The Influence of the Active Rate of Interest over the Financing Decision of the Enterprise

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Abstract. *The elaboration of some coherent strategies of development of the long term firms requires the existence of material resources which ensures, besides other necessary competences, the development and the pereniality of the firm. The enterprise has multiple choices of financing its activities: the credit lines, the treasury lines, the discount of the commerce effects, factoring, and leasing and investment credits. Tasking into account the Romanian market, one notices that the most important financing source at which the enterprises appeal to is represented by the nongovernmental credits. The main purpose of the article is to determine how the modification of the rate of interest can influence the structure of the capital and which are the particularities of this dependency for the Romanian market.*

Key words: rate of interest; degree of indebtedness; credits; termanent capital.

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Introduction

In the financial administration of the enterprise, there are differences between the necessary and the already existing of the financial resources. This fact is due to the differences between the firm premises and the personal funds or is due to some disorders in the cashing of economic results.

In both situations, the enterprise will seek within the financing and credit market, the necessary specific products for the covering of these necessities.

In short, the financing of the enterprise can be made through credit and treasury lines, the discount of commerce effects, lump or factoring. On long terms, the financing is made in more cases for the implementation of an investment. In this respect, there are the investment and the leasing financing credits. One should not forget about the possibility of capital drawing through the stock exchange, stock issue or other specific products.

By taking into account the Romanian market, one notices a growth the nongovernmental credit and in a smaller measure of the volume of factoring or leasing operations. As a result, the following the research is oriented towards two directions and tries to answer two questions:

1) Does the modification of the active rate of interest influence the credit decision at the level of the enterprise?

2) In what way does the bank credit constitute a financing form of the enterprise?

2. The wording problem

Starting from the idea that the active rate of interest has an influence over the credit decision adopted at the level of the enterprise through the study that we continue to develop we will try to determine in what way does the modification of the rate of interest determine the capital structure within the enterprise and which are the particularities of this dependency on the Romanian market. By using some statistical mathematical models, we will quantify the nature of the correlation between sizes, as well as its force.

The study is based on the real data, extracted from the financial situations of an enterprise, which uses the bank credit as a form of finance. For the rate of interest they used data published by the Romanian National Bank and for the considered enterprise, the indicators were calculated based on financial situations. Thus, a package of *entry data* of the models which are presented used within the analyzed model.

3. The correlation analysis

The correlation analysis is used in order to study the intensity of the connection between two or more variables. In a strict sense, the correlation is a measure of intensity of the connection between variables. The statistic connections, taking into account the type of the considered variables, can express either associations (in the case of nominal variables), or correlations (in the case of numeric variables). In the considered model, the correlation will be measured. This can be expressed through covariance, the Pearson correlation coefficient of the Spearman and Kendall correlation orders. Within the following made analysis we will refer to the Pearson correlation coefficient.

The Pearson correlation coefficient is noted with ñ(X,Y), and is defined by the relation:

$$\rho(X,Y) = \frac{cov(X,Y)}{\sigma_x \times \sigma_y} =$$

$$= \frac{\sum_{i=1}^{N}(x_i - \mu_x)(y_i - \mu_y)}{N \times \sigma_x \times \sigma_y}, \quad i = \overline{1,N}$$

in which:

cov(X, Y) means covariance;

x_i, y_i, μ_x, μ_y are values of the correlated variables and their medium level;

N- number of the pair of values;

σ_x, σ_y- quadric medium exception for X and Y.

The correlation coefficient is obtained through the standardization of the covariance. The value of the correlation coefficient is between -1 and +1. If this one receives the zero value, then there is no relation between variables. The ρ plus signal shows a direct connection (as the values of the X variable grow, the values of the Y variable grow, too) and the minus signal, a reverse connection (as the values of the X variable grow, the values of the Y variable decrease). The absolute value of ρ indicates the intensity of the connection, which is: the closer it gets with more than 1, the stronger the connection, respectively the closer it gets to zero, the weaker the connection when the correlation coefficient equals with +1, it indicates a perfect connection between variables, and when a correlation coefficient equals with -1 it indicates a perfect reverse connection.

4. The econometric model of analysis of the rate of interest - the indebtedness degree correlation

In order to emphasize the influence of the modification of the active rate of interest over the credit decision over the level of an enterprise, we will relate at two indicators which quantify the debt, i.e. the general debt degree and the financing debt degree. These were calculated for the October 2000-March 2004 period at each of the moments in which it was appealed to the banking credit financing.

Let us note the general debt by GD, the total debts by TD, the personal capitals by PC, the financing debt degree by FDD, the long and medium financial debt by LMFD, and by PEC the permanent capitals. For the calculation of these indicators the following formulae were used:

$$GD = \frac{TD}{PC};$$

$$FDD = \frac{LMFD}{PEC} \cdot$$

Based on the data extracted from the financing situations of the enterprises one calculated two indicators, the results being presented in Table 1. For the entrance variable named *rate of interest*, the data were extracted from the Romanian National Bank communications at the respective data.

