Institutul Național de Statistică

Societatea Română de Statistică

REVISTA ROMÂNĂ DE STATISTICĂ
- SUPLIMENT -

ROMANIAN STATISTICAL REVIEW
- SUPPLEMENT -

- **Scientific research Themes/Studies**
- **Papers at the National Seminary "Octav Onicescu"**

2013 / Trim. I

Autorii poartă întreaga răspundere pentru conținutul materialelor publicate, revista şi Societatea Română de Statistică fiind exonerate de orice răspundere.

ISSN 1018-046x

CUPRINS

Non-linear Regression used in Economic Analysis

Prof. Gabriela Victoria ANGHELACHE PhD
Academy of Economic Studies, Bucharest
Prof. Constantin ANGHELACHE PhD
„Artifex" University of Bucharest
Academy of Economic Studies, Bucharest
Andreea Gabriela BALTAC PhD Student
Academy of Economic Studies, Bucharest
„Artifex" University of Bucharest
Ligia PRODAN PhD Student
Academy of Economic Studies, Bucharest
„Dimitrie Cantemir" Christian University, Bucharest

Abstract

The evolution of economic phenomena do not evolve as linear trajectories, and trajectories can be nonlinear. Analysis of correlations between economic variables can be done by linear functions which are linearized transformations. Do so for the present nonlinear model into an equivalent simple and easy to interpret parameter values or to estimate them.

Key words*: evolution, correlations, models*
JEL Classification: *C01, C50*

- **General frame**

The evolution of the economic phenomena does not develop according linear trajectories but can take non-linear trajectories as well.

The analysis of the correlations between the economic variables can be performed depending on non-linear functions also, which are linearized by transformations. We proceed likewise in order to submit the non-linear model in a simple equivalent form, allowing an easy interpretation of the parameters values or their estimation.

Thus, if the dependence between two variables is shown by the non-linear model of regression $y_i \cdot a^{x_i} \varepsilon_i$, , through logarithmic procedure, we get the regression linear model $y_i = \ln b + \ln a \cdot x_i + \ln \varepsilon_i$.

When estimating a regression non-linear model we proceed as follows:

- we estimate the parameters applying the method of the smallest squares;
- through transformations, we linearize the non-linear function and then we estimate the parameters applying the method of the smallest squares;
- we establish the parameters through numerical methods.

- **Linearization models for the non-linear models**

We submit the semi-logarithmic and the double logarithmic models which can be linearized:

- The logarithmic model can be either without free term or with free term.
- The free term model (log-log) is of the dependence form, respectively:

$y_i = ax_i^b \varepsilon_i$

In this model a $\in R_+^*$ and $b \in R$. Depending of the sign of the parameter b the properties of the resulting characteristic are set up.

If this parameter is positive, the resulting characteristic has an up warding trajectory. The down warding trajectory of the resulting characteristic is emphasized, in the case of the regression non-linear model, by the negative value of the resulting characteristic exponent.

Applying the logarithms the double logarithmic model results

$\log y_i = \log a + b \log x_i + \log \varepsilon_i$

Using the substitutions

$y_i^* = k = \log y_i, x_i^* = \log x_i a^* = \log \varepsilon_i$, the regression linear model becomes:

$y_i^* = a^* + bx_i^* + \varepsilon_i^*$

We estimate the two parameters of the regression linear model and establish the parameter a which appears in the regression linear model:

$\hat{a} = 10^{\hat{a}^*}$

- The free term model (log-log) holds, in addition, a free term and shows under the following form:

$y_i = a_0 + ax_i^b \varepsilon_i$

In the case of this model applying the previous procedure of linearization is no more possible. In order to estimate the parameters, one of the following two methods applies:

- when a value of the free term of the model is specified, then, using the notations $v_i = y_i - a_0$ and $u_i = x_i$, we get the regression model $y_i = ax_i^b \varepsilon_i$. In this respect, parameters are estimated according to the case of the double logarithmic model;
- then we estimate the three parameters of the model through numerical models. It is possible to transform the model into a linear one using the development of the Taylor series.

We submit a number of properties of the parameters which are needed for interpreting the model parameters and the characteristics of the factorial variable in

connection with the parameters values. The interpretations are achieved in the context of using the model $y_i = ax_i^b \varepsilon_i$. For this model we underline that:

- if b < 0, the function log-log is down warding as against the factorial characteristic. In this case, $\lim_{x\to\infty} y_i(x_i) = 0$. In the situation of the free term model r, $\lim_{x\to\infty} y_i(x_i) = a_0$;
- if b > 0, the non-linear function is up warding and $\lim_{x\to\infty} y_i(x_i) = \infty$;
- irrespectively of the sign of the parameter b, this is equal with the elasticity of the resulting variable, calculated in connection with the factorial variable, namely:

  $b = \frac{\partial y_i}{\partial x_i} : \frac{y_i}{x_i}$;

- when the differential of second order is $\frac{\partial^2 y_i}{\partial x_i^2} = ab(b-1)x_i^{b-2}$, is results that: $b \in (0,1)$, the analytic function is up warding and concave ; b = 1, the regression model gets reduced to the simple linear model, without free term ; b > 1, the function is up warding and convex .

- The exponential model is used in the case when the points cloud resulting from the graphical representation of the series of values $(x_i, y_i)_{i=\overline{1,n}}$ is directed along the curve of an exponential function.

The exponential model, with the parameters a and b, is defined through the relation

$$y_i = a \cdot b^{x_i} \varepsilon_i, a, b \in R_+^*$$

The estimation of the parameters of the exponential model is made through data transformations by logarithms, following the stages:

- by logarithms applied to the equality terms we get the regression linear model:

$$\ln y_i = \ln a + \ln b \cdot x_i + \ln \varepsilon_i$$

The model becomes a linear by the substitution of $u_i = \ln y_i, \eta_i = \ln x_i, a^* = \ln a$ and $b^* = b$;

- we estimate the parameters of the regression linear model , $u_i = a^* + b^* x_i + \eta_i$ using the smallest squares method; we get the estimators $\hat{a}^*$ and $\hat{b}^*$;
- the estimators of the parameters of the regression non-linear model are established:

$\hat{a} = e^{\hat{a}^*}$ and $\hat{b} = e^{\hat{b}^*}$

Finally, we calculate the values adjusted on the basis of the estimates regression non-linear model:

$$\hat{y}_i = \hat{a}\left(\hat{b}\right)^{x_i}, i = \overline{1,n}$$

The exponential model is used when the values of the resulting variable increase in an arithmetic progression while the values of the factorial variable increase in a geometrical progression.

In order to interpret the meaning of the parameter b we take into account that

$$b = \frac{1}{y} \cdot \frac{\partial y}{\partial x}$$

It is to notice that the parameter b defines the increase rate of the resulting characteristic depending on the factorial variable X.

In the case of the exponential model we distinguish the following situations:

- b is the rate of increasing or decreasing of the characteristic Y as against X;
- if b > 1, he evolution of the characteristic Y is up warding
- if $b \in (0,1)$, the characteristic Y records a decrease as against the variable X;
- the values of the characteristic Y are positive only and the parameter a satisfies the positivity property.

- **Elements typical to the hyperbolic model**

The reciprocal regression model is used also to study the dependence between the unemployment rate and the inflation rate. The regression curve built up in this case is called Phillips curve. The regression reciprocal model, with a negative slope of the curve, is usually used for analyzing the dependence of one product consumption on the incomes available for consumption

The value –b/a is the abscise of the point in which the graph crosses the Ox axis. The value corresponds to the minimum income allowing the acquisition of the requested product for consumption.

The reciprocal model has the equality:

$$y_i = a + \frac{b \cdot}{x_i} + \varepsilon_i$$

The interpretation of the reciprocal model (hyperbolic) parameters is done as follows:

- We calculate the curve slope by the relation:

$$\partial y_i / \partial x_i = -b / x_i^2$$

The function is down warding when the parameter b is positive and up warding if b is negative.

- Irrespectively of the sign of the parameter b, for the reciprocal model $\lim_{x\to\infty} y(x) = a$

The estimation of the two parameters is done by following the stages :

- the parameters a, b are estimated through the smallest squares method.

Out of the condition $\sum_i \left(y_i - \hat{a} - \hat{b}\frac{1}{x_i} \right)^2$ = minimum, we get the linear system of equations:

$$\begin{cases} n\hat{a} + \hat{b}\sum_{i=1}^{n} \frac{1}{x_i} = \sum_{i=1}^{n} y_i \\ \hat{a}\sum_{i=1}^{n} \frac{1}{x_i} + \hat{b}\sum_{i=1}^{n} \frac{1}{x_i^2} = \sum_{i=1}^{n} \frac{y_i}{x_i} \end{cases}$$

We solve the linear system of equations having the unknown quantities $\hat{a}$ and $\hat{b}$.

- We calculate the adjusted values $\hat{y}_i = \hat{a} + \frac{\hat{b}}{x_i}$, and the series of the adjusting errors.

- **Specific aspects of the parabolic model**

This model is used in the case that the characteristic rhythm of evolution follows a linear function, having the slope coefficient equal to the constant a. The points $(x_i, y_i)_{i=\overline{1,n}}$ are placed around the curve described by a parabola.

For instance, the Laffer curve is represented in the form of a parabola and defines the relation between the government income and the taxation rate. We underline certain characteristics of the Laffer curve :

- The state income = f (taxation rate);
- The Laffer curve is decomposed in two regions: the region of a normal behavior, comprised between 0 and that level of the taxation rate (t%) where the state income is maximum; the region comprised between t% and 100% known as the inadmissible zone where, at an increase of the taxation rate, a corresponding increase of the state income is not achieved.
- Between the income out of the inflation taxation and the inflation rate there is a dependence of parabolic type. In this case, it is stated out that there is a level of the inflation up to which it is estimated that state increases its income after which, an increase of the inflation rate leads to the state income diminishing.

The regression parabolic model which is defined by the $a,b,c \in R$ is

$$y_i = c + bx_i + ax_i^2 + \varepsilon_i$$

Being a linear function as against the three parameters, a, b and c, in order to estimate them the smallest squares method is utilized. It is required as a condition that the value of the expression $\sum_i \left(y_i - \hat{c} - \hat{b}x_i - \hat{a}x_i^2\right)^2$ is a minimum one, resulting the following linear system of equations:

$$\begin{cases} n\hat{c} + \hat{b}\sum_{i=1}^{n} x_i + \hat{a}\sum_{i=1}^{n} x_i^2 = \sum_{i=1}^{n} y_i \\ \hat{c}\sum_{i=1}^{n} x_i + \hat{b}\sum_{i=1}^{n} x_i^2 + \hat{a}\sum_{i=1}^{n} x_i^3 = \sum_{i=1}^{n} y_i x_i \\ \hat{c}\sum_{i=1}^{n} x_i^2 + \hat{b}\sum_{i=1}^{n} x_i^3 + \hat{a}\sum_{i=1}^{n} x_i^4 = \sum_{i=1}^{n} y_i x_i^2 \end{cases}$$

Out of the system of equations, the series of the adjusted $\{\hat{y}_i, i = \overline{1,n}\}$ is resulting. In order to evaluate the quality of the estimated model, the series of the residuals $(\varepsilon_i)_{i=\overline{1,n}}$ is established, where $\hat{\varepsilon}_i = y_i - \hat{y}_i$.

- **The functions of polynomial type**

A regression non-linear model is often represented through the polynomial functions of a certain order.

If the polynomial function is of the order k, then this one is submitted through

$$y_t = \beta_0 + \beta_1 x_t + \beta_2 x_t^2 + ...\beta_k x_t^k + \varepsilon_t$$

where the residual variables satisfy the hypothesis of the regression classical model and $(x_t)_{t=\overline{1,n}}$ are the characteristic values for a number of periods

In this case, the function is non-linear as against the factorial variables but it is linear as against the parameters of the regression model.

For a correct estimation of the polynomial function parameters it must exist a multi-co-linearity between the variables X, X^2, ...X^k. The selection of the grade of the polynomial function is done taking into account that:

- the multi-co-linearity is frequent in the situation when the data series contains a reduced number of data;
- it is recommended the use of polynomial functions holding a degree lower or equal to 4;

- we note with R_k^2 the setting up ratio calculated for the polynomial function of order k. If the dimension of the data series is n, then $R_{n-1}^2 = 1$.

Out of the three studies, it results that the prediction power of the polynomial function decreases as against the number of parameters which must be estimated.

As an example, we can consider the definition of the cost for a production process (Y) depending on the production quantity achieved within a certain period (X):

$$y_t = \beta_0 + \beta_1 x_t + \beta_2 x_t^2 + \beta_3 x_t^k + \varepsilon_t$$

Considering the last polynomial function, we define four types of costs:

a) the average cost of the production over a period (c_t):

$$c_t = \frac{y_t}{x_t} = \beta_0 \frac{1}{x_t} + \left(\beta_1 + \beta_2 x_t + \beta_3 x_t^2\right) + \eta_t$$

b) the average fix cost of the production, which is represented by the first term of the above relation, through which we define the average cost;

$$cf_t = \frac{y_t}{x_t}$$

c) the average variable cost, represented by the second term is given by the relation:

$$cv_t = c_t - cf_t = \beta_1 + \beta_2 x_t + \beta_3 x_t^2$$

d) the marginal cost of the production:

$$cm_t = \frac{dy_t}{dx_t} = \beta_1 + 2\beta_2 x_t + 3\beta_3 x_t^2$$

These are significant indicators as to characterizing the performances of a production process.

In estimating the parameters of the model we shall relate to the data transformation $Z_1 = X$, $Z_2 = X^2$ . . . $Z_k = X^k$, the regression linear model resulting:

$$y_t = \beta_0 + \beta_1 z_{1t} + \beta_2 z_{2t} + ... + \beta_k z_{kt} + \varepsilon_t$$

In the case of the regression model of polynomial type, it will be necessary to establish the polynomial degree and to set out whether the variables Z_1, Z_2, ...Z_k are correlated on an overall basis or two by two and to which extent the multi-co-linearity is influencing the size of the dispersion estimators.

The regression continuous non-linear models can be transformed through the Taylor series of order k in polynomial models of order k and, afterwards, through substitutions of variables, the mentioned linear model is resulting.

We consider that the regression non-linear model is defined by the function $f\left(x_{1t}, x_{2t}\right)$, differentiable of order k in a point (a, b) while the succession of

calculating the mixt partial differentials up to the order k is not significant, it is resulting:

- the Taylor polynomial of order k attached to the function $f(x_1, x_2)$ in the point (a, b) is defined by the relation:

$$P_k(x_1, x_2) = f(a,b) + \frac{1}{1!} d^1 f(a,b) + \frac{1}{2!} d^2 f(a,b) + ... + \frac{1}{k!} d^k f(a,b),$$

where $d^1 f(a,b) = \left[\frac{\partial}{\partial x_1}(x_1 - a) + \frac{\partial}{\partial x_2}(x_2 - b) \right] f(a,b), \quad i = \overline{1,n}$ is the differential of order i of the function $f(x_1, x_2)$ in the point (a,b);

- if $R_k(x_1, x_2)$ represents the rest of order k of the Taylor series, then:

$$f(x_1, x_2) = P_k(x_1, x_2) + R_k(x_1, x_2)$$

- if a = b = 0, out of the above relation, we get the MacLaurin formual, which defines the equality:

$$f(x_1, x_2) = f(0,0) + P_1(x_1, x_2) + P_2(x_1, x_2) + ... + P_k(x_1, x_2) + R_1(x_1, x_2),$$

where $P_p(x_1, x_2)$ is a polynomial of degree p x_1 şi x_2.

- **The multiplicative model**

The multiplicative model, defined through the exogenous variable $X_1, X_2, \ldots, X_k$, is represented by the relation: $y_t = a x_{1t}^{\beta_1} x_{2t}^{\beta_2} ... x_{kt}^{\beta_k} e^{\varepsilon_t}$ where ε_t is a residual variable having a normal repartition of mean zero and dispersion σ^2

The multiplicative model is linearizing through logarithms. The equivalent model being obtained:

$$\ln y_t = \ln \alpha + \beta_1 \ln x_{1t} + \beta_2 \ln x_{2t} + ... \beta_k \ln x_{kt} + \varepsilon_t = \beta_0 + \beta_1 z_{1t} + \beta_2 z_{2t} + ... + \beta_k z_{kt} + \varepsilon_t$$

The main characteristic of this model is given by the relation existing between the coefficients of the exogenous variables and elasticity. Each parameter is equal to an elasticity coefficient, of the form:

$$e_j = \frac{\partial y_t}{\partial x_{jt}} \cdot \frac{x_{jt}}{y_t} = \frac{\partial \ln y_t}{\partial \ln x_{jt}} = \beta_j$$

A non-linear multiple model is that represented by the Cobb-Douglas production function, represented by a function of two variables, including the time variable as well.

- The first form of presentation or the Cobb-Douglas function without technical progress. In this case, the variable time is not explicitly included in the function frame. The function is defined by the relation:
- $Y_t = A K_1^{\alpha} L_t^{\beta} e^{\varepsilon_t}$

where:

Y_t - quantify the production or the production cost;

K_t – fix capital;
L_t – labor force;
A,α,β- real parameters;
ε_t - residual variable

- The second form of presentation or the Cobb-Douglas function with technical progress, the time variable being explicitly included in the function frame, defined by the relation:

$$Y_t = AK_1^{\alpha} L_t^{\beta} e^{mt+\varepsilon_t}$$

The two parameters, α and β, provide significant information on the characteristics of the production process, being the parameters of the partial elasticity as against each factor of the production process.

The parameter α represents the partial elasticity of the production as against the fix capital:

$$e_K = \frac{\partial Y_t}{\partial K_t}\frac{K_t}{Y_t} = \frac{\partial \ln Y_t}{\partial \ln K_t} = \alpha$$

The parameter β expresses the partial elasticity of the production as against the human capital:

$$e_L = \frac{\partial Y_t}{\partial L_t}\frac{L_t}{Y_t} = \frac{\partial \ln Y_t}{\partial \ln L_t} = \beta$$

The scale elasticity equals to the sum of both elasticity:.

$e = e_L + e_K = \alpha + \beta$

For he Cobb-Douglas production function, the scale elasticity is calculated only as against the two parameters, hence three situations:

- the production process with down warding scale yield, when the scale elasticity is lower than 1:

$\alpha + \beta < 1$

- the production process with constant scale yield, the scale elasticity being unitary:

$\alpha + \beta = 1$

If the two inputs are increasing then the outputs are also increasing to the same extent.

- the production process with up warding scale yield, the scale elasticity being over unitary:

$\alpha + \beta > 1$

In order to test if the scale yield of the process is constant, there are two hypotheses to define:

H_0: $\alpha + \beta = 1$

H_0: $\alpha + \beta \neq 1$

In order to test the nul hypothesis, we use the Student test, respectively:

$$t = \frac{\hat{\alpha} + \hat{\beta} - 1}{\hat{\sigma}_{\hat{\alpha}+\hat{\beta}}} = \frac{\hat{\alpha} + \hat{\beta} - 1}{\sqrt{\sigma_{\hat{\alpha}}^2 + \hat{\sigma}_{\hat{\beta}}^2 + \operatorname{cov}(\hat{\alpha}, \hat{\beta})}} \to t_{n-3}$$

For an established significance threshold, if $|t_{calculat}| < t_{tabelat}$, then the null hypothesis is accepted, according to which the process is one of down warding scale yield.

The Cobb-Douglas function is written in an equivalent form:

$$\frac{Y_t}{L_t} = A\left(\frac{K_t}{L_t}\right)^{\alpha} e^{\varepsilon_t}$$

In order to define the intensive form of the Cobb-Douglas production function, we define the following two dimensions: the unitary capital on the unit of labor capital nbg, $k_t = K_t / L_t$; the labor productivity, $y_t = Y_t / L_t$.

The intensive form of the Cobb-Douglass production function is defined by the relation:

$$y_t = f(k_t) = Ak_t^{\alpha} e^{\varepsilon_t}$$

It is checked whether the intensive production function satisfy the following two pairs of properties:

1. $f'(k_t) \rangle 0, \quad f''(k_t) \langle 0$
2. $\lim_{k_t \to 0} f'(k_t) = \infty$ and $\lim_{k_t \to \infty} f'(k_t) = 0$

In order to estimate the model parameters, we proceed to linearizing through logarithms and to estimating the parameters of the translog function, applying to the methods:

- we linearize the function through logarithms, getting a model triple logarithmic:

$$\ln Y_t = \ln A + \alpha \ln K_t + \beta \ln L_t + \varepsilon_t$$

The parameters of the regression model are estimated by applying the smallest squares method:

- we use the Cobb-Douglas production function through a translog function:

$$\ln Y_t = \alpha_0 + \alpha_1 \ln K_t + \beta_1 \ln L_t$$

$$= \alpha_2 (\ln K_t)^2 + \beta_2 (\ln L_t)^2 + \gamma_1 \ln K_t \ln L_t$$

The relation represents the Taylor series for the given function.

The nn-linear model represented by the production function CES is defined by the relation below:

$$Y_t^{-\theta} = \gamma^{-\theta} \left[\delta K_t^{-\theta} + (1 - \delta) L_t^{-\theta}\right]^{-\mu} e^{\varepsilon_t}$$

where:

Y_t - the variable quantifying the outputs from the system;

K_t - the fix capital;
L_t - the human capital;
γ,δ,μ,θ - the model parameters

ε_t - the residual variable having the repartition N(0, σ_ε^2)

The parameters of the CES model have the following significances and values domains:

- $\gamma > 0$ represents for this production function the efficiency parameter of the production process;
- $\delta \in (0,1)$ is the distribution parameter of the production process;
- $\mu \rangle 0$ is the scale parameter for the process;
- $\theta \geq -1$ is the substitution parameter of the two factors within the process.

In case that $\theta = 0$, we get the Cobb-Douglas production function.

The generalized form of the CES production function, defined through the factorial variables $X_1, X_2, ..., X_n$ is:

$$Y_t^{-\theta} = \gamma^{-\theta}\left(\delta_1 X_{1t}^{-\theta} + \delta_2 X_{2t}^{-\theta} + ... + \delta_n X_{nt}^{-\theta}\right)^{-\mu} e^{\varepsilon_t} \text{ where } \sum_{i=1}^{n} \delta_i = 1$$

If the function incorporates technical progress, the time variable shows up in an explicit manner in the frame of the regression model. The CES function is represented by the relation:

$$Y_t^{-\theta} = A^{-\theta}\left[\delta K_t^{-\theta} + (1-\delta)L_t^{-\theta}\right]^{-\mu} e^{mt+\varepsilon_t}$$

For the CES function the following properties are valid:

- The elasticity of the substitution of the two factors is constant, this one being established by the value of the substitution parameter, θ:

$$e = \frac{1}{1+\theta}$$

- The scale yield is set up depending on the value of the parameter μ, resulting that: the production function is of down warding scale yield $\mu \in (0,1)$; for $\mu = 1$, the production function has a constant scale yield: if $\mu > 1$, we hold a production function of up warding scale yield.

For estimating the parameters of the CES function, the algorithms are applied:

- The estimation of the parameters using the credibility function implies: logarithms on the function, out of which the production function results:

$$\ln Y_t = \ln \gamma + \frac{\mu}{\theta} \ln\left[\delta K_t^{-\theta} + (1-\delta)L_t^{-\theta}\right] + \varepsilon_t$$

We write the credibility function for the production function and establish the four estimates out of the conditions of maximum of the credibility function.

- The estimation of the parameters by using the translog representation means: the translog function is written, which is in fact, a polynomial of

second order of this function in the point (1,1). It is then obtained a linear model as against the parameters of the model:

$$\ln Y_t = \alpha_0 + \alpha_1 \ln K_t + \beta_1 \ln L_t + \alpha_{11} (\ln K_t - \ln L_t)^2 + \varepsilon_t$$

we estimate the parameters of the regression model by applying the MCMMP; we establish the estimators of the regression model taking into account the four relations defined for the CES parameters and translog.

References

Anghelache, C. (coord., 2012) – „Modele statistico – econometrice de analiză economic – utilizarea modelelor în studiul economiei României", Revista Română de Statistică, Supliment Noiembrie 2012

Anghelache, C., Mitruț, C. (coordonatori), Bugudui, E., Deatcu, C. (2009) – „Econometrie: studii teoretice şi practice", Editura Artifex, Bucureşti

Bardsen, G., Nymagen, R., Jansen, E. (2005) – „The Econometrics of Macroeconomic Modelling", Oxford University Press

Voineagu, V., Țițan, E. şi colectiv (2007) – "Teorie şi practică econometrică", Editura Meteor Press

Theoretical and Methodological Considerations on the Public Offers

Claudia Catalina SAVA, PhD Student
„Lucian Blaga" University of Sibiu

Abstract

This paper describes the most important characteristics of the public offers, both from the theoretical and methodological view.The European Union emphasizes clarity and transparency. The author focuses on specific provisions of European Directive and Romanian law and regulations related to voluntary and mandatory takeover bids, on characteristics such as price, offeror and offeeree right, offer timetable.

Key words: *public offer, takeover bid, fair price, sqeeze out*
JEL Classification: *G11, G18*

The European Directive regarding takeover bids ensures, at the level of the entire European Union, clarity and transparency as regards the specific aspects of these types of operations. The application of this Directive lead, at least at theoretical level, to the possibility to take over a company listed on the regulated market by any person interested in.

The Directive refers to the takeover bids but the Romanian legislation which transposes it treats in the chapter dedicated to this type of operations the bid and selling offers, as well. The bid public offer is defined as the public offer made from a person to the all holders of the securities of one company. Once launched, the bid offer will be made at a price at least equal to the highest price between the highest price paid by the offeror or the persons who are acting in concert with him for a period of 12 months prior to the date when the offeror communicated the offer document to the national authority (Romanian National Securities Commission) and the weighted average price afferent to the least 12 months before the date when the offeror communicated the offer document to the supervisory authority. In the situation when none of the above mentioned criteria is applicable, the bid price will be at least equal to the net asset per share, in accordance with the latest financial statement of the issuer.

Surprisingly, the Romanian primary legislation does not mention a price level for the bid offer, but the secondary legislation does. We could even say that the regulations exceed the law in this matter. As long as at the European level there is no an unitary frame, every EU country has the liberty to treat it differently. Whereas the bid public offer can aim packs of shares conducting to less than 33% of the total voting rights (for more than 33% it is required to launch the voluntary

takeover bid), the offer made by the issuer himself or an other person, shareholder or not, should have any price determining criteria. The price should be that the offeror considers to be offered and which, along with the other elements related to the percent of the total voting rights to be purchased, the duration and the allocation algorithm, will define the offer.

The voluntary bid offer is the offer made to all holders of the securities of a company for all their holdings, launched by a person who doesn't have this obligation but whose objective is the acquisition of more than 33% of the total voting rights. Unlike the bid offer, the voluntary takeover is addressed to all shareholders and for all their holdings, which denotes the intention of taking the control of the company. The offeror and, if case, the persons acting in concert with him, can or cannot be one of the shareholders, as well as in the bid offer we have spoked about previously. For the first time in the Romanian legislation, in the public offers subject appears, by parity of resoning with the tekeover bid Directive's provisions, the fact that the board of the offeree company remits to the competent authority, to the offeror and to the market its opinion of the pertinence, suitability of the bid.

Moreover, starting with the date of receiving the announcement, the Board of Directors of the company subject of the takeover bid cannot conclude any other contract/document and cannot take any action modifying the company assets or the takeover' objectives, except the current administrative documents. There is a quite different interpretation compared with the European provisions requiring the Board of Directors to obtain the approval of the general shareholders meeting for any action related to the issuer, especially those regarding the issue of shares that may prevent the undertaking of the voluntary takeover bid on the long term.

The European legislation stipulates that the issuer's board should express about the followings: the voluntary tekeover bid that affects the respective issuer, the strategic plan of the bidder (offeror) and the consequences for the company and for the staff. I think that the scope of these provisions, applicable in the case of mandatory takeover bid, as well, is to ensure a favourable environment for takeover bid and also to make available to the public the terms and the conditions. In the sense that, from the board's set out point of view, it would be obviously whether the takeover character is hostile or not. It is the directive's objective to ensure the protection of small investors. Considering the lack of clarifications at the European level, the Romanian legislation does not provide details about the case when the takeover has an obviously hostile character. Maybe, this was the reason why the directive gives the possibility for the management of the offeree company to choose alternative offers or doesn't forbid it.

The price, in case of the voluntary takeover bids, is, at least, equal to the highest price between the highest price paid by the bidder or the persons with whom he acts jointly, for the 12 months period before the date of submitting to CNVM the takeover' documentation, the weighted average trading price on the last 12 months before the date of submitting to CNVM the takeover' documentation, the price resulted from dividing the net shares value to the number of shares, as

presented in the last financial statement of the issuer.

Regarding the price in case of voluntary takeover bid, we have to accept the fact that the criteria are established in order to maximize the price received by the seller and this makes sense for ensuring the price protection in case of hostile takeover bid or for protecting in accepting an unfavourable price in case of insufficient disclosure. Only. Because there is no real stake for establishing the price in case of voluntary takeover bid, other than those described above, the period taken into account (12 months starting with the date of submitting the documentation) is considered as acceptable. The bidder (offeror) or the persons with whom he is acting in concert cannot launch, for one year after the closing the previous takeover bid, any other takeover bid related to the same issuer.

The takeover bid is mandatory when a person who, as a result of his purchase or those of the persons acting in concert with, holds more than 33% of the voting rights within a company. By exception, the persons who hold unintentionally, these holdings, have the right to choose either to launch a public offer under the legal provisions, or to sell a number of shares corresponding to the loss of the position acquired without intention. The difference between the situations presented above is that in case of intended holding of more than 33% of the voting rights, the person shall launch the offer within no more than 2 months after the moment of achieving the respective position, in this period when the position exceed the holding of 33%, the voting rights are suspended while, in the second situation, it operates the permission for selling to a level under 33% which may be done within maximum 3 months.

We have to notice that, during these 3 months, the voting rights exceeding the threshold of 33% (for the person who unintentionally holds voting rights more than 33%) are not suspended. The question is what might happen and how this may influence the company's life if a shareholding meeting took place within this period of time. Another question is that, if, comparing with the intentionally holding, the investor is favoured in this situation.

It seems that the legal provisions do not ensure an equal treatment for the investor who is within the 2 months term for launching the offer and that who unintentionally holds more than 33%in terms of exerting the voting rights.

Because the voting rights are not suspended, the shareholder who unintentionally holds 33%, may exercise all the voting rightsand, consequently, may crucially influence the issuer's activity, doubly so as fromobjective reasons and which, beware,cannot be invoked, but also from subjective ones he did not launch the offer. Moreover, the issuer holding more than 33% of the voting rightscannot proceed to the acquisition of shares of the same issuer, using other operations. In this context, it is debatable whether the notion of "operation" or "acquisition" includes also the participation to the increasing of the issuer's capital and the consequently increasing the number of shares.

From a point of view, only the fact that the shareholder is (or should be) under the period of getting ready for launching the offer, he should not be excluded from the shares acquisition within a capital increase. This proves that the

shareholder is interested in consolidating his position and reliability. Looking from another point of view, the obstruction of involvement of the controlling shareholder in the increase of capital may lead to significant alterations in the existing holdings and may impede the offer either by reducing the holding under the threshold stipulated by law.

I have to be honest and say that the Capital Market Law's provisions regarding the selling alternative in the case of unintended 33% or more holdings have no correspondent in the Directive and I have not found a base for a national option. What I am saying is that the Romanian law intended to make clearer the situations that may occur but I am sceptical about the accuracy of the theoretical concept and of its fairness.

As the law provides, in case of an unintentional acquisition of a holding exceeding the threshold of 33%, there is the possibility to opt for initiating an offer or for selling in order to fall below the mentioned threshold. In case of an intentional acquisition, as the Directive sets out, there is no alternative but to initiate the offer. This, on my own interpretation, means that the shareholder has to start the procedures for initiating the offer. It is true that there are not specifiedany interdictions to sell or penalties in case of selling. However, I appreciate that the rule "what it is not forbidden, it is allowed" cannot be applied.Thus, at national level, there have not been made clear, coherent and coercive rules for the situation of abstraction from the offer in case of intentional acquisition by total or partial selling, until the last change of the Capital Market Law. On the whole, the new provisions start from two distinct premises: one when the deadline for launching the offer is complied and another one when it is not. In the first one, no12 months before highest price applicable, the offer price shall be established by the highest value among the weighted average price for the last 12 months, prior to the date of submitting the documents, the value of the net asset of the company divided to the outstanding shares in accordance with the last audited financial statement and the value of the shares resulted from an expertise carried out following the international assessment standards. In the second one, the price of the offer is the highest value among the price paid by the offeror during the 12 months prior to date of handing in the offer and the date when he acquired the holding of more than 33%, as well as the weighted average transaction price for both the 12 months prior to handing in the documentations and to the moment when the legal threshold has been exceeded.

I agree that the last amendments to the law provide requirements relating to the calculation of the offering price, in case of a delay situation, that can discourage the phenomenon, but the situation of public offerings avoidance is still in place. The competent authority sanctions the attempts of avoidance but I strongly believe that more coherent, clear and coercive rules are more efficient.

The provisions of the Directive allowthe competent authorities of the European Member States, in some circumstances and subject to the criteria disclosed to the public, to intervene and to adjust the price in takeover bids. The adjustment can be made up or down, when, for example, the highest price paid by

the bidderis the result of market manipulation practices, the result of the agreement between the seller and the buyer or the general conditions of the markets have been influenced by exceptional events.

The transposition of the principle mentioned above into the national legislation was made stating that an independent evaluator designated by the bidder can determine the fairprice, when the stipulated criteria are not applicable or the competent authority considers that the purchasing shares activities were likely to influence the accuracy of the price.

On one hand the adjustment made into the capital market legislation reduces the capacity of the national competent authority to amend itself, in special cases and totally motivated, the offering price, and, on the other hand,it leaves this taskfor an independent expert.

Following a bid made to all the holders of the company and for all of their securities, if the bidder holds securities representing more than 95% of the voting rights or more than 90 % of the voting rights comprised in the bid, he is entitled to require to all the holders of the remaining securities to sell those securities at a fair price (squeeze-out) to him. These percentages represent the national option in implementing the directive, which requires a percentage no less than 90%, but not more than 95%. It is a national option that the price offered into a mandatory takeover bid and into a voluntary takeover bid, is considered to be fair when the bidder purchased shares representing more than 90% of the voting rights comprised in the bid.

The law does not distinguish between the voluntary and mandatory takeover bid, as the Directive does. The European legislation provides that, in case of a voluntary takeover bid, the fair price is the price paid by the bidder for purchasing more than 90 % of the voting rights comprised in the bid, which is logical.

The request addressed by the offeror to the shareholders who did not subscribe to the offer may be exercised no later than 3 months from the closing date of the offer. In this case, the offered price is considered as fair price. On the contrary, the price shall be determined by an independent expert, according to the international assessment standards. These provisions are different from those of the Directive which stipulates that if the offeror wants to exercise the right to request the withdrawal of the other shareholders, the offeror shall do this no later than 3 months from the offer closing date. There are no provisions referring to the possibility of extending this deadline or to adopt another modality of calculating the fair price in this situation.

In my opinion, this deadline cannot be extended and therefore the right conferred by the Directive cannot be exercised beyond this deadline. This opinion is confirmed by another provision according to which Member States shall ensure that following an offer where shares with voting rights attached have been bought in the above mentioned percentage, the shareholders who did not subscribe and continue to own shares may request the offeror to buy these shares at a fair price (sell-out). The modality of calculating the fair price is the same and the deadline of

the request is still the same, no later than 3 months from the offer closing date.

This means that even in the situation where the offeror does not launch the squeeze-out procedure, the shareholders of equities owned following the offer may ask the offeror to buy their shares. The interpretation of the community legislation by the national legislation means that both in squeeze-out and sell-out procedure, the person asked to sell, respectively to buy is obliged to do this. There are points of view stating that this obligation is not in accordance with the Constitution and this can be discussed.

References

Directive 2004/25/EC of the European Parliament on takeover bids
Law no. 297/2004 on the capital market (with all late amendments)

Theoretical Aspects Concerning the Inflation Analysis

Prof. Constantin ANGHELACHE PhD
„Artifex" University of Bucharest
Academy of Economic Studies, Bucharest
Prof. Dan CRUCERU PhD
„Artifex" University of Bucharest
Prof. Vergil VOINEAGU PhD
Academy of Economic Studies, Bucharest
Prof. Radu Titus MARINESCU PhD
„Artifex" University of Bucharest

Abstract:
Definition of inflation was the victim of a "war" theory of money growth and general price increase. What was once described as a monetary issue is now presented as a price effect. This change of position sense supporters anti-inflation complicated by the simple fact that inflation based on prices may have, as I mentioned with several causes, making it difficult to identify solutions to eliminate this phenomenon. When inflation was a question of money with one location, namely the central bank and a single solution - reducing the rate of monetary expansion.

