Institutul Naţional de Statistică

Societatea Română de Statistică

ROMANIAN STATISTICAL REVIEW
- SUPPLEMENT -

INTERNATIONAL SYMPOSIUM

"GLOBAL ECONOMIC CRISIS – STATUS AND PERSPECTIVES"

2012

"ARTIFEX" UNIVERSITY OF BUCHAREST

„DIMITRIE CANTEMIR" CHRISTIAN UNIVERSITY INSTITUTE OF MULTIDISCIPLINARY SCIENTIFIC RESEARCH

ACADEMY OF ROMANIA "COSTIN KIRIŢESCU" NATIONAL INSTITUTE OF ECONOMIC RESEARCH

ACADEMY OF ECONOMIC STUDIES OF THE REPUBLIC OF MOLDAVIA

„VICTOR SLĂVESCU" FINANCIAL AND MONETARY RESEARCH CENTRE

ACADEMY OF ECONOMIC STUDIES STATISTICS AND ECONOMETRICS DEPARTAMENT

BUSINESS PARTNER EXIM BANK

UNIVERSITA DEGLI STUDI DI PERUGIA

MEDIA PARTNERS
- The Romanian Journal of Statistics
- "Knowledge Horizons" Revue

UNIVERSITA DEGLI STUDI DI MESSINA

INTERNATIONAL SYMPOSIUM

"GLOBAL ECONOMIC CRISIS – STATUS AND PERSPECTIVES"

MAY 17-18, 2012

Bucharest, Romania

Table of Contents

Statistical Index used in Economic Analyses

Professor Constantin ANGHELACHE PhD
"Artifex" University of Bucharest
Professor Gabriela Victoria ANGHELACHE PhD
Professor Vergil VOINEAGU PhD
Academy of Economic Studies, Bucharest
Professor Ioan PARTACHI PhD
Academy of Economic Studies of Moldavia

Abstract

The index is sensitive to time changes of quantity and price data, over time, drawn from sub-measures, partially additive as they are measured in different units. The index summarizes these in a time series which includes the updates in quantities and prices' values.Because usually data are not measured in continuous time, it is considered that a series designed as a Divisia index, indicates that the series follows a procedure that makes a close analogue in discrete time periods.

Key words: *statistics, indicator, equation, calculation, measure*

Suppose that the price and quantity data on the n commodities in the chosen domain of definition can be regarded as continuous functions of (continuous) time, say pi(t) and qi(t) for i=1, . . . , n. The value of consumer expenditure at time t is V(t) defined in the obvious way as:

$$V(t) \equiv \sum_{i=1}^{n} p_i(t) q_i(t)$$

Now suppose that the functions pi (t) and qi (t) are differentiable. Then both sides of the definition (1) can be differentiated with respect to time to obtain:

$$V'(t) = \sum_{i=1}^{n} p_i'(t) q_i(t) + \sum_{i=1}^{n} p_i(t) q_i'(t)$$

Divide both sides of equation through by V(t) and the following equation is obtained:

$$\frac{V'(t)}{V(t)} = \frac{\sum_{i=1}^{n} p_i'(t) q_i(t) + \sum_{i=1}^{n} p_i(t) q_i'(t)}{\sum_{j=1}^{n} p_j(t) q_j(t)}$$

$$= \sum_{i=1}^{n} \frac{p_i'(t)}{p_i(t)} s_i(t) + \sum_{i=1}^{n} \frac{q_i'(t)}{q_i(t)} s_i(t)$$

where the time t expenditure share on commodity i, s_i (t), is defined as:

$$s_i(t) \equiv \frac{p_i(t)q_i(t)}{\sum_{m=1}^{n} p_m(t)q_m(t)}$$

for i=1, 2, . . . , n

Divisia compared the two expressions for the logarithmic value derivative, V'(t)/V(t), given by above equations, and he simply defined the logarithmic rate of change of the aggregate price level, P'(t)/P(t), as the first set of terms on the right-hand side of previous equation. He also simply defined the logarithmic rate of change of the aggregate quantity level, Q'(t)/Q(t), as the second set of terms on the right-hand side of equation. That is, he made the following definitions:

$$\frac{P'(t)}{P(t)} \equiv \sum_{i=1}^{n} s_i(t)\frac{p_i'(t)}{p_i(t)}$$

$$\frac{Q'(t)}{Q(t)} \equiv \sum_{i=1}^{n} s_i(t)\frac{q_i'(t)}{q_i(t)}$$

Definitions above are reasonable definitions for the proportional changes in the aggregate price and quantity (or quantity) levels, P(t) and Q(t). The problem with these definitions is that economic data are not collected in continuous time; they are collected in discrete time. In other words, even though transactions can be thought of as occurring in continuous time, no consumer records his or her purchases as they occur in continuous time; rather, purchases over a finite time period are cumulated and then recorded. A similar situation occurs for producers or sellers of commodities; firms cumulate their sales over discrete periods of time for accounting or analytical purposes. If it is attempted to approximate continuous time by shorter and shorter discrete time intervals, empirical price and quantity data can be expected to become increasingly erratic since consumers only make purchases at discrete points of time (and producers or sellers of commodities only make sales at discrete points of time). It is, however, still of some interest to approximate the continuous time price and quantity levels, P(t) and Q(t) defined implicitly by previous equations, by discrete time approximations.

There is a connection between the Divisia price and quantity levels, P(t) and Q(t), and the economic approach to index number theory. This connection is, however, best made after studying the economic approach to index number theory.

Define the following price and quantity (forward) differences:

$\Delta DP \equiv P(1) - P(0)$

$\Delta pi \equiv p_i(1) - p_i(0)$; i=1, . . . , n

Using the above definitions:

$$\frac{P(1)}{P(0)} = \frac{P(0)+\Delta P}{P(0)} = 1 + \frac{\Delta P}{P(0)} \approx 1 + \frac{\sum_{i=1}^{n} \Delta p_i q_i(0)}{\sum_{m=1}^{n} p_m(0)q_m(0)}$$

using (8) when t=0 and approximating $p'_i(0)$ by the difference Δpi

$$= \frac{\sum_{i=1}^{n} \{p_i(0) + \Delta p_i\} q_i(0)}{\sum_{m=1}^{n} p_m(0) q_m(0)} = \frac{\sum_{i=1}^{n} p_i(1) q_i(0)}{\sum_{m=1}^{n} p_m(0) q_m(0)}$$

$$= P_L(p^0, p^1, q^0, q^1)$$

where $p^t \equiv [p_1(t), \ldots, p_n(t)]$ and $q^t \equiv [q_1(t), \ldots, q_n(t)]$ for t=0,1. Thus, it can be seen that Divisia's discrete approximation to his continuous time price index is just the Laspeyres price index, PL, defined above.

$\Delta_b pi \equiv p_i(1) - p_i(0)$; i=1, . . . , n

This use of backward differences leads to the following approximation for P(0)/P(1):

$$\frac{P(0)}{P(1)} = \frac{P(1) + \Delta_b P}{P(1)} = 1 + \frac{\Delta_b P}{P(1)} \approx 1 + \frac{\sum_{i=1}^{n} \Delta_b p_i q_i(1)}{\sum_{m=1}^{n} p_m(1) q_m(1)}$$

using above equations when t=1 and approximating $p'_i(1)$ by the difference $\Delta_b p_i$

$$= \frac{\sum_{i=1}^{n} \{p_i(1) + \Delta_b p_i\} q_i(1)}{\sum_{m=1}^{n} p_m(1) q_m(1)}$$

$$= \frac{\sum_{i=1}^{n} p_i(0) q_i(1)}{\sum_{m=1}^{n} p_m(1) q_m(1)} = \frac{1}{P_P(p^0, p^1, q^0, q^1)}$$

where P_P is the Paasche index defined above. Taking reciprocals of both sides of equation (4) leads to the following discrete approximation to P(1)/P(0):

$$\frac{P(1)}{P(0)} \approx P_P$$

Thus, as Frisch noted, both the Paasche and Laspeyres indices can be regarded as (equally valid) approximations to the continuous time Divisia price index. Since the Paasche and Laspeyres indices can differ considerably in some empirical applications, it can be seen that Divisia's idea is not all that helpful in determining a unique discrete time index number formula.

The chain system measures the change in prices going from one period to a subsequent period using a bilateral index number formula involving the prices and quantities pertaining to the two adjacent periods. These one-period rates of change (the links in the chain) are then cumulated to yield the relative levels of prices over the entire period under consideration.

Thus if the bilateral price index is P, the chain system generates the following pattern of price levels for the first three periods:

1, $P(p^0, p^1, q^0, q^1)$, $P(p^0, p^1, q^0, q^1)$ $P(p^1, p^2, q^1, q^2)$

In contrast, the fixed base system of price levels, using the same bilateral index number formula P, simply computes the level of prices in period t relative to the base period 0 as $P(p^0, p^t, q^0, q^t)$. Thus the fixed base pattern of price levels for periods 0,1 and 2 is:

$$1, P(p^0, p^1, q^0, q^1), P(p^0, p^2, q^0, q^2)$$

The fixed base Laspeyres quantity index cannot be used for ever: eventually, the base period quantities q^0 are so far removed from the current period quantities qt that the base must be changed. Chaining is merely the limiting case where the base is changed each period.

The main advantage of the chain system is that under normal conditions, chaining will reduce the spread between the Paasche and Laspeyres indices.

These two indices each provide an asymmetric perspective on the amount of price change that has occurred between the two periods under consideration and it could be expected that a single point estimate of the aggregate price change should lie between these two estimates. Thus the use of either a chained Paasche or Laspeyres index will usually lead to a smaller difference between the two and hence to estimates that are closer to the ''truth''.

It is possible to be a little more precise about the conditions under which to chain or not to chain. Basically, chaining is advisable if the prices and quantities pertaining to adjacent periods are more similar than the prices and quantities of more distant periods, since this strategy will lead to a narrowing of the spread between the Paasche and Laspeyres indices at each
link.

Of course, one needs a measure of how similar are the prices and quantities pertaining to two periods. The similarity measures could be relative ones or absolute ones. In the case of absolute comparisons, two vectors of the same dimension are similar if they are identical and dissimilar otherwise. In the case of relative comparisons, two vectors are similar if they are proportional and dissimilar if they are non-proportional.

Once a similarity measure has been defined, the prices and quantities of each period can be compared to each other using this measure, and a ''tree'' or path that links all of the observations can be constructed where the most similar observations are compared with each other using a bilateral index number formula.

Hill (1995) defined the price structures between two countries to be more dissimilar the bigger the spread between P_L and P_P; i.e., the bigger is $\{P_L/P_P, P_P/P_L\}$. The problem with this measure of dissimilarity in the price structures of the two countries is that it could be the case that $P_L=P_P$ (so that the Hill measure would register a maximal degree of similarity), but p^0 could be very different from pt. Thus there is a need for a more systematic study of similarity (or dissimilarity) measures in order to pick the ''best'' one that could be used as an input into Hill's (2001) spanning tree algorithm for linking observations.

The method of linking observations explained in the previous paragraph, based on the similarity of the price and quantity structures of any two observations, may not be practical in a statistical agency context since the addition of a new period may lead to a reordering of the previous links. The above ''scientific'' method for linking observations may be useful, however, in deciding whether chaining is preferable or whether fixed base indices should be used while making month-to-month comparisons within a year.

Comparing the sequence of chain indices defined by the expression above to the corresponding fixed base indices, it can be seen that we will obtain the same answer in all

three periods if the index number formula P satisfies the following functional equation for all price and quantity vectors:
$P(p^0, p^2, q^0, q^2) = P(p^0, p^1, q^0, q^1)\, P(p^1, p^2, q^1, q^2)$

If an index number formula P satisfies the equation above, then P satisfies the circularity test.

If it is assumed that the index number formula P satisfies certain properties or tests in addition to the circularity test above, then Funke, Hacker and Voeller (1979) showed that P must have the following functional form, originally established by Konus and Byushgens (1926):

$$P_{KB}(p^0, p^1, q^0, q^1) \equiv \prod_{i=1}^{n} \left(\frac{p_i^1}{p_i^0}\right)^{\alpha_i}$$

where the n constants α_i satisfy the following restrictions:

$$\sum_{i=1}^{n} \alpha_i = 1 \text{ and } \alpha_i > 0 \quad \text{for } i = 1, \ldots, n$$

Thus under very weak regularity conditions, the only price index satisfying the circularity test is a weighted geometric average of all the individual price ratios, the weights being constant through time.

An interesting special case of the family of indices defined by equation above occurs when the weights α_i are all equal. In this case, PKB reduces to the Jevons (1865) index:

$$P_J(p^0, p^1, q^0, q^1) \equiv \prod_{i=1}^{n} \left(\frac{p_i^1}{p_i^0}\right)^{\frac{1}{n}}$$

The problem with the indices defined by Konus and Byushgens, and Jevons is that the individual price ratios, p^1_i / p^0_i, have weights (either α_i or 1/n) that are independent of the economic importance of commodity i in the two periods under consideration. Put another way, these price weights are independent of the quantities of commodity i consumed or the expenditures on commodity i during the two periods. Hence, these indices are not really suitable for use by statistical agencies at higher levels of aggregation when expenditure share information is available.

It is possible to give a theoretical explanation for the approximate satisfaction of the circularity test for symmetrically weighted index number formulae. Another symmetrically weighted formula is the Tornqvist index P_T. The natural logarithm of this index is defined as follows:

$$\ln P_T(p^0, p^1, q^0, q^1) \equiv \sum_{i=1}^{n} \frac{1}{2}\left(s_i^0 + s_i^1\right) \ln\left(\frac{p_i^1}{p_i^0}\right)$$

where the period t expenditure shares s^t_i are defined.

Walsh (1901) introduced the following useful variant of the circularity test:

$$1 = P(p^0, p^1, q^0, q^1) P(p^1, p^2, q^1, q^2) \ldots P(p^T, p^0, q^T, q^0)$$

The motivation for this test is the following. Use the bilateral index formula $P(p^0, p^1, q^0, q^1)$ to calculate the change in prices going from period 0 to 1, use the same formula evaluated at the data corresponding to periods 1 and 2, $P(p^1, p^2, q^1, q^2)$, to calculate the change in prices going from period 1 to 2, . . . , use $P(P^{T-1}, p^T, q^{T-1}, q^T)$ to calculate the

change in prices going from period T-1 to T, introduce an artificial period T+1 that has exactly the price and quantity of the initial period 0 and use $P(p^T, p^0, q^T, q^0)$ to calculate the change in prices going from period T to 0. Finally, multiply all of these indices together. Since we end up where we started, the product of all of these indices should ideally be one. Diewert (1993) called this test a multiperiod identity test. Note that if T=2 (so that the number of periods is three in total), then Walsh's test reduces to Fisher's (1921) time reversal test. Walsh (1901) showed how his circularity test could be used in order to evaluate how ''good'' any bilateral index number formula was.

References

Anghelache, C. (2011) – "*Treaty of Statistics*", Economica Publishing House, Bucharest

Anghelache, C., Mitruţ, C. et al. (2008) – "*Econometrics – Theory and Case Studies*", Artifex Publishing House, Bucharest

Anghelache, C. (2010) – "*Quantitative Methods Used in Financial-Banking Analyses*", Artifex Publishing House, Bucharest

Anghelache, C., Mitruţ, C., Voineagu, V., Isaic-Maniu, Al. (2011) – "*National Accounts System – Syntheses and Case Studies*", Economica Publishing House, Bucharest

Anghelache, C. (2004) – "*European Accounts System*", Economica Publishing House, Bucharest

www.insse.ro

www.eurostat.eu

The Individual - Subject of the International Human Rights Law

Lecturer Titus CORLĂȚEAN PhD
„Dimitrie Cantemir" Christian University, Bucharest
titus.corlatean@psd.ro

Abstract
Traditionally, the state and the international governmental organisations were considered the main subjects of public international law. In this context, the human rights international law confirms the specific place of the individual as subject of law, with a comprehensive legal personality established through international treaties and courts of justice specialized in this domain.
Key words: *human rights, individual, subject of international law*

1. Introductory considerations

The doctrine writers generally agree to define the **subjects of international law as entities participating both in the elaboration of international legal norms and in the legal relations governed by such norms, endowed with the capacity to hold certain rights and duties under the international legal system.**

An important element in the identification of a subject of international law is the **legal personality, respectively of the legal capacity to act internationally.**

Certain writers[1] have identified the subject of international law as:

- the holder of rights and duties provided under international law
- the holder of the right to bring a claim before an international tribunal;
- the holder of certain interests for which provisions are made under international law.

Other writers[2] have outlined that two basic conditions need to be cumulatively met in order for the individual to become subject of international law: to be a holder of rights and duties, established and sanctioned directly by the international law.

Finally, certain doctrine writers[3] have outlined the fact that legal personality in international law necessitates the consideration of the interrelationship between the rights and duties undertaken internationally and the capacity to bring complaints, claims or contentious proceedings before a court. Therefore, any initiation of a legal action should be the result of a right recognized to that entity under the international legal system.

The international doctrine of human rights mentions, besides the **state** and, in certain cases, the **international governmental organizations**, the **individual** as subject of contemporary international human rights law.

2. Individual as subject of international human rights law

The promotion of human rights in the international law resuscitates the traditional debate concerning the place of individual in the international legal system.

[1] J.G. Starke, Introduction to International Law, Butterworths, London, Tenth edition, 1989, page 58
[2] Paul Reuter, Droit international public, 1ère éd., PUF, Paris, 1958, page 175
[3] Malcom Shaw, Cambridge University Press, Sixth edition, Third printing, 2010, page 196

As a principle, the human rights may not be conceptualized outside legal categories, especially outside the category of subject of law[4]. The doctrine sets out that the human rights may only be conceived when the individual is recognized as a subject of law, endowed with the capacity to hold certain rights and duties enforceable at law. The human rights are defined as individual rights, therefore pertaining to the person.

The matter of the place of the individual in the international legal system has been at the centre of lively doctrinal controversies. Most of the writers adopted the view according to which the only subjects of the international legal system are the states and the inter-states international organizations (as derived subjects), due to the fact that the individuals may have access to the international law exclusively by means of states and diplomatic immunity. In other words, the international law governs relations between states, therefore the individual may not be a subject of international law.

The same writers consider that the state is, as a matter of historical development of the international law, the general subject of international law and it may not be assumed that a state has consented to make its citizens subjects of international law, unless it has unequivocally expressed its intention to do so.[5]

Therefore, an international rule is not binding for the individual unless it is "individualized". At the time such rule is adopted, the states shall express their intention to confer rights and duties to individuals under the international legal system.

Even in this last circumstance, certain writers do not recognize the capacity of the individual as subject of law. They assert that the state has the authority to enforce the observance of rights and obligations by their citizens and to punish any illegal deeds.[6]

According to this view, it is clear that individuals are subject to certain international rules that either give them benefits or bind them. This does not mean that the individuals are subjects of international law as, most of the times, the state establishes a ”screen” between individuals and international law a: their legal personality, capacity to act, their active or passive responsibility are established under the international legal systems.[7].

It would, therefore, be very uncommon for the individuals to claim directly, at international level, certain benefits conferred under the national legislation, and even if such circumstance occurs, state mediation would be required. In other words, in the view such writers, the individual may, at the most, acquire a ”derived” legal personality, as a result of the will of another international law subject.

However, an increasing number of contemporary writers view the individual as subject of international law. They ground their argument on the rights and obligations established under several international treaties and also on the principle of responsibility in international relations, including criminal responsibility, for any illegal deeds committed by the individual.

The judgement of the Nürnberg International Tribunal of 1946 (followed in 1948 by the judgement of Tokyo International Tribunal) is invoked in this respect, which

[4] Frédéric Sudre, Droit européen et international des droits de l'homme, Presses Universitaires de France, 7e édition, Paris, 2005, page 86

[5] See the Advisory Opinion of the Permanent Court of International Justice of 3 March 1928 in the case "Jurisdiction of the Courts of Danzig", cited by J.G. Starke; work cited , page 61, stating that if the Parties intended, under a certain treaty, to confer certain rights to individuals, such rights shall gain recognition and effect in the international law, meaning to be recognized by the International Court of Justice.

[6] Patrick Daillier, Mathias Forteau, Alain Pellet, Droit international Public, LGDJ, 8e édition, Paris, 2009, page 717

[7] Ibidem, page 716

prosecuted certain defendants, thus outlining the individual responsibility under international law.

The international law principles recognized by the Charter establishing the Nürnberg International Tribunal on 8 August 1945, but also by the text of the judgement, entailed the drafting of certain unequivocal references to certain ”individuals” guilty of crimes against peace and security of mankind. The Judgment of the Nürnberg Tribunal stated that "crimes against international law are committed by men, not by abstract entities, and only by punishing individuals who commit such crimes can the provisions of international law be enforced" "[8].

Based to this approach, the contemporary doctrine writers acknowledge the more important role of the individual in the international legal system. Certain writers consider that, basically, the international society is a society made of individuals responsible directly under the international law. There are some other writers[9] as well who criticize the theories according to which, at present, only states and inter-governmental institutions are subjects of international law. According to them, the essence of international law was ultimately aimed at the human being and this was outlined in the origins of the Natural Law on which the classical international law is based. **The modern practice has proved that individuals have become more often recognized participants and, therefore, subjects of international law.**

Nowadays, a large majority of the international doctrine writers agrees that this phenomenon has become an undisputable reality of the last decades, especially in the realm of protection of human rights and humanitarian law.

The contemporary doctrine outlines the fact that, by adopting UN Charter, the international community acknowledged that the fundamental rights and freedoms are no longer a national jurisdiction issue, but an international issue, therefore considering that the Charter endowed the individual with immediate international rights.

Moreover, the universal international treaties (starting with the two International Covenants of 1966) or regional international treaties (e.g. European Convention on Human Rights) establish, unquestionably, a set of fundamental rights and freedoms among which several are considered non-derogable (e.g. the right to life) or of "jus cogens", as well as certain duties. Furthermore, beside the substantive rights and related duties, the treaties establish certain procedural rights and duties, which guarantee the individuals direct access to specialized international courts, where the states have passive legal standing.

As regards the contribution to the process of international norms elaboration in the field of human rights, it is obvious that, at present, such contribution is not a direct one but **mediated** by state or non-governmental organizations, interest groups[10] which bring together people with a common view in certain fields relevant for the protection of human rights, even by individual opinions expressed in the international doctrine by reputable writers or in the courts case-law, through individual or separate opinions. The doctrine invokes, as mediated contribution to the elaboration of human rights international norms, the judicial decisions of the specialized international courts where the individual held active legal standing, submitted arguments and evidence that resulted in a court decision.

As regards the international legal capacity of the individuals, in particular their right to act internationally, their possibility to bring contentious proceedings before

[8] J.G. Starke, work cited , page 62
[9] Malcom Shaw, work cited , page 258
[10] Patrick Daillier etc., work cited , page 716

international courts[11], as well as non-contentious proceedings[12], also by means of individual claims submitted to the specialized organizations of UN or to the regional ones. Furthermore, the expression of the legal personality at international level, in the field under discussion, involves directly the individual criminal responsibility, situation confirmed at present at normative and institutional level, as well as by the practice.

Having an old customary basis whereby piracy on sea or slave trade were incriminated, nowadays the international law establishes the criminal responsibility for individual deeds of drugs trafficking, safety of international civil aviation or fight against terrorism. Probably the most obvious field regulated at present remains that of ”crimes against humanity” and "crimes of genocide”, as such have been defined and incriminated by the The Rome Statute of the International Criminal Court of 1988 (article 33 paragraph 2) as such have been applied in case of certain ad-hoc international criminal tribunals, such as the International Criminal Tribunal for the former Yugoslavia or that for Rwanda.

3. Conclusions

The legal personality of the **individual** in the international relations has been gradually recognized in the last decades by an increasing number of international law writers, particularly in the specific field of international protection of human rights.

As regards the **realm of international law of human rights,** one should bear in mind the fact that the **central axis remains the relation between state and individual**, which requires the observance of certain rights and the undertaking of certain duties, jurisdictional and non-jurisdictional contentious proceedings for the enforcement of such, as well as the conclusion largely embraced by the contemporary international society, according to which the protection of human rights has become an issue of international cooperation and guarantee and may no longer be accepted as object of absolute and exclusive sovereignty of the state.

Therefore, the individual is one of the main subjects of international law, beside the state and, according to certain writers, the international governmental organizations.

References

Starke J.G., *Introduction to International Law*, Butterworths, London, Tenth edition, 1989;
Reuter P., *Droit international public*, 1ère éd., PUF, Paris, 1958;
Shaw M., Cambridge University Press, Sixth edition, Third printing, 2010;
Sudre F., *Droit européen et international des droits de l'homme*, Presses Universitaires de France, 7e édition, Paris, 2005;
Daillier P., Forteau M., Pellet A., *Droit international Public*, LGDJ, 8e édition, Paris, 2009;
Brownlie I., *Principles of public international law*, Fourth edition, Clarendon Press Oxford, New York, 1990;
Dinh N.Q., Daillier P., Pellet A., *Droit international public*, 3e édition, Librairie générale de droit et de jurisprudence, Paris, 1987;
Miga-Beşteliu R., *Organizaţii internaţionale interguvernamentale*, Editura All Beck, Bucureşti, 2000;
Miga-Beşteliu R., Brumar C., *Protecţia internaţională a Drepturilor Omului*, Universul Juridic, Ediţia V-a, Bucureşti, 2010.

[11] For example, the European Court of Human Rights
[12]Individual claims submitted to the Human Rights Committee for established under the Protocol to the International Covenant on Civil and Political Rights

How Contemporary Stays the Prisoner's Dilemma in Economics?

Mathematician Adriana NICOLAE M.D.
Cuca 1st – 8th form school, Argeş County
Senior Lecturer Gheorghe SĂVOIU PhD
The University of Piteşti

Abstract

This paper describes the prisoner dilemma and applied it three times during three examples in the contemporary economics on frequent or usual situations. After a short introduction, the first part of the article is an attempt to detailed the prisoner dilemma, which still has an important influence in the contemporary theory of economics as an interesting problem of applied mathematics that indicates the absence of a solution, and thus the game theory offer an image of complexity and simplicity in mathematics thinking. The dilemma appears more realistic in economic phenomena. Three examples constitute the second section, constructed around the economic way of thinking of three important problems. A final remark closes the paper with the idea of a necessary and excellent approach to other scientific worlds through mathematics, games' theory, theory of complexity and other multi-disciplinarity options.

Key words: *game's theory, multi-disciplinarity, mathematical thinking, theory of complexity, prisoner dilemma.*

An important branch of applied mathematics is the game theory, which aims at analysing various situations concerning the interaction among parties who can have similar, opposite or mixed interests. John von Neumann and Oscar Morgenstern (1902-1977) contributed to the development of the game theory, this being developed in the book *The Theory of Games and Economic Behavior*, 1944.

A classic example of game theory is the prisoner's dilemma, a paradox, a mental experiment formulated in 1950 by Merrill Flood and Melvin Drescher, employees of an American consulting firm RAND (Research And Development). The prisoner dilemma is a non-zero sum game type and highlights how individual rational decisions can lead to non-optimal collective results. This social dilemma is two-person, bi-strategic and symmetric game highlighting the cost of the mistrust between the parties, of the suspicion and non-cooperation.

Albert Tucker from the Princeton University formulated a new game in 1950 using the term "prisoner's dilemma", this game being probably the most studied in the game theory, which is why, based on it, a series of variations were created by repeating the game or by developing reactive strategies (Tucker, A., *A two-person dilemma*).

1. The prisoner's dilemma and its scientific impact

The prisoner's dilemma is based on two suspects who are arrested by the police for committing a crime, the maximum penalty for which is ten years. They are interrogated in separate rooms, without being able to communicate with each other. Due to the fact that the police do not have enough evidence to convict both suspects, each is given the chance to confess they committed illegality, in exchange for a reward consisting in decreasing or even cancelling the penalty.

Thus, the agreement between the police and each of the two suspects is made under the following terms: if neither confesses his crime, each will receive 6 months of prison because the police will have insufficient evidence concerning the crime committed, they will only have presumptive evidence; if, on the other hand, both confess having committed the crime, they will receive half of the punishment, taking into account that they cooperated with the investigators, i.e. each will be sentenced to 5 years in prison.

There is also the situation where one confesses the crime, while the other does not confess, in which case the one who betrays will be free, and the other will be sentenced to 10 years in prison.

The fact that the two suspects are interrogated separately is taken into account, so neither knows the other's intention, either before or after the interrogation. This dilemma leads to a paradox, because the suspects' decision, jointly made (i.e. not to confess their crime) is divergent from the decision made individually and deliberately (to confess). Thus, each of the two suspects has a choice between a high gain, but with a significant risk (the one who confesses can be released, but can also go to prison) and a significant gain, but with an unacceptable risk (the one who does not confess can get only 6 months in prison, but there is a chance to be sentenced to 10 years in prison).

The two suspects' choices are analysed with the help of the game theory, the suspects being deemed rational agents, who have the same information, and are able to use such information to their advantage. It is considered that each will try to make the best decision for himself, without taking into account the other's decision, such a strategy being called dominant strategy. Therefore, each of the two suspects will prefer, in the following order, to be released, then to be sentenced at 5 years, and only finally to get 10 years in prison. Thus, the first suspect will choose to be released, and for this he must confess the crime and hope that the other will not confess. The other will think similarly, hoping he will be released. As both are trying to escape punishment, being rational, they will choose to confess, and consequently, a sub-optimal result is obtained, because the result is, for both of them, worse than if they had chosen not to confess. This result is called Nash equilibrium.

In this case, the prisoner's dilemma can be represented as follows:

Prisoner's dilemma – Payoff matrix

Figure no. 1.

	Suspect A		
Suspect B		confesses	does not confess
	confesses	5 years 5 years	10 years 0 years
	does not confess	0 years 10 years	6 years 6 years

Source: Schotter, A., (1996), Free market economics, Bucharest: Didactic and pedagogical Publishing House.

The meaning of the results could be the following:

- 0 years – reward (release) for unilateral confession;
- 6 months - reward for the cooperation of the two suspects;
- 5 years – punishment for bilateral confession;
- 10 years – punishment for betraying trust.

As we can also see in the table, the two prisoners would benefit more if both refused to confess the crime. Due to the fact that the two don't have the chance to agree on the decision they should make, an unilateral betrayal is obtained by which one confesses and hopes to obtain the best result for himself – to be acquitted (if the other suspect does not confess) or to be sentenced at five years instead of ten (if the other suspect confesses). The difference between the two situations is the cost of the impossibility to cooperate or the price of mutual mistrust.

2. Games and strategies

2.1 Single-play game

In the prisoner's dilemma played only one time, the individual interested only in his own welfare will choose the only rational strategy, i.e. not to cooperate with the other suspect, and to confess, thus betraying him. The decision of one of the suspects cannot influence the other's decision and, consequently, each of the two has a better position if he confesses. In this case, the players meet only one time, and their decisions don't influence the subsequent interactions. It is important to mention that in a single-play game it does not matter whether the two parties agreed or not, and even after a possible discussion the situation remains unchanged.

2.2 Repeated game (finitely)

Unlike the single-play game, in the (finitely) repeated game the situation changes, because a betrayal of trust can be avenged in the next game or in a subsequent game, and the cooperation is rewarded. It is important that the player should not know the moment when the game ends, otherwise it is possible that, for initially cooperating strategies, the betrayal occurs in the last round, because no reward it is possible for it any longer. In such case, the last but one round becomes the last one, for which the same situation results again. From this perspective, a non-optimal solution is obtained. If it is assumed that the game takes place as an infinite tournament, then the problem of the last round is solved.

2.3 Infinitely repeated game

In the case of the infinitely repeated game, such game is repeated, and the players don't know when it will end. In this case, there can be lack of cooperation in the next game, which is not rewarded. The punishment for betrayal will be received in the next game, while cooperation is (constantly) rewarded.

The punishment for betrayal in the next period is called *Tit-for-tat*, so we are talking about calculated confidence. The *Tit-for-tat* strategy was developed by Anatol Rapoport and is based on cooperation as long as the other cooperates too. On the other hand, if a party tries to betray, than the other party will betray too.

2.4 Dynamic and evolutionary competitions

The game played by several generations implies a development of the game in several rounds. If in several occasions, the strategies appear ones against the others, for each strategy the results will be counted together. In the next round, the less successful strategies are replaced by successful ones, the most successful strategy having a higher density in the next generation. Axelrod was the one who implemented this version of the competition.

Relatively good results were obtained as long as the strategies tending to deceive came in contact with the strategies that tended to cooperate, thus allowing to be used. Consequently, at the next generation, there is a tendency that the ca cooperative strategies be increasingly rare, being replaced by deceiving ones and thus the very foundation of success is annulled.

If two cooperative strategies meet, the results are better than if two deceiving strategies met. Consequently, a minority of cooperative strategies, *tit-for-tat*, is, thus present in a majority of deceiving strategies. They are called evolutionary stable strategies, because they are established through generations and withstand the invasions of other strategies.

In 2004 the strategy *tit-for-tat* was replaced by the *master-and-servant* strategy, proposed by the Southampton University, according to which, following a face-to-face meeting and an initial exchange, two roles are used, the exploiter and the victim. Thus the exploiter obtains a leading position. In an incipient population the *master-and-servant* strategy cannot be established, because the communication between players is coded, concerning their initial behaviour, which could lead to the fact that this strategy breaks the rules of the game.

The cooperative strategies can be spread if several conditions are met, such as: several rounds are played, the players can recognize one another from one round to the next, so that, if it is necessary, they can be rewarded and so that they don't know which is the last round.

In the case pf the prisoner's dilemma played in several rounds various strategies can be used, among which we mention: *tit-for-tat*, *mistrust*, *spite*, *master-and-servant* or *Southampton Strategy*, *always defect*, *always cooperate*.

The *tit-for-tat* strategy is mainly open to cooperation, but compensation is used in case of betrayal. Thus, at the first round, cooperation is used, and in the next round the previous move of the game partner is imitated.

The *mistrust* strategy implies betrayal in the first round, and in the next rounds the previous move of the game partner is imitated. Unlike the *tit-for-tat* strategy, it is not open for cooperation.

The *spite* strategy is characterised by cooperation up to the moment when the game partner betrays first, and he will subsequently betray continuously.

According to the *master-and-servant* strategy, during the first five to ten rounds a coded behaviour is played. The game partner can become an exploiter (the party who always betrays), and the other becomes an exception (the party who cooperates unconditionally). If the game partner does not comply with this strategy, then he betrays, to the detriment of the combatants who take part into the competition.

With the *always defect* strategy, the player always betrays, without taking into account what the dame partner does, and with the *always cooperate* strategy, he always cooperates and does not take into account the game partner's attitude.

3. Three examples of practical application of the "prisoner's dilemma"

I. We assume the case where two companies A and B extract gold from a gold deposit. For the extraction, the two companies must choose either a polluting technology, or an ecologic technology.

If both companies use a polluting technology, than the profit of each is 2,000,000 m. u. If company A uses an ecologic technology, and company B a polluting technology, then company A obtains a profit of 500,000 m. u., and company B a profit of 2,500,000 m.

u. If company A uses a polluting technology, and company B an ecologic technology, then the profit obtained by company A is 2,500,000 m.u., and that of company B is 500,000 m.u. If both companies use an ecologic technology the profit obtained by each is 800,000 m.u.

The data of this problem based on the prisoner's dilemma can be represented by the following matrix:

Matrix of the prisoner's dilemma in the case of gold mining

Figure no. 2.

	Company A		
Company B	Mining	Pollutant	Ecologic
	Pollutant	2000000 2000000	500000 2500000
	Ecologic	2500000 500000	800000 800000

Source: prepared by the authors

II. We assume the case of two neighbouring countries A and B, comparable from the point of view of the number of their inhabitants. Between the two states there is an economic, customs and monetary union. The two countries have a similar level of economic development. If in both countries the level of the taxes is low, each of the two countries attracts investments of 1,5 billions. If in country A the level of the taxes is high, and in country B the level of the taxes is low, then country A attracts investments of 0,5 billion, and country B of 2 billion If in country A the level of taxes is low, and in country B it is high, country A attracts investments of 2 billion, and country B 0.5 billion. If the level of taxes is high in both countries, they attract 1 billion m.u. investments each.

The data of these problems are presented in figure no. 3.

Matrix of the prisoner's dilemma in the case of comparing the level of taxes in the two countries

Figure no. 3.

	Country A		
Country B	Level of taxes	Small	Big
	Small	1.5 billion 1.5 billion	0.5 billion 2 billion
	Big	2 billion 0.5 billion	1 billion 1 billion

Source: prepared by the authors

III. We resume case II, except that it is deemed that one of the countries is more developed economically. The more developed country will attract labour from the less developed country. The immigration country will thus benefit from an acceleration of the economic growth, generated by the influx of workers from the less developed country (the number of the stable population increases, the consumers' number increases – generates additional economic investments, increases the value of taxes paid to the state budget and to social insurance funds, decreases the budget deficit, etc.).

Figure no. 4 presents the prisoner's dilemma in the case of two states competing for labour:

Matrix of the prisoner's dilemma in the case of the migration of labour with impact on the economic growth

Figure no. 4.

	Country A		
Country B	Development level/migration type	Developed - Immigration	Little development- Emigration
	Developed - Immigration	3 billion 3 billion	1 billion 4 billion
	Little development- Emigration	4 billion 1 billion	2 billion 2 billion

Source: prepared by the authors

If both countries are developed, they will be a destination for migrants, in which case the annual growth of the GDP in each of the two countries will be 3 billion monetary units. If country A is less developed and country B is developed, then the labour will migrate towards country B. Consequently, country A will have 1 billion m.u. GDP growth, while country B will have a growth of 4 billion. On the contrary, country A is developed and country B is less developed, the labour will migrate towards country A, and therefore country A will have a GDP growth of 4 billion, and country B of 1 billion. The forth situation occurs when both countries are less developed, in which case the economic growth of each will be 2 billion m.u..

4. Conclusions

The prisoner's dilemma proved to have application in the real world, in the most various areas, from politics to economy. Thus, although, more than six decades have passed from its development, this game keeps its importance.

We believe that the examples presented are relevant in the context of the economy globalization and free migration of capital and labour. The results of such game should be considered by state governments when they prepare the fiscal policy, or the labour market strategy.

References

Axelrod, R., (2000), *Die Evolution der Kooperation*, Oldenbourg Verlag, ISBN 3-486-53995-7;

Kreps, D. et all, (1982), *Rational Cooperation in the Finitely Repeated Prisoner`s Dilemma*, Journal of Economic Theory 27, pp. 245-252, available at http://www.edegan.com/pdfs/Kreps%20Milgrom%20Roberts%20Wilson%20(1982)%20-%20Rational%20Cooperation%20in%20the%20Finitely%20Repeated%20Prisoners%20Dilemma.pdf (accessed on 2.05.2012);

Rapoport, A., Chammah, A. M., (1965), *Prisoner's dilemma: a study in conflict and cooperation,* Ann Arbor, Ml, University of Michigan Press;

Schotter, A., (1996), Free market economics, Bucharest: Didactic and Pedagogical Publishing House;

Tucker, A., (1950), *A two-person dilemma*, Stanford University Press;

Winfried, E., Klaus, M., (1991), *Fatale Logik: Egoismus oder Kooperation in der Computersimulation*, c't 6 -Archiv

Practical Aspects of Credibility Theory Aiming the Hierarchical Model with Two-Levels

Lecturer Virginia ATANASIU PhD
Department of Applied Mathematics
The Academy of Economic Studies
Univ. tutor Daniela Mihaela VLADU
"Dimitrie Cantemir" Christian University, Bucharest

Abstract

It is an original paper, which shows how the hierarchical model with two levels, can be used to determine the linear non-homogeneous credibility premiums at the sector level and at the contract level. The fact that it is based on complicated mathematics, involving conditional expectations, shouldn't bother the user more than it does when he applies statistical tools like SAS, GLIM, discriminant analysis, and scoring models. These techniques can be applied by anybody on his own field of endeavor, whether it is economic, medical, insurance, or accounting. We give a rather explicit description of the input data for the used hierarchical model of Jewell, only to show that in practical situations there will always be enough data to apply credibility theory to a real insurance portfolio.

Key words: *risk, risk parameter, observable variables with associated weights, conditional expectations.*

Mathematics Subject Classification*: 62P05.*

Introduction

In **many cases** *there is* more than one **risk factor** *dividing* the **portfolio** in *different* **subclasses** or **sectors**.

One could *for instance* **consider** a **first subdivision** in *industrial fire insurance* and *fire insurance* **covering** *private households*.

Other risk factors *may be used* **to** *further* **classify** the **contracts**, *like how* the **building** *is used* or *constructed*. Thus, **we get** *classes* of **nearly** *homogeneous contracts*. For **each class** j from **sector** p **is given** a **weight** w_{pjr} at **time** r. A **natural way** *to do* **this** *is to consider* the **number** of **contract**s in the **class** *at that time*.

The **classes** $j=\overline{1,k_p}$ of **contracts** from **sector** p **are considered** *to have* the **same** *characteristics*, and therefore the **structure parameters** *related* to **sector** p **are estimated** *using* **all contracts** in the **sector**.

Combining the **statistics** of **all sectors** *enables us* to **derive** *estimates* for the **structure parameters** on the **sector level**. It is conceivable that **not all data** X_{pjr} **are available**, because **class** (p, j) **is empty** in **some time periods**. So the **information** *may be incomplete*. Therefore **we define** for *each* **contrac**t t_{pj} as the **number** of **time periods**

for which the **data** *are available*. **We will not** *always* **include** this **refinement** in *our* **notations**, sometimes **just putting** t. The **data** *are not* **necessarily** *restricted* to be **claim figures**. The **techniques** *works* as well for 1) **loss ratios**, 2) **claims** as a *proportion* of the **amount insured**, and so on.

The **question** *to be* **solved** *is*: **find** (*credibility*) *estimates* for the **pure risk premium** of the **class** (which is a **set** of **contracts**, *often* **referred** to *as a* **contract** *again*), the **pure risk premium** of the **sector**, and also for the **overall net premium**.

1. The description of the hierarchical model with two levels

We consider *now* a **portfolio** of **contracts**, which *can be broken* up into **sub-portfolios** (**sectors**), *each* **consisting** of *groups*.

The **sector** *is characterized* by a **risk parameter** *drawn* from a **structure distribution** *describing* the **heterogeneity** between **sectors**.

Given the **sector**, the **group** (of **contracts**) *is characterized* by **another** *risk parameter*.

We obtain the **scheme** of Diagram 1.

Sector	1……p……P	
Contracts	$(p,1),\ldots,(p,j),\ldots,(p,k_p)$	
Structure variables	θ_p	
	$\theta_{p1},\ldots,\theta_{pj},\ldots,\theta_{pk_p}$	
Observable variables with associated weights	X_{pjr},	$j = 1,\ldots,k_p$
	(w_{pjr}),	$r = 1,\ldots,t_{pj}$

Diagram 1: **Hierarchical scheme**

The **model** *consists* of the **structural variables** θ_p and θ_{pj}, and the **observable variables** X_{pjr}, where $p = \overline{1,P}$, $j = \overline{1,k_p}$, $r = \overline{1,t}$.

So the **sector** p *consists* of the **set** of **variables** $\left(\theta_p, \underline{\theta}_p, X_p\right) = \theta_p, \theta_{pj}, X_{pjr}$, $j = \overline{1,k_p}; r = \overline{1,t}$ and the **contract** (p, j) consists of the variables: $\left(\theta_p, \underline{X}_{pj}\right) = \theta_{pj}, X_{pjr}$, $r = \overline{1,t}$.

