the economic results are

aggregated and there are used continuous mathematical functions. To have a closer vision to the reality, and to understand their heterogeneous behavior, we can try to shape a stochastic process at the mesoeconomic level. There are several angles to look at an economic process, and this implies the fact that some theories can explain better than others, some aspects seen in different contexts. No matter how precisely a set of rules would be defined by a statistician for defining an organization, one person can be part of several organizations simultaneously, and this implies that any regression is limited by the knowledge that can be considered as embedded either in capital or labor.

Aknowledgements

This article is a result of the project „Doctoral Program and PhD Students in the education research and innovation triangle”. This project is co funded by European Social Fund through The Sectorial Operational Programme for Human Resources Development 2007-2013, coordinated by The Bucharest Academy of Economic Studies.

References

- Blanchard, O. (1997). *The Economics of Post-Communist Transition*, Clarendon Pres, Oxford
- Clark, J.B. (190). *The Distribution of Wealth*, New York: Macmillan (first printed 1899)
- Cornescu, V., Bucur, I., Crețoiu, Gh. (2008). *Economie*, Ed. a II-a, Editura C.H. Beck, București
- Dopfer, K., Foster, J., Potts, J., „Micro-meso-macro”, *Journal of Evolutionary Economics*, Vol. 14, 2004, pp. 263-279
- Dosi, G., „Sources, Procedures, and Microeconomic Effects of Innovation”, *Journal of Economic Literature*, American Economic Association, vol. 26(3), 1988, pp. 1120-1171
- Dosi, G., „Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change”, *Research Policy*, 11(3), 1982, pp. 147-162
- Hanusch, H., Pyka, A., „Principles of Neo-Schumpeterian Economics”, *Cambridge Journal of Economics*, Oxford University Press, vol. 31(2), 2007, pp. 275-289
- Kuhn, T.S. (1962). *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press
- Leontief, W., „Joseph A. Schumpeter (1883-1950)”, *Econometrica*, Vol. 18, No. 2 (Apr., 1950), pp. 103-110
- Mitra, P., Muravyev, Al., Schaffer, M.E., „Convergence in Institutions and Market Outcomes: Cross-Country and Time-Series Evidence from the BEEPS Surveys in Transition Economies”, *Discussion Papers of DIW*, Berlin 847, 2008, DIW Berlin, *German Institute for Economic Research*

- Nelson, R.R., Winter, S.G., „Neoclassical vs. Evolutionary Theories of Economic Growth: Critique and Prospectus”, *Economic Journal*, 84 (336), 1974, pp. 886-905
- OECD Manual, „Measuring Productivity, Measurement of Aggregate and Industry-level productivity, Growth”, ISBN 92-64-18737-5 – No. 51987, 2001
- OECD, „Work With Firm-Level Statistics: Some Key Applications”, Directorate for Science, Technology and Industry, OECD, *Workshop on Firm-Level Statistics, DSTI/EAS/IND/SWP/AH(2001)3*, 26-27 November 2001, <http://www.oecd.org/sti/>
- Rosenberg, N., „Science, Invention and Economic Growth”, *The Economic Journal*, Vol. 84, No. 333, 1974, pp. 90-108
- Ruse, M., „Charles Darwin on human evolution”, *Journal of Economic Behavior & Organization*, Elsevier, vol. 71(1), July 2009, pp. 10-19
- Samuelson, P.A., Barnett, P.A. (2007). *Inside the Economist's Mind – Conversations with Eminent Economists*, Blackwell Publishing
- Schumpeter, J. (1942). *Capitalism, Socialism and Democracy*, Harper and Brothers, New York
- Solow, R.M. „Technical Change and the Aggregate Production Function. The Review of Economics and Statistics”, Vol. 39, No. 3, 1957, pp. 312-320
- Taşnadi, Al., Doltu, C. (2001). *Dezvoltarea teoriei monetare – Mainstream-ul și Școala Austriacă*, Editura ASE, București

Dobrogea as Romanian Tourism Micro-destination*

Aurelia-Felicia STÂNCIOIU

Bucharest Academy of Economic Studies
stancioiufelicia@hotmail.com

Nicolae TEODORESCU

Bucharest Academy of Economic Studies
teodorescu.nicolae@gmail.com

Anca-Daniela VLĂDOI

Bucharest Academy of Economic Studies
anca.vladoi@gmail.com

Ion PÂRGARU

Polytechnic University of Bucharest
pargaruion@yahoo.com

Daniel MOISE

Bucharest Academy of Economic Studies
moisedaniel@gmail.com

Abstract. *Dobrogea, known since antiquity as Dacia Pontica, after the name of the sea that was bordering it – Pontus Euxinus, is a region situated in Southeastern Romania and covers four counties of which two – Constanța and Tulcea – belong to the Romanian territory. The celebrity of Dobrogea consists in its openness to the Black Sea, in Danube Delta (reservation of the biosphere that belongs to the UNESCO heritage since 1991) and in its archaeological traces that prove the existence and the continuity of the Romanian population next to “Turks, Tatars, Circassians, Macedo-Romanians and Greeks, Italian and Ukrainian, Catholic and Protestant Germans, Bulgarians and Russians, even Egyptians and Gipsy Muslims – a true ethnic mosaic” (Popoiu, 2010, p. 15). The conducted research refers just to the two Romanian counties and aims to highlight the role of the image of the historical region of Dobrogea in building its own brand and to identify its main tourist attractions and forms of tourism.*

Keywords: tourism destination; tourism micro-destination; destination image; regional tourism brand; forms of tourism; destination marketing.

JEL Code: M31.

REL Codes: 14F, 14G.

* The paper is part of a research presented in detail in No. 2(555)/2011 and examines, from this perspective, just the Romanian territory of the historical region of Dobrogea.

Introduction

Known in the past as Dacia Pontica or Scythia Minor, the historical region of Dobrogea stretches out from administrative point of view on the territory of two countries: Romania (Constanța and Tulcea counties) and Bulgaria (Dobrichi and Silistra counties). This paper and the conducted research focus just on the Romanian territory of this region.

The micro-destination of Dobrogea is situated in the Southeastern Romania and it is bordered on the North by the Dobrogea's massif (the Măcin Mountains), surrounded by three tablelands (Tulcea, Babadag and Casimcea), on the North-East by Danube Delta, on the East by Black Sea, on the West by the lower reaches of the Danube and on the South by the state border with Bulgaria. Regarding the administrative-territorial division, the region covers two counties: Constanța and Tulcea. The most important cities are: Constanța, Mangalia, Medgidia and Tulcea. The region includes both spa resorts (Eforie Nord, Eforie Sud, Saturn) and leisure resorts such as Mamaia, Jupiter, Neptun, Olimp, Venus, Costinești, 2 Mai and Vama Veche.

Very well known in Romania (it holds the first position in the preferences of the 1887 respondents), but also in Europe, as one of the most attractive tourist features that shapes its own tourism destination as "an exotic area with more than 1,200 plant species, with the richest ornithological fauna (over 300 species, including unique colonies of pelicans) and ichthyological fauna (represented by around 100 species) on the continent, Danube Delta is the largest reservation of wet lands in Europe (2,681 km²) and was included into the UNESCO heritage" (Matei, 2011, p. 174). In addition to the natural landscape offered by the Black Sea and the Danube Delta, there are many key tourist attractions, such as: the ruins of the Greek colonies (Tomis, Callatis and Histria), the Casino (Constanța), the National Museum of History and Archeology (Constanța), the Aquarium (Constanța), the Dolphinarium (Constanța), the Planetarium (Constanța), the Astronomical Observatory (Constanța), the Navy Museum (Constanța), the Tropaeum Traiani monument from Adamclisi, monasteries such as: Dervent Monastery, Celic Dere Monastery, Cocoș Monastery, the Monastery Cave of St. Andrew (St. Apostle Andrei).

Operational framework

The research conducted in October-December 2010 – January 2011 on a sample of 1,887 young people aged 20-24 years, with ongoing studies, aimed to identify the extent to which the perceptions of the residents coming from different Romanian regions related to the micro-destination of Dobrogea helps in the development of the identity within the elaboration process of the destination marketing strategy.

According to the classification of the forms of tourism proposed by the World Tourism Organization (WTO/UNO) in 1979, which takes into account the reasons guiding the choice of tourism destination (business and professional tourism, medical spa tourism, cultural tourism, leisure tourism, visiting friends and relatives and other forms of tourism), the respondents could choose the main form of tourism practiced within the historical region of Dobrogea.

Regarding the distribution of the forms of tourism for the micro-destination of Dobrogea, the results are as follows: 74.5% of the respondents considered the *leisure tourism* as being representative for this region, 16.3% opted for *medical spa tourism*, 3.3% chose *cultural tourism*, 3.1% opted for *other forms of tourism*, 2.3% chose *visiting friends and relatives*, while 0.5% of the respondents opted for *business and professional tourism* (Figure 1).