Key words: *inflation, price increase, money supply*
JEL Classification: *E31, P44*

In the 19th century the inflation was directly connected with the currency devaluation and not with the prices increase. According to a Federal Reserve release from the year 1919, "The inflation is a process of additional multiplication of currency ungrounded by a corresponding increase of the goods production".

After approximately 60 years, the quoting taken over from the Federal Reserve press release ceased of being valid so that in 1978, the term of inflation has as causes: the evolution of the exchange rate, the considerable increase of the labor force cost, the weather condition but not the excessive increase of money.

Consequently, the inflation definition has been the victim of a theoretical « war » between the increase of the monetary mass and the increase of the general level of prices. What was once described as a monetary cause is presented nowadays as an effect of the prices. This change of sense complicated the position of the anti-inflation supporters, simply because the inflation based on the level of

prices can have, as we have already pointed out, more causes which make the identification of the solutions meant to eliminate of this phenomenon more difficult. When the inflation was the cause of money with a single location, namely the central bank, there was a single solution – the reduction of the increase rate of the monetary mass.

The classical economists, contemporary of Adam Smith, where very careful with the exact definition of the economic terms since they were building up a language being at the ground of the construction of an emergent science.

Among their first contributions, there was also the distinction between the real and nominal prices, so that the real price (the value) of a product was defined as the effort required by its production, while in nominal terms (money) it was characterized only by the cost in money (fixed in terms of gold or other precious metals). In other words, the value of the goods is given by the laws of the nature – the effort of the labor force- and the nominal price differs depending on the availability of the precious metals and sovereign law, which define the money of a nation.

Although the classical economists believed that the fluctuation of the nominal price of the goods can have disturbing temporary influences on the economy (such as generating the versatile redistribution of resources between the parties of a contract with a nominal fix price), at the end of the day these modifications served only for changing the scale through which the real price was measured. The idea that the changes occurring in the quantity of money is affecting the nominal price of the goods only, has been supported by many of the early classical economists, among which the most known was David Hume.

The theory has been developed more rigorously at the beginning of the 20th century, by the economist Irving Fisher, becoming known as the "quantitative theory of money".

The first generation of economists, the successors of Adam Smith in the 19th century, have been very interested in paper money and their modality to relate to the causes of the modifications of one goods costs was based on three distinct sources:

- The value modification which took into account the real source of one goods costs;
- The modification of the money price (nominal), basically caused by the fluctuation of the metal content of the money;
- The depreciation of the currency relatively to the metal which constituted the national currency.

The term of inflation has been initially described by taking into consideration the source concerning the currency depreciation but, by the end of the 19th century, the distinction between the currencies and money became more and more unclear. So that by the beginning of the 20th century, the economists had the tendency to relate to the term of inflation of the currency by using any environment of money circulation attributed to a commercial demand. But on this change of relating to the term of inflation a question mark raised also. While the

quantity of currency related to the mass of precious metal was easy to establish, the things became more complicated when somebody tried to establish the quantity in circulation which exceed the commercial demand.

During the first decades of the 20th century, the economists seem to reach a definition through which the excess existing within the circulation environment of the money could be explained through the effect on the prices level only. Thus, the notions of the currency and prices inflations became connected in an incomprehensible mode.

This change of rhetoric may have an insignificant impact on the theoreticians of the quantitative economics as it seems unlikely that they were in the position to remark a significant distinction between the two ideas. From their point of view, the increase of the currency quantity related to the commercial demand can have only one effect – the prices increase, while an increase of the prices level can have only one origin – an increase of the money quantity corresponding to their demand.

Nevertheless, a number of economists tried to maintain the distinction between an increase of the prices level based on the additional "printing" of currency corresponding to the commercial exchanges and an increase, as result of the commercial exchanges diminishing for a certain money offer.

The connection of the inflation with the prices level proved to be another significant point of crossroads for the humanity. The apparition of the General Theory of Keynes, in 1936, has been considered as the moment of the assault of the quantitative theory on the monetarist theory, which dominated the macro economy for 40 years.

Making recourse to the conviction that the resources regularly and persistently non-engaged – an idea sustained at the moment of the Great Depression at the worldwide level-, the Keynesian theory contested the necessity of the connection between the quantity of money and the general level of the prices. Moreover, it sustained that the overall evolution of the prices may be due to other causes than money.

Apart the separation of the level of prices from the monetary mass, the Keynesian revolution seems to separate the term of inflation from the money situation and to re-define it as a description of the prices. In this way, the inflation became synonymous with any increase of price and that is why nowadays the distinction between the prices increases and the inflation is seldom done.

Referring to the inflation as a consequence of too much money, the economists have been forced to fight the optional issue: "how much is much?". The quantitative theory provided a clear answer to this question: "too much money" represents an increase of the monetary mass accompanied by an increase of the general level of the prices. When the Keynesian economic theory disputed the direct connection between money and the prices level, the inflation lost the association with money and became in the first place, associated with the prices situation.

Without being connected with the money offer, any increase of prices seems to be claimed by the term of inflation. In this respect, whenever this term is used for describing the level of prices, the anti-inflationist steps might be characterized as being against any price increase, including the wage increase as well. According to the monetarists, this is unacceptable while an anti-inflationist strategy is concerned with a certain type of price increase – that increase resulting through an excessive creation of currency. Fromm this point of view, targeting a sustainable level of inflation became a more rational goal of the central banks.

The period of the great inflation of the years 1970-1980 has been considered, along with the Great Depression of the years 1929-1932, the most grave failure of the monetary policies of he 19th century. During the respective period, the inflation exceeded the level of 10% in all the countries members of OECD, a notable exception being Germany.

Although the economic history has permanently faced periods of inflation and even of hyperinflation, the Great Inflation is considered by the economists as being an unique episode. In comparison with the period of the Great Inflation, the other periods have been associated with the two world wars or with other internal events which led to major changes within the economy and policy of a country and which, finally, as response to the government needs, resulted in the massive financing of the budgetary deficits by means of monetary emission (seignorage).

The negative consequences of the inflationist phenomenon of the years 1970-1980 contributed to a major extent to the change of the perception on the inflation from the point of view of both the monetary policies makers and the individual level of the day-to-day living.

The opinion polls referring to the economic conditions evidence the citizens' will as to live within a stable environment from the point of view of the prices evolution. We can discuss about the prices stability when, as average, the prices neither increase (inflation) nor decease (deflation) but keep on remaining stable over the time.

The economic theory and literature is abundant in information concerning the significance and benefits of the prices stability, as well as to the causes at the basis of the prices increase or decrease.

All the arguments submitted by the specialized literature suggest that a central bank which maintains the prices stability has a major contribution to the achievement of the economic goals concerning the economic growth and stability, the standard of life and the degree of the labor force occupation. That is why, during the decades following the Great Inflation, a remarkable convergence has been recorded as to the need to declare the prices stability as the main target of the monetary policy. The prices stability became the central point as it is considered an achievable goal on medium term and, meantime, a pre-condition for the good functioning of a market economy.

The European Union Treaty attributed to the European Central Bank (ECB) the mandate to maintain the stability at the European level, a target defined in quantitative terms as being an annual average increase of the harmonized index

of the consumption prices IAPC, below 2%. The Council of the ECB governors undertook as target to maintain the inflation but close to 2%. This target takes into account an adequate positive margin in order to avoid the deflation risk but sufficient to solve the eventual implications generated by the differential existing between the member states of the euro zone so that no state can survive within the euro zone when showing too low inflation rates or even deflation. In addition, this target take into considerations also the possibility of a slight over-estimation of the real inflation through IAPC.

Despite this recognition shown to the need of stability of the prices, the notion is periodically submitted to debates, which finally led to a lack of consensus on what should be understood by the price stability. This lack of consensus occurred between the academic environment and the central banks.

All these concerns regarding the inflation influenced also the methodology of calculating the price indices. The issue of the inflation measurement errors has been addressed for the first time in the year 1961, in the USA, by the Commission of the Chicago University, led by George Stigler. The main recommendation of this Commission referred to the necessity to adopt a rigorous probabilistic method to set up the sample of stores and products as well as a higher strictness as to setting up the products specifications.

In December 1996, in the USA as well, the Report of the Boskin Commission has been issued and made public, with a recognized impact at international level, both by the academic world, the statistical practice and among the central banks. The Boskin Commission emphasized a series of possible errors of measurement for the index of the consumption prices, such as: the substitution of products in the frame of the indices, the stores change, difficulties in the adequate measurement of the quality modifications and the necessity to bring in new products. The analysis achieved by the Boskin Commission on the USA data, indicated the fact that the effect of these statistical lack of accuracy may be a major one, leading to an over-estimation of the measured inflation at the level of the year, with values estimated between 0.8-1.6 percentage points.

Besides these problems of measurement there is a general question mark concerning the covering sphere of the price indices utilized for evaluating the prices stability. It may be possible that there are situations in which a general price index is used – such as the GDP deflator – including the prices of all the final goods and services produced within an economy and which can be considerably more relevant for the decisions regarding investment and saving.

The price index can be characterized as a factor through which the relative modification of this aggregated value is measured as a result of the prices modifications. As a result, all the significant formulas for the measurement of the price indices can be expressed as a weighted average of the relative prices which weights are represented by the contribution of each product (item) in the total value. We remind here the most known formulas for the measurement of the price indices, expressed as weighted average of the relative prices: Laspeyres index, Paasche index and Walsh indices, respectively Torngvist. Expressed as a

geometrical average of the Laspeyres and Paasche indices, the Fisher index can be considered also as a function of the weights of the expenses directly derived from the total value.

The relations existing between the most important four price indices are defined through their association with the centralized aggregates defined by the System of the National Accounts (SNC). The system of the national accounts is periodically submitted to revisions, the last version being the one issued in 2008.

So that, the chapter I explains the concepts utilized for defining the institutional sectors and the transaction types mentioned by SNC, in order to underline more exactly the association between the most significant types of indices and aggregated values measured through these concepts. The most adequate frame for presenting the price indices existing in the statistical system is the table resources utilizations.

The tables of the resources and utilizations are meant to serve the statistical and analytical purposes. The main statistical requirements which can be covered are the following:

- Identification of the gaps and incoherencies which affect the basic data;
- Weighing and calculating the indices which measure the price and volume;
- Getting the estimates in a residual manner (in order to obtain a variable, we start with estimating all the other variables, the un-known one resulting as a difference), mainly for the production and consumption of the specific products;
- Verifying and improving the coherence, liability and exhaustively of the data contained by the tables of resources and utilizations and the derived figures (as, for instance, those of the production accounts).

Meantime, the first chapter is analyzing some basic concepts regarding the prices statistics – the different formulas used to the indices calculation, the significance of the "consumption basket", the difference between the price index and the price modification etc.

The price indices have a long history and a large variety of utilization, starting from the adjustment of the level of wage, pensions and payments included within a long term contract, the deflation of the aggregates of the national accounts, up to the macroeconomic policies making.

The simplest and earliest example of index has been the one proposed by William Fleetwood in 1707, who intended to measure the average modifications of the prices paid by the students of the Oxford University, over a period of two and a half centuries. Another example from the 18th century has been the index calculated by the legislative body of Massachusetts in 1780, which considered indexing the pay to the soldiers fighting the revolutionary's war against England.

The 19th century is considered the most interesting moment in the history of the indices theory. In 1823, Joseph Lowe published a study concerning the agriculture, trade and financial services. In the frame of this study, the author

developed the concept of price index as a modification of the monetary value of a set, or classification of goods and services. This method is still utilized nowadays. Diewert (1993) argues that Lowe may be considered the father of the price indices. Later on in the 19th century, other significant contributions have been achieved, brought to the indices theory, including those of Laspeyres (1871) and Paasche (1874), whose names are associated with the most spread types of price indices. Marshall (1887) supported the utilization of the chained indices, where the indices are measuring the evolution of prices from one year to another, lined together in order to estimate the evolution of the indices over long periods of time.

In 1922, Irving Fisher published his work, considered a monumental one by those preoccupied by the indices theory: *The Making of Index Numbers*. This work underlined Fisher's interest on inflation and his support for the money quantitative theory. Fisher investigated the properties of hundreds of types of possible formulas for measuring the price indices, his preferred being the geometrical mean of the Laspeyres and Paasche indices , known presently as Fisher index. In 1924, Konüs published a work which resented the foundation of the economic theory of the life cost index (COLI), which is elaborated in order to measure the modifications of cost in order to maintain the same living standard (utility or welfare). In fact, the consumer does not buy the same set of products and services during different periods, adjusting his expenses depending on the prices changes and other factors occurring in the economy. Counter-party to the setting up of COLI is the index of the fix cost of goods. Another important approach from within the numbers theory has been the one issued by Divisia, in 1926, which is based on the assumption that the prices and the quantities are changing in time, in a continuous and instantaneous mode. As an economic, monetary and social phenomenon, the inflation took position in the center of the attention of the researchers belonging to different historical periods and schools, which get integrated within the Romanian monetary-financial thinking. The causes, intensity, forms of acting and, mainly, the effects generated by the inflation cannot be identified, in their totality, with the same circumstances and manifestations which this phenomenon met within other zones and countries of the world.

References

Anghelache, C. (coord., 2012) – „*Modele statistico – econometrice de analiză economic – utilizarea modelelor în studiul economiei României*", Revista Română de Statistică, Supliment Noiembrie 2012

Aukrust, O. (1977) – „*Inflation in the Open Economy. An Norwegian Model*", in Klein, L. B. and W. S. Sâlant (eds.), World Wide Inflation. Theory and Recent Experience. Brookings, Washington D.C., p.130

Biji, M., Biji, E.M., Lilea, E., Anghelache, C. – „*Tratat de statistică*", Editura Economică, Bucureşti, 2002

Begu, L., Stelian , S. (1999) – „*Statistică internațională*", Editura All Beck, 1999

Some Operational Aspects Relating to Quality Management and Total Quality Management

Associate Professor Sorin GRESOI PhD
Associate Professor Aurelian DIACONU PhD
„Artifex" University of Bucharest

Abstract

The work pass in review a few basic concepts found in quality management focusing on operational aspects of quality assurance in production activity and continue with issues regarding total quality strategy, the vector of competitiveness on the market.

Key words: *quality, competitiveness, check, improvement, standard.*
JEL Classification: *L15, M11*

A dynamic quality expressed through concepts such as quality potential, quality designed, quality built, quality assured and total quality.[1]

A brief analysis of the world economic picture of the 21st century allows highlighting some defining features of indisputable: diversification and renewal of supplies of goods, under the impact of the rapid development of science and technology, globalisation of markets, facilitated by progress in the field of telecommunications, increasing requirements of our customers and society[2].

In these circumstances, the quality of products and services was imposed as a determinant of the competitiveness and performance of enterprises.

Actual content of the performance is dependent on strategic objectives, there is no absolute performance, independent of its objectives is dependent performance evaluation setting objectives, which is performing in a given situation, characterized by certain objectives may not be in another situation characterized by other objectives[3].

Quality is a concept with a very wide use, which makes it extremely difficult to define from the scientific point of view. Disciplines such as philosophy, economics and technical ones give a different meaning of the term.

In philosophy, the quality is defined as a category that expresses the synthesis of things and properties of objects and processes. By virtue of a system of relationships, an object is what it is and can be distinguished from other objects. Changing the quality means the radical transformation of the object.

---

[1] Gresoi Sorin Gabriel – *"Management and quality management"*, Pro Universitaria Publishing House, 2011, p.13
[2] Verboncu Ion, Protopopescu Cristina (2010), *„The Implications of Management Reengineering on the Performances of Organizations",* Revista Română de Statistică trim IV/2010, supliment pp. 8-10,
[3] Diaconu Amelia, Diaconu Aurelian *„Performanța economico-financiară și indicatori ai analizei și evaluării ei*", Simpozionul Științific Internațional organizat de Societatea Română de Statistică la 17.03.2009, Nr. 3 martie, pp. 97-102.

In logic, quality means a criterion of logical order, after which predictive judgments are divided into affirmative and negative. Affirmative judgments are those qualities that states belonging to the object, iar judecățile negative enunță lipsa apartenenței unei însușiri la un obiect. Assertion and negation are regarded as representing the logical mechanism by which, in the judgment, it expresses the truth or falsehood.

With regard to the concept of quality of products and services, in the literature many definitions are formulated. On the other hand, in economic practice are given different meanings of this concept.

Thus, capacity is defined as representing "the customer's expectations", "the availability of the product", "a systematic approach to excellence", "compliance with the specifications," "suitable for use", etc.

David. Garwin, a professor at the Harvard Business School has highlighted five main guidelines in defining product quality: transcendence, to produce, process, and user costs.

Quality assurance in production

a) production processes should be checked if they are capable of producing the product specifications. Must be identified operations associated with the characteristics of the product that may have a significant effect on the quality of the product.

An adequate control must be established in order to ensure that these features within product specifications or that suitable changes or modifications are made.

Verifying production processes should include materials, equipment, systems and software, procedures and personnel.

In particular, account must be taken of production processes in which control is particularly important for product quality. Such special attention may be required for the characteristics of the product are not easily measurable for the special skills required in their implementation, for a product or process whose results cannot be fully verified through a subsequent inspection and testing.

Control of processes assumes control of materials and the traceability and inspection and maintenance of equipment.

b) product verification refers to:

- testing of materials and components

The method used to ensure the quality of the materials, components and assemblies supplied, which are the units of production, will depend on the situation and control of the information available from the vendor, as well as the impact on costs.

- inspection during manufacture

To verify compliance, to be taken into account in the inspection or test points suitable process. Location and frequency will depend on the importance of nature and the ease of checking in that stage of production. In general, verification must be carried out as close as possible to the point of realization of property or feature.

Checks may include:

- adjustment and inspection of the first units of the product;
- the inspection or testing of the machine by the operator;
- automatic inspection or testing;
- inspection points, at intervals throughout the process;
- the inspection light, through inspection that monitors specific operations.

► verification of the finished product

You can use several techniques, methods of checking the quality of the finished product:

► checking through 100% control of finished products

In the case of the production of unique and small series, whereas in the case of medium-sized or large series is uneconomic, unreliable and involved in certain situations.

► checking by sampling of finished products

Consists in extracting a "sample" of the finished products, in order to inspect his whole. Conclusion ACCEPTED/REJECTED thus obtained can be extended under certain conditions, the entire lot, without needing to inspect it, "piece by piece".

Because the sample is representative of the sampling to be done randomly, and the consignment to be as uniform as possible.

Statistical control of batches of finished products involves the definition of a "sample plan" that includes the following elements:

- type of control: single, double, multiple;
- security level control: normal, low, severely;
- acceptable quality level (AQ): standard values ranging from 0.01 .... 10;
- the level of checking/control (NC): common (NCI, NCII, NCIII) and special (S1, S2, S3, S4)

Knowing the batch size (N), using the standard SR ISO 2859-10: 2009 („Sampling procedures for inspection by attributes. Part 10: Introduction to the ISO 2859 series of standards for sampling for inspection by attributes") or the ruler, you get:

- the size of the sample of sampled (W)
- the maximum number of defects for which the consignment (A)
- the minimum number of defects for which the batch is rejected (R)
- continuous auditing/verification through regular quality samples.

The audit should not be confused with supervisory activities or checked, for example for the purposes of acceptance of a product. Audit means "listening" and not inspection.

Product audit shall be carried out to assess the performance of the product specifications (or with some requirements to beneficiaries etc..)

c) control and measurement equipment;

In order to achieve an adequate level of confidence in the decisions made or actions taken it is necessary that all assets/measuring systems used during the life cycle of the product concerned under control.

In measurement systems category included not only measuring and control apparatus and measuring and control devices, sizes, measuring translators, specialized products, equipment for testing.

All measuring systems whose performance may influence specific characteristics of a product, process or service should be verified before use – in relation to the accuracy and reliability of measurement.

d) control of non-compliant product;

Product units or non-conforming consignments alleged to be identified and their recorded appearances.

Non-conforming product units must be isolated, whenever possible, of the units produced and appropriately identified in order to prevent their further use until adequate provision is made.

All parts the components of a product and auToate parts (pieces) items were identified as being true must be examined by competent persons specially designated to decide what treatment is to be applied: repair, triggering reprocessing, or bad marketable state.

e) corrective actions

Implementation of corrective action begins with identifying a problem and involves taking steps to eliminate or minimise the possibility of the problem. Corrective action includes also repair, reprocessing or bad marketable State materials or unsatisfactory product units.

In order to find out the risks linked to its organizational structure, business activity may be divided in the following phases: research and development, purchasing, production and sale[4].

f) quality assurance in subsequent production activities

Subsequent production activities refer to: handling, storage, packaging, assembly, and delivery.

For all these activities should be drawn up and kept up-to-date documented procedures. Of special importance is the provision of feedback and information regarding the behaviour in the use of the product.

The quality of production and the product is affected and staff. As a result, you have identified the needs of personnel training and necessary to establish a method for ensuring that training. It should also be envisaged providing training to all levels of staff within the organization, society. Particular attention should be paid to the selection and training of newly hired personnel and personnel transferred to new assignments.

Is not sufficient initial training newly hired traders, this initial training must be accompanied by a periodically performed under the direction of a professional. This means overcoming the mental barrier, both the employer and the

[4] Nastase Dan, "*Marketing risk assessment activities*", Editura Semne, Bucuresti 2013, p.74

staff: on the one hand, the belief that a permanent investment in the training vendors, not enough experience for them, and on the other side a certain modesty embodied in accepting that you have to learn, regardless of age and experience[5].

Quality is an essential products and services.

According to SR EN ISO 9000: 2006(„Quality management systems. Fundamentals and vocabulary") quality is the extent to which a set of inherent characteristics fulfills requirements. Dictionaries and literature offers numerous other definitions of quality, such as:

- Quality is the customer's satisfaction
- Quality is fitness to be properly used
- Quality is what the customer is willing to pay depending on what you get and recover.

Total quality is a new evolutionary model of management that includes practices, tools and methods for gearing of the entire staff, with the objective of satisfying the customer in a a medium located in a continuous.

Total quality can be defined as a set of principles and methods brought together into a global strategy, put in place in a company in order to improve the quality of its products and services; the quality of its operation and the quality of its objectives. Purposes of applying the total quality strategy is the development of the enterprise, to ensure its profitability, satisfaction and loyalty of customers to attract. Total quality include:

- all functions of the enterprise (company);
- all activities of functions
- all employees, regardless of the hierarchical ladder;
- all vendor-client relationships in the enterprise;
- all the improvements in the field of quality;
- the whole life cycle of the product;
- all current and potential markets.

Total quality characteristics are:

- the generalization of the notion of quality;
- the generalization relationship supplier-customer;
- considering all needs (anticipating possible demands, the drive for "zero defects" policy, the development of trust on the basis of "quality");
- application of tracking tools, evaluation and settlement of.

If you compare a few features of the classic (traditional) concept of quality controlled and modern quality of all we notice a number of key differences.

Therefore the objective of total quality means ensuring the competitiveness of the enterprise it through customer satisfaction, taking as a basis the improvement continues with the participation of the entire staff.

[5] Teau Anca, *"Sales Techniques"*, Editura Pro Universitaria, Bucuresti, 2009, pag 39

References

Diaconu Amelia, Diaconu Aurelian „Economic and financial performance and its analysis and evaluation indicators", Simpozionul Ştiinţific Internaţional organizat de Societatea Română de Statistică la 17.03.2009, Nr. 3 martie,

Diaconu Aurelian, " Quality management: the influence of measurement errors", Ed.Artifex, Bucuresti, 2008

Gresoi Sorin Gabriel – *"Management and quality management"*, Pro Universitaria Publishing House, 2011,

Nastase Dan, "*Marketing risk assessment activities*", Editura Semne, Bucuresti 2013,

Teau Anca, *"Sales Techniques"*, Editura Pro Universitaria, Bucuresti, 2009,

Verboncu Ion, Protopopescu Cristina (2010), „*The Implications of Management Reengineering on the Performances of Organizations",* Revista Română de Statistică trim IV/2010, supliment.

Non-parametrical Estimation of the Regression used in Economic Analyses

Prof. Constantin ANGHELACHE PhD
„Artifex" University of Bucharest
Academy of Economic Studies, Bucharest
Prof. Gabriela Victoria ANGHELACHE PhD
Academy of Economic Studies, Bucharest
Prof. Liviu BEGU PhD
Academy of Economic Studies, Bucharest
Georgeta BARDAŞU PhD Student
Academy of Economic Studies, Bucharest

Abstract

Non-parametric methods are useful, but raises some problems. In practice, they require a large number of observations and are used for a relatively small number of explanatory variables. Moreover, the result is sensitive to the choice of the smoothing parameter and to a lesser extent in the nucleus. They pose a problem for the presentation of results that can not be contained in a compact formula but can only be described by graphs. A non-parametric analysis does not allow extrapolation outside the range of observation, but econometric is an advantage.

Key words: *non-parametric methods, variables, regression function, appraisal*

JEL Classification: *C01, C51*

- **General aspects**

Contrary to the other domains, the economic theory is rarely mentioning functional forms but, usually, it specifies only a list of the relevant variables in order to explain a phenomenon. The specification of the relation form is resulting, to a great extent, out of an empirical study containing a "good" model which "works well". A first level of analysis consists of writing a model (linear, logarithm linear, non-linear etc.) and performing the estimation without taking into account its approximate nature. A second approach consists of specifying a parametrical model which incorrect specification is explicit. This is leading, for instance, to the correction of the expression for variations or to the selection of the models for the erroneous specification.

Practically, we have to get all the specified conditions by adopting a *non-parametrical* approach when estimating the regression, in which the data themselves are selecting the form of the function to be built up.

Various methods (models) for estimating the non-parametrical regression have been drawn up which are presently commonly used. We consider likewise the nucleus method, which is a simple one and, in certain situations, dominated by other approaches.

The non-parametrical methods are useful but they are raising certain problems. In practice, they are requiring a large number of observations and are to apply to a relatively small number of explanatory variables. Moreover, the outcome is sensitive to the selection of the equalizing parameter and, to a smaller extent to the nucleus. They are raising a problem as to submitting the outcomes which cannot be covered by a compact formula but can be described by means of diagrams. A non-parametrical analysis does not allow an extrapolation outside the observation domain but, from the econometric point of view, this is an advantage. In order to redeem some of these difficulties, semi-parametrical methods have been developed which purpose is to estimate only certain characteristics of the regression or to constrain the regression function to satisfy certain conditions. The dimension of the issue is thus reduced and the obtaining of the outcomes facilitated. Meantime, it is possible to insert also structural conditionings to the model.

For the beginning, we take into consideration the standard estimation of the regression nucleus and then, we discuss certain problems of the estimation for specific characteristics of the regression or the estimation under compulsion.

- **The band lengths for the variables**

The previous expression is transformed in the following mode. In the dispersion terms, $h_n^{\,q}$ becomes $\prod_{j=1}^{q} h_{jn}$.

In addition, the same argument as the one applied to the density can be utilized in order to set up the width of the band and nucleus. We can use the expression of the squared mean asymptotic integrated error in order to derive the best width of the band at z fix.

This calculation implies that g and f are known. We can go on with estimating the f and g, first with a couple of initial values of the band width and, then, by using these estimations in order to improve the band width.

This procedure is merely a delicate one because it requires the estimation of the differentials, which are converging slowly (and need a large sample) and the conditioned dispersion. This method of connecting has been also extended to the selection of a specific band width for each explanatory variable.

After replacing the band width by its optimum value, we can look after an optimum nucleus, which is the Epanechnikov nucleus, as in the case of the density estimation.

An alternative approach for selecting the optimum width consists of the so-called *crossed validation method.*

The expression does not depend on h_n and can be numerically minimized by observing h_n for a given interval.

The AMISE calculation is based on two conditions, respectively: the fact that

$$\int uK(u)\,du = 0 \quad \text{dar} \quad \int uu'K(u)\,du \neq 0$$

and on the double difference of the observation density. The distance between g and g_n , *measured by* AMISE can be reduced by assuming a differentiation at a higher order or by selecting *K* so that:

$$\int u^j K(u)\,du = 0 \quad \text{for } j < r$$

In this case, the smallest r in this formula is called the order of the nucleus *K.* To note that when *K* is a density of measurement of the probability *(K* non negative), then r equals to 2.

The term of the systematic error is then equal, up to a multiplicative constant, with $h_n^{2\min(s,r)}$, where s is the order of the differentiation and r is the order of the nucleus.

The disadvantage of the nucleuses of high order, of order higher then 2,, is that there are no more densities and the estimated densities can be negative, at least on small samples.

When *Lf* h_n equals to the optimum choice, the convergence rate $\sqrt{nh_n^{\,q}}$ becomes:

$$\sqrt{nn^{-\frac{q}{q+4}}} = \sqrt{n^{\frac{4}{q+4}}}.$$

This is the convergence non-parametrical optimum rate with the measure q which can be compared with the usual parametrical rate, namely $\sqrt{n}$. We are checking the fact that indeed the interval between the two rates increases along with the increase of q .

In order to utilize this outcome in practice, we must estimate the density and the conditional dispersion. The density is estimated by the nucleus and, similarly, the conditional dispersion.

- **The estimation of the regression function transformation**

Instead of the estimation of the regression function, we can analyze a transformation of this function. The option for this transformation is grounded by

the economic analysis which defines the parameters *of interest.* Obviously , there are many transformations which can be considered but we shall focus on a specific class characterized by the relation:

$$\lambda = \int g(z)\, w(z)\, dz.$$

In this formula , $g(z) = E(\tilde{y} \mid \tilde{z} = z)$, and *w(z)* is a weight function which is either scalar, or vectorial and satisfies *w(z)*=0 if $f_{m\arg}(z) = 0$, which is natural since *g(z)* is defined only if $f_{m\arg}(z) > 0$. The parameter of interest λ is scalar or vectorial. This class of transformation is justified by the properties of the resulting estimator λ and, meantime, by its relevance as regards many issues of applied econometrics, which are special situations of these analyses.

Before entering into details, we notice the fact that this transformation does not insert the over-determination of the conditions on the variables distribution.

We shall estimate the mean of the regression differentials. We have seen that the parametrical estimation of a regression erroneously specified does not allow us to consistently estimate the differentials of this function in a certain point. In many econometrical issues, the differentials are parameters of interest. The estimation is possible but its rate of convergence is very slow and, consequently, requires a large sample. Nevertheless, in many applications it is enough to estimate the mean of the regression differentials, namely:

$$\lambda = \int \partial^{\alpha} g(z)\, v(z)\, dz$$

where α is a multiple index of the derivation and ∂^{α} is the derivation defined by this multiple index. The function *v(z)* is a density on the explanatory variable which can be equal to $f_m(z)$, the density of the actual explanatory variable being studied. We shall analyze the under-additively test. In order to illustrate this situation, let's assume that the function *C* is the function cost which associates an expected cost with the quantities of the different products *z*. The economic theory is interested in the under-additively *C,* namely it is:

$$C\left(\sum_{j=1}^{p} z_j\right) \le \sum_{j=1}^{p} C(z_j)$$

Which means that, the cost of a company producing $\sum_{j=1}^{p} z_j$, is lower than the cost of several companies each producing z_j . The above property must be true for each *p* and each sequence $(z_1, ..., z_p)$. It is easy to show that this property is equivalent to the property which will be explicitly shown by the content. If φ is

the density $(z_1,..., z_p)$, $\widetilde{\varphi}$ the density of the sum $z_1 + ... + z_p$ and φ_j the density z_j, than, it is equivalent with the fact that for each φ, we have:

$$\int C(u)\,\widetilde{\varphi}(u)du \le \sum_{j=1}^{p} \int C(z_j)\,\varphi_j(z_j)\,dz_j.$$

The reciprocal is resulting by taking into account the distribution on $(z_1,..., z_p)$ focused in one point. Now, we shall approach the under-additively test. The previous relation suggests that there is a λ defined, namely:

$$w(z) = \widetilde{\varphi}(z) - \sum_{j=1}^{p} \varphi_j(z),$$

the sign of this parameter having to be tested.

The estimation of λ defined can be made in two modes.

The first variant consists of the estimation of *g* followed by the calculation.

The second approach avoids the estimation *g* and is based on the particularity given by the utilized (final) function:

$$\frac{1}{n} \sum_{i=1}^{n} y_i \frac{w(z_i)}{f_{marg}(z_i)}.$$

This condition is seldom satisfied. We can replace $f_{m\arg}$ with a parametrical or non-parametrical estimation.

Implicitly, we assume that *w* is given. In practice, *iv* can be partially or totally unknown (since it is, for instance, a function of $f_{m\arg}$) and thus *w* must be replaced by an estimation.

A procedure of *adjustment* is inserted sometimes, consisting of the elimination of the data placed at the limit of the support of the explanatory variables distribution. The adjustment can be inserted in the function *w* as the form of a function with multiplying indicator.

The main asymptotic result is the convergence rate $\hat{\lambda}_n$ at λ. Indeed, we know:

$$\sqrt{n}\left(\hat{\lambda}_n - \lambda\right) \to N(0, V),$$

in the frame regularity conditionings and under the condition that the bands width have an adequate asymptotic behavior. In order to limit the problems of dimensioning or to impose certain restrictions originating in the economic theory, we often assume that the conditioned probability *g(z),* which is a function of the variables *q*, depends in fact on the functions of a reduced number of variables and, possibly, on certain parameters. In fact, there are two points of view being expressed: either we assume that *g* is actually restricted to this specific form or we

are searching for the best approximation *g* through an element satisfying the considered restrictions.

References

Anghelache, C. (coord., 2012) – „*Modele statistico – econometrice de analiză economic – utilizarea modelelor în studiul economiei României*", Revista Română de Statistică, Supliment Noiembrie 2012

Bardsen, G., Nymagen, R., Jansen, E. (2005) – *„The Econometrics of Macroeconomic Modelling",* Oxford University Press

Benjamin, C., Herrard A., Hanée-Bigot, M., Tavére, C. (2010) – „*Forecasting with an Econometric Model*", Springer

Dougherty, C. (2008) – "*Introduction to econometrics. Fourth edition*", Oxford University Press

Jesus Fernandez-Villaverde & Juan Rubio-Ramirez (2009) – "*Two Books on the New Macroeconometrics*", Taylor and Francis Journals, Econometric Reviews

Mitruț, C. (2008) – „*Basic econometrics for business administration"*, Editura ASE, Bucureşti

Voineagu, V., Țițan, E. şi colectiv (2007) – "*Teorie şi practică econometrică*", Editura Meteor Press

Sales Force Motivation and Compensation

Assoc. prof. Anca-Mihaela TEAU PhD
Artifex" University of Bucharest

Abstract

This article illustrate how sales managers can use sales incentives and compensations to motivate their sales team. To motivate sales people effectively, sales managers must have a thorough understanding of human needs and the concepts of motivation. They must also learn how to use the various forms of sales incentives and compensation to meet their salespeople's needs.

Key words and expressions: *commission plans, incentive, sales force motivation, sales compensation*

JEL Classification: *O15, M31*

Nowadays many companies have began to revise their sales incentive and compensation plans to reflect changes in sales strategies and tactics. For instance, the growth of international marketing requires that sales incentive and compensation be changed to reflect cultural, political and economic differences in other countries. Sales practices and operations are likely to be different and as a result management will be challenged to find the best way to motivate global sales personnel. The variety of sales commission plans make compensating individuals in a sales more complicated than with employees in others parts of a company. A salesperson's compensation often includes combinations of salary, commission, bonus, sales contests, and nonfinancial rewards and recognition programs.

To illustrate this problems, I structured the present article in three parts, first of them approaches the sales motivation, in the second part are presented some considerations to help develop a compensation plan that contributes to a high performance sales team and finally in the last part there are described the basic components of most sales commission plans.

1. Sales force motivation

One of the most difficult problem a sales manager faces is the motivation of the sales force. Motivation is the process that produces goal-directed behavior in an individual. It helps to initiate desired behavior in an individual and direct it toward the attainment of organizational goals. Motivation consists of three elements - need, drive and goal. Satisfaction of the need in the individual cuts off the drive in him to work toward satisfaction of the need. The effectiveness of the sales force plays a crucial role in the success and growth of an organization. In order to attain the goals of the organization, it is essential that the sales force is highly motivated.

Motivation in the sales function refers to the amount of effort a salesperson is willing to expend in the selling job. While some salespersons are self-motivated, there are others who need to be motivated to perform. Sales managers can motivate their team by following any of the theories of motivation, namely, Maslow's hierarchy of needs theory, Herzberg's two-factor theory, goal-setting theory, expectancy theory, and job design theories. Maslow's hierarchy of needs theory classifies the needs of an individual into five categories - physiological, safety or security, social, self-esteem and self-actualization needs. Physiological needs are the lowest order needs while self-actualization needs are the highest order needs. Further, as lower order needs get satisfied, an individual strives to satisfy higher order needs. Herzberg's two-factor theory states that the job environment of an individual is characterized by two types of factors - hygiene factors and motivational factors**.**

The goal-setting theory presumes that people have specific needs and aspirations to fulfill for which they set certain goals for themselves. They then go about achieving these goals by taking purposeful action. Further, setting higher goals produces higher output. The expectancy theory states that an individual is motivated by the perceived consequences of his or her actions. According to this theory, motivation is a function of expectation, valence and instrumentality. Job design theories assume that all individuals have the same needs, and that ensuring certain job characteristics can satisfy these needs.