2. The hypotheses of the hierarchical model with two-levels

(**J$_1$**) The **sectors** are **independent**: $\left(\theta_p, \underline{\theta}_p, X_p\right)$ **is independent** of $\left(\theta_{p'}, \underline{\theta}_{p'}, X_{p'}\right)$ with $p, p' = \overline{1, P}$ and $p \neq p'$.

(**J$_2$**) For **each** $p = \overline{1, P}$ and for **given values** of the **structural parameter** θ_p the **contracts** $\left(\theta_{pj}, \underline{X}_{pj}\right)$ **are** *conditionally independent.*

(**J$_3$**) For *each* **sector** $p = \overline{1, P}$ and for *each* **contract** $j = \overline{1, k_p}$ and for **given values** of the **structural variables** $\left(\theta_p, \theta_{pj}\right)$ the **observations** $\underline{X}_{pj}$ **are** *conditionally independent.*

(**J$_4$**) All **pairs** of **variables** $\left(\theta_p, \theta_{pj}\right)$ for $p = \overline{1, P}$, $j = \overline{1, k_p}$ **are** *identically distributed.*

(**J$_5$**) $E\left(X_{pjr} \mid \theta_p, \theta_{pj}\right) = \mu\left(\theta_p, \theta_{pj}\right), \forall\ r = \overline{1, t}$;

$$Var\left(X_{pjr} \mid \theta_p, \theta_{pj}\right) = \frac{\sigma^2\left(\theta_p, \theta_{pj}\right)}{w_{pjr}}, \forall\ r = \overline{1, t}.$$

(**J$_6$**) $E\left(X_{pjr} \mid \theta_p\right) = \nu\left(\theta_p\right), \ j = \overline{1, k_p}, \ r = \overline{1, t}$.

Observations:

1) Of course the **variables** X_{pjr}, $p = \overline{1, P}$, $j = \overline{1, k_p}$, $r = \overline{1, t}$ (from the Diagram 1) **represent** the **average** of w_{pjr} **contracts** *grouped together* at the **time** r, as follows: $X_{pjr} = \frac{1}{w_{pjr}} \sum_{i=1}^{w_{pjr}} X_{pjr}^{(i)}$, $r = \overline{1, t}$ with $X_{pjr}^{(i)}$, $i = \overline{1, w_{pjr}}$ **satisfying** the **hypotheses**: (**J$_1$**), (**J$_2$**), (**J$_3$**), (**J$_4$**), (**J$_5$'**), (**J$_6$'**), where:

(**J$_5$'**) All **contracts** *have in common* the **fact** that *their* **variances** and *their* **expectations** *are represented* by the *same* **functions** $\sigma^2(\cdot,\cdot)$ and $\mu(\cdot,\cdot)$ of the **risk parameter** ($\sigma^2(\cdot,\cdot)$ and $\mu(\cdot,\cdot)$ **do not depend** on the **subscripts**: p, j and r), that is:

$$E\left(X_{pjr}^{(i)} \mid \theta_p, \theta_{pj}\right) = \mu\left(\theta_p, \theta_{pj}\right), \ i = \overline{1, w_{pjr}}, \ r = \overline{1, t};$$

$$Var\left(X_{pjr}^{(i)} \mid \theta_p, \theta_{pj}\right) = \sigma^2\left(\theta_p, \theta_{pj}\right), \ i = \overline{1, w_{pjr}}, \ r = \overline{1, t}.$$

(**J$_6$'**) All **sectors** *have in common* that **their** *expectations* **are represented** by the *same* **function** $\nu(\cdot)$ of the **risk parameter** (the **functions** $\nu(\cdot)$ **do not depend** on the **subscripts** p , j , r), that is: $E\left(X_{pjr}^{(i)} \mid \theta_p\right) = \nu(\theta_p)$, $i = \overline{1, w_{pjr}}$; $r = \overline{1,t}$.

2) The **quantity** $\mu(\theta_p, \theta_{pj})$ is the **pure net risk premium** of the **contract** (p, j).

3) The **quantity** $\nu(\theta_p)$ is the **pure net risk premium** of the **sector** p .

Important are the **conditional expectations** in the *following* **Diagram 2**:

Sector	1……p……P
Contract	(p,1),…,(p,j),…,(p,k_p)
Structure variable	θ_p $\theta_{p1},\ldots,\theta_{pj},\ldots,\theta_{pk_p}$
Sectorial expectation	$\nu(\theta_p) = E\left[X_{pjr} \middle\| \theta_p\right] = E\left[\mu(\theta_p, \theta_{pj}) \middle\| \theta_p\right]$
Contract expectations	$\mu(\theta_p, \theta_{p1}),\ldots,\mu(\theta_p, \theta_{pj}),\ldots,\mu(\theta_p, \theta_{pk_p})$

Diagram 2: **Conditional expectations** in the **hierarchical model**

This paper **provides us** with **estimates** for $\nu(\theta_p)$ on **sector level** and for $\mu(\theta_p, \theta_{pj})$ on **contract level**. The **structural parameters** that *will occur* in the **credibility premium** and **their interpretation** now **are** as follows:

i) $m = m_p = E\left[\nu(\theta_p)\right] = E\left[\mu(\theta_p, \theta_{pj})\right] = E\left(X_{pjr}\right)$. This **represents** the **combined expectation** for the **entire collective**.

ii) $s^2 = E\left[\sigma^2(\theta_p, \theta_{pj})\right]$. This **structure parameter** s^2 **measures** the **degree** of **fluctuation** of the **individual contract** or the **heterogeneity** *in time* of the **data**.

iii) $a = E\left[Var\left[\mu(\theta_p, \theta_{pj})\right] \middle| \theta_p\right]$. **This quantity** a now **measures** the **degree** of **variability** in a **sector**, or the **heterogeneity** *within* a **sector**.

iv) $b = Var\left[\nu(\theta_p)\right]$. This **structure parameter** b **is** a **measure** for the **heterogeneity** between the **different sectors**.

The **notations** *applied* in the **two-level hierarchical model** *are* **natural extensions** of the **notations** of the **Bühlmann-Straub model**.

We see that **it is not necessary** that **each contract** (p, j) **has exactly** t **observations** but for *convenience* **we will write** t **instead** of t_{pj}.

We define z_{pj} which **will** *later* **prove** *to be* the **credibility factor** on **contract level** and z_p the **credibility factor** at **sector level**, as:

$$z_{pj} = aw_{pj.} / \left(s^2 + aw_{pj.}\right),$$

$$z_p = bz_{p.} / \left(a + bz_{p.}\right).$$

The **weights** *appearing* in the **definition** of z_{pj} **are** the **natural weights** w_{pjr}.

Those for z_p **are** the **cumulated credibility weights**. *It is important* **to remember** the *distinction* **between** $z_{p.} = \sum_j z_{pj}$ **and** z_p.

Further **we'll introduce** the following **weighted averages**:

$$X_{pjw} = \sum_{r=1}^{t} w_{pjr} X_{pjr} / w_{pj.}$$

The **averages** that **we will use** for the **sector** and the **entire collective** *are* **again** *weighted* with the **cumulated credibility factors** *instead* of the **natural weights**:

$$X_{pzw} = \sum_{j=1}^{k} z_{pj} X_{pjw} / z_{p.},$$

$$X_{zzw} = \sum_{p=1}^{P} z_p X_{pzw} / z_{..}.$$

Also: $w_{..} = \sum_{j=1}^{k} w_{pj.} = \sum_{j=1}^{k} \sum_{r=1}^{t} w_{pjr}$.

The following **estimators** *will be used* **in the sequel**: $N_p = X_{pzw}$ **individual estimator** for $\nu(\theta_p)$; $M_{pj} = X_{pjw}$ **individual estimator** for $\mu(\theta_p, \theta_{pj})$; $N_0 = X_{zzw}$ **collective estimator** for $\nu(\theta_p)$; $M_{p0} = X_{pzw}$ **collective estimator** for $\mu(\theta_p, \theta_{pj})$. Note that $N_p = M_{p0}$.

To be able to **present** the **credibility results** for the **two-levels hierarchical model**, *we close* **this section** by *giving* the **relevant co-variances**.

Covariance relations:

Under the **hypotheses** (**J$_1$**)-(**J$_6$**) the following **results** *can be obtained* for the **conditional expectations** and for the **co-variances**:

$$Cov\left[\mu(\theta_p,\theta_{pj}),X_{qir}\right]=\delta_{pq}\left(\delta_{ij}a+b\right);$$

$$Cov\left[\nu(\theta_p),X_{qjw}\right]=\delta_{pq}b;$$

$$Cov\left(X_{pjr},X_{pjr'}\right)=\delta_{rr'}\left(s^2/w_{pjr}\right)+a+b;$$

$$Cov\left(X_{pjr},X_{pj'r'}\right)=\delta_{jj'}\left[\delta_{rr'}\left(s^2/w_{pjr}\right)+a\right]+b;$$

$$Cov\left(X_{pjr},X_{qj'r'}\right)=0, \text{ if } p\neq q;$$

$$Cov\left(X_{pjr},X_{pj'w}\right)=Cov\left(X_{pjw},X_{pj'w}\right)=b+\delta_{jj'}\left(a/z_{pj}\right);$$

$$Cov\left(X_{pjw},X_{pzw}\right)=Cov\left(X_{pzw},X_{pzw}\right)=b/z_p=b+\left(a/z_{p.}\right);$$

$$Cov\left(X_{pzw},X_{zzw}\right)=Cov\left(X_{zzw},X_{zzw}\right)=b/z..$$

For the **demonstration** see [1] (the chapter 9).

3. Credibility results for the hierarchical model with two-levels

Here **we present** the **main results** of the **paper**, *leaving* the **detailed computations** to the **reader**.

In this section **we present** the **credibility premiums** at **sector level** and at **contract level**.

1) Application 1 (**Credibility estimated on the sector level**)

We consider the **two-levels hierarchical model** *as introduced* in the **first section** (see **Diagram 1**, from **Section 1**.). Under the *hypotheses* (**J$_1$**)-(**J$_6$**), the following **linear non-homogeneous estimator** *is obtained* for the **pure net risk premium** of **sector** p :

$$\hat{\nu}(\theta_p)=N_p^a=(1-z_p)m+z_pX_{pzw},$$

where z_p **is defined** in the **previous section**, and m , s^2 , a and b in **i**)-**iv**).

Proof: the *best linear non-homogeneous credibility estimator* **is determined** by *solving* the **following problem**:

$$\underset{c_0,c}{Min}\,E\left\{\left[\nu(\theta_p)-c_0-\sum_{q=1}^{P}\sum_{j=1}^{k}c_{qj}X_{qjw}\right]^2\right\}$$

Since this is the **minimum** of a **positive definite quadratic form**, *it is enough* **to find** a *solution* with **all partial derivatives** *equal* to zero.

Taking the **partial derivative** with respect to c_0, **we obtain** the *equation*:

$$E\left[\nu(\theta_p) - c_0 - \sum_{q,j} c_{qj} X_{qjw}\right] = 0$$

Indeed, **we have**:

$$f = f(c_0, c_{qj}; q = \overline{1,P}, j = \overline{1,k_q}) \overset{not.}{=} E\{[\nu(\theta_p) - c_0 - \sum_{q=1}^{P}\sum_{j=1}^{k_q} c_{qj} X_{qjw}]^2\} = E[\nu^2(\theta_p) +$$

$$c_0^2 + (\sum_{q=1}^{P}\sum_{j=1}^{k_q} c_{qj} X_{qjw})^2 -$$

$$- 2c_0\nu(\theta_p) - 2\nu(\theta_p)\sum_{q,j} c_{qj} X_{qjw} + 2c_0\sum_{q,j} c_{qj} X_{qjw}] =$$

$$E[\nu^2(\theta_p)] + c_0^2 + E[(\sum_{q=1}^{P}\sum_{j=1}^{k_q} c_{qj} X_{qjw})^2] - 2c_0 E[\nu(\theta_p)] -$$

$$- 2\sum_{q,j} c_{qj} E[\nu(\theta_p) X_{qjw}] + 2c_0\sum_{q,j} c_{qj} E(X_{qjw})$$

and thus the **condition** $\frac{\partial f}{\partial c_0} = 0$ **leads to**: $2c_0 - 2E[\nu(\theta_p)] +$

$$+ 2\sum_{q,j} c_{qj} E(X_{qjw}) = 0$$

, or: $c_0 - E[\nu(\theta_p)] + \sum_{q,j} c_{qj} E(X_{qjw}) = 0$, that is: $E\left[\nu(\theta_p) - c_0 - \sum_{q,j} c_{qj} X_{qjw}\right] = 0$.

So the **verification** of the **relation** above **is performed**. **Using** the **fact** that $m = E[\nu(\theta_p)] = E(X_{qjw})$ **we may solve** it with respect to c_0. **We obtain**:

$$c_0 = E[\nu(\theta_p)] - \sum_{q,j} c_{qj} E(X_{qjw}) = m - \sum_{q,j} c_{qj} m$$

,

because:

-*takes place* **i)** from **Section 2**, and:

$$E(X_{qjw}) = \sum_{r=1}^{t} \frac{w_{qjr}}{w_{qj.}} E(X_{qjr}) \overset{i)}{=} \sum_{r=1}^{t} \frac{w_{qjr}}{w_{qj.}} m = m$$

.

Inserting the **result** above in the first formula **we obtain**:

$$\min_c E\left\{\left[\nu(\theta_p) - m - \sum_{q,j} c_{qj}\left(X_{qjw} - m\right)\right]^2\right\}$$

, where: $c = (c_{qj})_{q,j}$.

Computing the **partial derivative** with respect to $c_{q'j'}$ **the result** *will be given* by the **following equations**:

$$Cov\left[\nu(\theta_p), X_{q'j'w}\right] = \sum_{q,j} c_{qj} Cov\left(X_{qjw}, X_{q'j'w}\right) \quad q' = \overline{1,P}, \quad j' = \overline{1,k_{q'}}.$$

Indeed, **we have**:

$$f = f(c_{qj}; q = \overline{1,P}, j = \overline{1,k_q}) \overset{not.}{=} E\{[\nu(\theta_p) - m - \sum_{q,j} c_{qj}(X_{qjw} - m)]^2\} =$$

$$E[\nu^2(\theta_p) + m^2 + \sum_{q,j} c_{qj}^2 (X_{qjw} -$$

$$- m)^2 + 2\sum_{q<q'}\sum_{j<j'} c_{qj}c_{q'j'}(X_{qjw} - m)(X_{q'j'w} - m) -$$

$$2m\nu(\theta_p) + 2m\sum_{q,j} c_{qj}(X_{qjw} - m) - 2\nu(\theta_p)\sum_{q,j} c_{qj}(X_{qjw} - m)] =$$

$$= E[\nu^2(\theta_p)] + m^2 +$$

$$\sum_{q,j} c_{qj}^2 E[(X_{qjw} - m)^2] + 2\sum_{q<q'}\sum_{j<j'} c_{qj}c_{q'j'}E[(X_{qjw} - m)(X_{q'j'w} - m)] -$$

$$2mE[\nu(\theta_p)] +$$

$$+ 2m\sum_{q,j} c_{qj}E[(X_{qjw} - m)] - 2\sum_{q,j} c_{qj}E[\nu(\theta_p)(X_{qjw} - m)] = E[\nu^2(\theta_p)] + m^2 + \ldots +$$

$$c_{q'j'}^2 E[(X_{q'j'w} - m)^2] +$$

$$+ \ldots + 2(\ldots + c_{q'j'}\sum_{\substack{q=1 \\ q\neq q'}}^{P}\sum_{\substack{j=1 \\ j\neq j'}}^{k_p} c_{qj}E[(X_{qjw} - m)(X_{q'j'w} - m)] + \ldots) -$$

$$2mE[\nu(\theta_p)] + 2m(\ldots + c_{q'j'}E[(X_{q'j'w} - m)] + \ldots) -$$

$$- 2(\ldots + c_{q'j'}E[\nu(\theta_p)(X_{q'j'w} - m)] + \ldots)$$ and thus the **conditons**: $\frac{\partial f}{\partial c_{q'j'}} = 0; \quad q' = \overline{1,P}, \; j' = \overline{1,k_{q'}}$ **lead to**:

$$2c_{q'j'}E[(X_{q'j'w} - m)^2] + 2\sum_{q;q\neq q'}\sum_{j\neq j'} c_{qj}E[(X_{qjw} - m)(X_{q'j'w} - m)] + 2mE[(X_{q'j'w} -$$

$$m)] - 2E\,[\,\nu(\theta_p)(X_{q'j'w} -$$

$$- m)] = 0; q' = \overline{1,P}; \; j' = \overline{1,k_{q'}},$$ or:

$$E[\nu(\theta_p) - m)(X_{q'j'w} - m)] = \sum_{q,j} c_{qj}E[(X_{qjw} - m)(X_{q'j'w} - m)]; \qquad q' = \overline{1,P},$$

$$j' = \overline{1,k_{q'}},$$ or:

$E[(\nu(\theta_p) - E(\nu(\theta_p))(X_{q'j'w} - E(X_{q'j'w}))] = \sum_{q,j} c_{qj} E[(X_{qjw} - E(X_{qjw}))(X_{q'j'w} - E(X_{q'j'w}))]$; $q' =$

$= \overline{1,P}$, $j' = \overline{1,k_{q'}}$, or: $Cov[\nu(\theta_p), X_{q'j'w}] = \sum_{q,j} c_{qj} Cov(X_{qjw}, X_{q'j'w})$;

$q' = \overline{1,P}$, $j' = \overline{1,k_{q'}}$.

Using the **covariance relations** of **Section 2**, *we obtain*:

$$\delta_{pq'} b = \sum_{q,j} c_{qj} \delta_{qq'} \left[b + \delta_{jj'} \left(a / z_{qj} \right) \right]$$

because:

$$Cov\left(X_{qjw}, X_{q'j'w}\right) = \delta_{qq'} Cov\left(X_{qjw}, X_{qj'w}\right) = \delta_{qq'} \left[b + \delta_{jj'} \left(a / z_{qj} \right) \right]$$.if

In case $p \neq q'$ the **left side** of previous equation **is zero**, so *using* the **symmetry arguments** and **partitioning**, *we obtain* $c_{q'j} = 0$ for all j as **solutions** of a **homogeneous system** of **equations**.

Indeed, if $p \neq q'$ then previous equation becomes:

$$0 = \sum_{q,j} \delta_{qq'} (b + \delta_{jj'} \frac{a}{z_{qj}}) c_{qj}; \; j' = \overline{1,k_{q'}},$$

that is a **linear homogeneous system** of $k_{q'}$ **equations** with $k_{q'}$ **unknowns**: $c_{q'j}; j = \overline{1,k_{q'}}; p \neq q'$, which **admits** as **unique solution** the **banal solution** $c_{q'j} = 0$ for all j, *according to* **Kramer's theorem**.

So $c_{q'j} = 0 \forall j$, if $p \neq q'$.

If $p = q'$ **one obtains** for $j' = \overline{1,k}$:

$$b = \sum_j c_{pj} \left[b + \delta_{jj'} \left(a / z_{pj} \right) \right] = c_{p.} b + c_{pj'} \left(a / z_{pj'} \right)$$, where: $c_{p.} = \sum_j c_{pj}$.

These equations *are* **symmetrical** in ($c_{pj'} / z_{pj'}$).

Let: $c_{pj'} / z_{pj'} = R$, then R **is determined** by: $b = Ra + c_{p.} b = Ra + Rz_{p.} b = R\left(a + z_{p.} b\right)$.

So: $R = b / \left(a + z_{p.} b\right) = z_p / z_{p.}$ and the **resulting value** for $c_{pj'}$, $j' = \overline{1,k_p}$ is $c_{pj'} = Rz_{pj'} = z_p z_{pj'} / z_{p.}$.

Indeed, **we have**:

$$b=\sum_{j=1}^{k}(b+\delta_{jj'}\frac{a}{z_{pj}})c_{pj};\ j'=\overline{1,k},(k\overset{not.}{=}k_{q'})\Leftrightarrow$$

$$b=b\sum_{j=1}^{k}c_{pj}+a\sum_{j=1}^{k}\delta_{jj'}\frac{c_{pj}}{z_{pj}};\ j'=\overline{1,k},(k\overset{not.}{=}k_{q'})\Leftrightarrow b=b\sum_{j=1}^{k}c_{pj}+$$

$$+a\frac{c_{pj'}}{z_{pj'}};\ j'=\overline{1,k}\Leftrightarrow b=bc_{p.}+a\frac{c_{pj'}}{z_{pj'}};\ j'=\overline{1,k}$$

, which **implies** the **following equations**:

$$\begin{cases} b=bc_{p.}+a\dfrac{c_{p1}}{z_{p1}}, \\ b=bc_{p.}+a\dfrac{c_{p2}}{z_{p2}}, \\ \vdots \\ b=bc_{p.}+a\dfrac{c_{pk}}{z_{pk}}. \end{cases}$$

The **first two equations** *lead to*:

$$bc_{p.}+a\frac{c_{p1}}{z_{p1}}=bc_{p.}+a\frac{c_{p2}}{z_{p2}}\Leftrightarrow\frac{c_{p1}}{z_{p1}}=\frac{c_{p2}}{z_{p2}}.$$

Similarly, from the **second** and the **third** *equation*, **we deduce** that:

$$\frac{c_{p2}}{z_{p2}}=\frac{c_{p3}}{z_{p3}},$$

and so on, step by step, **we obtain** that: $\frac{c_{p1}}{z_{p1}}=\frac{c_{p2}}{z_{p2}}=...=\frac{c_{pk}}{z_{pk}}$, and thus **it makes sense** *to denote* the **reports** $\frac{c_{pj'}}{z_{pj'}};\ j'=\overline{1,k}$ with an R (**representing** *their* **common value**).

So the **above equations**: $b=bc_{p.}+a\frac{c_{pj'}}{z_{pj'}};\ j'=\overline{1,k}$, **become** $b=bc_{p.}+aR$ and $c_{p.}=\sum_{j}c_{pj}=c_{p1}+c_{p2}+$

$+...+c_{pk}$ **becomes** $c_{p.}=Rz_{p1}+Rz_{p2}+...+Rz_{pk}=R\sum_{j=1}^{k}z_{pj}=Rz_{p.}$, and thus **we obtain** that: $b=bRz_{p.}+aR$, which **implies**: $R=\frac{b}{a+bz_{p.}}=\frac{z_p}{z_{p.}}$.

So the **resulting value** for $c_{pj'};\ j'=\overline{1,k}$ is:

$c_{pj'}=z_{pj'}R=z_{pj'}\frac{z_p}{z_{p.}}=z_p\frac{z_{pj'}}{z_{p.}};\ j'=\overline{1,k}\quad(p=q')$.

Using **these results**, c_0 **can be obtained**:

$c_0=m-\sum_j z_p z_{pj}/z_{p.}m=(1-z_p)m$.

Indeed, **we have**:

$c_0=m-[\sum_j(\sum_q c_{qj})]m=m[1-\sum_j(c_{pj}+\sum_{q;q\neq p}c_{qj})]=m[1-z_p\sum_j\frac{z_{pj}}{z_{p.}}]=m[1-z_p\frac{\sum_j z_{pj}}{z_{p.}}]=$

$m[1-z_p\cdot$

$\cdot\frac{z_{p.}}{z_{p.}}]=m(1-z_p)=(1-z_p)m$.

Finally, the **optimal non-homogeneous linear combination** of the X_{qjw}, **appears** as in **Application 1**.

$\hat{\nu}(\theta_p)=N_p^a=c_0+\sum_{q,j}c_{qj}X_{qjw}=(1-z_p)m+\sum_j(\sum_q c_{qj}X_{qjw})=(1-z_p)m+$

$\sum_j(c_{pj}X_{pjw}+\sum_{q;q\neq p}c_{qj}X_{qjw})=$

$=(1-z_p)m+z_p\sum_j\frac{z_{pj}}{z_{p.}}X_{pjw}=(1-z_p)m+z_pX_{pzw}$.

Consequently $N_p^a=(1-z_p)m+z_pX_{pzw}$, **as was to be proven**.

2) Application 2 (**Credibility estimated for the contract level**):

Under the *same* **hypotheses** as in the **previous application**, the **following linear non-homogeneous estimator** *is obtained* for the **pure net risk premium** of the **contract** (p,j):

$\hat{\mu}(\theta_p,\theta_{pj})=M_{pj}^a=(1-z_{pj})m_p+z_{pj}X_{pjw}$.

Proof: *we have* to **consider** the *following* **problem**:

$$\underset{c_0,c}{Min}\, E_{\theta_p}\left[E_{X,\theta_{pj}|\theta_p}\left[\left\{ \mu(\theta_p,\theta_{pj}) - c_0 - \sum_{q=1}^{P}\sum_{j=1}^{k_q}\sum_{r=1}^{t} c_{qir} X_{qir} \right\}^2 \middle| \theta_p \right] \right],$$

where $c = (c_{qir})_{q,i,r}$, $X = (X_{qir})_{q,i,r}$.

Apart from the **extra dimension**, the proof **proceeds** *exactly* **like** *other proofs* of **similar applications**.

Since relation above is the **minimum** of a **positive definite quadratic form**, *it is enough* **to find** a *solution* with **all partial derivatives** *equal to* **zero.**

Taking the **derivative** of the **expectation** with **respect to** c_0 **gives**:

$$c_0 = E_{\theta_p,\theta_{pj}}\left[\mu(\theta_p,\theta_{pj})\right] - \sum_{q,i,r} c_{qir} E_{X_{qir}}(X_{qir}) = m - \sum_{q,i,r} c_{qir} m,$$

because:

$E_{\theta_p,\theta_{pj}}[\mu(\theta_p,\theta_{pj})] = E_{\theta_p,\theta_{pj}}[E(X_{pjr} \mid \theta_p,\theta_{pj})] = E(X_{pjr}) = m$, and:

$E_{X_{qir}}(X_{qir}) = E(X_{qir}) = m$.

Inserting the **result** above in previous formula **we obtain**:

$$\underset{c}{Min}\, E_{\theta_p}\left[E_{X,\theta_{pj}|\theta_p}\left[\left\{ \mu(\theta_p,\theta_{pj}) - m - \sum_{q,i,r} c_{qir}(X_{qir} - m) \right\}^2 \middle| \theta_p \right] \right].$$

After **insertion**, the **derivative** with **respect to** $c_{q'i'r'}$ **is calculated**.

This **leads to** the **following equation**:

$$E_{\theta_p}\left[Cov\left[\mu(\theta_p,\theta_{pj}), X_{q'i'r'} \right] \middle| \theta_p \right] = \sum_{q,i,r} c_{qir} E_{\theta_p}\left[Cov\left[X_{q'i'r'}, X_{qir} \middle| \theta_p \right] \right]$$

Using the **covariance relations** of **Section 2**, *we get* the *following* **compactly written** *system* of **equations**. For **each subscripts** q', i', r':

$$\delta_{pq'}\delta_{ji'}a = \sum_{q,i,r} c_{qir}\left\{ \delta_{qq'}\left[\delta_{ii'}\left(\delta_{rr'}\frac{s^2}{w_{qir}} + a \right) + b \right] - \delta_{pq'}\delta_{qq'}b \right\},$$

because **take place** the **relations** below, where:

$$Cov(X_{qir}, X_{q'i'r'}) = \delta_{qq'} Cov(X_{qir}, X_{qi'r'}),$$

true equality for $q = q'$, and if *we consider* the **covariance relations** of **Section 2**, then *immediately* **we obtain** *her veracity*, for $q \neq q'$;

$Cov(X_{qir}, X_{q'i'r'}) = E_{\theta_p}[Cov(X_{qir}, X_{q'i'r'} \mid \theta_p)] + Cov[E_{\theta_p}(X_{qir} \mid \theta_p), E_{\theta_p}(X_{q'i'r'} \mid \theta_p)]$, which **implies**:

$E_{\theta_p}[Cov(X_{qir}, X_{q'i'r'} \mid \theta_p)] = Cov(X_{qir}, X_{q'i'r'}) - Cov[E_{\theta_p}(X_{qir} \mid \theta_p), E_{\theta_p}(X_{q'i'r'} \mid \theta_p)] =$

$$= \delta_{qq'}[\delta_{ii'}(\delta_{rr'}\frac{s^2}{w_{qir}} + a) + b] - \delta_{pq'}\delta_{qq'}b \quad ,$$

where:

$$Cov(X_{qir}, X_{q'i'r'}) = \delta_{qq'}Cov(X_{qir}, X_{qi'r'}) = \delta_{qq'}[\delta_{ii'}(\delta_{rr'}\frac{s^2}{w_{qir}} + a) + b]$$

if *we consider* the **fourth covariance relation** of **Section 2** and:

$Cov[(E_{\theta_p}(X_{qir} \mid \theta_p), E_{\theta_p}(X_{q'i'r'} \mid \theta_p)] = \delta_{pq'}\delta_{qq'}b$

because:

- if $p = q'$ and $q = q'$, then:

$Cov[E_{\theta_p}(X_{pir} \mid \theta_p), E_{\theta_p}(X_{pi'r'} \mid \theta_p)] = Cov[\nu(\theta_p), \nu(\theta_p)] = Var[\nu(\theta_p)] = b$;

- if $p = q'$ and $q \neq q'$, then:

$Cov[E_{\theta_p}(X_{qir} \mid \theta_p), E_{\theta_p}(X_{pi'r'} \mid \theta_p)] = Cov[E(X_{qir}), \nu(\theta_p)] = Cov[m, \nu(\theta_p)] = 0$

- if $p \neq q'$, then:

$Cov[E_{\theta_p}(X_{qir} \mid \theta_p), E_{\theta_p}(X_{q'i'r'} \mid \theta_p)] = Cov[E_{\theta_p}(X_{qir} \mid \theta_p), E(X_{q'i'r'})] =$

$Cov[E_{\theta_p}(X_{qir} \mid \theta_p), m] = 0$.

Also:

$Cov[\mu(\theta_p, \theta_{pj}), X_{q'i'r'}] = \delta_{pq'}(\delta_{i'j}a + b)$,

if *we consider* the **first covariance relation** of **Section 2**, and thus the **left side** of previous **equality becomes**:

$$E_{\theta_p}[Cov[\mu(\theta_p, \theta_{pj}), X_{q'i'r'}]\theta_p] \overset{(3.12)}{=} E_{\theta_p}[\delta_{pq'}(\delta_{i'j}a + b) \mid \theta_p] = \delta_{pq'}\delta_{i'j}a$$

Writing the **equations** with a **non-zero** *left side* **more explicitly** *one gets* for **each subscript** r': $a = \sum_{q,i,r} c_{qir}\delta_{pq}\delta_{ji}\left(\delta_{rr'}\frac{s^2}{w_{qir}} + a\right)$, which for $q' = p$, $i' = j$ **leads to**:

$$a=\sum_{r=1}^{t} c_{pjr}\left(\delta_{rr'}\frac{s^2}{w_{pjr}}+a\right),\ \forall\ r'=\overline{1,t}$$

.

because:

$$\sum_{q,i,r} c_{qir}\{\delta_{qp}[\delta_{ij}(\delta_{rr'}\frac{s^2}{w_{qir}}+a)+b]-\delta_{pp}\delta_{qp}b\}=\sum_{q,i,r} c_{qir}[\delta_{qp}\delta_{ij}(\delta_{rr'}\frac{s^2}{w_{qir}}+a)+\delta_{qp}b-$$

$$\delta_{qp}b]=$$

$$=\sum_{q,i,r} c_{qir}\delta_{qp}\delta_{ij}(\delta_{rr'}\frac{s^2}{w_{ir}}+a)=\sum_{r=1}^{t_{pj}}\{\sum_{q}\delta_{qp}[\sum_{i} c_{qir}\delta_{ij}(\delta_{rr'}\frac{s^2}{w_{qir}}+a)]\}=$$

$$\sum_{r=1}^{t_{pj}}\{\sum_{q}\delta_{qp}[c_{qjr}(\delta_{rr'}\frac{s^2}{w_{jr}}+a)+$$

$$+\sum_{i;i\neq j} c_{qir}0(\delta_{rr'}\frac{s^2}{w_{qir}}+a)]\}=\sum_{r=1}^{t_{pj}}[\sum_{q}\delta_{qp}c_{qjr}(\delta_{rr'}$$

$$\frac{s^2}{w_{qjr}}+a)]=\sum_{r=1}^{t}[c_{pjr}(\delta_{rr'}\frac{s^2}{w_{pjr}}+a)+\sum_{q;q\neq p}0c_{qjr}(\delta_{rr'}\frac{s^2}{w_{qjr}}+a)]=$$

$$=\sum_{r=1}^{t_{pj}}(\delta_{rr'}\frac{s^2}{w_{pjr}}+a)\ c_{pjr}$$. Introducing the **notation**:

$$c_{pj.}=\sum_{r=1}^{t_{pj}} c_{pjr}$$

the **equations** above **are equivalent** with:

$$a=\frac{s^2}{w_{pjr'}}c_{pjr'}+ac_{pj.};r'=\overline{1,t_{pj}};p=q'\wedge i'=j$$

which **written** *explicitly*, **lead to**:

$$\frac{c_{pj1}}{w_{pj1}}=\frac{c_{pj2}}{w_{pj2}}=...=\frac{c_{pjt_{pj}}}{w_{pjt_{pj}}}\overset{not.}{=}R$$

and from **here** *we deduce* that:

$$c_{pj.}\underset{(3.17)}{\overset{(3.15)}{=}}Rw_{pj.}$$

From these equations **we have**:

$$a=s^2R+aRw_{pj.}$$

which **implies**:

$$R = \frac{a}{s^2 + aw_{pj.}} = \frac{z_{pj}}{w_{pj.}}$$

Substituting **this result** above **we obtain**:

$$c_{pjr'} \underset{(3.20)}{\overset{(3.17)}{=}} z_{pj} \frac{w_{pjr'}}{w_{pj.}}; r' = \overline{1, t_{pj}}, p = q' \wedge i' = j$$

All the **other** $c_{q'i'r'}$ **are** *zero* because of the **independence assumptions**, being the **solution** of a **homogeneous system** of **equations**.

So: $c_{q'i'r'} = 0, \forall r' = \overline{1, t_{pj}}; p \neq q' \ \vee \ i' \neq j$

Finally c_0 **can be calculated** to be:

$$c_0 = (1 - z_{pj})m$$

if **we replace** *all values* **obtained** for „ c_{qir} ”.

So:

$$M^{a}_{pj} = (1 - z_{pj})m + z_{pj} X_{pjw},$$

where m is the **collective expectation** from $\mu(\theta_p, \theta_{pj})$ for **each sector**, as was to be proven.

Conclusions

In this paper **we have demonstrated** that the **estimators** *obtained* for the **pure net risk premium** on **sector level** and for the **pure net risk premium** on **contract level** *are* the **best linear credibility estimators** from the Jewell model, *using* the **greatest accuracy theory**. So, the article **provides** the **means** *to calculate* the **credibility premiums** at *sector level* and at *contract level*, which **represent** the **most recent developments** in the **credibility theory**. **They** *certainly* **present** the *only solution* when the **insurance industry** *faces risks* with **basic risk characteristics** that **cannot be** *assigned* **to any established collective** or with a **risk coverage** *under circumstances* that **have** *never* **been met**.

References

Atanasiu, V., *Contributions to the credibility theory*, doctoral dissertation, University of Bucharest, Faculty of Mathematics, 2000.

De Vylder, F. & Goovaerts, M.J., *Semilinear credibility with several approximating functions*, Insurance: Mathematics and Economics, 4, 155- 162, 1985.

Gerber, H.U. & Jones, D.A., *Credibility formulas of the updating type*, in "*Credibility theory and application*", Proceedings of the Berkeley Actuarial Research Conference on credibility, Academic Press, New York, 89-109, 1975.

Gerber, H.U., *Credibility for Esscher premiums*, Mitteilungen der VSVM, 80, 307-312, 1980.

Goovaerts M. J., Kaas R., Van Heerwaarden A., E., Bauwelincks T., *Insurance Series*, Volume 3, Effective Actuarial Methods, Elsevier Science Publishers B.V., 187-211, 1990.

Pentikäinen T., Daykin C. D., Pesonen M., *Practical Risk Theory for Actuaries*, Chapman & Hall, 1993.

Sundt B., *An Introduction to Non-Life Insurance Mathematics*, volume of the "Mannheim Series", 22-54, 1984.

Pragmatism of the Account Information, under Application of International Financial Reporting Standards

Professor Gheorghe LEPADATU PhD
"Dimitrie Cantemir", Christian University Bucharest,

Abstract

The evolution of Accounting during the transition to a market economy has demonstrated the existence of a special methodology of gathering, processing and providing information related to modern Accounting, based on specific informational system. Accounting may offer a model, as a means of expressing financial records and its economic activities.

Key words: *accounting, standards, audit, financial records*

JEL Code: *M41; M42*

1. Utility of the information from the annual financial statements

Accounting remains the main provider of economic information necessary for managers to short-term decisions. It is designed currently as an internal tool in making decisions and in achieving management control. Role in addition to providing real and reliable information on whether the property, it is the financial audit. This information is useful not only managers but also other categories of users.

If the information produced by accounting, particularly those based decisions can not be disclosed because it is the company's strategy, the audit report provided by may be published.

Information provided to be useful, must first be accurate, and timely, do not require high costs for collection and, in particular, to be current. In terms of accuracy, determine the quality of decision information. Incorrect information may lead to loss-making decisions for the enterprise. **Thus, accuracy of accounting information is feasible but with higher costs.**

Accuracy of information is understood both in terms of calculation itself and in terms of actual coverage of all cost items, the causes that generated them and the responsibility for these.

Timeliness of information, characterized by promptness is transmitted, the quality of decision is crucial since a belatedly received information loses value and is equivalent to manager a total lack of information.

News information, depends on the promptness with which it is collected, processed and transmitted.

The three characteristics of information, where information can be found and released by a financial audit. Thus, the information is essential for financial audit because, based on the audit report are forecasts or future acquisitions and may lead to an incorrect

date and the bankruptcy of a company. If information is appropriate to say that a financial audit report based on statements made earlier, there is no relevance to meet the objective "true picture".

Current market economy system, is characterized by a high level of technicality, modernization and upgrading in accordance with market demands immediate, is due to rapid obsolescence. The amazing speed of processing requires all sectors and industries to Western standards align to succeed and be profitable in step with social progress.

A rigorous accounting system, will reveal changes that may be made to the accounting database in order to reflect the transition from a centralized economy to a market economy, a process currently under way in Romania. The accounting system is designed to provide third parties the information that he produces are able to meet the needs of their end users.

Current and potential investors need information to help decide on the one hand, whether to buy, keep or sell their shares in an entity asset and, secondly, in relation to that company the ability to pay them dividends. They are useful information for establishing the rate of return possible in the next period, so as to make comparisons in terms of existing opportunities at a time on the market and investment risks.

Managers need information units, which enable them to conduct business in a profitable manner. They require access to additional information that would help in better asset management entity. Tax authorities requires that financial statements are prepared so that the taxable profits of the company can be properly determined.

Tax financial statements are prepared using a system of precise rules provided by laws in force accounting and pilot companies based reasoning system based on professional, by the provisions of the Framework and International Accounting Standards.

Employees have brought attention to accounting, where they are interested in items relating to the size of profits, the distribution thereof, and growth prospects in terms of salaries and establishment of various benefits and personal opportunities available to them.

Providers are concerned about the degree to which the debtor unit will meet its obligations and at the same time, their interest on its future business volume, which can significantly influence the volume and value of orders unobtainable.

Customers are interested in the company's ability to continue their work, they require a range of information, enabling them to estimate the prospects of business partners so that in the event of major changes that might occur, appropriate reactions able , leading to their protection activities.

Lenders are a category of donors, including a significant share of banking units have.

Banks are anxious especially when pre-credit analyst, the capacity for repayment of loans to be granted, the degree of liquidity of the customer and its ability to profit in the period ahead.

Other external users are represented by groups or individuals who were not included in the categories listed, such as, for example, competitors, consumers, etc..

Depending on user requirements, the manager decides in what context will attempt to provide the information required, given that information to be provided are those prescribed by law or regulation, but on the other hand, there may be information sought by users are not included in financial statements and the company can provide. Can there another category of information called "sensitive", which the company does not want to make them public because they can significantly influence the market.

Another factor in choosing the information that is provided, the cost of collecting information, which in some cases, benefits may be more important than communication.

The database has a flexibility that allows all users needs, without double accounting records. To increase business competitiveness, it must rise in "top of the best companies", in which are highlighted national elements of profitability, turnover, which is a prerequisite for future partnerships. In a market economy based on continually increasing the quality and level of information, "information is power." The large number and variety of transactions undertaken in a market economy, the vast majority of large companies, shows that these benefits need speed data processing by computer.

2. Qualitative types of data derived from financial statements

Whatever the system chosen, or the computer at hand, he easily makes a reference to primary documents, any underlying transaction (eg invoice number). Processing system mainly to record economic information, have the capacity to generate evidence of financial audit work necessary part of the financial auditor. We can say that the financial auditor prefers a computerized data collection system, because it is easier to test the accuracy of the database. For example, in accounting for leases, according to International Accounting Standards, it must be net reveals they were registered or leased the assets held under leases, which would be very difficult if use of manual records, especially from a company whose main line of business leases. Thus, auditors, the position of independence and impartiality that lies have a significant role in ensuring the quality of financial statements information released, bringing it greater credibility. From this perspective, the financial audit is designed to equally protect all users of accounting information. Although financial audit does not provide an absolute guarantee, remains the most likely risk management information and thus to obtain high quality information, useful for different users decisions. Financial Auditor role is to increase user confidence that the accounting information was obtained, processed and analyzed in accordance with international accounting standards and auditing and financial statements present all (or reserves) reflects the economic reality on financial audit.

3. Specificities, in terms of quality of financial statements conducted in accordance with the international accounting standards

Under the general framework of the International Accounting Standards Committee, information is significant because their omission or erroneous declaration may influence the economic decisions of users, decisions on financial statements. Qualitative characteristics are characteristics that determine the usefulness of data derived from financial statements and are classified into four categories: understandability, relevance, reliability and comparability.

Intelligibility of information provided, is an essential quality for users, because it involves the ease with which can be understood and applied these data, but assuming that beneficiaries have sufficient knowledge of financial, accounting or even economically.

Relevance of information, is that influence economic decisions of users, helping them to assess events, confirming or correcting their past evaluations. Under the new rules, an auditor formulates an opinion on whether financial statements prepared by the company really reflects a true and fair view, carefully choosing the level of materiality.

Within each of its mission, financial auditor shall ensure that all issues may be important and may affect the audit opinion were fully taken into account. Thus, the audit procedures used are designed to provide reasonable assurance of detecting all important aspects of the problem. Relevant information is influenced by nature and materiality. Materiality is largely subjective, but his determination, the financial auditor's reasoning

makes use of his professional. Auditor is concerned to properly quantify the materiality level for two reasons:

- To decide on the level of materiality used during the procedure for collecting audit evidence. Audit scope and purpose of the tests are mainly related to materiality;
- To decide on the "materiality level of opinion";
- Materiality is an expression of meaning or relative importance of an issue in the context of financial statements. An issue or value is considered significant if its omission would affect obviously, decisions of users of financial statements.

