CONSTRUCTION OF THE REGRESSION MODEL FOR THE ECONOMIC RISK ANALYSIS

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Abstract

Economic risk is important to study because in the activity of any entity or of the national economy as a whole, a number of factors act. These include the risk factor, which has negative effects on economic developments.

Economic risk can arise in a number of circumstances such as sometimes poor management which does not take into account the correlation and proportionality that must exist between statistical quantities, and on the other hand due to reductions imposed by the fundamental law of the market, ie a much higher supply than market demand leading to negative results. On the other hand, there are elements that can sometimes be favourable and sometimes negative in terms of the international economic relations that are established between states, but last but not least the economy of an entity, a country or the world can be disturbed by the emergence of inconsistencies, of crisis situations leading to major restructuring of developments and correlations that need to be reconsidered to ensure macro stability.

It is easy to explain this aspect especially if we take into account the economic-financial crisis that took place in the period 2008-2010, but also more recently of the health crisis caused by the coronavirus pandemic, which has already been conjugated with the prospect of an economic-financial crisis without previous.

All these elements presented are considered by the authors to substantiate the perspective of economic risks. These economic risks must be anticipated, estimated in order to be able to take remedial measures, to take hedging measures, because it is, theoretically but also practically, impossible for the risks to be eliminated. In this context we have built a regression model that after careful study of statistical variables in the economy can be used to calculate the parameters that underlie the estimation of future prospects. For example, in this period of economic and financial crisis that will continue with the health crisis and then possibly continue only singularly, we need to do some studies in order to see the evolutionary trends of the economy.

This study based on the regression function in the economic field is of utmost importance and must be taken into account when establishing economic development programs of a country when structural elements appear that must be taken into account.

In this article we also used some studies we presented a series of tables and graphs, to highlight the perspective of the evolution of this economic crisis with its effects.

Keywords: market, demand, supply, risk, factors, models, parameters, estimates

JEL classification: C13, F40

Introduction

In the article entitled *Constructing the regression model for economic risk analysis*, the authors considered the construction of a risk estimation model to provide decision support for the subsequent activity of economic entities, using the linear regression method.

A first stage in this analysis is the choice of the dependent variable as the economic risk, and then the identification of the explanatory variables considering the aim, to estimate the economic risk based on the monetary indicators of the economic entities.

Another step is the analysis and elimination from the data set of gross errors represented by values that far exceed most of the values in the data string, applying the Grubbs test. Subsequently, the possible dependencies between the explanatory variables were checked, thus calculating the Pearson linear correlation coefficient.

Next, the estimated values of the parameters of the simple and multiple linear regression models were calculated using the least squares method. Regression models were also statistically verified and validated.

Finally, Gauss's concordance criterion was applied for choosing the model that best estimates the economic risk.

Literature review

Some aspects related to the systematic risk that affect financial stability are analyzed in their paper by Acemoglu, D., Ozdaglar, A., Tahbaz-Salehi A. (2015). Also, issues related to systematic risk are addressed by Eisenberg, L., Noah, T. (2001). In his paper Ai, H. (2010) is concerned with the long-term risk and the effect of this risk on the evolution of asset prices. Anghelache, C., Capanu, I. (2000, 2003) approach in their works the economic indicators for analyzes at micro and macroeconomic level. The system of financial analysis indicators of economic agents is also treated by Anghel, M.G., (2014) in his paper. Anghelache, C., Bodó, Gy. (2016) are concerned with the effects of systematic risks and the role of managerial decisions during periods of economic crisis. In the same vein Anghelache, C., Anghel, M.G., Bodó, Gy. (2017) address in their paper some theoretical aspects regarding the role of information in the process of decision modelling and risk management. Clark, T., Ravazzolo, F. (2015) are concerned with the performance of macroeconomic forecasting according to alternative specifications of time-varying volatility. Eeckhoudt, L., Gollier, Ch., Schlesinger, H. (2011) approach the way in which economic-financial decisions related to economic risks can be made. An analysis of the risk factors regarding the managerial decisions is made in their paper Popa, P.D., Dobrescu, Gh.G. (2014). Robert N., Gronn, E., Machina, M., Bergland, O. (2013) are concerned with the uncertain business environment and economic risk.

Methodology, data, discussions, results

In this stage the dependent variable, y, chosen was the economic risk, RE, calculated as a weighted average of the Z score determined with the Altman model, Z_A, and with the Canon-Holder model, Z_{CH}, according to the formula:

$$y = RE = 0{,}6 * Z_A + 0{,}4 * Z_{CH} \quad (1)$$

where:

RE = Economic risk, dependent variable y;
Z_A = Z score Z by German method;
Z_{CH} = Z score by Canon-Holder method.