A salesperson's motivation plays a crucial role in influencing his performance and thereby his productivity. Salespersons having a high level of motivation tend to perform well in the selling job and have high productivity. On the other hand, salespersons who lack motivation tend to be poor performers and fail to achieve their sales targets. Such salespersons hence tend to have low productivity. Creating desire is part skill and technique, and part behaviour and style. In modern selling and business, trust and relationship (the 'you' factor) are increasingly significant, as natural competitive development inexorably squeezes and reduces the opportunities for clear product advantage and uniqueness.[1]

Sales managers can take various measures to motivate the sales force and boost its productivity. These measures can be in the form of sales quotas, sales contests, well- designed compensation plans and reward systems, etc. The sales compensation plan has a greater impact on the company's results than any other single document. It impacts the behavior of the sales organization in a direct fashion. Salespeople are generally paid differently than all other functions within the company. Their performance is easily quantified and measured. As a result, their compensation is generally comprised of a base salary, and a quota or commission.

2. Sales Commission Plans

The best sales compensation programs are ones that are fair, motivating and will achieve the goals of the company. Setting unrealistic sales goals, or

[1] Anca Mihaela Teau, Cristina Protopopescu (2011), *AIDA, Hierarchy of Effects*, Revista Română de Statistică, trim. III/2011, pp., ISSN 1018-046x

putting unrealistic ceilings on earnings power will create discord in the ranks of the top salespeople. Sales commission plans can be rewarding and motivating if done correctly. It can have a negative impact on motivation resulting lower sales when structured poorly. There is no one size fits all process for developing a compensation plan. There are considerations to help develop a compensation plan that contributes to a high performance sales team.

- Sales commission plans should not be developed in a vacuum. Make sure the compensation plan and budget are developed in conjunction with the Company's overall planning process. It is a good idea to involve the sales team when creating the compensation plan. They can contribute ideas and practical feedback borne from experience.
- Develop the compensation plan to focus on both tactical sales objectives and the company's strategic objectives and goals. Consider organizational goals including profit, growth, market share, product line revenue, and business development when creating the plan.
- Make certain the plan does not direct sales behavior away from organization objectives. Salespeople always maximize a sales plan to their personal benefit and reward. The Company job is to make sure the plan benefits everyone.
- Create metrics and measurable criteria for the tactical and strategic objectives mentioned above. Just looking at gross sales may cause other critical issues like customer satisfaction, customer retention, new business development, competitive sales, profitability, and individual product line sales to suffer.
- Keep your plan simple yet complete. It has to achieve the company objectives, but not be so complicated the salesperson cannot accurately determine how they are being rewarded. You do not want your sales people spending the first few days of each month arguing about compensation.
- Relationship building and consultative selling with major clients requires long-term engagements and often necessitates a fixed salary component to the plan.
- Design the compensation plan so it discourages turnover among the top sales people. Paying a little extra to keep top performers happy is far cheaper than the turnover caused by a poor compensation plan.
- Reward your sales team based on their contribution and worth, not just level of activity. Many top salespeople work smarter and more efficiently. Both performing tasks and achieving results are important, and the plan needs to be crafted to create the right balance.
- Create the sales commission plans so it differentiates between top, average, and inadequate performers. An effective plan will motivate top performers to continue performing high levels, average performers to improve their performance and poor performers to hopefully consider other lines of work. A plan without the right differentiation runs the risk of retaining poor performers and causing top performers to leave.

- Perform benchmarking. If in improving sales target is to become the best in everything they do, sure benchmarking possible to know if he has reached the goal or when it will be achieved. This is the only instrument that teaches us how "good" can become" best". Well done, benchmarking will tell you directly what is now "the best" and how to achieve this level of excellence[2].
- Try to create plans that do not create direct competition between salespeople. The best plans do not have the entire sales team competing against each other for a fixed pot of compensation dollars. Reward salespeople for concentrating on customers, corporate objectives, and out selling your competition.
- Sales commission plans should be evolutionary, not revolutionary. Don't change the sales plan too radically or quickly. Completely revamping a compensation plan may appear arbitrary and confusing to the sales team. Involve the salespeople for ideas and feedback, and take it slow. There are times when a sales plan has to be changed quickly due to new products, mergers and acquisitions, or new market penetration. In this case, develop the new plan completely, and implement it swiftly so salespeople can immediately begin maximizing their rewards.
- A properly designed compensation plan allows above average performers to find a comfortable level of income without penalty. Remember that individuals are motivated differently by the types of sales jobs and their individual and personal agendas.
- The right sales commission plans have a positive impact on customers and the marketplace. A poor plan has the opposite effect.
- Use the sales contests judiciously. They can often motivate sales for short period of time, but they can also violate characteristics of a carefully crafted compensation plan, and make it hard for you to get your team back on track.

3.Types of commission plans

There are many forms of commission plans. A commission plan can include many types of compensation and can include multiple formulas. Here are the basic components of most sales commission plans.

a)Salary Only

A straight salary compensation plan for salespeople is used for one of several reasons. It is first used when a new sales rep is brought into a company. It is also used when a new territory is opened or a person needs time to come up to speed and perform at the proper level. A salaried compensation for a period of time gives a new person that opportunity. Another reason to use salary only is when management is trying to motivate a salesperson to achieve key success factors that are not revenue or sales volume related. Salary only compensation is also used when is difficult to determine an individual's impact on the total selling effort.

[2] Gresoi Sorin Gabriel – *"Management and quality management"*, Pro Universitaria Publishing House, 2011, pg.140

Sometimes in team selling, or in global and multinational sales accounts, customer care and relationship building is the key focus. One way of guaranteeing proper account involvement is to compensate a sales rep using salary only.

The advantages of salary only compensation are management can ask the sales people to spend their time completing tasks and activities that are important to the company's initiatives and objectives. Salary only plans are used when salespeople are expected to perform customer service, market research, customer problem solving, education, or other promotions. Also, straight salary plans can be used effectively where extensive high-tech integration and design services are required to get a product approved and sold. Another advantage to salary only plans is they are easy to compute and administer. They also give management more flexibility in positioning their sales force in a way that best meets corporate goals. Another added bonus for management is cost of sales stays fairly constant even with increasing sales volume. This results in cost per unit sold dropping and profitability rising. The disadvantage is when sales go down, salaries remained constant for a time, and they represent an ever-increasing percentage of sales. The other key consideration of a salary only commission plan is that financial rewards are not tied to a specific job performance. This causes performance evaluation to be more subjective. Since salaries are fixed, it does not provide an incentive for improving the rep's performance. Over long run, this type of compensation plan tends to attract security oriented sales people rather than the true high-performance hunters and business development reps.

b)Straight Commission

Having a compensation plan based entirely on commissions is an excellent way to motivate highly aggressive selling behavior. Straight commission is the right choice if the goal is to turn sales reps loose in a market or territory to maximize sales volume. Straight commission assumes that the non-selling tasks have been minimized in their importance at the expense of sales volume. Another consideration of a straight commission plan is companies have a harder time controlling sales force activities.

Straight commission sales commission plans can be very motivational. Individuals who are motivated to improve their financial compensation are motivated to improve their sales production. However there is a point where further incremental effort and activity increases become less attractive to each person, and at that point sales productivity plateaus. Sale commission plans compose only of commission are simple and have a perceived sense of fairness. As long as each rep's territory is properly defined with approximately equal potential, compensation equals productivity. A straight commission plan makes it easy to compute and administer compensation. Compensation costs move up and down with sales volume which makes this attractive to companies that may be trying to save working capital. The company doesn't need to worry about paying higher wages and salaries unless sales volumes increase.

There are some disadvantages to straight commission plans. There is less control over sales reps, and less control over directing other corporate objectives. It

may be difficult to get reps to think about relationship building activities that do not lead to short-term sales when every sales rep is trying to maximize sales. Developing new accounts takes more effort than getting business from existing accounts. As a result, straight commission plans often encourage milking existing customers rather than developing new business. Getting market data, feedback, and analysis from your sales team may also be problematic with this type of plan. Many sales people dislike straight commission plans because earnings are unstable and unpredictable. When business conditions are poor, turnover rates are likely to be high. Some companies try to compensate this with a draw advanced to the salesperson against future commissions. Draws need to be paid at a future date from commissions earned. Often though, the salesperson may fail to earn enough commissions to repay the draw or they may quit or be fired before the draw is repaid. In those cases, the company has to absorb the loss.

c)Combination Sales Commission Plans

Combination sales commission plans offer both a base salary plus an incentive based on production. These pay plans are popular with many companies because they have many advantages while avoiding many of the limitations of the other plans. The salesperson gets a stable salary that smoothes out the highs and lows. Management gets the advantage of having more ability to direct and reward their salespeople to perform tasks and activities not directly related to short-term revenue. The incentive portion of the plan motivates a salesperson to increase sales revenue and profitability. The incentive program can be structured in a tiered format to incentivize top sales reps to achieve on an open-ended basis. All revenues a sales rep brings in above their quota, is very profitable business for a company. The company gains additional revenue and profit, but the fixed expenses for the wage and benefits for the sales rep does not increase.

There are aspects of this plan that can vary. Sometimes incentives are left open-ended and sometimes they are capped. Occasionally an extremely large windfall deal is won by a sales rep that throws the incentives out of balance. Another consideration is defining exactly when a sales rep is credited with a completed sale and is due commission payments. The ratio of the base to incentive is something each company needs to determine. When a sales rep's activities are mostly related to short-term sales, the incentive portion of the pay is usually higher. When a sales rep is asked to do more relationship building and activities that don't bring in short-term revenue, the base salary is usually adjusted upwards. Increase the incentive portion of the plan when selling the product is difficult, and the salesperson is key to the sales success. The incentive portion should be reduced when the salespeople are largely order takers.

References:

Anca-Mihaela Teau, *Tehnici de vanzare,* Editura ProUniversitaria Bucuresti, 2009

Anca Mihaela Teau, Cristina Protopopescu (2011), *AIDA, Hierarchy of Effects*, Revista Română de Statistică, trim. III/2011, pp., ISSN 1018-046x

Andris A. Zoltners,Prabhakant Sinha,Sally E. Lorimer, *The Complete Guide to Sales Force Incentive Compensation*, ISBN-10:0-8144-7324-5, New York, 2006

Gresoi Sorin Gabriel – *"Management and quality management"*, Pro Universitaria Publishing House, 2011

Thomas N. Ingram, Raymond W. LaForge, Ramon A. Avila, *Sales Management: Analysis and Decision Making*, ISBN- 978-0-7656-2259-4, 2009

New Global Financial Regulatory Framework

Daniel DUMITRESCU, PhD Student
Diana Valentina SOARE, PhD Student
Academy of Economic Studies, Bucharest

Abstract

This paper presents the main aspects regarding the new regulations applicable in the global finances. Triggered by the occurrence of the 2008 crisis, the regulatory framework reform induces significant modifications in the national legal provisions for the financial system.

Key words: *reform, board, stability, supervision, coordination*
JEL Classification: *N20, G18*

The 2008 crisis was international and financial services were at the base, revealing problems like regulatory gaps, ineffective monitoring, opaque markets and financial products much too complex.

As a result, several committees and working groups have been established to reform the global financial regulatory framework in the context of the current financial crisis.

The purpose of these initiatives was to prevent that the financial system would never again crash and disrupt the global economy. There is also a big concern for the future to avoid that taxpayers will underwrite big banks bailouts.

Therefore, major changes are in force at the global level, but also in the United States, the European Union and other national legislation.

Following these new set of rules, regulators acquired new skills and powers in financial supervision and new institutions were born to control risks in the financial system. The new regulatory framework is highly complex and there is still much work to be done. But the new rules and new institutions, such as the Basel III rules, the Dodd - Frank Act in the United States, besides mitigating financial risks and ensure investors, had unexpected results.

For example, by avoiding getting into riskier activities and by the adoption of new capital requirements, banks poses in present large sums of money as protection against a possible new crisis. But as a result of these measures, the private sector credit has declined significantly in recent years, banks, choosing instead to make deposits in central banks or hold sovereign debts.

Against such situations, it is very probable that in 2013 the ECB (European Central Bank) will have a negative interest rate for deposits made by commercial banks to money at the European Central Bank.

There is also a tendency to oversee the entire financial system as a whole, integrating the various regulators of banks, insurance companies, pension funds. In

this respect we mention the emergence of new global regulatory institutions such as the Financial Stability Board, established by the G20 with a mission to lead the global agenda and to ensure consistency of the financial agenda. The Group of Twenty (G20) is the premier forum for international cooperation on the most important issues related to global economic and financial agenda.

In the United States, the Dodd - Frank Act created two new institutions: the Financial Stability Oversight Council (a new entity that supervises risk of the financial system and coordinates work of other regulators) and the Office of Financial Research (OFR) housed within the US Treasury.

The European Union is a world leader in the implementation of its G20 commitments. In this regard, the Commission has entrusted Mr. de Larosière too coordinate a high level working group to issue a set of recommendations on how the financial system can be strenghten and to propose a new architecture of European financial supervision institutions

As a result, at European level we observe the establishment of the European Systemic Risk Board as part of the European System of Financial Supervision.

Following we will presents a preview of these new institutions and regulations:

1. New international financial system regulators:

- **Financial Stability Board:**

The Financial Stability Board - FSB has been established to lead at the international level, the work of national financial authorities and international standard setting bodies and to develop and promote the implementation of effective, regulatory, supervisory and other financial sector policies . The FSB brings together national authorities responsible for financial stability in significant international financial centers, international financial institutions, international groupings of regulators and sectorial supervisors, and committees of central bank experts.

FSB's mandate is to:

a. assess vulnerabilities affecting the financial system and identify and oversee action needed to address them;

b. promote the exchange of information and coordination between the authorities responsible for financial stability;

c. monitor and advise on market developments and their implications for regulatory policy;

d. advise and monitor best practice in meeting regulatory standards;

e. undertake joint strategic reviews of the policy development work of the international standard setting bodies to ensure their work is timely, coordinated, focused on priorities and address the gaps;

f. establish guidelines for and support the establishment of supervisory colleges;

g. manage plans for cross-border crisis management, particularly with regard to systemically important firms, and

h. collaborate with the IMF to conduct „early warning exercises".

- **Basel Committee on Banking Supervision**

The Basel Committee on Banking Supervision provides a forum for regular cooperation on bank surveillance issues. Its objective is to improve the understanding of key issues in monitoring and perfectionate the quality of banking supervision worldwide. It aims at exchanging information on national supervisory issues, approaches and techniques, in order to promote a common understanding. Sometimes, the Commission uses this common understanding to develop guidelines and supervisory standards in areas where they are considered desirable. In this regard, the Committee is best known for its international standards on capital adequacy; fundamental principles for effective banking supervision, and the Concordat on cross-border banking supervision.

The Committee encourages contacts and cooperation between its members and other banking supervisory authorities. It circulates to supervisors throughout the world, both published and unpublished documents providing guidance on bank surveillance issues. Contacts were strengthened by an International Conference of Banking Supervisors (ICBS) which takes place every two years.

- **Basel III: A global regulatory framework for more resilient banks and banking systems**

"Basel III" is a comprehensive set of reform measures, developed by the Basel Committee on Banking Supervision to strengthen the regulation, supervision and risk management of the banking realm.

These measures aim to:

a. improve the capacity of the banking sector to absorb shocks due to economic and financial stress, regardless of the source;

b. improve governance and risk management;

c. enhance transparency and disclosure of banks;

d. the reforms target;

e. bank-level, or microprudential, regulation, which will help raise the resilience of individual banking institutions to periods of stress;

f. macroprudential, system wide risks that can build up across the banking sector as well as the procyclical amplification of these risks over time.

These two approaches are complementary, as greater resilience at the individual bank level reduces the risk of system wide shocks.

Basel III is part of the Committee's continuous effort to enhance the banking regulatory framework. It builds on the International Convergence of Capital Measurement and Capital Standards document (Basel II).

2. New financial system regulators in the United States:

- **Financial Stability Oversight Council**

The Financial Stability Oversight Council has a clear statutory mandate that creates for the first time collective accountability for identifying risks and

responding to emerging threats to financial stability. It is a collaborative establishment, chaired by the Secretary of the Treasury that brings together the expertise of federal financial regulators, independent insurance experts appointed by the President and government regulators. In addition, to assist in the identification of emerging risks to financial stability, the FSOC can provide guidance and request data and analyzes from the newly created Office of Financial Research (OFR) housed within the US Treasury.

The Council has significant new powers to constrain excessive risk in the financial sector. For instance, the FSOC has the authority to designate a nonbank financial firm for tough new supervision to help minimize the risk of such a firm from threatening the stability of the financial system.

Before the crisis, the U.S. financial regulatory framework focused narrowly on individual institutions and markets, which allowed supervisory gaps to grow and regulatory inconsistencies to emerge in turn, allowing arbitrage and weakened standards. No single regulator was responsible for the fight against global risks to financial stability, which often involve different types of financial institutions operating in multiple markets, leaving large parts of the financial system unregulated.

The Dodd-Frank Wall Street Reform and Consumer Protection Act addressed these problems through the creation of FSOC, which is authorized to:

a. facilitate regulatory coordination;
b. facilitate the sharing of information and Collection;
c. designate nonbank financial companies for consolidated supervision;
d. designate Systemic Financial Market Utilities and Systemic Payment, Clearing, or Settlement Activities;
e. recommend higher standards;
f. break Up Firms that Pose a "Grave Threat" to Financial Stability.

- **Reform of the Dodd-Frank Wall Street and Consumer Protection Act**

The complete name is: "An Act to promote the financial stability of the United States by improving accountability and transparency in the financial system, to end ''too big to fail'', to protect the American taxpayer by ending bailouts, to protect consumers from abusive financial services practices, and for other purposes." The Act amends the existing regulatory structure, such as the creation of a multitude of new offices (while merging and removing others) in order to streamline the regulatory process, increasing supervision of institutions considered a specific risk systemic amending the Federal Reserve Act, to promote transparency and additional changes.

The Act purports to provide rigorous standards and supervision to protect the economy and American consumers, investors and businesses, purports to end taxpayer funded bailouts of financial institutions, claims to provide for an advanced warning system on the stability of the economy, creates rules on executive compensation and corporate governance, and eliminates some loopholes that led to

the 2008 economic recession. The new agencies are either granted explicit power over a particular aspect of financial regulation, or that power is transferred from an existing agency. All of the new and some existing agencies are not required to do so, are also forced to report to Congress on an annual basis (or biannual) to present the results of lesson plans and explain future goals.

Of the existing agencies, changes are proposed, ranging from new powers to the transfer of powers in order to improve the regulatory system. Institutions affected by these changes include most regulatory agencies currently involved in the control of the financial system:

a. Federal Deposit Insurance Corporation (FDIC)
b. U.S. Securities and Exchange Commission (SEC)
c. Office of the Comptroller of the Currency (OCC)
d. Federal Reserve (the "Fed")
e. Securities Investor Protection Corporation (SIPC), etc..

3. **New regulators of EU financial system:**

- **European Systemic Risk Board**

In response to the global financial crisis, the European Commission appointed a High Level Group chaired by Jacques de Larosière to examine how the European system of supervision could be strengthened to better protect its citizens so as to restore confidence in the financial system.

Among its many findings, the group noted that the monitoring arrangements should not only focus on the supervision of individual firms, but also focus on the stability of the financial system as a whole.

In 2009, the de Larosière report recommended, among other things, to establish a Union level body with a mandate to monitor risks in the financial system as a whole.

The ESRB is part of the European System of Financial Supervision (ESFS), the purpose of which is to monitor the financial system in the European Union.

Besides the ESRB, the ESFS shall comprise:

a. the European Banking Authority (EBA);
b. European Insurance and Occupational Pensions Authority (EIOPA);
c. European Securities and Markets Authority (ESMA);
d. the Joint Committee of European Supervisory Authorities (ESAs);
e. the competent or supervision authorities in the Member States as specified in the Act establishing the three ESAs.

In the next article we will analyse progress made by Romania to adopt at national level legislation on supervising the whole financial system. In these respect, a main point will consist in reviewing the legislation procedure that is now in progress (February 2013) for establishing the Authority for Financial Supervision. We will examine if the adopted legislation represent a correct harmonization of the international and European legislation in this matter.

References

Dodd-Frank Wall Street Reform and Consumer Protection Act;
EU regulation N0 1092/2010 on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board;
Green Paper on Shadow Banking – European Commission;
Regulation (EU) No 1093/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Banking Authority);
Regulation (EU) No 1094/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Insurance and Occupational Pensions Authority);
Regulation (EU) No 1095/2010 of the European Parliament and of the Council of 24 November 2010 establishing a European Supervisory Authority (European Securities and Markets Authority);
Council Regulation (EU) No 1096/2010 of 17 November 2010 conferring specific tasks upon the European Central Bank concerning the functioning of the European Systemic Risk Board;
http://www.g20.org;
http://www.financialstabilityboard.org;
http://www.bis.org/bcbs/index.htm;
http://www.bis.org/bcbs/basel3.htm;
http://www.treasury.gov/initiatives/fsoc/Pages/home.aspx;
http://www.sec.gov/about/laws/wallstreetreform-cpa.pdf;
http://www.esrb.europa.eu/home/html/index.en.html;
http://eur-lex.europa.eu;
Bank Corporate Governance, Beyond the Global Banking Crisis – INSEAD (Jean DERMINE 2011/33/FIN);
Green Paper on Corporate Governance in Financial institutions: Lesson to be drawn from the current financial crisis, best practices – European Commission;
Non-bank financial institutions: Assessment of their impact on the stability of the financial system – Economic Papers 472/November 2012 – European commission.

Gross Domestic Product/inhabitant and Occupation of the Labor Force

Ligia PRODAN PhD Student
prodanligia@yahoo.com
Academy of Economic Studies, Bucharest

Abstract

The author analyzes the correlation between two important macroeconomic indicators, the GDP/inhabitant and the degree of occupation of the labor force. This correlation reveals the importance of the second indicator for the evolution of the GDP. The results, achieved by using Eviews 5.1, are presented in both descriptive and graphical manner.

Key words: *labor force, correlation, hypothesis, model, estimation*
JEL Classification: *E01*

Regression and correlation method indicates how the characteristic result of „Y" changes in conditions where the characteristics of values „X" changes. The goal of regression is to identify the mathematical relationship that exist between two variables.

To assess the intensity of the relationship between two variables, the level of correlation between them is determined, which indicates the intensity of the connection between variables by measuring the scattering degree of recorded data around the regression line.

Employment rate of the population

General employment rate calculated as a ratio between population and total population was 43.05%, by using the relationship:

$$RO_g = \frac{PO}{PT} \times 100$$

where: RO = employment rate
PT = total population
PO = employment population.

The employment rate of working age population (15- 64 years) is calculated by gender and by area.

From the calculations made, it results that the employment rate of working age population (15- 64 years) registered in 2011 levels of 58.5%, with higher values for the employed male 65% compared to 52% for the females and those in rural areas 58.8% to 58.2% for those in urban areas.

The analysis considered data sets and the estimation the parameters of regression model was performed using specialized software package Eviews 5.1.

Thus, in a first stage of analysis peculiarities of the two data sets previously considered were studied.

As can be seen from the above table, the evolution of the two macroeconomic indicators is very similar, with sharp increases for the period 1990 - 2008 and a decrease of approximately 4 to 5% in 2009.

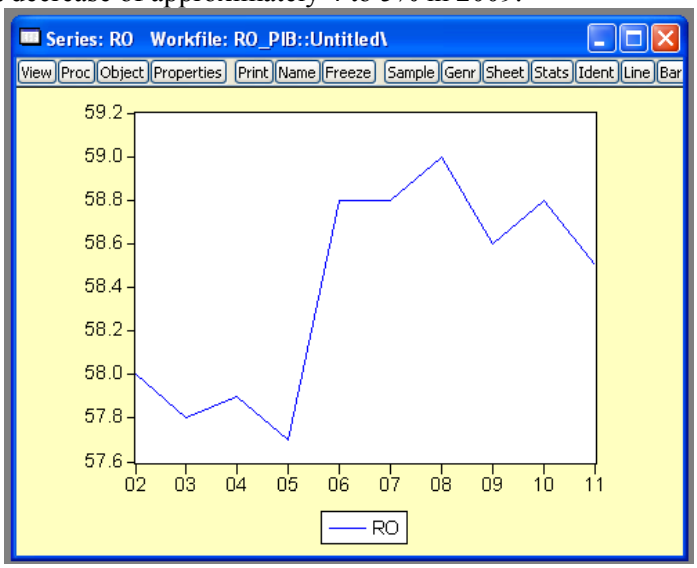


Figure 1 – Evolution of employment rate

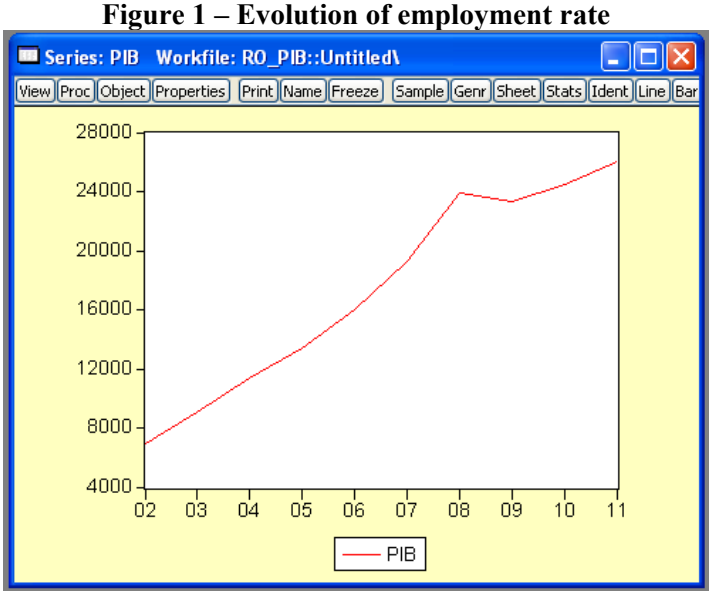


Figure 2 – GDP evolution

To confirm the above hypothesis, we performed the graphical representation of data series (using at this specific commands implemented within the software package Eviews 5.1), this tool is particularly useful for identifying a typology that defines the correlation function of the two indicators analyzed:

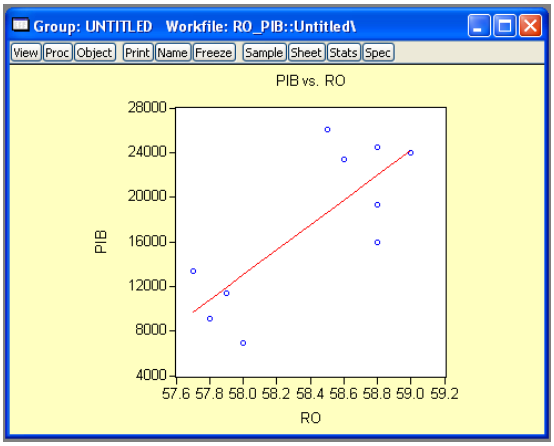


Figure 3 – The correlation between employment rate and GDP per inhabitant

As you can see, the graphic above evidences a direct linear connection between the two indicators, which allows us to affirm that it is possible to use simple linear regression model to study the dependence between the GDP per inhabitant and the employment rate of the population.

Estimating the parameters of regression model using the variable as the employment rate of people employed and the GDP per inhabitant value as variable dependence was performed automatically (Figure 6), using specialized software package Eviews 5.1. Its framework is implemented least-squares method (Least Squares) as a method for estimating the model parameters, requiring only define two variables (PIB_L and E) and the constant term (C).

Using this method work, the following results have been obtained on the evolution of the phenomenon studied:

Equation: UNTITLED Workfile: RO_PIB::Untitled\

View Proc Object Print Name Freeze Estimate Forecast Stats Resids

Dependent Variable: PIB
Method: Least Squares
Date: 02/21/13 Time: 06:54
Sample: 2002 2011
Included observations: 10

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RO	11150.08	3155.614	3.533412	0.0077
C	-633663.4	184262.1	-3.438924	0.0088

R-squared	0.609470	Mean dependent var	17390.01
Adjusted R-squared	0.560654	S.D. dependent var	6979.090
S.E. of regression	4625.962	Akaike info criterion	19.89361
Sum squared resid	1.71E+08	Schwarz criterion	19.95413
Log likelihood	-97.46806	F-statistic	12.48500
Durbin-Watson stat	1.104232	Prob(F-statistic)	0.007694

Figure 4 – Parameter estimation results of the regression model that analyzes the dependency between GDP per inhabitant and population employment rate

Analyzing the results obtained it is possible to formulate practical conclusions concerning the dependence between the value of GDP per inhabitant and employment rate of the population, as follows:

- The probability that this is a correct model is relatively high - about 61%, this conclusion can be made based on the values determined using Eviews program for testing R - squared (0.6094) and Adjusted R - squared (0.5606);
- The validity of this model is confirmed by regression test values F - statistic (12.48500 - higher value than table level is considered to be the benchmark in analysis validity of econometric models) and the degree of risk almost zero (reflected by test value Prob F - statistic)
- Based on the above, we consider the regression model describing the relationship between the GDP per inhabitant and the employment rate of the population as fair, which faithfully reflect the real evolution of the two macroeconomic indicators.
- Based on estimated values previously considered regression model may be given as follows:
  PIB = - 633,663.4 + 11,150.08 RO
- Between the value of GDP per inhabitant and population employment rate recorded in Romania in the period 2002 - 2011 there is a significant direct relationship. Thus, we can say that a one percent increase in employment will lead to an increase with 11,150.08 currency units for the GDP/inhabitant.
- The high value of the constant term reflects that the influence of the unspecified factors in the model on resultative variable evolution (GDP per inhabitant) is significant, which leads us to conclude that the model used (although is correct) can be developed to ensure even better outcomes for activity prediction.
  Between the employment rate and GDP / inhabitant there is a direct linear (Table 3, Figure 3,4 and 5) whose trend can be evidenced by the equation: $\hat{y} = -633{,}663{,}4 + 11{,}150.08 \bullet x$, which gives the following results:
- Correlation coefficient $r_{y/x} = 0.7804$ indicates a strong link between the two variables:
  $r = \sqrt{R^2} = \sqrt{0.609} = 0{,}7804;$
- The determination report confirms that the employment rate is a determinant factor $(R^2 \rangle 50\%)$ for GDP growth/ inhabitant, its variation influencing the rate by 61%.
- To verify the significance of the linear correlation coefficient t test (Student) is applied, by calculating the variable t_{calc} by the relation:
  $$t_{calc} = \frac{r_{y/x}}{\sqrt{1 - r_{y/x}^2}} \times \sqrt{n-2}$$

where: $r_{y/x}$ = linear correlation coefficient.

n = number of pairs of observed values =10

$$t_{calc} = \frac{0,7804}{\sqrt{1-0,609}} \times \sqrt{10-2} = 3,531$$

t_{calc} value is compared with the critical value, the table, $t_{tabelat}$, that is probabilistic set to a level of significance α and n-2 degrees of freedom. If $|t_{calc}| > |t_{tabelat}|$ the hypothesis significance of correlation is checked, and if $|t_{calc}| < |t_{tabelat}|$ the relationship is insignificant, so a key determinant will have to be found to apply the correlation method.

With a 95% probability and 8 degrees of freedom $t_{tabelat}$ has a value of 2.306. Because $|t_{calc}| > |t_{tabelat}|, |3,531| > |2,306|$, we can say that the hypothesis for the significance of correlation between variables investigated is verify and and there is a connection between investigated variables significant, so $r_{y/x}$ is statistically significant and analysis model is correctly specified.

References

Anghelache C., (2008) – „Tratat de statistică teoretică şi economică", Editura Economica, Bucureşti

Anghelache, C (coordonator) şi alţii (2012) – „Modele statistico – econometrice de analiză economic – utilizarea modelelor în studiul economiei României", Revista Română de Statistică (Supliment)

Turdean, M.S., Prodan L., (2012) – „Statistică pentru afaceri", Editura ProUniversitaria, Bucuresti, ISBN 978-606-647-312-5

*** Institutul Național de Statistică – Anuarul Statistic al României, Ediţiile 2010, 2011, 2012

A Study of the Relationship between Corporate Social Responsibility - Financial Performance - Firm Size

Prof. Georgeta VINTILĂ, PhD
Florinita DUCA, PhD Student
The Bucharest University of Economic Studies
vintilageorgeta@yahoo.fr
florinitaduca@yahoo.com

Abstract

The notion of corporate social responsibility is established on the reciprocal dependence between a company and society, as well as the indicators that influence this relationship. This paper explores whether profitability and company size have a potential influence on levels of corporate social responsibility according the annual dates of romanian companies, using statistical correlations. The research found that company size and company profitability have an influence toward the corporate social responsibility.

Key words: *Corporate social responsibility, profitability, company size*

JEL Classification: *C10, G10, G30.*

- **Introduction**

Corporate social responsibility is a business philosophy gaining popularity in the 21st century. The definition of corporate social responsibility is not abstruse. Corporate social responsibility is the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large (The World Business Council for Sustainable Development). Corporate social responsibility can be defined as the "economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time" (Carroll and Buchholtz, 2003). Mathews (1993) has defined social and environmental disclosure as: organizations voluntarily disclosing both quantitatively and qualitatively about their corporate social responsibility activities in order to inform their stakeholders. Corporate social responsibility social activities may include charitable contributions to local and national organizations such as fundraising, donations. Corporate social responsibility is defined as the voluntary activities undertaken by a company to operate in an economic, social and

environmentally sustainable manner, like resulting from information published by the Romanian companies on specialized pages (www.responsabilitatesociala.ro).

- **Prior Literature and Hypotheses Development**

A considerable number of theoretical and empirical research on corporate social responsibility disclosure have been undertaken throughout the world due to the continuing emphasis on green awareness (Basalamah and Jermias, 2005).

Company Profitability and Corporate Social Responsibility

Profitability is the company's ability to produce a profit that would sustain long-term and short-term growth. The higher the level of corporate profitability should be the greater the level of social disclosure (Hackston and Milne, 1996). Profitability of company is measured by return on assets. Return on assets is a financial ratio used by business managers to determine how much money they're making on how much investment. Return on assets gives an indication of the capital intensity of the company, which will depend on the industry. It is given by the ratio between net income and total assets.

Uadiale and Fagbemi (2011), found that company profitability has positive effect on corporate social responsibility. Their study is based on the voluntary disclosure index constructed using the annual report of the sampled companies. Dependent variable of the study is financial performance which is represented by return on equity (measured as a proportion of Profit after tax to issued share capital) and return on assets (measured as the proportion of Profit after tax to total assets). The independent variables/parameters are community performance, environment management system and employee relations. Lev et al.(2008) examines the causality between corporate social responsibility(measured by charitable contributions) and financial performance, measured by sales growth. They demonstart as that corporate philanthropy programs have evolved towards congruence between business and social objectives ("strategic giving"), and that firms will not substantially invest in corporate social responsability giving unless it adds economic value. Drawing upon theoretical arguments, Akpinar et al. (2008) demonstrated empirical evidence which shows that once stakeholders are prioritized corporate social responsibility has a positive impact on market-based financial performance whereas this kind of an impact does not exist when stakeholders are given equal weights. In their paper, Vintila et al.(2009) established a positive relationship between social performance(CSP), measured through a coefficient, and financial performance of companies (size and profitability), at the level of a sample of Romanian companies listed on Bucharest Stock Exchange. Duca (2011) found that there is a positive relationship between corporate social responsibility expenditure and firm performance. Teoh at al. (1999), and Aly et al. (2010) found that company profitability has no effect on corporate social responsibility. Therefore, we formulate our hypothesis as follows:

H1: There is a significant relationship between profitability and corporate social responsibility

Company Size and Corporate Social Responsibility

Company size is the size of the company's image, which can be assessed based on the volatility of the company's activities, which can be viewed from various aspects. Company size is the independent variable which explain variation corporate social responsability. Size of company is measured by the total assets.

From an empirical perspective, various studies have found that there is a positive relationship between corporate social responsibility and firm size. Uwalomwa(2011) identify a significant positive relationship exists between the size of firms (financial sector) and the level of corporate social disclosure. So, simply implies that the larger the size of a firm, the more they will be willing to invest on resources and corporate environmental technologies that are environmentally friendly. Parsa and Deng (2008), which employ data from U.K., indicate that a positive change in company size leads to positive and significant change in amount of corporate social responsibility disclosure. Branco and Rodrigues (2008) show that the amount of corporate social responsibility disclosure in large companies is higher than small companies, because stakeholders expect greater corporate social responsibility disclosure from large companies than small companies. Social responsibility disclosure does not relate to the company size. csr disclosure might be influenced by the concern of the management or the environmental awareness(Rahman and Widyasari, 2008).