Credibility is the quality of information we ensure that it does not contain significant errors, is neutral and trustworthy. Credibility of information based on the following defining characteristics: fair representation - information to be reliable, economic transactions and events reflect exactly;

- Prevalence of economics on the judiciary - the vast majority of transactions counting process reflects the economic substance of transactions, not just their legal form. To take into account the prevalence of a transaction, look at all aspects and implications, with emphasis on those which may have a commercial effect in practice,
- Neutrality - the information contained in financial statements to be credible and timely in making correct decisions, it is necessary that it should not be influenced by anything
- Prudence - professionals who prepare financial statements have various uncertainties in the presentation of economic issues, but are always careful in using professional judgments so that their estimates are not contrary to the principle of prudence. Allows accounting records to assets of real value, or as close to reality through prudent valuation of assets and liabilities
- Completeness - not to be invalid, the information required to be complete, without omitting significant issues, within reasonable limits of materiality chosen correctly.

Comparability - The financial statements presented are compared in time and space, so users could make a relevant opinion on the financial position of the enterprise market and its expected performance. Therefore, disclosure of the accounting records, indicators and accounting policies, and consistency is achieved in case of changing some of the techniques used, they will be presented in such a way that it can pair with the techniques used in previous periods .

4. Accounting framework in accordance with international accounting standards which define the limits of accounting information is relevant and reliable by:

- Opportunity - refers to the timely submission of economic data, because a delay in reporting can lead to loss of information relevant effects;
- Cost-benefit - is a limit as coercive rather than qualitative, this ratio is optimal when we refer to relevant information. If information is to obtain a price higher than the benefit of its use when it has no capacity to be relevant;
- Balance between qualitative characteristics - the specialty practice can not be rigorously quantify this balance is a problem because professional reasoning, resulting in financial statements, which belongs to both producers and users of information.

Reflects the information in the financial statements, is a concept of British origin, took over and defined by EU Directives. In the Romanian accounting, this new concept was introduced by the Accounting Act, under which, the official document of the management of economic units is the ”balance sheet, which gives an accurate picture, clear and complete assets, financial position and performance”.

5. Conclusion

In conclusion we can say that Romania's current accounting rules require financial statements to be made so that they reflect a true and fair view of heritage. This is possible if professional accountants and management unit uses professional reasoning. An important part of professional reasoning is related to the accurate determination of materiality for the purposes detailed presentation of financial statements (either primary or statements in the explanatory notes annexed to the balance sheet) of significant items. This is very important and is given special attention since, including detailed accounts of insignificant items could create confusion in their interpretation or analysis would hinder them. It is widely agreed that the use of judgment, not carried out with a universally valid model whose application to provide a financial audit with guaranteed positive results.

Such a goal is achieved through the rigorous pursuit through a deep understanding of the economic environment, social and institutional entities audited by resorting to specific professional standards and adherence to a code of professional ethics. Financial auditor is a difficult approach even with meeting all these elements. In conclusion, we believe that the opinion made by an auditor improves the quality of the information contained in financial statements and is the most efficient manner in which it appears that financial statements do not present significant deviations, thus meeting the interests of both parties.

References

Hattingh C. P., *Financial Accounting Course – One Page Summaries*, Randburg: PC Finance Research CC

Levis, R. and D. Pendrill, *Advanced Financial Accounting*, 40th ed. London, Pitman Publishing

Vorster, Q., M. Koen, and C. Koornhof, *Descriptive Accounting*, 5th ed. Durban, Butterworths. 2000

Belverde E. Needles, Jr. şi colab. *Principiile de bază ale contabilităţii*, ed. a V-a, Ed. Arc. Bucureşti, 2001

Feleagă (Malciu) L., Feleagă N., *Contabilitatea financiară – o abrodare europeană şi internaţională*, vol. 1-II, Ed. InfoMega, Bucureşti, 2005

Lepădatu G. şi colab., *Drept contabil*, Ed. Tribuna Economică, Bucureşti, 1998

Lepădatu G., *Standarde, teorii si sisteme de conducere a contabilitatii pe plan mondial*, Ed. Pro Universitaria, Bucuresti, 2009

XXX

Legea nr. 82/1991 – Legea contabilităţii, republicată

OMFP nr. 3055/2009, pentru aprobarea reglementărilor contabile conforme cu Directivele europene;

Standarde Internaţionale de Raportare Financiară, (IFRS)™ – incluzând Standardele Internaţionale de Contabilitate (IAS)™ şi interpretările lor la 01.1.2007. Ed. CECCAR, Bucureşti, 2007.

Wiley IFRS, Interpretarea şi aplicarea Standardelor Internaţionale de Contabilitate şi Raportare Financiară (Drept de autor, 2007, Jonh Wiley, & Sons, Inc.), BMT Publishing House, Bucureşti 2007.

About Lowe Index and Mid-year Indices

Professor Constantin ANGHELACHE PhD
"Artifex" University of Bucharest
Professor Vergil VOINEAGU PhD
Mihai GHEORGHE, PhD Student
Academy of Economic Studies, Bucharest
Senior Lecturer Oleg VEREJAN PhD
Academy of Economic Studies of Moldavia
Senior Lecturer Elena BUGUDUI PhD
Lecturer Florin Paul Costel LILEA PhD
"Artifex" University of Bucharest

Abstract

The Lowe price index is a type of index in which the quantities are fixed and predetermined. The Lowe quantity index is a type of index in which the prices are fixed and predetermined. Many of the indices produced by statistical agencies turn out to be Lowe indices. Lowe indices have certain characteristic features that throw light on their underlying properties.

Key words: *merchandise, base, time series, dataset, vector*

It is now assumed that the base year quantity vector qb corresponds to a year that lies between months 0 and t. Under the assumption of long-term trends in prices and normal substitution effects so that there are also long-term trends in quantities (in the opposite direction to the trends in prices so that if the i^{th} commodity price is trending up, then the corresponding i^{th} quantity is trending down), it is likely that the intermediate year quantity vector will lie between the monthly quantity vectors q^0 and q^t. The mid-year Lowe index, $P_{Lo}(p^0, p^t, q^b)$, and the Laspeyres index going from month 0 to t, $P_L(p^0, p^t, q^0)$, will still satisfy the exact relationship given. Thus $P_{Lo}(p^0, p^t, q^b)$ will equal $P_L(p^0, p^t, q^0)$ plus the covariance term:

$$[\sum_{i=1}^{n}(r_i - r^*)\ (t_i - t^*)s_i^0]/Q_L(q^0, q^b, p^0)$$

where $Q_L(q^0, q^b, p^0)$ is the Laspeyres quantity index going from month 0 to t. This covariance term is likely to be negative so that

$P_L(p^0, p^t, q^0) > P_{Lo}(p^0, p^t, q^b)$

To see why this covariance is likely to be negative, suppose that there is a long-term upward trend in the price of commodity i so that

$$r_i - r^* \equiv (pi^t/p_i^0) - r^*$$

is positive. With normal consumer substitution responses, q_i will tend to decrease relatively over time and since q^b_i is assumed to be between q^0_i and q^t_i, q^b_i/q^0_i less an average quantity change of this type is likely to be negative.

Hence

$$u_i - u^* \equiv (q_i^b/q_i^0) - t^*$$

is likely to be negative.

Thus, the covariance is likely to be negative under these circumstances. Therefore, under the assumptions that the quantity base year falls between months 0 and t and that there are long-term trends in prices and normal consumer substitution responses, the Laspeyres index will normally be larger than the corresponding Lowe mid-year index, with the divergence probably growing as month t becomes more distant from month 0.

It can also be seen that under the above assumptions, the mid-year Lowe index is likely to be greater than the Paasche index between months 0 and t; i.e.,

$$P_{Lo}(p^0, p^t, q^b) > P_P(p^0, p^t, q^t)$$

To see why the above inequality is likely to hold, think of q^b starting at the month 0 quantity vector q^0 and then trending smoothly to the month t quantity vector q^t.

When $q^b = q^0$, the Lowe index $P_{Lo}(p^0, p^t, q^b)$ becomes the Laspeyres index $P_L(p^0, p^t, q^0)$. When $q^b=q^t$, the Lowe index $P_{Lo}(p^0, p^t, q^b)$ becomes the Paasche index $P_P(p^0, p^t, q^t)$. Under the assumption of trending prices and normal substitution responses to these trending prices, it was shown earlier that the Paasche index will be less than the corresponding Laspeyres price index; i.e., that $P_P(p^0, p^t, q^t)$ was less than $P_L(p^0, p^t, q^0)$. Thus, under the assumption of smoothly trending prices and quantities between months 0 and t, and assuming that q^b is between q^0 and q^t, we will have

$$P_P(p^0, p^t, q^t) < P_{Lo}(p^0, p^t, q^b) < P_L(p^0, p^t, q^0)$$

index between months 0 and t. This basic idea has been implemented by Okamoto (2001), using Japanese consumer data, and he found that the resulting mid-year indices approximated very closely to the corresponding Fisher ideal indices.

It should be noted that these mid-year indices can only be computed on a retrospective basis; i.e., they cannot be calculated in a timely fashion, as can Lowe indices that use a base year that is prior to month 0. Thus mid-year indices cannot be used to replace the more timely Lowe indices. The above material indicates, however, that these timely Lowe indices are likely to have an upward bias that is even bigger than the usual Laspeyres upward bias compared to an ideal target index, which was taken to be an average of the Paasche and Laspeyres indices.

The computer chip revolution of the past four decades has led to strong downward trends in the prices of products that use these chips intensively. As new uses for chips have been developed over the years, the share of products that are chip intensive has grown and this implies that what used to be a relatively minor problem has become a more major problem. Other major scientific advances have had similar effects. For example, the invention of fiber optic cable (and lasers) has led to a downward trend in telecommunications prices as obsolete technologies based on copper wire are gradually replaced. Since the end of the Second World War, a series of international trade agreements has dramatically reduced tariffs around the world. These reductions, combined with improvements in transport technologies, have led to a very rapid growth of international trade and remarkable improvements in international specialization. Manufacturing activities in the more developed economies have gradually been outsourced to lower-wage countries, leading to deflation in goods prices in most countries around the world. In contrast, many services cannot be readily outsourced and so, on average, the price of services trends upwards while the price of goods trends downwards. At the microeconomic level, there are tremendous differences in growth rates of firms. Successful firms expand their scale, lower their costs, and cause less successful competitors to wither away with their higher prices and lower volumes. This leads to a systematic negative correlation between changes in item prices and the corresponding changes in item volumes that can be very large indeed.

The Young index. Recall the definitions for the base year quantities, q^b_i, and the base year prices, p^b_i. The base year expenditure shares can be defined in the usual way as follows:

$$s_i^b \equiv \frac{p_i^b q_i^b}{\sum_{k=1}^{n} p_k^b q_k^b}$$

i=1, . . . , n

Define the vector of base year expenditure shares in the usual way as $s^b = [s^b_1, \ldots, s^b_n]$. These base year expenditure shares were used to provide an alternative formula for the base year b Lowe price index going from month 0 to t, defined as

$$(p^0, p^t, q^b) = \left[\sum_{i=1}^{n} s_i^b \left(p_i^t / p_i^b\right)\right] / \left[\sum_{i=1}^{n} s_i^b \left(p_i^0 / p_i^b\right)\right]$$

Rather than using this index as their short-run target index, many statistical agencies use the following closely related index:

$$P_Y(p^0, p^t, s^b) \equiv \sum_{i=1}^{n} s_i^b \left(p_i^t / p_i^0\right)$$

This type of index was first defined by the English economist, Arthur Young (1812). Note that there is a change in focus when the Young index is used compared to the other indices proposed earlier.

Note that this view of index number theory, based on the share-weighted average of price ratios, is a little different from the view, which saw the index number problem as that of decomposing a value ratio into the product of two terms, one of which expresses the amount of price change between the two periods and the other which expresses the amount of quantity

Thus the Young index $P_Y(p^0, p^t, s^b)$ is equal to the Laspeyres index $P_L(p^0, p^t, q^0)$, plus the covariance between the difference in the annual shares pertaining to year b and the month 0 shares, $s^b_i - s^0_i$, and the deviations of the relative prices from their mean, $r_i - r^*$.

It is no longer possible to guess at what the likely sign of the covariance term is. The question is no longer whether the quantity demanded goes down as the price of commodity i goes up (the answer to this question is usually ‘‘yes’’) but the new question is: does the share of expenditure go down as the price of commodity i goes up? The answer to this question depends on the elasticity of demand for the product. Let us provisionally assume, however, that there are long-run trends in commodity prices and if the trend in prices for commodity i is above the mean, then the expenditure share for the commodity trends down (and vice versa). Thus we are assuming high elasticities or very strong substitution effects. Assuming also that the base year b is prior to month 0, then under these conditions, suppose that there is a long-term upward trend in the price of commodity i so that $r_i - r^* = (p^t_i / p^0_i) - r^*$ is positive. With the assumed very elastic consumer substitution responses, s_i will tend to decrease relatively over time and since s^b_i is assumed to be prior to s^0_i; s^0_i is expected to be less than s^b_i or $s^b_i - s^0_i$ will probably be positive. Thus, the covariance is likely to be positive under these circumstances. Hence with long-run trends in prices and very elastic responses of consumers to price changes, the Young index is likely to be greater than the corresponding Laspeyres index.

Assume that there are long-run trends in commodity prices. If the trend in prices for commodity i is above the mean, then suppose that the expenditure share for the commodity trends up (and vice versa). Thus we are assuming low elasticities or very weak substitution effects. Assume also that the base year b is prior to month 0 and suppose that

there is a long-term upward trend in the price of commodity i so that $r_i - r^* = (p^t_i / p^0_i) - r^*$ is positive. With the assumed very inelastic consumer substitution responses, s_i will tend to increase relatively over time and since s^b_i is assumed to be prior to s^0_i , it will be the case that s^0_i is greater than s^b_i or $s^b_i - s^0_i$ is negative. Thus, the covariance is likely to be negative under these circumstances. Hence with long-run trends in prices and very inelastic responses of consumers to price changes, the Young index is likely to be less than the corresponding Laspeyres index.

It is useful to have a formula for updating the previous month's Young price index using just month over-month price relatives. The Young index for month t+1, $P_Y(p^0, p^{t+1}, s^b)$, can be written in terms of the Young index for month t, $P_Y(p^0, p^t, s^b)$, and an updating factor as follows:

$$P_Y(p^0, p^{t+1}, s^b) \equiv \sum_{i=1}^{n} s_i^b \left(\frac{p_i^{t+1}}{p_i^0}\right)$$

$$= P_Y(p^0, p^t, s^b) \frac{\sum_{i=1}^{n} s_i^b (p_i^{t+1}/p_i^0)}{\sum_{i=1}^{n} s_i^b (p_i^t/p_i^0)}$$

$$= P_Y(p^0, p^t, s^b) \frac{\sum_{i=1}^{n} p_i^b q_i^b (p_i^{t+1}/p_i^0)}{\sum_{i=1}^{n} p_i^b q_i^b (p_i^t/p_i^0)}$$

using definition above:

$$= P_Y(p^0, p^t, s^b) \frac{\sum_{i=1}^{n} p_i^b q_i^b \left(\frac{p_i^t}{p_i^0}\right)\left(\frac{p_i^{t+1}}{p_i^t}\right)}{\sum_{i=1}^{n} p_i^b q_i^b (p_i^t/p_i^0)}$$

$$= P_Y(p^0, p^t, s^b) \left[\sum_{i=1}^{n} s_i^{b0t} (p_i^{t+1}/p_i^t)\right]$$

where the hybrid weights s^{b0t}_i are defined by

$$s_i^{b0t} \equiv \frac{p_i^b q_i^b (p_i^t/p_i^0)}{\sum_{k=1}^{n} p_k^b q_k^b (p_k^t/p_k^0)} = \frac{s_i^b (p_i^t/p_i^0)}{\sum_{k=1}^{n} s_k^b (p_k^t/p_k^0)} \quad i = 1, \ldots, n$$

Thus the hybrid weights s^{b0t}_i can be obtained from the base year weights s^b_i by updating them; i.e., by multiplying them by the price relatives (or indices at higher levels of aggregation), p^t_i/p^0_i. Thus the required updating factor, going from month t to month t+1, is the chain link index:

$$\sum_{i=1}^{n} s_i^{b0t} (p_i^{t+1}/p_i^t),$$

which uses the hybrid share weights s^{b0t}_i defined by equation above.

The rebased Young index, $P^*_Y(p^0, p^t, s^b)$, which uses the current month as the initial base period, is a share weighted harmonic mean of the price relatives going from month 0 to month t, whereas the original Young index, $P_Y(p^0, p^t, s^b)$, is a share-weighted arithmetic mean of the same price relatives.

The problem with the Young index is that not only does it not coincide with its rebased counterpart, but there is a definite inequality between the two indices, namely:

$$P^*_Y(p^0, p^t, s^b) \leq P_Y(p^0, p^t, s^b)$$

with a strict inequality provided that the period t price vector p^t is not proportional to the period 0 price vector p^0. A statistical agency that uses the direct Young index $P_Y(p^0, p^t, s^b)$ will generally show a higher inflation rate than a statistical agency that uses the same raw data but uses the rebased Young index, $P^*_Y(p^0, p^{tl}, s^b)$.

The inequality (11) does not tell us by how much the Young index will exceed its rebased time antithesis. However, it is shown that to the accuracy of a certain second-order Taylor series approximation, the following relationship holds between the direct Young index and its time antithesis:

$$P_Y(p^0, p^t, s^b) \approx P^*_Y(p^0, p^t, s^b) + P_Y(p^0, p^t, s^b)\text{Var } e$$

where Var e is defined as

$$\text{Var } e \equiv \sum_{i=1}^{n} s_i^b [e_i - e^*]^2$$

The deviations e_i are defined by $1+e_i = r_i/r^*$ for i=1, . . . , n where the r_i and their weighted mean r* are defined by

$$r_i \equiv p_i^t / p_i^0; \quad i = 1, \ldots, n;$$

$$r^* \equiv \sum_{i=1}^{n} s_i^b r_i$$

which turns out to equal the direct Young index, $P_Y(p^0, p^t, s^b)$. The weighted mean of the e_i is defined as

$$e^* \equiv \sum_{i=1}^{n} s_i^b e_i$$

which turns out to equal 0. Hence the more dispersion there is in the price relatives p^t_i/p^0_i, to the accuracy of a second-order approximation, the more the direct Young index will exceed its counterpart that uses month t as the initial base period rather than month 0.

If the base year shares s^b_i happen to coincide with both the month 0 and month t shares, s^0_i and s^t_i respectively, it can be seen that the time-rectified Young index $P^{**}_Y(p^0, p^t, s^b)$ defined will coincide with the Fisher ideal price index between months 0 and t, $P_F(p^0, p^t, q^0, q^t)$ (which will also equal the Laspeyres and Paasche indices under these conditions).

References

Anghelache, C. (2008) – "*Treaty of Statistics*", Economica Publishing House, Bucharest

Anghelache, C. et al. (2011) – "*Elements of Theoretical and Applied Econometrics*", Artifex Publishing House, Bucharest

Anghelache, C. (2006) – "*Quantitative Methods Used in Financial-Banking Analyses*", Artifex Publishing House, Bucharest

Biji, M.E., Biji, M., Lilea, E., Anghelache, C. (2004) – "*Treaty of Statistics*" , Economica Publishing House, Bucharest

Anghelache, C., Mitruț, C., Voineagu, V., Isaic-Maniu, Al. (2008) – "*National Accounts System*", 2nd Edition, Economica Publishing House, Bucharest

Total Quality and Performance Productivity in Romanian Cooperative Banks

Associate prof. Liliana-Aurora CONSTANTINESCU, PhD
"Dimitrie Cantemir" Christian University, Brasov, Romania,
lilianauroracon@yahoo.com
Adrian CONSTANTINESCU, PhD student
"Lucian Blaga" University, Sibiu, Romania,
adicon85@yahoo.com

Abstract

In this study, the authors intends to approach the concept of quality management at credit institutions as consisting of placing the client in the centre of the units activity and the suborordination of all activities to the imperative to fully satisfy him.

These are also presented the conditions involves in fulfilment of the imperatives of total quality programme of European credit institutions.

Key words: *Cooperative banks, total quality management, client satisfaction, client fidelity, profit*

JEL classification: *G01, G21,G23*.

1. Introduction

Cooperative banks contribute to financing local economies and have the capacity of meeting the needs of co-operating members and of other clients. They are a moving force of cohesion and social integration and attempt to combat financial exclusion, so that all social categories in the demographic may have access to financial services, without any discrimination.

cooperative banks equally play an essential part through their staff and collaborators, as the personnel of these banks accounted for 15% of all European employees over the last three years.

Cooperative banks wish to play a decisive role in consolidating the banking sector within the enlarged EU and to offer their clients services that are perfectly tailored to their needs.

Unique in their diversity, cooperative banks have proved that they have the capacity to meet the economic and social needs of the demographic, and of the regions, as well as the requirement to adapt and become actively involved in the development of the European Union.

With specific characteristics, Cooperative Banks are recognised both by national and by European legislation. They are valued by all financial rating agencies and ranked as a real banking force.

Cooperative banks, consisting of 4.600 credit organisations and 65.000 agencies, perform an essential role in the European economic and financial system. One out of every

two banks is a cooperative, and they control 30% of the operations in the banking and financing market.

Cooperative banks have a distinguished tradition in maximising the advantages offered to over 150 million clients and 80 million cooperative members; they also employ over 750.000 staff.

The bank model has been a success factor because it associates services offered to clients and democratic leadership with the stimulation of financial progress through competition.

Through constructive dialogue with the representatives of European institutions, cooperative banks have put forward the three directions that will enable them to create and develop a new image of enlarged Europe.

Descendents of the original model based on democracy, transparency and closeness to the client as an associate member and co-owner, cooperative banks contribute to stability and competitiveness of the economic and financial system.

This role was stressed by all financial analysts who believe that the cooperative banks have an important and unique role within the banking community through their capital ownership structure based on the principle of 'one-man, one vote', through the structure of central organisms and through guarantee mechanisms.

2. Performance revolution in 21st century

The organization of the banking system in Romania is based on the experience of other countries, as well as the recommendations of the International Monetary Fund. Consequently, the banking system in our country is organized on two levels:

- ✓ the first level : the National Bank of Romania, as a central and emission bank ;
- ✓ the second level : the Credit Institutions.

The Credit Institutions (CI), according to the Government Urgent Decree (OUG) nr. 99/6Dec.2006, referring to the credit institutions and to the process of making the capital adequate , modified and approved by means of the Law nr. 227/4 July 2007 and OUG nr.25/ 18 March 2009, are the following:

- o banks;
- o credit cooperative organizations (credit institution);
- o institutions issuing electronic money;
- o banks of saving and credit in the real estate field;
- o banks of loan on mortgage.

Performance management can be defined as a strategic integrated approach to guaranteeing the long-lasting success in the activity of organizations by improving the performance of employees and by developing the capabilities of the individual teams and individual staff.

Performance management firstly envisages performance improvement as a means towards ensuring the efficiency of cooperative banks.

Secondly, performance management in cooperative banks requires staff development. Performance improvement cannot be achieved unless efficient processes for continuous development are in place.

Thirdly, performance management requires meeting the necessities and expectations of all groups of people interested in the good functioning of cooperative banks.

Finally, performance management means communication and involvement, creating a climate for permanent dialogue between managers and team members aimed at

defining mutual expectations and to make common use of information regarding the mission, values and objectives of cooperative banks.

Mankind has stepped into the 21st Century, a period where we envisage a 'performance revolution'.

Performance has an important part to play in the great changes in Romanian society. The actions of the forces of contemporary society determine a certain kind of behaviour, which pivots around competition for resources and clients, and in this competition performance is paramount.

In the 21st Century, in a market economy, knowledge of performance management has become indispensable in running any kind of business, and especially cooperative banks. Awareness of performance management can form the basis for development, and managers must act as catalysts.

Economists forecast that in the first part of the 21st Century a new economy will appear, based on performance and bearing the following characteristics:

- small and medium enterprises will multiply rapidly while aiming at high-performance activities;
- the frequency of performance assessments of the companies' dealings with the clients will increase continuously;
- all economic and social activities will be based on performance;
- the main functions of the company will become coordinating, protecting and integrating performance;
- property and management of performance will converge.

Cooperative banks belong to the category of services aimed at immaterial goods, and therefore quality and productivity often conflict each other . Clients want both, and it is up to the high-performance cooperative banks to strike the right balance between these two aspects, to their clients' benefit.

There are other main problems to be resolved by cooperative banks wishing to offer high-performance services, including:

- offering diverse services that are simple and easily accessible;
- continuously training personnel to be qualified and friendly to customers;
- prompt service, a main way to retain clients;
- client-orientated attitude for the staff, who are ambassadors of cooperative banks;
- authority delegation, so that the front line employees can personally attend to emerging problems.

To ensure the future of the network, it is necessary that all members of *Creditcoop* should make maximum efforts to improve quality and performance productivity.

The behaviour of the cooperative banks in performance management must be directly linked with renewing banking activity, products, services, conceptions and staff behaviour.

But, in order to renew, it is decisive to create interest and involvment at the group level, to create the organisational framework necessary to innovate.

The main components of the process can be summarised thus:

- adopting flexible structures that allow the development of useful ideas for the organisation;
- training and encouraging personnel to find solutions capable of innovating and diversifying products and services offered;

- ❖ recruiting and promoting personnel with a sense of initiative;
- ❖ mediating communication between clients and staff;
- ❖ introducing an adequate rewards system for employees;
- ❖ creating and testing conditions that can lead to sustaining the innovative ideas regarding the economic and financial activities of cooperative banks.

3. Total quality and performance productivity

Cooperative banks offer clients financial services and products, so therefore quality becomes measurable and represents the sum of quality characteristics of the service or product.

The main characteristic feature of the conceptual revolution in the quality management at the cooperatives banks is the client's position at the centre of the unit's activity, and the subordination of all activities to the imperative of his full satisfaction.

For the manager- president of the cooperative bank, knowing the client involves:

- ✓ understanding what the client expects from the service ordered;
- ✓ understanding what makes the client take a service;
- ✓ understanding what produces satisfaction in using the service offered by the cooperative bank.

The action of managing quality in the cooperative bank involves the following:

- ▪ full understanding and involvement of the bank's leadership in promoting services beyond reproach;
- ▪ calling on cooperation with those who have the necessary responsibility and the determination to ensure quality services;
- ▪ instituting a philosophy among the associated members and employees in the spirit of strictly following the quality standards set by BNR;
- ▪ conceiving and designing services matching client expectations;
- ▪ motivating the entire staff to consider the opinions of clients, cooperating members and shareholders;
- ▪ permanent openness to identify and correct any disfunctions;
- ▪ identifying efficient forms of influencing and improving client fidelity;
- ▪ permanent comparisons with competing banking services and adaptation of own services to the market.

Each of these actions must materialise into specific measures and approaches, adapted to the bank's activity profile, but their finality will be perceived by clients as part of the fulfilment or exceeding of their own expectations.

Total quality represents a modern variation on the concept of managing quality and matches a set of activities which aim at delivering irreproachable services, above the clients' expectation levels.

The imperatives of total quality involve the fulfilment by the cooperative banks of the following conditions:

- ➢ foresight and strategy, which means fulfilling the objectives set thoroughly as regards the quality of products, through anticipation of situations that may displease clients;
- ➢ excellence - as a philosophy for the whole personnel involved, backed up by conviction in delivering the service;
- ➢ the responsibility of personnel expected to adopt the climate and tradition enshrined in the cooperative bank and to identify the cooperative's objectives, showing shareholder clients responsibility, efficiency,

kindness, security, value, the attributes of a worthy organisational culture.

Each of the conditions listed above need to occupy the manager president's major concerns. The latter needs to identify and apply concrete optimal solutions, depending on the nature of services, by adapting the information, decision-making and control system of the company's management.

For the complete success of a cooperative bank, its products must:

- satisfy a well-defined purpose;
- satisfy client expectations;
- comply with legal measures and other conditions imposed by the social and economic environment;
- be competitive on the market.

A total quality management system considers two independent aspects, namely:

- the needs and interests of the cooperative bank to offer quality products at optimal cost, influencing the efficiency of activity;
- the needs and expectations of clients, who need to trust in the capacity of banks to offer quality products.

The problem of quality must be approached globally. It must therefore be based on the following fundamental considerations:

- quality is assessed through the ability to satisfy user requirements;
- quality is built throughout the activity's processes;
- quality must be maintained, which implies a demanding attitude within the company, in a close relationship with the client and in accordance with procedural, technical and organisational regulations.

Within a cooperative bank, quality management is a topical preoccupation, which is given the appropriate attention, in spite of the current difficulties, associated with the reorganisation of the cooperative bank, within Creditcoop network, and with the changes in legislation regarding the credit institution enacted after Romania's accession into the European Union.

In order to take certain steps towards improving the quality of the cooperative bank's products, a certain programme was initiated, based on the management improvent and the development of executive staff, closely linked to the clients' opinions and suggestions.

4. Conclusions

Regarding the activity of the cooperative banks, performance is perceived to cover the following aspects:

- economic characteristic features (interest);
- technical characteristic features;
- personnel quality.

The main characteristic feature of the conceptual revolution in the quality management at the cooperatives banks is the client's position at the centre of the unit's activity, and the subordination of all activities to the imperative of his full satisfaction.

Competitiveness is the most important success factor in the market economy. This means that the cooperative bank needs to have many products to offer, which can prove their increase in efficiency.

Generally, the quality of the products offered to clients has become a key factor in determining the client's preferences for a specific bank. Through the liberalisation of the

international stock exchanges, through the globalisation of economies, the standards of quality are constantly on the rise.

The dynamic changes which characterise the market economy and the European Union's exigencies lead to a considerable increase in quality expectations. Conceived from the perspective of the objective process of amplifying and diversifying economic exchanges, quality is, at the same time, an essential condition for competitiveness, and, implicitly, for the participation of any company within its business domain.

Cooperative banks are determined to continue to play an active part in European economic development.

Cooperative banking networks are alternatives to the banking system already present in the countries of EU, and, trough their organization, they have contributed fully to the economic and financial prosperity of hundreds of thousands of Europeans, to whom they have guaranteed access to financial services of a high quality and at low cost, and will continue to do so in the future.

The cooperative banking model is still under-estimated, especially in the new EU Member States (including Romania), in spite of the fact they could play a decisive part in the latters economic development.

References

Constantinescu Liliana Aurora, 2008, *Managementul performant al băncilor cooperatiste într-o Românie modernă, europeană*, Ed. Lux Libris, Braşov;

Constantinescu Liliana Aurora, 2009, *Instituţiile de credit şi operaţiunile desfăşurate de acestea în România*, Editura Lux Libris, Braşov;

Constantinescu Liliana Aurora, 2010, *Management financiar bancar*, Editura Lux Libris, Braşov;

Petrescu, I., 2002, *Managementul Performanţei*, Editura Lux Libris, Braşov

Petrescu, I., 2004, *Management European*, Editura Expert, Bucureşti

Petrescu, I., 2005, *Fundamentele managementului organizaţiei. Abordări moderne*, Editura Alma Mater, Braşov

Popescu, I., 2001, *Certitudine şi risc în tranzacţia economică*, Editura Eficient, Bucureşti

Ştefănescu Camelia, 2008, *Managementul afacerilor*, Ed. Fundaţiei România de Mâine, Bucureşti

Fiscal Adjustment in European Union Countries

Professor Laura OBREJA BRAŞOVEANU PhD
Postdoc fellows♠
Academy of Economic Studies, Bucharest
laura_obreja@yahoo.com
Professor IulianViorel BRAŞOVEANU PhD
Postdoc fellows♠♠
Academy of Economic Studies, Bucharest
viorel_brasoveanu@yahoo.com

Abstract
This article aims to identify the applied strategies for fiscal adjustments for the period 1996-2011 in European Union countries –there are determined the fiscal policy stance (neutral, relaxed, very relaxed, strict or very strict), there are considered the episodes of fiscal adjustment (a reduction of fiscal deficit more than 1,5 pp), there is identified the fiscal discipline and there are determined the characteristics of fiscal adjustment – the size, the composition (through the increase of public revenues or through the decrease of public expenditures) and the effect on the economic growth. Depending on the reaction of the real economy, measured by the evolution of economic growth, there are identified the "optimal" adjustment strategies.

Key words: *fiscal policy, fiscal adjustment, public revenues, public expenditures, fiscal discipline*
JEL Classification: H20, H30, H50, H62

1. Introduction

Current fiscal problems sustain the necessity for fiscal adjustment. Fiscal adjustment is defined as a significantly reduction of public deficit. The composition of fiscal adjustment is very relevant for its effects.There is evidence that it is effective if it consists on mixed measures to reduce expenditures, to improve revenues mobilization, to improve the resource allocation and efficiency of public sector.

The scope of this paper is to identify the applied strategies for obtaining fiscal adjustment (a reduction of the public deficit more than 1.5 pp) in European Union countries for the period 1996-2011, and determines if there is an "optimal" fiscal adjustment, depending on the reaction of economic growth.

♠**Acknowledgments:** This work was co-finaced 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 economic science domain".
♠♠**Acknowledgments:** This work was co-finaced from the Post Doctoral Programme PD 650 (from Human Resources Competition), project number 74/03.08.2010, financed by UEFISCDI/ CNCSIS.

Section 2contains the key definitions for fiscal adjustment and for adjustment's success. In Section 3 there is presented the empirical study on episodes of fiscal adjustment in the context of the EU27 during 1996-2011. Section 4 concludes and section 4 contains the bibliography.

2. Literature review

Fiscal adjustment is described as a significant decrease of budget deficit. This section contains the definition of fiscal adjustment in the context of the classification of fiscal policy, the definition of the fiscal adjustment's success depending on the sustainability of deficit reduction.

Definitions for fiscal adjustment

- Alesina, Perotti (1995) define the stance for fiscal policy depending on the changes of the budget deficit (called fiscal impulse, denoted by FI): (a) neutral if the FI is in the range (-0.5pp; +0.5pp); (b) relaxed, if FI is in the range (+0.5pp;+1.5pp); (c) very relaxed, if FI is greater than 1.5pp, (d) restrictive or moderate adjustments, if FI is in the range (-1.5pp; -0.5pp); (e) very restrictive or strong adjustments, if FI is less than -1.5pp.
- Purfield (2003) defines the very restrictive fiscal policy episode as an episode of fiscal adjustment characterized by an improvement of budget primary balance by at least 1.5 percentage points of GDP in a year or at least 1.25 percentage points of GDP in at least two consecutive years.
- Alesina, Perotti (1995) – fiscal policy is considered to be: (a) neutral if the FI is in the range ($-\mu i-0.5\sigma i$; $-\mu i+0.5\sigma i$); (b) relaxed, if FI is in the range ($\mu i+0.5\sigma i$; $\mu i+\sigma i$); (c) very relaxed, if FI is greater than $\mu i+\sigma i$, (d) restrictive or moderate adjustments, if FI is in the range ($\mu i-\sigma i$; $\mu i-0.5\sigma i$); (e) very restrictive or strong adjustments, if FI is less than $\mu i-\sigma i$.

Definitions for a successful fiscal adjustment

- Alesina, Perotti (1995) define the successful fiscal adjustment as the situation in which a very restrictive fiscal policy generates gross debt ratio to GDP after 3 years lower than in the year of fiscal adjustment with at least 5 percentage points of GDP.
- Alesina, Perotti (1996) define the successful fiscal adjustment as the situation in which an episode of very restrictive fiscal policy meets the following conditions: (i) within three years after the restrictive episodes, the cyclically adjusted primary deficit is on average 2% lower compared to last year of the restrictive fiscal policy, (ii) three years after the last year of the restrictive fiscal policy, the debt to GDP is 5% below the level registered last year of the restrictive fiscal policy.
- Purfield (2003) defines a successful episode of fiscal adjustment as the situation in which the average of the general government balance after two years is at least 2 percentage points lower than in the two years preceding the adjustment.

Definitions for expansionary fiscal adjustment

- Purfield (2003) defines an episode of fiscal adjustment as being expansionary if the average growth rate of real GDP during the adjustment period and over the next two years is at least one standard deviation above the average growth rate recorded for the country throughout the period.

In order to analyze the consequences of the fiscal adjustment process, there must be taken into consideration the following: the size of the adjustment, the applied strategy - reduced public expenditures or increased public revenues, and changed structure of public revenues

and expenditures, the sustainability of fiscal adjustment, macroeconomic consequences of fiscal adjustment.

3. Empirical research

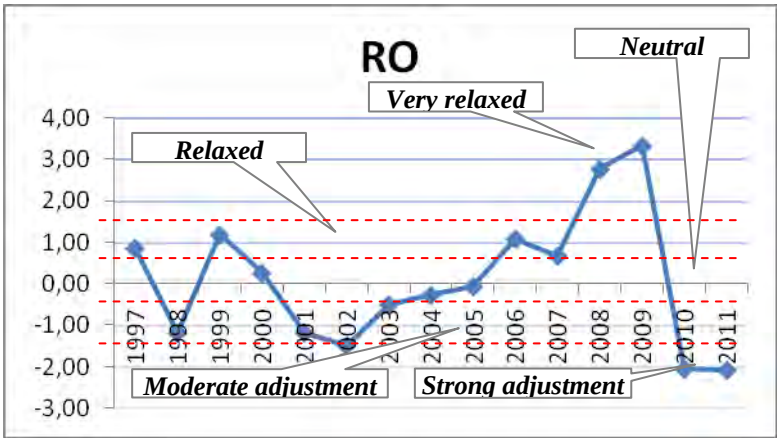
For European Union countries, in the period 1996-2011, there are identified the fiscal adjustment episodes. The methodology consists in determining the stance of fiscal policy depending on the values of fiscal impulse (changes of public deficit): (a) neutral if the FI is in the range (-0.5pp; +0.5pp); (b) relaxed, if FI is in the range (+0.5pp;+1.5pp); (c) very relaxed, if FI is greater than 1.5pp, (d) restrictive or moderate adjustments, if FI is in the range (-1.5pp; -0.5pp); (e) very restrictive or strong adjustments, if FI is less than -1.5pp. In the next table there are fiscal policies applied in UE 27 countries.

Table 1: Stance of fiscal policy in European Union countries – 1996-2011

	No.	*199*	*199*	*1999*	*200*	*200*	*200*	*200*	*200*	*200*	*20*	*200*	*200*	*20*	*201*	*201*
AT	3	e	b	c	d	e	b	b	a	e	c	d	c	a	c	d
BE	3	e	d	c	d	c	b	c	c	a	e	c	b	a	e	d
BG	3	e	c	b	b	e	a	d	e	b	d	b	d	a	d	d
CY	4	a	d	c	e	c	a	a	e	e	d	e	a	a	d	b
CZ	2	c	b	d	c	a	b	c	e	c	d	e	b	a	d	d
DK	2	d	d	d	d	b	b	c	e	e	c	c	a	a	c	b
EE	3	e	a	a	e	c	c	d	c	c	d	c	a	d	e	d
FI	4	e	e	c	e	a	b	a	c	c	d	d	b	a	c	e
FR	0	d	d	d	c	c	a	b	c	d	d	c	b	a	c	d
DE	4	d	c	d	e	a	b	c	c	c	e	e	c	a	b	e
EL	4	d	e	d	b	b	c	b	a	e	c	b	a	a	e	e
HU	5	b	a	e	e	b	a	e	d	a	b	e	d	b	c	e
IE	3	e	d	c	e	a	b	d	d	c	d	a	a	a	a	e
IT	2	e	c	d	d	a	c	c	c	b	d	e	b	a	d	d
LV	2	e	b	a	d	d	c	d	d	d	c	c	a	a	d	e
LT	4	a	e	c	c	c	e	d	c	d	c	b	a	a	e	e
LU	3	e	c	c	e	c	a	a	a	d	d	e	b	a	c	c
MT	4	c	a	e	e	b	d	a	e	e	c	c	a	d	c	d
NL	1	d	c	d	e	a	a	b	d	d	d	c	c	a	d	d
PL	3	c	c	e	b	a	c	b	d	d	c	e	a	a	c	e
PT	2	d	c	d	c	b	d	c	c	a	e	d	c	a	c	e
RO	2	b	d	b	c	d	d	d	c	c	b	b	a	a	e	e
SK	4	e	d	a	a	e	a	e	c	c	c	d	c	a	c	e
SI	1	b	c	b	b	c	e	c	c	d	c	d	a	a	c	c
ES	3	d	d	e	c	c	c	c	c	d	d	c	a	a	e	e
SE	5	e	e	c	e	a	a	c	e	e	c	d	b	a	d	d
UK	3	e	e	d	e	a	a	b	c	c	d	c	a	a	d	d

For the period 1996-2011, Romania had only 2 fiscal adjustments. The fiscal policy might be caracterized as being:

- ⇨ Very relaxed – 2008, 2009
- ⇨ Relaxed – 1997, 1999, 2006, 2007
- ⇨ Neutral – 2000, 2004, 2005
- ⇨ Moderate adjustment – 1998, 2001, 2002, 2003
- ⇨ Strong adjustment – 2010, 2011



Notation for variables used is presented below:

Variables for fiscal indicators:

balance = public budget balance in GDP (data source: AMECO)
exp = public expenditures share in GDP (data source: AMECO)
rev = public revenues in GDP (data source: AMECO)
debt = general government consolidated gross debt (data source: AMECO)
d_x=delta x = absolute change of variable x
dr_x=delta relative x = percentage change of variable x

Dummy variables

success = dummy variable for success if fiscal adjustment is successful, this success is defined by the condition that a year after adjusting the deficit remains below 3% of GDP
adjustment_exp = dummy variable for fiscal adjustment achieved through greater public spending than the public revenue adjustment

Fiscal adjustment indicators:

size = size of fiscal adjustment, measured as the change in budget balance (d_balance)
exp_contrib = proportion of fiscal adjustment achieved by diminishing expenditure to GDP = (- d_ exp)/d_balance

Economic growth indicators

growth = real GDP growth rate (data source: AMECO)
gdppcpps = GDP per capita in constant price atPPS (data source: AMECO)

The database consists on countries from European Union - EU27: AT, BE, BG, CY, CZ, DK, EE, FI, FR, DE, EL, HU, IE, IT, LV, LT, LU, MT, NL, PL, PT, RO, SK, SI, ES, SE, UK. The data base contains annual data for the period 1996-2011 for EU27 countries.

In the following table there are determined the average level of total expenditures and revenues, growth rate in each of the stances of fiscal policy, for Romania and UE27 average.

A special attentionmust be paidinfiscalpolicy analysisto the countries with vulnerability offiscal policy-Stoian(2011). Inthis study there areanalyzedthe features offiscal policyin Romaniaandin theEU27 countries.