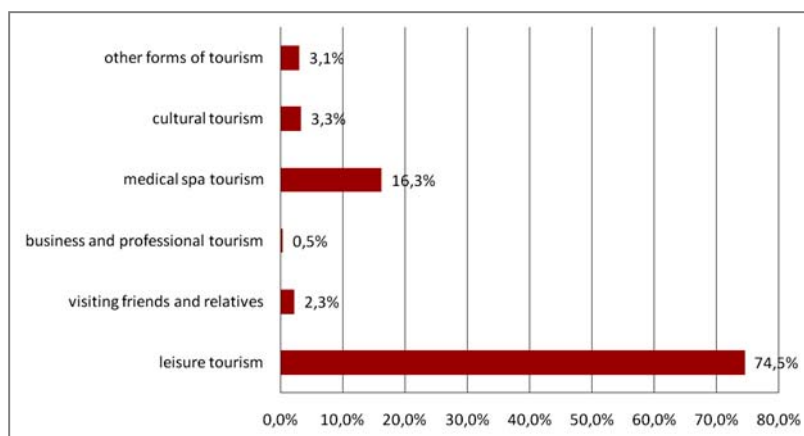


Figure 1. The distribution of the forms of tourism for the micro-destination of Dobrogea

Taking into consideration the regions of origin of the respondents, it can be noticed that the *leisure tourism* constantly holds the first position as predominant form of tourism for this historical region and it is frequently followed by the medical spa tourism. The last place belongs to the business and professional tourism. Regarding the established regional structure, the situation is as follows (Table 1):

1) Muntenia as region of origin (Figure 2):

- 73.7% of the respondents chose *leisure tourism* as representative form of tourism for the region of Dobrogea;
- 17.7% opted for *medical spa tourism*;
- 3.2% chose cultural tourism;
- 2.9% opted for other forms of tourism;
- 2.1% chose visiting friends and relatives;
- 0.4% of the respondents – business and professional tourism.

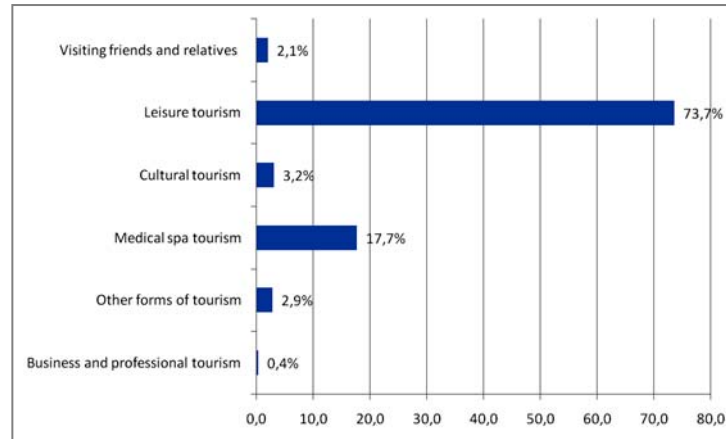


Figure 2. The distribution of the forms of tourism for the micro-destination of Dobrogea.
Region of origin of the respondents: Muntenia

2) Oltenia as region of origin (Figure 3):

- 63.6% of the respondents chose *leisure tourism* as representative form of tourism for the region of Dobrogea;
- 17.4% opted for *medical spa tourism*;
- 7.4% chose cultural tourism;
- 5.8% opted for visiting friends and relatives;
- 4.1% chose other forms of tourism;
- 1.7% of the respondents opted for business and professional tourism.

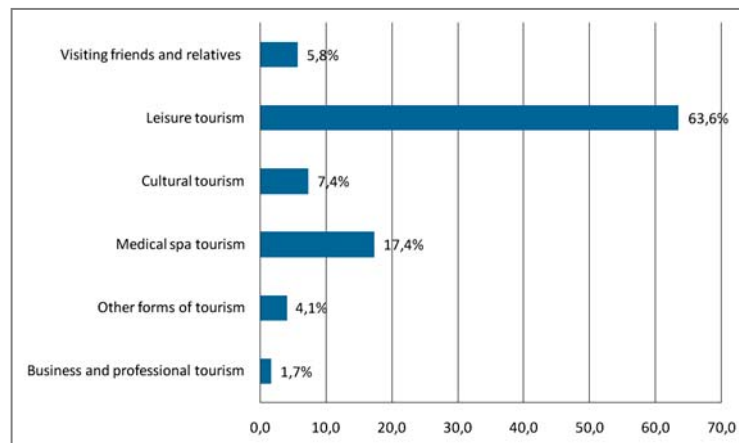


Figure 3. The distribution of the forms of tourism for the micro-destination of Dobrogea.
Region of origin of the respondents: Oltenia

3) Banat-Crișana as region of origin (Figure 4):

- 63.4% of the respondents chose *leisure tourism* as representative form of tourism for the region of Dobrogea;
- 12.2% opted for *cultural tourism*;
- 10.2% chose medical spa tourism;
- 7.1% opted for other forms of tourism;
- 5.1% chose visiting friends and relatives;
- 2.0% of the respondents opted for business and professional tourism.

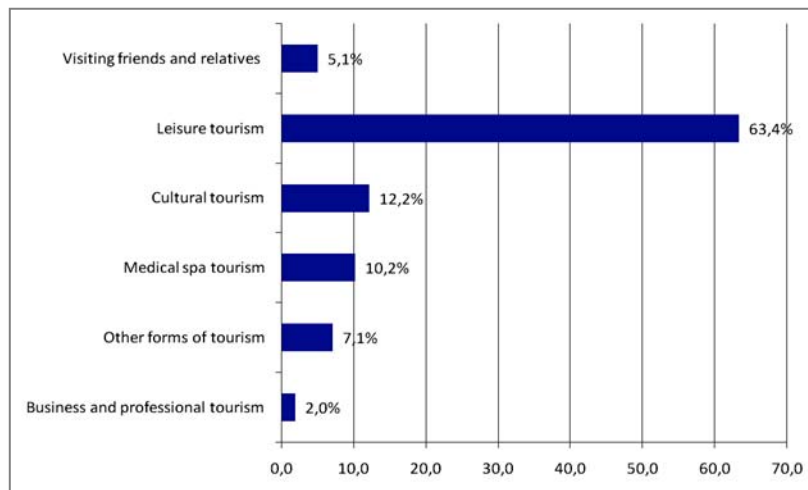


Figura 4. The distribution of the forms of tourism for the micro-destination of Dobrogea.
Region of origin of the respondents: Banat-Crișana

4) Transylvania as region of origin (Figure 5):

- 50.0% of the respondents chose *leisure tourism* as representative form of tourism for the region of Dobrogea;
- 22.9% opted for *medical spa tourism*;
- 11.8% chose other forms of tourism;
- 8.5% opted for cultural tourism;
- 5.1% chose visiting friends and relatives;
- 1.7% of the respondents chose business and professional tourism.

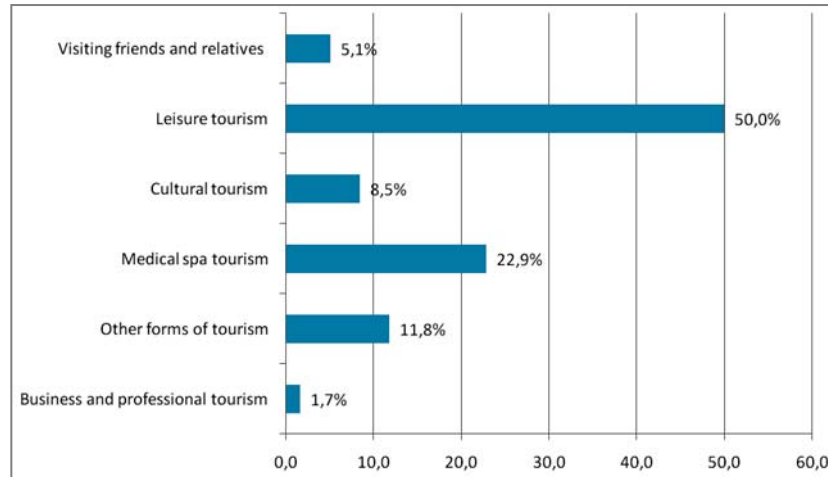


Figure 5. The distribution of the forms of tourism for the micro-destination of Dobrogea.
Region of origin of the respondents: Transylvania

5) Bucovina as region of origin (Figure 6):

- 58.9% of the respondents opted for *leisure tourism* as representative form of tourism for the region of Dobrogea;
- 17.9% chose *medical spa tourism*;
- 8.4% opted for cultural tourism;
- 7.4% chose visiting friends and relatives;
- 5.3% opted for other forms of tourism;
- 2.1% of the respondents chose business and professional tourism.