Therefore, we formulate our second hypothesis as follows:

H2: Company size has a positive influence toward corporate social responsibility

- **Research methodology**

We examined the relationship between profitability company, size company and corporate social responsibility on a sample of companies for the 2008 financial year. Data was gathered from publicly available information, as well as information from corporate social responsibility of Romania. Data has been analysed by using correlation and regression.

In order to test the above hypotheses, the study will investigate the following models:

$Y = \beta_0 + \beta_1 X1 + \beta_2 X2 + \mu$ (1), Where;

- Y represents corporate social responsibility(measured by the corporate social expenditure, CSR);
- X1 represents Profitability(measured by return on assets, ROA);
- X2 represents Size(measured by the total assets);
- μ_{it} = Error term.

Corporate social expenditure budgets for Romanian companies(Figure nr. 1) are divided into the following areas: education, culture, environment, social, human rights and sport (www.responsabilitatesociala.ro).

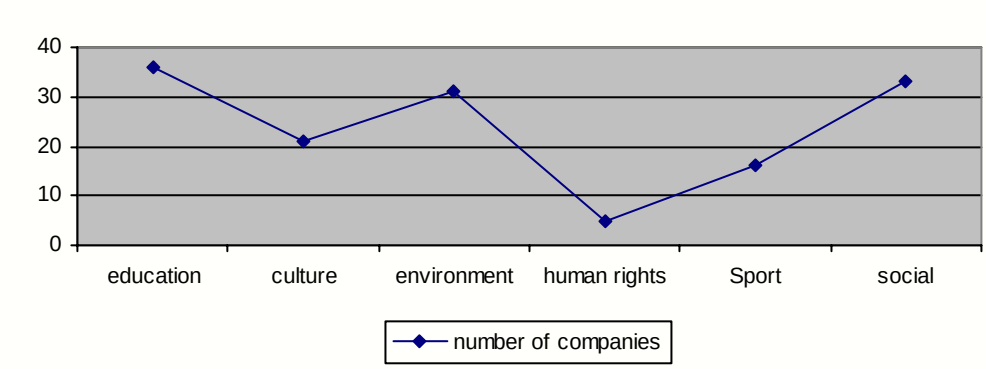


Figure nr. 1: areas of corporate social responsibility

Source**:** www.responsabilitatesociala.ro;

- **Regression Model Results**

Table 1 - Results of regression analysis

Dependent Variable: CSR

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SIZE	0.4947	0.0883	5.6017	0.0001
ROA	4.5860	1.0727	4.2754	0.0011
C	3.6245	1.8578	1.9510	0.0748
R-squared	0.7592	F-statistic		18.9132
Adjusted R-squared	0.7190	Prob(F-statistic)		0.0002
Durbin-Watson stat	2.7121			

Table 1 presents the results of pooled regression analysis, the OLS method. The model explains 75.92 % of variation in corporate social responsibility, with significant F-statistic(R^2 = 0.7592; This indicator shows how much from the total variance of the dependent variable is determined by the independent variables). So, this means that the corporate social responsibility is influenced by these two variables. The remaining 24.08% were influenced by other variables which are not tested in this study.

Regression analysis is used to find how significant the influence of each independent variable, return on assets and company size, toward corporate social responsibility as the dependent variable.

Hypothesis analysis

The first hypothesis states that company profitability positively influence toward corporate social responsibility. This research result shows that p - value is 0.0001 < 0.05 in the positive direction, so H1 is accepted. It means that profitability has influence corporate social responsibility of the romanian companies. Management thinks that corporate social responsibility activities is like investment activities that will give positive return to the company. This is particularly supports the research done by Bedi (2009), that identified in his studies that there is a

positive relationship between financial Performance and Social expenditure, the correlation coefficient for the same is 0.974.

The second hypothesis states that company size influence on corporate social responsibility expenditure. This research result shows that p - value is 0.0011 < 0.05 in the positive direction, so H1 is accepted. It means that size has influence corporate social responsibility of the romanian companies. This is particularly supports the research done by Uwalomwa(2011), a result of coefficient of determination of 0.89 and p - value is 0.000, what reveals that exist a significant positive relationship exists between the size of firms and the level of corporate social responsability.

- **Conclusion**

The existing studies on the relation between corporate social responsibility expenditure and corporate financial performance provide mixed results. We have investigated the relation between corporate financial performance, size and corporate social responsibility using a sample of Romanian firms; corporate social responsibility is measured by the corporate social expenditure.

The data showed that the amounts committed to social responsibility vary from one company to the other.

Based on the results of hypothesis testing which has been carried out it is concluded that company size and company profitability has a positive effect on corporate social responsibility expenditure. The reliability of the corporate social responsibility data is an important issue, as data from different sources have significant differences regarding how to evaluate the corporate social responsibility performance of a firm.

This study used a model that examined the effect of financial performance and company size with the corporate social responsibility as a dependent variable. Future studies are expected to improve the model by adding variables that affect corporate social responsability. This study is still subject to a number of limitations. Since we only employ data for a single year, future studies are suggested to incorporate a longer time span to provide more reliable insights on corporate social responsability. Our sample size is relatively small, mainly because information on the budget corporate social responsability expenditure are few, but know the area where the company carries out its projects.

As it is becoming increasingly important for companies to integrate social and environmental concerns in their business strategies, it is important for managers of these companies to understand the relationship between financial performance and corporate social responsibility.

References

Aly, D., Simon, J. and Hussainey, K. (2010), "Determinants of corporate internet reporting: evidence from Egypt", Managerial Auditing Journal.

Akpinar, A., Jiang, Y., Gomez-Mejia, L. R., Berrone, P. and Walls. J. L., (2008), "Strategic use of CSR as a signal for good management",. IE Business School Working Paper.
Basalamah A.S., and Jermias, J. (2005). „Social and environmental reporting and auditing in Indonesia: maintaining organizational legitimacy?", GAMA International Journal of Business.
Bedi, H. S.,(2009), "Financial performance and social responsibility: indian scenario", Electronic copy available at: http://ssrn.com/abstract=1496291.
Branco, M., and Rodrigues, L., (2008), "Factors Influencing Social Responsibility Disclosure by Portuguese Companies", Journal of Business Ethics.
Carroll A., Buchholtz A., (2003), "Business and Society. Ethics and Stakeholder Management", United Kingdom: South-Western, Thomson Learning.
Duca F., (2011) – „Financial Performance and Social Responsibility: Romanian Scenario", Ovidius University Annals, Economic Sciences Series.
Hackston, D. and Milne, M. J., (1996), „Some determinant of social and environment disclosures in New Zealand Company", Accounting, Audit, and Accountability Journal.
Lev, B. I., Petrovits, C. and Radhakrishnan, S., (2008), "Is doing good good for you? How corporate charitable contributions enhance revenue growth", Available at SSRN: http://ssrn.com/abstract=920502.
Mathews, M. R., (1993), "Socially responsible accounting". London: Chapman & Hall.
Parsa, S. and Deng, L. X. (2008), "Capital markets' reactions to social information announcements", International Journal of Accounting and Finance.
Rahman, A., and Widyasari, K. N., (2008), „The analysis of company characteristic influence toward CSR disclosure: empirical evidence of manufacturing companies listed in JSX", Jurnal Akuntansi & Auditing Indonesia, 12 (1).
Uadiale, O. M. and Fagbemi, T. O., (2011), "Corporate Social Responsibility and Financial Performance in Developing Economies: The Nigerian Experience", The 2011 New Orleans international Academic Conference.
Vintila G., Armeanu St. D., Lazar P., Moscalu M., (2009), „Study regarding the impact of the corporate social responsibility upon firms financial performance", www.ectap.ro.
Uwalomwa, U., (2011), „An empirical investigation of the association between firms' characteristics and corporate social disclosures in the nigerian financial sector", Journal of Sustainable Development in Africa.
Teoh, S., Welch, I. and Wazzan, C., (1999), „The effect of socially activist investment policies on the financial markets: Evidence from the South African boycott", Journal of Business.
www.responsabilitatesociala.ro.
www.wbcsd.org

Analyzing the Domestic Trade and Public Nourishment Activity – Statistical System of Indicators

Prof. Constantin ANGHELACHE PhD
„Artifex" University of Bucharest
Academy of Economic Studies, Bucharest
Prof. Constantin MITRUȚ PhD
Academy of Economic Studies, Bucharest
Assoc. prof. Alexandru MANOLE PhD
„Artifex" University of Bucharest
Adina Mihaela DINU PhD Student
Academy of Economic Studies, Bucharest

Abstract

A precondition for final goods from producers is bringing them closer to the place of purchase for consumption (end-use). In this process may take one or more intermediaries, depending on the nature of the goods and the goods movement organization. Physical movement of goods is accompanied by storing them as continuous movement from one to another and dissolution unimpeded progress to the public can not be organized on the basis of efficient storage process.

Key words: *consumption, goods, movement, progress*
JEL Classification: *L66*

- **The indicators of goods stocks**

A preliminary condition for the final achievement of the goods is to bring them from the producers as close as possible to the place of their acquisition with the purpose of their consumption (final utilization). During this process, one or several intermediaries may interfere, depending on the goods nature and the way the goods movement is organized.

The physical shifting of the goods is accompanied by their stocking, since the un-interrupted circulation from one intermediary to another as well as the unrestrained display to the population cannot be organized on the basis of efficient principles without a stocking process.

In order to characterize statistically these quantities of products, a system of absolute and derived indicators is applied to, based on the records of goods products at the beginning or at the end of a surveyed period, as well as the stocks recorded at different moments of the period, by the time of the inventories.

The absolute level of the stock is shown up either in a physical expression or in a value expression.

The physical stock is used in the frame of each commercial or public nourishment unit, on the basis of the primary evidence documents, which show the movement of the goods (shelve card, inputs/outputs notes, minutes concerning the findings of the loss/deterioration etc.), as well as by the analytical records of every company.

Knowing the size of the stock in a physical expression is required in order to calculate the storage-keeping spaces as well as for evaluating the actual possibilities to satisfy the demand for each and every product.

In its value expression, the stock is reflecting an immobilization of funds supporting, on one side, the checking of the material administration within the commercial and public nourishment units and, on the other side, the qualitative characterization of the activity of each operative unit as well as its contribution to the outcomes achieved by the unit it is belonging.

Over a period of activity, the stocks of products keep on changing, to the initial stock *(Si)* being added the entries *(In)* and deducted the usual exits *(Ie)*, due to the sale to other intermediaries, respectively, the consumers or due to consumption of their own laboratories, kitchens, annexes of the public nourishment units, as well as the accidental exits – losses (P) generated by the perishability, physical degradation, dilapidation, thefts etc. Out of this movement of the stocks during the studied period, there is a final stock *(Sf)* resulting, according to the relation:

$$S_f = S_i + I_n - I_e - P$$

The stock rate is set up as a percentage ratio between the size of a stock existing at a certain moment of the analyzed period *(S)* and the wholesales or, as the case it, retail sales, recorded during the respective period *(D),* according to the relation:

$$Ratastocului_{(\%)} = \frac{S}{D} * 100$$

As the momentarily stock (S) is not always at a relevant level of the stocked volume, it is recommended that the stock rate is calculated on the basis of the average stock, typical for the studied period (month, quarter or year):

$$Ratastocului_{(\%)} = \frac{S}{D} * 100$$

The relative size of the stock can be expressed also with the help of the stock indicator, expressed in days-hauling time for the wholesale units or stock expressed in days-sales for the retail and public nourishment units, according to the relation:

$$Stocînzile - rulaj = S : \frac{R}{Z} sau$$

$$Stocînzile - desfacere = S : \frac{D}{Z}$$, in which:

S = the existing stock at a given moment
R = the total circulation of the studied month, quarter or year
D = whole sales or retail sales
Z = the number of days of the respective period

The circulating speed of the goods is calculated according to the relation:

$$V = \frac{\overline{S}}{\overline{D}} = \overline{S} : \frac{D}{Z} = \frac{\overline{S} * Z}{D}$$

Along with the absolute size of the goods stock meant to be sold, the international statistics is recording also the stocks rotation along the reporting period.

This qualitative indicator of the domestic trade and public nourishment units, shows how many times the stocks are renewed during the studied period and is calculated by applying one of the calculation relations below:

$$\textit{Number of rotations of the stocks} = \frac{D}{S} \textit{ sau } \frac{Z}{V}$$

- **The indicators of the commercial and public nourishment activity**

The economic activity run by the commercial and public nourishment units is reflected in the volume of sales and returns recorded during the period subject of the statistical survey.

In the majority of the world countries, such information is collected monthly, quarterly or yearly, on the basis of a representative sample of operative units and the data aggregated at the national level are adjusted by means of a multiplying coefficient in order to estimate the total wholesales, respectively, retail sales. Obviously, the sample is so set up that it includes operative units of all kinds.

The value volume of the wholesales circulation of goods includes: - re-sale of new or used goods by the retailers to the industrial and commercial users or to persons of other profession, to certain collectivities; there are included also the activities run by those intermediaries who buy goods or sell them on their own name but on the account of the unites specialized in wholesales.

The wholesales stores are, usually, specialized depending on the nature of goods being circulated so; agricultural raw materials; minerals and industrial chemicals; oil and oil products; foods, beverage and tobacco; textiles and cloths; timber and construction materials; furniture; paper and paper articles; medicines, pharmaceutical specialties and various products; ironmongery articles and electrical equipment; machinery and spare parts for industry, trade and agriculture; cars and auto-moto pieces; scrap and waste etc.

As indicators of the circulation of a wholesale commercial store over the period of reference, we mention:

- Sales by categories of products;
- Sales on own account;
- Sales made on thirds account;
- Commissions cashed for the achieved transactions on the third parties account.

The value volume of the retail goods circulation includes the resale to the population of the goods meant for individual or family consumption or for the household use; here we include also the products sales to the companies and communities in order to cover the collective consumption or the household use of these entities.

- **The price indicators in the domestic trade and public nourishment**

In the sphere of the public nourishment, the selling prices are, usually, higher than in the case of the trade itself, even for those products which are not prepared at the consumption place. The special extra money for the public nourishment is differentiated depending on the degree of preparation of the products (prepared, semi-prepared, non-prepared), on the type of the units in which the sale is made, the comfort degree provided and the time of the sale (in the season or extra-season).

In the retail price evolution analysis the prices index by groups of goods is calculated according to the relation:

$$I^p = \frac{\sum v_1}{\sum \frac{1}{i^v} * v_1}$$,where:

i^v = the individual index of the retail prices;

v^1 = the value volume of the sales under the new price conditions.

This kind of indices is calculated for foodstuff, cloths and footwear, fuel and lightening. They enter into the calculation of the index of the goods prices and tariffs applied to the consumption services supplied to the population.

The variation in time of the prices for the products sold on the rural market is characterized also by a price index, the estimation being based on the periodical records performed on a markets sample from different cities of the country.

The decentralization of the economic activity, the gradual passing to a real autonomy of the commercial companies, the privatization of the commercial and public nourishment sector are influencing both the price system, in the sense of giving up the system of the unique prices, and the methodology for statistically watching of the price variation in time and space. Out of the international statistical practice it is resulting that, along with the dynamics of the supply prices of various suppliers of goods, it is useful to know the variation of the wholesale prices and, obviously, of the retail prices.

The data required by the estimation of these indices are provided by the monthly inquiries made on a sample of commercial units, respectively, public nourishment units, which inform on the level of prices for those products which are representative for each group of goods they are trading.

The establishment of the price index is usually made through a weighted arithmetical average of the individual price indices, by considering the value volume of the sales during the base period *(vo),* according to the relation:

$$I^p = \sum i^p * \frac{v_0}{\sum v_0}$$

- **The indicators of costs of the commercial and public nourishment activity**

The analysis of the economic and financial outcomes, including the establishment of the economic efficiency at the level of each unit or over the entire network of units belonging to a company or to a subsidiary of the commercial company and/or of public nourishment, is performed on the basis of strict records of all the revenues and expenses made during the period of reference. This kind of data can be obtained annually through two ways: through the responses received in the frame of the annual inquiries from the operative units side, respectively, through the fiscal statements submitted by each company. If in the first case we get an estimate of the indicators referring to the wholesale or retail sales, the cost of acquisition for the resold goods, the circulation expenses, the gross margin of allowance, extras etc., through the fiscal statements an exhaustive recording is achieved for all the financial flows of each unit with its own administration.

The costs of the commercial and public nourishment activity are reflecting the consumption of labor and materials done in order to achieve the specific activity, either at the level of the operative unit or at the level of the entire unit. In the international statistics, these costs are generically known as exploitation costs during the period the inquiry is referring to (typically, the calendar year).

The relative level of the costs (N) expresses the size of the expenses made in order to achieve 100 or 1000 lei whole or retail sales during the analyzed period:

$$N = \frac{C}{D} * 100(1000),$$ where:

C = the total volume of costs

D = goods sale achieved by the unit, the unit group or the commercial company under study.

Another relative indicator is the rhythm of decrease (increase) of the relative level of the costs during the investigated period as against the base period. Noting with *R* this rhythm, we get it as follows:

$$R = \frac{N_1 - N_0}{N_0} * 100$$

This indicator is the quantitative synthetic expression of the concerns as to administrate to the best the financial resources under the conditions of the own activity dynamics and of the influence often contradictory of the market conjuncture.

At the numerator of this index, the difference ($N_1 - N_0$) expresses the quantum of the decrease (increase) of its relative level of costs for the commercial or public nourishment activity *(Q),*and by applying this difference to the current value volume of the goods (D_1) it results the absolute level of the savings or exceeding the costs (E) as against the performances of the activity during the base period:

$$E = \frac{Q * D_1}{100} = \frac{(N_1 - N_0) * D_1}{100} = C_1 - \frac{N_0 D_1}{100}$$

Starting from the structure of the total costs by groups of expenses or the repartition of the costs by operative and auxiliary units, at the level of each commercial and public nourishment units, we establish the average relative level of the costs *(N):*

$$\overline{N} = \frac{\sum C}{\sum D} = \frac{\sum ND}{\sum D}$$

The dynamics of this average level is studied by factors of influence, by decomposing the index with variable structure *(I^N_{SV})* into an index of fix structure *(I^N_{SF})* which synthetizes the concern of the unit for the best administration of the resources and an index of the structure variation *(I^N_{VS})*, which expresses the external influence of the demand restructuring on the market segment where the commercial company is acting.

Since :

$$I^N_{SV} = I^C : I^D$$

- **The indicators of the economic and social efficiency of the domestic trade and public nourishment**

The covers of the expenses out of own incomes and the obtaining a net profit are representing the motivation for mobilizing funds for any investor, binding to each economic agent.

In the field of the goods circulation, as a result of practicing different prices for buying and reselling the products, there are certain particularities occurring in setting up the indicators of results. Thus, from the difference between the value of the goods sales at retail prices and the value volume of buying goods for resell at wholesale prices it results the gross income of the company which, in

the structure of the price for each traded product, is found out in the form of the commercial extra (allowance). Since the purchase and resale of the goods do not coincide time wise, the above difference is not corrected with the sold of the movement of the own stocks of goods *(Si – Sf)*.

The final production of the commerce and public nourishment is obtained by deducting the losses of goods from the global production, including the perishability. It is composed from the material expenses of the company (packing, fuel, inventory items, fix capital annuities etc.) and the net production which represents the newly created value (the net added value) from the field of goods circulation.

The absolute volume of the profit (the benefit mass) is calculated at the company level by deducting from the commercial allowance all the costs of the activity according to the law in force. In order to be able to evaluate the proportions of the obtained profit, a series of derivate indicators are calculated by comparing the profit mass with the various quantifiable elements arising out of the company activity. Thus, the profit rate as against the volume of the goods sales *(RP_1)* is expressing the extent to which the studied company can achieve profit for every 1000 lei sales.

$$RP_1 = \frac{P}{D} * 1000$$, where:

p =the benefit mass

D = sales achieved during the period of reference

Since the profit is a component part of the commercial allowance, along with the activity costs, a relative coordinating dimension can be also established, in the form of the ratio:

$$RP_2 = \frac{P}{D} * 100$$

which is called the profit rate as against the costs of the commercial or public nourishment activity.

The profitableness of the company can be evaluated also as against the main groups of expenses. Because of the fact that the labor force wage *(FS)* and the annuities (A) represent the preponderant part of the costs, in the economic practice it is often meat the indicator called the profit rate against the alive and past labor expenses as well.

$$RP_3 = \frac{P}{CS} * 100$$

The mode of valorizing the social capital (CS) can be expressed through the profit rate to the social capital which, in fact, is the rate of the commercial profit.

$$RP_4 = \frac{P}{CS} * 100$$

All these indicators can be calculated for auto-analysis purposes by each

economic agent and, at the macroeconomic level they are established on the basis of the annual fiscal statements of the commercial and public nourishment companies. Apart these indicators, at the level of each company there are also a series of relative proportions of intensity which can be calculated, expressing the degree of valorizing the human, material and financial resources through the activity run during the analyzed year.

Thus, the efficiency of the labor force utilization can be characterized statistically through the average volume of the sales by a commercial worker (labor productivity), through the degree of utilization of the maximum available time for work but also through the annual average profit by a commercial worker.

The degree of utilization of the technical and material basis can be underlined through the annual average sales per each square meter of commercial surface or through the revenues of the public nourishment activity per one place at table or through the annual average profit recorded per each physical unit of expressing the technical and material basis or the annual average profit for each 1000 lei fix means.

Finally, the utilization of the own and drawn financial means can be analyzed through indicators such as:

- the necessary circulating means for each 1000 lei sales
- the average number of rotations of the circulating means over one year and, indirectly,
- the circulation speed of the goods

The social efficiency or the quality of the domestic trade and public nourishment activity is statistically expressed through a series of relative proportions which are characterizing the level of attending the consumers. Among these indicators there are also the ones characterizing the offer structure by qualities and assortments, the degree of renewing of the offer (the weight of the new products in the total assortments), the absolute and relative proportion of the stocks from the commercial network, the average number of inhabitants per a commercial unit or per one square meter of attending surface, the average daily spent by the buyers for acquiring the goods, the average number of inhabitants/a commercial worker from the network of specialized shops on a certain group of products, the degree of informing the consumers (advertising expenses for each 1000 lei sales), the degree of technical endowment of the commercial network, the index of the territorial distribution of the commercial and public nourishment units network.

References

Anghelache C. (2011) – „*România 2011. Starea economică în malaxorul crizei*”, Editura Economică, Bucureşti

Anghelache, C. (coord., 2012) – „*Modele statistico – econometrice de analiză economic – utilizarea modelelor în studiul economiei României*”, Revista Română de Statistică, Supliment Noiembrie 2012

Diaconu, A., Gresoi, S.G. (2011) – "*Agriculture impact on environment*", ART ECO – Review of Economic Studies and Research, Editura Artifex, Vol. 2/No.2/2011, pp. 57-60.

Diaconu, A., Gresoi, S.G., Diaconu, Am. (2011) - "*Some Elements of Agriculture Development in the European Union",* ART ECO – Review of Economic Studies and Research, Editura Artifex, Vol. 2/No.4/2011, pp. 63-72.

Dougherty, C. (2007) – "*Introduction to Econometrics"*, Oxford University Press

Fetcu (Stoica) E.A, (2006) -*„Analiza statistică a activității de comerț interior şi alimentație publică"*, Simpozionul ştiințific internațional „Dezvoltarea economică durabilă – Management competitiv şi eficiență economică", Editura Artifex – Bucureşti, 2006

Fetcu (Stoica), E.A. (2010) – "*Indicatori statistici de analiză a activității de comerț interior şi alimentație publică*", International Scientific Symposium "The necessity for Romania's economical and social reform in the context of global crysis", Artifex University, May 2010, ISBN 978-973-7631-71-.8

Lilea, F.P.C. (2010) "Analiza statistică a repartiției regionale a întreprinderilor mici şi mijlocii în România", Editura Ideea Europeană, Bucureşti

Anghelache, G.V., Anghelache, C., Cruceru, D. (2011) "*International Trade of Romania in 2011",* ART ECO – Review of Economic Studies and Research, Editura Artifex, Vol. 2/No.4/2011, pp. 88-97

Conditional Probability and Econometric Models

Assoc. prof. Alexandru MANOLE PhD
„Artifex" University of Bucharest
Lecturer Andrei HREBENCIUC PhD
Academy of Economic Studies, Bucharest
Daniel DUMITRESCU PhD Student
Academy of Economic Studies, Bucharest

Abstract

The concept of conditional probability is fundamental because econometrics regression models are probabilistic. Here, we consider the conditional probabilities to a certain vector, which would be possible to define more generally to the standard deviation σ.

Key words: *conditional probability, econometrics, standard deviation*

JEL Classification: *C60, C70*

The concept of conditional probability is fundamental in econometrics since the regression models are stochastic. Here, we take into consideration conditional probabilities against a certain vector, which we might define more generally as against the square mean deviation.

We place ourselves within the Hillbert space (L^2) of integrating square variables referring to a distribution of the probability of reference: if z is some real variable belonging to this mass, then $E(z^2) < \infty$. We should remember that L^2 is a standardized vectorial mass on R with a defined norm by $\| z \| = [E(z^2)]^{1/2}$. If z_1 and z_2 are two elements of this space, then we can write their product as $E(z_1 z_2)$; these variables are considered as orthogonal in the sense of L^2 if $E(z_1 z_2) = 0$. Moreover, we state that a series of numbers z_n within this space converges towards an aleatory z if $\| z_n - z \| \to 0$ when $n \to +\infty$. This notion of orthogonal and square mean convergence would farther allow us to use the notions of orthogonal projection and the best approximations in terms of the smallest squares.

The usual requirement of rigorousness implies a careful distinction between the equality of the aleatory variable and the doubtless equality.

Also, we can define the concept of conditional probability and enumerate its main properties, mainly as regards he notion of the best approximation in the spirit of the norm L^2 and to appreciate the linear conditional probability as basis out of which the linear regression derives.

- **The conditional probability**

We shall insert the sample $(x_1,...,x_n)$ generated depending on a series of sampling probabilities P^θ. This interval acts as limits of the probability of reference and we consider aleatory variables defined on this space. These variables can be components x_i of the series of studies or sub-vectors of I x_i. The Hilbert space of reference is that of the aleatory variables which depend on the sample and are integrable as against P_∞^θ. Being rigorous, this interval depends on θ.

We shall mention some properties of the conditional probabilities which we shall generalize to a vector $\tilde{y}$ defined in $\Re^p$. We shall consider the conditional probability of a vector $\tilde{y}$ given $\tilde{z}$ by the vector of a dimension p, defined by the relation:

$$E^\theta(\tilde{y}|\tilde{z}) = \begin{pmatrix} E^\theta(\tilde{y}_1|\tilde{z}) \\ \dots\dots\dots \\ E^\theta(\tilde{y}_p|\tilde{z}) \end{pmatrix}$$

All the aleatory vectors $\tilde{y}, \tilde{y}^{(1)}, \tilde{y}^{(2)}$ defined in $\Re^p$, as well as the aleatory vectors $\tilde{z}, \tilde{z}^{(1)}, \tilde{z}^{(2)}$ defined in $\Re^q$, have known properties (linearity, positivity, non-equality and satisfy the rule of the three perpendiculars

The concept of conditional probability is a fundamental one because it allow us to formalize the temporal dependence within the stochastic processes.

We may as well discuss about the conditional probability of an aleatory matrix, which allows us to define the variation matrix – covariance of an aleatory $\tilde{y}_i$ defined in $\Re^p$, conditioned on $\tilde{z}$, as well as in the following square matrix p x p.

The definition of the conditional probability can be interpreted as the orthogonality of $\tilde{y} - E^\theta(\tilde{y}\,|\,\tilde{z})$ with all the functions $\tilde{z}$. Also, we can show a theorem which characterizes the conditional probability in terms of orthogonal projections, for instance in terms of the best approximation in the sense of L^2 norm.

- **The linear conditional probability**

We have seen that the conditional probability $E^\theta(\tilde{y}\,|\,\tilde{z})$ is the orthogonal projection of the aleatory variable $\tilde{y}$ in the sub-space of the square integrable functions of $\tilde{z}$ in the sense of the L^2 norm. We shall focus on the particular situation when we consider the linear functions of $\tilde{z}$. We define the linear conditional probability of $\tilde{y}$ by the orthogonal projection of $\tilde{y}$ on the sub-space of the linear functions of $\tilde{z}$, which we shall define through $L^{*2}(\tilde{z})$. We know $L^{*2}(\tilde{z}) \subset L^2(\tilde{z})$.

The following two situations which will be submitted are showing two simple cases in which we consider the projection of a scalar aleatory variable $\tilde{y}$ on a constant and on a scalar aleatory variable $\tilde{z}$.

- If $\tilde{y}$ is an aleatory variable, we wish to find out a constant „a" which is the closest possible to $\tilde{y}$ in the sense of the L^2 norm, „a" is the orthogonal projection of $\tilde{y}$ defined on the sub-space of L established by the constant 1. Out of this, it results:

$$E^{\theta}((\tilde{y}-a),1)=0$$

and, further on, $a = E^{\theta}(\tilde{y})$

If $\tilde{y}$ and $\tilde{z}$ are aleatory variables, then the linear conditional probability of $\tilde{y}$ given $\tilde{z}$ of the form $EL^{\theta}(\tilde{y}\mid\tilde{z})=\alpha\tilde{z}$ (where „a" is a scalar), is obtained by putting the orthogonality condition $EL^{\theta}((\tilde{y}-\tilde{z})\tilde{z})=0$.

- When $\tilde{y}$ and $\tilde{z}$ are both scalar aleatory variables and, in order to insert the linear regression coefficient, we deduce :

$$EL^{\theta}(\tilde{y}|\tilde{z},1)=E^{\theta}(\tilde{y})+\frac{Cov^{\theta}(\tilde{y},\tilde{z})}{(Var^{\theta}(\tilde{z}))(\tilde{z}-E^{\theta}(\tilde{z}))}$$

The linear regression coefficient of the pair ($\tilde{y}$, $\tilde{z}$) is defined by the formula:

$$\rho=\frac{Cov^{\theta}(\tilde{y},\tilde{z})}{\sqrt{Var^{\theta}(\tilde{y})}\sqrt{Var^{\theta}(\tilde{z})}}$$

The coefficient ρ is always defined within the interval [—1. 1]. In addition, we underline that $|\rho|=1$ if, and if only, $\tilde{y}$ is already a related function of $\tilde{z}$. Moreover, if $\tilde{y}$ and $\tilde{z}$ are independent, then p = 0 (its reciprocal is false).

- If $\tilde{y}$ and $\tilde{z}$ are two independent vectors, respectively defined on $\Re^p$ and $\Re^q$, this means that in the case of the continuous distributions, we have the function:

$$f(\tilde{y},\tilde{z})=f_{marg}(\tilde{y})f_{marg}(\tilde{z})$$

or

$$f_{cond}(\tilde{y}|\tilde{z})=f_{marg}(\tilde{y})$$

(in order to simplify the noting, both marginal densities are noted by f_{marg} , the systematic utilization of the arguments moves away any ambiguity). A first consequence is that, for all the integrable square functions, h satisfies the relation:

$$E^{\theta}(h(\tilde{y})|\tilde{z})=E^{\theta}(h(\tilde{y}))$$

In this case, we do not express a different independence notion but one of conditional independence. To mention only that $\widetilde{y}^{(1)}$ and $\widetilde{y}^{()}$ are independent on $\widetilde{z}$, given any two functions h_1 and h_2 defined on $\Re^p$.

References

Anghelache, C., Mitruț, C. (coordonatori), Bugudui, E., Deatcu, C. (2009) – „*Econometrie: studii teoretice şi practice*", Editura Artifex, Bucureşti

Anghelache, C. (coord., 2012) – „*Modele statistico – econometrice de analiză economic – utilizarea modelelor în studiul economiei României*", Revista Română de Statistică, Supliment Noiembrie 2012

Voineagu, V., Țițan, E. şi colectiv (2007) – "*Teorie şi practică econometrică*", Editura Meteor Press

Model of Matrix-based Regression used in Economic Analyses

Prof. Constantin ANGHELACHE PhD
„Artifex" University of Bucharest
Academy of Economic Studies, Bucharest
Prof. Radu Titus MARINESCU PhD
„Artifex" University of Bucharest
Georgeta BARDAŞU PhD Student
Academy of Economic Studies, Bucharest
Ligia PRODAN PhD Student
Academy of Economic Studies, Bucharest
„Dimitrie Cantemir" Christian University, Bucharest

Abstract

The emergence of new patterns of conflict with globalization has led to the re-configuration of the security agreement and the emergence of a "new security paradigm" in recent years. Securing could still lead to neglect issues of governance and the creation (or re-creating) the state monopoly of force, becoming the main concern in situations of conflict, often through extraordinary measures leading to fracture and proliferation of conflicts rather than their closure.

Key words: *linear, estimator, extension, covariance, condition*
JEL Classification: *C10, C18*

The model relationship for this non-linear variant is the following:

$$y = Z\beta + u,$$

and we imposed the assumptions:

$$E^{\theta}(u|Z) = 0$$ and

$$Var^{\theta}(u|Z) = Var^{\theta}(u) = \sigma^2 I_n.$$

The first condition means that $Z\beta$ is the probability of *y*conditioned on *Z*and thus it cannot be altered without fundamentally altering the model nature. In many economic situations, the second condition can be generalized in two modes, first within a setting, making the conditional variation u_i depending on the conditional variables z_i (heteroscedasticity) and, secondly, within a ne-i.i.d., without assuming that the covariance between the rests would be zero. Within a general frame, this can be written as:

$Var^{\theta}(u|Z) = \Omega$,

whereΩ is a matrix which generally depends on *Z*and on the unknown parameters ρ. In this model, the parameters of interest are β andρ.

Making the distinction between the case where Ω is known up to a multiplicative factor and the case where Ω is a function of unknown parameters, the usual approach of this class of models is of the form $\Omega = \sigma^2 V$.

First of all, if $\Omega = \sigma^2 V$, where σ^2 is known and$V$ is a symmetrical positive defined matrix, we can check whether the impartial linear estimator with the smallest dispersion solves the condition of minimum.

This estimator is known as the *estimator of the generalized smallest squares (GLS)*.

The immediate extension of the Gauss-Markov theorem shows in particular that the dispersion of β conditional on Z is $\sigma^2 (Z'V^{-1}Z)^{-1}$ and that it is the smallest of the impartial linear estimators. A simple interpretation of this estimator is obtained by realizing that V^{-1} can be factorized in $V^{-1} = P'P$ where P is irreversible.

Assuming the relation $y|Z \sim N(Z\beta, \sigma^2 V)$, ,we can easily verify that $\hat{\beta}_n$ is MLE of β, and that $\frac{n-q}{n}\hat{\sigma}_n^2$ equals to MLE of σ^2 .

Secondly, if Ωis unknown and depends of a parametrical ρ, then the approach consists of two stages:

- We get a preliminary estimate of $\hat{\rho}_n$ ofρ and ithus an estimator $\hat{\Omega}_n$ ofΩ, replacing ρ with $\hat{\rho}_n$,

We estimate β using the formula where V is replaced by $\hat{\Omega}_n$.

Under these conditions, we get *the feasible generalized estimator of the smallest squares*. This estimator is losing the properties of the small sample of the estimator GLS when V is known and studied from the asymptotic point of view.

Further on, we shall focus, basically, on this study and, meantime, of the heteroscedasticity case and on the extension of the GLS estimators in the multivariate case.

We shall consider a model $\{X^n, \Theta, P_n^\theta\}$ and a function ψ defined on X xΛ x R $(\Lambda \subset \Re^k, R \subset \Re^l)$ with values in $\Re^k$. The function $\psi(x_i, \lambda, \rho)$ is assumed as inferable for all λ andρ.

The interpretation is the following: if $\rho$is fixed at a certain value, which generally will depend on θ, $\rho(\theta)$, then the system is defining a function$\lambda(\theta)$ of the parameters of interest and the function $\rho(\theta)$ defines a function of the disturbing parameters. The estimation of this last one is not a priority but approaching them is necessary in order to analyze the parameters of interest. It is noticeable that in the specific situation we are examining, the system contains more unknowns then equations and, thus, it cannot be used alone for estimating $\rho(\theta)$ and$\lambda(\theta)$.

Then, we analyze this issue for two situations:

The first case is defined by the assumption that the value of $\rho$is known. Generally speaking, this value depends on$\theta$and then we assume that ρ equals to $\rho(\theta)$. Here, λcan be analyzed by using the known methods. We have a simple system of momentum equations which, in the context of the common conditions of regularity, leads to the $\widetilde{\lambda}_n(\rho(\theta))$, given as solution of the function:

$$E^\theta(\psi(x_i, \lambda, \rho)) = 0.$$

The second case more relevant is that where $\rho(\theta)$ is unknown but we have an available estimator $\hat{\rho}_n$ which converges towards $\rho(\theta)$. We solve the system:

$$\frac{1}{n}\sum_{i=1}^{n}\psi(x_i, \lambda, \hat{\rho}_n) = 0,$$

out of which we get the estimator $\widetilde{\lambda}_n$. Then, it is normal to ask whether $\widetilde{\lambda}_n$keeps the same asymptotic properties as $\widetilde{\lambda}_n(\rho(\theta))$and, particularly, whether the asymptotic variation of the estimator is the same when $\rho(\theta)$ is known or when$\rho(\theta)$ is estimated. The answer is negative but the following theorem provides a simple criterion according to which both asymptotic distributions are equal.