Table 2: Average levels for public revenues, expenditures and economic growth in each of the stances of fiscal policy in Romania and UE27 – 1996-2011

			TOTAL EXPENDITURES		TOTAL REVENUES		GROWTH RATE		GDP per capita PPS in CP 2000		
fiscal policy RQ	balance	debt	Exp	d_exp	rev	d_rev	growth	d_growth	Gdppcpps	d_ gdppcpps	dr_ gdppcpps
a	-7.34	18.52	40.20	1.44	32.85	-1.61	0.10	-6.70	5.62	0.30	5.6%
2 (13,3%)	2.35	7.23	1.29	0.55	1.06	0.15	10.18	10.89	0.13	0.16	3.2%
b	-3.50	15.47	36.90	2.37	33.40	1.43	2.23	-1.08	5.53	-0.22	-2.0%
4 (26,7%)	1.10	4.31	2.18	0.87	2.31	0.83	5.96	5.17	0.44	0.83	12.8%
c	-2.35	19.00	35.24	-0.17	32.89	-0.14	5.03	0.60	5.49	-0.37	-6.2%
3 (20%)	2.01	3.34	2.88	0.41	0.87	0.67	3.13	4.25	0.66	0.68	11.2%
d	-2.55	22.22	35.11	-0.98	32.56	0.11	3.48	1.40	5.38	-0.09	-0.9%
4 (26,7%)	0.96	4.06	1.21	1.52	0.44	1.64	3.73	1.94	0.43	0.79	13.3%
e	-5.90	32.50	39.86	-1.14	33.96	0.93	0.10	4.30	5.45	-0.14	-2.5%
2 (13,3%)	1.48	2.06	1.47	1.33	0.00	1.31	1.98	2.12	0.04	0.13	2.2%
UE27											
a	-5.15	49.41	46.48	3.06	41.32	-0.69	-0.19	-3.43	19.16	-0.31	-1.7%
76 (19%)	5.12	27.72	6.00	2.81	6.20	1.39	4.74	4.41	9.88	1.23	6.0%
b	-2.65	52.65	45.65	0.90	43.00	-0.05	2.54	-0.45	17.22	0.06	0.6%
50 (13%)	2.91	29.62	5.91	1.31	6.28	1.34	3.05	2.74	8.98	0.81	5.8%
c	-1.89	48.10	44.25	-0.07	42.35	-0.06	3.76	0.68	18.95	0.34	1.6%
106 (26%)	2.82	27.66	6.39	1.27	6.50	1.27	2.58	3.16	8.74	0.64	4.0%
d	-1.88	49.92	43.98	-0.81	42.11	0.13	3.64	0.93	18.35	0.42	2.3%
94 (23%)	2.79	28.87	6.66	1.22	6.59	1.22	3.13	3.04	8.72	0.65	4.6%
e	-1.88	57.51	44.82	-2.40	42.94	0.59	3.63	1.35	17.82	0.44	2.2%
79 (19%)	3.87	30.65	6.28	2.91	7.07	1.39	2.98	3.32	8.79	0.81	4.5%

Each row contains two values: average and standard deviation for the indicator.

The following table contains the situations of fiscal adjustment in European Union 27 countries, regarding the success (success = dummy variable for success if fiscal adjustment is successful, this success is defined by the condition that a year after adjusting the deficit remains below 3% of GDP) and the applied strategy for fiscal adjustment (exp_contrib = proportion of fiscal adjustment achieved by diminishing expenditure to GDP = (- d_exp)/d_balance). From the total fiscal adjustment episodes, 64,56% had success, respectively one year after the adjustment the deficit remains below 3% of GDP, and 72,15% had been realized through greater public spending than the public revenue adjustment (the total fiscal impulse is influenced more of public expenditure decrease than public revenue increase).

Table no. 3: Fiscal adjustments

	No.		Succes=1		adjustment_exp=1		
Total	79	100%	51	64.56%	51	57	72.15%
Succes=1	51	64.56%			24	21	36.84%
Succes=0	28	35.44%			27	21	36.84%
adjustment_exp=1	57	72.15%					
adjustment_exp=0	22	27.85%					

Obreja Brașoveanu, L. (2011) obtains the empirical results that sustain that the probability of success is determined by a complex set of factors: the size of the consolidation effort (significant adjustments should be more successful in supporting deficit reduction, while representing a signal change in regime, maintaining policy credibility and irreversibility) and the need of fiscal adjustment (the necessity of applying an adjustment should significantly influence the credibility of the changes). The following table contains the average values for the relevant indicators –comparing the successful and the unsuccessful episodes of fiscal adjustment, there can be noticed that: the size of the fiscal adjustment is relatively smaller for the successful fiscal adjustment, change of growth rate is relatively smaller for the successful fiscal adjustment, but the growth rate one year after

the adjustment is bigger, change of gross domestic product per capita in PPS is, in absolute and relative value, bigger for the successful fiscal adjustment, public expenditure decrease more in the case of unsuccessful fiscal adjustment, public revenue increase more in the case of successful fiscal adjustment, proportion of fiscal adjustment achieved by diminishing expenditure to GDP is similar in both situations.

Table no. 3: Fiscal adjustments - continued

ADJUSTMENT	**succes=1**	**succes=0**	adjustment _exp=1	adjustment _exp=0
Total	**51**	**28**	57	22
succes	**1**	**0**	0.63	0.68
adjustment_exp	**0,71**	**0,75**	1	0
Size	**2,8**	**3,37**	3,18	2,54
exp_contrib	**0,77**	**0,76**	0,99	0,2
d_growth (t+1)-(t-1)	**0,6**	**1,83**	0,96	1,25
growth t+1	**3,61**	**2,89**	3,4	3,25
d_gdppcpps(t+1)-(t-1)	**0,89**	**0,23**	0,68	0,6
d_ gdppcpps%	**4,44**	**1,72**	3,6	3,14
d_exp	**-2,2**	**-2,8**	-3,1	-0,5
d_rev	**0,64**	**0,5**	0,04	2,03

Conclusions

Significant adjustments lead to sustainable reduction of budget deficit – there is a signal of credible commitment of the authorities to address budgetary imbalances, which could enhance their success. The composition of fiscal adjustment is very relevant for its effects.There is evidence that it is effective if it consists on mixed measures to reduce expenditures – but the structure of public expenditures is also relevant, to improve revenues mobilization – but the structure of public revenues is also relevant.

Comparing the successful and the unsuccessful episodes of fiscal adjustment, there can be noticed that, in average, a successful fiscal adjustment has a smaller size of the fiscal adjustment, a smaller change of growth rate, a greater growth rate one year after the adjustment, a greater change of gross domestic product per capita in PPS is, in absolute and relative value, a smaller decrease of public expenditure,a greater increase of public revenue.

References

Alesina, A,, Perotti, R, (1995) „Fiscal Expansions and Adjustment in OECD Countries", Economic Policy

Alesina, A,, Perotti, R, (1996) „Fiscal Adjustment in OECD Countries: Composition and Macroeconomic Effects", NBER working papers

Obreja Brașoveanu, L. (2011) "Composition and determinants of fiscal adjustment's succes in the EU27 context", The Review of Finance and Banking, volume 3, issue 2, decembre 2011, http://rfb.ase.ro/articole/P2.pdf

Purfield, C, (2003) „Fiscal Adjustment in Transition Countries: Evidence from the 1990s", IMF working paper

Stoian, A. (2011) "A Retrospective Approach on Assessing Fiscal Vulnerability: Empirical Evidence for Overindebted European Countries", Timisoara Journal of Economics, West University of Timisoara, Romania, Faculty of Economics and Business Administration, vol. 4(3(15)).

The Stapled Anastomoses in Rectal Cancer Surgery – Modern Alternative for Bowel Reconstruction

Bogdan MASTALIER
Cristian BOTEZATU
Surgical Clinic of Colentina Hospital

Abstract

Colorectal cancer represents one of the most frequently tumor pathologies, despite the efforts for early diagnosis and the therapeutic progress made in the last few years. In case of rectal cancer, the need for oncologic resection is combined with the goal of sphincter preservation with coloanal continuity reestablished. That is where the stapled anastomosis allowed the decrease of the resection level, with shortened operative duration and rapid healing. In Colentina Surgical Clinic were operated 372 cases with this pathology in the last 10 years (2002-2011). In 169 cases were undergone surgical procedures with reestablishing of the intestinal continuity, 58 cases of whom being represented by anterior resection with stapled anastomosis. Hartmann resection was done in 48 cases, 35 cases of these benefited of subsequent intervention for continuity reestablishment (23 cases of stapled anastomosis). Anastomotic leakage was noted in 41 cases, from which 24 cases benefited of conservative approach.

Key words: rectal cancer, surgical treatment, stapled anastomoses.

Introduction

Resumption and improvement of mechanic suture procedures represented a huge technical progress in digestive surgery, being of highly importance in cases of sutures needed to be done at the extremities of the digestive tube (esophagus and rectum). Rectal surgery especially benefits from technique of mechanic anastomosis, which allows a descent of the level of anterior resection close to levator muscles floor, with accomplishment of what is known as low anterior resection. Such solving manner made possible in the last year to avoid the iliac anus, allowing for decreasing number of abdominal perineal resections, with increase postoperative comfort, in conditions of oncologic surgery accomplishment (1, 2, 3, 4).

Hartmann interventions, mainly effectuated as emergency procedures for complicated rectal tumors, in elderly or in patients with associated organic diseases that counter indicate assuming of great anesthesic and surgical risks, benefit by technique of stapled anastomoses at the moment of colon reintegration with continuity reestablishment, which shorten the intervention and permit a rapid postoperative healing evolution.

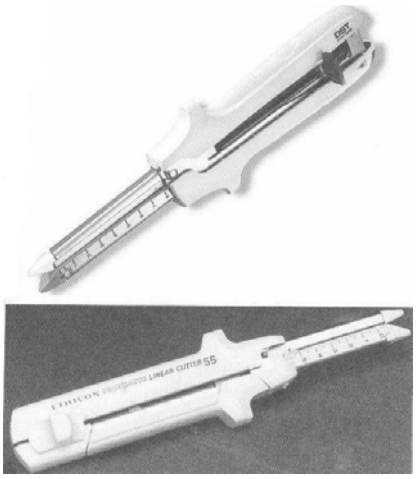
Many studies highlighted the benefits of stapled anastomoses, mainly represented by decrease of tissue manipulation (minimal bleeding, minor trauma with less postoperative edema), rapid reestablishment of intestinal peristaltic and rapid postoperative recovery of the patient. The main disadvantage is represented by the high cost of stapler devices (5).

The fundaments of safety anastomosis, even manual or mechanic, depend on adequate blood irrigation of both digestive anastomotic ends, lack of anastomotic tension,

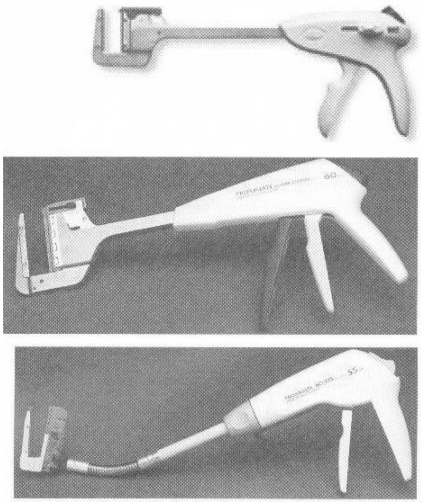
accurate execution, lack of distal obstruction, correct mechanic preparation of the large bowel (impossible to be fulfilled in case of emergency intervention, could be realize with similar results by mean of so called orthograde intraoperative lavage). Decision for performing of mechanic or manual anastomosis finally represents a combination between surgeon preference and the individual perception about the advantages of each method, both of them being dependent on anterior operative experience (6).

The development and diversification of mechanic suture devices (staplers) allowed for an important progress in colorectal surgery to be done, considering that low colorectal anastomoses are often impossible by manual suture with conventional instruments (6, 7, 8). Circular end-to-end anastomosis stapler (EEA) of 28, 31 or 33 mm diameter is successfully used for accomplishment of low colorectal anastomosis.

intraluminal stapler (ILS), as known as end-to-end circular stapler (CEEA); also possible used for end-to-side, side-to-end or even side-to-side anastomosis



gastrointestinal anastomosis stapler (GIA), used for side-to-side anastomosis; it includes a cutting knife



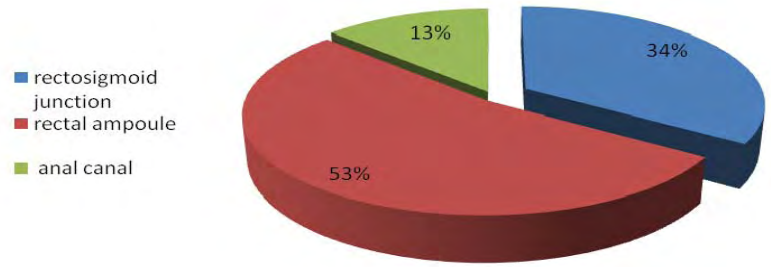
TA linear stapler (toracoabdominal or transversal anastomosis); used for closure of loop ends

1. Material and method

In the period of 2002–2011 in Surgical Clinic of Colentina Hospital were diagnosed and treated 372 patients with rectal cancer. The study group was analyzed in a retrospective descriptive manner, based on registration medical papers and operative protocols.

Tumor localization is important as regards the type of surgical intervention to be chosen: it can be seen that most tumors (53%) were located in the rectal ampoule.

RECTAL TUMOR TOPOGRAPHY	Nr. of cases	%
rectosigmoid junction	126	34 %
rectal ampoule	190	53 %
anal canal	56	13 %



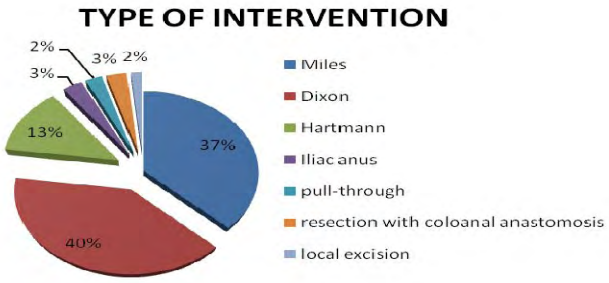
Tumors localized at the rectosigmoid junction benefited in the majority of cases from sphincter preservation interventions due to their topography but also to early presentation with ample symptomatology, compared to those localized in the rectal ampoule. For the tumors localized in the anal canal the treatment had to choose between local excision, rectum resection with coloanal anastomosis, pull-through technique or abdomino-perineal resection with definitive terminal left iliac colostomy.

In cases of tumor localized at rectal ampoule level, surgical interventions we have practiced were represented by anterior resection, even of low type (with stapled colorectal anastomosis in most situations of low resection), pull-through technique interventions or even abdominoperineal resections with definitive terminal left iliac colostomy.

In those situations complicated by occlusion, as well in those were the general status of the patient did not permit ample and long standing interventions, the surgical option was represented by Hartmann intervention (48 cases). In 35 cases of these we pursue 3-6 months later with surgical reintervention for intestinal continuity reestablishment (23 cases were accomplished by stapled anastomosis).

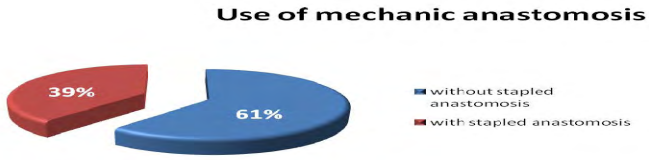
Considering the factors mentioned above, the accomplished surgical interventions we have done are represented as it follows:

TYPE OF INTERVENTION	Nr. of cases	%
Miles	138	37 %
Dixon	149	40 %
Hartmann	48	13 %
Iliac anus	11	3 %
pull-through	9	2 %
resection with coloanal anastomosis	11	3 %
local excision	6	2 %



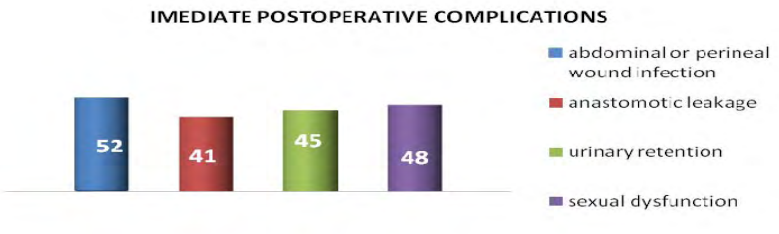
Considering the 149 cases submitted for Dixon anterior resection, 58 of them benefitted from possibility of mechanic anastomosis executed with circular stapler (EEA 28, 31 or 33).

DIXON OPERATION (149)	Nr. of cases	%
without stapled anastomosis	91	61 %
with stapled anastomosis	58	39 %



Immediate postoperative complications, even rather frequent, did not raise distinct problems, being mainly represented by abdominal or perineal wound infections (52 cases), anastomotic leakage (41 cases), urinary retention (45 cases) and sexual dysfunction (48 cases).

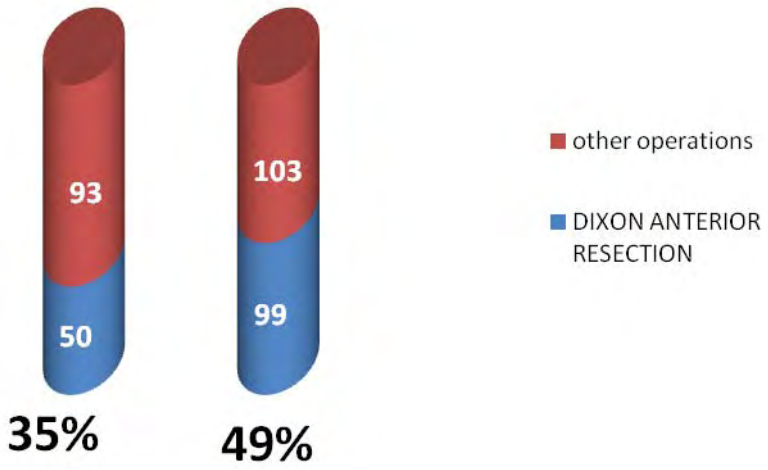
IMEDIATE POSTOPERATIVE COMPLICATIONS	Nr. of cases	%
abdominal or perineal wound infection	52	14 %
anastomotic leakage	41	11 %
urinary retention	45	12 %
sexual dysfunction	48	13 %



2. Results and discussions

It can be observed that interventions most frequently done were represented by anterior resection Dixon and abdominoperineal resection Miles, in some equal proportion. Though it is an intervention ended by permanent iliac colostomy, the use of abdominoperineal resection is justified by delayed presentation, in advanced stages of the disease, when the use of other procedure should not have radical goal. In the last period, the proportion of anterior resections is getting high (50 Dixon resections of 143 patients treated in the period of 2002-2006, comparing to 99 Dixon resections of 202 patients treated in the period of 2007-2011), such representing an increase of the rate of this type of intervention from 35% to 49%. This was possible also by introduction of mechanic suture devices that allowed us to perform safe lower anterior resection close to the limit of the levator ani muscles.

DIXON ANTERIOR RESECTION	Nr. of cases	%
2002-2006	50 of 143	35 %
2007-2011	99 of 202	49 %



Stapled anastomosis proved its advantages represented by decrease of tissue manipulation, with subsequent diminished bleeding and tissue trauma, rapid reestablishment of intestinal peristalsis and rapid postoperative recovery of the patient. Main advantage consists in possibility to obtain good reconstruction of the intestinal wall on the inferior rectum, where manual suture is more difficult to be accomplished. Main disadvantage is represented by the high cost of the device. There were no differences as concerns the postoperative complications (anastomotic fistulas, strictures) or recurrence rate between the two modalities of anastomotic execution.

The management of the anastomotic leakage (41 cases) was conservative in 24 cases. The rest of 17 cases needed surgical reinterventions that realized the closure of the rectal stump, with terminal left iliac colostomy.

3. Conclusions

- Rectal cancer continues to rise a lot of problems as concerns the increased percentage of advanced cases, as well the technical solutions requested by each case.
- Stapled anastomoses allow accomplishment of low anterior resections, in situations where continuity reestablishment by manual anastomoses is not technical possible.
- Postoperative complication rates are not significantly different between the two modalities of intestinal continuity recovery, manual versus mechanic, being mainly dependent on surgeon experience and correct intraoperative achievement of the colorectal surgical principles.
- Mechanic anastomosis permits a more rapid postoperative recovery of the patients which were submitted for rectal cancer surgery.
- High cost of stapler devices continues to represent the main disadvantage of use of mechanic anastomoses.

References

Mastalier B. – Cancerul de rect, Editura Universitară Carol Davila, Bucureşti, 2011, 53-60.

Mastalier B., Simion S. – Our experience regarding the stapled anastomoses in rectal cancer surgery. Journal of Medicine and Life, nr.3, vol. 4, 2011.

Petz von A. – Zur Technik der Magenresektion. Ein neuer Magen Darmnehapparat. Zentralbl Chir. 1924, 51: 179.

Ravitch M. M., Brown I. W., Daviglus G. F., – Experimental and clinical use of the Soviet bronchus stapling instrument. Surgery, 1959, 46: 97

Doran H., Pătraşcu Tr., Catrina E., Mihalache O. – Operaţia Hartmann. Evaluarea unei experienţe clinice de 30 de ani. Chirurgia (Buc.) 2008, nr. 4, vol. 103: 413-416.

Beuran M., Chiotoroiu Al. L., Chilie A., Morteanu S., Vartic M., Avram M., Lică I., Roşu O. – Anastomozele manuale versus anastomozele mecanice în cancerul colo-rectal complicat - studiu retrospectiv. Chirurgia (Buc.) 2010, nr. 5, vol. 105: 645-651.

Angelescu M., Jitea N., Angelescu N. – Utilizarea aparatelor de sutură mecanică în chirurgia generală. Chirurgia (Buc.) 1999, nr. 5, vol. 94: 367-375.

Funariu Gh., Pop C. E., Ionescu C., Scurtu R., Dindelegan G. – Anastomoze mecanice în chirurgia rectocolică. Chirurgia (Buc.) 2001, nr. 2, vol. 96: 213-219.

A Regional Comparative Outlook of the Romanian Tourism Industry Competitiveness

Carmen MORARU
Ministry of Regional Development and Tourism,
Bucharest, Romania
cmoraru@mturism.ro

Abstract

The paper aims to determine if the Romanian tourism product has growth prospects using several diagnose and assessment tools: such as BCG matrix (Boston Consulting Group), "Porter Five Forces" model and finally, we are going to analyze the main products in the portfolio using the Ansoff's Matrix. This approach will help us decide what strategy is appropriate for each product.

The last step will be to determine the degree of competitiveness of the Romanian tourism using the Tourism Competitiveness Index of the World Economic Forum.

An analysis of the position of the Romanian tourism, based on the data we dispose have on hand, will help us determine to what extent the investments in this industry can give the expected results, which are the difficulties investors will face and the stakeholders involved in the tourism industry in Romania and which is the current position of each product we intend to introduce on the market. To estimate the profitability and the potential of the Romanian tourism, we will use the model developed by Boston Consulting Group, the BCG matrix. Regarding the assessment of the competitiveness of the industry, we find Porter Five Forces model to be the most appropriate. Finally we will analyze each product using Ansoff's product-market matrix.

Key words: *competitiveness, tourism product, tourism competitive index, competitive position*

1. To invest or not to invest

For a tourist destination, a research is a complicated endeavor, given the difficulty to predict with certainty the market share of a destination in a dispersed and highly competitive market such as tourism market. Of course it is difficult to gauge the popularity of a given product on a specific market source. We believe, however, that the application of the BCG matrix can be a useful tool to determine the potential of Romania as a tourist destination. The purpose of our initiative is to establish the extent to which tourism is a viable alternative for economic development in Romania, from the perspective of the growth rate in tourism revenue and of market share in the target countries.

BCG matrix involves two simple variables: the pace of market growth to determine its attractiveness and the market share of the product to see how competitive is the product / portfolio of products at a given time[1] Designed to analyze and evaluate the portfolio of products of a company, this tool is used to measure the growth prospects of a

[1] Bob de Wit, Ron Meyer, „ Strategy Synthesis – resolving strategy paradoxes to create competitive advantage", Thomson Learning, 2005, page 131.

product, to make it fit into a category and make a decision regarding the market strategy. In terms of market share and market growth rate, there are four types of products[2]:

- Stars - products with a high market share in a market with a rapid growth rate. It is advisable to invest in these products, since they may become more profitable.

- Cash cows - products with a market leading position, producing consistent revenue without having to require heavy investment. They have a large share in a market whose growth rate is decreasing.

- Question mark - are products that have a small market share in a market that grows quickly. In addition, an analysis of the competitive context is needed, before deciding whether to invest or not.

- Dogs - products which are unprofitable, or have a small margin of profit in a shrinking market.

In the present paper we are not going to develop a portfolio analysis, but we'll look at tourism as if it was the only product of the Romania's portfolio. The market share of the target markets is 1.2%, previously presented in the analysis for the brand of the country. As for the market growth rate, we will use the 4% forecast provided by the World Tourism Organization for the worldwide tourism. We will start from the premise that in a fragmented market, with dozens of players, a market share of 1.2% is an average one. Moreover, the European Tourism Commission statistics show that, regarding Europe, a market share of 1.2%, is significant.

We could tackle the tourist industry in Romania, given the specificity of the tourism offer, as a cluster type system, that we could use also in future decisions regarding the most appropriate development strategy. In this paper we will use the definition (revised) of clusters as it was given by Michael Porter[3]: *"Clusters are geographic concentrations of interconnected companies and institutions, in a particular field. Clusters comprise a group of related industries and other entities important in terms of competition. These include, for example, suppliers of specialized inputs such as components, machinery and services, or providers of specialized infrastructure. Often, clusters extend to different downstream channels and customers and laterally to manufacturers of complementary products and the industries related by skills, technologies or common inputs. Finally, some clusters include governmental and other institutions - such as universities, standards agencies, think tanks, vocational training providers and employers - to provide specialized training, education, information, research and technical support."*

The tourism industry is part of the category of those branches described and analyzed as a cluster type branch.

2. Tourism industry - outlook

The assessment and the understanding of the specificity and dynamics of the industrial branch, which is expected to invest in, are essential before deciding on making that industry a priority economic sector. *Porter Five Forces*, a model that allows diagnosis and assessment of the position of an industrial branch by evaluating the five forces acting on it (the intensity of the competition on the market, the power of the suppliers, the existence of substitutes for the products we are trading and the threat of entry of new competitors) is relevant to the present situation. We need to establish if entering on the

[2] Marcel van Assen, Gerben van den Berg, Paul Pietersma, „Key Management Models", FT Prentice Hall, 2009

[3] Mercedes Delgado, Michael E. Porter, Scott Stern," Clusters, Convergence, and Economic Performance" Submitted for publication, March 11, 201 1

tourist market and tourist industry is an attractive option for Romania or whether Romania should focus on investing the resources available in other industries that are more efficient. As regards Romania, the analysis of variables shows that:

1. *Competition in the market*: It is a market characterized by a high degree of competition, with several players who compete with similar tourist products. It is a market dominated by a few powerful players. The main source markets are Germany, France, Italy and Russia. They are target markets for Romania, as well as for the direct competitors of Romania, such as Bulgaria, Austria and Hungary. They are strong competitors with a longer tradition than Romania, with a better reputation in the market and some of them, such as Austria, are capable of producing tourist products and services on a large scale, and later sell them at attractive prices. We can say that the degree of rivalry is high. On a scale from 1 to 5 we appreciate it to be 3.5.

2. *The buyers' influence*: This should be considered more complex. Buyer's tendency to replace the offer in Romania with another tourist destination, especially one of those we compete directly with, can be great if we are talking about products that are specific for Romania, such as Danube Delta. It is similarly, if we talk about natural potential in terms of hiking tourism. For products in which Romania does not have a competitive advantage, what experts call "switching costs", are small. On the other hand, the offer diversified worldwide, as well as the numerous sources of information, make the power of the buyer grow. We appreciate that the buyer's power is at an average level of 2.5.

3. *The suppliers' potential*: If we talk about the Romanian tourism product, we can consider the suppliers to be the companies delivering tourism the materials and the technologies necessary to provide the services contracted by the tourists: suppliers of food, utilities, transport services, recreational services, etc. We believe that the power of the suppliers is small in most cases due to their large number, the low level of product differentiation and due to their dependency towards tourism. An exception is the utility providers, which have a monopoly position on the Romanian market. But their functioning is regulated by the State, so that they must obey the laws in force. In terms of tourist attractions, most of them are under the administration of the State. Therefore, we consider that the power of the suppliers is below average, and an index of 1.50 is just enough.

4. *The existence of substitutes* - The danger of substituting the tourism products offered by Romania with another type of tourism products, is great. The worldwide existing supply is complex and attractive, including tourism products such as seaside resort, ski, exotic destinations, or amusement parks, which offer in the same place, a diverse set of experiences, specific to different areas of the world. This chapter has a score of 3.5.

5. *Possible dangers for new players* - Tourism is a complex industry that depends on the existence of a natural or man-made tourist potential, on the existence of an infrastructure and geographical positioning. Political stability, membership of an organization that encourages the free movement and, above all, the safety of that destination, are essential conditions for a country to enter the tourism market. These barriers are very hard to remove and they require very high costs and diplomatic efforts. Moreover, even if eliminating many of these barriers, the marketing and advertising costs are high and these are costs that can never be recovered when taking the decision to leave the market. In these circumstances, we believe that the possibility for new tourist destinations to enter the market, jeopardizing Romania's position, is very small and we grade it with 0.5.

Overall, the tourism accounted for 11.5 points, so it can be considered an attractive industry.

The high degree of rivalry and the existence of many tourist destinations which can substitute Romania, require, however, continued efforts in innovation for tourism product differentiation. In addition, a correct strategy regarding the tourist product is essential. Ansoff's matrix will help us choose the right strategy for a product.

3. Portfolio of products

The market strategy development of the Romanian tourism must take into account many aspects:

- The specifics and the needs of the target markets
- The specifics of each product in the portfolio
- The synergies between the market and the product

Romania's portfolio consists of six products:

- Cultural tours;
- Ecotourism;
- Rural tourism;
- Spa and wellness tourism;
- City breaks;
- Active and adventure tourism.

These could be promoted on eight target markets: Germany, United Kingdom, Italy, Russia, Austria, USA, France and Hungary under the Masterplan for the development of the Romanian tourism during 2007-2026, conducted by the World Tourism Organization's experts.

The implementation of the strategy is not indicated to be the same for all the products, since each has its specifics and delivers different messages to the market. Therefore, Romania needs a method to assist in shaping a strategy for managing the portfolio. I think the Ansoff's matrix is a useful tool, which provides solutions for each combination of the product and market[4].

Depending on the product-market report, there are four possible competitive strategies:

- Market penetration (current product -current market)
- Market development (existing product - new market).
- Product development (new product - existing market)
- Diversification (new product is promoted in a new market.)

When referring to Romania, we can say that there is no new market, meaning that there is no market where the Romanian tourism product is unknown. In terms of tourism products in the portfolio, we can say that the cultural circuits and the rural tourism are already existing products, products known abroad, which will be promoted in already existing markets. Regarding City breaks, Bucharest and Sibiu are already known products, thus they fit into the same category. If other cities will be promoted, then we will have to promote new products in already existing markets.

Nature tourism as well as Active and Adventure tourism are new products, which will also be promoted in the existing markets. A special case is the Spa and Wellness tourism that in the past was promoted in the foreign markets, but due to the outdated material basis has become uncompetitive. I consider that, in this case, we have a product that needs to be rethought, put on new bases, so that it totally changes its image associated

[4] Key management Models, page 6:

with the old product. Summarizing, we can say that the Romanian tourism portfolio consists of products which fall into two strategies:

• Market penetration for: cultural tours, rural tourism, City breaks (Bucharest and Sibiu)

• Product development for: nature tourism, active and adventure tourism, spa and wellness tourism, City breaks (the remaining cities).

In consequence, it is mandatory that the authorities adjust their competitive strategy depending on the category in which the product is located. Beyond this strategy, it is important to analyze the level of competitiveness of Romania in relation to its main competitors.

4. Romania – the competitive position in the region

The definition of competitiveness is based on the position in the market, as compared with the competition, of the entity that markets a product or a service. "Competitiveness is our ability to produce goods and services that meet the test of international competition while our citizens enjoy a standard of living that is both rising and sustainable.[5]„ I consider Krugmann's definition to be as yet little defensive, not bringing in the foreground the intention of any operator to increase the level of sales at the expense of the direct competitors. That is why I choose the definition which sees competitiveness as "the ability of a country to support and expand its international market share and at the same time to improve standard of living of its population"[6]. When referring strictly to the tourism industry, then we can define the tourism competitiveness as a "relative competitive position (in terms of profits and growth) of a country's tourism industry within the global market, including the developed and developing countries, through tourism which increases the level of the income of its citizens and improves their standard of living[7]"

How can the competitiveness be measured is still generating debate.

The data presented above shows Romania's position in relation to its competitors, both industry-wide and in relation to the target markets. Apparently, Romania has experienced a growth rate of tourism higher than the competition, but the pace of growth of the Romanian tourism is calculated starting from a smaller base than that of its main rivals: Bulgaria, Hungary and Austria. In these circumstances it is risky to say that Romania's position in the market is becoming more solid. We could say that, in order to realistically identify the actual place of Romania, but also to see the weaknesses and the strengths of the country in the tourism market, it is useful to determine how competitive is Romania in relation to its main rivals.

Economists consider three methods for quantifying the degree of competitiveness[8]:

The cost-benefit analysis: is a method for measurig competitiveness based on financial indicators such as production costs or price competitiveness. We believe that this method is suitable for analyzing a company's competitiveness, but it is not a very efficient method in the case of countries in which the factors that influence an industry are multiple, from governmental policies to the quality of the human factor and the attitude of the population in connection with certain themes.

The resource-based analysis: this method is suitable for analyzing a company, given that it refers to resources such as access to raw materials, technology or development

[5] (Paul Krugmann, Competitiveness: A dangerous obsession. Foreign Affairs, 73, 1991, page 31)
[6] F Fajnzylber, International competitiveness: Agreed goal, hard task. CEPAL Review 36, page 12, 1988
[7] Wei-Chiang Hong, „Competitiveness in the tourism sector", Physica-Verlag, 2008, page 6
[8] Wei-Chiang Hong, „Competitiveness in the tourism sector", Physica-Verlag, 2008, page 37

of company-specific production processes that provide a competitive advantage in relation to other actors in the market. It is, however, less relevant for a country that can become skilled in the tourism field, even though its resources do not qualify it to aspire to such a performance. The ability to use resources is very important.

The rankings: it represents an appropriate method for analyzing a country's competitive position in the tourist market as it includes a set of factors that influence a dynamic market such as tourism, in addition to the costs or resources already existing. When determining a country's competitiveness in the tourism market, several factors must be taken into account. A good example of this is the methodology developed by the World Economic Forum to measure a country's tourism competitiveness taking into account various factors that affect the tourism market, such as infrastructure, labor, public policies, health, environment, safety offered by that destination, communication infrastructure, existing natural resources, population attitude towards tourists, etc. It is a much more efficient and realistic method, even more so as the analysis models based on cost, price or resources have proven ineffective in tourism: for example, Egypt is more competitive with regard to the prices of tourist products and tourist resources diversity than Estonia. However, other factors influencing tourist traffic make Estonia be ranked ahead of Egypt in terms of competitiveness in tourism.

We believe that the last method is the most complete one and it can give us indications as regards to the areas in which the Romanian tourism is lacking. Therefore, in assessing the

competitive position of Romania, I will take into account the results of the Tourism Competitiveness Index developed by the World Economic Forum in 2011 which examines 14 areas to assess the competitiveness of tourism in a country: policies and legislation; sustainable development of the environment; safety and security; health and hygiene; "Tourism and Travel" as the priority system; air transport infrastructure; land transport infrastructure; tourism infrastructure; IT&C infrastructure; sector's competitiveness in price; human resources; local population affinity for tourism; natural resources; cultural resources. Romania occupies a middle position in the *Tourism Competitiveness Index* developed by the World Economic Forum. Thus, Romania ranks on the 63rd position out of 139 in this ranking. All three competitors analyzed are in front of Romania: Austria - 4th place, Hungary - 38th place, Bulgaria - 48th place. The situation is much worse if we take into account only the classification for the European area, where Romania ranks 34th out of 42 states. Basically, in this ranking Romania surpasses in tourism competition only Albania, Georgia, Macedonia, Serbia, Ukraine, Armenia, Bosnia - Herzegovina and Moldova. The performances of Bulgaria and Hungary are unexpectedly very good. In the meantime, the position of Austria is not surprizing. Interestingly, both countries, Bulgaria and Hungary have achieved a good outcome by attractive strategies: Bulgaria has relied on increasing the number of travelers in search of cheap destinations, while Hungary has attracted tourists for a day by offering a cheaper exchange rate [9].

:Our **conclusion** is that Romania has a weak competitive position in relation to the three countries it competes with, for the same tourism products. On the other hand, Romania's problems are not related to its tourism potential, but to the wrong strategy approach and to the small investment in certain areas.

- The poor results of the Romanian tourism are not just a marketing problem

[9] World Economic Forum - Tourism Competitiveness Index 2011, page 40

- The resources – the strategy mix is a winner in a dynamic industry such as tourism, as it is demonstrated by Bulgaria and Hungary

- Austria is clearly a competitor from another league, which should make us use a defensive strategy in the markets we compete

Romania must identify the weaknesses and move on to a structural reform.

References

Bob de Wit, Ron Meyer, Strategy Synthesis – resolving strategy paradoxes to create competitive advantage, Thomson Learning, 2005, page 131.

Marcel van Assen, Gerben van den Berg, Paul Pietersma, Key Management Models, FT Prentice Hall, 2009

Mercedes Delgado, Michael E. Porter, Scott Stern Clusters, Convergence, and Economic Performance, **s**ubmitted for publication, March 11, 2011

Mill Robert, Morrison Alistair, The Tourism System, 2009

Paul Krugmann, Competitiveness: A dangerous obsession. Foreign Affairs, 73, 1991

Romanian Ministry of Tourism, THR & TNS, "Development of the new tourism brand for Romania", 2010

Wei-Chiang Hong, Competitiveness in the tourism sector, Physica-Verlag, 2008

World Economic Forum - Tourism Competitiveness Index 2011

Legal and Methodological Backgrounds of the Corporate Social Responsibility

Univ. tutor Iacob BACIU
"Dimitrie Cantemir" Christian University, Bucharest
baciu_iacob@yahoo.com

Abstract

The legal and methodological issues on corporate social responsibility are obsolete and are in addition to corporate governance, strengthening the importance of running a company in the context of recent radical changes occurring in the global economy and, implicitly, new trends in the context of financial globalization. The need for the emergence of the concept of "corporate governance" as well as governance implications on the internal environment of firms, represented by shareholders and employees, or the external environment, represented by the creditors, suppliers and the community made a presentation of inappropriate combinations of key accounts, most often fraudulent, leading to the opening of resounding financial scandals in Europe and the United States of America. Social responsibility means that a company can take care of both profitability and development, as well as social and environmental impact. The existence of an enterprise is not just that of producing a profit, but it has a social responsibility in the sense that it belongs to society in general. Corporate governance varies significantly from country to country depending on economic factors, political, financial, social cultural or country-specific. The organization must be concerned not only the exploitation of human, natural, financial resources, but also its image in society by adopting strategies and social contracts which has to be concerted, valued and accepted by consensus.

Key words: *governance, company, internal audit, control*

JEL Classification: *G32, G33, G34, M42*

1. CSR models in the world

Corporate social responsibility is not a fashionable effect, it sits on some solid foundation, both historical and conceptual. One of the definitions of CSR, which brings together the broadest consensus on European plan, found in the document published by the European Community in July 2001 and known as "Green Card" is: "a concept whereby a company integrates voluntarily concerns to social and environmental issues in business operations and interaction with their stakeholders". Stakeholders include the following groups of categories: employers, managers, employees, unions, customers, members, business partners, suppliers (*stakeholders*) as well as the public opinion, competitors, government, voters, NGOs, pressure and influence groups, national and international communities (*affected parties*). Social Responsibility basically means that a company should take care of both profitability and development and the environmental and social impact. In other words, existential justification of an enterprise, i.e. to produce income, remains intangible instance, but will be taken into account also the interests of affected and essential parties. We can say, now, that companies are concerned to move from a culture of

exploitation of resources (human, natural, financial) to a refreshed culture of new management by adopting strategies based on responsibility and recognition of the impact their work has of all partners involved and influenced.

The U.S. has the longest history of CSR over time, but UK and European Union countries and recently Russia, have approached and developed CSR practices, more methodical and intense, the last 20-25 years. In most cases, European economic companies are striving for, rather, to satisfy legal or regulatory requirements multitude of CSR, which are expressed in all laws, rules and standards of those countries. In European Union, the countries that are implementing CSR reference model, that meets the most votes, results from extrapolating the European model of excellence for quality, EFQM (European Foundation of Quality Management). The following table shows some comparative characteristic features of CSR in the U.S. and Europe.

Table 1. **CSR models for American and European context**

	American context	**European context**
Economical responsibilities	Policy considerations of enterprises with corporate management, compensation and protection of customers;	Legislation (minimum wage legislation, the overtime, development and testing of pharmaceutical products etc.);
Legal responsibilities	Low level of legal obligations for business	Relatively high in terms of legislation for business activities;
Ethical responsibilities	Corporative policies concerning local communities;	High level of taxation, stipulations connected with the high level of social support;
Philanthropic responsibilities	Tangible initiatives that support arts, culture and higher education;	High level of taxation, since governments are cautious in regard to the main culture, education, etc.

CSR in the UK is different. He draws and combines models of U.S. and Continental Europe and is proving to be more powerful than either of the source model. The explanation lies in the fact that in UK particularly, between government and corporations is an ongoing dialogue, encouraging investment in priority projects that contain the highest dose of CSR.

It can be said that in Romania the debate of CSR progresses, information and training to many entrepreneurs is widening, but implementation of these concepts by their companies is quite hard.

2. Corporate governance and CSR

Corporate governance is a central and dynamic aspect of economic reality, becoming more present in many countries around the world. In Romanian language, the term ”governance” is synonymous with the ”administration” or the ”leadership”, involving all activities within an entity that falls under the management. In this regard, if the term ”governance” means ”leadership”, than the term ”corporate governance” lead the idea of overall driving of the whole entity, whereas the term ”corporate” comes from the word ”body (*corp*)”, suggesting the general idea, the whole unit.

Corporate governance covers a wide range of fields, from the economy to information theory, law, accounting, finance, management, psychology, sociology and policy, although corporate governance is closely related to the management entity and its

structures. It is recognized that this concept includes within its major problems the social responsibility and ethical business practices. Also, corporate governance has a very broad connotation, including items such as internal audit and external transparency, very tight deadlines for financial reporting and disclosure to external users.

Also, in April 1999, the Organization for Economic Cooperation and Development believes that corporate governance should specify the distribution of rights and responsibilities among different categories of people involved in the company, such as board of directors, directors, shareholders and other stakeholders, setting rules and procedures for making decisions on the activities of certain companies. Also the Organisation for Economic Cooperation and Development believes that corporate governance is at the same time, both a set of relationships between management unit, the board of directors, shareholders and other interested groups and the structure through which company objectives are set and the means to they are achieved, and the system of incentives offered by the board of directors and management to enhance shareholders' interests and goals of society.

As already stated, the concept of ”corporate governance” refers both to how a corporation is managed and controlled to achieve the preset objectives and the system by which the entity relates to stakeholders, while protecting their interests inherently.

3. Internal audit - function of corporate governance and its role in CSR

In recent decades, internal auditing is increasingly accepted as a function of the company, which plays an important role in corporate governance. It must be an independent and objective function in a corporate level. Economic entity aims to implement the three goals listed in the definition of internal audit, namely: corporate governance, risk management and internal control system so that internal audit to be a key component of corporate monitoring of these ideals. As already stated, the task management is to still installing a system to prevent fraud within the organization and internal audit has the responsibility of providing their own assistance, assessing risks and strategies for corporate control, suggesting proposals, recommendations and solutions to mitigate the threat of fraud and improve the control strategy. Interest in corporate governance in recent years has fueled significantly the force of the audit. The important role of internal audit of the organization derives from its influences on the internal control. Economic crises resulting from huge financial scandals that took place on the European and American scene revealed that accounting fraud is largely attributed to lack of form control laid down in internal regulations of companies. Thus, there are highlighted the close links between fraud, corporate governance and internal audit role.