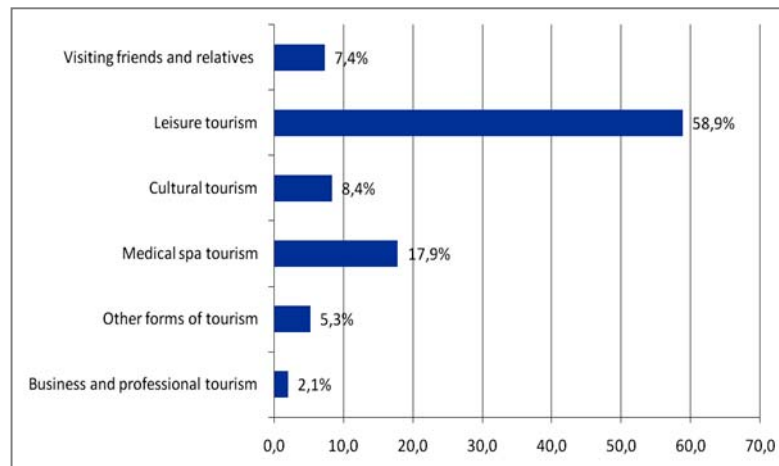


Figure 6. The distribution of the forms of tourism for the micro-destination of Dobrogea.
Region of origin of the respondents: Bucovina

6) Moldavia and Maramureş as regions of origin (Figure 7):

- 66.8% of the respondents chose *leisure tourism* as representative form of tourism for the region of Dobrogea;
- 16.9% opted for *medical spa tourism*;
- 6.8% chose cultural tourism;
- 4.7% opted for visiting friends and relatives;
- 3.4% chose other forms of tourism;
- 1.4% of the respondents chose business and professional tourism.

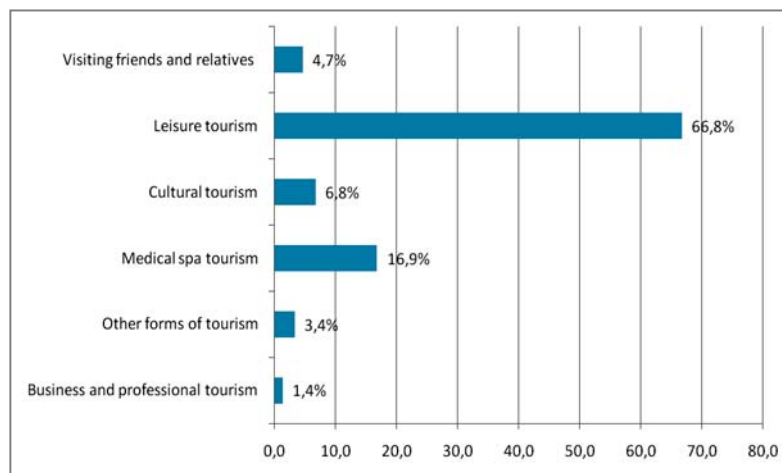


Figure 7. The distribution of the forms of tourism for the micro-destination of Dobrogea.
Region of origin of the respondents: Moldavia and Maramureş

7) Dobrogea as region of origin (Figure 8):

- 55.6% of the respondents chose *leisure tourism* as representative form of tourism for their region;
- 21.0% chose *medical spa tourism*;
- 11.3% opted for cultural tourism;
- 6.5% chose visiting friends and relatives;
- 4.0% opted for other forms of tourism;
- 1.6% of the respondents chose business and professional tourism.

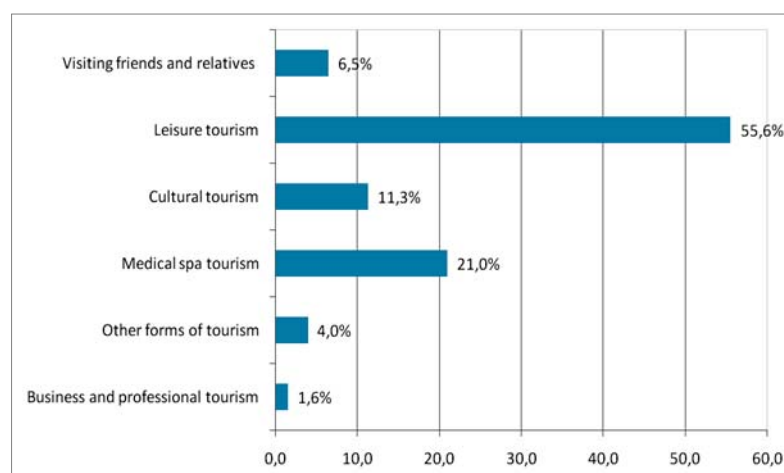


Figure 8. The distribution of the forms of tourism for the micro-destination of Dobrogea.
Region of origin of the respondents: Dobrogea

Table 1

**The distribution of the responses by forms of tourism
and by region of origin of the respondents**

(%)

Forms of tourism Region of origin of the respondents	Business and professional tourism	Other forms of tourism	Medical spa tourism	Cultural tourism	Leisure tourism	Visiting friends and relatives
Muntenia	0.4	2.9	17.7	3.2	73.7	2.1
Oltenia	1.7	4.1	17.4	7.4	63.6	5.8
Banat – Crișana	2.0	7.1	10.2	12.2	63.4	5.1
Transylvania	1.7	11.8	22.9	8.5	50.0	5.1
Bucovina	2.1	5.3	17.9	8.4	58.9	7.4
Moldavia and Maramureș	1.4	3.4	16.9	6.8	66.8	4.7
Dobrogea	1.6	4.0	21.0	11.3	55.6	6.5

The choice of the respondents for the *leisure tourism* as representative form of tourism for the micro-destination of Dobrogea can be explained in particular by the existence of a beautiful natural landscape offered by the Black Sea and Danube Delta. The resorts located along the Black Sea coast were considered to be before the 90's the preferred holiday destinations especially during the summer months (June-August) and for the last years it can be noticed a tendency for tourism during the weekend.

The references made by the respondents to the natural and anthropic tourism resources of the tourism micro-destination of Dobrogea are illustrated by order of relevance in Figure 9.

A. NATURAL POTENTIAL	% of respondents
<i>topography</i> : the Danube Delta, the Romanian littoral of the Black Sea, Dobrogea Plateau, Măcin Mountains, Culmea Niculițelului, Tulcea Hills, Babadag Plateau, Limanu Cave, etc.	47.8
<i>climate/climatic elements</i> : scorching heat, humidity.	1.4
<i>hidrography</i> : Danube River, the three branches of the Danube (Chilia, Sulina, Sfântul Gheorghe/Saint George), Siutghiol Lake, Techirghiol Lake, etc.	19.0
<i>flora and fauna</i> : the Biosphere Reservation of Danube Delta, Letea Forest, Geological Complex of Cheile Dobrogei, seagulls, fish, etc.	0.9
B. ANTHROPIC POTENTIAL	% of respondents
<i>historical traces and art monuments</i> : the ruins of the ancient Greek colonies (Histria, Tomis, Callatis), the Tropaeum Traiani Monument from Adamclisi, the Turkish mosque of Ali-Gaza Pasha, etc.	2.8
<i>elements of ethnography and folklore</i> : folk music, folk dances, folk costumes, gastronomy (fish soup, fish brine, Dobrogean stew, Dobrogean pie, wines), customs and traditions, etc.	3.6
<i>museums</i> : the National Museum of History and Archeology, the Popular Art Museum, the Sea Museum, the Romanian Navy Museum, etc.	0.4
<i>cultural-artistic institutions</i> : Dervent Monastery, Celic Dere Monastery, Cocos Monastery, the Monastery Cave of St. Andrew (St. Apostle Andrei), the Big Mosque from Constanța, etc.	2.0
<i>events</i> : Callatis Festival.	0.1
<i>contemporary constructions</i> : Nuclear Power Plant from Cernavodă, Thermal power station from Năvodari, Dolphinarium, Telegondola, Aqua Magic, the Anghel Saligny Bridge, wind farms, etc.	1.7
<i>human settlements</i> : Constanța, Techirghiol, Mamaia, Eforie Nord, Eforie Sud, Costinești, Olimp, Neptun, Jupiter, Cap Aurora, Venus, Saturn, Mangalia, 2 Mai, Vama Veche, Tulcea, Sulina, Cernavodă, Năvodari, etc.	12.0
C. MISCELLANEOUS	% of respondents
<i>personalities</i> : Anghel Saligny, Panait Cerna, Aneta Stan, Gheorghe Hagi, Radu Mazăre.	0.2
<i>other elements/aspects</i> : affiliation (home), childhood, holiday, recreation, fishing, population (Lipovans, Turks, Macedo-Romanians), etc.	8.1

Source: adapted after Minciu, R. (2001). *Economia turismului*, Ed. Uranus, București, p. 161

Figure 9. Structure of the tourism potential of the region of Dobrogea

Conclusions

From the conducted research it can be concluded that the *leisure tourism* is the representative form of tourism for the region of Dobrogea, fact which can be in particular explained by the relaxing and special natural landscape offered by the Black Sea and the Danube Delta, by the specific gastronomy, customs and traditions and by the existence of the ruins of the former Greek colonies such as Tomis, Histria and Callatis – all these tourist attractions allowing the development of the cultural tourism besides the leisure tourism. The medical spa tourism emerged as a result of the existence of the Techirghiol Lake (which is rich in concentrated salt water and sapropelic mud) and comes to complete the other forms of tourism practiced in this region.