Let's assume that $\hat{\rho}_n$ converges to ρ (θ) and that $\sqrt{n}(\hat{\rho}_n - \rho(\theta))$ has a limit of distribution. If the common conditions of regularity are satisfied, then $\widetilde{\lambda}_n$converges to λ (θ). If the condition:

$$E^\theta\left(\frac{\partial\psi}{\partial\rho'}(x_i, \lambda, \rho)\Big|_{\lambda(\theta)\ and\ \rho(\theta)}\right) = 0,$$

is also satisfied, then the asymptotic distribution $\sqrt{n}(\hat{\lambda}_n - \lambda(\theta))$ is the same as the one submitted by the previous relations.

The third term of the equality tends towards zero and we see that the solutions we get out of:

$$\frac{1}{n}\sum_{i=1}^{n}\psi(x_i, \lambda, \widehat{\rho_n}) = 0$$

şi

$$\frac{1}{n}\sum_{i=1}^{n}\psi(x_i, \lambda, \rho(\theta)) = 0$$

are close arbitrarily and converge towards the same limit $\lambda(\theta)$.

References

Anghelache, C. (2012) – „*România 2012. Starea economică în criză profundă*", Editura Economică, Bucureşti

Anghelache, C. (coord., 2012) – „*Modele statistico – econometrice de analiză economic – utilizarea modelelor în studiul economiei României*", Revista Română de Statistică, Supliment Noiembrie 2012

Anghelache, C. şi alţii (2012) – „*Elemente de econometrie teoretică şi aplicată*", Editura Artifex, Bucureşti

Anghelache, C., Dumbravă, M. şi alţii (2007) – „*Econometrie – Teorie şi studii de caz*", Editura ARTIFEX, Bucureşti

Anghelache, C., Mitruţ, C. (coordonatori), Bugudui, E., Deatcu, C. (2009) – „*Econometrie: studii teoretice şi practice*", Editura Artifex, Bucureşti

Bardsen, G., Nymagen, R., Jansen, E. (2005) – *„The Econometrics of Macroeconomic Modelling",* Oxford University Press

Dougherty, C. (2008) – "*Introduction to econometrics. Fourth edition*", Oxford University Press

Gourieroux, C., Jasiak, J. (2001) – *„Financial econometrics: problems, models and methods",* Princeton University Press, Princeton

Mitruţ, C. (2008) – „*Basic econometrics for business administration"*, Editura ASE, Bucureşti

Thomas, R.L. (1997) – "*Modern econometrics – an introduction"*, Editura „Financial Times – Prentice Hall"

Voineagu, V., Ţiţan, E. şi colectiv (2007) – "*Teorie şi practică econometrică*", Editura Meteor Press

Performance Management or Performance Based Management?

Lecturer Ph.D. Cristina PROTOPOPESCU
„Artifex" University of Bucharest

Abstract

In this paper we present some considerations about performance and performance management. Starting with the challenge of defining the performance concept, we intend to establish if „performance management" can be a new management system or it is just a sophisticated term for a HR strategy in order to improve the performance of teams and individuals. We also try to discuss the conection between performance management and management by objectives. Whether or not it is exageratted to talk about a performance management, giving the fact that management means a lot of planning, organizing, coordination, people motivating and controling processes, it's obvious that the performance concept become very important today.

Key words: *performance, performance management, management by objectives*

JEL Classification: *L25, L26*

One of the most frequently used concepts in the economic theory and practice, perfomance appears to have different meanings. On a general basis, performance means a special accomplishment in a certain field or domain. From a technical point of view, the performance represents the best results of a technical system or a machine. Therefore we reach performance not in the circumstances of an ordinary result, by in a special one. In the economic field, performance means „a certain level of the best results obtained by the company"[1]. Also performance can be defined as a „special result obtained in management, economic or comercial domain, which gives organization and its components competitiveness, efficiency and efficacy"[2].

We can measure performance by using a series of economic and financial indicators which we compare with the firm's acchivements in the past or company's objectives or with the results of similar companies on the market.

[1] Constantin Barbulescu, Constantin Bagu – *Managementul productiei, vol. II – Politici manageriale de productie*, Tribuna Economica, Bucuresti, 2001, pg. 55
[2] Ion Verboncu, Michael Zalman – *Management si performante*, Editura Universitara, Bucuresti, 2005, pg. 64

The performance concept gained more and more importance for companies and their management under the pressure of competitiveness in the market place. Therefore the next step was the performance management emergence. Performance management is a part of the new human resources management approaches and gives companies the posibility to create a new organizational culture. In this culture, each employee understands his role within the company and the way his performance affects the company's objectives and performances.

It's very useful to remember that nowadays competitiveness in many industries is based on the effectiveness of human resources – became „assets". The competitiveness and profitability are brought by the ability of employee to create, to accumulate knowledge and to properly apply their skills within an organizational culture based on individual performance. For managers and shareholders too it is important to recognize that „creativity and human capital are sources for long-term competitive advantage"[3].

Performance management is an useful tool for increasing labor yield, individual performance and reducing general administration costs.

According to Michael Armstrong, performance management „can be defined as a systematic process for improving organizational performance by developing the performance of individual and teams"[4]. This author sees performance management as an instrument for „getting better results from the organization, teams and individuals by understanding and managing performance within an agreed framework of planned goals, standards and competence requirements".

The most important direction that must be followed in order to increase individual performance is given by objectives. Richard Luecke and Brian J. Hall consider that „performance management begins with goals"[5] which are the results that people should aim to achieve. These two authors consider that „every company, every operating unit and every employee needs goals and plans for achieving them". In fact, setting goals and sharing them within the company is one of the essential functions of management – planning. This idea isn't new in management theory and practice. We must say that one of the most important management instrument – management by objectives (MBO) is based upon the same premises[6]. At this level we ask if is there any difference between performance management and management by objectives or is it the same idea only with different names?

[3] Anca Mihaela Teau – *Tehnici de vanzare*, Editura ProUniversitaria, Bucuresti, 2009, pg. 40

[4] Michael Armstrong – *Performance Management: Key Strategies and Practical Guidelines*, Kogan Page Limited, London, 2006

[5] Richard Luecke, Brian J. Hall – *Performance Management. Measure and Improve the Effectiveness of Your Employees*, Harvard Business School, Boston, 2006

[6] Dan Nastase – *Management comercial*, Editura Axioma Print, Bucuresti, 2010, pg. 80

In my opinion, performance management as it is applied today, benefits a lot from „older" management instruments such as management by objectives[7]. It started rather as a philosophy than as a management tool, but gradually it has transformed in an instrument focused on aligning the individual goals with the goals of the organization and ensures that the employees work on the right tasks and do the right things.

Having in mind that management means a lot of planning, organizing, coordination, people motivating and controling processes, we consider that performance management isn't the proper name and it would be better to use the term „performance based management".

Performance based management can be regarded as a proactive system of managing employee performance for driving the individuals and the organizations towards desired performance and results.

In the theory and practice management, the performance based management system is still evolving and includes the following components[8]**:**

1. ***Performance Planning*.** Performance planning is the first component of any performance management process which forms the basis of performance appraisals. Performance planning is jointly done by managers and employees in the beginning of a performance session. As in MBO's case, the planning process must developed throught a large implication of managers, employees, HR specialists and other stakeholders. During this period, the employees decide upon the targets and the key performance areas which can be performed over a year within the performance budget and following the entire objectives system. Also at this level it is important to establish the motivation forms and rewarding.
2. **Performance Appraisal and Reviewing:** The appraisals are normally performed twice in a year in an organization in the form of mid reviews and annual reviews which is held in the end of the financial year. In this process, the appraisee first offers the self filled up ratings in the self appraisal form and also describes his/her achievements over a period of time in quantifiable terms. After the self appraisal, the final ratings are provided by the appraiser for the quantifiable and measurable achievements of the employee being appraised. The entire process of review seeks an active participation of both the employee and the appraiser for analyzing the causes of loopholes in the performance and how it can be overcome.
3. **Feedback on the Performance followed by personal counseling and performance facilitation:** Feedback and counseling are given a lot of importance in the performance management process. This is the stage in

[7] Sorin Gabriel Gresoi – *Managementul si gestiunea calitatii*, Editura ProUniversitaria, Bucuresti, 2011, pg. 130

[8] Source: www.managementstudyguide.com

which the employee acquires awareness from the appraiser about the areas of improvements and also information on whether the employee is contributing the expected levels of performance or not. The employee receives an open and a very transparent feedback and along with this the training and development needs of the employee is also identified. The appraiser adopts all the possible steps to ensure that the employee meets the expected outcomes for an organization through effective personal counseling and guidance, mentoring and representing the employee in training programmes which develop the competencies and improve the overall productivity.

4. **Rewarding good performance:** This is a very vital component as it will determine the work motivation of an employee. During this stage, an employee is publicly recognized for good performance and is rewarded. This stage is very sensitive for an employee as this may have a direct influence on the self esteem and achievement orientation. Any contributions duly recognized by an organization helps an employee in coping up with the failures successfully and satisfies the need for affection.
5. **Performance Improvement Plans:** In this stage, fresh set of goals are established for an employee and new deadline is provided for accomplishing those objectives. The employee is clearly communicated about the areas in which the employee is expected to improve and a stipulated deadline is also assigned within which the employee must show this improvement. This plan is jointly developed by the appraisee and the appraiser and is mutually approved.
6. **Potential Appraisal:** Potential appraisal forms a basis for both lateral and vertical movement of employees. By implementing competency mapping and various assessment techniques, potential appraisal is performed. Potential appraisal provides crucial inputs for succession planning and job rotation.

Conclusion

Performance based management brings a lot of benefits for companies and also for managers and employees. We can say that all major stakeholders benefit from it.

At the company's level performance based management has the following advantages:

- Improved organizational performance due to the fact that employees understand the importance of their contributions to the organizational goals and objectives
- Improved productivity and costs reduction
- Benefits from a new organizational culture based on performance, employee retention and loyalty

For managers, we talk about saving time and a better organizational climate as a consequnce of reducing conflicts. For employees the benefits are:

- Regularly providing open and transparent job feedbacks to the employees.
- Establishing a clear linkage between performance and compensation
- Providing ample learning and development opportunities by representing the employees in leadership development programmes, etc.
- Evaluating performance and distributing incentives and rewards on a fair and equated basis.
- Establishing clear performance objectives by facilitating an open communication and a joint dialogue.
- Recognizing and rewarding good performance in an organization.
- Providing maximum opportunities for career growth.

References

Michael Armstrong – *Performance management: Key Strategies and Practical Guidelines*, Kogan Page Limited, London, 2006

Constantin Barbulescu, Constantin Bagu – *Managementul productiei, vol. II – Politici manageriale de productie*, Tribuna Economica, Bucuresti, 2001

Sorin Gabriel Gresoi – *Managementul si gestiunea calitatii*, Editura ProUniversitaria, 2011

Richard Luecke, Brian J. Hall – *Performance Management. Measure and Improve the Effectiveness of Your Employees*, Harvard Business School Publishing Corporation, Boston, 2006

Dan Nastase – *Management comercial*, Editura Axioma Print, Bucuresti, 2010

Anca Mihaela Teau – *Tehnici de vanzare*, Editura ProUniversitaria, Bucuresti, 2009

Ion Verboncu, Michael Zalman – *Management si performante*, Editura Universitara, Bucuresti, 2005

www.managementstudyguide.com

Conflicts Management in Constructions Projects

Associate Professor Cibela NEAGU, PhD
„ARTIFEX" University of Bucharest
Associate Professor Cezar BRAICU, PhD
„Spiru Haret" University of Bucharest

Abstract

Conflicts are inevitable within organisations and construction projects are not excepted. The large number of persons involved and the interdependent relations sometimes inevitably result in conflicts.

There are very different and sometimes hidden reasons of the conflicts.

Nevertheless, conflicts may represent a chance in running the project, as they contribute both to new developments and to clarifying problems and positions of the team personnel. Besides, it's the project leading team that is in charge with surveying conflicts to try to find the best solutions in the early phase of the conflict.

The project manager must induce the team to create an appropriate working climate characterized by no tensions within.

In order to practice a performing conflicts management, the project manager must have social competency and communication skills. The quality of the project outcomes, the degree of personnel involvement and motivation highly depend both on means of communication and level of information inside the team.

This work paper highlights the main types of conflicts which develop in construction projects and the most important strategies for settlement.

Key words: *conflicts, project team, manager, strategy, organization*

JEL Classification: *O15, J53*

1. Causes of conflicts

The specific elements these projects have – complexity, interdisciplinary, newness – as well the activity in itself presuppose a correlation of all the activities

and decisions within the project. The number of individuals working on such a project as well as the relations between them generates conflicts.

The conflicts are, within certain limits normal and necessary in a project and, they measure the quality of work in a project and help finding new solutions, new organizational ways clarify the problematic aspects and finally create a good working environment.

The lack of conflicts, which means to avoid direct confrontation, may be a clue for the work team to postpone solving such conflicts. Thus, the duty of the management of the team involved in the project is to control conflicts and to try to solve them as they appear.

The causes that generate conflicts are various and sometimes hidden. The objective causes mingle with individual judgement and feelings.

Among the main causes that generate conflicts in this field are:

- the ambiguities in the contractual documents;
- the attitude of the contractors and beneficiaries;
- different attitudes towards what is right in a private enterprise contract.

The ambiguities in the private enterprise contracts and the way they are interpreted represent one of the most frequent cause that generates conflicts.

The competition to win action is sometimes very hard and the parties are very aggressive.

The attitude of the contracting parties and beneficiaries is a source of conflicts. The activity in constructions is characterized by a high degree of risk and implies fast decisions concerning the expenses, coordination of the subcontracting parties with different levels of competence and the setting up of a viable relation between the supplier and the beneficiary. That is why this environment attracts participants with an aggressive attitude and highly competitive.

The attitudes are different when it comes to what is right in a private enterprise contract.

2. Types of conflicts

Apparently, setting up a project team does not seem to be very problematic.

Due to the general opinion, everything depends on the qualification of the individuals working in a team. But the diversity that exists among project teams makes things more complicated. They have their own character, limited in time, and their target is unique and specific due to the project.

A careful attention should be paid to solving the conflicts within the team. The individuals do not reach immediately an agreement because they have different attitudes and expectations. Usually this type of conflict is generated by the fact that each member of the team wants the best for the team.

The conflicts may appear:

- within the project team;
- between the project team and the managers of different departments within the company;

- between the teams of different projects;
- between the team and high level management;
- between the team and the beneficiary, suppliers or consultants, etc.

Taking into consideration the order the conflicts appear, we can talk about the following types of conflicts:

- conflicts related to non-compliance with the dead lines;
- priority conflicts;
- conflicts related to ensuring the necessary personnel;
- conflicts related to technical factors;
- conflicts related to personnel management;
- conflicts generated by different types of personality;
- conflicts related to expenses.

The sources of conflicts can weight differently, depending on the stage the project is in. Where the project is at organizational stage, the conflicts that may appear are related to project management and setting the priorities.

In the last stage of the project there are conflicts related to deadlines and priorities, while during the project, the conflicts generated by technical aspects are more frequent.

The conflicts are not easy to mange, but it is a necessity to solve them. The most important tool to deal with conflicts is communication. The way people communicate and the way the involved personnel is informed, influences the quality of the results and the motivation.

3. Strategies regarding conflicts management.

In practice, there are mentioned several strategies that help solving the conflicts in this field.

In order to solve a conflict we must acknowledge its existence. The specialists are talking about the following stages:

- to define the problem, talking into consideration the requests the parties involved have and not the possible solutions;
- to select the best solution that meets the needs of the parties involved in a conflict and to verify the order of the possible measures;
- to name the person, the time and the deadline to implement the necessary measures;
- to implement the measures;
- to evaluate the effectiveness of the solution.

There is no general strategy to solve a conflict. Each type of conflict has its solution. Knneth Thomas identified five possible strategies that can be used to solve a conflict:

a) Competitive approach;
b) Collaborative approach;
c) To compromise;

d) To adapt;
e) To avoid.

Kenneth Thomas also established the circumstances each strategy can be used.

a) Competitive approach. This strategy gives priority to the objectives, facts or procedures, because the conflict parties act in order to reach their own aims, using rather often authoritative structures. Thus, some specialists think this strategy is "power oriented", because they use any type of authority to obtain a fit position.

This approach can be used in the following situation:

- when it is recommended a rapid and decisive intervention;
- when it concerns the individuals that have a passive attitude;
- when we need to adopt some unpopular measures in order to solve important problems;
- when we need to solve some vital problems for the welfare of the company and the next measure to be implemented is definitely the right one.

b) Collaborative approach. This strategy is meant to maintain the interpersonal relations between parties and to make sure the objectives are met. This approach takes into consideration the fact that the individuals do not act only in their own interest but also considering the other party. In other words, the parties agree to communicate in order to solve the conflict.

This strategy can be used:

- when the main objective is to learn and get experience;
- when we are looking for solutions to the problems that cannot be solved by compromising;
- when we need to develop a general strategy when the parties have different opinions;
- when the feelings interfered with the pre-established human relations;
- when we want to raise the commitment of the parties by consensus.

c) To compromise. Compromise means to analyse the conflicts and to reach an agreement that fits both parties. This strategy aims to find a solution that satisfies both parties.

We can use this strategy:

- when the objectives are important but do not justify the gaps created by adopting severe measures;
- when the parties in the conflicts have equal power to negotiate;
- when we want to make a temporary agreement concerning a very complex problem;

- when we cannot use the competitive strategy or the collaborative one.

d) To adapt. The parties involved in a conflict do not act in order to impose their own point of view but to meet the other individual's needs. It implies to maintain the inter-personal relations without taking into consideration the personal objectives of the parties.

This strategy can be used:

- when we want stability;
- when one of the parties committed a mistake in order to obtain position to continue negotiating;
- when the other party considers the problem to be more important than it is – to maintain collaboration;
- when we want be credible towards third parties;
- when we want our employees to learn from mistakes.

e) To avoid. Although the parties acknowledge the existence of a conflict, they do not want to confront themselves. Thus, the problems are postponed, but in time they become more and more serious.

This strategy can be used:

- when the problem is less important;
- when the requirements of a party cannot be met;
- when the parties have to re – analyse more objectively the problem;
- when gathering and analysing information is more important than taking a immediate decision;
- when there are other persons that can solve more effectively the conflict.

When solving a conflict, we have to consider everybody's best interests and we have to be sure that this is the best solution for them. There is no need to impose a solution not even when we are convinced that this solution fits everybody.

That is why conflicts management is very important in a project.

4. The manager's role in solving the conflicts. The manager of a project should communicate with all the persons involved and try together with the team of the persons involved and try together with the team to find a solution. He has to make sure the conflict ends as soon as possible in order to avoid a worse situation. The discussions will be strictly between those involved, without third parties. The manager is not allowed to have a party that wins and one that is defeated. All the parties should have a positive feeling when the conflict ends and the results must be acceptable and constructive.

References

Constantinescu D.A. – Managementul proiectelor, Ed. Semne'94, Bucureşti, 2001

Dijmărescu I. – Managementul proiectelor, Academia Română de Management, 1997
Harris, F., Mc. Caffer, R. – Modern Construction Management, John Wiley and Sons, 1983
Hiltrop, J.M., Udall, S. – Arta negocierii, Teora, Bucureşti, 1998
Laundon, K.C., Laundon, J.P. – Management information systems, Macmillan, New York, 1991
Mocanu, M., Schuster, C. – Managementul proiectelor, Ed. All Beck, Bucureşti, 2004
Neagu, Cibela – Managementul proiectelor, Ed. Tritonic, Bucuresti, 2008
Phil Baugules – Project Management, Transet Limited, England, 1999
Postavaru, N. – Managementul proiectelor, Matrix Rom, Bucureşti, 1999
Radu, V., Curteanu, D. – Managementul proiectelor, Ed. All Beck, Bucureşti, 2004

The Economy of Romania during the Period 2000-2012

Prof. Constantin ANGHELACHE PhD
„Artifex" University of Bucharest
Academy of Economic Studies, Bucharest
Prof. Vergil VOINEAGU PhD
Academy of Economic Studies, Bucharest
Diana Valentina SOARE PhD Student
Academy of Economic Studies, Bucharest
Daniel DUMITRESCU PhD Student
Academy of Economic Studies, Bucharest

Abstract

A key element in economic stability analysis is the consumer price developments in the national economy. In 2000, it had a very high rate and objective successive governments during that period was represented by undertaking measures to ensure stability and evolution influenced by economic measures aimed at consumer prices.

Key words: *economic, stability, analyisis, evolution*
JEL Classification: *E20, E30*

- **The evolution of the consumption prices**

An essential element in analyzing the economic stability is given by the evolution of the consumption prices in the frame of a national economy[1]. In the year 2000, this recorded a very high rhythm and the targets of the governments which succeeded one another during the respective period has been represented by taking those steps meant to secure the stability and an evolution influenced by the economic steps aiming the consumption prices.

In this respect, the complex of macroeconomic steps taken into account by each executive aimed with priority the achievement of inflation meant to lead to the launching of the entire economic activity. For instance,in the year 2001, the increasing rate of the inflation (of the population consumption prices) counted as 30.3% as comparatively with the year 2000. As a result of the macroeconomic policies and of the general overall evolution in 2002 the inflation rate reached the level of 17.8%, in 2003 of 14.1%, in 2004 of 9.3%, while in 2005 it reached 8.6%

[1] Biji, M., Lilea, E., Roşca, E., Vătui, M. (2010) - "*Statistica pentru economişti*" Editura Economică, Bucureşti
Pineda, J., Rodríguez, F. (2010) – „*Curse or Blessing? Natural Resources and Human Development*", Human Development Report Office (HDRO), United Nations Development Programme (UNDP)

and 4.9% in 2006. The year 2007, the first one after the adhesion, has been difficult enough, being the first year in which the inflation rate of increase started to increase, leveling up to 6.6% as against 2006 , in 2008 to 6.3% as comparatively with 2007. Starting with the year 2009, until 2011 (ten months), the inflation rate oscillated around the level of 4.5 percentage points per year. Of course, the biggest weight in the inflation rate diminishing, from one period to another, is due to the macroeconomic strategy of development but, under certain circumstances, the reduction of the inflation has been based on the effect of some administrative steps as well, taken by the executive. Normally, an evolution close to the economy and the forecasted strategy for the evolution of the consumption prices has been obtained and this has been reflected in the power given by the comparison of the increase rhythms of various indices (GDP, wages level, labor force occupation etc.) For the period up to 2003, the analysis of the consumption prices has been relevant as well through the prism of their comparison with the evolution of the exchange rate of the national currency. Through complex measures, economic and those administrated by the National Bank, starting with the year 2001, he evolution of the consumption prices as a form to measure the inflation, followed up a somehow predictable course. To keep in mind the fact that, after the denomination of the leu, in 2004, a total separation occurs between the evolution of the consumption prices index and the evolution of the exchange rate of the national currency. In this context, we take into consideration that the Romanian leu, as a necessary and vital step meant to secure an efficient process of denomination, followed a course of appreciation and, thus, the confidence of the population in the national currency has been regained, the speculative effects of the foreign exchange and of the preoccupations of those holding foreign currency (euro or USD) have disappeared etc.

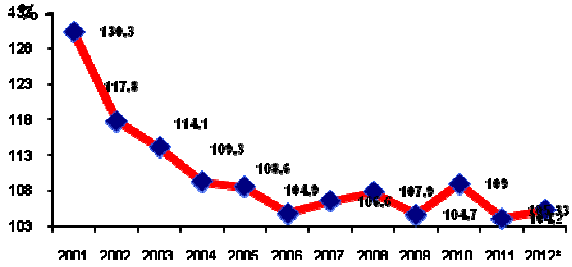
This evolution concerning the consolidation of the Romanian leu is beneficial for the post-denomination development. On the other hand, the inflation kept on being generated by the evolution of the administrated prices, those which compulsory must be maintained after the adhesion to the European Union as well. If we proceed to analyze the evolution of the consumption prices over the entire period, we shall state out that the administrated prices, with an increased effect during the last period of time, had a major influence on the inflation evolution.

The other prices on the market, for alimentary and non-alimentary goods and for services have been theoretically reasonable, being generated by the conditions of the free market and, also, by the balance between the offer and the financial resources available with the population. When talking about the financial resources available with the population we have in mind, mainly,, the controlled resources since, depending on the methods utilized for estimating the foreign currency reserves (euro,, USD and the other foreign currencies) on the un-controlled market, we can conclude that they are big enough. Thus, for instance, they are estimated to exceed 2 billion of euro in[2]. In the context, we can point out

[2] www.insse.ro, www.eurostat.eu

that during the period 2009-2011, the inflation exceeded the forecasted level and it is to anticipate that during the forthcoming period, the need to administrate the prices of a series of products belonging to the range of those for which we have to line up with the level of the European market, has however a negative effect.

The indices of the consumption price during the period 2001-2012
- December previous year = 100 -



*) Estimated data.
Data source: National Institute of Statistics

Consequently, it is probable that the inflation evolution will be slightly superior to the forecasted levels. In the same sense, we can expect a development after the adhesion to the European Union as well, when certain general European policies may imply an effect of increasing for certain prices.

- **The evolution of the industry and production prices**

The industry represented and keeps on representing a basic branch of the national economy [3]. It recorded a growth rhythm somehow steady in the sense that the restructuring process in the extractive industry, the manufacturing one and the field of electric energy production followed up the same course. The industry has been restructured, a number of energo- consuming enterprises, huge consumers of raw materials, materials and energy, with low profitability, disappeared. Meantime, the state owned commercial companies and the autonomous administrations having no perspectives have been abandoned or closed up, given the "competition in the free market of the European Union", after the adhesion.

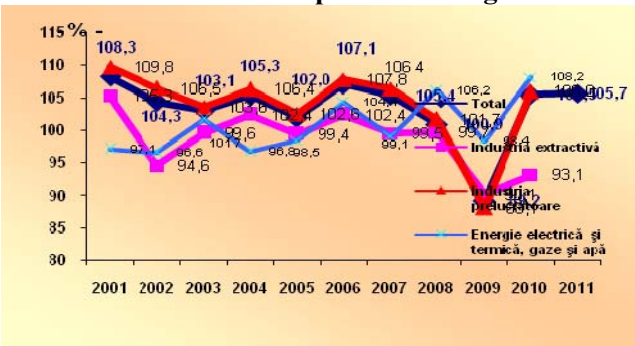
On this ground, we can talk about an increase of the sectors efficiency[4] which are still running the activity in industry, a phenomenon accompanied by the raise of the unemployment, since the production of services and the development of the SME-s could not secure the absorption of the labor force dismissed in the industrial branch of the national economy. The weight of certain branches kept increasing their weight, such as: the alimentary production of beverage, the wood manufacturing and wooden products, polygraphy, the reproduction of supports of

[3] Anghelache C., Isaic-Maniu AL., Mitruț C., Voineagu V. (2011) - „*Sistemul conturilor naționale: sinteze și studii de caz*", Editura Economică, București
[4]Jesus Fernandez-Villaverde & Juan Rubio-Ramirez (2009) – "*Two Books on the New Macroeconometrics*", Taylor and Francis Journals, Econometric Reviews

the recordings, oil processing, the coal processing to coke and the treatment of the nuclear fuels, the construction of road transportation means, furniture and other industrial activities, which became domains where a series of commercial companies followed up the modern program of achievement, hold an updated technology (not to say an advanced one) and work with an adequate productivity, fit to the economy of our country.

The prices of the industrial production followed up a moderate course, as shown by the diagram below. Romania carried on a large amount of lohn production activity in the field of ready-made clothes, textiles, clothing articles, leather goods etc., which, at the end of the day proved to lack efficiency and, normally, gradually, this activity started to reduce it weight in the frame of the macroeconomic activity. We might, eventually, discuss, as a negative element, the fact that, today, the Romanian industry is not enough prepared to impose, within the concert of the European Union after the adhesion, a number of products marked „Made in Romania". As a matter of fact, according to the Agreement and Protocols signed with the member countries of the European Union, it is to anticipate that during the following years, a series of industrial activities will have to be modernized as, contrary, there is the risk of getting them ceased.

Indices of the industrial production – gross series



Data sources: *National Institute of statistics*

In this frame of the analysis, we should underline the fact that the economy of Romania must clearly grow, through compelling its recognition on the European market for certain goods bearing the seal of the results which it is in the position to acquire.

- **The evolution of the agriculture**

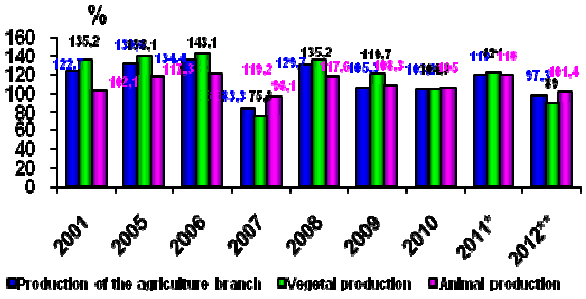
The agriculture of Romania, both the vegetal and animal sector, developed in an oscillatory manner, depending on the natural conditions (meteorological). This is due to the fact that, according to the Low no. 18, the arable surface of the country has been broken down, I would say now without discernment, and due to this situation, there are few possibilities for an actual laboring of the agricultural terrains.

The qualitative degradation of the agricultural production of our country kept on going on, as a result of the utilization in an unconvincing rhythm of the fertilizers, herbicide, insecticides, fungicides etc. as well as to the laboring of the entire potential agricultural surface by classical agro technical methods. Other negative elements stated out over the entire period are given by the fact that agriculture of Romania developed based on a non-scientific process, starting from the inappropriate (there are only the surfaces over 200 hectares which can be labored in convenient conditions), the collapse and vanishing of companies specialized in the agriculture mechanization as well as the difficulties to labor the small surfaces by mechanized means and, the last but not the least, the diminishing of the irrigations which secured uniform conditions over the entire year and, moreover, the collapse of the utilization of the crops rotation.

From this point of view, the agriculture production of agriculture goods and services, the vegetal and animal production recorded somehow sinuous courses. If, in the case of the livestock, we state out a positive evolution but only after a strong reduction of its level during the first 12 years before the analyzed period, so that we consider that a stabilized level has been reached, which is adequate to the Romania requirements.

The agricultural productions of goods and services in the vegetal production followed up positive courses in a way or another.

Indices of the production of the agriculture branch (2000=100)



*) Provisional data. **) Partial data

Data source: *National Institute of Statistics*

There is a single positive element within this evolution, in the sense that by the "natural" mode to carry on the agricultural activities, we secured, volens-nolens, an ecological process of the agriculture production , which can be positive in the perspective of steps to be taken in order to reach the possibility of utilizing the advanced agro technical methods.

The vegetal production recorded different evolutions, with growths from one period to another, influenced by the effects of the natural conditions[5].

[5] Anghelache C. (2011) – "*România 2011. Starea economică în malaxorul crizei"*, Editura Economică, Bucureşti

In the year 2005, when 622.000 hectares have been damaged by the floods, the productions decreased for all the categories, being smaller as comparatively with the year 2004. During the period 2006-2011 also, larger surfaces of terrains have been drawn out of the productive circuit due to floods.

Vegetal production

Thousand tons

Indicators	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011*	2012**
Cereals grain	14.357	12.964	24.403	19.345	15.352	7.784	7.314	7.614	7.960	8.960	6915
Potatoes	4.078	3.947	4.230	3.739	4.251	3.538	4.120	3.915	4.014	4.975	2926
Sun flower	1.003	1.506	1.558	1.341	1.605	535	635	580	610	687	475
Soya beans	146	225	299	313	330	104	215	204	197	206	102
Vegetables	3.973	4.685	4.774	3.625	4.520	2.687	3.150	2.900	2.987	3.125	2549
Fruit	952	2.089	1.744	1.647	1.312	995	1.340	1.051	1.275	1.360	985
Grapes	1.077	1.078	1.230	506	948	826	914	870	906	909	840

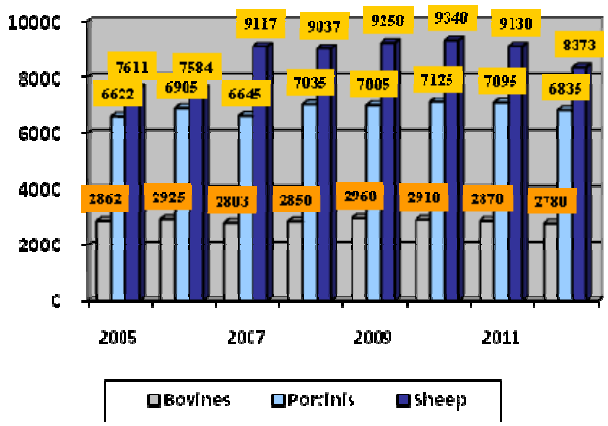
*) Provisional data**)Partial data

Data source: *National Institute of Statistics*

We have to underline that Romania needs and has to pay certain efforts in order to be able to secure an up warding rhythm to the evolution of the agriculture which, whether we like it or not, must remain, due to the natural conditions as well, a significant branch of the national economy.

Meantime, the livestock effectives, the three main categories, bovines, porcinis, sheep, recorded a course somehow stable, with growths during the last two years, mainly as far as the porcinis and sheep are concerned which, I believe, secure part of the conditions required for the Romanian economy carrying on.

Livestock effectives during the period 2004-2012
(thousand heads)



*) Provisional databy June 30th, 2012

Data source: *National Institute of Statistics*

- **Investment and constructions**

From the year 2000 up to the year 2008, the investment recorded an up warding course, with growths of over 9% de from one year to another. From the year 2009, the investment and the production marked a down warding course, with very large decreases in 2010 and 2011. So, for instance, in the year 2001 an increase of 9% has been recorded in the field of investments and constructions, r[6], while during the following years until the year 2008, this rhythm of growth kept on being approximately similar.After the year 2009, we faced very large reductions. From the point of view of dwellings also, we state out an increase in the sense that, from one year to another, their number increased as absolute figures, until 2008, afterword the decline of the investments getting set up.

The year 2006 represents the year when, through the 1,540 dwellings for the victims of the disaster, the increase has been by far superior as against the previous years.

The same rhythm is recorded in respect of the achievement of engineering constructions, residential buildings, dwellings under execution etc., where there are steady but certain increases. The investments came, for their majority, from integrally private funds, a master role being played, during the last two years, by the possibility of civil constructions, including dwellings based on credits, which have been more easily granted and which, by this mortgage might mean an advantage during the periods to come.

Number of finalized dwellings

	2004	**2005**	**2006**	**2007**	**2008**	**2009**	**2010*)**
Number of the finalized dwellings – total	30127	32868	38178	45867	64348	62520	54045
Out of which:							
- for victims of disasters	0	1497	1898	1339	1251	72	114
- from integrally private funds	25160	27527	33409	42320	61210	62448	53981

*)Provisional data

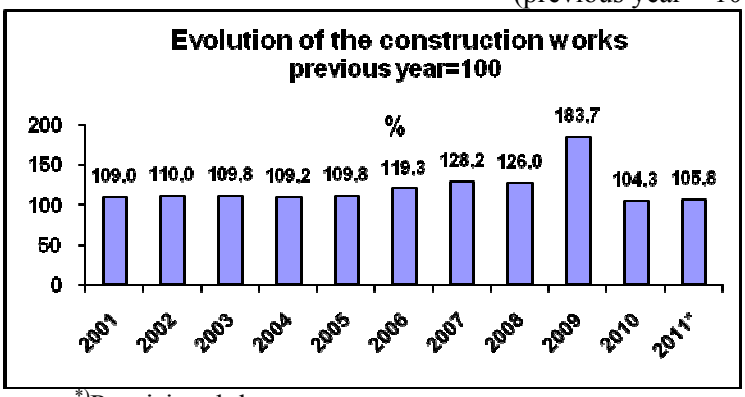
Data source: *National Institute of Statistics*

Investments have been made in respect of the achievement of new constructions, the purchasing of equipment and transportation means or the repair and modernization of the present fix means, already existing.

[6]Voineagu,V. (2007) – „*Economic And Social Evolution Of Romania During 1.I-28.II.2007 Period*", Theoretical and Applied Economics, Volume (Year): 06 (511) (supplement) (2007), Issue (Month): 07(511)(supplement) (June)

The evolution of the construction works 2001-2012

(previous year = 100)



*)Provisional data

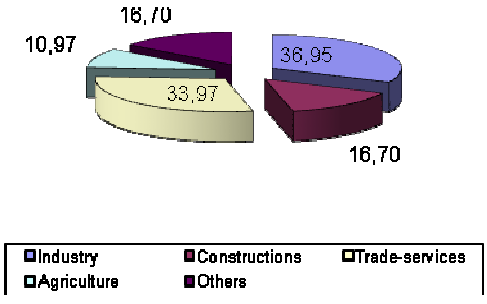
Data source: *National Institute of Statistics*

From the point of view of the structure by destinations of the investments in industry, they have been directed to the replacement of the old equipment, the increase of the production capacity, the modernization of technologies, the environment protection, the labor protection and other sectors which required investments.