In the last three decades, at international level, have appeared corporations involved in various inadequate combinations accounts (sometimes fraudulent patterns) that ultimately proved to be the main causes of bankruptcies and financial scandals landslide.

Among the most important common reasons of these scandals were related to managers' incompetence, failure procedures under domestic regulations, disregard of risk management, poor distribution of roles and responsibilities, ignoring the recommendations provided by internal auditors or external audit ineffectiveness. The role of CSR increased lately. Although failures of corporate governance on the European continent are spectacular and large, neither American continent has led lack of financial scandals of corporate which are, surprisingly, in financial meltdown. Furthermore, because of broader financial market development in the United States of America, financial disasters have major implications greater than those occurring in Europe. In this sense, the most controversial and shocking series of financial fraud, where energy company Enron is considered to be the most resounding failure in U.S. history, continuing to shake the economic and political world

overseas. This company went bankrupt in 2001, having some secret affairs that hid billions of dollars in debt, being the seventh of the most important American companies. So, thousands of employees lost their jobs and investors lost billions of dollars from the scandal. The Enron scandal began when the company had overestimated the benefit, and underestimating the debts. Former financial director of group Enron, Andrew Fastow, had created and led financial companies as front company used to conceal the extent of its losses and to give the impression to financial groups that Enron healthy work. The scandal broke on December 3, 2001, when the corporation declared bankruptcy suddenly, although the year before announced a hefty profit. When the company went into financial collapse, 20000 employees were made redundant. Thus, their pensions no longer exist and the shares are no longer worth anything. Paradoxically, the Enron scandal was not even so big itself, but the human and financial costs involved in it were huge, estimating that the fall is costing the corporation's employees and its investors more than U.S. $ 60 billion.

4. Legal aspects regarding CSR in the globalization era

The corporate governance of an entity is a social, political, legal, economic, financial and accounting construction, depending on the nature of society and its evolution.

Weak legal protection of minority shareholders in many East-Asian countries have allowed majority shareholders to increase their wealth expropriation of minority shareholders, in case of disorder investor confidence in a particular company. Moreover, it demonstrated empirically that variables depending on corporate governance explained the largest variation in exchange rates and stock market performance during the Asian crisis, rather than macro-economic variables. In return of insider systems are outsider systems, i.e. Those financial and corporate governance systems in which most big companies are controlled by managers, but are held by outside shareholders, such as financial institutions and individual shareholders. The situation in question is intended to lead to well-known separation or ”divorce” of the property control.

Until recently, shareholders, such as financial institutions, chose to be passive and to pursue short term objectives, preferring an outsider type strategy, exit one, to the detriment of insider input. In the United Kingdom and United States significant institutional investors – characterizing the outsider system – currently tend to have a substantial influence on company directors. In most American corporations, the Board is composed of several other senior executives and external members. Thus, the executive members of the board - inside directors - present strategic projects, while providing the necessary information flow and meantime non-executive members - outside directors – are external components of the company's managerial, accounting control functions on board operations site. This body should have access to effective information flow in order to carry out their role, just because the information must come from the control. Also leading powers of the board in the American vision system include management oversight, control of financial performance and obtaining resources, ensure compliance and understanding of social responsibility of the entity. It appears that the functions contained in the American system does not differ substantially from those referred to in the corporate systems of other countries.

To enhance the contribution of independent directors in the board of management, is provided the formation of other committees like the audit committee - in order to choose the auditors and to establish specific rules for internal control, the executive committee - which acts as the refill the Board for urgent matters, the compensation committee, whose role is to determine the remuneration of top managers, according to the economic

objectives set. Studies conducted in countries with market economies strengthened reveals the great influence of large shareholders have on business managers. So, in some countries may deduct a certain correlation between the degree of concentration of shares and turnover of managers, so that increasing concentration of ownership would, at first glance, a positive influence on corporate governance, because the ownership of shares by increasing considerably fewer people control over the work of managers. Therefore, should be registered an increase greater coherence of actions by maximizing profit or strengthening the market position of company. Noting the success of U.S. capital markets in recent years, Germany has begun to focus its corporate governance system closer to that of the U.S. Analyzing the German system of corporate governance, however, we find features combined with those of the American system and the specific elements of complex circumstances, corporate culture, cultural values, patterns and harmonizing national reporting - accounting and legislative issues. The involvement of public authorities in economic activity is particularly important, being able to talk in Germany of a corporatism that through collective bargaining determines incomes policy concertation. Industrial relations are characterized by great diversity in Germany, being able to detect a high degree of consultation between union confederations and employers' associations, while the unions are well organized and effectively cooperate with each other. As I noted during this study, literature consider that European and Japanese models of corporate business are somewhat similar, in that corporate solidarity combine with social harmony. Unlike these systems, the Anglo-American model is based on respect for the individual as a social norm, a key factor that defines the structure of corporate affairs being the notion of contractual relationship between equal individuals. In this Anglo-American model the corporate governance is based on the idea that shareholders are entitled by contract to claim the residual profit company as the last who bear the risks. In Japan there has been a transformation of corporate ownership and Japanese institutional investors have started to recognize the financial benefits can be obtained from improved corporate governance.

5. Conclusion

In conclusion, looking at aspects of corporate governance and CSR, a few ideas, such as the fact that corporate governance involves not only monitoring and stimulation in order to obtain performance, it should encourage advanced practice, to make a decisive contribution not only in defending the interests of investors but also to ensure social stability, encouraging mobility and quality of human capital growth, the orderly processes of production, strong correlation with culture, i.e. in the era of globalization CSR (corporate governance in complentarea) define the key for progress society as a community rather than shareholders.

References

xxx OECD (2004) *Principles of Corporate Governace*, online la:
http://www.oecd.org/document/49/0,3343,en_2649_34813_31530865_1_1_1_1,00.html,
xxx The EFQM Framework for Corporate Social Responsability, 2004
xxx The European Quest for Excellence, EFQM 10th anniversarz book,1999
www.markmedia.ro
www.csr-romania.ro
www.responsabilitatesociala.ro
www.csr.com
www.ec.europa.eu

Universal International Treaties on the Protection of Human Rights

Lecturer Titus CORLĂȚEAN PhD
„Dimitrie Cantemir" Christian University, Bucharest
titus.corlatean@psd.ro

Abstract

The international treaties in the field of human rights represent the main source of law for the protection of fundamental rights and liberties. The universal treaties, general or specialized, established a common denominator at the international level, no matter might be the specificity of different regional systems, for the protection of human rights.

Key words: *human rights protection, universal treaties, general / specialized treaties*

1. Concepts. Classification.

In the field of human rights, the international treaty is, as compared to the custom, the most important source of the international human rights law.

Under article 2 paragraph 1 of the 1969 Vienna Convention on the Law of Treaties, treaty means "an international agreement concluded between States in written form and governed by international law, whether embodied in a single instrument or in two or more related instruments and whatever its particular designation"[1].

International human rights treaties may fall within the following categories according to various criteria. According to the **geographical criterion**, the international treaties in the field may be classified into **universal treaties** (UN system) and **regional treaties** (applicable at regional level: European, Inter-American, African etc.).

In this paper we intend to briefly specify a few of the most important universal international treaties in the field of human rights.

2. Universal international treaties

These international treaties are those adopted within the United Nations Organization and also at the level of specialized institutions within the UN system.

In turn, these treaties may be classified into **general treaties** and **specialized treaties**.

2.1. General Treaties

This section may include:

- International Covenant on Civil and Political Rights adopted on 16 December 1966 under Resolution 2200 A (XXI) of the United Nations General Assembly. The Covenant came into force on 23 March 1976 and, on 1 February 2012, the United Nations Secretary General held records of 74 states registered as signatories and of 167 states as parties. Romania signed this Covenant on 27 June 1968 and submitted the ratification instrument on 9 December 1974.[2]

[1] Vienna Convention on the law of treaties between the states in "Adrian Năstase, Bogdan Aurescu, Drept Internațional contemporan, Texte esențiale" ("Adrian Nastase, Bogdan Aurescu, Contemporary International Law, Essential Texts"), R.A. Official Journal, Bucharest, 2000, page 138-139;

[2] See the website of the United Nations Organization "treaties.un.org", Base de données, État des traités, Chapitre IV "Droits de l'homme";

International Covenant on Civil and Political Rights establishes the classical rights and freedoms protecting individuals from state interferences. Such guaranteed rights and freedoms included, inter alia, right to life, prohibition of torture, prohibition of slavery and forced or compulsory labour, right to freedom, etc;

- Optional Protocol to the International Covenant on Civil and Political Rights, adopted on 16 December 1966, under the same resolution of the United Nations General Assembly which also adopted the Covenant referred to above. The Protocol came into force on 23 March 1976. On 1 February 2012, the United Nations Secretary General held records of 35 states registered as signatories and of 114 states, as parties.

Romania submitted the instrument of adherence to the Optional Protocol on 20 July 1993.[3]

Such instrument establishes a mechanism allowing for the submission of individual complaints against violations of the rights and freedoms protected by the International Covenant on Civil and Political Rights;

- Second Optional Protocol to the International Covenant on Civil and Political Rights aiming at the abolition of the death penalty, adopted on 15 December 1989 under Resolution 44/128 of the United Nations General Assembly came into force on 11 July 1991. On 1 February 2012, the United Nations Secretary General held records of 35 states registered as signatories and of 73 states, as parties. Romania signed this Protocol on 15 March 1990 and submitted the ratification instrument on 27 February 1991[4];

- International Covenant on Economic, Social and Cultural Rights adopted on 16 December 1966 under Resolution 2200 A(XXI) of the United Nations General Assembly came into force on 3 January 1976. On 1 February 2012, the United Nations Secretary General held records of 70 states registered as signatories and of 160 states, as parties. Romania signed the Covenant on 27 June 1968 and submitted the ratification instrument on 9 December 1974.[5]

International Covenant on Economic, Social and Cultural Rights stipulates the obligation for the states to take actions, either individually or under international assistance or cooperation, for the progressive and full realization of the rights stated in this treaty, particularly by means of legislative measures.

The Covenant established a non-discrimination clause securing equality of rights for women and men in the economic, social and cultural fields.

The Covenant stipulates, first and foremost, the right to work and a series of subsequent rights, right to form trade unions, right to the protection of family, right of everyone to an adequate standard of living for himself and for his family, right of everyone to the enjoyment of the highest attainable standard of physical and mental health, right of everyone to education, right of everyone to take part in cultural life, etc.;

- Optional Protocol to the International Covenant on Economic, Social and Cultural Rights, adopted on 10 December 2008 under Resolution A/RES/63/117 of the United Nations General Assembly. This Protocol has not come into force yet. On 1 February 2012, the United Nations Secretary General held records of 39 states registered as signatories and of 7 states, as parties. Until the date hereof, Romania has not signed the Optional Protocol referred to above.[6]

[3] Ibidem;
[4] Idem;
[5] Idem;
[6] Idem;

Adoption of this Protocol aims at offering economic, social and cultural rights a justiciable nature, by giving individuals the possibility to notify the Economic, Social and Cultural Rights Committee of the United Nations of any violations of the rights guaranteed under the International Covenant on Economic, Social and Cultural Rights. It also acknowledges the jurisdiction of the Committee mentioned herein above to receive and analyze interstate notices or communications, subject to the submission by the state ratifying/joining the Protocol of a statement to this effect.

In this context, there are certain mentions to be made in connection with the first international document solemnly stating the fundamental rights and freedoms guaranteed to any human being, namely the **Universal Declaration of Human Rights.**

This document was adopted on 10 December 1948 by the United Nations General Assembly and is deemed to be the primordial source of law, of a universal character, giving birth to international regulations for the protection of human rights in contemporary time. This document offers a unitary concept of the international society after the Second World War on the rights and freedoms of the individual. By virtue of this document, the United Nations General Assembly adopted afterwards over 60 conventions, resolutions and declarations in this field.

Article 1 proclaims that "All human beings are born free and equal in dignity and rights. They are endowed with reason and conscience and should act towards one another in a spirit of brotherhood."[7].

Article 3, proclaiming everyone's right to life, liberty and security of person and article 22, introducing the economic, social and cultural rights to benefit all people, state two fundamental characteristics of the human rights: that rights are **universal** and **inalienable**. [8]

Each individual may enjoy the rights proclaimed without distinction of any kind, such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status. All are equal before the law and are entitled without any discrimination to equal protection of the law. As stated in the preamble of the Declaration, the rights proclaimed constitute a common goal to be attained by all peoples, so that such rights are given universal and effective recognition and observance by all states.

Nevertheless, the Universal Declaration of Human Rights is **not an international treaty**, a source of legal rights and obligations. This Declaration was adopted under a resolution[9] and, as any other such document, it has a political, advisory basis.

Owing to the importance attached to the field in question, it has acquired in time a fundamental significance whose mandatory force is required in the practice of the states or in the process of codification of international treaties in the field.

Besides, certain provisions of the Declaration were incorporated into the Constitutions of many states or were invoked in international or national case law, which

[7] Main International Instruments on Human Rights Romania is party to, Volume I – Universal Instruments), the Romanian Institute for Human Rights, Bucharest, 1999, page 8;

[8] See also Raluca Miga-Beşteliu, Catrinel Brumar, „Protecţia internaţională a Drepturilor Omului", ("International Protection of Human Rights"), Universul Juridic Publishing House, Fifth Edition, Bucharest, 2010, page 40;

[9] Resolution 217 A (III) dated 10 December 1948 of the United Nations General Assembly;

emphasizes that the Declaration was accepted as a document comprising general principles and regulations expressing common standards in the field of human rights.[10]

The Romanian Constitution is a similar case, testifying to the above by considering in article 20 the Universal Declaration of Human Rights to be on an equal footing with "the covenants and other treaties Romania is party to".

2.2. Specialized Treaties

Following the sequence of the Chapters in section titled "Multilateral treaties deposited with the United Nations Secretary General", there are listed below a few relevant international treaties:

- Chapter IV – "Human Rights" [11]

- Convention on the Prevention and Punishment of the Crime of Genocide, adopted on 9 December 1948 and effective on 12 January 1951. Romania submitted the instrument of adherence on 2 November 1950;
- International Convention on the Elimination of All Forms of Racial Discrimination, adopted on 21 December 1965 and effective on 4 January 1969. Romania submitted the instrument of adherence on 15 September 1970. On 16 December 1992, the United Nations General Assembly adopted the Amendment to article 8 of the International Convention as cited, ratified until the date hereof by 43 states, but not yet efffective;
- *Convention on the Non-Applicability of Statutory Limitations to War Crimes and Crimes Against Humanity, adopted on 26 November 1968 and effective as of 11 November 1970. Romania signed the Convention on 17 April 1969 and submitted the instrument of adherence on 15 September 1969;*
- Convention on the Suppression and Punishment of the Crime of Apartheid, adopted on 30 November 1973 and effective on 18 July 1976. Romania signed the Convention on 6 September 1974 and submitted the ratification instrument on 15 August 1978;
- International Convention on the Elimination of All Forms of Racial Discrimination Against Women, adopted on 18 December 1979 and effective on 3 September 1981. Romania signed the Convention on 4 September 1980 and submitted the ratification instrument on 7 January 1982.

United Nations General Assembly adopted on 22 December 1995 an Amendment to the first paragraph of article 20 of the Convention and, on 6 October 1999, respectively, an Optional Protocol on the recognition of the right of individuals to submit to the Committee for the Elimination of Discrimination Against Women, claims of violations of the rights protected under the Convention.

Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, adopted on 10 December 1984 and effective on 26 June 1987. Romania submitted the instrument of adherence on 18 December 1990. United Nations General Assembly adopted on 16 December 1992 Amendments to paragraph 7 of article 17 and to paragraph 5 of article 18 of the Convention and, on 18 December 2002, the Optional Protocol to said Convention, respectively;

Convention on the Rights of the Child, adopted on 20 November 1989 and effective on 2 September 1990. Romania signed the Convention on 26 January 1990 and submitted the ratification instrument on 28 September 1990. United Nations General Assembly adopted on 12 December 1995 an Amendment to paragraph 2 of article 43 of the

[10] Raluca Miga-Beşteliu, Catrinel Brumar, the work cited, page 43;
[11] See the United Nations website as cited;

Convention and other 3 Optional Protocols, respectively, on 25 May 2000 (the first two) and on 19 December 2011 (the last one) etc.

- **Chapter V – "Refugees and Stateless Persons"**[12]

• Convention relating to the Status of Refugees, adopted on 28 July 1951 and effective on 22 April 1954. Romania submitted the instrument of adherence on 7 August 1991. United Nations General Assembly adopted on 16 December 1966 a Protocol relating to the Status of Refugees;

• Convention relating to the status of Stateless Persons, adopted on 23 September 1954 and effective on 6 June 1960. Romania submitted the instrument of adherence on 27 January 2006.

- **Chapter VII – "Traffic in Persons"**[13]

• International Convention for the Suppression of the Traffic in Women and Children, adopted on 30 September 1921. Romania ratified the Convention on 5 September 1923. Provisions of the Convention were included in the Protocol signed on 12 November 1947 and effective on 24 April 1950. Romania executed the Protocol on 2 November 1950, but never ratified it;

• Convention and Protocol for the Suppression of the Traffic in Persons and of the Exploitation of the Prostitution of Others, adopted on 21 March 1950 and effective on 25 July 1951. Romania submitted the instruments of adherence on 15 February 1955 for both treaties.

- **Chapter XVI – "Status of Women"**[14]

• Convention on the Political Rights of Women, adopted on 20 December 1952 and effective on 7 July 1954. Romania signed the Convention on 27 April 1954 and submitted the ratification instrument on 6 August 1954;

• Convention on the Nationality of Married Women, adopted on 29 January 1957 and effective on 11 August 1958. Romania submitted the instrument of adherence on 2 December 1960 etc.

2.3. International Treaties in the field of International Humanitarian Law

A major branch of the international protection of human rights is represented by international law regulations consisting in the so-called "International Humanitarian Law".

These regulations have not been drafted in the United Nations system, but they represent an international law source in the field of human rights holding a universal specialized value.

The **Geneva Conventions** dated 12 August 1949 regulate the conduct in time of hostilities or armed conflicts (jus in bello)[15] and are as listed herein below:

- Geneva ***Convention*** for the Amelioration of the Condition of ***Wounded***, ***Sick*** and Shipwrecked Members of Armed Forces at ***Sea***;
- Geneva Convention relative to the Treatment of Prisoners of War;
- ***Geneva Convention*** relative to the ***Protection*** of ***Civilian*** Persons in Time of War.

Presently, there are 194 states registered as parties to the 4 Geneva Conventions[16].

Romania ratified the Conventions on 1 June 1954.[17]

[12] Idem;
[13] Idem;
[14] Idem;
[15] Malcolm Shaw, Cambridge University Press, Sixth edition, Third printing, 2010, page 1167;
[16] See "International Committee of the Red Cross", www.icrc.org, War&law-states party to the Geneva Conventions;

The 1949 Geneva Conventions were supplemented by two Additional Protocols in 1977 and by a third Protocol in 2005:

- Additional Protocol relating to the Protection of Victims of International Armed Conflicts (Protocol I).

Presently, there are 170 states registered as parties. Romania ratified Protocol I on 21 June 1990;

- Additional Protocol relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II).

Presently, there are 165 states registered as parties. Romania ratified Protocol II on 21 June 1990;

- Additional Protocol relating to the Adoption of an ***Additional*** Distinctive Emblem (Protocol III).

Presently, there are 54 states registered as parties. Romania has not become party to Protocol III yet. International humanitarian law, as such is codified in the regulations referred to above, is applicable in case of **international armed conflict**, that is, in time of declared war or armed conflict between two or more belligerent parties, regardless of one or more parties' recognition or non-recognition of the state of war, as well as in case of **non-international armed conflict**.

3. Conclusions

Today's authors of international human rights law agree that the international treaties in this domain and especially the universal treaties represent the main source of law and a common denominator for the different regional systems and cultures in what is considered the basic standards for the protection of fundamental rights and liberties.

References

Oberdorff H., *Droits de l'homme et libertés fondamentales*, Librairie générale de droit et de jurisprudence, 2e édition, Paris, 2010;

Sudre F., *Dreptul european şi internaţional al drepturilor omului*, Editura Polirom, Iaşi, 2006;

Lord McNair, *The law of the treaties*, Oxford University Press, 1961;

Nguyen Q.D., Patrick D., Pellet A., *Droit international public*, 3e édition, Librairie générale de droit et de jurisprudence, Paris, 1987;

Reuter P., *Droit international public*, 1ère éd., PUF, Paris, 1958;

Brownlie I., *Principles of public international law*, Fourth edition, Clarendon Press Oxford, New York, 1990;

Vienna Convention on the law of treaties between the states in "Adrian Năstase, Bogdan Aurescu, Drept Internațional contemporan, Texte esențiale", R.A. Monitorul Oficial, Bucharest, 2000;

The website of the United Nations Organization "treaties.un.org", Base de données, État des traités, Chapitre IV "Droits de l'homme";

Main International Instruments on Human Rights Romania is party to, Volume I – Universal Instruments), the Romanian Institute for Human Rights, Bucharest, 1999;

Shaw Malcolm, Cambridge University Press, Sixth edition, Third printing, 2010;

"International Committee of the Red Cross", www.icrc.org, War&law-states party to the Geneva Conventions

[17] Ibidem.

Analysis on the Financial Indicators of the Company

Professor Constantin ANGHELACHE PhD
"Artifex" University Bucharest
Professor Gabriela Victoria ANGHELACHE PhD
Academy of Economic Studies, Bucharest
Professor Ioan PARTACHI PhD
Academy of Economic Studies of Moldova
Lorand KRALIK, PhD Student
Academy of Economic Studies, Buchares

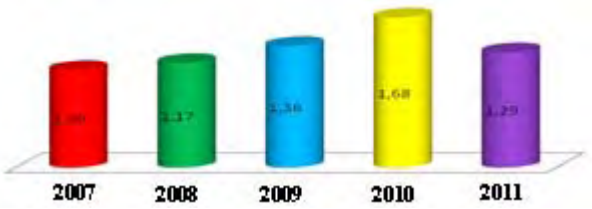
Abstract
This paper presents the results of the analysis on the financial indicators of AUTOAERO company. By using official data, on a 5 years interval, the analysis is able to outline the major evolutions that characterize the financial situation of the company. The authors have chosen to appeal to suggestive methods for presenting the results, the tables and graphical representation being self-illustrative.
Key words: *profitability, dynamics, economic environment, rotation*

Based on the data in the balance sheet of AUTOAERO company in 2007 – 2011, we have determined the main indicators based on the calculation relationships in the analysis methodology. Thus, we have calculated the current and immediate liquidity for the company. We see that current liquidity grew from 1,09 in 2007 to 1,68 in 2010. In 2011, on the background of economic crisis expansion, the current liquidity ratio fell at 1,29, below the level of 2009.

The evolution of current liquidity during the period 2007-2011 and its chart are presented below.

Evolution of current liquidity during the period 2007-2011

Indicator	Year				
	2007	2008	2009	2010	2011
Current liquidity	1,09	1,17	1,36	1,68	1,29



Evolution of current liquidity during the period 2007-2011

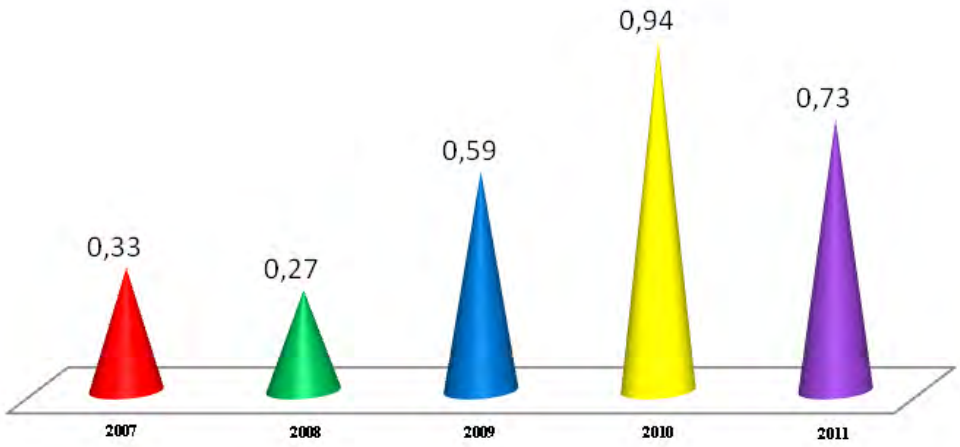
During the analyzed period, current liquidity had a positive evolution, exception being the last year, but the recommended value was not reached.

The same evolution trend had the immediate liquidity recorded by the company during the analyzed period. Thus, the indicator rose from 0,33 in 2007 to 0,94 in 2010, then decreasing to 0,73 in 2011. Comparing the evolution in 2011 for the two liquidity indicators, we shall see that the immediate one was slightly constant, revealing an adequate policy of the company management.

In the following table and chart, the evolution of the immediate liquidity during the period 2007 – 2011 is presented:

Evolution of the immediate liquidity during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Immediate liquidity	0,33	0,27	0,59	0,94	0,73



Evolution of the immediate liquidity during the period 2007 – 2011

The evolution of financial profitability, calculated on the period 2007-2011, follows the same trend defined by the current and immediate liquidity of the company.

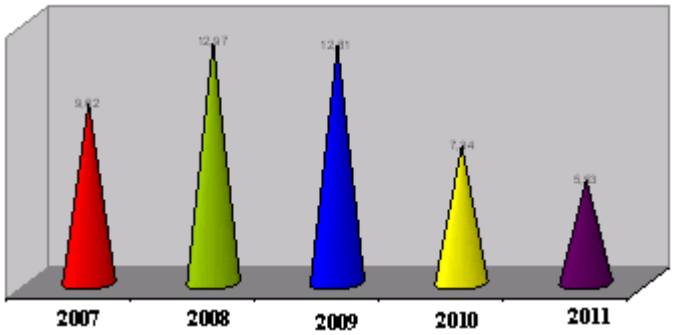
In 2007 the profitability ratio was 9,62%, growing to 12,97% in 2008.

The year 2009 revealed a hold at the level 12,81%, but alarming decreases were recorded in 2010 (7,34%) and 2011 (5,53%).

We present below the synthesis of the financial profitability's evolution, also representing it graphically.

Evolution of financial profitability during 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Financial profitability ratio	9,62	12,97	12,81	7,34	5,53



Evolution of financial profitability during 2007 – 2011

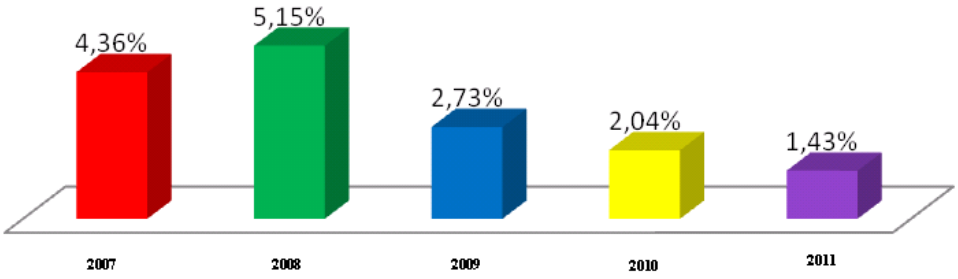
Another important element of economic-financial analysis is the return on advanced capital. This indicator expresses, in percent points, the efficiency of company capital utilization (consumption).

We shall see that this indicator had an ascending trend only in 2008 (5,15%) versus 2007 (4,36%), continuously decreasing in the last three years. So, in 2009 it fell to 2,73%, in 2010 to 2,04%, reaching in 2011 the value of 1,43%.

For 2012, a more accentuate decrease is pre-figured. The synthesis of indicators regarding the return on advanced capitals is presented in the following table and chart.

Evolution of return on advanced capital during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Return on advanced capital (%)	4,36	5,15	2,73	2,04	1,43



Evolution of return on advanced capital during the period 2007 – 2011

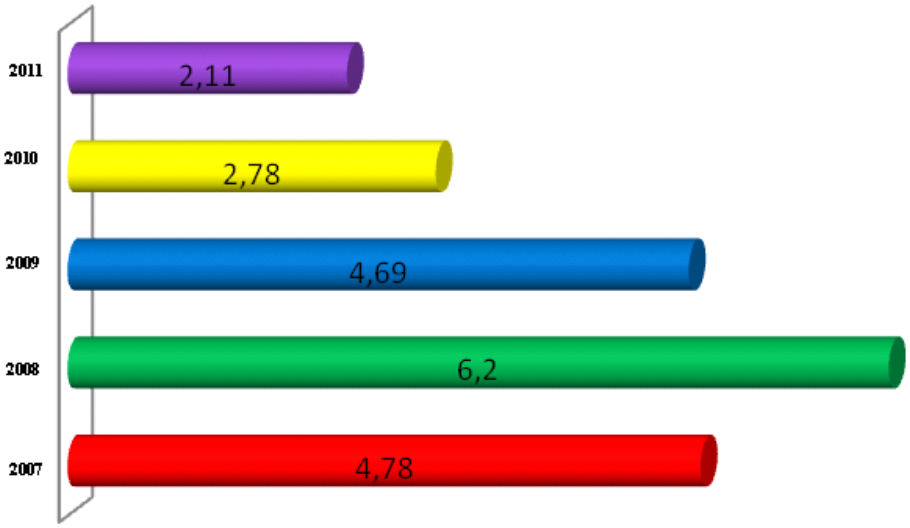
To reveal the profitability, the efficiency at which production factors of the company were consumed, the profit ratio was calculated for each year of the analyzed period.

Expressed in percent points, this indicator rose from 4,78% in 2007 to 6,20% in 2008, decreasing then constantly, to not say alarmingly, to 4,69% in 2009, 2,78% in 2010 and 2,11% in 2011. The year 2012 appears to gave a profit close to zero.

The evolution of this indicator is presented, synthetically, in the table and chart below.

Evolution of the profitability ratio during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Profit ratio(%)	4,78	6,20	4,69	2,78	2,11



Evolution of the profitability ratio during the period 2007 – 2011

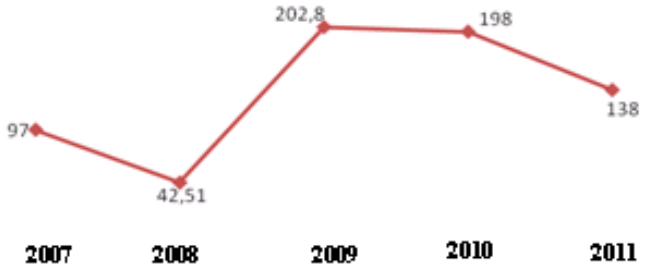
As it can be seen, the activity of the analyzed economic entity was also influenced by the global economic-financial crisis, so a continuous decrease of the profit ratio is recorded.

By deepening the economic-financial analysis, the analysis of the performances of the company, the rotation speed of debits-customers was calculated, for the period 2007-2011, in days, for each year.

Evolution of rotation speed of debits-customers during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Rotation speed of debits-customers (days)	97	42,51	202,8	198	138

This indicator experienced an ascending evolution, falling from 97 days in 2007, to 42,51 days in 2008. during the following years, it increased, at 202,8 days in 2009, then tempered, reaching 198 days in 2010 and 138 days in 2011. The evolution of the rotation speed of debits-customers is presented in the below chart.



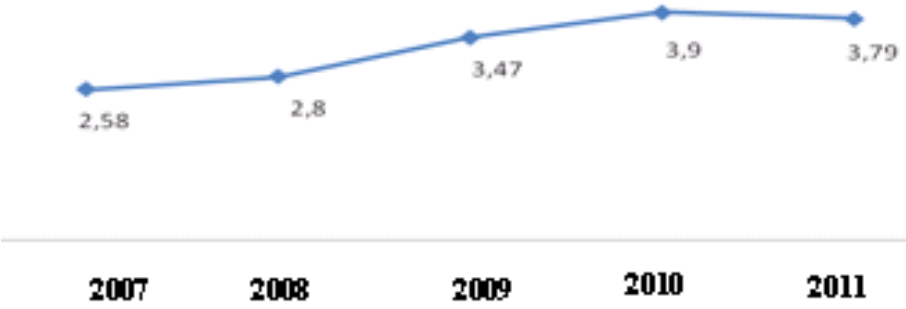
Evolution of rotation speed of debits-customers during the period 2007 – 2011

The duration of one rotation for receivables, in 2011, recorded a decrease compared to the previous period (2010), so it can be stated that the management of company's relationship with its customers was more effective, thus being ensured the quicker recovery of debts – customers. The evolution of the rotation speed of fixed assets, revealed by indicators calculated for each year of the analyzed period, reveals its increase from 2,58 in 2007 to 3,79 in 2011. In the following table, we present the evolution of the indicator during the analyzed period.

Evolution of the rotation speed for fixed assets during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Rotation speed of fixed assets	2,58	2,80	3,47	3,90	3,79

The following chart describes the evolution of the fixed assets' rotation speed during the period 2007-2011



Evolution of the rotation speed for fixed assets during the period 2007 – 2011

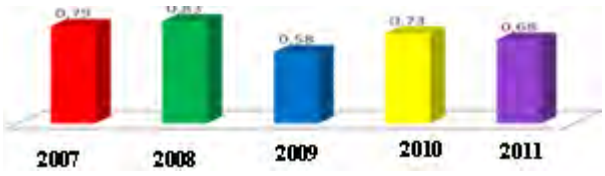
Based on the previous made analysis, it can be stated that the company used its fixed assets in a less effective manner. This slight decrease of the rotation speed for fixed assets from the previous period can lead to an immobilization of capital unfavorable for the analyzed economic entity.

By discussing the indicators regarding the rotation speed of total assets during the period 2007-2011, it is observed an oscillatory evolution with increases and decreases, that is a specific trend for an economic unstable period.

The evolution of the indicator is suggestively outlined by the data from the table and graphical representation below.

Evolution of rotation speed for total assets during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Rotation speed of total assets	0,79	0,83	0,58	0,73	0,68



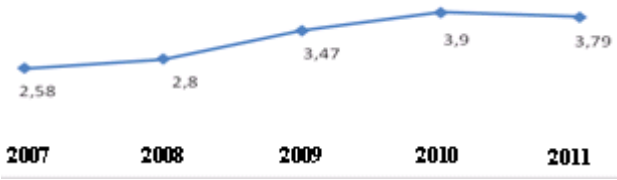
Evolution of rotation speed for total assets during the period 2007 – 2011

An interesting element in analyzing the company performances is the modality in which the total/yearly value of investments evolved during the period 2007-2011.

Annual indicators calculated for the analyzed period are synthesized in the table below and represented in a proper chart.

Evolution of total value of investments during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
Total value of investments (bill. lei)	136,3	148,1	379,4	900,8	740,7



Evolution of total value of investments during the period 2007 – 2011

All indicators mentioned until this point in analysis are synthesized in the table matrix below.

Evolution of the main economic – financial indicators during the period 2007 – 2011

Indicator	Year				
	2007	2008	2009	2010	2011
I. Ratios regarding the structure of patrimonial elements					
I.1. Fixed assets ratio					
• Total fixed assets ratio - %	16,35	29,64	16,76	18,84	17,89
Intangible assets ratio - %	0,05	0,02	0,003	0,004	1,41
Tangible assets ratio - %	13,42	16,59	15,03	16,89	14,81
• Financial fixed assets ratio - %	2,87	13,03	1,73	1,95	1,67
I.2. Circulating assets ratio					
Ratio of total circulating	83,65	70,36	83,24	81,16	82,11

Indicator	Year				
	2007	2008	2009	2010	2011
assets - %					
• Inventories ratio - %	58,52	54,40	47,07	3,58	35,32
Commercial receivables ratio - %	12,71	6,66	33,79	40,24	25,71
Cash ratio - %	12,42	9,30	2,37	5,08	21,08
II. Ratios regarding the financial structure of capitals					
II.1.Financial stability ratio					36,77
II.2. Indebt ratios					
• Short – term debts ratio -	76,97	60,19	60,97	48,13	63,22
Global autonomy ratio - %	13,96	19,42	20,78	23,68	22,05
Total debts ratio - %	86,03	72,10	68,18	61,89	77,95
General solvability ratio	1,30	1,66	1,64	2,08	1,58
Financial autonomy ratio	0,61	0,62	0,74	0,63	0,6
III. Financial equilibrium indicators					
• Working capital (thousands lei)	23.038,7	29.485,5	69.823	91.538,1	54.827,3
• Necessary working capital (thousands lei)	-19.756,2	2.502,2	62.377,2	-11.930,7	-6.379,5
• Net treasury (thousands lei)	42.795,05	26.983,3	7.445,7	103.468,9	61.206,8
• Net situation (thousands lei)	48.121,9	80.950	99.783,9	105.594,9	64.048
IV. Indicators regarding liquidity and rotation speed					
• Current liquidity	1,09	1,17	1,36	1,68	1,29
• Immediate liquidity	0,33	0,27	0,59	0,94	0,73
• Flash liquidity	0,16	0,15	0,04	0,11	0,71
• Rotation speed of debits -customers	97	42,51	202,8	198	138
Rotation speed of fixed assets	2,58	2,80	3,47	3,90	3,79
Rotation speeds of total assets	0,79	0,83	0,58	0,73	0,68
V. Profitability ratios					
Return - %	1,23	4,09	5,09	2,78	6,72
Financial profitability ratio - %	9,62	12,97	12,81	7,34	5,53

Indicator	Year				
	2007	2008	2009	2010	2011
• Return on invested capital capitalului investit	4,36	5,15	2,73	2,04	1,43
Profit ratio (Gross commercial margin ratio)	4,78	6,20	4,69	2,78	2,11

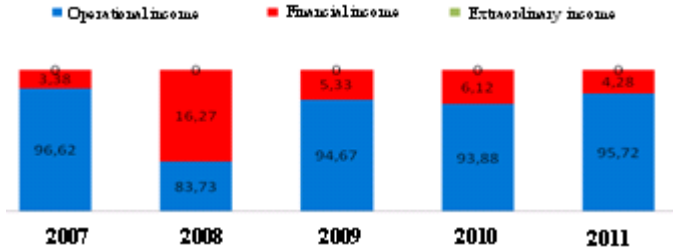
Evoluţia structurii veniturilor pe parcursul ultimilor 5 ani, concretizată in indicatori calculaţi, exprimă in cifre relative o pondere de peste 93% in fiecare an a veniturilor din exploatare, diferenţa până la 100% rezultând din activităţi financiare.

Evolution of income structure during the period 2007 – 2011

%

Indicator	2007	2008	2009	2010	2011
Operational incomes	96,62	83,73	94,67	93,88	95,72
Financial incomes	3,38	16,27	5,33	6,12	4,28
Extraordinary incomes	0	0	0	0	0
Total	**100**	**100**	**100**	**100**	**100**

The structure of incomes, expessed in percent points, achieved during the period 2007-2011, are presented in the following chart.



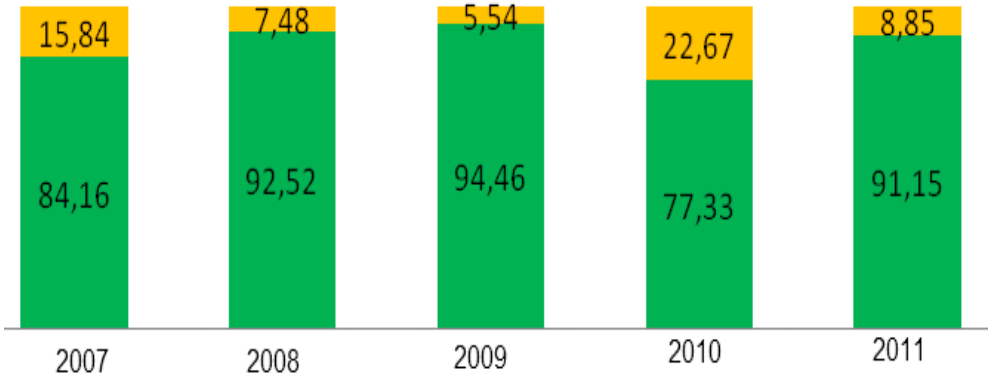
Evolution of incomes during the period 2007 – 2011

Parallel to the mode in which incomes were achieved and structured, the analysis of the expenses emphasizes an oscillatory situation. So, in 2007 and 2009 financial expenses grew, being 15,84%, respectively 22,67%, because banking loans were relied on to realize imports. The data regarding the evolution of expenses are synthesized in the table and graphical representation below.

Evolution of structure of expenses during the last five years

%

Indicator	2007	2008	2009	2010	2011
Operational expenses	84,16	92,52	94,46	77,33	91,15
Financial expenses	15,84	7,48	5,54	22,67	8,85
Extraordinary expenses	0	0	0	0	0
Total	**100**	**100**	**100**	**100**	**100**



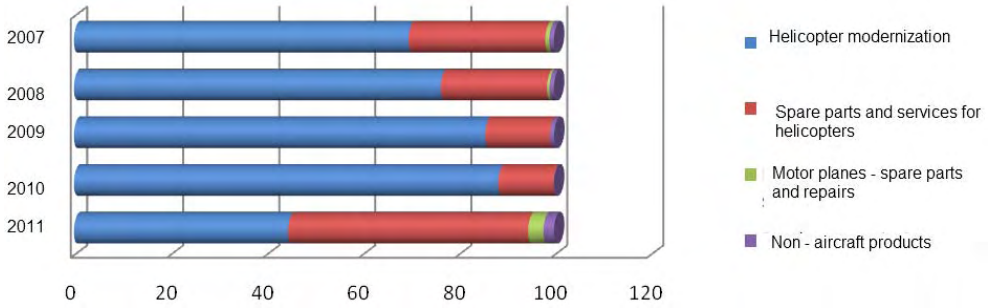
Evolution of expenses and of their structure, 2007-2011

The evolution of sales, on total and product structure is outlined in the table and chart below.

Evolution of the weight for each product in total sales

%

Sales, depending on product types	2007	2008	2009	2010	2011
Helicopter improvement	44,60	88,37	85,68	76,40	69,70
Helicopter spare parts and services	50,02	11,56	13,45	22,15	28,48
Motor planes, spare parts and repairs	3,18	-	-	0,52	0,84
Non-aviation products	2,20	0,07	0,91	0,93	0,98
Total	**100**	**100**	**100**	**100**	**100**



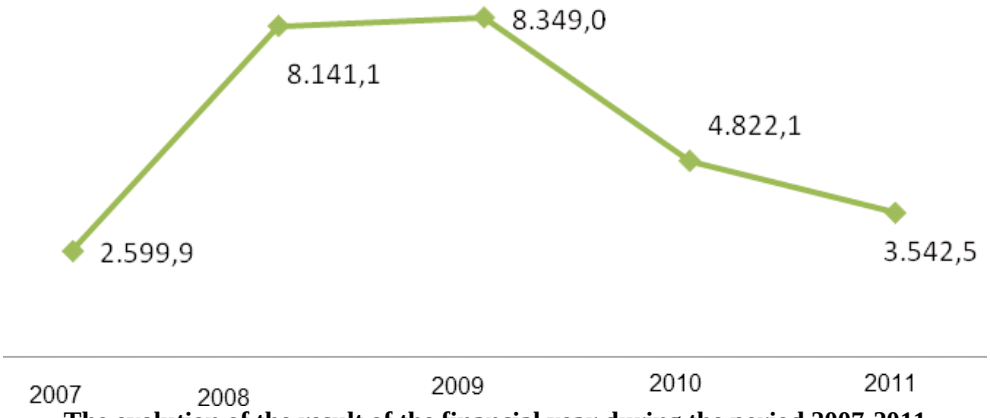
Evolution of the weight of each product in total sales

In the final part of the analysis, we have used the indicator "economic-financial results", calculated annualy based on data from the company's balance sheets. The evolution of this indicator, that reveals the performance of the commercial company, is presented in the table and chart below.