For an accurate assessment of the tourism micro-destination of Dobrogea, similar researches should be conducted for other categories of population, of different ages and with different level of education and afterwards strategies should be mapped out in order to develop appropriate tourism products.

References

- Datculescu, P. (2006). *Cercetarea de marketing*, Brandbuilders Grup, București
- Dobrea, R.Z., Ștefănescu, A.N., “Analiza competitivității industriei turistice din România în contextual globalizării economice”, *Economia seria Management*, 11(1), 2008, pp. 40-54
- Echtner, C.M., Ritchie, J.R.B., “The Meaning and Measurement of Destination Image”, *Journal of Tourism Studies*, 2(2), 1991, pp. 2-12
- Fan, Y., “Branding the nation: What is being branded?”, *Journal of Vacation Marketing*, 12(1), 2006, pp. 5-14
- INSSE (Institutul Național de Statistică) (2009). „Populație; Educație”, în *Anuarul statistic 2009*
<http://www.insse.ro/cms/rw/pages/anuarstatistic2009.ro.do> (accessed 05.10.2010)
- Kapferer, J. (1997). *Strategic brand management*, Kogan Page, Great Britain
- Matei, E. (2011). *Ecoturism*, Editura Universitară, Ediția a-2-a, rev., București
- Minciu, R. (2001). *Economia turismului*, Editura Uranus, București
- Morgan, N., Pritchard, A. (2001). *Advertising in Tourism and Leisure*, Butterworth-Heinemann, Oxford, UK
- Pike, S., “Destination Image Analysis: A Review of 142 Papers from 1973-2000”, *Tourism Management*, 23(5), 2002, pp. 541-549
- Popoiu, P. (2010). *Antropologia Dobrogei*, Editura Universitaria, Craiova
- Ritchie, J.R.B., Ritchie, J.B.R., “The Branding of Tourist destination. Past Achievements and Future Challenges”, *Proceedings of the 1998 Annual Congress of the International Association of Scientific Experts in Tourism, Destination Marketing: Scopes and Limitations*, edited by Peter Keller, Marrakech, Morocco: International Association of Scientific Experts in Tourism, pp. 89-116
- World Travel & Tourism Council (2011). “Economic Impact Data and Forecasts”
http://www.wttc.org/eng/Tourism_Research/Economic_Research/ (accessed 04.01.2011)
- World Travel & Tourism Council (2011). “Travel & Tourism Economic Impact. Romania”
http://www.wttc.org/bin/pdf/original_pdf_file/romania.pdf (accessed 04.01.2011)

The Rethinking of the Economic Activity Based on Principles of Eco-Efficiency*

Daniela VÎRJAN

Bucharest Academy of Economic Studies
daniela_virjan@yahoo.com

Abstract. *Drought, floods, damaging storms, heat waves, acid rain, climate changes are but a few of the consequences of human action upon the environment. Can we possibly live against the environment? The answer is NO, and as such we must run an economy which respects the principles of eco-efficiency because only so can economic progress go on. Green economy is a great opportunity for all of the world's countries, and is a real economy which keeps the resource-needs and environment relation in balance, aims towards quality and not quantity, lays emphasis on regeneration, recycling, reuse and creativity. Eco-efficiency implies both innovation towards a high degree of product dematerialization, services and systems, alongside with greatly changing current production and consumption practices. If we produce based on the principle of eco-efficiency we can reduce the effects of the profound economic, ecological, socio-political and cultural-spiritual crisis which marks our planet and countries.*

Keywords: eco-efficiency; green economy; innovation; competitiveness; sustainable development; sustainable economic growth.

JEL Codes: Q01, Q57.

REL Codes: 5C, 15C, 15D.

* Ideas in this article were presented at the Symposium „The global crisis and reconstruction of economics?”, 5-6 November 2010, Faculty of Economics, Bucharest Academy of Economic Studies.

For two centuries, the idea of accumulating capital has created a strong process of industrialization which led to the diversification of goods and services made in new enterprises about which mankind didn't even dream of, all these becoming not only doable, but also, in great numbers, leading to a continually increasing consumption of natural resources, raw materials and energy. Nowadays, the growth of industrialization is reaching its absolute limits by the negative consequences (the ecological, social, human and economic crisis), but also by having used up the resources, which imposes a slowing down of the rate of growth and in some cases even a crash. As such, the idea according to which economic growth is the best way for human growth proved to be an illusion, for as long as it's unexpected and unwanted consequences were not taken into account. As such we must rethink our current economic activity, keeping other economic processes in mind, so that the economic system cushions with the natural system and works on the principle of boats with sails, pushed by the ecological processes and not by natural resources which are limited and can be used up.

The world's natural resources may be used up and are limited, and as such we must use them as rationally and efficiently possible without endangering the environment for future generations. Nowadays increasing the efficiency with which the world's resources are used has become profitable, and without eco-efficiency you cannot speak of a durable production system. The transition towards an energetic system based on efficiency and regenerating energy requires that we replace a whole complex system.

Eco-efficiency means that we must reduce the intensity at which we use up raw materials, materials and the consumption of energy per unit of product, improving the possibilities of recycling and reusing, the best use of regenerating resources, increasing the durability of products and the chances that they decompose in easy to recycle components, reducing the dispersion of toxic substances in the environment, etc.

Eco-efficiency is motivated not only by concerns related to the protection of the environment, but also by the perspective of important financial economy under the form of lower bills for energy and water, less expenses with raw materials, materials, fuel, etc. The new economy must be the economy of the modern world, the economy of the labor market, of human needs, of raw materials and of how these come together harmoniously, so as to create a cushioning between human needs and the needs of the environment. The new economy must emphasize the use and reuse of values and not change them, on the qualitative side of products and less on the quantitative side, on regeneration, recycling, reuse and less on accumulating money or material goods.

It is not only rich states which are responsible towards society and the environment, but every one of us. Us people should think of how to save energy and raw materials; consumers need to learn how to clean the environment of the hazardous effects of waste; producers must think and produce in a more healthy manner while polluting less, etc. The success of the rethinking of the economic activity requires innovation and competitiveness. The new economy needs pioneering companies which can change this hostile economic landscape and prepare the domain so that it attracts more economic agents towards producing on the principle of eco-efficiency.

The European Union has launched the Sustainable Development Strategy during the Gothenburg summit (2001), called Europe 2020 (renewed in June 2006), and in June 2009 the European Committee has evaluated the progress made by the European Union ever since the moment the strategy was launched. The Committee had underlined that despite the fact that the EU sees itself as the spearhead of the battle against climatic changes and for sustainable development, in some area certain tendencies remain: annual losses in the field of services related to the ecosystem equivalent to 50 billion Euro, while the summed losses sustained by the natural wealth is estimated at 7% of the GDP of member countries up till 2050; the demand for natural resources is rapidly rising; the European reserves of fish and almost exhausted, and the forests, plant species and animal races are increasingly endangered by climatic changes, etc. As such on the day of the 3rd of March 2010, the European Committee has adopted the Europe 2020 Strategy for exiting the crisis and rapidly changing over to an economy with lower emissions and a lower consumption of energy, based on energetically efficient technologies, on sustainable transport and by changing over to sustainable consumption behaviors. The strategy identifies three key factors required for economic growth, which must be applied to the whole of the EU and at national levels too: a growth based on intelligence, innovation, education and a digital society; a more competitive production and a more efficient use of resources; an economic growth favorable to inclusion, meaning better participation on the labor market and the fight against poverty.