Of course, the investments for the environment protection and the technologies modernization should increase, along with those meant to the labor protection where the provisions of the Labor Code as well as, mainly, the requirements arising from the adhesion documents, must be implemented.

Investments-Constructions

(percentages as against the previous year)



Data source: *National Institute of Statistics*

Certainly, the economic agents have focused their efforts merely towards the increase of the production capacities and the replacement of the old equipment but, from the point of view of the harmonization with the European Union requirements, significant amounts should be allocated, mainly for the environment and labor protection.

Out of a preliminary study it is resulting that in the frame of the privatization contracts of certain companies and autonomous administrations, the investment plans and obligations for the environment protection field are not in accordance with those being agreed upon.

From this point of view, the environment is affected and its consequences on the general natural situation will generate particular effects. Nothing to do but to watch the way the putting into practice of the whole program concerning the environment protection, drawn up by the present government team is achieved.

To see also that the imports of capital goods have been focused on these structural elements of the investments and that they counted for about 16.97% of the total imports, which is a positive fact.

References

Anghelache C. (2011) – "*România 2011. Starea economică în malaxorul crizei"*, Editura Economică, Bucureşti

Anghelache C., Isaic-Maniu AL., Mitruț C., Voineagu V. (2011) - „*Sistemul conturilor naționale: sinteze şi studii de caz*", Editura Economică, Bucureşti

Biji, M., Lilea, E., Roşca, E., Vătui, M. (2010) - "*Statistica pentru economişti*" Editura Economică, Bucureşti

Jesus Fernandez-Villaverde & Juan Rubio-Ramirez (2009) – "*Two Books on the New Macroeconometrics*", Taylor and Francis Journals, Econometric Reviews

Pineda, J., Rodríguez, F. (2010) – „*Curse or Blessing? Natural Resources and Human Development*", Human Development Report Office (HDRO), United Nations Development Programme (UNDP)

Voineagu,V. (2007) – „*Economic And Social Evolution Of Romania During 1.I-28.II.2007 Period*", Theoretical and Applied Economics, Volume (Year): 06 (511) (supplement) (2007), Issue (Month): 07(511)(supplement) (June)

www.insse.ro, www.eurostat.eu

The Company Overall Performance Accounting and Some Statistical Management Tools

Assistant Marian ȚAICU, PhD student
taicumarian@yahoo.com
Associate Professor Gheorghe SĂVOIU PhD
gsavoiu@yahoo.com
Master student ec. Malvina FLOREA
malvinaflorea@yahoo.com
University of Piteşti,
Faculty of Economic Sciences

Abstract

Starting with the last two decades of the 20th century, the financial models for the assessment of the company results began to be increasingly criticized, as it was deemed that they did not reflect its overall performance. The company must obtain performance not only at the economic and financial level but also at the social and environmental level. For a sustainable development, the new economy must be rethought from a social and ecologic perspective. Economic sciences must evolve in order to provide answers to environmental issues that are increasingly intense. The paper presents the possibilities of the accounting and statistics to become genuine company overall performance management tools.

Key words: *performance, social accounting, environmental accounting, statistics, management*

JEL Classification: *M40, M41, C40***.**

The notion of performance has a multitude of usages despite the fact that this concept is sporadically defined in specialty works. We consider that the notion of performance is highly complex and it is currently searching for a way to rediscover itself, in order to cease being mistaken for the indicators used to describe and measure it.

Company performance is assessed differently by the stakeholders of the company, based on their divers and often divergent interests. We can study performance from the perspective of each category of users of accounting information: shareholders, managers, employees, creditors, state, business partners, mass media and the public.

The concept of overall performance of the company is based on stakeholder theory.

We believe that in order to maximize the company's value, managers must take into account the interests of the social partners.. Amid limited resources and deepening social problems, social responsibility has become or will be made a growing priority of all businesses, regardless of size and scope of activity.

Gray et al (1988) published the first paper where accountability and the social contract were investigated as part of a theory for corporate social reporting (CSR).

In additional to the traditional measurement of performance through profit (economic performance), companies should also take into account social performance (to act in a socially responsible manner) and environmental performance (to minimize the impact on the environment). These three aspects are perfectly integrated in the "triple bottom line" concept which was first coined in 1994 by John Elkington. Elkington is the founder of a British consultancy called SustainAbility (http://www.sustainability.com). He supported the idea that companies should be preparing three different bottom lines:

- the first is the traditional measure of corporate profit - the "bottom line" of the profit and loss account;
- the second is the bottom line of a company's "people account"- a measure in some shape or form of how socially responsible an organization has been throughout its operations;
- the third is the bottom line of the company's "planet" account - a measure of how environmentally responsible it has been.

Thus, the triple bottom line (TBL) consists of three Ps: profit, people and planet and it aims to measure the financial, social and environmental performance of the company over a period of time.

1. Accounting – overall performance management tool

In our opinion performance measurement is a prerequisite for the development of an enterprise, but it is not sufficient and should be one of the performance management tools. In the literature, many authors prefer to talk about a performance management system rather than about a performance measurement system, which is also emphasized by E. Lardenoije et. al (2005) [1].

Traditionally, according to the dualistic concept, the current in-house accounting system has two major components: financial accounting and management accounting. Unlike financial accounting, management accounting is not regulated at national level, because it does not meet external requirements. On the other hand, large enterprises create their strict and detailed procedures on the organization of the management accounting, taking into account the specificity of the activity and the internal information needs. Management accounting information is dedicated to the company management only, it is not published outside the company and is confidential.

In the literature, management accounting is defined as "a system by which

[1] Lardenoije, E., van Raaij, E., van Weele, A. – *Performance Management Models and Purchasing: Relevance Still Lost*, Researches in Purchasing and Supply Management, the 14th IPSERA Conference, 2005, pp. 687-697

the value of the internal company flows is calculated and analysed. It must be adapted to the activity, to the functional structure of the company and to the requirements of the decision-makers in relation to the evolutions of the economic and technological environment"[2].

The emergence of management accounting was a consequence of the increase in industrial organizations. Management accounting was developed mainly in the U.S.A., its evolution being favoured by factors such as the shift from the payment per unit to fixed wages, from simple operations to multiple operations, from individual business to integrated business. After World War I a number of companies such as Du Pont and General Motors started applying budgeting and used techniques such as standard cost, deviation analysis, ROI (return on investment).

Brabete et all (2011)[3] believe that "although price cost calculation is traditionally considered an objective specific to management accountancy, however, we don't have to make a strict delimitation between the roles of the two components of the national accounting system regarding the determination of this important indicator".

In the authors' opinion, currently, accounting experiences a new phase in its evolution, in which it must meet the requirements of achieving an overall performance management. We believe that the transition to the current stage was hastened by the global economic crisis that began in 2008. In this context, both financial accounting and management accounting must undergo changes in order to meet the users' need for information.

2. Overall performance involves a new type of accounting

A number of stakeholders both from inside as well as from outside the company exercise pressures related to social and environmental matters. These pressures are presented in Table no. 1.

Table no. 1: Sources of pressures on the company concerning social and environmental issues

It. no.	Social and environmental stakeholder	Pressures exercised on the company
1.	The State and its institutions	The legal provisions on social and environmental matters, environmental taxes.
2.	The shareholders	The increase in the company performance and the maximisation of its value.

[2] Iacob C., Ionescu I., Goagără D., *Contabilitate de gestiune conformă cu practica internațională*, Universitaria Publishing House, Craiova, 2007, p. 14

[3] Brabete V., Criveanu M., Drăgan C. - *Comparative analysis on cost price philosophy in national and international context*, Proceedings of Management of International Business and Economic Systems, 2011, pp. 451-460 http://mibes.teilar.gr/proceedings/2011/poster/p4.pdf

It. no.	Social and environmental stakeholder	Pressures exercised on the company
3.	The clients	They request products compliant with the environmental standards. They appreciate companies with responsible social and environmental policies.
4.	The employees, the trade unions	They request the elimination of pollution at the workplace, compensations for occupational diseases due to pollution and social protection measures.
5.	The local community, the ecologist organisations	The elimination of the negative effects of the business on the environment.
6.	The mass media	Presents positive and negative aspects of the environmental and social policies, thus outlining the image of the company before consumers.

Source: *Information prepared by the authors.*

The company can meet the expectations of all the categories above by obtaining overall performance: economic and financial, social and environmental. Managerial accounting evolved in recent decades from a supplier of financial information to a system of tools used by the company management to prepare the strategy, to relate with the external environment and to make economic forecasts. In Romania two oil groups (Petrom and Rompetrol) that dominate the domestic market have policies to obtain overall performance by investments in the social and environmental field. These policies are detailed on the websites of each of the two companies.

2.1. An accounting for the measurement of social performance

The social responsibility of the company meets the internal and the external requirements. An important component of the social responsibility of a company is the provision of health and safety at work. A socially responsible company takes care of its employees' health and safety in a manner that exceeds the requirements of the legal provisions but also takes into account the external implications. Thus, the provision of health and safety at work may be a criterion in the selection of subcontractors.

The performance obtained by the company at the social level can be assessed based on criteria such as: health and safety at work, the number of newly created jobs, the impact on the development at regional level, providing professional development opportunities, observing the employees' and customers' rights, investments in areas such as culture, education, and health, imposing ethical standards on their employees, initiating actions to combat corruption, etc.

All these generate costs that, for an adequate management, must be identified and tracked separately by the accounting system existing in the company.

Thus the necessity of the existence of a social accounting emerges.

2.2. Environmental accounting

From the point of view of the environmental matters, traditional accounting has a number of shortcomings. For example it does not facilitate obtaining information on environmental costs, which are often hidden costs of the company. For example the costs of the wages of the staff involved in environmental actions are included in the same account as the other costs of the living labour.

Traditional management accounting does not recognize the importance of environmental issues, which results in the following:

- Environmental costs are often considered unimportant;
- Certain types of environmental costs are not identified and tracked;
- in the case of investments environmental costs are not always taken into account.

Environmental accounting also referred to as green accounting aims to incorporate environmental costs and benefits in the decision-making process.

The International Federation of Accountants (IFAC) considers environmental management accounting as "the environmental and economic performance management through the development and implementation of "theoretical and practical environmental accounting systems".

According to the ISO 14.001 standard environmental performance is defined as "the measurable results of an environmental management system related to an organization's control of its environmental aspects, based upon its environmental policy, objective and targets". In our opinion environmental policies should be monitored by companies together with the level of certain indicators such as profit, turnover, the return on sales, etc.

Environmental management accounting is the identification, collection, analysis and use of two types of information required to make decisions:

- Physical information on the use, flows and purpose of energy, water and materials (including wastes). These are very important especially for large companies, who have considerable spaces (mining or oil companies);
- Monetary information on the environmental costs, earnings and savings.

Environmental management accounting is focused on environmental costs and provides users with information on the movement and consumption of natural resources and energy. Environmental management accounting is a support for decision making, providing useful information in order to obtain financial and environmental performance. It should be noted, however, that the implementation of this accounting at the level of the company does not guarantee obtaining financial and environmental performance.

The interest in obtaining environmental performance and in environmental management accounting derives from a few key factors:

- the legal provisions in some countries require the publication of annual reports on environmental performance;

- the increase in the voluntary acceptance of the importance of the management of the environmental issues;

- the promotion of the environmental management accounting by some national and international organizations;

- environmental taxes levied by the State;

- The customers who require that products should meet the environmental standards.

In order to implement the environmental management accounting in the company it is necessary to adapt the current IT systems or to adopt new, cheap IT solutions that should nevertheless meet the users' quality requirements. In our opinion, it is necessary to supplement the general chart of accounts by creating new accounts to record environmental information.

Environmental costs can be classified into the following categories [4]:

- Categories reflecting the type of work environment (such as waste control vs. waste prevention);

- More representative categories for the traditional accounting (cost of materials vs. costs of labour);

- categories in the environmental area;

- categories reflecting the visibility of the data in the accounting records (visible costs vs. hidden costs).

Although, conceptually, environmental management accounting is no longer something entirely new in the company practice, it is in an early stage. Companies that implement it can thus benefit from competitive advantage. Companies' efforts to reduce their environmental costs will create benefits for the whole human society.

The implementation of environmental management accounting has a number of advantages. Firstly it provides detailed information to decision makers in which environmental costs are shown separately. A company that strives to reduce the environmental impact of its activities improves its image and can attract more valuable staff with long-term effects on its activities.

The benefits of environmental management accounting also result from the support it provides for[5]:

- Environmental protection through the compliance with the environmental standards and the environmental policies adopted at the organizational level (planning and implementation of investments for pollution control, searching and buying substitutes for toxic materials, waste and emissions reporting to the competent authorities);

- The simultaneously decrease of the costs and impact on the environment through a more efficient use of energy, water and materials (a more accurate tracking of the energy, water, materials and waste flows);

- Evaluating and implementing programs to ensure the strategic position of the company.

[4] IFAC, Environmental Management Accounting – International Guidance Document, 2005, p. 37

[5] German Environment Ministry, Guide to Corporate Environmental Cost Management , Berlin, 2003

The environmental cost analysis can identify new opportunities, savings can be made by recycling or using resources for other activities.

3. Statistics – overall performance management tool

Inductively, current statistics has become a manner of *thinking with the help of data,* and more generally, *statistics turns from the wide concept of science by which you learn to think with the help of figures,* for many entrepreneurs, close to the decision-making process, a simple, but *effective overall performance management tool.* Economics details three relatively emergent trends: a) the increase in the people's need to think effectively with the help of data in the economic activity, and also in education and in the everyday life; b) the expansion of technologies available in providing people with support to be able to think with the help pf data; c) the increase in the scientific interest for understanding the way people think with the help of data (for the statistics way of thinking).

The result of the interference between the most important element of the economy the entrepreneur and its enterprise, through specifically decisional statistical thinking outlines the business performance. Entrepreneurial thinking with the help of the statistical one (Săvoiu, 2011) must determine: a) the basic values of the situation in terms of probabilities; b) the expected value through *maximizing expected gains* in a more distant future; c) the function of expected subjective utility; d) the value of the effect and the accuracy of the choice in the hope that since information is well analysed and statistically processed in a systematic manner, there will be no *post-decisional regret.*

Customs or traditions, cultural and linguistic diversity, differences, the structure or organization of businesses and especially the relatively special priorities concerning the use and availability of resources are normal factors of the limitation of harmonisation and of restraining the statistical comparability in the economy of the present. There is however a system of fundamental statistical indicators focused on the financial and accounting information with maximum utility for the economic entrepreneur in the contemporary European market economy, known for a decade and a half under the designation of short-term statistics system (Săvoiu, 2007). *The methodological manual for short-term statistics* of EUROSTAT highlighted ever since 1999, three requirements of this short-term incidental statistics system: a) the accurate knowledge of short-term economic events concerning the *business cycle* in all the activities; b) the increasing share of *regional information* together with a breakdown of the indication at the level of major regions of a country with a preponderantly monthly frequency; c) meeting the necessities of the data users concerning the *business cycle in different markets and for different sizes of a business entity* ((size classes) ensuring a reasonable level of detail, optimal number of indicators, increased clarity and comparability.

The contemporary entrepreneur, the skilful businessman resorts, in the absence of resources, (time and money for his own research) to *vector indicators with qualities of sensors* (representative indicators) in order to determine the

approximate current state and prospects of an activity, economic regions or even a national economy, distinctive indicators in *the economic recovery* (the number of registrations of new businesses, the number of vacancies and newly created jobs, the change in unemployment and in absolute and relative terms, the dynamics and volume of loans for business development, the dynamics of exports, imports, private consumption and public administration, as well as various other specialized indices), in relation to the economic downturn (the number of bankruptcies, the dynamics of arrears, the dynamics of stocks and the dynamics of incomes and hourly gains, the dynamics of productivity, the evolution of social conflicts of any kind and of strikes, etc.)

The minimal and functional design of this system essentially contains a set of incidental indicators or *short-term* indicators presenting following ten elements in an optimal manner. We can also notice other three important general aspects of it: *the time horizon* requiring the comparison with the nearest period, or the last period of the indicator respectively, *the form of the indicator* which is frequently that if a statistic index outlining the trend cycle in the attempt to eliminate fluctuations and *the type of final totalling value*, usually the monthly or moving average les sensitive or "volatile" to external factors or distortions. Usually, the standard statistical indicator of this system highlights changes compared to the corresponding periods of time of the previous year or even to previous periods or simply change rates, using a general formula: R (%) = I ×100 - 100, where "I" is the index expressed by a coefficient and especially designed for such situations.

I. The quantitative evaluation of the activity defined by *production* is made using its volume index and becomes the most important short-term indicator. The production is signified either as activity "per se" of processing, changing goods, or as result of the processing, changing goods. Thus production becomes *value added* to the cost of factors, and the production index becomes *the evolution of the value added*. *The assessment of the production dynamics* is basically done by its volume index, calculated with the monthly Laspeyres index formula (in its Geary index version):

(1) $I^{q}_{t/o} = \dfrac{\sum_{i=1}^{n} p_{io} q_{it} - \sum_{j=1}^{m} p^{*}_{jo} q^{*}_{jt}}{\sum_{i=1}^{n} p_{io} q_{io} - \sum_{j=1}^{m} p^{*}_{jo} q^{*}_{jo}} \times 100$ where: p = price, q = quantity, i = products used as inputs, p^{*} = material price, q^{*} = material quantity, j = materials used as inputs.

The dynamics of the physical production or of the gross production is also calculated with indices in the Laspeyres formula without taking into account the material inputs:

(2) $I^{q}_{t/o} = \dfrac{\sum p_0 q_t}{\sum p_0 q_0} \times 100$

The evolution of the value production is affected by the practical difficulty concerning the determination of the required price data. The most frequently adopted solution is the deflation of the sales with a Laspeyres price index.

II. The anticipation of the activity summarised by *orders and contracts* is statistically quantified by the *order and contract indices* that include the evolution of the new orders (contracts) and of the stock of orders. The return on the statistical research of the orders is limited to the production activities and mainly to the order, the activities with a long production cycle, or the big order activities, and indices can be calculated using simple monthly value indices:

(3) $I^{CN}_{t/o} = \frac{\sum V_{CNt}}{\sum V_{CN_0}} \times 100$, where $V^{CN_{0,t}}$ = the value of the new orders in the "0" or „t" periods

(4) $I^{SC}_{t/o} = \frac{\sum V_{SC_t}}{\sum V_{SC_0}} \times 100$, where $V^{SC_{0,t}}$ = the value of the stock of orders in the "0" or „t" periods

The volume index of the newly received orders is obtained by deflation with a Paasche price index.

III. The essential incidental fluctuation factor, or *investments* respectively, whose short-term *statistical evaluation* is made by the tangible asset flow method. The concept gross investments in tangible assets underlying this method includes all the corporate capital assets having a life of more than one year, whether existing or newly acquired from third parties or produced for own use in order to: a) increase the production capacity; b) increase productivity by reducing unit costs; c) replace obsolete capital assets (machinery, equipment, facilities). The surveys are monthly or quarterly and lead to the assessment of the nation al production (P_{INV}) to which, capital asset imports (M) are added and from which exports of the same assets (X) are deducted:

(5) $I_{NVESTIŢII} = P_{INV} + M_{INV} - X_{INV}$;

IV. The anticipation of the fluctuation tendencies (approached by investments) is approximated using the *gross operating surplus*;

V. The approximation of the profitability is made in practice by highlighting two indicators: the turnover and the compensation for employees. *The turnover index* provides the determination of the sales dynamics, the difference between turnover and production is one of substance. The turnover is used to assess current sales trends, and respectively to identify market fluctuations (the demand-supply balance point), while production reflects the volume tendencies of the value added to the cost of factors. The difference becomes more obvious between the deflationary turnover index and the production index. Thus the unsold production influencing the increase in stocks is included in the index, but not in the turnover index, while sales of stock are included in the turnover, but does not affect production. Secondary production is often included in the turnover index, while the production index, based on a list of products does not include it, and the deflation

of the turnover can only be made with the price index for the domestic production and not with the export prices, which is not the case with production. The turnover becomes relatively synonymous for sales, dispatches, deliveries. The calculation of the turnover index consists in comparing the turnover of all units sampled and actually monitored of the current month "t" to the turnover of the baseline period "0":

(6) $I^{CA}_{t/0} = \frac{\sum CA_t}{\sum CA_o}$ x 100, where CA is the turnover.

The compensation for employees or the wages in terms of the national account system is shown by an aggregate index at the level of the activity. Certain EUROSTAT member states publish its variable as absolute figure.

VI. The adjustment on various markets with the purpose of providing statistical value comparability is possible through the *price index* (industrial product price index, consumer price index, unit value index, etc.). *Price indices*, through the consumer price index and through the industrial product price index (domestic and export ones) aim to provide quick information on the business cycle fluctuations, the latter being significantly less frequently used as deflating indices. Calculated as Laspeyres indices, price indices are largely harmonized, the harmonized consumer price index (HPCI), being established in the EU project ever since 1997.

VII. The necessary statistical detailing related to the use and purpose is substantiated in the indicators on *inventories and fixed assets*.

VIII. The quantity assessment of labour resources is statistically substantiated by *the number of labour and the unemployment rate. The used labour*, as number of employed individuals, *the unemployment rate* and *the volume of the of work time actually worked*, expressed as number of hours worked, are key adjustment indicators in the labour area.

IX. The intensive use labour is statistically measured through *productivity as simple ratio between effect and effort indices.*

X. The quantity expression of the connection with "the rest of the world" or "the foreign countries as an object of the SCN or SEC is given by the external demand through *exports* and by the foreign competition by *imports. The export and import volumes, the coverage of imports by exports and* the trade balance are the main indicators used to measure the relationship with the rest of the world.

Short-term statistical indicator results should be consistent with other areas of the statistical system, since only an integrated and non-contradictory system of indicators is relevant and deserves the users' trust.

The concepts of social accounting and environmental accounting have found their place within the accounting system in recent decades. Statistics can also be an important tool available to managers in their approach meant to obtain overall performance.

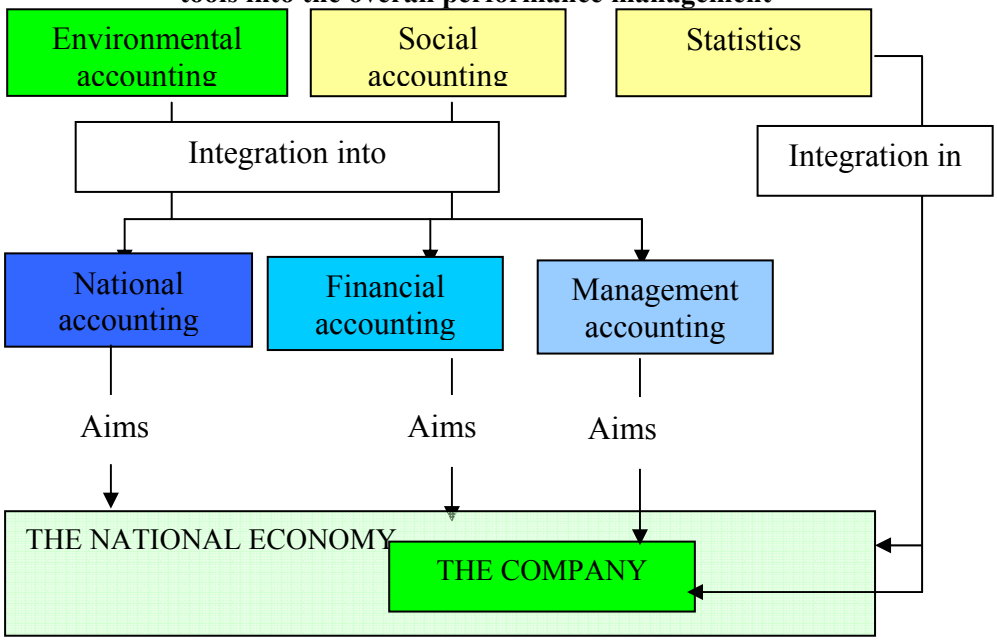
In the last decades we have witnessed the explosive development of computers that can be used from the collection and processing of data to

performance management. Today there is a variety of data processing applications and there is even a risk of a suffocation with information.

L. Şerbănescu and C. Necşulescu (2012)[6] consider that "most organizations don't need data. On the contrary, they have dozens of applications, files, data bases in which the smallest details are memorized regarding the daily activity. Yet, all these data should be united, compared, analysed and filtered to emphasize what is really important for the business". The cited authors propose the use of Business Inteligence solutions.

The integration of accounting and statistical tools into the company overall performance management is shown in Figure 1.

Figure no. 1: Opportunities to implement accounting and statistical tools into the overall performance management



Source: *Adapted from Ţaicu, M. - Contabilitatea managerială a mediului şi dezvoltarea durabilă a firmei, Provocări contabile. Articole, studii şi cercetări, 2010, pp. 168-173*

4. Conclusions

The implementation of the social and environmental accounting must serve the need for improvement at the organizational level and to achieve social and environmental performance, and their implementation should not take place "at any cost". In our opinion, social and environmental accounting should not remain just a theoretical concept, it should be effectively implemented in companies.

[6] Şerbănescu L., Necşulescu C. – *Organizational Optimization of a Company Through the Implementation of Business Intelligence Solution*, Acta Universitatis Danubius. Œconomica, Vol 8, No 5, 2012, pp. 15-25

Social and environmental policies are found in am increasing number of companies, either required by the law, or willingly adopted. Such policies generate environmental costs that have resulted in the emergence of environmental managerial accounting. The implementation of the social and environmental accounting in the company does not automatically imply that environmental performance will be obtained, but managers are thus provided with a useful tool for managing and measuring it. Until now the implementation of social and environmental accounting has taken place especially in large companies, because small and medium companies do not attach sufficient importance to environmental matters. In big companies, which have considerable financial resources, an environmental manager position can be created, in order to deal exclusively with such matters.

C. Tilt and G.Lubansky (1999)[7] concluded "that although social and environmental accounting can be justified on grounds of moral obligations, fairness or justice, the distribution of power in society allows individual groups (such as corporations) to ignore their obligations without penalty". We believe that even now, after more than a decade, the statement of the quoted authors is applicable, as little progress can be seen in this area. A solution is the involvement of the state in this area. Legislation can and should be adapted in order to require social and environmental performance reporting.

For successful strategic environmental objectives environmental education is essential and should take place from pre-school to the academic one. The academic education system and the scientific research are part of our contemporary life that can enhance development trends towards the development of tools available to managers, such as environmental management accounting, but also towards human ecology.

References

Bourguignon, A. (1995) – *Peut-on définir la performance?*, Revue Française de Comptabilité, nr. 269, pp. 61-66;

Brabete V., Criveanu M., Drăgan C. (2011) - *Comparative analysis on cost price philosophy in national and international context*, Proceedings of Management of International Business and Economic Systems, pp. 451-460 http://mibes.teilar.gr/proceedings/2011/poster/p4.pdf

Dumitrana, M, Caraiani, C. (coord) (2010) – *Control de gestiune*, Universitara Publishing House, Bucharest;

Firescu Victoria, Țaicu Marian (2011) – *Company Performance Measurement: Conceptual And Methodological Approaches*, Proceedings of the 3rd International Conference EBEEC, Piteşti, pp 192-199*;*

Ghereş Marinela, Săvoiu Gheorghe (coord.) (2010)– *Economia mediului. Tratat*, Universitara Publishing House, Bucharest;

[7]Tilt C., Lubansky G. (1999), The Political Obligations of Corporations: Justifying A Role For The State In Enforcing Accountability,www.flinders.edu.au http://scholar.googleusercontent.com/scholar?q=cache:vwphk xosgboj: scholar.google.com/&hl=ro&as_sdt=0

Gray R., D. Owen, & K. Maunders (1988) - *Corporate Social Reporting: Emerging Trends in Accountability and the Social Contract*, Accounting, Auditing and Accountability Journal, 1(1), pp. 6-20;
Iacob C., Ionescu I., Goagără D. (2007) – *Contabilitate de gestiune conformă cu practica internațională*, Universitaria Publishing House, Craiova;
Iacob Constanța, Țaicu Marian (2012) – *Managerial Accounting And Environmental Performance Of Bakery Companies*, Scientific Bulletin – Economic Sciences, Volume 11 /Issue 1, pp. 16-24;
Ionescu I., Iacob C., Țaicu M. (2012) – *Control de gestiune. Sinteze şi aplicații*, Universitaria Publishing House, Craiova;
Kaplan, R. S., Norton, D. P. (2001) - *The Strategy-Focused Organization*. Boston, MA: Harvard Business School Press;
Lardenoije, E., van Raaij, E., van Weele, A. (2005) – *Performance Management Models and Purchasing: Relevance Still Lost*, Researches in Purchasing and Supply Management, the 14th IPSERA Conference, pp. 687-697;
Lebas, M. (1995) – *Performance measurement and performance management*, International Journal of Production Economics, Volume 41, Issues 1-3, pp. 23-35;
Săvoiu, G. (2011) – *Statistică pentru afaceri*, Universitara Publishing House, Bucharest, pp.24-25
Săvoiu, G. (2007) - *Statistica. Un mod ştiinţific de gândire*, Universitara Publishing House, Bucharest, pp. 378-381.
Şendroiu C., Roman A., Chițu A.(2006) – *O nouă dimensiune a contabilității: Contabilitatea managerială a mediului*, în The Journal of the Faculty of Economics - Economic Science Series, TOM XV, volumul II, pp.: 615-618;
Şerbănescu Luminița (2009) – *Business Intelligence Solutions For Human Resource Management*, The Annals of the "Stefan cel Mare" University of Suceava. Fascicle of The Faculty of Economics and Public Administration, vol. 9 (Special), pp. 162-168;
Şerbănescu L., Necşulescu C. (2012) – *Organizational Optimization of a Company Through the Implementation of Business Intelligence Solution*, Acta Universitatis Danubius. Œconomica, Vol 8, No 5, pp. 15-25;
Ştefănescu I, Iorga-Simăn I, Săvoiu Gh., Manea C. (2009) – *Life quality and human ecologyInterferences in academic education and in scientific research*, Progress of Cryogenics and Isotopes Separation, Conphys Publishing House, Râmnicu –Vâlcea, vol 12, issues 23-24, pp.117-128;
Tilt C., Lubansky G. (1999) - The political obligations of corporations:justifying a role for the state in enforcing accountability, www.flinders.edu.au, http://scholar.googleuser content.com/scholar?q=cache:vwphkxosgboj:scholar.google.com/&hl=ro&as_ sdt=0;
Țaicu Marian (2010) – *Contabilitatea managerială a mediului şi dezvoltarea durabilă a firmei*, Provocări contabile. Articole, studii şi cercetări, pp. 168-173;

Țaicu Marian, Bondoc Maria-Daniela (2011) – *Cost Analysis – A Company Performance Management Tool,* Proceedings of the 3rd International Conference EBEEC, *pp. 184-191;*

Țaicu Marian, Săvoiu Gheorghe, Apostol Ciprian (2010) – *Environmental management accounting, eco-performance and human ecology of modern companies,* The Eco-Economic Challenges for XXI Century*,* pp. 81-86;

*** German Environment Ministry – Guide to Corporate Environmental Cost Management, Berlin, 2003;

*** IFAC – *Environmental Management Accounting – International Guidance Document*, www.ifac.org, New York, 2005;

*** IFAC – *Management Accounting Concepts*, www.mia.org.my, New York;

*** United Nations Division for Sustainable Development – *Environmental Management Accounting, Procedures and Principles*, www.un.org, New York, 2001.

Partially Studied Models Based on Discreet Variables

Prof. Constantin ANGHELACHE PhD
„Artifex" University of Bucharest
Academy of Economic Studies, Bucharest
Prof. Gabriela Victoria ANGHELACHE PhD
Academy of Economic Studies, Bucharest
Andreea Gabriela BALTAC PhD Student
Academy of Economic Studies, Bucharest
„Artifex" University of Bucharest
Claudia Cătălina SAVA PhD Student
„Lucian Blaga" University of Sibiu

Abstract

We study some types of models that do not fall into this category:

- Models with discrete dependent variables, called qualitative response models where endogenous variables can take only two values (binomial dichotomous or binary response models) or a limited number of values (divided into several categories, multinomial, or model choice multiple);

- Partially observed models (or models with limited dependent variables) where the dependent variable analyzes are reduced to a single value after a certain limit. We consider here models censored sampling designs. These latter models are characterized by a truncation process that depends on a latent variable that differs from the one that describes the observed data.

Key words: *models, discrete dependent variables, limited dependent variables*

JEL Classification: *C18, C25*

- **Models with dependent discreet variables partially studied**

When considering the econometric models, it is usually assumed that the dependent variable can take any value within $\Re$ or $\Re^p$.

We shall study certain types of models which do not join this category:

- Models with dependent discreet variables, known as the models of the qualitative response, where the endogenous

variables can take two values only (*dyhotomic* binomial or models of *binary response*) or a limited number of values (*divided by several distinct categories* , multinomial, or models of multiple variants)

- Models partially studied (or models of limited dependent variables), where the analysis of the dependent variable are reduced to a single value after a certain limit is exceeded. Here we take into consideration the licensed models or the sampling models. These last models are characterized by a process of cutting down depending on a dormant variable differing from the one who describes the studied data.

Obviously, the writing of the conditional probability, of the form: $E^{\theta}(y_i|z_i) = \lambda' z_i$ is not adequate since the restriction $\lambda' z_i$ is not possible in order to take certain discreet values only or to belong to a specific interval for all the values of z_i. These models are analyzed in the form of *models indices*.

$$E^{\theta}(y_i|z_i) = \varphi(z_i) = \psi: \Re^q \to \Re$$

with $\varphi: \Re^q \to \Re$ .The function ω is called *function index*and can take any value out of the mass of the real numbers; *ais a linear function index* if it can be written as:

$$\omega(z_i) = \lambda' z_i$$

and consequently it depends on **z,** through a linear combination, called function of transformation.

Thus, ψ is projecting the value of the real numbers from the interval [0,1] and can bedepending on the function of cumulative distribution of some distributive probabilities.

We shall study different types of dependent discreet variables models and partially studied models, as well as the aspects concerning the estimations and tests.

- **Dyhotomic models**

They are characterized by the fact that the endogenous variable y_i can take two values only, 0 sau 1. The following study, on the maximizing the utility, is underlining the motivations for this type of model.

In general terms, the model of the binary choice can be written as a model with indices which, we shall assume, has a linear index of the form:

$$E^{\theta}(y_i|z_i) = \psi(\omega(z_i)) = \psi\left(\lambda' z_i\right)$$

The function ψ has the characteristic of a function of cumulative distribution. There are two situations occurring: if ψ is unknown, we estimate the model non-parametrically. If ψ is known, we are using the traditional methods.

In this last alternative, the choice ψ generates the two main types of dyhotomic models studied by the literature. The first one is the *„probit" model,* where the function ψ is simple Φ and the distribution function of the normal standard:

$$F_N(x) \equiv \int_{-\infty}^{x} \frac{1}{\sqrt{2\pi}} e^{-u^2/2} du.$$

The second one is the *„logit" model,* where ψ is the logistic function:

$$F_L(x) \equiv \frac{e^x}{1+e^x},$$

The „probit" and „logit" models are usually giving similar outcomes. When comparing the curves of the two distribution functions $F_N(x)$ şi $F_L\left(x\sqrt{3}/\pi\right)$ (the one of logistics being normalized by the reverse of the standard deviation), we notice the fact that they are almost identical, excepting the ultimate.

- *Models with non-arranged multiple variants* are a simple generalization of the models with binary variants.
- *Models with arranged multiple variants* are grounded on responses discreetly arranged, for instance, the selection of financial assets with different profits.
- *Licensed models*, knownalso as *„tobit" models,* arecharacterized by the fact that the endogenous variable takes one single value starting as from a certain limit. For instance, the demand for a specific goods is blocked because the fact that out of the sales analysis it results that they cannot exceed the production capacity of the company. Another example consists of the duration of the unemployment period, which is forbidden since some individuals did not get out from the unemployment period and, hence, they are not accounted. Thus, in the case of this kind of models, the observations cannot be considered as an achievement of the continuous aleatory variables but merely as a combination of discreet and continuous variables.
- *The models of lack of balance* have been developed in order to take into calculation the fact that, on certain markets, the quantity in transaction is not equal with the offer and the

demand simultaneously or, in other words, some of the sellers and buyers are not able to do the exchange at the market price.

- *Samples selection models* (known also as *models of incidental cutting downs*or *generalized tobit models*) imply a cutting down process grounded on a dormant variable differing from the variable which describes the studied data. For instance, the desired number labor hours of a person which may depend on remuneration and the domestic characteristics is noticed only in the situation when the individual is actually working, namely, he gets paid a salary higher than the real (due) salary.
-

- **Model with normal bi-dimensional distribution**

The literature shows also other types of samples selection models being proposed, such as the one where each individual may have one of the two possible states out of which there is only one which can be studied.