The evolution of the result of the financial year during the period 2007-2011

mil lei

Indicator	2007	2008	2009	2010	2011
Net profit	2.599,9	8.141,1	8.349,0	4.822,1	3.542,5
Loss	-	-	-	-	-



The evolution of the result of the financial year during the period 2007-2011

Synthesizing, the main indicators calculated based on data from the 2011 balance sheet, are outlined in the following table, to ease their correlative analysis and to diagnose, more evidently, the performance of the commercial company.

Main indicators in 2011

Indicators	Value - lei -
1. Net turnover	197.230,1
2. Production sold	185.083,2
1. Total incomes, of which:	159.335,7
- Operational incomes	152.516,1
- Financial incomes	6.819,6
2. Total expenses, of which:	155.163,1
- Operational expenses	141.431,2
- Financial expenses	13.731,9
3. Gross profit	4.172,6
4. Net profit	3.542,5

Also, we have extracted and presented the interesting elements regarding the financial patrimonial nature of the analyzed company in 2011.

Financial (patrimonial) balance sheet

ASSETS	VALUE	LIABILITIES	VALUE
I. Fixed assets, of which:	51.998,6	I. Own capitals	64.048
- intangible	4.081,9	II. Average and long – term debts	42.777,9
- tangible	43.028,8	III. Short-term, of which	183.669,1

ASSETS	VALUE	LIABILITIES	VALUE
- financial	4.887,9	Operational debts	183.669,1
II. Circulating assets,	238.496,4	Short-term banking debts	-
Of which:			
- inventories	102.594		
- receivables	74.695.6		
- cash and equivalents	61.206,8		
TOTAL	**290.495,00**		**290.495,00**

Note: indicators expressed in million lei

There we have a complex analysis of the economic-financial performance, of a commercial company. Certainly, the analysis is susceptible to be extended (deepen) through the use of factorial modes, but this can be made depending on the purpose and extent degree of the respective analysis.

References

Anghelache, C. S. , Vintilă, G., Dumbravă, M. (2009) – *„Main aspects regarding the contents of the economic-financial analysis”*, Romanian Statistical Review, Issue 9/2009 – Supplement

Armeanu, D.; Balu, F.O.; Obreja, C. (2008) – *"Interest Rate Risk Management using Duration Gap Methodology"*, Theoretical and Applied Economics, Asociaţia Generală a Economiştilor din România - AGER, vol. 1, pp. 3-10

Barbu, T.C..; Puiu, A.C., Radu, A.N. (2008) – *„The necessity of operational risk management and quantification”*, Annals of the University of Oradea

Braşoveanu, I.; Obreja Braşoveanu, L.; Păun, C. (2008) –*"Comparative Approaches Regarding Fiscal Systems in European Union"* ,Theoretical and Applied Economics, Asociaţia Generală a Economiştilor din România - AGER, vol. 4, pp. 65-74

Hamilton, J., Waggoner, D., Zha, T. (2007) – *„Normalization in econometrics”*, Econometrics Reviews, nr. 26, pp. 221-252

Moşteanu, T.; Iacob, M. (2009) – *"Principles for Private and Public Internalisation of Externalities. A Synoptic View"*, Theoretical and Applied Economics, Asociaţia Generală a Economiştilor din România - AGER, vol. 10, pages 35-42

Assessment and Recognition of Intellectual Capital - Concrete Implications of the Accounting in the Management of Sustainable Development

Professor Gheorghe LEPADATU PhD
"Dimitrie Cantemir" Christian University, Bucharest
cilezbujor@yahoo.com
Lecturer Marius MICULESCU PhD
Dimitrie Cantemir" Christian University, MTC Timisoara
marius.miculescu@yahoo.com

Abstract
Intangible assets are the most important sources of competitive advantage. According to the new perspective supported by endogenous growth theory, the traditional factors of production have diminished the importance. Simultaneously, increased the importance of intangible assets, which is an important factor of competitiveness and convergence. In the intangible assets, intellectual capital is paramount. Intangible economy is a challenge at the beginning of the millennium and can be addressed in terms of demand, supply and economic system. Assessment and recognition of intellectual capital is a topical issue and is the result of research studies that have come over recent years.
Key words: *intangible assets, intellectual capital, evaluation, recognition*

JEL Classification: M41

1. Introduction

The knowledge economy requires an interdisciplinary approach. Personally, I plead to promote knowledge economy as a consensual, modern science, in the context of the human communities organization, namely the knowledge society and the modern concept of corporate governance, which defines the company as a social responsibility.

The issue of intangible assets is particularly studied by the accounting, for which IAS 38 - Intangible assets - does not address sufficiently clearly the intangible asset. Standard is regarding as a non-monetary asset, but identifiable, with the possibility to bring future economic benefits that can be reliably measured.

Based on these aspects, we consider necessary to identify ways of measuring intellectual capital.

The transition of most developed and emerging nations towards knowledge-based economies has led to the awareness of the importance of intellectual capital for the economic growth. While information systems designers are trying to capitalize employees' knowledge and expertise in technologies reflected in databases and logic programs, economists are trying to find the most appropriate methods for measuring and evaluating knowledge, which is the essential part of intellectual capital.

Although the specialized literature mentions differently the terms of intellectual capital and intangible assets, they both refer to all the knowledge, skills and competence of an enterprise's employees, whose performance generates profits for it.

The management of companies has directed all efforts towards the creation and development of intangible assets to support the innovation process by: research & development expenditures, resource allocation for employees' training, etc. As a result, the market value of the enterprise is becoming more and more influenced by the intangible assets that it holds. Human capital refers both to the knowledge, skills, abilities of the employees of an enterprise, but also to the culture, set of values and principles developed therein. Regarding capital structure, it includes all databases, software, organizational structures, trademarks, patents and other assets that support the productivity of the employees. Structural capital consists of the capital represented by customers and enterprise organizational capital, the latter being composed of the innovation capital (intellectual property, other intellectual assets) that the company owns and the capital invested in their production processes. Nevertheless, the value of these forms of capital is proving to be difficult to estimate, a series of measurement indicators being developed in this respect.

2. Intangible assets monitor

Sveiby proposes a monitoring system for intangible assets consisting of a table in which indicators are gathered to estimate the value of intangible assets. These indicators vary depending on the strategy adopted by the enterprise and their grouping reflects how the value for shareholders is generated: growth of intangible assets, their renewal rate, their use efficiency and stability of their operation.

- Level of education = quantified by a score given based on the study level of the organization's employees;
- Company image enhanced by relationships with customers = share of income from contracts with various customers having the effect of improving the company's image;
- Organizational structure improvement from relationships with customers = share of income from contracts that improve the organizational structure of the company and involve the development of R & D programs;
- Competence gained from relationships with customers = Share of income from projects undertaken for various clients that have led to an increase of the company employee competence;
- Professionals share = number of professionals (managerial staff and employees entering into relationships with the customers) in total company personnel;
- Customer satisfaction index - quantifies customer satisfaction on a scale from 1 to 6 (highest satisfaction);
- Professionals turnover rate = number of professionals who have left compared to the number of professionals at the beginning of the year;
- Frequency of renewed contracts = share of income from customers that the company has worked with in the previous year;
- Administrative staff turnover = number of administrative staff who left the company compared to the number at the beginning of the year;
- Rookie ratio = number of employees who have less than 2 years of seniority.
- Seniority = number of years employed in the same organization.

The intangible assets monitoring system proposed by Sveiby was applied by several Swedish companies, their help being reflected on the impact that the strategy adopted by the company has on customer satisfaction, that is, their loyalty, on the competence acquired by employees and their satisfaction.

There are experts in the field who, following investigations, are supporting the idea that the value of intellectual capital would be the difference between the market value of a company (market capitalization) and its book value (tangible assets - liabilities). Research has showed that the biggest difference between the two values occurs in the case of high-tech industries and those intensively based on knowledge, industries that require substantial investments in intangible assets. The difference between market value and book value is indeed largely based on the intangible elements of the enterprise that have not been capitalized in the balance sheet. The difference between market value and book value is influenced by the choice of the depreciation method (affecting comparisons between companies), and by changes in accounting rules (affecting comparisons over time within the same company). The adoption of the ratio between market value and book value as an indicator for evaluating intellectual capital has the disadvantage that the market value is being determined and revised constantly (exchange rate), while the book value is updated only once a year, through the balance sheet. There can be made a comparison between the indicator calculated as the ratio between market value and book value of an enterprise and that of similar competing companies, or with the average of the industry field, or with the indicators calculated in previous years for the same company.

3. Tobin's "Q" indicator compares the market value of an enterprise with the cost of replacing its assets. The cost of replacing fixed assets can be calculated as the value of fixed assets (including depreciation) adjusted to the inflation. This will remove the effect of adopting different depreciation methods.

The "Q" indicator is relevant when similar companies are compared over a period of several years. This indicator is appropriate when comparing the value of intangible elements belonging to enterprises in the same business sector, working on the same market and having similar fixed assets.

When both the "Q" indicator and the ratio between market value and book value decrease over time, it means that the enterprise's intangible assets are depreciating and this may be a signal for the investors that a certain company is not managing adequately its intellectual capital. In this case, they may change the investment portfolio, looking for companies having an increasing or steady "Q" indicator.

The model resembles the one based on market value and book value, except that the book value is replaced with the cost of tangible assets. It is considered that a company having a Q indicator greater than 1 and greater than the one of a competing company will achieve a higher return, this advantage being attributed to its intellectual capital.

The two models presented above define intellectual capital as the difference between the market capitalization of the company and the capital in the form of shares of shareholders. They are useful to illustrate the financial value of intellectual capital and to compare companies operating in the same business area. However, they do not contain information about the components that contribute to intellectual capital. Because of the exclusive expression in monetary units, such models based on market capitalization only provide a partial perspective on knowledge-based assets.

4. Model based on components of intellectual capital

The **Technology Broker** model was proposed by Annie Brooking in 1996 and it establishes the value of intellectual capital in monetary units, defined by the author as a mix of four components: human-centered assets, market assets, infrastructure assets and

intellectual property assets. Human-centered assets consist of collective expertise, creativity, ability to solve novel problems, leadership. Market assets are represented by the intangibles such as trademarks, contracts, licensing agreements or franchise contracts.

Infrastructure assets include technologies, methodologies and processes that enable the organization to function. Intellectual property refers to the legal mechanism for protecting the assets of the company, trade secrets, patents, copyrights, etc. The Technology Broker model starts with an analysis and diagnostic test based on 20 questions. The lower the number of positive answers to this test, the higher the need to strengthen the intellectual capital of that company. In this regard, an intellectual capital audit is performed, including 178 questions on its four components. Once an organization completes the audit, the model proposes three methods to calculate the monetary value of intellectual capital: cost approach, market value approach and income approach.

However, companies have intangible assets that are not recorded on their balance sheets; these intangible assets include management skill, valuable trademarks and name recognition, a good reputation, proprietary products and so forth. Such assets are valuable and would fetch their worth if a company were to be sold.

Analysts should try to assess the value of such assets based on a company's abilitz to earn economic profits or rents from them, even though it is difficult to do so.

Financial analysts have traditionally viewed the values assigned to intangible assets with suspicion. Consequently, in adjusting financial statements they often exclude the book value assigned to intangibles (reducing net equity by an equal amount and increasing pretax income by the armonization expense associated with the intangibles).

This arbitrary assignment of zero value to intangibles might also be inadvisable. The analyst should decide if there is any extra earning power atributable to goodwill, or any other intagible asset. If there is, it is a valuable asset.

An issue to be considered when comparing the returns on equity or assets of various companies is the degree of recognized intangible assets. An entity that has acquired many of its intangible assets in mergers and acquisitions will typically have a significantly higher amount of such assets in its balance sheet (and hence lower returns on equity and assets) than an equivalent entity that has developed most of its intangible assets internally.

It is considered that there are certain similarities between Technology Broker audit questions and the indicators of Skandia model. However, the major difficulty for the model shown is the transposition of qualitative results of the questionnaire into the monetary value of assets.

In 1992, the Harvard Business Review magazine published an article introducing the ***Balanced Scorecard model*** by which companies can assess four areas: finance (profitability, cash flow), customer oriented strategies (customer loyalty development, customer degree of satisfaction, market share), internal process initiatives (cycle of production, productivity, quality index) as well as learning and growth activities (qualification level, innovation, application of research results, the share of new products / services). This model seeks to balance the traditional accounting approach with indicators that refer to innovation, learning and creating value in financial and non-financial terms. Thus, this model is implementing an organization's mission and strategy into a set of performance indicators, becoming one of the most popular tools for the development of indicators for knowledge measurement and management. It was applied in hundreds of organizations from different economic areas in developed countries. However, there are critics who consider this model too rigid and its categories too limited.

The Intellectual Capital Index (IC-Index) proposes the replacement of individual indicators by an index and attempts to correlate the changes in intellectual capital with changes in the market value of the firm. The index is based on indicators that relate to: human capital, innovative capital, infrastructure capital, relational capital (customers). The value of the IC-index depends on the subjective assessment of the mentioned indicators and on their share. However, this model offers the managers the opportunity of understanding the effects of a certain strategy on its intellectual capital.

5. ***As a conclusion***, one may note that the first research in the measurement and evaluation of knowledge generating assets and of intellectual capital have focused on definitions and classifications. Many models have similar construction and measures, but different names. Knowledge management and measurement models may serve specific purposes of different organizations in different ways. They can use the measurement models as analysis and diagnostic tests for assessing the progress or the hierarchy of investment projects or for obtaining facilities (political support) for a particular program.

Education plays a key role in determining human capital formation and human opportunity from economically point of view. Today, in Romania, it becomes urgent investment in human capital goal: there are necessary substantive steps, not only conceptual, but concerning the mentality. The first is the understanding that without a rapid and profound improvement in the educational system we can not have any growth or raise living standards, however funds would allocate the European Union and regardless of which method of assessment would use.

The second step is to change the managerial mentality in the Ministry of Education, Youth and Sport by reforming the educational system and by allocation of funds for investment in education.

Current assessment of human capital in Romania reveals chronic lack of investments in this area, the national labor force being used in areas where payment is at the lowest wage and productivity.

Advantages and limits of score based models:

Score based models do not result in monetary units estimates of intangible assets; however, they may be used to develop measurement models of knowledge based assets on national level, for the establishment of socio-economic and human development strategies.

Among the benefits brought by these models, it can be stated that they establish indicators compiled based on existing resources, processes and outcomes. They can help detect and correct errors between inputs and processes, on one hand, and outputs and results, on the other. Indicators are trying to use contextual nuances to enrich the analysis of data that can be the basis for elaborating appropriate development policies. Within these limits, we can mention the contextual influences which, although facilitating the expression of corrective policies, they can hinder comparisons between different results.

The intangible assets topics should be addressed, primarily, in terms of human resource management and accounting. Properties from the balance sheet begin with intangible assets, ill-defined and recognized in the annual financial statements. Intangible assets created internally are not recognized in the balance sheet and in the explanatory notes, but only those purchased from outside.

All efforts must be directed towards the development of intangible assets and identifying human capital, their value representing a real growth in the general fund of globalization.

References

Becker G, (1993), *Human capital, Third edition*, Chicago, Il., University of Chicago Press,

Brooking, A. (1996) *Intellectual Capital; Core Assets for Third Millenium Enterprise*. London, Thomson Business Press

Edvinsson, L. & Malone, M.S. (1997) Developing a Model for Managing Intellectual Capital. In European Management Journal 14, no.4, pg. 356-364

Friedman, M., (1995) *Capitalism si libertate*, Editura Enciclopedica, Bucuresti

Kaplan, R.S. & Norton, D.P. (2001) *The Strategy –focused Organization (How Balanced Scorecard companies thrive in the new business environment)*, Harvard Business School Press

Lepadatu, Ghe., (2010), *Standarde, teorii si sisteme de conducere a contabilitatii pe plan mondial*, Editura Pro Universitaria, Bucuresti

Malhotra, Y. (2000) *Knowledge Assets in the Global Economy; Assessment of National Intellectual Capital* in Journal of Global Information Management 8, no. 3, pg. 5-15

Ross, J., Roos, G., Edvinsson, L. Dragonetti, N.C. (1997) *Intellectual Capital: Navigating in the New Business Landscape*, New York, Macmillan Business

Roşca, Gh. I., (2006), *Societatea cunoaşterii*, Editura Economică, Bucuresti

Stănescu, A., Deac, V. *Consideraţii privitoare la inovare ca instrument competitiv*, Revista Calitatea- acces la succes, Nr. 101 Special, 2009

Suciu, M.C., (2005), *Investitii in educatie*, Editura Economica, Bucuresti

Sveiby, K.E. (1997) The New Organizational Wealth; Managing and Measuring Knowledge-based Assets, San Francisco, Berrett-Koehler

*** *Standarde Internationale de Raportare Financiara. Ghid practic.* (2007), Institutul IRECSON

The Efficacy of the Promotional Operations and the Sustainable Consumption

Lecturer Silvia IFTIME PhD
"Artifex" University Bucharest
silvia.iftime@gmail.com
Associate Professor Emanuela IONESCU PhD
"Artifex" University Bucharest
emiionescu03@yahoo.com

Abstract

Sales promotion is today one of the vectors of marketing and trade which has an increasing professional character anchored in the current economic reality. Sales promotion refers today to products and services, manufacturers and distributors, physical brands and virtual brands. It addresses the customer, the public at large, or the professionals in the field.

Sales promotion answers multiple objectives such as: make the customers become regular customers, recruiting of new customers, increase of the customer traffic at the sales outlets, increase the value of the panel of shopping.

Key words: *sales promotion; efficacy sales; promotional efficacy; promotional operation; sustainable consumption.*

Sales promotion uses differentiated techniques to answer punctually its objectives. All of these techniques have the same purpose: sell more in a given period. The use of promotions must not affect the brand or product image. The main goal of the promotions is both the action on sales development and the notoriety of the brand image. This is why it is legitimate to speak of a double mission of sales promotion: efficacy-sales and efficacy-image.

In the 80s, sales promotion was just a marketing instrument used to accelerate sales for a short period of time, usually 3 months. There are two categories of promotions:

- Promotions-consumers, whose role was to make the potential customers buy products or services;
- Promotions-distributors, whose role was to determine the distributors to sell more.

After thirty years, this distinction became imperceptible. The mission of sales promotion remained unchanged: sell more in a given period.

The verb to promote comes from the Latin „pro movere", which means to go forward. However, this origin doesn't signify that promotions also involve selling.

Indeed, advertising has a great impact on the sales if we judge by the media budgets of the enterprises. The advertising of the advantages which the consumer may obtain by buying one product or another, the advertisement creates demand from the consumer, materialized in additional sales.

The marketing people observe most often the curve of sales at the moment when the advertisement spot is broadcast on the TV channels. For instance, the company producing the „Hochland" cheese, located in Sighişoara, observed that every time its advertisement spots where broadcast on TV channels, the demand from consumers

increased. Unfortunately, this demand didn't have the chance to become effective because the production cycle was elaborate, needing two weeks, plus the time for product curing and distribution.

The direct marketing creates a more personal contact with the customer. It places the customer in a favourable disposition towards the product or brand, thus with purchases. It is established that the direct marketing makes the products be sold.

By the fact that it interacts with the customer, sales promotion brings additional visibility to the product. This type of efficacy with impact on the level of product desirability is termed as "promotional efficacy'. It was observed that the directors of promotional campaigns are monitoring attentively both the expenditure and the results of the promotion, irrespective of the value of utilization of the promoted product (food, mobile phones, sports equipment).

The directors of promotional campaigns from Western Europe also pay attention to the sales with distribution, because they may be even higher than the double of the expenditure used to buy the broadcast time on the TV.

Otherwise said, if all the disciplines of communication must prove their efficacy, the punctual input to the consumer is specific to sales promotion.

This **promotional efficacy** adds to the **sales efficacy** which advertising or the direct marketing presupposes. It is at the core of the mission of advertising or direct marketing. Far from overlooking this mission for a moment, it is important to evaluate ex-ante a promotional operation, the ex-post verification and the storage in memory. This vigilance is essential because a promotional campaign whose input is not translated into more sales, or which has no impact on the brand image, is a failure and should not be rerun. The efficacy of the promotional operations to boost sales is difficult to assess, much more as the consumer is increasingly aware, therefore increasingly demanding.

This efficacy must be measured with objectivity and perspicacity, which is indispensable for the execution of a promotional operation.

1. Efficacy of the promotional operations

The promotional efficacy is measured with specific indicators whish, properly instrumented, may evaluate in an objective manner the promotional efficacy. The promotional efficacy is the capacity of a promotional operation to accomplish its goals.

The main goal of a promotional operation is to increase the volume of sales by making the goods or services more desirable. This goal can be accomplished through specific actions. These objectives are:

- Make the clients become regular customers;
- Recruiting new customers;
- Increase the traffic of buyers at the sales outlets;
- Increase the panel of purchases
- Modify the structure of the panel of purchases through promotional operations which aim to change the consumption behaviour in agreement with the principles of the sustainable consumption

The specificity of sales promotion is that the punctual input to the consumer may sell more products.

The secondary objectives of the promotional efficacy are accomplished by optimising the promotional programs.

A. Make the clients become regular customers

When the promotional programs aim to get regular customers, they are such configured as to ensure the correct perception by the consumers of the dimension of the economic advantage which the consumer will get by becoming a regular client buying goods or services from the same distributor. Most often, the programs designed to get regular customers are run through specific cards which give account bonuses upon buying merchandise from the same retailer.

In Romania, these cards are used in Gima supermarkets located inside the malls from Bucharest and from several other large towns, in the network of drugstores Sensiblu, Dona or Help Net and they make discounts for a given volume of purchases or for each product that is bought by the client.

B. Recruiting new customers through promotional programs is done with promotional techniques which aim to draw in new customers to the distrinution networks which promote new services and products. The testing of these products/services is most often done through promotional operations such as play / animation / tasting sessions or demonstrations.

C. Increase the traffic of buyers in sales outlets is a way to increase the volume of sales which uses promotional techniques such as animation (done by trained animators) or demonstrations, when household appliances or electronics are tested, or even special cutlery that belong to the category of new products.

The increase of the traffic of buyers at the sales outlets may also be done in specialised food stores using promotional techniques such as presents for the promoted foods that are purchased.

D. Increase the panel of purchases

This promotional objective is accomplished by actions such as:

a) Prolonging the life cycle of the products/services existing on the market;
b) Testing in consumption new products/services or those which are under homologation;
c) Diversifying the assortment of products and services provided by the producers / distributors already on the market;

a) Prolonging the life cycle of the products/services existing on the market may enlarge the panel of purchases because it presumes finding ways to obtain the products/services existing on the market by new technologies which will decrease the fixed production costs. The use of new technologies restates in discussion the issue of the traditional products manufactured in large volumes which are to be marketed at affordable prices. For instance, “Pate Ardealul”, manufactured according to a traditional recipe using technologies which allow large volumes of production, makes it possible to sell it at affordable prices, same as other traditional products such as „Scandia” brand, the „Tradiţional” range of products, among which tripe sour soup, beans and sausages. The reduction of the production costs of the products/services demanded by the market may prolong its life cycle because the lower production costs will entail lower prices. The purchase of products and services at lower prices makes the buyers purchase larger amounts of the products or services, increasing thus the panel of purchases.

b) Testing in consumption new products/services or those which are under homologation may contribute to increasing the panel of purchases because the new products tested in consumption act directly to change the consumption behaviour in terms of quality and value. Testing in consumption new products/services is done using promotional techniques such as tasting sessions, play and animation at the sales outlet. Testing in consumption products under homologation (drugs, cars,

electronic appliances) creates breaches towards the increase of consumption in terms of amount and quality, therefore of the panel of purchases.

c) Diversifying the assortment of products and services provided by the producers / distributors already on the market may lead to increasing the panel of purchases because the mew products manufactured with more sophisticated technologies act on the profitability of the production / distribution companies and concomitantly on the consumption behaviour, changing the panel of purchases. This is the case of the promotional brands such as Winny, Carrefour or 365, specific to the large and small distribution in Romania (Cora, Carrefour, Mega Image), which allow the sales of various goods at lower prices. It is established that the sales of merchandise at affordable prices increases the volume of sales. In other words, it increases the panel of purchases in terms of amount and assortment.

d) The restructure of the panel of purchases by promotional actions which aim to change the consumption behaviour in agreement with the principles of the sustainable consumption. The principle of sustainability designates the meeting place of three dimensions: ecology, economy and the social sphere. In relation with the consumer behaviour, the ecologic dimension of sustainability becomes the most important. On the other hand, the (ecologic) production and consumption can only be achieved if the consumer may afford them and if the consumption and production are done under acceptable social auspices. But the ecologic products are expensive, which influences the actual consumption. This statement is supported by the market share of the environmentally-friendly products. For instance, the consumption of bio cotton is just 1% of the world offer, the market share of the bio foods within the total consumption of foods in Europe was just 0.2% in 2002 for the pig meat and 2.3% of the fruits.

The sustainable consumption doesn't always mean giving up quantity in favour of quality, rather a change of the consumption behaviour even if the absolute volume of the consumption might be considerable, which would determine the absolute increase of the sales of products and services. How can one act through promotional actions to restructure the panel of purchases in favour of healthy products? To exemplify, we will give the example of "Nutriday Danone" yogurt packed in a small plastic container and sold for just 0.90 lei. It all begun with a promotional program based on a promotional price which allows higher volumes of sales. The program included TV spots which induced the idea of choosing the product from a range of options in order to keep the family healthy. "What would you do if you had 0.90 lei?", is the question which the family members must answer. The wife and mother answers: "I would choose Nutriday yogurt" – health for my family. The start of a promotional program with promotional prices allows higher volumes of sales in the unit of time, which influences the size of the orders made by the distributors and the prospective reduction, at the end of the promotional campaign, of the unit price. The change of the consumer behaviour and the restructuring of the panel of purchases in favour of the ecologic / sustainable products / services is, also, done through promotional actions whose purpose is to educate, inform and make aware the population regarding the effects of the sustainable and ecological products and services.

References

www.daily-business.ro
Collection of „Financiarul", Bucharest, 2009-2010

A Philosophical Introduction to the History of Statistics' Conceptualization

Senior Lecturer Gheorghe SĂVOIU PhD
The University of Piteşti

Abstract

This paper describes an attempt to an original approach to the history of statistics' conceptualization, otherwise than in the most introductory parts of the statistics' books. From identify difficulties to write something new and useful in order to discover new understandings of statistics, this introduction to the history of statistics' word, without excessive historical details, is more a philosophy way of being statistics, according to its specific thinking formats, that have evolved during the time. A small number of questions about statistical significance and its history, but few consistent answers are the essence of this article.

Key words: *statistics, science, meaning, concept, path*

It is perhaps both early and late in the day, when the author and the editor converse on the Internet, each of them sitting in front of a computer, on two city far apart, at a long distance that separates one from the other, pondering over the idea of writing a necessary book on the history of statistics' meaning or conceptualization. A stream of questions crosses the time and space that separate the two of them – only apparently, no doubt. What really new and useful things about the history of statistics could one be able to write now? What would the original angle be, or what would an original and pragmatic approach to that topic look like? What are the nature and essence of statistics that deserve to be revealed to such a diverse audience?

The answers actually generate more questions, which are increasingly connected with ordinary life, but equally difficult, appearing at the other end of the world.

A child is looking at the sky, against the background of which birds are passing, in a perfectly aligned flight that reproduces an arrowhead, and wonders where and why they are soaring in that shape, and also whom that flying arrow actually belongs to. A student having missed a test is attentively listening to the teacher letting his mates know the marks they had got, trying to understand their music, while not being able to help wondering what he hears so many marks lying around the average value, and so few of them represent maximum or minimum values.

A teenager finds out, after the summer camp she is on finishes, that the associations or the original pairs can no longer be found, apart from a small proportion, at the end, and expresses her queries regarding the completely unknown causes and criteria that have substantially changed the composition of the couples. A family of judicious adults are dispassionately considering the sex options before a child is born, which are naturally limited to male or female, trying to select an alternative that could ensure the height required to practice a sport that has facilitated the meeting, as is basketball in an American college; they start from the height of the parents, and also from the most recently born members of their friends' families – but this, too, generates many more questions of even greater intensity.

An old man looks back on his life, and wonders, with no definite answer, whether joy or sadness were the dominant second or minute, in his seemingly endless chronological series of days, months and years that have passed the at the speed of thought…

Of course, the readers will ask themselves, continuing this endless cycle of questions and queries, what is the point of those questions, which is the common element of all the above, and especially which is their connection with the history of statistics?

The child's question, the student's dilemma, the paradoxical finding of the teenager, the couple's problematic decision on the desired sex of the baby, bearing the potentiality of an appropriate height, the happy or sad dominant of the moment, seen in retrospect, which defines a person's life, they can all get false solutions or final findings with or without the contribution of the science of statistics, but they cannot become truths established as repeatability cases, or regularities through specific laws having to do with graphic literacy, the normal distribution (or the normal curve) with the average man, regression and association, or the theory of survey, in any other way than with the help of the science of statistics, and statistical thinking.

Thousands of pages have been written, and will certainly be written about statistics and the history of that type of thinking, never dealing only with positive, and never with entirely negative aspects – in other words, without anger or bias. After Shakespeare first mentioned the job of a statistician in one of his plays, John Gaunt entered the pages of encyclopedias as the world's first statistician, by means of some apparently simple Bills of Mortality; then there came the turn of Gottfried Achenwall, the fecund spirit of the school in Göttingen, to popularize the concept of statistics in universities, using it in the sense of in-depth knowledge of the status, or of each state, a term taken over from his teacher Martin Schmeitzel. A. L. von Schlözer, Achenwall's most loyal follower, as well as his successor at that university department, gave the concept its academic splendour, through the famous aphorism Statistics is history at rest, and history – statistics on the move, noting also that statistics cannot be conceived or defined outside the realm of the figures, and thus strengthening the essence of statistics by numerical measurements.

There is no other science with so many meanings as statistics, from the well-known institution, placed under the hand of a king or an emperor and ready to offer him information about population and welfare, to the set of data, from the sense of a specific activity to the significance of a special science, from the method or the way of thinking about the quantitative measuring process of surrounding reality, to the contemporary concept of representative information, etc..

From that day on, the history of statistical thinking became a wonderful adventure of human thought, unparalleled through its consequences and language, through its methods and the tools kindly and generously provided for scientific research in general. Always, the history of statistics multiplies its meanings as a science and enriches them with new approaches to reality. If René Descartes identified thought with the consciousness of the thinking individual, and considered it as something given, which is to say a divine gift (the evidence of the existence of the self being the very in vivo realization of the process of human reflection or reason: I think, therefore I am), the diversity of the thinking of the statistical type results from the complex historical approach to defining statistical thinking itself. In relation to each single science, the theory of definition has become a true geometric locus of a number of increasingly diverse attitudes, bringing together the logician's rigorousness and the linguist's creative signification, the lexicographer's careful formulation and the philosopher's discernment, the conceptualization and methodology in

identifying the repeatability in populations, which are characteristic of the statistician, and the educationalist's practice-checked precept, the identity of communicated mathematics and cybernetics message and the equivalence of meaning for both the recipient and the transmitter, in communication and negotiation.

Scientific definition, regarded as a whole, brings together, in a single sentence, a subject, the defined element (the definiendum), and a predicate or the defining element (the definiens), which describe the same class of objects, and, as a direct result of the theory of definition, is intended to facilitate knowledge and clarify the meaning of the terms that we use, although it offers very different meanings itself. If the ancients considered definition to mean an utterance, or speech act, which revealed the essence of a thing, and, at the height of the Middle Ages it already delineated the names of the objects rather than the objects themselves, giving new meaning to a word by means of other, earlier words, today, in modern mathematics and logic, definition is turned into a syntactic operation, or a rule that allows mutual substitution of two expressions, or a rule allowing the translation of an expression from one language into another, going as far as identifying a convention of language use.

The classics tried to define the essence of the phenomenon, using similarities (the genus proximus), or the difference, while our contemporaries have long given up restricting definitions. The definition has been delimited as a general cognitive and pragmatic communication operation, which has first occurred at the level of language and experience, in scientific theories and hypotheses, and finally, in the formal systems used by logic, mathematics and statistics. The subject (the defined element) is equal "by definition" to the predicate (the defining element). Univocality, as signification of time, unaltered in time and space, becomes the desideratum of a precise definition, while ambiguity and imprecision are expressions of imbalance and content inequality, materialized in the sentence (or the statement) of the definition. The criteria that are necessary and sufficient for the definition are related to the presence of synonymy (equivalence), and the absence of ambiguity. The subject (the defined element) is the linguistic synonym, and a non-contradictory or logically unambiguous equivalent, in relation to the predicate (the defining element).

Reconsidered through a similar historical perspective proved by evidence, the first definition that has come down to us belongs to the Greek mathematician and philosopher Archytas of Tarentum, Plato's contemporary and friend, who considered it necessary that the definition should refer to the material or the constitutive elements of the defined object, as well as the form or manner of their combination. If definition with Plato is revealed by contradictory discussions, or series of successive approximations for the same object, with Aristotle definition is for the first time restricted, and so any definition should be made by means of the proximate genus (the closest in point of sense), or the specific difference, thus becoming a speech or utterance that expresses the essence of a thing. The definition uses either a speech / an utterance instead of a name, or a speech instead of another speech, since some things expressed through speech can also be defined. Aristotle also formulated the first conditions for the words within the definition, i.e. the definition must not contain homonyms or metaphors, or any other words improperly used, but unambiguous expressions; it must not contain rare, make recourse to words of a general character that enumerate known aspects or issues, without increasing the accuracy of the delineation, it must not include differences that are unnecessary or narrow the scope of definition, or repeat the same words. According to Marcus Tullius Cicero, the definition is part of the class of the terms indissolubly related to the nature of the topics discussed.

Subsequently, the Cartesian approach emphasized the importance of defining the terms that we use in the language of science; John Locke's empiricism acknowledges, in a

trailblazing attempt, the impossibility of exhaustive definition, or of defining all the terms in a language, thus recognizing the need for simple ideas or undefined terms. Definition and demonstration are, according to Blaise Pascal, the operations on which the art is based of persuading the speaker of the truth of a thesis, and the ideal method of organizing information in a particular science. Also, Blaise Pascal formulated, in his geometric method, the three fundamental rules of definition construction, the first being that things that are too mundane or well-known must not be defined, no less than things for which there are no clear terms; the second emphasizes that no obscure or equivocal term should be left undefined, and the last rule refers to the fact that only simple, well-known words should be used in definitions.

Antoine Arnauld and Pierre Nicole, the representatives of Port-Royal logic, consider definition a shortened form and a concentration of the language used in science, which allows synthesizing, in a single word, a complex idea. Since Joseph Diaz Gergonne's time until today, defining has been turned into announcing that a standardized expression has been agreed on for conveying, in future, a set of ideas, by using a single word chosen arbitrarily.

The definition is equivalent to an identity of meaning between two expressions of the same set of ideas, of which the simpler and more novel is arbitrary, while another, a more complicated one, is stated in words whose meaning has already been established by either usage or earlier conventions. John Stuart Mill considered definition as a simple statement or a declarative sentence about the signification of a word, defining names rather than material objects. He understood by the denotation of a word the objects (entities) to which it referred, and, by the connotation of the name, all the notes, shades or attributes the objects denoted have in common, and are evoked by uttering the name.

His schema for defining connotative names can be rendered thus: X is such a name that, if applied to a given object, it means that the object in question has the attributes Y_1,..., Y_n. According to John Stuart Mill, the perfect definition will exhaust the wide variety of the notes, that is the meaning of the term, becoming a list of all the predicates, which, in empirical sciences at least, is practically impossible. In Augustus De Morgan's view, the objects of the definitions are made up of complex names, to the extent that they can rightly be substituted by other terms.

Augustus De Morgan distinguishes the nominal definition, as a substitution of longer names by other names, usually shorter, from the actual definition, where the terms of the predicate designate a criterion for selecting objects to which the defined term is applied. The real definition cannot rid of the use of names and, therefore, when it comes to it, there is an equivalence between two expressions. According to Gottlob Frege and his view, specific of symbolic logic, definitions are done in an autonomous domain of concepts (meanings), which are inter-subjectively communicable, and through establishing complete equivalence, apt to substitute.

Without complete definitions and apparently final with respect to the time dimension, there is no stability, equilibrium or conceptual order, in any of the modern sciences; the definition provides a sharp outline for every concept. Gottlob Frege and Blaise Pascal, declared enemies of partial definitions, changed the definition into a solved equation, where the left side or the defined part (Dfd) coincides with the unknown element of the equation, and the defining part (Dfn) corresponds to the right side of the solved equation, where there are no unknown elements: (Dfd) ≡ (Dfn). For the authors of this book, Frege's definition of statistics represents a fusion, or a reduction through consonance

(reversibility, reciprocity, energy identity) of the unknown to the known, a fusion of the unknowable of statistical thought to the history of a science whose name is perhaps of great significance at present, that of statistics.

In keeping with the operational definitions, another specific class of definitions, described by Physics Nobel laureate Percy Williams Bridgman, to define a term or concept is synonymous with describing it as a corresponding set of operations. The functions of modern definition remain that of clarifying and shortening discourse, communication, negotiation, scientific research, etc. Contemporary definitions often designate notions through the series of distinct operations that characterize them, yet do not necessarily reveal the nature of things. The target of definitions remains conquering the longed-for Cartesian doubt, thus avoiding both ambiguity and imprecision.

In conclusion, the validation of a definition occurs if, in a sentence where there occurs the defined element of a definition, the latter can be replaced by the defining element without in any way affecting the meaning of the entire expression meaning something – so, the definition has been correctly formulated. Scientific definition can also be seen as a process, when it targets the sequence of logical operations meant to identify a designatum or a common referent (of a name, or of a general nominal expression). Statistics, in the sense of data, results from its definition as a process, and is the increasingly invoked equivalent of its specific data research approach, with the declared intention to transform them into information.

The fundamental typology of definitions distinguishes extensional or enumerative definitions, and ostensive or encyclopaedic definitions (by imposing a name through the act of indicating or presenting the object that the name applies to, by saying it while at the same time indicating the designated object). For the same authors, in an extensional definition, statistics became the science that deals with systematically expounding terms or concepts, principles and methods, techniques and tools; a science which finally benefits from laws, which never refer to the individual or the entity, but the population or the system entities to which each belongs, while, in a definition of the ostensive type, statistics virtually identifies with its institutional significance, namely the national institute of statistics, with its statisticians and statistics (W. E. Johnson).

An equally important class of definitions are those of the intentional type, which confer properties or characteristics that must be held by defined element. The methodological significance attributed to statistics is rather the result of an intentional process; statistics becomes a collection of methods that allow us to make right decisions, the best in the event of uncertainty (Abraham Wald).

A secondary typology in the theory of the definition of statistics, provided by concrete utilization, identifies analytical definitions (which list the acceptable uses), stipulative definitions (which generate a new use), and circular definitions (which are as a rule less allowable, because they use the defined element within the body of the defining element). According to the classical analytical definition, statistics was a matter of describing the state until the seventeenth century, and, in a stipulative manner, modern statistics becomes an inference or an extension of information from the sample to the total population, after the discovery of the survey theory. An implicit and intentional circularity occurs in defining statistics by the authors who increasingly identify statistics with information; it actually becomes a representative concept of contemporary information and its circulation –symmetrical in a theoretical plane, and asymmetrical in the real plane.

Definitions can also be inductive, when, beginning with a careful analysis of the individual, one gradually reaches generalization, or deductive, where the definition operation is started from the generalization or major premise, and the logical conclusion is

established through the individual or minor premise. Several outstanding classics, founders of a number of national statistical institutions, defined inductive statistics, nearly one and a half centuries ago, stating that it is for any government what are to man what his senses (Dionisie Pop-Marţian).

The ordinary or commonplace meaning of statistics, according to the mass communication media, is that of a series of data or information, irrespective of whether the series itself concerns the political, economic, sporting, religious or cultural world, as an activity that deals with the study of numbers, with putting them into tables, with summing by rows or columns, with synthetic representation in graphs, with the affirmation of the presence of errors, with testing the validity of statements (hypotheses), etc.

Without considering false such a meaning, it can be said that the previous meaning. that of an obvious, easy to use and shallow knowledge of data, is simplistic and ambiguous, which has led to ironic interpretations or trivially jocular meanings, such as "statistics is like a bathing suit, which shows what everyone knows, and hides what everyone wants to see" (Georges Vedel), or the famous formulation "there are lies, big lies, and statistics" (Mark Twain). A relative truth contained in any of those malicious statements is that the central subject of statistics remain numbers (although the statistics of variables of a non-numeric type has a growing importance), and the statistics provided to the public by the media often include laws or regularities which are obvious at the level of the crowds, which seem to hide individual behaviour. To record the results of some research in a quantitative (numerical) form has now become a habit, followed by other ones, such as collecting, taking apart to regroup, joining and combining, aggregating data, while often forgetting that all those practices and operations are nothing but statistics.

The definition is the most important way to ensure the accuracy of specialized terms, but the message, the meaning and its sense will have to be the same for both emitters and recipients, as well as expert and lay recipients. This seems to motivate such a long digression on the definition of statistics. In terms of history, the definition relatively overlaps with the development of logic in general; the definition in logic being that operation through which the characteristic notes of a term are indicated, which rigorously set it apart from any other term.

The definition of the logical type of today's statistics concretely identifies it with the special thinking a human being displays if faced with a large amount of data. Though it started as a method of measuring what was required to measure, and calculating the change (variation) of the initial measure, replacing qualitative uncertainties for numerical or quantitative certainties, statistics has currently reached typical manner of thinking through data, specific to scientific research.

Die *Freunde am Denken*, in the meaning of *joy of thinking*, characterizes almost all recent defining of statistics in the last decades, in science worldwide. There are so many concrete ways of thinking, from mathematical thinking to selective thinking, from logical thinking to the thinking through models, from deterministic thinking to the experimental thinking, from infinity thinking to the thinking of uniqueness, from triadic to binary thinking – and the list could go on…

In such a variegated typology of thinking, what then does thinking strictly statistically mean? Or, to put it in a simpler way, could that thinking per a contrario face, or could what is statistical thinking compare with what is not statistical thinking? Statistical thinking means to interpret the individual rather than the general, to ensure comparability rather than stability, thinking not in a linear or flat manner, i.e. in a single- or two-

dimensional manner, but rather three-dimensional (in time, space and structurally, or organizationally).