Progress made towards the three objectives will be measured via five indicators representative at the level of the EU, and which member states must transform in indicators of national reference: 75% of the population between 20-64 years must be hired; 3% of the EU's GDP must be invested in research and development; the climatic objective of 20/20/20 must be achieved, meaning that 20% of energy used must have been attained from regenerating sources, and the volumes of toxins emitted in the atmosphere must be cut by 20% before 2020; the percentage of early school dropout must be under 10%, and at least 40% of the young generation must have academic studies; the number of

individuals exposed to poverty must be cut down by 20 million individuals. So as to realize the proposed objectives the EU proposes the Europe 2020 Agenda, which is a series of initiatives among which: a union of innovation which implies the reorientation of research-development and the innovation policies towards major challenges; the Youth in motion program is a digital agenda for Europe which implies the creation of unique digital markets to which all Europeans must have broadband internet access before 2013; efficient use of resources, regenerating resources too, with reduced atmospheric carbon emission; an industrial policy which will promote green economic growth; an agenda for new competencies and work places; an European platform against poverty.⁽¹⁾

The European Committee's Project for the new economic strategy of the EU sounds good enough, the aims are ambitious and realistic, but achieving them remains a problem difficult to solve, just as it has happened before with the Lisbon Strategy. The EU must rigorously involve itself in the management of how this is implemented and in the overseeing of the process, especially on the long term and must convince all member states to put up permanent and sustained effort towards achieving, on one side, a tighter connection between climate changes, energy, banking-financial regulation and social development, and, on the other side, must redefine the aggregate of policies: economic, educational, cultural, banking-financial which must have a coexistent end and must be attuned to the new European and world requirements. The role of the European parliament must be amplified by changing over to a new level of government and responsibility. Also, it is necessary that all citizens and all institutions empowered and acknowledged by law to contribute to a rapid change towards a society of knowledge, with reduced emissions and reduced energy consumption, based on technologies effective in terms of energy and resource usage and educating the population and institutions towards a sustainable consumption, all of these to limit the effects of the profound economic, ecologic, socio-political and cultural-spiritual crisis which plagues the whole planet.

Green Economy is the solution for a healthy, prosperous and clean life, economic policies should establish a market for the very clear environmental framework aimed at: reducing drastically our emissions that deteriorate the climate, preservation of rural landscapes, protecting diversity the biological world, halting production of nuclear waste, etc.

The transition from a society of waste to a recycling economy will provide new jobs will replace the extraction industries, will create economic and social stability will ensure a healthier and cleaner environment; energy will come from wind turbines instead of coal mines and the cities will be for people

not cars. Green Economy will not be in conflict with the system, the planetary ecosystem will be able to sustain economic progress for a long future.

We must be aware that by consuming these products, either as individuals or as a legal person, we can exercise great influence on the future of Earth. Each purchase you do, whether it is a piece of paper or a computer, contains hidden costs to the environment and Earth's population. Many products require large amounts of water, wood, energy, metals and resources that are not always renewable, and these materials often contain toxic chemicals that when they reach the environment they endanger human health and ecological systems on which we depend.

Corporations, schools, universities, state institutions and other large institutions have a significant purchasing power, and many companies just do not buy just finished products but also raw materials, packaging and other goods required for their production process. In this respect, for things to flow normally in the environment, greening of supply is proposed. Greening supply contracts requires that supply agencies would require: products that display more positive environmental attributes, products that generate less waste, with more durable less bulky packaging that is reusable; products that meet certain criteria of environmental protection during manufacturing or production, suppliers should recover or accept electronic equipment or other property at the end of it's utilization; suppliers should present environmental safeguards, etc. (Halweil, Mastny, 2004, p. 162).

Buying organic products can increase savings, for both entrepreneurs as well as for any other person, and some organic products are even cheaper than conventional products, and even if when buying organic products does not lead directly to savings, they may lead to general benefit for all. Purchasing organic products can improve the health of the population (Halweil, Mastny, 2004, p. 173). Although we are not aware, many of the products you purchase (eg. paint for walls and furniture, pesticides for maintenance of land. cleaning detergents used for maintenance of buildings, heavy metals and volatile organic compounds, etc.) can pollute the air inside buildings and hazardous emissions emitted can accumulate in living tissue, thus jeopardizing human health and the environment.

An important mean of institutionalizing environmental supply is the establishment of written rules or laws that support the work. Example: the strategy adopted by the City of Copenhagen in 1998, stating that all the effects of two years in office should be without PVC, all photocopiers should use 100% recycled paper, all printers should print on both sides and all boxes should be used. However, who ensures that these activities will take place? Nobody, because organizations do not set strict targets and because there isn't a

system of well-formed; so if an institution sets more specific and measurable goals it's more probable to buy organic products.

Higher demand from all institutions for organic products can play a major role in establishing a larger market sales of environmental goods and services, and producers will be more motivated to design and produce them, and if these products will be on the rise, propelled by competition and innovation, the markets will decrease prices, making it accessible to purchase organic products.

Presently, some manufacturers are looking to bring more competitive and more modern new goods on the market, but in their chase after profits will unbalance other spheres of social life and especially the environment. Given that companies are responsible for making profits and are in relationship with associations and suppliers, in some cases it may be that certain competitive disadvantages prevent them from going to a green economy.

Consumer economy makes the individual to focus attention and energy consumption because it's a fashion, thus remaining a prisoner of that need, which in fact is physiological, not longer having time to think at other spiritual needs that might improve or even change the social condition nor to think about environmental consequences. And so it appears as an over-fish limits needs, the goods which are useful but less used, even harmful to consumers, that produce artificial needs.

The mass production and mass consumption is an economic necessity as modern economies are able to produce huge quantities of goods at very low prices, which makes both producers and consumers to look more and more products as single goods that can take be dispose of relatively easy and not as articles incorporating energy and valuable materials. Cheap raw materials are the consumer's paradise. Major producers seek to produce in countries where labor is cheapest, being in constant competition in terms of maintaining a very low income to workers. China is one example, so that its trade surplus with the United States reached 103 billion in 2002 (Brown, 2005, p. 23).

To support the orientation towards an economy that consumes less energy, consumers and producers should pay attention to product life cycle, from materials and production methods to how these products are biodegradable and undergo the process of recycling, use and reuse. For that process to be sustainable a number of measures should be taken: suspension of subsidies from the state (fuel, metals and minerals, wood, etc.) encourages lower prices and stimulates the consumer, tax transfer is a measure that causes producers to reduce use of fossil fuel and waste emissions, however, imposing eco-taxes is limited so far (eg tax for environmental protection in OECD countries averages about 6-7% of total all taxes, environmental supply can lead to technological innovation and establish green markets through regulatory

instruments, product standards and labeling programs to inform consumers in choosing non-aggressive products towards the environment, goods, etc.).

Since resources are limited to the potential of our planet, you must use them wisely and find ways to recycle and reuse them in order to become less necessary to extract from the wild.

Producers should try to provide the same given volume of goods and services, a contribution of materials ten times lower, so prices are the lowest cost per unit, encouraging increased use of these products and consumers can satisfy their many needs at the same price. The activity of consumption of resources will be minimized if the companies recover after the use of products. If manufacturers will consider this, then useless parts will be eliminated such as unwanted packages and products that can be easily disassembled, recycled, or reused.

Sustainability, reparability, and the capacity of modernization are key factors in lowering the environmental impact of consumption. For some companies these factors may mean lower sales, but there will be more opportunities for maintenance, repairing and remanufacturing products, and therefore a greater potential for business and jobs over the life of a product. This will make producers to rethink the product and to provide consumers with products that satisfy a real need, and so consumers will not buy products, but will take lease or rent them, and manufacturers will support the maintenance. But unfortunately there is more to do in reducing the environmental impact of products and services supplied to consumers.

The past few decades, the prices of oil, fossil fuels and natural gases have risen very much, so as to show that the time when these could be cheap has gone, increasing the tension between the world's countries. As such the contemporary economy must find ways to bring together the economy with the environment, and the functioning of the economy must be based on natural processes, which regenerate and can be recycled, with natural hydrological cycles, with local materials, using local resources, and entails that we rebuild our economic units into ecological systems.

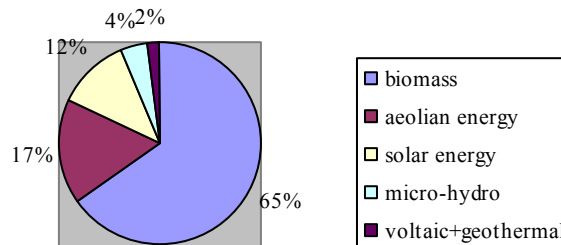
The International Agency for Energy (IAE) has forecasted that regenerating energy will hold a percentage of 13% of the world's energy from 2005 to 2030, and if national policies will be effectively implemented this percentage may reach 17% and regenerating resources could provide 29% of the total global energy during this time. Also, the IAE estimates that we must invest 45 trillion \$, in average 1% of the current global economic production before 2050 for the world to be rid of the need for oil and to cut in half CO₂ emissions. World Consumption of energy in 2009 and potential annual renewable energy production with current technologies: world energy

consumption – 477 energy flow; solar energy > 1600; wind energy p 600; geothermal energy – 500; biomass > 250; hydropower p 50; marine energy < 1 (Savin, Moomaw, 2009, p. 181).