Let's note with $y_i^{(1)}$ and $y_i^{(0)}$ the two possible outcomes for*i*individual. For instance, if we are studying the effect of a medical treatment, $y_i^{(1)}$ şi $y_i^{(0)}$ are representing two alternative effects of the treatment, depending on the fact that the individual is or is not treated but, of course, we shall notice one outcome only. This example has been inserted into the models of the medical treatments effects but it can be extendedly applied in econometrics in order to evaluate the public policies (for instance, the policy regarding the labor force occupation, the policy in education field and so forth). In other words, we notice y_i defined by:

$$y_i = d_i y_i^{(1)} + (1 - d_i) y_i^{(0)}$$ with

$$d_i = \begin{cases} 1 & Daca\ i\ este\ tratat \\ 0 \end{cases}$$

Let d_i^* be the dormant variable defined by a linear index z_i:

$$d_i^* = \lambda' z_i - \eta_{d_i};$$

then d_i can be written as

$$d_i = \begin{cases} 1 & Daca\ d_i^* \geq 0 \\ 0 \end{cases}$$

We define the equation of the potential income if *i* attends the treatment

$$y_i^{(1)*} = w_i \lambda_1 - \eta_i^{(1)}.$$

We notice $y_i^{(1)}$ defined by the relation:

$$y_i^{(1)} = \begin{cases} 1 \ Daca \ y_i^{(1)*} \geq 0 \\ 0 \end{cases}$$

The equation of the income if *i*does not attend the treatment is submitted by the relation:

$$y_i^{(0)*} = w_i \lambda_0 - \eta_i^{(0)}.$$

and we notice $y_i^{(0)}$ defined by

$$y_i^{(0)} = \begin{cases} 1 \ Daca \ y_i^{(0)*} \geq 0 \\ 0 \end{cases}$$

Consider the effect of the treatment on the individual *i*:

$$\Delta_i = y_i^{(1)} - y_i^{(0)},$$

which, obviously, cannot be noticed.

- **Estimation**

There are various methods of estimation which can be used. First of all, we are studying the non-parametrical estimations represented by those of the indices with no assumption as to the indices function. Secondly, we are studying the semi-parametrical estimation assuming certain forms of the indices function. Finally, we shall refer to the estimation of the maximum probabilities.

The non-parametrical estimation

The submitted models can be written as indices models of the form:

$$E^{\theta}(y_i|z_i) = \psi\left(\lambda' z_i\right) = \varphi(z_i),$$

where ψ is a function from $\Re$ ***on*** $\Re$ and $\lambda' z_i$, is a linear combination of elements from z_i. We assume that ψ isdifferent and that z_i, hasacontinuous density. In addition, in order to solve the issue of the non-identification of the pair (ψ, λ), we bring λ to the normal form by setting $\lambda_1 = 1$. Moreover, we shall utilize here some of its outcomes.

The estimation is established by the following steps:

- Estimates φ with the help of the estimator nucleus $\hat{\varphi}_n$;
- Estimates λ_j on the function $\hat{\lambda}_{\mathbf{yn}}$
- The non-parametrical regression *y*on $\hat{\lambda}_n' z$ where $\hat{\lambda}_n$ is a vector of $\hat{\lambda}_{jn}'$.

Another estimating procedure is based on minimizing $E[(\varphi(z)-\psi(\lambda' z))^2]$ observing ψ and λ. Thestepsto run throughare the following:

- Establishing the estimation ψ
- Estimation λ through $\hat{\lambda}_n$
- Establishing an estimator $\hat{\psi}_n$ obtainedby replacing λ with $\hat{\lambda}_n$.

- **The semi-parametrical estimation with a maximum probability**

In certain situations, such as the case of the binary selection models, the indices model is established so that the function ψ holds the property of a distribution function. When ψ are known, the traditional methods of estimation should be applied, such as the maximum probability. On the contrary, when ψ isunknownwe have to go back to the specific non-parametrical methods which are exploring the property according to which ψ is a distribution function.

We apply this idea to the dyhotomic models.

We come back to the binary selection model which takes the form of a model with linear indices, where ψ has all the properties of a distribution function. If ψ would be known, λ can be estimated by maximizing the logarithmic probability.

Since it is actually unknown, we replace ψ by a non-parametrical estimator $\hat{\psi}_{ni}$.

It can be shown that this estimator is a consistent and asymptotical normal one.

- **The estimation of the maximum probabilities**

The models with discreet and partially studied variables are usually estimated through the method of the maximum probabilities. We come back to the models previously submitted and use their traditional presentation, namely, not in the form of a non-parametrical indices model.

First of all, we consider the traditional representation of a dyhotomic model, where is assumed that the variable y_i takes two values (y_i = 0 or 1).

The „tobit" model has granted as guarantee the fact that by the logarithmical probability the rests are normally distributed. The logarithmical probability has a non-standard form since we have a mix of continuous discreet distributions but it can be maximized a recurrent method usual for getting MLE.

References

Anghelache, C. (2012) – „*România 2012. Starea economică în criză profundă*", Editura Economică, Bucureşti

Anghelache, C. şi alţii (2012) – „*Elemente de econometrie teoretică şi aplicată*”, Editura Artifex, Bucureşti
Anghelache, C. (coord., 2012) – „*Modele statistico – econometrice de analiză economică – utilizarea modelelor în studiul economiei României*”, Revista Română de Statistică, Supliment Noiembrie 2012
Anghelache, C., Mitruţ, C. (coordonatori), Bugudui, E., Deatcu, C. (2009) – „*Econometrie: studii teoretice şi practice*”, EdituraArtifex, Bucureşti
Dougherty, C. (2008) – “*Introduction to econometrics. Fourth edition*”, Oxford University Press
Gourieroux, C., Jasiak, J. (2001) – *„Financial econometrics: problems, models and methods”,* Princeton University Press, Princeton
Jesus Fernandez-Villaverde & Juan Rubio-Ramirez (2009) – “*Two Books on the New Macroeconometrics*”, Taylor and Francis Journals, Econometric Reviews
Mitruţ, C. (2008) – „*Basic econometrics for business administration”*, Editura ASE, Bucureşti
Voineagu, V., Ţiţan, E. şicolectiv (2007) – “*Teorieşipracticăeconometrică*”, Editura Meteor Press

Some Accounting Issues and Statistics about Romania and EU Funds - Absorption through Projects and Eligible Expenses

Senior Lecturer Gheorghe SĂVOIU PhD
Lecturer Mariana BĂNUȚĂ
Lecturer Mihaela GÂDOIU
University of Piteşti, Faculty of Economic Sciences

Abstract

The first part of the article deals with the concise presentation of main European funds, the poor preparation of absorption of these funds in Romania during the period of pre- and post-adherence and a few statistics regarding the rate of absorption placed under the level of 10 % of some funds of over 30 billion euro between 2007 and 2013. The second part presents an accounting analysis of eligible expenses and main accounting problems which led to the blocking of some large sums from EU funds. A few final remarks upon these irremediably lost resources due to Romanian economy are made in a pessimistic way, within the context of a profound recession and of a national project management preponderantly non-competitive and here and there without responsability.

Key words: *project, project management, EU funds, absorption rate of EU funds, SWOT analysis, project budget, eligible expenses.*

JEL Classification: *C46, G23, H43, O22, M41*

Any European financing fund was and is the expression of European Union politics which is either structural or of insurance of social cohesion, being conceived as a financial instrument for the promotion of this politics. The convergence of EU member states, disparities diminution between EU member states and consolidation of economic and social cohesion was achieved inter-community by means of two categories of important funds till the moment of Romanian adherence on the 1st of January 2007:

I. Structural funds – initially estimated to the value of 195 billion euro for the period 2000 – 2006 which in their turn comprise four main categories:

a) European social fund – ESF, established after 1957, as a result of the treaty of ROME (more precisely from 1958); the major purpose of this fund is to support

the professional training, requalification of manpower and teenagers'reintegration on the labour market. The main objective remained the prevention and control of unemployment through the access increase to labour market, chances equalization, increase of number of jobs and of professional qualification, the favourite domains being the social and labour market domains.
b) European Fund of Orientation and Agricultural Guarantee – EFOAG, established also after treaty of Rome, more precisely after 1960, and its component of functional orientation after 1962; the purpose was to support the conditions and qualitative improvement of programs of agricultural production and of marketing of these products in order to achieve thus a lasting rural development. The major objectives are further the structural adjustment and reconversion, development of agricultural activity (with emphasis upon its orientation), prices support of agricultural products. The favourite domains have become the investments in associations, facilities given to young agriculturists, support of retirement from agriculture, support of deprived areas (or with environment restrictions), support of agricultural methods which protect the environment and support of forestry.

c) European fund of regional development – EFRD created and being functional after 1975, became the most important component of structural support, its purpose being the correction of unbalances and participation to the development and transformation of regions. The productive investments directly resulted in domains such as creation of new jobs, investments in infrastructure (networks, education, health), development of internal potential, awarding of technical assistance.

d) Financial instrument of fishing orientation – FIFO has become functional only after 1993 being proposed after Maastricht, with the purpose to adapt and modernize the fishing equipments in a blue Europe. Its domains are the support of adaptation efforts in the fishing domain, fleet modernization, development of aquaculture, protection of marine areas, awarding of facilities for processing, marketing, promotion of piscatorial products.

II. Social cohesion and technical assistance fund, which had a total value in the period 2000 – 2006 of about 18 billion euro and which was created after 1993. This fund directly finances individual projects which allow the environment improvement and development of transport networks having as main purpose the consolidation of social and economic cohesion through the support given to less prosperous states whose PIB is under 90% as against the community average. Till May 2004, it has been assigned exclusively to the poorest member states,respectively Greece, Ireland, Portugal and Spain and can cover till 80-85% from the total of public expenses. The functioning principles of these funds have remained practically the same also after our country adherence:

I. Partnership – is the existence of a close cooperation between EU and national, regional and local authorities from each member state (the funds allocation becomes thus the result of a dialogue).

II. Scheduling and internal coherence (scheduling = conception of some programs of multinational development and internal coherence = awarded by complementary actions, through explicit strategy as well as through global impact (bigger than the sum of impact of projects)

III. Additionality or complementarity and external coherence – the European funds don't substitute the financial efforts of member states, but they are additional.

IV. Concentration- the financial support is pointed to the poorest regions, the financial resources to activities with maximum impact and to a limited number of prioritary objectives and serve a restricted number of regions.

V. The category of other principles has in its content: a) efficiency principle (effect maximization of communitary allocations); b) subsidiarity principle (responsability assigning to authorities close to citizens); c) co-financing principle (financial support assurance including private, international financial support or of any other nature besides the public support); d) durability principle (the selection of a project for financing takes into consideration its chances to continue successfully even after the communitary support stops).

1.Analyses and statistics regarding the absorption of European funds by Romania

Having a volume under 75% from average EU PIB, Romania qualified theoretically in pre-adherence at a financing level of the highest from EU projects in the period 2007-2013. It was suggested the use of genuine projects "pipes", called also „pipeline"projects. There have been some studies and SWOT analyses which signaled a preparation more than modest of the future access of Romania to European structural funds which doesn't rise yet to the level of resources which will be alloted, anticipating percentages of absorption close to „zero" in the first years post-adherence 2007 and 2008.

Table 1: SWOT analysis of Romanian project portfolio at the end of 2006

Strong points	**Weak points**
-Existence of projects made -Experience and adaptability -Regional programs (ADR) -Plan of regional development (second revision from December 2005) -Regional operational programs (ROP)	-Problems regarding the absorption capacity of funds to all new EU member states -Institutional frame -Control assurance -Problem of financial management -Quality of regional strategies (according to „Romanian Monitoring Report")

Oportunities	Threats
- Posibility to create excellence poles (group: university + research institute + IMM or administrative institution) - Existence of five national thematic programs projects - Existence of transversal programs and strategies - Possibility to form academic teams of project writers from students and teachers in universities through a mandatory discipline	-Appearance of some regional strategies sometimes non-connected with the national ones -Lack of a great number of teams already formed of project writers -Lack of involved private funds (in average, their contribution cannot rise to 50 %) - Monopolization of some activities of project editing with European financing at county level -Potential accounting and financial indiscipline

*Note : The five national programs refer to economic competitivity, energetic and transport infrastructure, environment infrastructure, development of human resources and modernization of administration.

Source: Săvoiu, G. -coord- (2006). Projects with External Financing, Economic Independence Publishing House, Piteşti. pag.156 -157

The weak points can also materialize in the pre-adherence of Romania, by detail and in the uncomplete reformed economy, in the low level of investments, in the high rate of unemployment, in the low level of services addressed to business environment and communities and in the low level of basic infrastructure necessary to economic activities.

The potential financings of projects achieved in Romania from EU funds could rise at over 33.5 billion euro between 2007 and 2013, but the effective achievements indicate a general rate of funds absorption at the level of the Convergence Objective of 9.17% from EU allocation on the 30 of June 2012 respectively 11.47% at the end of 2012, according to official data presented by the Authority for Structural Instruments Coordination (ASIC).

During the period 2007-2013, Romania benefits from an allocation of 19.213 billion Euro, which is implemented by means of the seven Operational Programs within the Convergence Objective.

The National Strategic Reference Frame of 2007-2013 benefits of this allocation from:

a) Structural funds (European Social Fund -3,684 billion Euro; European fund of Regional Development- 8.976 billion Euro);

b) Cohesion Fund- 6.552 billion Euro;

c) national co-financing estimated to 5.6 billion Euro.

At the level of each Operational Program, the stage of implementation on the 31st of January 2013 is presented as follows:

Table 2: Allocation of European Funds and their rate of absorption on financing programs during the period 2007-2013

No.	Designation of Operational Program	Allocated sum (billion Euro)	Absorbed sum (mil. Euro)	Absorption rate (%)	Problems and difficulties
1.	Transport Operational Program	4.56	295.18	6.46	At the Transport Operational Program the biggest problems are related to fraud suspicions especially embezzlements. Another annoying problem is represented by the projects of great amplitude which are in a reduced stage of implementation especially in the railway domain.
2.	Districtual Operational Program of Economic Competitivity Increase DOPECI	2.55	192.9	6.77	The problems recently issued are related to confusing institutional architecture although the projects for IMM are the duty of Ministry of Tourism and the energy projects are the duty of Ministry of Internals. There are also problems related to the functioning of Management Authority of Districtual Operational. Programof Economic Competitivity Increase by Ministry of Economy as well as by the Intermediary Organism (IO) for IMM. Similarly to the previous presented program, there are suspicions of fraud and penal investigations are made also in the case of this program.
3.	Regional Operational Program ROP	3.72	920.34	24.7	Excepting the second Primary Axis, the European Committee placed in pre-suspension the Regional Operational Program in October 2012 (its unblocking is expected in March 2013)
4.	Districtual Operational Program of Human Resources Development DOPHRD	3.47	268.84	7.73	The Districtual Operational Program of Human Resources Development entered the suspension in august 2012 but it has been unblocked in February 2013.
5.	Districtual Operational Program for Environment	4.51	464.6	10.3	The main problems are related to the reduced degree of implementation of started projects which generates the risk of disengagement of European money.
6.	Operational Program of Administrative Capacity Development	0.208	51.2	24.63	No major problems are encountered excepting the error rate to expenses which arrived up to 8%, while the European Committee allows maximum 2%. Also, it is foreseen the risk of appearance of some institutionally administrative ambiguities.
7.	Operational Program of Technical Assistance	0.170	31.02	18.23	The quality of expenses represents the problem arised by this program in the sense that money should be directed especially towards efficient projects which lead to the expertize growth in the domain of European funds absorption.

Source: Table realized by authors by synthesizing the webography resources of this paper.

In the case of the seven Profile Programs for the projects with disorders, Romania will have to accept financial corrections from European Committee till the level of 25%.

For the period 2014-2020, Romania will receive 39.88 billion Euro – structural and cohesion funds and funds assigned to agriculture comparatively with the value of 33.5 billion Euro, sum allocated in the previous period which leads to a growth with 18% in comparison with the allocations from the financial period 2007-2013 (as a result of adoption of EU multiannual budget of 2014-2020).

The dashboard of European funds which will be received in Romania between 2014-2020 looks as follows (see http//: www.zf.ro):

- For structural funds, Romania will receive 21.82 billion euro, with an increase of 10% against the allocations from the period 2007-2013 (19.8 billion euro, sum updated to the inflation).
- For Common Agricultural Politics (CAP) it will receive 17,5 billion euro, with an increase of 27% against the allocations from present multiannual financial period of the Union (13,8 billion euro).
- For direct payments to farmers, it will receive 10.3 billion euro, against 5.6 billion euro in the period 2007-2013 (plus 3.4 billion euro).
- For rural development, it was allocated 7.1 billion euro, against 8.2 billion euro between 2007-2013 (minus 1.1 billion euro).

Also, in the period 2014-2020, money can be spend in the interval N+3 (three years after the established date for a project to be achieved), against N+2 at present, which means that the all allocation must be absorbed in 10 years from the beginning of financial period.

2. Projects budget, elligible expenses and noncompliance with accounting discipline in the projects financed by EU

In the life cycle of the project financed from European funds, we can identify three assessments of the project budget: a) "ex ante" budget assessment in whose context we make the opportunity study of project budget yet from auction and we have in view the definition and application of financial orientations of its activities; b) continuous assessment of budget, which develops during all the project and represents a monitorization instrument for decidents and financers being interactive related to the project evolution; c) "ex post" budget assessment, in whose context the analysis takes place after the project closing and quantifies the economic, social and scientific contribution of the project results. Any assessment of a project budget will have to answer to the questions regarding the four defining aspects of the project: why, how, when and for whom the assessment will be made, which finally leads to four classic assessment models of projects budget: a) Goal Achievement Model; b) Means Achievement Model; c) Human Resources Model; d) Political Model. If the first model tries to define "in which measure the initial program was achieved", the second emphasizes the analysis of the decision process which influences the achievement or nonachievement of objectives initially

established, the third has in view the competence of those implicated in the project achievement (the project success depends essentially of this thing) and the fourth and last classic type of budget model starts from the indicators of pertinence and efficiency of the project in relation with the financing program which have been accepted by the main implicated parts.

In a project budget, there will be included all its necessary expenses, but never there will not be comprised the non-elligible expenses mentioned even from the editing phase of projects. A budget will be possible ensuring the coherent and continuous development of the project in necessary quality conditions. Any expense which was not initially included can lead either to the solicitation of additional funds besides the one already approved(which can mean the project cancellation), or to the demand to modify the budget (which can be accepted by financers but between certain limits). Expenses can not be increased in the budget more than it is necessary. If there are reserves included in the budget for unexpected situations, these have maximum limits accepted by the financer. Besides the strictly necessary expenses, financers are willing to finance only the expenses related to the functioning of the financing program on the whole. If modifications are necessary in the budget, these can be made but with the financer's approval who accepts as a rule when the variations don't affect the basis object of the project or when the financial impact is limited to a transfer within a single budget chapter. The assurance of personal contribution is necessary in the budget (excepting the non-reimbursable financings or grants), not only regarding the contribution in kind but also the financial resources. A bigger personal contribution can indicate to the financer that the sollicitant treats the project activities with interest and seriousness.

In the practical development of the project, the promoter may start activities from the project before to receive the sum from the financer (as a rule, this sum is paid in more instalments but never exceeds 95 % at the end of the project). The personal contribution of the sollicitant or promoter must cover the expenses of project functioning during this period. A good accomplisher of project budgets will have the following skills very well assimilated in order to be capable to achieve a budgetary scenario as appropriate to the financing program of the project: a) completely knowledge of information and financial documents; b) understanding of dissociation between elligible costs and non-elligible costs; c) anticipation of elligible indirect costs; d) adaptation to the printed form structure of each program; e) establishing of coherent calculus modes (which are then kept).

Elligibility / non-elligibility represents the concrete state of a project to achieve/to not achieve the mandatory criteria established, announced and disseminated through the projects auction by financer or the program agency.

In detail, we can distinguish the promoter's elligibility, the partner's elligibility, the area elligibility, the activities' elligibility, the budget elligibility, the expenses' elligibility etc.

It is also necessary an analysis of some aspects of the accounting organization and management of projects financed by European funds. As we

found from the analysis of allocation and absorption of European funds by means of the seven Operational Programs, the European Committeee applied financial corrections with a high level (even of 25%) as a result of verifications of programs run. For this reason, it becomes more important the knowledge of elligibility problems of expenses afferent to projects. For the implementation of projects financed from European funds, it is required a distinct book keeping, by using project analytic accounts. In the situation when the entity benefits of more projects financed from European funds, it is required to have a distinct book keeping for each project. In case of projects financing from European funds, some mandatory work procedures must be drawn up according to financing contract as for example: procedure for the reimbursement demand deposit, accounting procedure, payments authorization procedure, payments making procedure etc. The book keeping corresponding to the project[1] will be achieved according to specific procedure by an accounting expert /authorized accountant according to law who will sign and date the accounting documents corresponding to project operations (with observance of accounting, fiscal, financing regulations etc.). The project manager is responsible with the application of procedure regarding the project accounting.

Within the projects financed from European funds, from the point of view of elligibility, we can distinguish the following categories of expenses:

- **Elligible expenses**: the expenses realized by a beneficiary corresponding to projects financed within operational programs which can be financed not only from structural instruments, but also from the state budget and/or beneficiary's personal contribution according to legal national and community regulations in force. Examples of elligible expenses within a Districtual Operational Program of Human Resources Development project: staff expenses; lodging, transport and daily fee expenses; expenses corresponding to project management; taxes; financial and juridical expenses; expenses for rents, amortizations and leasing; subventions and scholarships; general administrative expenses; publicity and information expenses, expenses of the type European Fund for Regional Development (EFRD).

- **Non-elligible expenses**: expenses inherent to project achievement financed from structural instruments within the operational programs, which can not be financed from structural instruments according to national and community regulations. Examples of non-elligible expenses within a Districtual Operational Program of Human Resources Development project: value added tax; interest and other commissions corresponding to credits; collateral expenses which intervene in a leasing contract; expenses for houses for the operations which benefit of FSE financing; purchase of second-hand equipments; fines, penalties and judgement expenses; costs for operation of investment objectives.

[1] The analytic accounts used in the project accounting must contain the following elements: number and account designation, abbreviation of the operational program, number and date of the contract for project financing.

We mention that in order to identify which categories of expenses are considered elligible within a project we can consult the list provided in Specific Conditions of the Sollicitant's Guide for each demand of project proposals.

Generally, in order to be elligible, an expense must accomplish the following conditions in a cumulative way[2]:

a. to be effectively paid from the date provided in non-reimbursable financing contract;
b. to be necessary for the realization of activities within the project;
c. to be provided in the estimated project budget;
d. to be in conformity with the principles of a rigorous financial management taking into consideration the efficient use of funds and an optimum cost-results report;
e. to be registered in the beneficiary's accounting, to be identifiable , verifiable and proved through invoices, in conformity with the provisions of the national legislation, or through other accounting documents with probative value, equivalent to invoices;
f. not to have been the object of other public financings;
g. to be in conformity with the provisions of the financing contract;
h. to be conformable to the provisions of national and community legislation;
i. to be mentioned in the list of eligible expenses presented in the Specific Conditions for each demand of project proposals.

In certain limits imposed by EU rules, the elligibility conditions of expenses must be established at national level, this representing the appropriate level within the member state – not necessarily at the level of central Government (can be at regional or local level), even specifically for an operational program. However,in this situation we must observe the condition that all established rules be in conformity with the respective community or national legislation. These rules of elligibility imposed at national level are considered as mandatory as the Committee rules and their non-observance attracts the declaration of expenses as non-elligible.

In order to be discounted, the expenses made within the project will be integrated in budgetary chapters corresponding to their typology and will be supported by justificatory documents. At the reimbursement of expenses, there will be requested at least the following documents: invoices, entry-reception note (NIR), payment documents (payment orders), bank statements, consumptions orders, fixed assets sheet, minutes of putting in functioning, balance sheets for analytic accounts used in the book keeping of projects, accounting notes, trial balances, day book, inventory book etc.

As it is mentioned in the regulations of EU politics and funds (http//: www.fonduri-ue.ro „The Continuous Training of the Staff Implicated in the Administration of Structural and Cohesion Funds") regarding the elligibility of expenses, the strategy from Lisbon pointed out the following aspect: "the funds

[2] The Districtual Operational Program of Human Resources Development 2007-2013, the Beneficiary's Manual, 2009 (revised)

objectives must be based upon the European Union priorities in matter of promotion of competitivity and creation of jobs. The Committee and member states assure that 60% of expenses of all member states allocated to the „Convergence" objective and 75% of expenses allocated to the „Competitivity and work force occupancy" objective are meant/allocated to these priorities. The cofinancing coefficients are limited and their maximum value for each objective is: a) convergence - between 75% and 85%; b) competitivity and work force occupancy - between 50% and 85%; c) European territorial cooperation - between 75% and 90%; d) cohesion fund - 85 %.

Conclusions

In the case of Romania, the implications of an absorption capacity extremely reduced of European funds have been major and with a significant impact arguing briefly through the recession amplitude, the recession inertiality in national plan for more than a year in comparison with the world-wide duration, through the substantial reduction of average rhytm of national economic growth and through the great increase of external debt and loans from FMI. In the next period, the absorption rate level can not increase up to necessary values despite some extremely high allocated funds for the next years (??? billion euro, till 2020, structured on funds). Romanian agriculture hasn't benefit of those about 4 billion euro till 2012 and can not benefit further of greater sums).

Nobody wants to imagine possible negative scenarios, but fast evolutions must be imposed in order that Romania could access in EU a greater percentage from funds allocated through feasible projects and especially usefull to lasting development and economic convergence with the developed states from European community in the long term future. It is easy for Romanian economy only to subscribe in "EU club", but it is painful and critical not to be capable further to practically spend the available money from projects financed from European funds through coherent regional and national and especially useful strategies.

The knowledge of aspects specific to the accounting organization and management of projects financed from European funds as well as of those regarding the elligibility of expenses have incidence upon the increase of the funds absorption rate and of diminution of financial corrections applied by the European Committee. In view of the absorption improvement of European funds it was outlined the expansion necessity of elligible expenses categories to be reimbursed from these funds with favourable effects also regarding the diminution of budgetary expenses.

References

Bârgăoanu, A., (2004). *Project Management*, Virtual Business University, Reşiţa, Ed.www.comunicare.ro

Feleagă N., Malciu L.(2004). *Challenges of International Accounting at the Crossing Between Milleniums : Assessment Patterns and Immaterial Investments*, Economic Publishing House, Bucureşti, , pag. 158
Kerzner, H.(1998). *Project Management: A Systems Approach to Planning, Schedulling and Controlling*, Ed. John Wiley & Sons, Inc., New York.
Lock , D. (2000). *Project Management*, Ed. CODECS,Bucureşti.
Mc Collum, J., Bănacu, C. S. (2005), *Project Management. A Practical Approach*, Ed. University, Bucureşti
Munteanu, C., Horobeţ, A. (2005). *Transnational Finances,* Ed. All Beck, Bucureşti.
Săvoiu, G. (2005). *Project and Partnership in the Context of European Integration; Rules and Consequences,* Statistics Romanian Review, INS, Bucureşti, no.1/2005 presented also within *Octav Onicescu National Seminar of Statistics.*
Săvoiu, G. -coord- (2006). *External Financing Projects,* Ed. Economic Independence, Piteşti.

Webography

http://www.europa.eu
http://www.finantare.ro
http://www.infoeuropa.ro
http://www.cursdeguvernare.ro
http://www.zf.ro
http://www.fonduri-ue.ro
http://www.portalcontabilitate.ro

Unele consideraţii despre managementul resurselor materiale şi logistică

Prof. univ. dr. Mircea UDRESCU
Universitatea „Artifex" din Bucureşti
Drd. Sandu CUTURELA
Universitatea Naţională de Apărare

Abstract

In time, we all became acquainted with notions with close significance, which suggests aspects of securing production, securing workplaces and ensuring the company with materials in order to realize its production function: supply, purchase, material assurance, resource management, workplace supply, management of materials, company logistics etc.

Key words: *supply, assurance, management, marketing, logistics, purchase, feeding in etc.*

JEL Classification: *M11, R42*

Logistica a evoluat şi evoluează, şi din momentul în care a încorporat fundamentele specifice de lucru ale ştiinţei, ca modul managerial de funcţionare eficientă a oricărui sistem social, logistica a căpătat dimensiuni globale, propagându-se ca o religie.

Este lesne de înţeles că, sub aspect economic, managementul logistic relevă arta planificării şi conducerii logisticii în sprijinul procesului de producţie al companiei, pornind de la selecţia furnizorilor, mişcarea materialelor în interiorul firmei şi distribuirea produselor finite până la consumatorul final. Înţelegerea acestui domeniu în cadrul firmei, ca actor important al economiei globale, presupune cunoaşterea comportamentului de cumpărare al companiilor, managementul stocurilor, planificarea şi controlul producţiei, managementul calităţii, managementul transportului şi distribuţiei.

Logistica asigură, prin managementul specific, gestiunea integrată a fluxului tuturor materialelor şi produselor finite înspre şi dinspre întreprindere. Obiectivul fundamental al managementului logistic este furnizarea bunurilor/serviciilor către clienţi cu cele mai mici costuri. Gestiunea integrată a întregului ciclu operativ al întreprinderii cuprinde: proiectarea, aprovizionarea, producţia, distribuţia, transportul şi depozitarea, livrarea la client, asistenţa postvânzare.

Literatura economică şi limbajul cotidian abundă de termeni care au contingenţă cu activităţile de asigurare a proceselor transformatoare cu resursele materiale necesare. Aprovizionare, cumpărare, asigurare materială, alimentare,

gestionarea stocurilor, logistică etc. sunt noțiuni utilizate pentru a semnifica aspecte ale aceluiaşi proces, sau procesul respectiv în integralitatea sa.

Literatura economică străină utilizează frecvent termenii cumpărare sau aprovizionare (achat şi approvisionnment în lucrările de origine franceză, purchasing sau procurament în cele de sorginte anglosaxonă)[1], pentru ca de câțiva ani totul să fie asimilat de sintagma gestiunea fluxurilor materiale sau de noțiunea logistică.[2]

Cu mulți ani în urmă, părintele managementului modern, Peter Druker aprecia că autorii vest-europeni, europeni şi americani, sunt mai mult preocupați de imaginea ce doresc s-o sugereze decât de acuratețea conținutului semantic.[3] Spre exemplificare, pentru unii, termenul cumpărare reprezintă „…un act comercial care cuprinde identificarea nevoilor, alegerea furnizorilor, negocierea prețului şi a altor condiții de tranzacționare şi urmărirea comenzilor până la livrarea acestora”[4], în timp ce pentru alții, a cumpăra se explică prin obiectivele pe termen scurt ce trebuie să fie îndeplinite de asigurarea materială în raport cu consumul.[5]

În multe situații, termenii asigurare materială, aprovizionare, alimentare, cumpărare, gestiunea stocurilor etc. au fost înlocuiți cu cel de logistică, acesta sugerând integrarea activităților complementare la activitatea ce dă sens afacerii[6].

Utilizarea acestor noțiuni, a căror utilizare nu de puține ori derutează, se explică prin tendința de a percepe asigurarea materială ca un proces dirijat, planifica şi organizat cotidian pentru a aduce resursele materiale acolo unde sunt necesare, dar şi ca urmare a tendinței de a pune semnul egalității între asigurarea materială şi aprovizionare, incertitudinea de vocabular reflectând diversitatea de organigrame şi de atribuții efective, rezultat al acțiunilor de definire a organizării procesuale şi structurale a managementului firmei funcție de natura obiectului de activitate.[7]

În vederea îndeplinirii obiectivelor sale , o organizație are nevoie de resurse materiale adecvate, atât din punct de vedere calitativ, dar şi cantitativ. La rândul lor, resursele materiale necesare pot fi de diferite feluri:[8]produse, materii prime, utilaje şi echipamente, dar şi servicii de diferite tipuri: de construcții, de transport, de consultanță şi studii etc. De aceea, asigurarea materialelor, în condițiile economiei de piață, are anumite trăsături, astfel: sunt relații de transfer (de schimb) între diferite firme şi o autoritate contractantă; sunt relații economice prin care furnizorul urmăreşte obținerea unui profit, iar beneficiarul urmăreşte

[1] Mescon, M.H., Albert, M., Khedauri, F., Management, Thired Edition Harper, Row Publisher, NY, 1988, p.29-36

[2] Lienemann, Carsten, InformationslogistiK – Qualitat im Fokus, in Deiters, Wolfgang; Report informationslogistik – Informationen just in time. Symposion Publishing, Duseldorf, 2001

[3] P. Druker, The Practice of Management, London, Heineman, 1955, p. 12-38

[4] John W. England, Evolutionary Concepts in Contemporary Economics. Ann Arbor, MI: University of Michigan Press, 1994, p. 6

[5] S. Heinritz, P.V.Farrel, L. guinipero, M. Kolchin, Logistics and Supply Chain Management, Preutice Hall. Second Edition, 1998, p. 34-39

[6] Cf. Ballan, R., Basic Business Logistics, Prentice-Hall, Inc. Englewood Cliffs, New Jersey, 1978, p.46

[7] M. Couetoux, Compatibilite generale entreprise par, Broche, 1 mars, 1974, p.86

[8] Cf. Bauer, Michael J., Poirier, Charles, Lapide Lawrence, Bermudez, John, E-Business: The Strategic Impact on Supply Chain and Logistics, CSC Consulting, AMR Research, Council of Logistics Management, 2001, p.82

obținerea unui avantaj economic, care poate să fie cost „sănătos”(care asigură cel mai bun raport calitate/cost şi uneori chiar o stare de profitabilitate); efectele economice se regăsesc la nivelul activității beneficiarului, în sensul că se pot satisface mai multe obiective, cu aceeaşi valoare financiară; sunt raporturi economice care depind de „raportul de putere” care există între furnizor şi beneficiar.

În condițiile reale ale economiei de piață, declanşarea producției, substanța oricărei afaceri, care prefigurează un anumit nivel al consumului, se face în urma cuantificării nivelului cererii[9] în trinomul: nevoi, dorințe şi cerințe. Modul de satisfacere a acestei cereri se sprijină pe activitățile subsistemului vânzări, care pune în ecuație capacitățile de producție, nevoile de consum estimate şi stocurile existente.[10] În mod ideal, o activitate de asigurare materială se consideră că trebuie să satisfacă nevoile pornind de la întrebarea „Ce se cere?”, iar răspunsul trebuie facă referiri la minimizarea costurilor de gestiune, concomitent cu asigurarea unui grad de securitate corespunzător, prin a determina răspunsuri optime la „Când se cere?” şi „Cât se cere?”[11]

Asigurarea răspunsurilor la întrebările „Cât se cere?”, „Unde se cere?”, „Cum se cere?”, „La ce preț se cere?” presupune strategii comerciale menite să valorifice eficient oportunitățile pieței.

Pentru cei care departajează asigurarea materială de asigurarea tehnic-materială, totul are legătură cu compararea activităților tehnice de producție de cele care sunt specifice numai proceselor elementare de consum. Pentru aceştia: asigurarea materială, asigurarea materială, pentru a-şi realiza obiectivele în condiții de eficacitate, trebuie să se bazeze pe studii strategice de perspectivă rezonabilă; în vederea creşterii eficienței pe termen scurt, activitatea de asigurare materială trebuie să se bazeze pe planuri şi sisteme de gestiune, rezultate direct din obiectivele generale, care la rândul lor se stabilesc pe baza asigurării tehnico-materiale , de dotare şi înzestrare tehnologică; eficiența componentelor tehnice ține de eficiența cu care sunt alimentate cu materialele[12] de consum.

Datele referitoare la strategiile şi politicile de achiziție pe piață sunt obținute ca urmare a necesității efectuării unor studii specifice ce au drept scop identificarea oportunităților şi a amenințărilor, respectiv dezvoltarea unor politici de valorificare sau de contractare în cazul amenințărilor[13].

---

[9] Arnold, J. R. Tony, Stephen N. Chapman, Introduction to Materials Management, Upper Saddle River, NJ: Prentice Hall, 2003, p.11-34

[10] Ackerman, Keneth B., A Manager's Guide, in Transportation and Distribution, June, 1999, p.67-69

[11] Cf. Ballou, Ronald H., Business Logistics/Supply Chain Management, Pearson Education, Inc., Upper Saddle River, New Jersey, 2004, p.31.