Statistical thinking does not mean thinking under the extreme pressure of accuracy, but interested in the general trends and tendencies, approximated spatially, temporally and structurally or organizationally; thinking statistically does not a priori exclude error, but rather requires to accommodate with it, dynamically, constantly measuring and reducing it; it absolutely demands to scientifically live in the increasingly limited shadow of error and in the sun of knowledge and its systematic evaluation. Statistical thinking does not only mean to simplify reality, but rather to multiply it, from the individual to the general, to finally reduce it, to the simultaneous interest of both the general and the individual.

Another aspect of statistical thinking, considered essential as well, is its methodical and deductive nature. Thus, certain simple methods of statistical thinking, which belong to the pre-statistics of the scientific world, such as grouping and the central tendency, deductively pave the way for some other methods, more profound, such as the analysis of variability, of correlation and statistical selection. Statistical thinking does not coincide with the mere validation of the accuracy of a method as a guarantee of its value, but rather tests it permanently. Statistical thinking is not only to identify and order questions and factors or effects, but also to speculate, generating hypotheses, to determine their meaning and validity. A statistical hypothesis, if well formulated, is a statistical research or a half-solved statistical inference.

The most natural definition of current statistics seems to be to think by means of the data obtained by measuring, recording, collecting, and, at the level of an expression as simple and general as possible, statistics becomes the science by which you learn how to think with numbers. What does thinking with data or figures mean? Theoretically, it translates as a process of research (cognition), which will be turned to account to identify, integrate and communicate that information at a decision-making level, through complex indicators or categories and graphs as support of statistical thinking, and practically, it is tantamount to giving an answer to the logician faced with the information explosion of data at the time we live.

Statistical thinking is present, step by step, in provisionally identifying a problem, by exploring an amount of data, in delimiting the impact and modelling the solution to the problem identified, as well as continually fitting the final model substantialized through data. Statistical thinking is closely linked to empirical research process, to process of error filtration or purification and of generalization, by means of the primary data available. Statistics is therefore understood by the authors as a way of thinking that brings together a variety of strategies intended to increase or expand scientific knowledge through data. In one of the most reasonable approaches, the content of the complete approach of statistical research includes four dimensions, which overlap in time and are distinct in terms of temporal phases (Chris Wild and Maxine Pfannkuch): a) the size of the investigational cycle, in keeping with which statistics is a system of thought focused on analysis and the initial approach to the scientific problems identified by observation, processing and research, the cycle involving: defining the problem, the investigation programme, the resulting data, analysis and interpretation, conclusions, etc.; b) the size of the interrogative cycle, compared with which statistic is a system of thought focused on solutions or alternatives open to the questions and problems of the investigational cycle, comprising generating alternatives or solutions, search and selection of alternatives or optimized solutions, interpretation of the variants or solutions, commenting on the solutions or alternatives, the variant, option or solution which was chosen in the final decision; c) the

size of the typology of the ways of thinking, which believes that statistics is a system of thinking that includes, apart from the general kinds of strategic thinking, the research of the explanations, the modelling and practical-technical thinking, five other, exclusively statistical, types of thinking (recognizing the need for data to initiate a process of statistical thinking, a trans-numeration as transformation from non-numerical into numerical, in order to facilitate the process of thinking, identifying and analyzing variation, the recourse to the ability to reason through population models aggregate from individual models, and context-statistical reciprocity in the process of thinking, addressed as integration of statistical thinking into the context of the real or the tangible (statistical thinking applied to the variation obtained by means of modelled data will tell its story about the real or the context, justified mathematically); d) the size which sums up the psychological parts of the investigations under the concept of personal dispositions, according to which the originality of statistical thought is also given by the statistician's psychology or personal disposition, uniting the attitudes useful to the statistical researcher, from skepticism to imagination, curiosity, an open mind to ideas in the competition against scientific prejudices, deep understanding, logical attitudes, commitment and perseverance, etc.

Statistical thinking does not omit to make recourse to the concept of ergodicity, as a true perpetual motion, which is usually described as a simultaneous objective property of a set or population, and also of each single individual. In a statistical survey of a system two different results can be obtained, summarized in two distinct regularities or laws, resulting from a statistical analysis of the whole set or human population studied at some point, and also a statistical analysis of a single person (a statistical unit or individual) over a period of time. The first regularity might not be representative of the time, while the second may not be representative of all men (all statistical units). An investigation through statistical thinking is called ergodic if the results of the two types of statistical or legitimate resulting from statistical thinking will coincide. Most of the statistical population, especially a human or biological populations, addressed the system is not ergodic.

The new motto of thinking represented by statistical research emphasizes the need to understand phenomena through the data, and identify the information content present in the data, as the inference of statistical thinking in the knowledge profoundly reformulates the very academic curricullum. If analogy, induction and deduction remain the main forms in which the processes of abstraction and the thought processes of a mathematical type occur, grouping, association and inference remain essential in classical statistical thinking. Later on, with the help of software packages specific to the computer era, statistical thinking, universalized in trans- and multi-disciplinarity will contemplate the horizon of an infinity of potentials. In conclusion, the option of defining statistics as a way of thinking through data, based on using a variety of strategies to increase or expand scientific knowledge through the agency of the same data, comes forth as the future dominant for the history of this memorable science, in the present book.

After a short introduction, the contents of this book details the beginnings of statistics and its specific kind of thinking, explains the connections between statistics and probability, presents the portraits of the great statisticians, explains the contemporary applications, underlines the trends in the computing era, and the new instruments called statistical software, looking forward to the future.

References

Biehler, R., (1994), *Probabilistic Thinking, Statistical Reasoning, and the Search for Causes –Do We Need a Probabilistic Revolution after We Have Taught Data Analysis*?, The IVth International Conference on Teaching Statistics, Marrakech.

Borovcnik, M., Peard, R.,(1996), *Probability*, A. Bishop (eds.), *International Handbook of Mathematics Education*, Kluwer Academic Publishers, Dordrecht, , pag. 239-288.

Chance, B. L.,(2002), *Components of Statistical Thinking and Implications for Instruction and Assessment*, California Polytechnic State University, Journal of Statistics Education Vol.10,No 3 www.amstat.org / publications/se/v10n3/chance.html

Hoerl, R.W. Snee, R.D. (2003), *Statistical Thinking: Improving Statistical Performance*, Pacific Grove, sau M. Stuart, (2002), *An Introduction to Statistical Analysis for Business and Industry-A Problem Solving Approach*, Hodder Arnold, London.

Kreager, P., (1988), *New Light on Graunt*, paper published in „*Population Studies. A Journal of Demography*", vol.42, Nr l, martie, pag. 120 -140.

Moore, D. (1990). *On the shoulders of giants: new approaches to numeracy*, paper published in Steen, L. A. (Ed.) Washington, D.C.National Academy Press. pp. 95-137

Săvoiu, G., (2008), *The Scientific Way of Thinking in Statistics, Statistical Physics and Quantum Mechanics, Romanian Statistical Review* no.11/2008, S XIII pp. 1- 10 *http:// www. Revista de statistica. ro/sumar 2008.html.*

Sylwester, D. (1993), *Statistical Thinking*, AMSTAT News, February

Wild, C.J., Pfannkuch, M.,(1999), *Statistical Thinking in Empirical Enquiry*, Department of Statistics, University of Auckland, New Zealand, *International Statistical Review*, pp. 223 - 265

Theory Forms in Unemployment

Senior Lecturer Elena BUGUDUI PhD
Artifex University, Bucharest
bugudui@yahoo.com
Ghenadie CIOBANU PhD
I.N.C.S. M.P. S.
ghenadc@gmail.com

Abstract

This article aims to develop a group of Romanian counties, using classification techniques forms uncontrolled, depending on several variables that affect unemployment, with Ward's algorithm and distance Cebashev type and complete aggregation technique. The approach aims to establish common features and highlighting the phenomenon of regional typologies labor vacancy. In our study, considering the simultaneous criteria for classification and ranking of unemployed based on the features that define the economic criteria and / or demographics. Identification of unemployed belonging to certain classes with well defined individuality allows better correlation of unemployment phenomenon with other socio-economic phenomena such as: fitness for a particular type of retraining, crime control, optimal allocation of resources to areas and territorial, the evolution of living standards.

Key words: *unemployment, cluster, region, classification, clustering*

1.Introduction

Scientific activities in general, aim to differentiate the structure of sets of objects by category or specific classes, based on fundamental properties of objects, such structuring are known by various names such as: classification, clustering, grouping or discrimination. Operation of these groups allows the separation of legitimate development of a phenomenon or identify plausible causes of a phenomenon in explaining diversity. For example, we retrieve information about the number of unemployed by county and test whether they are grouped in certain regions: hard hit by unemployment, the environment affected or less affected. In our case, we try to classify counties as variables and let unemployment influence classification algorithm to determine the differentiation more or less considerable, decide how many geographical areas can be defined by the typology of unemployment.

The cornerstone of uncontrolled type classification (clustering) is the concept corresponds to the concept of classifier distance. This concept of controlled forms recognition systems and is key for assessing the differences of objects, and evaluate differences of clusters.

Depending on the procedures used, the initial assumptions made and the nature of their application results, cluster analysis methods fall into two broad categories:

• Hierarchical clustering methods and clustering methods aggregation and division, this category includes simple aggregation method, aggregation method, method of aggregation environments, Ward's method;

• classification by partitioning methods or iterative methods, including the K-means algorithm, the algorithm of K- medoizi, CLARA algorithm, fuzzy algorithms and others.

In the analysis of the vacancy level in territorial labor, clustering techniques will be used to structure the administrative units of the country after the occupation, allowing highlighting the extent to which geographic factor influenced the default level of unemployment and living standards .

2. Theoretical aspects of cluster analysis techniques

Cluster analysis is intended to group statistical observations, identified by a number of features in a small number of classes as homogeneous or identify a hierarchy of classes, which include each other, so that the phenomenon can be analyzed on different levels of depth. Regardless of the method, class composition is formulated so that units belonging to a class to be as close to each other, and grades up to be as different.

Analysis from cluster have two stages:

¬ choice of n-dimensional arrays to measure the similarity between units, to all observed characteristics;

¬ defining an algorithm for the formation of classes, so that differences between groups are as large in terms of variability, while units in the same group to be close (homogeneous group).

Not all features will always be considered, but will test various types of work using a time one of these variables and various distances and methods of aggregation. Index of proximity between counties is a number that expresses the similarity / difference between the two counties, taking into account characteristic values observed simultaneously. If all the p variables are quantitative, can be used any distance as proximity indicators. Of the Euclidean distance dist mention:

$$d_{kl} = \sqrt{\sum_{i=1}^{p}(x_{ki} - x_{li})^2}$$

and Mahalanobis:

$$d_{kl} = \frac{1}{1-r^2}\left(\frac{(x_{ki} - x_{kj})^2}{s^2{}_k} - 2r\frac{(x_{ki} - x_{kj})(x_{li} - x_{lj})}{s_k s_l} + \frac{(x_{li} - x_{lj})^2}{s_l^2}\right),$$

where r is the coefficient correlation between two variables, and s is the standard deviations of the two variables.

If data are qualitative, can be used as a means of assessing the distance, Euclidean distance (rectangular), or often, the rank correlation coefficient.

It appears that if we work with absolute data value for the distance between two units (ie two lines of the matrix) is strongly influenced by the characteristics of each unit of units. Therefore the initial data are normalized statistical practice within the meaning of their replacement with deviation from the mean, standard deviation relative to:

$x_{ij'} = (x_{ij} - \overline{xij}) / s$

Proximity indices between classes (counties, in our case) measures the distance between two clusters (groups of counties). There are several methods for evaluating the distances between clusters:

• Method closest neighbors ("single linkage")

• Method of farthest neighbors ("complete linkage")
• Average distance between pairs method ("average linkage")
• Centroid method.
• Ward's method.

3. Empirical Study

Information on unemployment rates, number of local units active in industry, construction and services, balance of international and internal migration (urban-rural), number of graduates, employment resources, ie spending unemployed, were summarized in a table where each county corresponds to an observation (Figure 1.). Applying distance and classification techniques discussed above, resulting clusters were visible levels of aggregation, based on similarities and differences between the counties studied items (using the statistical software package).

Evaluation of "distance" between counties and between groups of counties, in terms of unemployment. With observed data, constitute a matrix X (n * p), where n is the number of counties, and p is the number of measured variables for each county. He opted for eleven variables: unemployment, labor resources of the county, the number of graduates, number of local units active in industry, construction and services (branches with major impact on employment), unemployed costs, number of graduates, the balance internal migration (rural-urban), and that the balance of international migration, development region as a factor driving employment.

Case 1. Cluster analysis county by: economic and demographic variables on unemployment - unemployment, the number of local units in the industry (ULAI), construction (ULAC) and services (ULAS), the number of graduates (graduated), unemployment costs (chCuSomaj), international migration balance (IMS) and internal (rural-urban, SMUR). Distance used was distance Cebîshev and complete aggregation technique (complete linkage).

Analyzing the dendogram, the highest level, we classify the 42 counties in two categories, ranging aggregation threshold, the next levels are delimited three, then five classes.

Based on the results provided by statistical package, we see that the highest level of decomposition is outlines two types of unemployment, a characteristic atypical Bucharest and several counties (PH, AB, HD, BV) and another consisting of the remaining counties.

The next level of depth detaches Bucharest group of four counties, and later, the remaining counties are subdivided into two micro types; first includes counties with a high occupancy rate of labor provided by the development of economic sectors based the working or extraction of resources (an average unemployment rate of 5.4%, below the national rate of unemployment) and the second characterized by high labor migration, ie migration counties with the highest International, Sibiu (-714 persons), Bacau (-603 persons), Neamt (-652).

Four levels of detail for each cluster supported in part clarify the classification depth, reaching a maximum of 3-4 counties selected cluster (Fig. 2.).

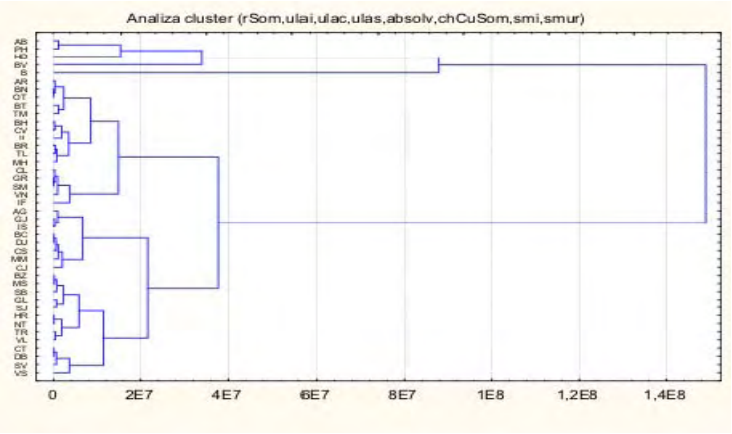


Figure 1. Cluster Analysis of the counties where unemployment and the characteristics of development

Case 2. Cluster analysis county by: demographic characteristics concerning unemployment - the unemployment rate, number of graduates (graduated), expenditure on social protection of unemployed (chCuSomaj), international migration balance (IMS) and internal (rural-urban, SMUR).

Distance used: max C C (Cebîshev), using Ward's method for evaluating proximity of two clusters.

This type of cluster analysis will attempt to verify the typology unemployment counties is influenced by the development, expressed by the number of active units in industry, construction and services, or their influence is already taken by the characteristics of the unemployment phenomenon referred directly to: expenditure social protection of unemployed (chCuSomaj), international migration balance (IMS) and internal (rural-urban, SMUR), this difference could be an indicator of adequacy of social assistance measures of unemployment.

Dendogram physiognomy remains the same, is observed (figura2.) that there are major changes from previous clusters, the first level grouping is the same counties and most significant division as "persistence" (level 4) is also done in four macro-clusters , as before. Notable differences occur only on levels 3, 4 and 5. Thus, without active local characteristics of each unit, Brasov county Hunedoara county is associated to form a single cluster, while unemployment in Bucharest remains a distinct typology, forming a single cluster.

Group Bihor county, Buzau, Mures, Iasi, Sibiu and Galati almost completely migrate to another cluster, while the counties of Maramures, Florida, Vaslui high incidence of unemployment, remain as a single cluster. Using Ward's algorithm reveals that aggregate counties late, that the lower levels (between 3 and 5, as shown and in Fig. 2.).

The differences are explained by the very idea of the method, so that variation within the same be as small classes, while inter-cluster variation to be large. Using other distances (eg. Manhattan) is without major modifications, it can be deduced that the structure of classes is roughly similar for all techniques presented. Of all, it appears that Ward's algorithm is more stable than other techniques, being the connecting link between the other methods, is explained by the fact that it considers all cases of analysis, based on the calculation of intra-and inter-cluster variance.

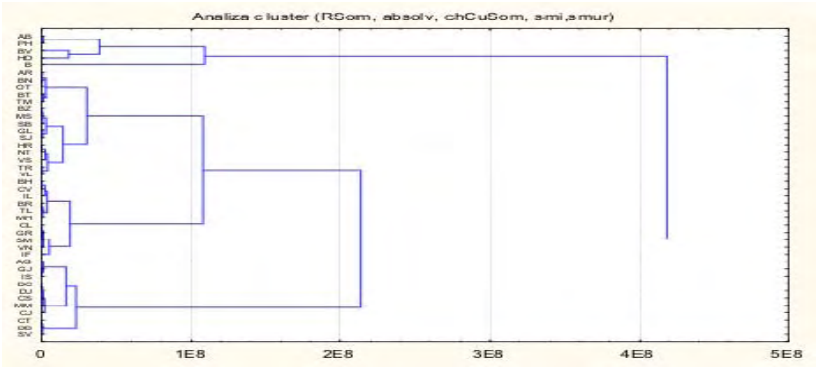


Figure 2.Cluster Analysis of counties by demographic characteristics, unemployment

4. Conclusions.

With two clustering results, it is interesting to put out and considered variables influence the phenomenon to the attention I in this study. For Ward's algorithm and type away we Cebishev an analysis, based on indicators provided by STATISTICA software to characterize the clustering process.

We can easily see that a major impact on regional classification have had unemployed social protection expenditure, by their size, they have established separate group (Fig. 3.), Followed by the number of graduates and units active local services.

Only the subsequent levels, the unemployment rate is associated to the clustering effect, with the balance of international migration, the next cluster consisting of local units in the industry, local units active in construction and rural-urban migration balance.

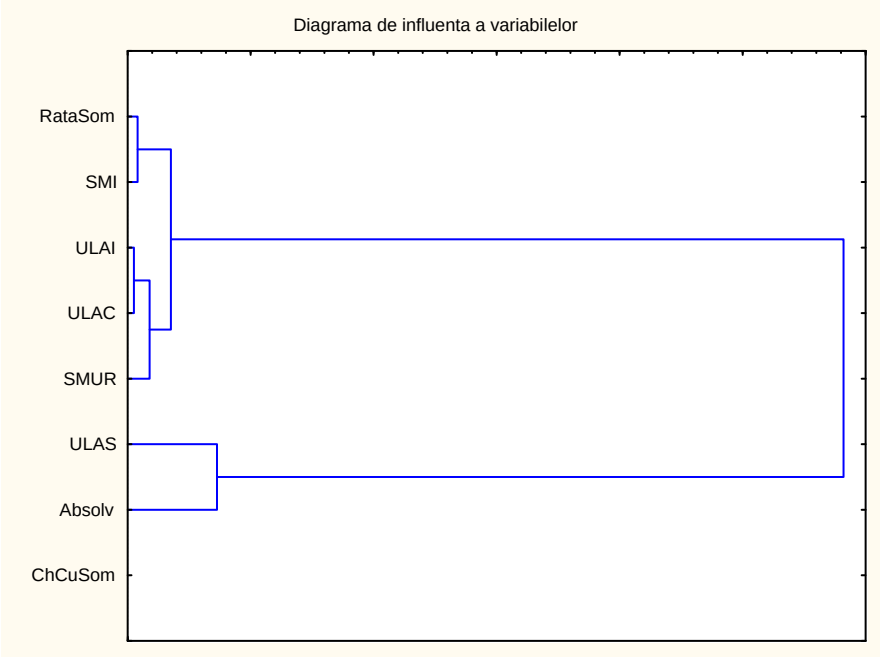


Figure. 3 Influence of variables in the clustering

References

Bugudui, E.(2009) *Quantitative methods for measuring the degree of vacancy in territorial labor*-thesis- Phd.ESA-Bucharest,

P. Congdon, (2004)Applied Bayesian Modelling, John Wiley & Sons Ltd, Chichester, 2003

D. Dumitrescu, H. Costin, Neural Networks, Theory and applications Teora Publishing House, Bucharest,

Dobrescu E. (2002) Transition in Romania, econometric approaches Publishing House, Bucharest,

Neagoe V., Stãnãşilã O. (1999) pattern recognition and neural networks, Matrix Rom Publishing House, Bucharest,

Ruxandra Gheorghe, (2001) Data analysis, ASE, Bucharest,

O. Stãnãşilã Neagoe V., (2005) theory of forms recognition, Publishing House, Bucharest,

Saporta G., Probabilités, Analyse des données et Statistik, Ed Technip, Paris, (2000).

Voineagu V., F.Storm, Voineagu M., Stefanescu C. (2002) Factor analysis of phenomena at regional, Ed.Aramis, Bucharest.

Colentina Surgical Clinic Experience in Treatment of Rectal Cancer

Bogdan MASTALIER
Cristian BOTEZATU
Surgical Clinic of Colentina Hospital

Abstract

Colorectal cancer represents the fourth neoplasic localization after the bronchopulmonary, gastric and genital (breast, cervical) topographies. It is the neoplasia with the greatest percentage of hepatic metastases. In Colentina Surgical Clinic were operated 372 cases with this pathology in the last 10 years (2002-2011). Most surgical interventions were represented by abdominoperineal resection and anterior resection. Stapled anastomosis was done in 58 (39%) of cases. Rectal touch and colonoscopy represented the main diagnostic methods. Most of the patients were male, with a mean age of 61 years (range between 36-85 years old). Complementary pre or postoperative oncologic treatment increased the life expectance in these patients.

Key words: *rectal tumors, surgical treatment.*

Introduction

Colorectal cancer represents the fourth form of cancer in the world. Even though some less frequent than colonic cancer, rectal cancer presents many characteristics of this one as geographic distribution. Unlike colonic cancer, it is more common in male (sex ratio of 1.5-2). The most affected age is ranging between 45-70 years old, with a maximum in the seventh decade; though rather rare in younger, it has worse evolution in these. As regards the topographic distribution, malignant proliferations inside the rectum are rather equal distributed between the upper, middle and lower segments (1, 2, 3, 4).

Major factors that influence the result after rectal cancer surgery include a number of histological features of the tumor, the stage of the disease and the quality of the surgical intervention (3, 5). Besides their role in evaluation of surgical performance, pathologists and radiologists play an essential role in the development of management strategy in rectal cancer. Circumferential resection margin needs full attention both from the surgeon during the intervention as well as afterwards from the pathologist at the moment of the sample dissection and histologic evaluation (6, 7).

Clinical picture is relatively not specific, the dominant symptoms being represented by intestinal transit disturbance, rectoragy and pain; these require as soon as possible the need for rectal touch examination, followed by paraclinical investigations that obligatory include colonoscopy with biopsy, endorectal echography and CT-scan (8, 9, 10).

In the presence of a patient with rectal cancer, there are a number of available procedures that can, under particular circumstances, be the preferred approach for a given patient (11):

- abdominoperineal resection;

- low anterior resection (with colorectal or coloanal anastomosis, with or without J colonic pouch);
- colostomy or ileostomy;
- Hartmann's resection;
- abdominoanal pull-through;
- abdominosacral (coccygeal) resection;
- transsacral resection (Kraske's);
- transsphincteric excision;
- transanal (local) excision;
- electrocoagulation;
- laser coagulation;
- cryosurgical destruction;
- interstitial or intracavitary radiation (obviously not an operation. but it can be the sole modality of treatment in some instances).

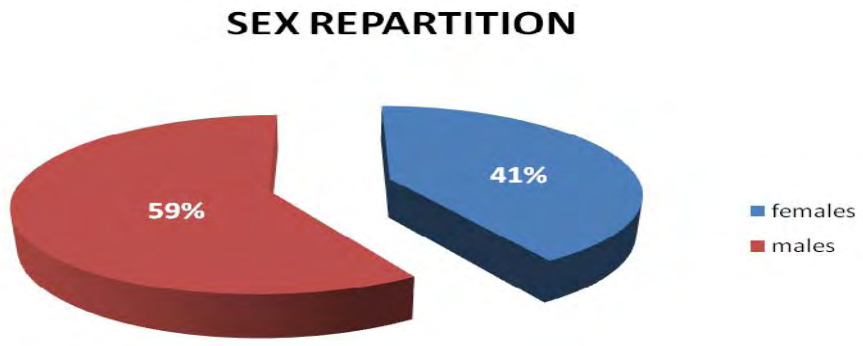
The same rectal tumor, with the same localization, may require different therapeutic attitudes in two different patients, considering that it depends on multiple factors with direct influence on therapeutic solution and on subsequent evolution.

1. Material and method

In the period of 2002–2011, in Surgical Clinic of Colentina Hospital were diagnosed and treated 372 patients with rectal cancer. The studied group was analyzed in a retrospective descriptive manner, based on evaluation of observation papers and operative registers.

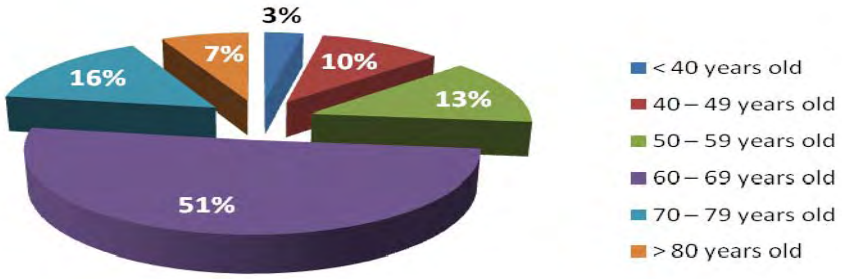
2. Results and discussions

Sex distribution of our 372 patients diagnosed with rectal cancer was represented by 153 (41%) females and 219 (59%) males, with a predominance of the disease in male, thus confirming the sex ratio of the international statistics.



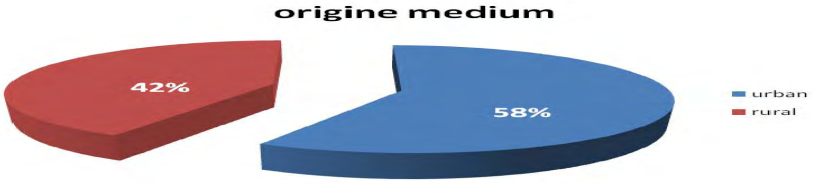
The age of the studied group was ranging as it follows:

< 40 years old	12	3 %
40 – 49 years old	38	10 %
50 – 59 years old	49	13 %
60 – 69 years old	189	51 %
70 – 79 years old	57	16 %
> 80 years old	27	7 %



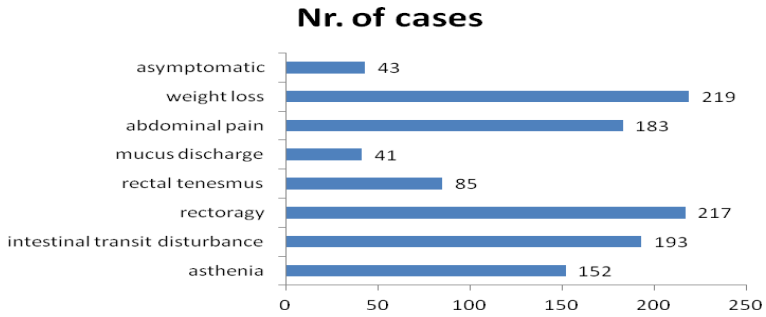
On the whole, it can be observed that maximum of frequency is met in age ranks of 50-59, 60-69 and 70-79 years old, with an incidence peak in the seventh decade (51%). Though rare in younger, it was confirmed once again the much more unfavorable evolution of these patients, only one of the nine cases diagnosed at age lower than 40's being alive five years later.

It can be noticed that the rectal cancer is more often met in people from urban (216 cases) medium than the rural one (156 cases). This could be explained through the differences between the type of food and the life style, with less toxicity and stress in the rural medium.



The 372 patients of our study group presented themselves for admission with varied symptoms:

SYMPTOM	Nr. of cases
asthenia	152
intestinal transit disturbance	193
rectoragy	217
rectal tenesmus	85
mucus discharge	41
abdominal pain	183
weight loss	219
asymptomatic	43

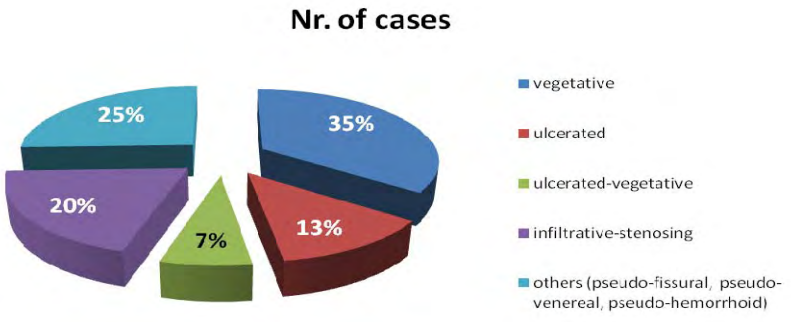


These symptoms were rather associated than isolated. It is well known that rectal cancer remains asymptomatic for a long period and, even when they appear, first symptoms are not specific. It is obvious that only a small number of patients were presenting with lack of any symptom, thus suggesting that presentation in early stages, with real curable potential, is very rare.

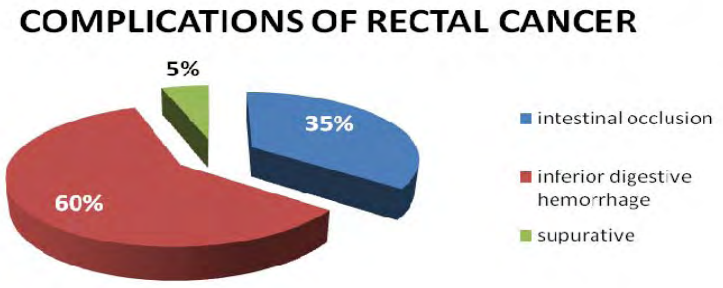
Preoperative assessment of the 372 patients was based on known diagnostic methods, with accent on rectal touch examination and colonoscopy. Abdominal echography, endorectal echography and CT-scan brought essential information regarding the loco-regional and distance tumor spreading.

As regards the macroscopic aspect, the histopathologic forms, diagnosed on biopsy specimens obtained by rectal touch and colonoscopy, are as it follows:

HISTOPATHOLOGIC FORMS (macroscopic)	Nr. of cases	%
vegetative	130	35%
ulcerated	47	13%
ulcerated-vegetative	26	7%
infiltrative-stenosing	74	20%
others (pseudo-fissural, pseudo-venereal, pseudo-hemorrhoid)	95	25%

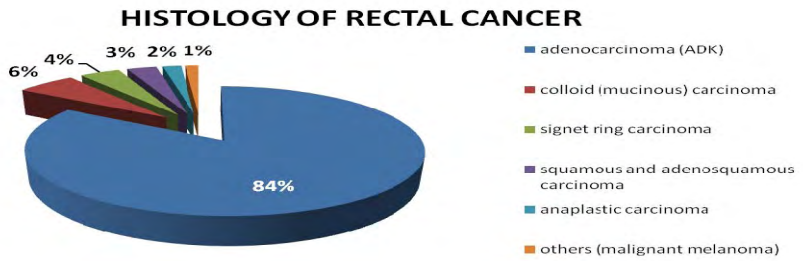


In 37 cases (10% of the whole number of cases) presentation consisted in complicated forms of rectal cancer: 13 cases of intestinal occlusion, 22 cases of inferior digestive hemorrhage, necrosis with superinfection and perianal abscess or even phlegmon of ischiorectal fossa developing in 2 cases.



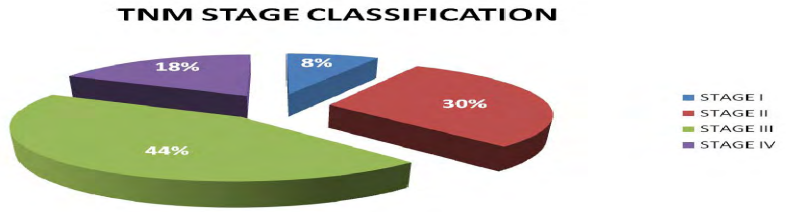
The histopathologic examination of the preoperative bioptic sample took by colonoscopy or of the operative resection specimen showed the following types of rectal neoplasia:

HISTOLOGY	Nr. of cases (%)
adenocarcinoma (ADK)	312 (84 %)
colloid (mucinous) carcinoma	22 (6 %)
signet ring carcinoma	15 (4 %)
squamous and adenosquamous carcinoma	11 (3 %)
anaplastic carcinoma	7 (2 %)
others (malignant melanoma)	5 (1 %)



Staging of rectal cancer represents an important prognostic factor, as well as an indicator of the type of therapy that should be adopted to obtain a satisfactory result. The majority of patients presented for examination in advanced stages of the disease, thus explaining the many time palliative character of the surgical intervention, as well as the poor response to the complementary oncologic treatment done.

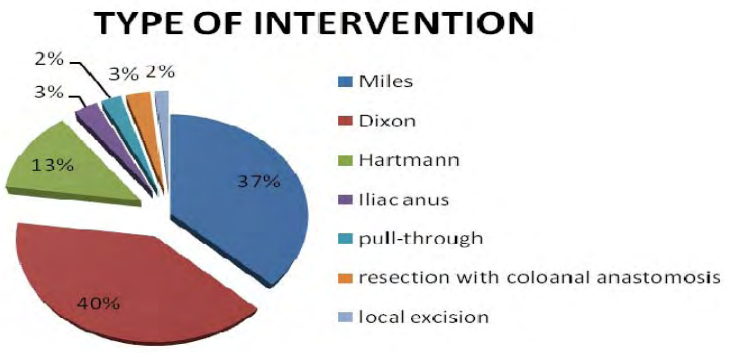
TNM STAGE CLASSIFICATION	Nr. of cases	%
I	30	8 %
II	112	30 %
III	164	44 %
IV	66	18 %



In complicated occlusive forms, as well as in those where the generally status of the patient did not allow ample long duration interventions, we made our choice for a Hartmann's resection. Considering the 48 Hartmann's resections of our casuistry, 35 of them benefited from reintervention for reestablishment of the intestinal continuity 3-6 months later. In those cases where tumor resection could not be done due to its massive locoregional invasion with great pelvic vessels involvement, we preferred to do only a definitive left iliac anus.

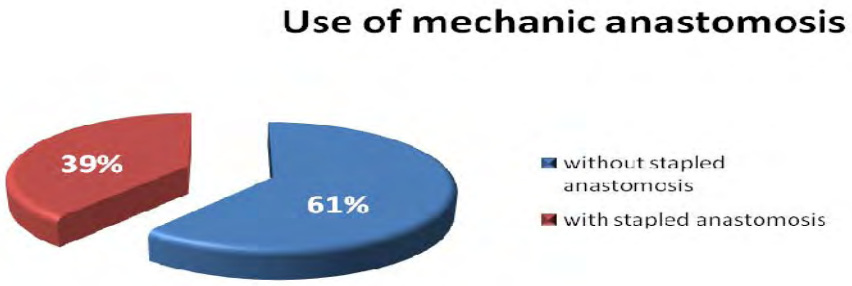
There were no transsacral, transcoccygeal, transsphincteric, abdominosacral or abdominotranssphincteric resections. There were no coloplasties or reestablishments of intestinal continuity by mean of colonic pouch. Considering the factors mentioned above, the following types of surgical interventions were done:

TYPE OF INTERVENTION	Nr. of cases	%
Miles	138	37 %
Dixon	149	40 %
Hartmann	48	13 %
Iliac anus	11	3 %
pull-through	9	2 %
resection with coloanal anastomosis	11	3 %
local excision	6	2 %



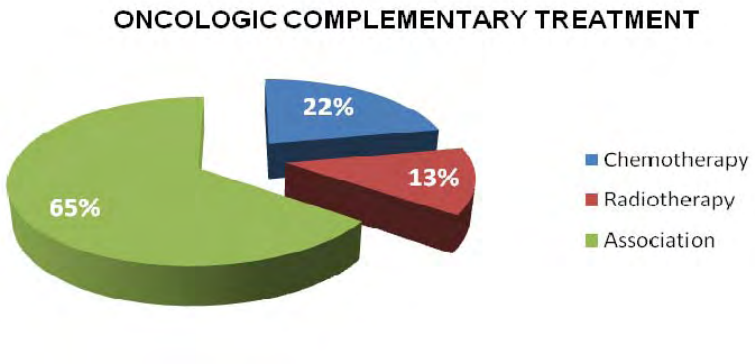
Of the 149 cases submitted for anterior Dixon resection, 58 benefitted from the possibility of mechanic suture by mean of circular stapler device.

DIXON OPERATION (149)	Nr. of cases	%
without stapled anastomosis	91	61 %
with stapled anastomosis	58	39 %



329 patients benefited from decision for use of oncologic complementary treatment, especially in case of metastases and advanced stages. These were guided to specialized centers for radio and/or chemotherapy, according to well known protocols.

ONCOLOGIC COMPLEMENTARY TREATMENT	Nr. of cases	%
Chemotherapy	72	22 %
Radiotherapy	43	13 %
Association	214	65 %
TOTAL	329	100 %



Rectal cancer is essentially responsive to surgical resection, chemotherapy only playing an adjuvant role for the surgical treatment. Classical chemotherapic agents used in

the treatment of colorectal cancer are 5-fluorouracil (5-FU) and leucovorin (LF, calcium folinat, antagonist of folic acid inhibitors) or folinic acid (AF). We used the classical association 5-FU/AF, administered on a period of 6 months, with goal to obtain the oncologic sterilization. Postoperative adjuvant therapy role was to try to prevent the appearance of metastases and to ameliorate the prognostic.

4. Conclusions

1. Rectal cancer presents an increasing incidence that, correspondingly to the gravity of the disease, demonstrates the reason for considering this pathology as a serious problem of public health.

2. Rectal cancer remains a privilege of people older than 50 years, especially of the seventh decade, though lately it can be noticed an increasing incidence in younger.

3. Rectal touch and colonoscopy done in every situation with clinical picture suggestive for rectal cancer increase the chances of diagnosis of this in early stages with curative potential.

4. As many others, we strongly recommend the global use of TNM staging system to make possible common attitudes as regards therapeutic strategy and results interpretation.

5. It can be noticed the tendency for an increasing use of sphincter saving procedures, with especial care to maintain intact the curative intention. Mechanic suture devices are part of the accomplishment of this goal.

6. The most frequent surgical procedures used in rectal cancer surgery are represented by Miles rectal amputation (sacrifice of rectal sphincter) and Dixon conservative anterior resection.

7. Every time one discuss about doing a sphincter saving surgical procedure, it has to be taken into account the compulsory condition of achieving a surgical intervention with oncologic curative goal. The issue is not whether reestablishment of intestinal continuity could be technically done but whether it should be done considering the oncologic safety criteria.

References

Mastalier B. – Cancerul de rect, Editura Universitară Carol Davila, Bucureşti, 2011, 53-60.

Mastalier B., Simion S., Brătucu E. – Rezultatele tratamentului chirurgical al cancerului de rect: experienţa ultimilor 10 ani. Journal of Medicine and Life, nr.2, vol. 4, 2011.

Franks L. M., Teich N. M. – Cellular and Molecular Biology of Cancer, 3rd Edition, Oxford University Press Inc., New York, 2003: 1-425.

Saclarides Theodore J., Millikan Heith W., Godellas Constantine V. – Rectal cancer. In Surgical Oncology - An Algorithmic Approach, Springer-Verlag New York Inc., 2003: 364-373.

Tamiolakis D., Venizelos J., Papadopoulos N., Lambropoulou M., Papadopoulos E., Simopoulos C. – Expresia antigenului HLA-DR şi caracterizarea infiltratului limfocitar în mucoasa normală, adenoamele tubuloviloase şi carcinoamele invazive de colon. Chirurgia (Buc.) 2005, nr. 5, vol. 100: 451-456.

Heald R. J., Husband E. M., Ryall R. D. – The mesorectum in rectal cancer surgery: the clue to pelvic recurrence? *Br J Surg.* 1982;69:613-616. Reprinted with permission of Blackwell Science Ltd.

Scott N. A., Jackson P., al-Jaberi T., Dixon M.F., Quirke P., Finan P.J. – Total mesorectal excision and local recurrence: a study of tumour spread in the mesorectum distal to rectal cancer. Br J Surg 1995; 82: 1031-1033.

Beynon J., Mortensen N. J. M. C., Foy D. M. A. – Preoperative assessment of local invasion in rectal cancer: digital examination, endoluminal sonography or computed tomography? Br. J. Surg. 1986, 73: 1015.

Brătucu E., Straja D., Ulmeanu D., Daha C. – Explorarea endoscopică intraoperatorie în chirurgia tubului digestiv. Chirurgia (Buc.) 1998, nr. 2, vol. 93: 101-106.

Tiutiuca R. C., Eva I., Moscalu M., Constantinoiu S. – Studiu asupra evaluării neoplaziilor rectale prin metode imagistice complementare. Chirurgia (Buc.) 2009, nr. 4, vol. 104: 399-407.

Corman Marvin L. – Carcinoma of the rectum. In Colon & Rectal Surgery, 5th edition, Lippincot Williams and Wilkins, 2005: 905-1061.

Academic Excellence Through Research and Development of Higher Education Institutions at Domestic and International Level

Senior Lecturer Emilia GOGU PhD
Profesor Mihaela MUREŞAN PhD
Senior Lecturer Marinella TURDEAN PhD
"Dimitrie Cantemir" Christian University, Bucharest

Abstract

Global academic market has certainly become more competitive than ever. Countries like China and South Korea to Saudi Arabia have made a priority of creating world-class universities and restoring lost luster of once great institutions. The investment in this area is significant: China is spending billions to improve the quality of education and research of elite institutions, while Saudi King Abdullah has allocated $ 10 billion for the new Science and Technology University that bears his name. And in the U.S. the weight of post-secondary education is about 2.9% of GDP, almost twice as China, European Union and Japan.

Keywords: *Academic excellence; Tertiary education sector, staff in the research - development activity; expenditure on research-development*

"... if wise investments are not done in professorss,
if we do not respect them or involve them in making decisions,
as do countries with top education, students pay the price ".
Weigarten Randi, president of the American Professor Federation

1. Elite institutions' academic excellence

Countries in America, Europe and Asia have developed along time a culture of academic excellence among elite institutions. Recently, in this competition have entered countries like Singapore and Saudi Arabia which encourage a culture of academic excellence at their universities by establishing partnerships with elite Western institutions. And the idea of associating a university with a particular location is reconsidered. Western universities from Texas A & M to the Sorbonne, have attracted world attention in the last decade by creating 160 campuses in Asia and the Middle East. New York University (NYU) initiated liberal arts colleges in Abu Dhabi as part of what the NYU President, Jon Sexon, conceives as a "global university network." "*One day,* as suggested by Vice-chancellor of Warwick University, Nigel Thrift, *we could see direct mergers between institutions – and finally, the academic equivalent of multinational corporations*".