In Romania, green businesses are only just starting - investing in wind farms and plants using solar energy is just starting. For renewable energy, energy efficiency and organic farming, European Commission allocates funds through the Sectoral Operational Program on boosting economic competitiveness. To support investments in upgrading and building new generating capacity for electricity and heat by turning biomass, hydropower resources, solar, wind, geothermal, etc. have been allocated 263 million for 2007-2013 (see Figure 1). Distribution areas of potential renewable energy: Danube Delta – energy solar; Dobrogea – solar and wind; Moldova – micro-hydro, wind energy, biomass; Carpathians – biomass and micro-hydro; Transylvania – high potential for micro-hydro; West Plain – geothermal energy; Sub-Carpathians – biomass and micro-hydro; South Plain – biomass, geothermal energy, solar energy⁽²⁾.

Romania has the energetic potential and possibility to place Aeolian aggregates, and Aeolian installations with a capacity of up to 1,400 MW, which means 23,000 GWh/year. Solar energy is used especially for producing warm water for household use in individual homes, and if we were to exploit the whole of our countries solar potential we could cover for about 50% of the volume of household use water or 15% of the thermal energy currently required for heating. Given the weather and sun conditions of our country, a thermal solar collector could work with a return of 40%-90%.

Another source of regenerating energy Romania holds and has great potential is water, which is used in a proportion of 48. The biomass is the main rurally used fuel for warming households and water, and maximally exploiting the biomass means that we must fully use residue from logging, sawdust and other resources resulting from wood, agricultural waste resulting from cereal or corn stalks, vine crop residues and urban waste residues. Current growth rates indicate that Aeolian, solar and biomass using installations can be built at speeds similar to those of conventional large energy projects (the number of photovoltaic cells has risen by more 40% per year; Aeolian energy – 3.15%; oil – 1.8%; nuclear energy – 0.4%) (Hare, 2009, p. 202).



Source: Mona Scărișoreanu (2009), *Organic farming receives 180 million euros*, Capital magazine, October 2009, article published in the magazine supplement entitled *Romania in the threshold green revolution*, p. 6.

Figure 1. Romania's green energy potential

Currently Romania produces about 18% of its energy from regenerating source. The European Committee has set that before 2020 Romania must reach 24%, and as such the intermediary goals of 2012 is 19.04%, in 2014 of 19.66%, in 2016 of 20.59% and in 2018 of 21.83%. In the whole of the European Union only 8.5% of energy is produced using regenerating sources, and up till 2020 the aggregate aim is 20%⁽³⁾.

For us to free ourselves of our need for fossil fuels we need will and we also need to redefine our educational and cultural policies as to what regards our practices of production and consumption. The building of many new aeolian power plants, geothermal power plants, biomass power plants and other regenerating systems will require large amounts of energy, but the build times are rather short – three to eight months for an aeolian turbine and one to give years for photovoltaic panels which last for about 30 years, and once most regenerating systems are put into operation there will no longer be a need to extract and transport fuels needed for them to work.

The times of cheap energy have favored the building of some green building, with zero energy consumption and zero carbon emissions, which locally produce all the energy they need, from regenerating sources (thermo-solar panels can heat up water and produce heat efficiently, and photovoltaic cells can be placed on the roof and even on the building face). Such building are some like the Bank of America Tower (SUA – they have their own power plant generating 4.6 Megawatts, the steel in the building has been made in a proportion of 87% from recycled material and the concrete 45% from recycled materials; it saves 34 million liters of water annually thanks to its own rain water collecting system), World Wildlife Fund (the Dutch headquarters of the

ecological organization – the first building with 0 greenhouse gases emissions; the building is ventilated naturally, and electricity and warm water are produced by the solar panels which cover the building), the Wuhan Electric Center (China – is shaped like a flower; zero greenhouse gases emissions, the roof is equipped with solar panels to generate its electrical energy, and rain is collected and recycled, and also Aeolian turbines generate energy), etc.

Romania must speed up implementation of these programs because, starting 2020 will have to produce 24% of consumed energy from renewable resources, with six percentage points more than the present hydropower and biomass. The European Parliament also determined that since 2019, any new building constructed in the European Union to be "green", so according to Romanian Council for Green Buildings (RoGBC), a building is considered green if by design, materials construction and technology can reduce both energy consumption and negative environmental impacts both during construction and operation. Developing a green building design implies project costs and performance and equipment increased by 10% -20% compared with traditional buildings, but operating costs decline with a minimum of 10-15% for green building, energy costs are lower, and people can live in a healthier environment.

All energy services which use natural fluxes of energy will protect the global climate, will create new jobs, will help the developing countries to reduce poverty, will increase personal and social security, will reduce international tensions caused by resources and will also improve people's health and that of the ecosystems. For that we must achieve certain objectives to create a world with zero polluting gas emissions so as to attain climatic stability: long term thinking which must make the future our responsibility and we must consider the impact of our decision on future generations; innovative technologies which maximize the production and use of energy, without carbon, while minimizing costs and easing access to ecological goods; demographic policies together with economic, educational, political, social, etc. policies so as to ensure a balance between the needs and resources available to the population; changing our way of life means that we must change our unhealthy habits and practices of production and consumption into more efficient practices both on the side of the entrepreneur and on the side of the consumer, we must wish that production be made ecologically, we must buy only products we strictly need, we must undertake a series of actions for the environment, we must refuse to consume products which damage and endanger our lives, etc.; the soil and vegetation must be protected and continually improved so that the soil can absorb 13% of all CO₂ emissions caused by man each year, so the soil can also serve as strong collectors of carboniferous gases and greenhouse effect gases

from the atmosphere; capable, strong institutions which can watch over so that certain aims be finalized efficiently, both at a national and at a global level, aims which must try to satisfy the needs not only of certain groups of interest but also those of citizens in a as clean as possible environment; effective environmental agreements which must regulate, in an as equal as possible manner, responsibility for having inefficiently exploited and having polluted the socio-human environment by economic activities; economic stability so as to allow the implementation and monitoring of economic and ecological objectives both in times of economic boom and recession; political stability so that the political be able to concentrate on finding effective solutions so as to solve future problems and not have to deal with conflicts and revolts between political parties or different interest groups; informing and warning humanity about the unwanted and unexpected consequences of an irrational, wasteful, ineffective, polluting and damaging economy on all that is alive on this planet, etc.

Like any economic revolution, changing over to green economy requires sustained effort and many sacrifices, and registering on this sustainable path will be a lengthy and complex process. Governments must play an important role, promptly acting inside the borders and working together with other governments both at an European level and at a global one. Companies and certain institutions will have to assume many of the risks, create much innovation and create new jobs, while citizens will change their unhealthy mentality, way of life, habits and practices of production and consumption, and with all of this only time can tell how much these efforts and investments into durable ways to save the future.

Notes

- (1) See „Avatarurile strategiilor Uniunii Europene”, *Euroconsultanța*, *Ghidul firmei*, Nr. 8(67), august 2010, pp. 29-34
- (2) Press release from the Ministry of environment and Forests, available on-line on the website at www.euroactiv.ro 18.02.2010
- (3) According to Frauke Thies – Green Peace expert of the UE, statement made on-line on www.wall-street.ro, accessed 19.05.2010

References

- Brown, L.R. (2005). *Starea lumii 2004*, Editura Tehnică, București
- Drăgan, A., „Investițiile în afaceri verzi, profitabile pe termen lung”, *Revista Capital*, octombrie 2009, articol publicat în revista “România, în pragul revoluției verzi”
- Halweil, B., Mastny, Lisa (2004). *Starea lumii 2004*, Raportul Institutului Worldwatch asupra progreselor spre o societate durabilă, Editura Tehnică, București
- Hare, W.L. (2009). *Starea lumii – despre încălzirea globală 2009*, The Woldwatch Institute, Editura Tehnică, București
- Milani, B., „What is green economics?”, 2005, available on-line www.greenecomonomics.net
- Stan, R. „Generația verde, pregătită de asalt”, *Revista Capital*, 30 octombrie 2009
- EcoMagazin.ro, distrugând stereotipul de consumator eco, disponibil on-line www.stopco2.ro
- Revista Euroconsultanță, nr. 8 (67), august 2010
- Revista Piața financiară, martie 2010

The Correlation between the Conceptual System of the Political Economy and that of the Accountancy – a Solution for Reducing the Risks Connected to the Administration Activities in any Stage of the Economic*

Aurelian Virgil BĂLUȚĂ

“Spiru Haret” University, Bucharest
baluta.aurelian@yahoo.com

Abstract. *Some mistakes of big financial institutions caused the crise from 2008: the correlation for a long term balance in accordance with economical theory and accounting practice were not applied, not enough controll of financial flows, wrong management of very important companies, unuse of actuarial tools. Provisions for many kind of clients and the amount of assets were not bookkeeped in accordance with IAS-IFRS system. It is a international collective interst about accounting of big financial institutions that manage an important part of many from international market. The analysis of the profitability-cost correlation in the development strategy of the company as part of a good management was not applied in accordance with economical theory. The fraud, including accounting fraud, was present in big institutions.*

Keywords: accounting; political economy; crise; fraud; financial institution.