[12] Chopra, Sunil, Peter, Meindl, Supply Chain Management: Strategy, Planning and Operations, Upper Saddle, River, NJ:Prentice-Hall, Inc., 2001, p.37-44

[13] Pe larg, Harmon, Roy L., Reinventing the Warehouse World Class Distribution logistics, The Free Press, New York, 2003, p.82

Pe plan local, se consideră că sintagma „asigurarea şi gestiunea resurselor materiale" ar exprima mai bine realitatea, deoarece:[14]asigurarea cu resursele materiale trebuie privită ca o funcţie a unui sistem al managementului logistic, rezultată din necesitatea unor obiective specifice; asigurarea cu resursele materiale nu poate fi redusă la o activitate de aprovizionare propriu-zisă, ea având un conţinut mult mai mare; nu este indiferent modul cum se asigură resursele materiale (calitate, preţ, costuri, siguranţă etc.), din care cauză, pentru a permite măsuri de control-evaluare eficiente, trebuie să existe sisteme de apreciere a performanţelor. Ca atare, noţiunea sau sintagma ce se urmăreşte în redarea sistemului de idei este necesar să corespundă conţinutului specific al activităţilor într-o organizaţie competitivă.

Dimpotrivă, sunt şi puncte de vedere care susţin ca indicată sintagma de „asigurare materială, deoarece[15]: lasă loc unei adaptări în spirala cerere şi ofertă de pe piaţă, este particular legată de natura firmei, contribuind la definirea conţinutului comportamentului instituţional, lasă loc deschis colaborărilor dintre concurenţi etc. Asigurarea materială poate fi gândită ca o funcţiune a firmei care, în actualele condiţii de competitivitate, se caracterizează prin: existenţa tot mai accentuată a tendinţei de reevaluare a locului şi rolului activităţii de asigurare materială, aceasta devenind dintr-o activitate subordonată una cu o poziţie egală cu celelalte activităţi importante ale firmei; repoziţionarea subordonării directe a acestei activităţi din ce în ce mai frecvent conducerii superioare a firmei; creşterea sensibilităţii tuturor angajaţilor faţă de activitatea de asigurare materială, atât ca urmare a influenţelor negative pe care le poate determina o asigurare necorespunzătoare, cât, mai ales, ca urmare a nevoii de exploatare competitivă a oportunităţilor ce ţin de o bună asigurare materială; creşterea tendinţelor de desfăşurare a activităţilor firmei după cerinţele calităţii totale; corelarea tot mai strânsă dintre asigurarea materială şi politicile de marketing etc.

O dată cu apariţia şi dezvoltarea globalizării, o nouă noţiune, LOGISTICA, a început să capete din ce în ce o tot mai mare utilizare. La simpla lecturare mass-media cotidiene întâlnim, din ce în ce mai mult, expresii de genul: logistica didactică, logistica unei adunări, logistica unei autostrăzi, logistica forţelor de ordine, logistica infractorilor, logistica spitalului, logistica militară, logistica firmei, canale logistice, companii logistice ş.a.m.d.

De la început, suntem obligaţi să acceptăm că logistica este o noţiune, cu o largă întrebuinţare, ce sugerează baza tehnico-materială în care se organizează şi execută diverse activităţi. Pentru a surprinde corelaţiile integratoare specifice logisticii firmei, este necesar să aducem câteva argumente în legătură cu apariţia şi dezvoltarea sensurilor şi semnificaţiilor generale ale noţiunii şi sistemelor logistice.

Astfel, dicţionarele de bază ale limbii române sugerează că logistica este un substantiv feminin, având ca sorginte cuvântul de origine franceză LOGISTIQUE ce exprimă fie arta calculelor, fie un domeniu al logicii formale,

[14] Cîrstea G., Asigurarea şi gestiunea resurselor materiale – Marketingul aprovizionării, Editura Economică, Bucureşti, 2000, p.22-35
[15] Dima, I.C., (coordonator), Management logistic, Editura Didactică şi Pedagogică, Bucureşti, 1996, p.3-48

responsabil de aplicarea metodelor matematice în cibernetică, electronică, lingvistică etc. Există însă şi diferite materiale care consideră logistica o noţiune ce s-a dezvoltat de la cuvântul grecesc LOGISTIKOS, care defineşte pe cineva priceput în a face calcule[16].

Unele dicţionare ale limbii franceze apreciază că LOGISTICA are două înţelesuri: în primul rând, cea de logică matematică, parte a logicii moderne, ce se ocupă de acţiunile combinatorii, şi, în al doilea rând, de parte a artei militare care se ocupă cu transportul şi revitalizarea armatelor.[17]

Încercând să localizeze începuturile logisticii moderne, doctorul în economie Mihai Korke, în articolul Timpul-factor de optimizare a activităţilor agenţilor economici, consideră că, în a doua jumătate a secolului XX, logistica îşi face apariţia în viaţa civilă pentru rezolvarea problemelor aprovizionărilor pieţelor din S.U.A. aflate la mari distanţe faţă de nordul industrializat[18].

Cu peste cinci decenii în urmă, în literatura economică românească, logistica exprima "…un complex de activităţi, cuprinzând manipularea, transportul, sortarea, depozitarea produselor, formarea sortimentului comercial, prepararea şi executarea comenzilor, având drept scop deplasarea fizică a produsului de la producător la utilizatorul final cu cele mai reduse costuri ocazionate de procesul distribuţiei[19]."

Pornindu-se de la conţinutul esenţial al logisticii din domeniul marketingului, de asigurare a deplasării fizice a produselor de la producător la utilizatorul final, cu cele mai reduse costuri ocazionate de procesul distribuţiei, tot mai mulţi specialişti în managementul firmei au trecut la folosirea sintagmei LOGISTICA INDUSTRIALĂ , pentru a desemna dimensionarea optimă a fluxurilor de materiale şi a operaţiunilor legate de acestea. În acest nou ansamblu metodologic se au în vedere atât optimul decizional, de comandă, cât şi cele de instrumentare fizică – de depozitare, sortare, manipulare , transport etc. Această nouă abordare a logisticii a făcut să se schimbe concepţia prin care operaţiunile legate de logistica de marketing – depozitare, sortare, manipulare, transport etc. nu ar contribui la sporirea valorii produsului, cu una nouă, cu una nouă, ce susţine faptul că valoarea unui produs este strâns legată de apariţia acestuia la momentul şi la locul cerute de consumator. Această nouă viziune asupra logisticii a stat la baza fundamentării concepţiei de producţie "Gest in time".

Încetul cu încetul, LOGISTICA a început să fie percepută tot mai mult ca o ŞTIINŢĂ A VIITORULUI, având drept obiect de studiu dimensionarea şi corelarea optimă a fluxurilor de informaţii şi de bunuri, cu scopul de a adapta continuu firma la condiţiile de mediu.

---

[16] Mircea Udrescu, *Logistica şi globalizarea,* în volumul „Spaţiul sud-est european în contextul globalizării – Sesiune de comunicări ştiinţifice cu participare internaţională – STRATEGII XXI, Bucureşti, 12-13 aprilie, 2007, p.306-307.

[17] Pe larg, Nouveau Petit Larousse, 1985, p.634

[18] Mihai Korke, *Timpul-factor de optimizare a activităţilor agenţilor economici*, Sisteme logistice nr.2,1991, p.7.

[19] Colectiv, *Dictionar de marketing*, Editura Junimea, Iaşi, 1979, p. 192-193.

Ca atare, LOGISTICA a devenit o COMPONENTĂ DISTINCTĂ A MANAGEMENTULUI, determinarea ştiinţifică a momentului în care un produs trebuie să se găsească în fiecare punct al lanţului productiv şi de desfacere fundamentând imaginea logisticii moderne. Din aceste considerente, cu puţin înainte de sfârşitul secolului XX, devenise o convingere managerială faptul că logistica era percepută a fi "...o condiţie esenţială a competitivităţii în relaţiile economice actuale ...un instrument de natură managerială, o tehnologie de sinteză, coordonând sarcinile aprovizionării, desfacerii, gestiunii industriale, prestaţiei post-vânzare. Logica de bază a logisticii impune principiul după care suma optimurilor locale nu este egală cu optimul global"[20]

Logistica a evoluat şi evoluează, şi din momentul în care a încorporat fundamentele specifice de lucru ale ştiinţei, ca modul managerial de funcţionare eficientă a oricărui sistem social, logistica a căpătat dimensiuni globale, propagându-se ca o religie.

Este lesne de înţeles că, sub aspect economic, managementul logistic relevă arta planificării şi conducerii logisticii în sprijinul procesului de producţie al companiei, pornind de la selecţia furnizorilor, mişcarea materialelor în interiorul firmei şi distribuirea produselor finite până la consumatorul final. Înţelegerea acestui domeniu în cadrul firmei, ca actor important al economiei globale, presupune cunoaşterea comportamentului de cumpărare al companiilor, managementul stocurilor, planificarea şi controlul producţiei, managementul calităţii, managementul transportului şi distribuţiei.

Logistica asigură, prin managementul specific, gestiunea integrată a fluxului tuturor materialelor şi produselor finite înspre şi dinspre întreprindere. Obiectivul fundamental al managementului logistic este furnizarea bunurilor/serviciilor către clienţi cu cele mai mici costuri. Gestiunea integrată a întregului ciclu operativ al întreprinderii cuprinde: proiectarea, aprovizionarea, producţia, distribuţia, transportul şi depozitarea, livrarea la client, asistenţa postvânzare.

Tendinţa logisticii globale o reprezintă orientarea către conjunctura actuală şi potenţială a cererii şi ofertei pe piaţa serviciilor logistice, având ca motor de dezvoltare coordonatele concurenţiale europene şi mondiale în domeniu. În acest scop se desprinde concluzia că accesul la poziţii decizionale în marile companii este cu mult mai uşor de realizat dacă aspiranţii au pregătire şi experienţă în domeniul logisticii şi managementului operaţiunilor logistice.

În economia globală, specifică societăţii bazate pe cunoaştere, eficienţa managementului logistic presupune corelarea celor trei componente ce reunesc activităţi desfăşurate deopotrivă în interiorul companiei (activităţile de susţinere a producţiei), cât si la interfaţa cu secvenţele din amonte (intrările) şi din aval (ieşirile), în cadrul canalelor de marketing (aprovizionarea şi distribuţia fizică).

Renumitul teoretician în domeniu - John Gattorna susţinea că, pană nu de mult, se făcea greşeala de a asocia procesele manageriale logistice cu distribuţia

[20] Rodica Chiriţă, Logistica – factor de stimulare a întreprinderii, Tribuna economică, nr. 2, 1990, p.32

produselor finite, adică cu ultima etapă a producției. Acest punct de vedere a ignorat rolul managementului logistic în gestionarea fluxurilor interne de materii prime, subansamble, brevete, piese şi ambalaje. Acest flux fizic este însoțit de un flux de informații în ambele sensuri care reprezintă cadrul de operare al logistici[21].

În prezent, multe din ideile susținute de John Gattorna sunt deja realitate, deoarece toate firmele care se bucură de succes consideră logistica tot mai mult o funcție managerială, care este responsabilă de sincronizarea produs, loc, timp, având drept finalitate optimizarea de ansamblu a activităților pentru menținerea organizației în mediul concurențial.

Având în vedere globalizarea şi socializarea logisticii, profesorul universitar Bernard Helmut Kortshac, de la Universitatea Economică din Viena, aprecia că logistica realizează o descriere complexă a interacțiunii bazate pe diviziunea şi specializarea muncii între elemente, funcții, compartimente şi întreprinderi, între național şi internațional, în condițiile transformării pieței vânzătorului într-o piață a cumpărătorului. Logistica reprezintă, aşadar în opinia profesorului, ŞTIINȚA ŞI INSTRUMENTUL DE OPTIMIZARE a eforturilor în cele mai diverse domenii: în transporturi, în funcționarea spitalelor, în îndepărtarea deşeurilor rezultate din orice activitate, în cucerirea spațiului cosmic,în negocierea afacerilor întinzându-se de la logistica întreprinderii la logistica națională,de la logistica națională la logistica europeană şi până la cea mondială[22].

Dacă avem în vedere compania producătoare, managerul logistician este singura persoană din firmă ce poate conduce gestionarea tuturor fluxurilor de informații şi de materiale, pornind de la conceperea produsului şi pană la consumul lui, ținând cont de interacțiunile acestor fluxuri. O asemenea poziție îi dă posibilitatea managerului departamentului logistic să estimeze capacitatea firmei de a răspunde aşteptărilor.

În conformitate cu prevederile studiului renumitei organizații Council of Logistics Management, în anul 1986, managementul logistic era definit ca fiind procesul de planificare, implementare şi control al fluxului şi stocării eficiente şi eficace sub aspectul costurilor, a materiilor prime, produselor în curs de prelucrare, produselor finite şi fluxurilor informaționale conexe, de la punctul de origine la punctul de consum, cu scopul îndeplinirii cerințelor clienților[23]. În anul 2003, aceeaşi organizație Council of Logistics Management (CLM) din SUA a formulat o nouă definiție a managementului logistic. Definiția respectivă conținea o serie de modificări esențiale în raport cu definițiile anterioare. Astfel, dacă logistica este considerată ca parte integrantă a lanțului de aprovizionare-livrare, managementul logistic include, de regulă, toate activitățile referitoare la managementul transporturilor spre şi de la organizație, managementul flotei de mijloace de

[21] John L. Gattorna (coordonator) şi colectiv, *Managementul logisticii şi distribuției*, Editura Teora, București, 1999, p. 48.
[22] Bernard Helmut Kortshac, *Logistica*, în Sisteme logistice nr. 2,1991, p.7.
[23] Carmen Bălan, *Evoluții conceptuale în domeniul logisticii şi lanțului de aprovizionare livrare*, în Abordări şi determinări funcționale ale logisticii – Simpozion ştiințific la Catedra Logistică, Finanțe şi Contabilitate din UNAp, 02.02.2007, p.165-166.

transport, depozitarea, manipularea materialelor, onorarea comenzilor, proiectarea reţelelor logistice, managementul stocurilor, planificarea livrării/cererii şi managementul prestatorilor terţi de servicii logistice.[24]

Funcţia managerială logistică include, totodată, după cum este şi firesc, alegerea furnizorilor şi aprovizionarea, planificarea şi programarea producţiei, ambalarea şi asamblarea, precum şi servirea clienţilor. Astfel, din punct de vedere managerial, se remarcă implicarea logisticii în toate nivelurile de planificare şi execuţie ale companiei – strategic, operaţional şi tactic. Rezultă aşadar că, managementul logistic este o funcţie integratoare la nivelul firmei/organizaţiei, care coordonează şi optimizează toate activităţile logistice pe care le integrează cu alte funcţii, printre care marketingul, vânzările, producţia, finanţele şi tehnologia informaţiei.

Potrivit precizărilor efectuate de CLM, se remarcă o serie de clarificări suplimentare ale conţinutului conceptului managerial de logistică rezultat din analiza limitelor şi relaţiilor cu alte funcţiuni şi activităţi ale organizaţiei. Principalele aspecte subliniate sunt următoarele: managementul prestatorilor terţi de servicii logistice, planificarea şi programarea producţiei, nivelurile de aplicabilitate a conceptului, rolul de funcţie integratoare.

Din ce în ce mai multe firme adoptă şi aplică astăzi cerinţele logisticii, precum şi sintagma de management integrat al logisticii. Potrivit acestui concept, pentru oferirea unor bunuri şi servicii mai accesibile clienţilor şi reducerea cheltuielilor de distribuţie este necesară munca în echipă, atât în interiorul firmei cât şi cu toate organizaţiile care constituie canalul de marketing. În acest scop, compartimentele funcţionale ale firmei vor acţiona în strânsă cooperare în vederea maximizării rezultatelor organizaţiei în domeniul logistic. Totodată, pentru a maximiza rezultatele întregului sistem de distribuţie, firma va trebui ca, în exterior, să-şi integreze sistemul său logistic cu cele ale furnizorilor şi clienţilor săi[25].

În opinia specialiştilor în domeniu, obiectivul fundamental al managementului integrat al logisticii îl reprezintă armonizarea tuturor deciziilor privind distribuţia, care sunt luate la nivelul companiei. În acest scop, pentru realizarea unor relaţii compatibile între funcţii, unele firme au constituit comitete logistice permanente, alcătuite din manageri cu responsabilităţi în derularea diferitelor activităţi de distribuţie fizică.

Tot în sensul de integrare eficientă, specialiştii afirmă că firmele pot crea şi posturi speciale care leagă activităţile logistice ale diferitelor domenii funcţionale. Astfel, numeroase firme dispun deja de un vicepreşedinte responsabil cu logistica, a cărui autoritate este interfuncţională în coordonarea activităţilor logistice şi de marketing, pentru gestionarea eficientă a activităţilor lanţului ofertei (lanţului de aprovizionare-livrare) la fiecare categorie de produse în parte, în vederea satisfacerii la un nivel superior a nevoilor clienţilor, la costuri rezonabile[26].

[24] Carmen Bălan, *Logistica* , Ediţia a III-a revăzută şi adăugită, Editura Uranus, Bucureşti, 2006, p. 309-312.
[25] Philip Kotler, Gary Armstrong, *Principiile Marketingului*, Ediţia a III-A, Editura Teora SRL, Bucureşti, 2005, p.615-616
[26] Ibidem.

În vederea coordonării strategiilor logistice şi construirii parteneriatelor puternice cu furnizorii şi clienţii, pentru îmbunătăţirea serviciilor oferite şi reducerii costurilor aferente canalelor de distribuţie, numeroase firme au constituit echipe logistice interfuncţională interfirme.

La începutul deceniului actual, specialiştii au inclus în rândul deciziilor manageriale logistice o alegere suplimentară, respectiv decizia de a realiza cu forţe proprii sau de a externaliza activităţile logistice. În acest fel, managementul prestatorilor de servicii a devenit o componentă distinctă a logisticii. Aceşti furnizori independenţi de servicii logistice îndeplinesc în totalitate sau o parte din funcţiile necesare pentru ca produsele clienţilor lor să ajungă pe piaţă. În acest mod, prin subcontractarea activităţilor logistice, compania poate să dispună de un sistem complet de distribuţie a bunurilor, fără să fie nevoită să suporte costurile, întârzierile şi riscurile asociate înfiinţării propriului său sistem. Potrivit studiilor făcute, subcontractarea permite, de regulă, reduceri de costuri de 15 până la 30%.[27]

După cum s-a remarcat, planificarea şi programarea producţiei sunt integrate în aria de competenţă a logisticianului. Totuşi, CLM a folosit sintagma *„în grade variate"*, pentru a ilustra gradul de implicare a managerului logistician în domeniul planificării şi programării producţiei[28]. Motivele variaţiilor pot fi absenţa activităţilor de producţie/prelucrare în anumite organizaţii, precum şi participarea logisticianului ca membru în echipe de lucru, alături de specialiştii în domeniul planificării operaţiunilor producţiei.

Actualmente, statutul logisticii în cadrul organizaţiei este mai bine precizat, fiindcă este implicată în toate nivelurile procesului managerial, de la planificare la execuţie. Spre deosebire de accepţiunile din deceniile anterioare, logistica încetează să mai fie privită doar ca un set de activităţi şi priorităţi imediate, desfăşurate în funcţie de imperativele momentului.

Din perspectiva accentuării globalizării în societatea bazată pe cunoaştere, ne asociem aserţiunii sociologului Ilie Bădescu potrivit căreia, prin logistică, instituţie şi computer, controlul prin ştiinţă asupra întinderii şi timpului a devenit posibil. În viziunea sa, termenii englezi C.I.M.-Computer Integrated Manufacturing şi C.I.L.-Computer Integrated Logistics reprezintă faza computerizării operaţiilor logistice. De aceea, în acest moment, ştiinţa capătă puteri egale cu ale religiei şi filozofiei, în sensul că poate controla, ba chiar interveni în succesiunea secvenţelor temporale, transformând secvenţele temporale succesive în secvenţe sincronizate şi deci simultane ori chiar reversibile. Prin unirea logisticii computerizate cu instituţia a rezultat managementul logistic sau logistica instituţională. Din punct de vedere logistic,sociologul Ilie Bădescu apreciază că, în prezent, se trece de la instituţia

[27] Ibidem, p. 617.

[28] Carmen Bălan, *Evoluţii conceptuale în domeniul logisticii şi lanţului de aprovizionare livrare*, în Abordări şi determinări funcţionale ale logisticii – Simpozion ştiinţific la Catedra Logistică, Finanţe şi Contabilitate din UNAp, 02.02.2007, p.168

mică la instituția megalitică, pe care nici statele naționale foarte puternice n-o mai pot controla[29].

Din aceste aprecieri este cert că atât globalizarea, cât şi logistica sunt două noțiuni ce au cunoscut semnificații deosebite în ultimii cincizeci de ani. O dată cu noile concepții despre funcțiile firmei, logistica a trecut de la logistica de marketing la logistica industrială, căpătând valențe de funcționalitate globală, gestionând, după principii de eficiență, fluxurile de informații şi de materiale din amonte de întreprindere, din interiorul acesteia, precum şi din aval de aceasta, fiind responsabilă de realizarea produselor din momentul proiectării până la ajungerea lor la consumatorul final, cu cele mai mici costuri.

Pe măsură ce aceeaşi sursă de capital a căpătat o tot mai diversă utilizare, acoperind o arie multiplă de domenii de activitate, logistica a câştigat noi valențe globale, devenind responsabilă de eficientizarea capitalurilor în profil teritorial, gestionând fluxurile de informații şi de bunuri specifice producției de bunuri, infrastructurii, educației, securității, apărării mediului, sănătății etc.

Lumea socială reflectă, desigur, polarizările economice, în sensul că elitele globalizate sunt tot mai mult atrase de noile valori economice pe care le împărtăşesc şi le propagă, în timp ce mari mase ale populației sunt înclinate spre naționalism, etnocentrism şi spre imprevizibile mişcări de eliberare de sub ceea ce se percepe a fi izvorul sărăciei dictat de hegemonia globalizării. Într-un astfel de mediu, rezistența la procesele globalizării este previzibil să evolueze spre radicalism ideologic, mai ales în țările în care elita politică conducătoare este redusă numeric, iar globalizarea este tot mai mult percepută ca o sursă de sărăcie, de dominație mascată,de transfer neechitabil de avuție națională către anumiți poli hegemonici[30].

Logistica globală catalizează, potrivit opiniei noastre, procesele economiei globalizate, în societatea bazată pe cunoaştere, în numele unor scopuri politice globale. Dar, dincolo de tendințele benefice, globalizarea economică şi logistică este însoțită şi de fenomene dureroase, ca: exacerbarea intereselor cronice locale şi regionale; mondializarea marii criminalități organizate, responsabile de traficul de droguri, stupefiante, armamente etc.; radicalizarea fanatismelor de sorginte etnică şi religioasă; diversificarea acțiunilor teroriste etc.

Condiționările logistice ale globalizării, în societatea bazată pe cunoaştere, se exprimă prin aşa-zisele standarde minime ce se cer unor organizații, comunități sau națiuni pentru a accede la aspecte ce prezintă interes. Când se cere ca o autostradă să dispună de anumite facilități logistice, un autoturism să îndeplinească unele norme ecologice, produsele alimentare să se conserve în anumite condiții tehnice etc., de regulă există interese ca anumite produse să fie vândute în zonă, stimulându-se consacrarea unor producători privilegiați. În acest mod, progresul

[29] Mircea Udrescu, *Logistica şi globalizarea,* în volumul „Spațiul sud-est european în contextul globalizării – Sesiune de comunicări științifice cu participare internațională – STRAREGII XXI, Bucureşti, 12-13 aprilie, 2007, p.308.

[30] Ibidem, p.309.

devine apanajul unei elite producătoare, în timp ce mari întinderi geografice se transformă în sigure piețe de desfacere, în zone de influență[31].

Pe ansamblu, LOGISTICA integrează într-un tot unitar interacțiunea dintre elementele active şi pasive ale producției, care constituie o succesiune ordonată ce vizează specializarea în muncă, dar şi timpul şi spațiul deplasării fizice, lanțul de relații fiind subordonat scopului – crearea de valoare. Esența LOGISTICII MODERNE constă în gestionarea optimă a fluxurilor de informații şi de materiale în amonte, în procesul transformării, precum şi în aval de firmă, în procesul distribuției fizice de bunuri şi servicii, în condiții de competitivitate. Astfel, LOGISTICA devine o componentă importantă a culturii organizaționale, un sistem managerial performant, prin care firma este integrată, după principii de eficiență şi de eficacitate, într-un mediu ambiant tot mai competitiv.

Bibliografie selectivă

Arnold, J.R. Tony, Chapman, stephen N., Introduction to Materials Management, Upper Saddle River, NJ: Prentice Hall, 2003

Bălan, C., Logistica, Editura Uranus, Bucureşti, 2006

Cârstea, G., Asigurarea şi gestiunea resurselor materiale. Marketingul aprovizionării, Editura Economică, Bucureşti, 2000

Dima, I.C., coordonator, Managementul logistic, Editura Didactică şi Pedagogică, Bucureşti, 1996

Druker, P., The Practice of Management, London, Heineman, 1955

Gattorna, John, coordonator, Managemntul logisticii şi distribuției, Editura Teora, Bucureşti, 1999

Philip, kotler, Armstrong, G., Principiile marketingului, Editura Teora, Bucureşti, 2005

Udrescu, Mircea, Managementul vânzărilor, Editura Artifex, Bucureşti, 2012.

[31] Ibidem, p.310.

Raportul dintre cifra de afaceri si personalul din IMM–Model de analiză

Lect.univ.dr. Florin Paul Costel LILEA
Universitatea Artifex – Bucure□ti
florin.lilea@gmail.com
Asist.univ.drd. Raluca Mariana DRAGOESCU
Universitatea Artifex – Bucure□ti
dragoescuraluca@gmail.com
Drd. Georgeta BARDAŞU
Academia de Studii Economice, Bucure□ti
georgeta.lixandru@yahoo.com

Abstract

Statistical characterization of the SME's sector contribution to the development of the national economy involves the calculation and analysis of some adequate indicators (enterprises number, occupied population, turnover, investments volume etc.)

The analysis of the model proposed in this study, aims to highlight some qualitative aspects of SME's activity, per total and regional structure, using an intermediate indicator that is between results and resources that is the ratio between the amount of turnover and the staff engaged in these establishments.

Key words: *turnover, personnel, development regions, statistical analisys, regional hierarchy*

JEL classification: *C40, F63, R12, Y10*

Mărimea indicatorilor absoluți pe total implicați în calcul (cifra de afaceri şi numărul de personal) s-a obținut ca sumă a acestora din industrie, construcții, comerț şi servicii către populație, date extrase din publicațiile statistice în domeniu.

Având în vedere faptul că ne-am propus să efectuăm analiza la nivelul unui an (2011) am considerat cifra de afaceri în prețuri curente (prețurile comparabile fiind justificate în cazul studierii unui fenomen în dinamică)[1].

Pe baza datelor din tabelul 1 se pot evidenția o serie de concluzii privind eficiența activității populației ocupate pe regiuni şi pe total.

[1] Raluca Andreea Mihalache, Cătălin Deatcu „*Utilizarea metodelor econometrice în analiza trecerii de la soldul bugetar la sursele de finanțare",* Scientific Research Themes/Studies Communications at the National Seminary „Octav Onicescu", Romanian Statistical Review Trim. 3/2011, pp. 103-106

Astfel, în toate cazurile regiunea Bucuresti-Ilfov se detaşeaza net de celelalte şapte regiuni, aici înregistrându-se cel mai bun raport între cifra de afaceri şi personal. De fapt, se observă ca în toate cazurile nivelul indicatorului analizat pe tară este devansat doar de această regiune.

La polul opus se situează regiunea Sud-Vest Oltenia care se află pe ultimul loc în trei din cele patru domenii de activitate.

Pe regiuni situația se prezintă astfel:

- întreprinderile de comerț, în toate cazurile realizează cele mai mari valori ale acestui indicator dar se constată variații mici ale acestuia între cele sapte regiuni;

Tabelul 1. Repartițiile regionale ale raportului dintre cifra de afaceri şi numărul de salariați din IMM pe total şi pe activitati, în anul 2011 în prețuri curente (mii lei/persoană)

Regiunea	Total		Industrie		Construcții		Comerț		Servicii	
	2011	Rangul	2011	Rangul	2011	Rangul	2011	Rangul	2011	Rangul
Nord – Vest	185,93	5	191,57	6	154,00	4	289,37	6	99,89	3
Centru	195,87	4	207,69	4	137,02	7	313,25	4	99,70	4
Nord – Est	164,13	8	139,34	8	153,27	5	276,82	7	86,50	7
Sud – Est	225,01	3	258,99	3	150,88	6	366,21	2	93,58	6
Sud – Muntenia	244,67	2	285,99	2	168,66	2	329,24	3	117,21	2
Bucureşti - Ilfov	357,15	1	416,82	1	272,69	1	683,37	1	177,64	1
Sud-Vest Oltenia	175,57	7	194,60	5	127,11	8	274,47	8	72,38	8
Vest	175,75	6	164,45	7	174,92	3	305,89	5	98,29	5
Total	235,84		233,17		180,14		408,22		126,89	-

Sursa: Prelucrat după Anuarul Statistic al României 2012, Tabelele 15.20 i 15.22

- pe locul 2 se situează întreprinderile din industrie care realizează valori ale indicatorului mai mari decat în activitatea de construc ii -care deține locul 3-, atât pe total cât şi în majoritatea regiunilor.
- în construc ii se observă că în cazul IMM în cele şapte regiuni acest raport prezintă valori apropiate şi usor diminuate față de cele din industrie. Excepție de la această regulă fac regiunile Nord-Est i Vest. O mențiune interesantă ar fi şi aceea că regiunea Sud-Vest Oltenia ocupă un surprinzator loc 3 față de locul 7 (în industrie) şi locul 6 (pe total);
- în ceea ce priveste IMM prestatoare de servicii indicatorul analizat a înregistrat cele mai mici valori, comparativ cu celelalte activități. Mărimea indicatorului analizat se situează şi în acest caz sub media pe tară (126,89 mii lei/persoană) în cele şapte regiuni, excepție făcând şi de data aceasta regiunea Bucuresti-Ilfov;

- pe total se păstrează aceeaşi ierarhie, activitatea de comerţ se situează pe primul loc cu o medie de 408,22 mii lei/persoană, urmată la mare distanţă de IMM din industrie cu 233,17 mii lei/persoană şi construc□ii (180,14 mii lei/persoană), pe ultimul loc situându-se activităţile prestatoare de servicii (126,89 mii lei/persoană).

Informaţii suplimentare putem obţine dacă efectuăm aceeaşi analiză ţinând cont de data aceasta de repartiţia regională a IMM în funcţie de mărimea lor. Aceasta cu atât mai mult cu cât acest criteriu de grupare stă la baza definirii IMM. Pe baza acestui criteriu, Institutul Naţional de Statistică a adoptat ca definiţii de lucru gruparea IMM în trei clase de mărime, în funcţie de numărul de personal, după cum urmează:

- microîntreprinderi – mai puţin de 10 salariaţi;
- întreprinderi mici – între 10 şi 49 salariaţi;
- întreprinderi mijlocii – între 50 şi 249 de salariaţi.

Folosind şi în acest caz ca un criteriu de eficienţă raportul dintre cifra de afaceri şi numărul personalului am calculat valorile acestui indicator pe clase de mărime (vezi tabelul 2).

Tabelul 2. Repartiţiile regionale ale raportului dintre cifra de afaceri şi numărul de salariaţi din IMM pe total şi pe clase de mărime, în anul 2011 în preţuri curente (mii lei/persoană)

Regiunea	Total		0-9 salariati		10-49 salariati		50-249 salariaţi	
	2011	Rangul	2011	Rangul	2011	Rangul	2011	Rangul
Nord – Vest	189,19	6	171,64	4	200,02	6	196,19	6
Centru	184,05	7	165,16	5	190,27	7	194,85	7
Nord – Est	177,03	8	156,01	8	189,86	8	185,29	8
Sud – Est	218,96	3	191,10	3	235,23	2	230,86	3
Sud – Muntenia	220,61	2	217,99	2	207,73	5	235,15	2
Bucureşti - Ilfov	400,19	1	312,50	1	388,42	1	492,91	1
Sud-Vest Oltenia	189,61	5	158,92	7	209,34	4	201,59	5
Vest	195,67	4	160,85	6	214,41	3	210,06	4
Total	276,77		206,73		246,88		277,15	

Sursa: Prelucrat după Anuarul Statistic al României 2012, Tabelele 15.20 □i 15.22

Pe baza datelor calculate în tabelul 2 se pot desprinde o serie de concluzii ce vizează aspecte legate de dezvoltarea activităţii IMM. Se observă că în anul 2011 pe total, în toate regiunile cu excepţia regiunii Bucureşti-Ilfov s-au înregistrat valori apropiate pe regiuni ale indicatorului analizat. Cifra de afaceri pe o persoană atinge la regiunea Bucureşti-Ilfov valoarea maximă de 400,19 mii lei pe persoană, o valoare de 2,2 ori mai mare decât cea înregistrată în regiunea Nord-Est cu cea mai mică valoare şi de 1,4 ori mai mare decât media pe total. De menţionat faptul

că în celelalte şapte regiuni valoarea raportului dintre cifra de afaceri şi numărul personalului se află sub media pe țară[2].

Interesant este şi faptul că pe clase de mărime situația ca tendință rămâne aceeaşi, adică, la regiunea Bucureşti-Ilfov se înregistrează cea mai mare valoare a raportului iar la celelalte regiuni valorile se situează sub media pe țară. Dacă comparăm pe total valorile medii, constatăm că în cazul întreprinderilor mijlocii media este de 277,15 mii lei pe persoană devansând media pe total de 276,77 mii lei pe persoană. La microîntreprinderi □i intreprinderi mici valoarea indicatorului analizat (206,73 mii lei/persoană, respectiv 246,88 mii lei/persoană) se află sub media pe țară. De precizat faptul că cea mai mare valoare a raportului dintre cifra de afaceri şi numărul de salariați se întâlneşte la întreprinderile mijlocii (492,91 mii lei pe persoană).

Datele prezentate în tabelul 2 evidențiază faptul că regiunea Bucureşti-Ilfov este în top în anul 2011, indiferent de mărimea întreprinderii iar la polul opus se situează regiunea Nord-Est cu cea mai mică valoare a indicatorului analizat. Pe clase de mărime, au existat mici modificări de la o regiune la alta.

Cea mai mare amplitudine a variației s-a înregistrat la întreprinderile mijlocii unde diferența dintre valoarea maximă 492,91 mii lei/persoană la regiunea Bucure□ti-Ilfov şi valoarea minimă 185,29 mii lei/persoană la regiunea Nord-Est a fost de 307,62 mii lei/persoană.

De remarcat faptul că în anul 2011 la grupa întreprinderilor mici, dacă exceptăm regiunea Bucureşti-Ilfov, indicatorul analizat diferă în mică măsură de la o regiune la alta (de la 189,86 mii lei/persoană la regiunea Nord-Est la 235,23 mii lei/persoană la regiunea Sud-Est).

Aceiaşi tendință de stabilitate a valorii indicatorului pe regiuni se întâlneşte şi la grupa întreprinderilor mijlocii unde amplitudinea variației este de asemenea mică (diferența dintre valoarea maximă (exceptând locul 1) de 235,15 mii lei/persoană înregistrată la regiunea Sud-Muntenia si 185,29 mii lei/persoană obținută la regiunea Nord-Est) egală cu 49,86 mii lei/persoană, foarte apropiată de amplitudinea variației pe total de 43,58 mii lei/persoană.

Daca avem în vedere şi rangurile pe regiuni observăm că pe clase de mărime există concordanță deplină între rangurile situate la extreme (regiunea Bucuresti-Ilfov se menține pe primul loc în toate cazurile iar regiunea Nord-Est pe ultimul loc cu rangul 8).

De menționat faptul că la celelalte regiuni rangurile diferă nesemnificativ de la o grupă de mărime la alta.

În concluzie, se poate aprecia că deşi s-au obținut unele îmbunătățiri pe linia eficientizării activitătii, se impun în continuare măsuri de atragere a investitorilor străini, cu deosebire a celor strategici, elaborarea unor studii de fezabilitate pentru produsele cu care România este competitivă şi dispune de cadre

[2] Anghelache, C., Anghelache G.V., Cruceru D., Manole A., Bugudui, E., Lilea, F.PC., - *Repere semnificative ale evolu□iei serviciilor, comer□ului □i ale altor sectoare în ultimul deceniu* – în Suplimentul Revistei Române de Statistică nr. 3/2012, pg. 120-127

calificate. Trebuie impulsionat procesul de creare a unor puternice şi viabile întreprinderi, care să valorifice în mai mare măsură resursele locale din regiunile de dezvoltare ale ţării noastre care se situează în momentul de fa□ă pe ultimele locuri.

Bibliografie selectivă

Anghelache, C. - „*Tratat de statistică teoretică şi economică*", Editura Economică, Bucureşti, 2008;

Anghelache, C., - „*România 2012 – Starea economică în criză perpetuă*", Editura Economică, Bucureşti, 2012;

Lilea, F.P.C.- "*Analiza statistică a repartiţiei regionale a întreprinderilor mici şi mijlocii în România*", Editura Ideea Europeană, Bucureşti, 2010;

Voineagu V., Furtună F., Voineagu M., Ştefănescu C., *Analiza factorială a fenomenelor social-economice, în profil regional*, Editura RAMIS, Bucureşti, 2002;

*** Anuarul statistic al României, INS, Bucureşti, 2012.