Based on the entrance data the Pearson correlation coefficients were calculated for the connections: The rate of interest - The financing debt degree, The rate of interest - The general debt degree and The general debt degree - The financing debt degree (Table 2).

In Table 2 the Pearson correlation coefficients are presented under the form of a matrix. Each hole contains information regarding the correlation between two variables (the horizontal and the vertical ones), the corresponding signification threshold and the considered number of observations (N). In the considered model, the variables are the following: the active rate of interest, the general debt threshold and the financing debt threshold.

The entrance data of the correlation model

Table 1

N	Data	The active rate of interest (%)	The general debt degree (%)	The financing debt degree (%)
1	30-Cct-04	18.75	33.20	22.52
2	31-Dec-04	17.96	34.99	24.95
3	30-Mar-05	10.75	120.50	130.30
4	30-Iun-05	8.00	205.30	180.60
5	30-Sep-05	8.25	204.50	190.50
6	31-Dec-05	7.50	229.43	194.88
7	31-Mar-06	8.47	163.56	108.97
8	30-Iun-06	8.50	184.49	110.03
9	31-Dec-06	8.75	136.81	80.93
10	31-Mar-07	8.08	113.49	83.03

Source: *Personal calculations made based on the financing situations of the enterprise and the National Romanian Bank Reports 2004-2007.*

The number of observations N= 10 refers to reference numbers. These are presented in the first column in Table 1 and correspond to calendar data when the report was done, covering the October 2004-March 2007 period. Suitable to each N observation (that is the calendar data) there are three variables of the model to be considered: the rate of interest (column 3, Table 1), the general debt degree (column 4, Table 1) and the financing debt degree (column 5, Table 1).

The signification threshold offers information about the probability of correcting the obtained results. In other words, it will indicate us the error degree of the model, for the analyzed enterprise. As one can see the results can be considered significant, the error probability being less than 1%.

The Pearson correlation coefficient

Table 2

		The rate of interest	The general debt degree	The financing debt degree
The rate of interest	The Pearson coefficient	1,000	-0,885*	-0,772*
	The signification threshold	-	0,001	0,009
	N	10	10	10
The general debt degree	The Pearson coefficient	-0,885*	1,000	0,928*
	The signification threshold	0,001	-	0,000
	N	10	10	10
The financing debt degree	The Pearson coefficient	-0,772*	0,928*	1,000
	The signification threshold	0,009	0,000	-
	N	10	10	10

* The correlation is significant - the probabilty to mistake is less than 1%

5. The dissemination of results

If one follows the first line of Table 2, one notices the three corresponding coefficients of the connections between the rate of interest and the other variables. It is obvious that the relation between the rate of interest and the rate of interest is a direct and perfect correlation, that is why the value of the indicator is 1 and the threshold signification result has an error less 0,000 %.

For the relations between the rate of interest and the general debt degree and the rate of interest and the financing debt degree correlations, the values of the Pearson coefficient are -0,885 and, respectively, -0,772. These values show a very strong connection between the two pairs of variables, since they are so close to -1. From the presentation of the model, one remember the idea in accordance with which the value of the coefficient gets closer to 1 or -1 as the connection between the two variables becomes stronger. The minus signal indicates the nature of the correlation, which in the two analyzed cases is indirect: a growth of the rate of interest determined a subtraction of the debt degree and the other way around.

The second line of the table indicates the values of the Pearson correlation coefficient calculated for the connections between the general debt degree and the other variables. One notices the value of +0,928 of the coefficient for the connection: the general debt degree - the financing debt degree. The value being very close to +1 it certifies a direct and strong connection between the two variables. Due to the fact that the importance of the result is very big we can come up with the idea that for this enterprise financing is almost one hundred per cent identified with the bank crediting.

One can notice the big threshold of signification of the proposed model, the error probability being less than 1%.

6. Conclusions

The results of the research made will be made in two directions: one refers to the proposed model and the other to the financing of the enterprise. The realized shaping leads us to the following conclusions:

1. There are some connections between the three variables.

2. The results of the statistical-mathematical shaping certify the indirect correlation between the Rate of value and the General debt degree, which means that it sustains the fact that a growth of the rate of value on the financial market lead to a subtraction of the general debt degree and the other way around.

3. The proposed model certifies an indirect connection between the Rate of interest and the Financing debt degree.

4. The proposed model can be considered relevant because in a big measure the results are significant, taking into account the fact that error probability is in most of the cases less than 1%. This means that the results are relevant, the probability to be correct being higher than 99%.

Regarding the financing of the enterprise the present study certifies through the proposed econometric model that there is a strong connection between the modification of the rate of interest and the financing decision of the enterprise. The correlation between the General debt degree and the Financing debt degree is given by the values of the Pearson coefficient, very closed to +1.

Thus, within this study case a characteristic of the Romanian financing market is: although there is a large palette of financing products, the enterprises chose in most cases the banking credit.

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