JEL Code: A12.

REL Code: 5C.

* Ideas in this article were presented at the Symposium „The global crisis and reconstruction of economics?”, 5-6 November 2010, Faculty of Economics, Bucharest Academy of Economic Studies.

Introduction

In the accounts department and in the accounting law there have appeared, in time, many problems, dilemmas and economic theories which are of a major importance in the economic science. Among the main causes of the financial crisis which begun in 2008 is the accountancy fraud, the unreasonable and extremely high deviation from the concepts of the general economic theory and the way of operationally using these concepts in the accountancy or in the financial management, the exaggeration of the treating method based on exceptions of the different situations that the companies deal with in the current activity, with a significant deviation from the approach based on unanimously accepted professional arguments.

1. The correlation between the conceptual system of the political economy and that of the accountancy. General practice and big institution practice

1.1. The problem of balance or the balance-unbalance dilemma has been known even within the accounts department and the accounting law. There have been noticed accounting doctrines which focused themselves on the concept of balanced evolution. At micro-economic level, this means:

a) correlation between income and expenses on short, average and long term, so that one should register a rational profit, in agreement with the capitalization parameters of the capital invested in other projects, balanced with the business degree of risk;

b) correlation between returns and payments on short, average and long term, so that one should register a positive or negative treasury flow which should be sustainable on the financial market according to some reasonable estimations;

c) permanent correlation between assets structure and company's debt structure.

Accountancy and accounting law have been influenced by the economic science studies concerning the possibility and the opportunity of the unbalance as an instrument of evolution towards performance. Some micro-economic strategies based on a lack of balance lead to a long-term balance. The processed of regional integration and those belonging to global economy have aroused the companies to adopt formulas which lead to a lack of balance, at least partially, regarding the correlations as they are formulated in the classical way. The big financial institutions that failed in 2008 and caused the crisis did not apply the correlation for a long term balance in accordance with economical theory and accounting practice.

1.2. The controversy free exchange-protectionism has made the object of some very important theoretical studies, inclusively by a mathematical formalization of high class. Accountancy has had, in time, the role of registering all the elements that make the difference in the business ongoing between the juridical

system of free exchange and that of protectionism. One cannot imagine a debate regarding all these huge options if there is a lack of information regarding the impact at company level. Both the arguments for free exchange and those for protectionism are based on the assessment of the impact produced by the differentiations between the two juridical systems. At the level of companies the comparison must be made between the higher level of customs duties for the foreign trade transactions and the opportunity of some business ongoing in more countries and without customs duties. Comparisons are especially made at level of profit and loss account. The analysis supposes the introduction of hypotheses concerning the activity volume structure and that of sales figure. Customs duties increase the costs of companies which import on a certain market, respectively those of the producers and exporters of partner countries. At the same time, customs duties support the companies that produce and sale on national market. From the point of view of optimization calculations at macro-economic level, there are to be taken into account the reduced customs duties which affect income (as smaller budgetary income) in a relative and absolute way, compared to the advantages on economic network or those in favor of consumers. Protectionism means higher customs duties (as budgetary income) with an impact upon the development of those areas which bring progress in economy at a certain moment in time. The elaboration of models regarding the advantages of protectionism or of the free exchange were based, among others, on the data from the accountancy of companies involved in transactions where customs duties had an important role in market positioning. The more or less support of the public authorities regarding the foreign trade liberalization is related to direct or indirect interests towards some categories of transaction. The information regarding the systems of micro-economic interests and the intensity of this interest come from accounting field, to a great extent.

Free exchange does not mean “no rules”. The control of finance flows is very important to have economic growth with free exchange for financial tools. If there are no control of management and few people decide for a big amount of money, like in financial institutions from USA, the danger of fraud is really big and may generate effects in accordance with the amount of money wrong managed.

The different speed-ups and slowing downs of liberalization rhythm can be explained by means of these interests reflected in accountancy. In the set of information which are relevant for this topic, there can be seen the associates of the companies having business interests which are submitted to the process of European liberalization of foreign trade. The slow rhythm of service market integration in the EU can be explained by means of a reduced participation of European MPs in information technology companies or trans-frontier services, in general.

1.3. *The economic efficiency-social justice dilemma* in the reparation of richness and income was introduced in the economic theory at the beginning of the XIX th century but it gradually reflected itself in the companies' accountancy in the XXth century. The actual stage of practice at micro-economic level in the application of social justice desiderata can be applied especially to the most performing segment and it is related to the concept called *corporatist social responsibility*. The accounting law should find solutions for settling the reports related to the application of this concept. Accountancy has introduced formulas of registering, management and reference of the way in which this principle is applied.

Social justice do not mean help from taxes paid by poor people for banks wrong managed. Also economic efficiency do not mean help from taxes paid by poor people for banks wrong managed. So why keep such institutions that caused crise?

1.4. A global problem of humanity which was included in the economic science study object was represented, starting with the middle of the XX th century, by the *relation between resources waste and people's welfare or the connection between the level of life quality and environment protection*.

The responses of the accounting law and of the accountancy at this problem consisted in:

- the improvement of calculation methods of companies' negative outsourcing which resulted from the fact that environment protection norms haven't been applied;
- connecting the managerial and financial accountancy to environment accountancy;
- perfecting the balance-sheet technique so that the concept "environment balance-sheet" become operational;
- the correlation between the needs to be informed with regard to the environment and the accountancy report offer;
- the adapting of lifelong products cost calculation methods, including the assessment of residual cost as offal;
- adapting the provisions system to those projects which have an impact upon the environment, including the mining industry;
- the support of informational mechanism for a long-term development with accounting procedures and methodologies which are adapted and adequate to its specificity.

For this kind of problems, the budgetary politics found solutions concerning the social and economic fields. Pollution assessment systems, research support systems for clear energy were some of the first answers of the budgetary politics and there were good results there where they were applied. Thus, in a few years, some economic developing countries reduced their dependence on energy primary

resources and brought a major contribution to the creation of an environment protection politics which was both real and efficient.

There is also negative outsourcing wrong management of the companies that failed and the fraud in accounting. The amount paid by the public budget is a measure of this kind of outsourcing. If the Government have no tools to reduce such kind of negative outsourcing the crisis is very possible.

1.5. Another problem of economic science was represented by the most adequate *assessment of economic dynamics* the purposes of which were not to disturb the social balances and to imprint a real progress in people's living standard. An important step made by the economic science was in the direction of using the Math apparatus and especially that of formalizing the concepts or the relations studied. It is about mathematical *modeling of economic processes and phenomena*. Such a tendency was reflected in accountancy as well. The manner in which modeling impact manifested itself in the budgetary politics contained many plans. First, there were elaborated micro-economic mathematical models which contained data from the accounting-informational system. As a rule, the majority of these models contained the profit, the sales figure, the developed activity. Lately, there have been mentioned corporatist rules. All these parameters are the result of accounting information processing or represent accounting procedures on rigor classes, including the reference system. The banks failed in 2008 did not apply the actuarial tools for their management.

Secondly, there have been elaborated company models according to the parameters of budgetary politics. There have not been neglected parameters like the evolution of budgetary returns according to the development of economy or the tax burden. These models have been submitted to analysis especially from a doctrinaire perspective.

At microeconomic level, there are models which presented the company's evolution from different areas of activity under the influence of the budgetary parameters like wages tax rate, profit tax, VAT. Also, there has been analyzed the influence that taxes had upon the degradation of the situation of certain segments of economic agents, especially for small and medium-size enterprises.

1.6. From the perspective of economic sciences' hierarchy or class structure, *accountancy* is part of the *category of applicative sciences or applicative models*. At its level, there are applied a lot of elements of the fundamental theory or even of economic philosophy. It is known that the debates concerning the contents of accounting informational system gave and still give the opportunity to some important debates of the legitimate users of financial situations, on the form or content of accounting reports, on the way in which the analysis indicators are explained, on the economic implications of different accounting options.

Important rules of accounting, including IAS-IFRS system was not applied by the big banks. Provisions for many kind of clients was not bookkept, the amount of assets was bookkept without evaluation, other rules was not respected. So, accounting was not an applicative science for the big banks.

1.7. Any component of economic science has a proper mechanism through which it supports a set of interests. Accountancy and accounting law, as part of the economic science *respond to a set of complex interests even in the dynamics*. On one hand, accountancy and accounting law have in view national collective interests, being in correlation with macro economy. Taxes are paid by companies, to a great extent. Fiscal management, the purpose of which is to control taxable mass at level of company, needs, first of all, accountancy data. It is true that recent evolutions of accountancy mark the separation from strict demands of the fiscal system, but this does not mean that there are new flows of information and documents for tax calculations. Fiscal management continues to process accounting data which are submitted to specific demands. As a rule, taxes are part of the companies' costs. In those cases when the taxation subject is not clearly defined, practice demonstrated that this belongs to enterprise's accountancy as well.