Also many Asian countries are making significant progress in developing their academic system. In China, for example, institutions like Tsinghua and Peking Universities in Beijing and Shanghai Jiao Tong University could become prominent worldwide both in

research and development and by absorbing additional elite students and also by the number of students / graduates.

Currently methods and modern techniques of knowledge transmission and changes in the geography of knowledge production is certainly notable. The discoveries made in research institutions in a country of innovators can be used in other parts of the world. Countries should not be indifferent and increase their share of research - the great achievements may have positive economic and academic effects through wide spreading - but should not be afraid of the multiplying discoveries elsewhere.

Trans-border scientific collaboration as measured by the volume of publications written by co-authors from different countries has doubled in the last two decades. Undoubtedly more powerful research aspirations of developing countries have eroded long-term dominance of North America, the European Union and Japan.

Traditional research leaders have experienced significant decreases in this period. From 2002 to 2008, the U.S. share of articles included in the index Thompson Reuters[1] scientific research, has declined more significantly than any other country, from 30.9% to 27.7%. While the number of Chinese publications recorded in this index has doubled, as the volume of scientific papers from Brazil, a country whose institutions of research would not have been in anybody's charts 20 years ago. Thus, overall, the total number of publications listed in Thompson Reuters index rose by more than one third from 2002 to 2008. And the manner of publication and international recognition of the findings from research, makes knowledge become a public good / universal, for which national borders have little relevance.

2. Globalized education

Developing the educational system is the primary form through which we directly invest in human capital. Performance of this capital is later positively found in the socio-economic system of the nation and population welfare.

In this era of globalized education, there is little place for continuing the cold war. The international educational race, that deserves to be won, has the stake of developing the intellectual capacity of each state, and is determined to face the formidable scientific challenges of the XXI century. This race is long and involves many more actors than politics or economics.

Regardless of geopolitical domination or economic power, each state / country is challenged to participate in the Program for International Student Assessment (PISA). The top leaders are considered constant as Finland and South Korea, whose students have all kept in top. These countries deserve with no doubt be rated for achievements in higher education. The latest results from this program indicate that top performance is now held by the students in Shanghai[2]. Chinese educational performance is real and visible. Tiger mothers are not a myth - Chinese students focus intensely on the issues, with strong support from their families.

On long term it will be less relevant where countries are situated in the university hierarchy since an unprecedented phenomenon of student mobility has already been triggered, which has become a defining feature of global higher education. If in 1975 there were about 800 000 students who have ventured to study abroad, in 2000 the number reached 2,000,000 in 2008 their level exploded to 3.3 million.

[1] Thompson Reutres - the best known research publications database

[2] Shanghai is a special case and less representative for China as a whole, is like a magnet that attracts talented people from all over China and benefits of extensive government investment in education.

The distribution of mobile international students clearly changes from state to state, reflecting a global higher education market increasingly more competitive. Currently there are far fewer foreign students in U.S. than a decade ago. And even with its share declining, the U.S. still has more than 9% of the market of foreign students than the next competitor, United Kingdom. In the international bachelor, American universities are a magnet for technical education, engineering and IT.

If we develop the global university system, the importance given to the careful selection of high quality professional professors, these professors could be involved (in different ways) in an academic program, which enable the presentation of lectures (or pedagogical methods) at a broader level to many academic institutions. We believe that this approach would cause / increase further scientific work, so many colleges / institutions should optimize the teaching process and therefore would increase the universality of the academic process.

3. Costs of research and development in romania

Research and development expenditures have increased significantly in the last decade worldwide, from U.S. $ 790 billion to 1, 1 trillion dollars, an increase of 45%. Asian weight from the R & D world expenditures has increased from 27% (2002) to 32% in 2007, driven mainly by China, India and South Korea[3].

Of course, the costs of research and development in Rumania are a bit smaller. But not always the concern is the level as is their dynamics. From this point of view Romania grew by over 100% due to growth in the higher education expenditure of over 3.6 times, and 2.19 times the government sector.

Current expenditure weight in total expenditure in 2010 was 84.74% compared with that of 2005 which was 87.89%, 15.26% remaining were the investment costs, this structural change can be seen in the dynamic investment rate which increased by 157.1% compared to base year.

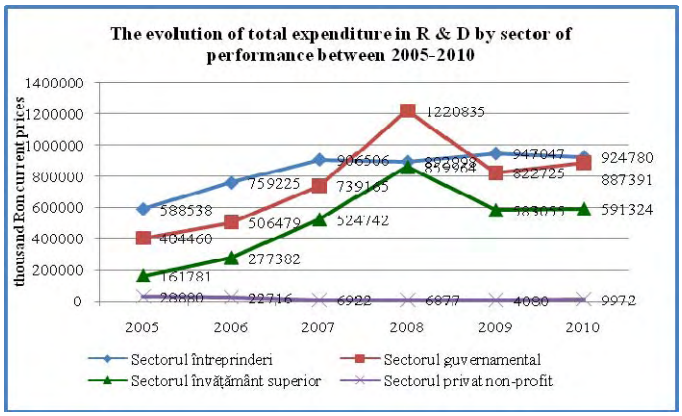


Figure 1.

It is relevant to determine the distribution costs per employee in the four sectors of performance. These average researcher costs can be done both on overall employees and full-time employees overall.

[3] According to the UNESCO report - 2010

Table 1. Expenditure level on full-time employees in research and development by sector of performance between 2005-2010

Lei/Employee nb[4]

Sector	2005	2006	2007	2008	2009	2010	Shift 2010/2005%	
							Absolute (persons)	Relative (%)
Total	35629	53367	75140	98081	82996	92219	***56590***	***158,8***
Enterprises sector	36426	55172	69162	77484	88032	111810	***75384***	***206,9***
Government sector	40225	60432	84130	118390	94479	101952	***61727***	***153,5***
Tertiary education sector	23781	39062	75709	101976	66076	65311	***41530***	***174,6***
Private non-profit sector	139517	234186	45242	57308	37778	70225	***-69292***	***-49,7***

Source: Data taken and processed from the NSI 2011 Statistical Yearbook of Romania

If we compare the dynamics of expenditures on full-time employees with the previously completed dynamics, in this case (Table 4) we can see given only a negative value, namely the non-profit private sector. Even though in the other sectors are recorded decreases of human potential, the costs level per employee increased 2.5 times, from which enterprise sector has increased the employee expenditure level 3 times, government sector by 153.5% and the tertiary education sector by 174.6% .

4. Research and development in international profile

Prioritizing indicators of research and development in the international profile, (33 countries of the world) Romania is ranked 22nd on the number of people in full time equivalent and the number of researchers and in what regards the weight of expenditures with R & D in GDP, Romania ranks on the 30 place surpassing only Slovakia, Bulgaria and Cyprus. (Table 2).

Table 2.

Staff in the research - development activity and the expenditure on research-development, in 2008

Country	Number of persons in full-time equivalent[5]	From which: Researchers[6]	Expenditures on R&D, % in GDP[7]	Rank		
				Number pers. (full time)	Researchers	The weight of expenditures R&D. in GDP
1. Australia	136696	91617	2,35	*10*	*10*	*9*
2. Austria	58077	34546	2,67	*17*	*19*	*7*
3. Belgium	60129	37287	1,96	*15*	*17*	*11*
4. Bulgaria	17219	11384	0,47	*25*	*26*	*32*
5. Cyprus	1201	806	0,43	*33*	*33*	*33*
6. Croaţia	10583	6697	0,9	*29*	*29*	*25*
7. Denmark	58589	35702	2,88	*16*	*18*	*5*
8. Estonia	5086	3979	1,29	*31*	*31*	*21*

[4] Employees (number of persons in full-time equivalent employment)
[5] Number of persons in full-time equivalent
[6] Researchers
[7] Expenditure on R&D, % in Gross Domestic Product

Country	Number of persons in full-time equivalent[5]	From which: Researchers[6]	Expenditures on R&D, % in GDP[7]	Rank		
				Number pers. (full time)	Researchers	The weight of expenditures R&D. in GDP
9. Russian Federation	869772	451213	1,04	*3*	*3*	*23*
10. Finland	**56698**	**40879**	**3,72**	***18***	***15***	***1***
11. France	384513	229130	2,11	*5*	*7*	*10*
12. Germany	522688	302467	2,68	*4*	*4*	*6*
13. Ireland	20363	14546	1,44	*24*	*24*	*19*
14. Islanda	3117	2308	2,65	*32*	*32*	*8*
15. Italy	239016	96677	1,23	*8*	*9*	*22*
16. Japan	882739	656676	3,44	*2*	*2*	*3*
17. Latvia	6533	4370	0,61	*30*	*30*	*29*
18. Lithuania	12632	8458	0,8	*27*	*27*	*26*
19. Norvegia	35967	26018	1,62	*21*	*21*	*15*
20. Netherlands	93369	50727	1,76	*11*	*13*	*13*
21. Polond	74596	61831	0,61	*13*	*11*	*28*
22. Portugal	47882	40408	1,5	*20*	*16*	*16*
23. China	1965357	1592420	1,47	*1*	*1*	*17*
24. United Kingdom	342086	251932	1,77	*6*	*5*	*12*
25. Czech Republic	50808	29785	1,47	*19*	*20*	*18*
26. Coreea Republic	294440	236137	3,36	*7*	*6*	*4*
27. Romania	**30390**	**19394**	**0,58**	***22***	***22***	***30***
28. Slovakia	15576	12587	0,47	*26*	*25*	*31*
29. Slovenia	11594	7032	1,66	*28*	*28*	*14*
30. Spain	215676	130986	1,35	*9*	*8*	*20*
31. Sweden	77549	48220	3,68	*12*	*14*	*2*
32. Turkey	67244	52811	0,73	*14*	*12*	*27*
33. Hungary	27403	18504	1	*23*	*23*	*24*

Source: Data taken and processed from the NSI 2011 Statistical Yearbook of Romania Bucharest

It should be noted that Finland has first place in the hierarchy, it is known that the universities in the country are very well rated, and the weight of the population with higher education in total population is ranked first in the EU.

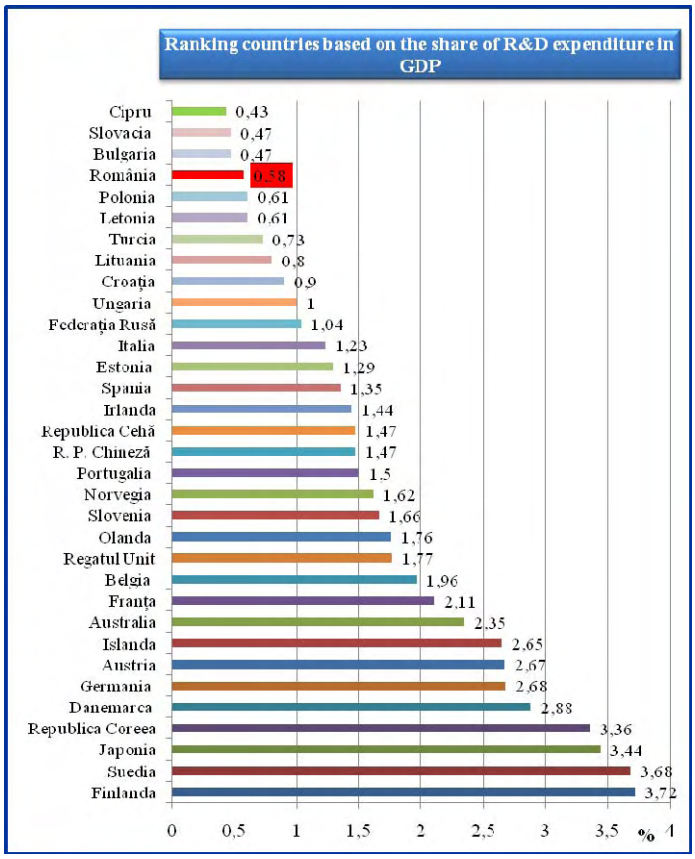


Figure 2.

In conclusion, any *national system of education - no matter where it is - has the obligation to provide all its citizens quality education*. And the country must find ways to maintain in the national arena all those who would help (increase) the socio-economic development and/or increase academic prestige which subsequently recovers other generations.

References

*** *Statistical Yearbook of Romania Bucharest NSI 2011*
*** *www.ins.ro*

Analysis Model of the Company's Patrimonial Elements

Professor Constantin ANGHELACHE PhD
"Artifex" University Bucharest
Professor Gabriela Victoria ANGHELACHE PhD
Lorand KRALIK, PhD Student
Academy of Economic Studies, Bucharest
Mădălina DUMBRAVĂ PhD
Financial – banking specialist, Romanian Commercial Bank

Abstract
This paper reveals the mist significant aspects pertaining to the financial analysis on a company's patrimony. Among the items analyzed, the authors focused on the structure of assets and liabilities, the financial structure of capitals. The analysis model is based mostly on ratios, and the results are presented in an easily readable manner, with extensive use of charts and tables.
Key words: *ratio, balance, patrimony, capitals, figures,*

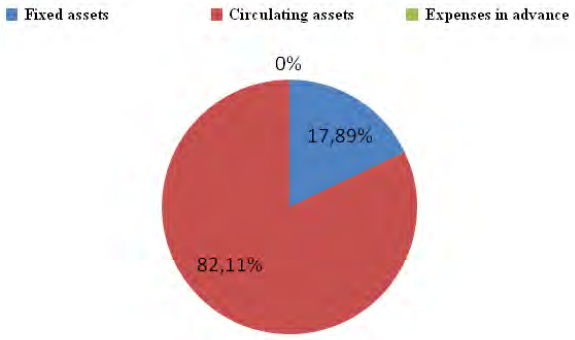
Based on the balance sheet on December 31st, 2011, we have realized the analysis of the structure for assets and liabilities, pursuing, mostly, the determination of certain ratios that characterize the relations existing between various patrimonial elements.

This way, the structure of assets in the company patrimony can be synthesized as in the table below:

Structure of assets, S.C. AUTOAERO S.R.L.

Item	Value (lei)	Weight
Fixed assets	51.998,6	17,89%
Circulating assets	238.496,4	82,11%
Expenses in advance	0	0
Total assets	**290.495**	**100%**

The relationship existing at the level of analyzed economic entity between the level of various assets categories is represented in the following chart:



Structure of assets, S.C. AUTOAERO S.R.L.

Also, based on previously presented patrimonial elements, we have determined the specific ratios for each component of company asset.

1. Fixed assets ratio

This ratio reflects the weight of patrimonial elements that are to be permanently found in the patrimony and measures the degree of fixation for capital elements.

- $$\text{Fixed assets ratio} = \frac{\text{Fixed assets}}{\text{Total assets}} \times 100$$

$$\text{Fixed assets ratio} = \frac{51.998,6}{290.495} \times 100 = 17,89\%$$

From previous calculation, it can be seen that fixed assets have a slightly reduced weight (17,89%) in total company assets. Detailing the fixed assets ratio will be made upon intangible, tangible and financial fixed assets, resulting:

- $$\text{Intangible assets ratio} = \frac{\text{Intangible assets}}{\text{Total assets}} \times 100$$

$$\text{Intangible assets ratio} = \frac{4.081}{290.495} \times 100 = 1,41\%$$

The intangible assets ratio, for economic entities acting in developing countries, is extremely low (below 25% of total assets), but in the case of analyzed company, its value is 1,41% (almost non-existing).

- $$\text{Tangible assets ratio} = \frac{\text{Tangible assets}}{\text{Total assets}} \times 100$$

$$\text{Tangible assets ratio} = \frac{43.028,8}{290.495} \times 100 = 14,81\%$$

- $$\text{Financial fixed assets ratio} = \frac{\text{Financial fixed assets}}{\text{Total assets}} \times 100$$

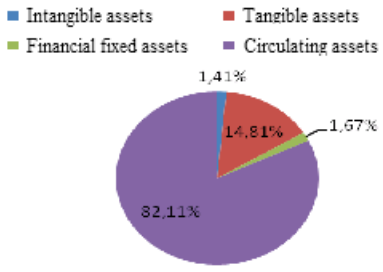
$$\text{Financial fixed assets ratio} = \frac{4.887,9}{290.495} \times 100 = 1,67\%$$

In the following table, we have synthesized data regarding the structure, in absolute and relative figures, of the structure of fixed assets.

Structure of fixed assets, S.C. AUTOAERO S.R.L.

Item	Value (mil. lei)	Weight in total assets
Intangible assets	4.081,0	1,41%
Tangible assets	43.028,8	14,81%
Financial fixed assets	4.887,9	1,68%

Calculated data, for greater suggestivity, are presented in the following chart:



Weight of fixed assets in total assets

2. Circulating assets ratio

This ratio has a major significance in the activity of a company. Therefore, by capitalizing the theoretical methodology, we will apply this methodology to the balance sheet data of analyzed company and will achieve significant indicators.

- $$\text{Circulating assets ratio} = \frac{\text{Circulating assets}}{\text{Total assets}} \times 100$$

$$\text{Circulating assets ratio} = \frac{238.496,4}{290.495} \times 100 = 82,11\%$$

The analyzed company has an extremely high weight of circulating assets in total assets (over 80%).

In the case of the circulating assets ratio, we will detail it on main component items as well, in order to achieve relative structural measures. We envision the rate (weight) of inventories, commercial receivalbes and cash and cash equivalents at the analyzed company.

- $$\text{Inventories ratio} = \frac{\text{Inventories}}{\text{Total assets}} \times 100$$

$$\text{Inventories ratio} = \frac{102.594}{290.495} \times 100 = 35,32\%$$

- $$\text{Commercial receivables ratio} = \frac{\text{Customers and similar accounts}}{\text{Total assets}} \times 100$$

$$\text{Commercial receivables ratio} = \frac{74.695,6}{290.495} \times 100 = 25,71\%$$

- $$\text{Cash and cash equivalent ratio} = \frac{\text{Cash} + \text{Placement titles}}{\text{Total assets}} \times 100$$

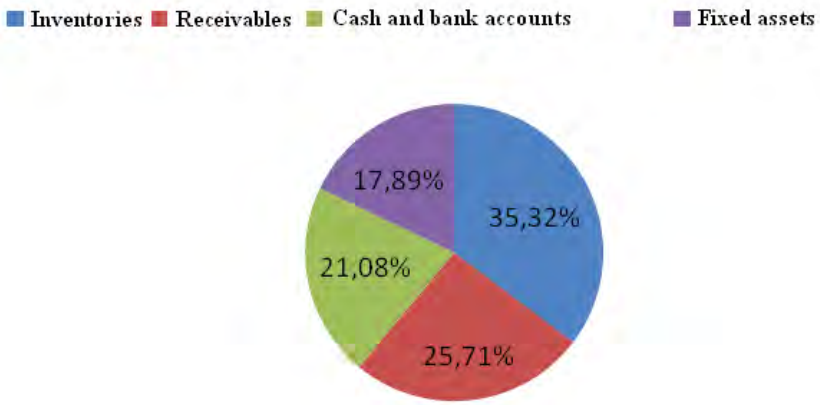
$$\text{Cash and cash equivalent ratio} = \frac{61.206,8}{290.495} \times 100 = 21,08\%$$

In the following table, the data resulted from calculations for the structure of financial assets are presented.

Structure of circulating assets, S.C. AUTOAERO S.R.L.

Item	Value (lei)	Weight in total assets
Inventories	102.594	43,02%
Receivables	74.695,6	31,32%
Short-term investments	0	0
Cash and bank accounts	61.206,8	25,66%
Total	238.496,4	100,00%

The weight of circulating assets in total company assets is presented in the following chart:



Weight of circulating assets in total assets

Similarly, based on the same methodology and using data from the company's balance sheet, we have calculated the relevant indicators regarding liabilities.

Thus, the liabilities of the company, as presented in the 2011 balance sheet, can be synthesized in the following table and chart. These (the table and the chart) are realized based on absolute and relative data regarding the liabilities included in the company balance sheet.

Structure of liabilities, S.C. AUTOAERO S.R.L.

Item	Value (mil. lei)	Weight
Debts: sums that are to be paid within a year	183.669,1	63,22%
Debts: sums that are to be paid within a period longer than year	42.777,9	14,73%
Own capitals	64.048	22,05 %
Total liabilities	**290.495**	**100%**

Structure of liabilities S.C. AUTOAERO S.R.L.

From the analysis made, based on data (indicators) calculated, it can be seen that debts with reimbursement term below one year hold a significant weight (63,22%) in total company liabilities.

For better characterization of the structure of economic entity's liabilities, the determination of specific ratios is recommended.

3. Analysis of financial structure of capitals for Autoaero S.R.L company.

a) Financial stability ratio

The ratio reflects the weight of financing sources remaining at the disposition of commercial company ofr a period more than one year in the total sources of covering economic means. Subsequently, we have calculated the financial stability ratio, by using the relationship:

- $$\text{Financial stability ratio} = \frac{\text{Permanent capital}}{\text{Total liabilities}} \times 100$$

$$\text{Financial stability ratio} = \frac{\text{Own capital} + \text{Average and long - term debts}}{\text{Total liabilities}} \times 100$$

$$\text{Financial stability ratio} = \frac{64.048 + 42.777,9}{290.495} \times 100 = 36,77\%$$

b) Indebment ratios

These ratios show the weight of debts with exigibility term below one year in the total company liabilities and financing sources attracted, in total company liabilities. Applying calculation relationships and using the data from company balance sheet, we have achieved:

- $$\text{Short - term debts ratio} = \frac{\text{Short - term debts}}{\text{Total liabilities}} \times 100$$

$$\text{Short - term debts ratio} = \frac{183.669,1}{290.495} \times 100 = 63,22\%$$

From previous calculation it can be seen that shot-term debts have an extremely high weight in total liabilities of the analyzed economic agent. Such situation can be considered extremely unfavorable for the company, as it is exposed to the risk of occurrence of further difficulties, following the concentration of due terms for various debts within a very short time (less than one year).

- **Global autonomy ratio** presents the weight of own source in total means ised to finance the activity of an economic entity. In practice, it is recommended that the weight of own financing sources to be minimum 33% of total financing sources used by the company.

$$\text{Global autonomy ratio} = \frac{\text{Own capital}}{\text{Total liabilities}} \times 100$$

$$\text{Global autonomy ratio} = \frac{64.048}{290.495} \times 100 = 22,05\%$$

The value recorded by this indicator (22,05%) is lesser than the recommended one, (33%), raising a first question mark on the future evolution of analyzed economic agent. This situation is due to under-dimensioning company's own capital compared to the total value of liabilities, appealing mostly to attracted sources to finance the economic activity, situation that leads to the occurrence of non-justified additional costs.

- **Total debts ratio** reflects the weight of attracted financing sources in total company liabilities.

$$\text{Total debts ratio} = \frac{\text{Total debts}}{\text{Total liabilities}} \times 100$$

$$\text{Total debts ratio} = \frac{42.777,9 + 183.669,1}{290.495} \times 100 = 77,95\%$$

Total debts ratio records a very high value compared to the optimal level recommended of 67%, a high weight of external financial sources attracting the occurrence of significant additional costs. The management of the company considered that the level of these costs can be supported upon the optimum use of acquired tangible assets.

- **General solvability ratio** measures the risk of payment incapacity for debts to which the analyzed economic agent is subjected. The minimum vale of solvability ratio is considered 1,4 (if the minimum weight of own capital in total financing sources is 30%). If the global solvability ratio is lower than unit, the company is not solvable.

$$\text{General solvability ratio} = \frac{\text{Total assets}}{\text{Current debts}} = \frac{290.495}{183.669,1} = 1,58$$

- **Financial autonomy ratio** gives the weight of own resources in the long-term resources attracted by the company.

$$\text{Financial autonomy ratio} = \frac{\text{Own capital}}{\text{Permanent capital}} = \frac{64.048}{64.048 + 42.777,9} = 0,6$$

$$\text{Inventories financing ratio} = \frac{\text{Permanent working capital}}{\text{Inventories}} = \frac{54.827,3}{102.594} = 0,53$$

References

Anghelache, C. S. , Vintilă, G., Dumbravă, M. (2009) – *„Main aspects regarding the contents of the economic-financial analysis”*, Romanian Statistical Review, Issue 9/2009 – Supplement

Anghelache, C. S., Dincă, M., Dumbravă, M. (2009) - *„Some economic-financial analysis models”*, Romanian Statistical Review, Issue 9/2009 – Supplement

Vintilă, G. (2006) - "*Financial management of the enterprise*", Didactica-Pedagogica Publishing House, Bucharest

Moşteanu, T.; Iacob, M. (2008) – "*Theories And Approaches Regarding The Cost – Benefit Analysis Role And Principles"*, Theoretical and Applied Economics, Asociaţia Generală a Economiştilor din România - AGER, vol. 11, pages 7-13

Vintilă, G.; Moscalu, M. (2009) – *"Aspects Regarding the Development and the Integration of the Corporate Social Responsibility Concept in Firms' Behaviour. Particularities for Small and Medium-sized Enterprises"*, Theoretical and Applied Economics, Asociaţia Generală a Economiştilor din România - AGER, vol. 7(07(536)), pp. 53-62

Causes of Global and National Economic Crisis

Professor Mircea UDRESCU PhD
"Artifex" University Bucharest
udrescu@artifex.org.ro

Abstract

The economic crisis is expected to bring a slow down, stagnation or decrease of the economic activity. The socio-economic crisis in Romania started in 1990 and it continues at present, being emphasized by the financial and economic crisis on the international market. From now on, the crisis exit door for Romania is possible only by operating the morals to all the domains, by unlocking the functional procedures of the financial- economic processes and by showing a performant management at all levels. The economic-political crisis in Romanian is a label crisis with no responsibilities, only with consequences. After 1989, society could no longer advance because Communists and Securitate people were still present and controlled structures and decision-taking systems through their connections and therefore turned the state into a dummy and they turned into a dummy even the president, elected and self-proclaimed a symbol of anti-Communist fighting. In Romania, the state started to be called the worst manager. Blamed and pointed at by everybody, the state initiated quick economic privatization and land retrocession and assets sales. Instead of increasing the responsibility of the management to ensure economic efficacy and efficiency of the all joint assets through mixed forms of ownership, the state initiated accelerated and reckless privatization. Instead of assuming social, political, economic and legal responsibility for the management of the national assets, our original liberalism caused generalized corruption and unjustifiably made rich a political minority well connected to the relevant people, and made poor the most of the population. After twenty years of reform, the national economy looks like a sick person that has undergone twenty years of therapy and is now dying. Doctors and relatives can see the patient is much worse than twenty years ago and instead of accusing the medical staff that prescribed the treatment, simply say: „It is God's will". Since the ordinary man cannot fight the Divine will, he continues living in this everybody's vanity fair.

Key words: *economic crisis, financial crisis, moral crisis, efficient management, liberty, responsibility, performance*

1.**Definition.** Generally, the economic crisis reflects the difficulties of the economic activity, that is a slow down, stagnation or a decrease of the economic activities. It appears as a serious fracture of the macroeconomic equilibrium, especially of the equilibrium between production and consumption, between demand and supply, between the extent to which the production factors are used and the level of employment, between the level of prices and the purchase power of the citizens etc.

In terms of time graphics, the economic crisis starts from the moment when the ascending cycle incurs a turn and lasts until the descending cycle leaves room again to the sustainable ascending cycle. During this time, the governmental bodies and the management of the economic agents act in coordination in order to trigger quality changes meant to remove the causes that generated serious economic imbalance.

On the other hand, financial crises reflect serious malfunctioning of financial systems of countries, which are the significant deficits of the public budgets. Financial crises may appear as a result of accidents (significant reduction of money collected to the budget), unforeseeable shocks to the real economy (domestic and /or international unfavourable circumstances in certain branches or sub-branches of activity), of hasty decisions of the management that trigger exaggerated expenses, thus ignoring risks etc, as the case may be. Consequently, economic-financial crises are caused by crisis-generating elements that pertain to both categories and negatively influence both fields of activity.

Moreover, it is considered that "The current crisis started with financial turbulence, which have lost money, continued with economic one, where GDP fell, and generated a social crisis, which were million lost jobs. I would add that the current turmoil is the product of a crisis of Western cultural model, the crisis caused by removal of core values that led to the initial rise of the West"[1].(1)

The duration of an economic-financial crisis depends on the macroeconomic factors taken into account, whose representation can have multiple nuances, generated by subjective and political influences. [2]

2. **Main features**. The crisis began in the U.S. and spread in the name of globalization, on the whole planet. Curse of cheap money also hit individuals and companies who wanted to get rich by speculative actions. The traditional principles of work, savings and prudence, were passed in great haste to leverage and greed, understood as short-term profitability. Events are financial crisis, economic and social, but it seems to have causes and origins beyond the financial excesses of the moral essence of consumer society, because. "Western values have migrated over time to focus put on working diligently and accumulation of wealth by social participation, leading ultimately to self-fulfillment absolutization guiding principle of human right. Thus witnessing the shift from collective to individualistic values sometimes went to extremes to alienation. "(2)

The latest economic and financial literature is full of texts about the global financial crisis that started in 2007 and forced various economic branches into its devastating whirlpool. Many countries have lived an economic decline mainly caused by this phenomenon.

In Romanian, as well as in many countries in transition towards the market economy, *the economic-financial crisis started in 1989, when the drastic political, institutional crisis began and when the entire system crisis began*. Ever since, year after year, the main macro-economic indicators have known spectacular decrease, some of them justified by the effects of circumstantial crises like the crisis that began in 2007.

With no rational explanation, after the moment 1989, Romania switched from an economic growth based on industrial production and significant exports to a consumption-based model. Consequently, the goods production diminished significantly, as you can see in the table below[3]:

DETAILS	1989	2010
Employees (in thousands)	3 800	1 200
Steel (thousands of tons)	14 411	3 900
Copper (thousands of tons	39 397	0

[1] Basil Yuga, The long march of capitalism, Article, foreign Policz Romania, April to March 2012, p.36
[2] Idem. P.39
[3] Cf. Laurenţiu Gheorghe, Memoirs industrial, article, Forbes, 7 March 2011, p.14

DETAILS	1989	2010
Excavators (pcs.)	953	0
Tractors (pcs.)	17 124	856
Train engines (pcs)	152	0
Trucks (pcs)	13 515	0

Since, usually, comparisons are made between consecutive years, experts believe that if the GDP decrease in 2010 is less than 2%, it happens because of the positive contribution of the industry that has had a 5.5 % growth while goods exports have incurred a 28% growth.[4]

Agriculture in its turn has known deep transformation. Thus, if the experts in this field and actual European and global trends in this productive activity claim that efficient agriculture is strictly linked to the concentration of the agricultural areas in large production farms, in Romania „…rural property is twice more fragmented than between the two World Wars. As a result of the enforcement of the Land Law, the average area of the agricultural farm is 1.9 ha while two thirds of the farms have between 0.5 – 1.6 hectares. In addition, according to the data provided by the Academy of Agricultural and Forestry Sciences, these properties are further on fragmented into about 40 million plots of land, often located at significant distances from each other"[5]. Thus, although we are able to ensure food for half of the European population, the Romanian agricultural production can hardly survive and a lot of the domestic consumption needs are met by importing products.

Most famous economists and sociologists insisted upon the need to combine the social mechanism with social responsibility. Any individual is in search of an existential direction in a universe restricted by rights and obligations, liberties and responsibilities towards one's own person and social environment. The economic-social crisis in Romania *is the result of the balance towards increased liberty and a blameable ignoring of one's responsibility*. Right after the moment 1989, the governments that ran, in turn, the country, din not hesitate to promise another kind of economic development, meant to ensure everybody a better and more peaceful life. Beyond any responsibility, the new governments involved to social majority into a deep reform, without taking into account the costs of the reforms and against the ideals of the reform. Consequently, the social reform performed so far has been characterized by increased poverty, de-structuring of the health system and of the educational system, serious degradation of the domestic production, loss of traditional international markets, waste of national assets, contracts mainly for consumption and for balancing the payments for significant foreign debt, unacceptable increase of unemployment, migration of millions of people to foreign countries for a job, often under humiliating circumstances etc.

The economic-political crisis in Romanian is a label crisis with no responsibilities, only with consequences. All suffering after 1989 has been masked by the shadow left by the emblem of a well-known ghost: Communism. Before 1989, Communists were acting upon the human being and were restraining any form of freedom while human beings had only obligations. The huge industrial plants that used to ensure jobs for thousands of people suddenly became heaps of metal scraps. The outcome of work during the Communist Era was actually expressed in lies of a generalized Communist Party propaganda. After 1989,

[4] Ibidem
[5] N. N. Constantinescu, Lessons of economic transition in România, Economic Publishing House, Bucharest, 1997, p.187

society could no longer advance because Communists and *Securitate* people were still present and controlled structures and decision-taking systems through their connections and therefore turned the state into a dummy and they turned into a dummy even the president, elected and self-proclaimed a symbol of anti-Communist fight. In Romania, the state started to be called the worst manager. Blamed and pointed at by everybody, the state initiated quick economic privatization and land retrocession and assets sales. Instead of increasing the responsibility of the management to ensure economic efficacy and efficiency of the all joint assets through mixed forms of ownership, the state initiated accelerated and reckless privatization. Instead of assuming social, political, economic and legal responsibility for the management of the national assets, our original liberalism caused generalized corruption and unjustifiably made rich a political minority well connected to the relevant people, and made poor the most of the population. After twenty years of reform, the national economy looks like a sick person that has undergone twenty years of therapy and is now dying. Doctors and relatives can see the patient is much worse than twenty years ago and instead of accusing the medical staff that prescribed the treatment, simply say: „It is God's will". Since the ordinary man cannot fight the Divine will, he continues living in this everybody's vanity fair.

3. **Algorithm of the deepened crisis**. In 1989, there were few who could foresee such an evolution of the economic and social mechanisms. At present, after more than twenty years of structural reform, we can clearly see the developments that explain the precipice where our country lies:

a). A legal framework implemented that was meant to de-structure and deprive of responsibility. The basic concepts are represented by the Romanian Constitution itself, adopted in November 1991, stipulating that: the Romanian economy is a market economy. The state shall ensure: freedom of trade, protection of fair competition, creation of a framework favourable to all production factors, protection of national interests represented in the economic, financial and FOREX activities, enhanced national scientific research, recuperation and protection of the environment and ecologic balance, creation of appropriate pre-requisites to ensure life quality, protection of the property. The sub-soil, the infrastructure, the economic resources and the continental part of the country etc. shall be object of public property exclusively but shall be available for lease or concession. The right to work and to choose one's job. Social insurance of the work etc. Starting from the Constitution, the governmental strategies and the whole range of laws acted in the sense of amending the property relations. Consequently, public property and co-operative property have been more and more protected until they became private property.

b). The management of public enterprises and organizations has been replaced with entities appointed according to political criteria. Consequently, the management of companies was removed from the control of the employees, the framework created to prevent frauds in public entities was annulled and the development of the private interest was encouraged. After the sad old model of „*Mitrea Cocor*", professional management was replaced with the management loyal to a party while the economic outcome was becoming scarce. Corroborated, these factors triggered the systemic economic crisis that deepened as the global economy was hit by other crises.

c). Fragmentation, despite any economic criteria, of the huge public enterprises into smaller independent structures. What had been achieved as a result of concepts of centralized concentrated economy was later on destroyed because of more than blameable political ignorance. Thus, many economic enterprises that used to be competitive on

international markets lost their identity; the newly created structures started competing among themselves and their market was gradually taken over by foreign competitors. The result was insolvency and bankruptcy. For instance, big industrial areas like *Electroputere*, *Tractorul*, *Uzinele 23 August* etc. handed over their domestic and foreign markets to foreign competitors, and later on, their locations turned into suspicious residential or commercial areas.

d). Irresponsible initiation and development of financial blocking. Public enterprises were turned into commercial companies and autonomous régies with no economic justification. Left without any operational autonomy, with no initial cash flow, at least to pay salaries and procurement to resume production, placed most such enterprises in the position to ask for loans. At the same time, the irrational process of giving back the shares of about 30-33 billion lei (price at that moment), led to sudden loss of cash flow in these enterprises, generated inflation and seriously hit people's savings and the economic processes of companies. Loans, whose interests gradually increased from 30-40%, to 150%, 180% etc, extended the financial blocking and involved even the high performance companies in this merry-go-round. After five years of economic reforms, the national production capabilities decreased to 40-50%[6].

e).Gradual depreciation of the leu against the dollar. From 60 lei, the rate exchange in 1990, the dollar was 3, 600 lei in 1996 and 4, 700 – 4, 800 lei in the exchange offices. The accelerated inflation seriously affected the purchase power of the population, strained the productive companies and helped a minority that was loyal to the political parties to become rich especially through financial fraud.

f). Acceptance of external circumstances as a fatality. While Romania complied, as an obedient student, with indications to conclude new treaties of free exchange with other countries, the Western countries were doing their best to protect their own products whenever it was possible. In addition, Romania always complied with the interdictions imposed by UN embargos for Iraq and the former Yugoslavia which affected the Romanian economy while Romanian received only promises that the los incurred would be recuperated. Moreover, once CAER market dismantled, although it was a fact whose justification was difficult to understand, the Romanian politicians were blocking the political and economic relations with former Soviet countries which allowed Western countries to enjoy easy access to such a huge economic market. Although experts have a different opinion, Romanian politicians are still condemning any large-scale economic relations with Russia and China, which has major implications upon the strategic action guidelines to stimulate exports and domestic production.

All these facts and the almost generalized corruption and the lack of efficiency of authorities at all levels forced Romania to live serious reduction of the GDP, poverty and social disillusion. All comparisons with the 1989 production show, in actual mathematics, that Romania is undergoing a deep economic, social and financial crisis. This situation can be also stated as it follows „…to emphasize that the main feature of the 2009-2010 economic and financial strategy is an „appearance of confusion", corroborated with "illicit group interests". Without being definitely sure but taking into account the domestic situation and explaining through the evolution of the countries that underwent the crisis as well, I can state that Romania will still be affected by the deep crisis until June 2011; the trend will be reversed after this moment. It also depends on the 2010 budget analysis, on

[6] Idem, p.69

the coherence of the 2011 budget forecast and especially on the success in bringing the state powers along the right, operational, beneficial track."[7]

4. **Action guidelines for sustainable recovery**. Obviously, mathematical figures and expert analyses show that Romania is still under recession. Millions of Romanians are living in poverty, in some case below human acceptance. However, there is hope that 2011 may bring a positive economic trend which keeps hope alive in people's mind. There are many ways to leave behind the crisis, claimed by politicians, national and international bodies, researchers, scientists, ordinary people. We consider therefore extremely imperative to act along the following guidelines:

1. *To activate moral values in all fields of activity*. Over the last centuries, people have started more than ever to project their lives by giving more importance to legal concepts and less to moral concepts. Consequently, the thief is not a thief, the murderer is not a murderer, and the liar is not a liar etc. until justice pronounces it so. Thieves, liars, murderers etc enjoy the rights of being not guilty and are free to walk among people in society, to the detriment of the law, while a whole range of lawyers will acquit them thus stirring the indignation of the citizens. Honesty, fairness, shame etc. have become values subordinated to legal actions; wrongdoers can defy citizens by arguing that the legal system made them justice and stopped their prosecution. In fact, the current economic and financial crisis, both global and Romanian, is a moral crisis. People have lost the compass of social action. The so called legal fairness allowed development of selfishness, greed, lack of good sense, freedom without responsibilities. Politicians reproach each other with horrible acts, without any shame or remorse; the administration have gradually become incredibly corrupted; the medical staff shamelessly asks for money although the medical services are said to be free of charge; teachers become more and more subjective when they give marks; mafia people reject any law and impose their mafia-type rules in their defy towards any law and moral norms etc. Not long ago, those who violated the moral social norms would be rejected by their groups and the rejection would be based on the strict enforcement of the laws. Any economic and social recovery plan will be useless if not based upon moral recovery of society. Moral health can remove corruption at all levels, can remove injustice, can limit greed, and can become the basis of a better life.

2. *To de-block operational mechanisms of the economic and financial system.* Basically, national economy operates as an integrated system of input, transformations and output that should ensure better and better conditions for those who take part in those processes. In our view, in order to de-block the operational mechanisms of the economic and social system, there is a need to make the political decisions-taking entities more responsible. Their political freedom must definitely be justified by moral and legal responsibility. When she analyzed the current economic and financial conditions, Angela Merkel, the German Chancellor, reminded of „…the co-responsibility of the politics for the community consciousness in terms of norms, ideas and attitudes. The ethical effort is a matter of survival for the modern state."[8] De-blocking through political and governmental responsibility may take into account: to encourage investments, to cut inflation, to cut useless expenses, to identify available markets, to modernize production, to impose a discipline of the work, to concentrate and centralize production, to correlate fluxes built up

[7] Constantin Anghelache, Macroeconomic diagnosis loses relevance if not lead to long-term solution, article, The Economist,, no 8, 14 March 2011, p.7

[8] Apud Constantin Popescu, In România, reform failed, the economy died, article, The Economist, no 8, 14 March 2011, p.45

on economies of scale etc. how can these action guidelines become plans if no one in this country knows what are the political functions and what are the administrative functions! The lack of moral values makes people think of providential solutions. People wish to see hopeful facts in industry, agriculture, health, educational system, administration, tourism, justice, in all social mechanisms. Everything must be coordinated by morals.

3). *Sustainable high-performance management.* Management implies competitive use of the available resources. High performance management explain why some countries are rich and other countries are poor. In fact, there are countries with irresponsible management although they are urged to act as Cicero asked in the Roman Senate in the year 55 B.C.: „National budget must be balanced. Public debt must be reduced. Arrogance of the authorities must be moderated. Payments to foreign governments must be diminished if our nation wants to avoid bankruptcy. People must learn once again to work instead of being assisted by public means."[9] However, people can learn to work unless work is planned, organized, trained and strictly coordinated so that the workers should not seem themselves as working tools. Workers must enjoy a decent living standard. In the absence of material incentives, most ambitious managerial goals will be doomed to failure since salaries maintained at le level of minimal subsistence will entail sloppy work. Performance balance in all fields of activity shall be based not on irrational and reckless cuts in salaries, expenses, imports etc., but on managing performance of output, product, productivity, sales, and increased satisfaction in the transformation system. Such a management can succeed only in an environment of moral values and responsibility, as it is the case of the German society.

4). *Reconsideration report individual interest - public interest.* Excess ideology made the public interest is considered to be communist interest and individual interest of capitalist interests. Exaggerated faith in the liberal ideas of cultivating personal interests can generate incorrect social behaviors that promote unimaginable a few people. That is, currently, there are people showing revenues that exceed the revenues of states with large populations. Consequently, without strait-laced personal initiative, individual, consider it necessary, in any social construction, to rely on general interest of the community. This requires structural reforms that would bring in a new light on the relationship capital, labor, interest and money, to achieve general welfare standards, by reconsidering economic ideas about tax policies and their correlation with sustainable development policies.

The four basic guidelines to fight the crisis start of course from the moral cleansing, both at individual and group levels. If these commandments are not taken into account, changes that we mention all the time in our speeches will only deepen the crisis.

References

Anghelache C., *Macroeconomics Diagnosis Loses Relevance if not Lead to Long Term Solution*, The Economist, no.8, 14 March, 2011

Constantinescu N.N., *Lesson of Economic Transition in Romania*, Economic Publishing House, 1997.

Iuga V., *The Long March of Capitalism*, Foreign Policy Romania, April-March, 2012

Laurenţiu G., *Memoirs industrial*, Forbes, 7 March 2011.

Popescu C., In Romania, Reform Failed, the Economy Dailed, The Economist, no 8, 14 March 2011.

[9] Ibidem