A few examples support this statement: the differences resulting from the global income tax which were calculated for the private individuals in Romania before 2004, the change of gross income taxation regarding the retentions owned by the employee, taxation of the advantages in nature. One of the forms of supporting the economic raising is represented by the mechanism of public subventions. Accountancy has the following duties in managing the state aid:

- delivers information concerning the opportunity of aid tuning and the application of selection criteria;
- supervises the registering of state aid as an element of companies' non-fiscal income;
- helps at the management of use method;
- allows subsequent monitoring of state aid and of its effects on the microeconomic plan and on the general plan.

Taxes payment by companies can be submitted to a crossed control by means of public finance treasury and of companies' accounting. The existence of accounting justifying documents helps at the identification of some errors of registering at public finance treasury. For these reasons, accountancy concerns *general collective interests*. There appears an aspect of the system of interests at micro-economic level. It is known that, at company level, the interests are presented in a diversified, structured, stratified way. The patronage (the associates) has interests related to profit, sales figure and company value. Managers want to reach performance indicators. The bigger are the expenses the more unreachable become the indicators. Employees want to continue exploitation so that they keep their workplaces and a stable and secure income source. If there is a national

collectiv interest about accounting of all kind of companies much more will be an international collectiv interst about accounting of financial institution that manage an important of money from international market.

If the taxation level is higher, either the net salary diminishes or the business risks to be over. As private individuals, both the managers and the employees want good salaries which should cover their needs. After the crise public debt increased and the taxes have to cover this debt. All the people pay for the lost from financial institution.

The last part of the XXth century marked, including Europe, a large process of regionalization. Accountancy is part of this process. More than that, accountancy surpassed the European integration, from the point of view of the rhythm. The accountancy of EU's companies entered the period of international normalization. For this reason, the legislation concerning the liberty of capitals' movement, of European citizens' mobility to create companies in any state of the EU found the accountancy ready for this. The only obstacles there still exists are the linguistic ones. From the point of view of accounting references, there is a total regionalization concerning the format and the contents of principal positions. From this point of view one can tell that there is a correlation between *the normalization of accountancy and the regional economy*.

In the epoch of globalization there are correlations between accountancy and the national budgetary politics which are looked upon in a relation of interdependence, due to the *Agreements among countries regarding the avoidance of double taxation*. Thus, we can speak about borderless international practice of management and pursuit procedures within companies participating at the international value circuit of the demands of double taxation avoidance agreements. Among these demands one can notice the separate registering of external suppliers, of services catering within these relations, the emission of reports at level of each supplier concerning the sums and data where services were discounted. It is very important not to import as international practice the accounting fraud.

The systems of financing by means of international financial organisms like IMF impose *restrictions in the public politics regarding* the transparent support of the different categories of companies, the reduction and elimination of crossed subventions, the fiscal and quasi-fiscal credit. These restrictions find and answer in adequate accounting procedures at level of companies which could identify the presence of every state aid, be it direct or indirect, of any form of public intervention in the companies' business. From the above presented, we can notice that there is a *correlation between accountancy and world's economy*.

Taxes are drawings which reduce the available income of certain individuals. Fiscal laws establish, in the great majority of cases, that the payer of taxes adherent to staff rights is the company (the employer). This separation

is available especially in the case of pay-as-you-earn taxes. The company in itself is a juridical creation and contains a set of interests. There can be affected the employers' profits, the managers' salaries, the employees' salaries. Sometimes it is possible that the fiscal changes be in the consumers' pockets or in those of the users of economic goods offered by the company. By means of accountancy we are able to know who are the real beneficiaries of public acquisition and of state aid, respectively who obtains profit from the respective transactions, who consumes and who produces the goods which represent the object of public acquisitions or of state aid.

It is relevant to find out in the problems of interests system the social needs to which the public consumption addresses itself. The payments for social protection are mostly addressed to for physiological needs. Education which is financed out of public funds refers to man's needs for knowledge. The expenses destined for the Ministry of National Defense and for the Ministry of Administration and of the Interior concern the security of the individual and of the property. The analysis of the expense from the point of view of human needs to which they address can represent a starting point in establishing the level of the country's development and especially of its perspectives. When the budgetary politics is mainly directed towards basic physiological needs, there appears a clear sign of reduced level of development and of some reduced future perspectives.

The approach of budgetary politics from the point of view of economic interests can be deepened in the analysis of the *mutations which it provokes over market hierarchies*. If the budgetary politics limits itself to the redistribution of funds to collective general needs then it accomplishes its mission. To the extent to which there are changes on the market hierarchies we can speak about a politics which affects and distorts competition. Such a budgetary politics is harmful for the national economic complex and for the market efficiencies.

2. The analysis of the profitability-cost correlation in the development strategy of the company

Within the decisional process in the modern enterprises the profitability-cost correlation has a special position. The respective issue involves a dynamic analysis that starts from the critical point and follows in time the situation of the profitability per product according to the essential curves that condition the profit.

The majority of the experts state that the *product policy* represents a decisive field of the fundamental options in the economic activity. In order to decide upon the introduction or the taking out of use, the sizes or the diversification of the services, it is extremely important to analyze the *life cycle* of the products, both at the producer and the consumer, in correlation with the

profitability dynamics. The cost-profitability analysis is completed with the cost-income, cost-gross margin, profit – fixed capital or share capital. Often there are positive or negative gaps as compared to the expectations of the employers or of the managers. The economic analysis shall propose concrete solutions according to every single situation.

In the case of certain negative unsustainable deviations, much above the expectations, it is possible to decide to *stop the operation* or even the *functioning of the employers' entity*. Such decisions are taken if

- we can notice a tendency of the cumulated loss dimension increase;
- for the recovery significant investments are necessary, which can be recovered under weaker financial conditions than the current conditions on the market;
- there are no recovery signs in the predictable future;
- the assets' separate value exceeds the entity value (the value of the respective business under the conditions of the existing economic process). The activity stopping means the suspension of the specific activities with the purpose of some major technological, economic, conception mutations. It is possible to start the activity again after the reorganization. In the economic doctrine we use the word *reengineering* for such processes. Stopping the entity functioning means putting the employers' entity in dissolution and legal liquidation. Usually it won't start the activity again. The managers of financial institutions replaced this kind of analyse with accounting fraud because is easier.

Another option is the modification of the seasonable character in relation with the intensity of the exploitation and of the economic activity in the case of some time gaps between the expected level and the actually performed level. We can choose the option of the activity on a shorter or longer segment during one year.

The third option is the introduction of certain major modifications in the structure, conception and resources granted to the business if there are "alert" gaps between the expected and the accomplished profitability indicators. Through these modifications it is possible to completely or partly change the activity profile, the business plan, the used personnel, the management system, the organisational structure. The purpose is to reduce the costs up to the profitability level expected by the employers.

For financial institutions the respect of the economic theory and accounting rules means sometimes to reduce the bonus and the salaries of the managers. But the accounting fraud replaced such a problem to clients and reditors of the banks, to public budget and poor people.

We do not exclude the decision of a strict monitoring and control if we notice conjunctural deviations from the expected positions. In such cases we

must separate the influence of the objective cyclic tendencies in a company life over the profitability. The costs budget and the other components of the estimation mechanism shall be rigorously used so as to eliminate the conjunctural unjustified consumptions of resources.

Conclusions

Between the accountancy and the general economic theory we have set correlations to the level of concepts, principles, including the rendering of the various general economic laws in the specific accountancy schemes. This is what I intend to do in this communication – to point out these correlations. One of the possible conclusions is that the outburst of the financial crisis is not due to the underdevelopment of the economic science in general or of any specific component part, but the practice, mainly illegal or in opposition with the fundamental theoretic concepts of certain companies having a dominant position on the international market. Taking into consideration these correlations, along with the rigorous compliance with the applicable accounting regulations would have probably avoided the outburst of the financial crisis. Another conclusion is that it is not necessary to seriously review the economic theory as long as the causes of the outburst of the crisis consist in the deviation from the economic theory, not in the compliance with it.

References

- Angelescu, Coralia, Dinu, M., Gavrilă, I., Popescu, C-tin, Socol, C. (2009). *Economie*, ediția a 8-a, Editura Economică, București
- Hennie, van G., „International Financial Reporting Standards”, Traducere autorizată a Băncii Mondiale, Editura Irecson, București, 2007
- Boaja, M., Lepădatu, Gh. (2006). *Standardele Internaționale de Raportare Financiară*, Editura Universitară, București
- Nișulescu, E., Manolescu, Maria, Lepădatu, Gh. (1998). *Drept contabil* Editura Tribuna Economică, București
- www.masuri-anticriza.ro