If the value statements necessary to calculate the explanatory variables in the Altman model are known from the financial statements, then the Z_A is calculated. Similar for the explanatory variables in the Canon-Holder model with which Z_{CH} is calculated. The purpose of this case study is to construct by the regression method a model for estimating the economic risk based on the indicators available as public information. This model can be used as a support for the decision to select future customers and to establish customized clauses in the contract to reduce business risk.

- **Identification of explanatory variables**

The way in which the explanatory variables are chosen depends on the purpose pursued in the econometric model, in this case, the estimation of the economic risk based on the monetary indicators of the economic entities. In order for inflation not to influence the value of the indicators used, the ratio of indicators from the same time period was analysed 12 variables were taken into analysis, denoted by X1, X2, ... X12, defined with the following formulas:

$$X1 = \frac{Debt}{Equity} \quad (2)$$

$$X2 = \frac{capital}{Capital + debt} \quad (3)$$

$$X3 = \frac{stocks}{Current\ assets} \quad (4)$$

$$X4 = \frac{Receivables + House + Bank\ accounts}{Current\ assets} \quad (5)$$

$$X5 = \frac{debts}{Current\ assets} \quad (6)$$

$$X6 = \frac{Receivables + House + Bank\ Accounts - Debts}{Current\ assets} \quad (7)$$

$$X7 = \frac{Receivables + House + Bank\ accounts}{Fixed\ assets + Current\ assets} \quad (8)$$

$$X8 = \frac{Current\ assets - Debts}{Fixed\ assets + Current\ assets} \quad (9)$$

$$X9 = \frac{capital}{Current\ assets} \quad (10)$$

$$X10 = \frac{Debts}{Gross\ profit} \quad (11)$$

$$X11 = \frac{Gross\ profit}{Fixed\ assets + Current\ assets} \quad (12)$$

$$X12 = \frac{Fiscal\ value}{Fixed\ assets + Current\ assets} \quad (13)$$

The 12 explanatory variables were calculated for each of the 82 values of the dependent variable y.

• Elimination of gross errors

The values of the dependent variable and of the explanatory variables may be affected by errors generated by values of economic indicators at a certain point in the analysis that corresponded to the corrections made during the financial year, fines and penalties, possible calculation errors. Of these errors, the gross errors represented by values that far exceed most of the values in the data string were analysed and removed from the data set. The Grubbs test, developed by Frank Ephraim Grubbs, was applied to eliminate values considered as gross errors.

For the application of the Grubbs test, the analysed data series was sorted in ascending order and the extreme, minimum and / or maximum values were identified. For the remaining data, without the extreme values considered, the mean and dispersion were calculated.

These values are calculated:

$$G = \frac{\bar{x} - x_{min}}{s} \tag{14}$$

$$G_{critic} = \frac{(n-1)t_{critic}}{\sqrt{n(n-2+t_{critic}^2)}} \tag{15}$$

$$t_{critic} = T.INV(1 - \frac{\propto}{n}; n-2) \tag{16}$$

where:

$\bar{x}$ - Data string x_i average, without extreme values;

x_{min} - The value suspected to be a gross error out of range;

s - Sample dispersion;

G_{critic} - Grubbs test statistics;

n - Sample size;

t_{critic} - The critical value in the t-Student distribution with n-2 degrees of freedom and the level of significance α/n;

T.INV - Excel function for the calculation of $t_{critical}$ from the inverse of the $t_{Student}$ distribution.

If:

$$G > G_{critic} \tag{17}$$

Then the null hypothesis is rejected:

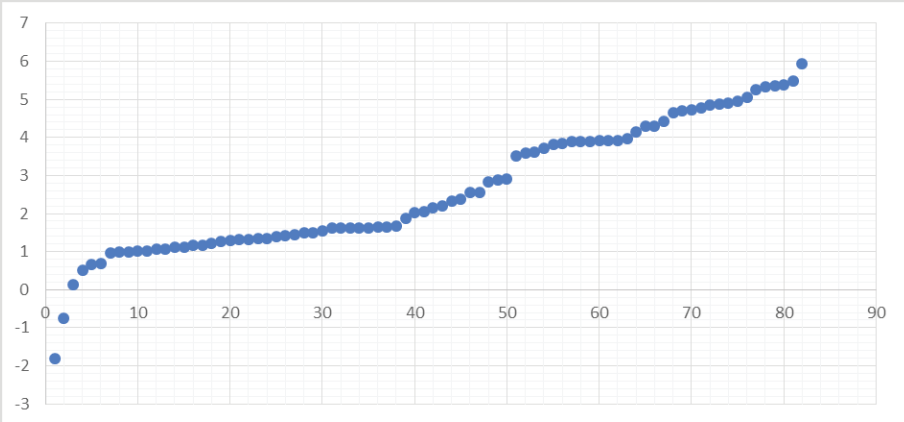
H_0: There are no gross errors, x_{min} belongs to the string (18)

• Elimination of gross errors regarding the dependent variable

For the application of the Grubbs test for the dependent variable RE, the data set was sorted upwards and plotted.

Economic risk variable RE

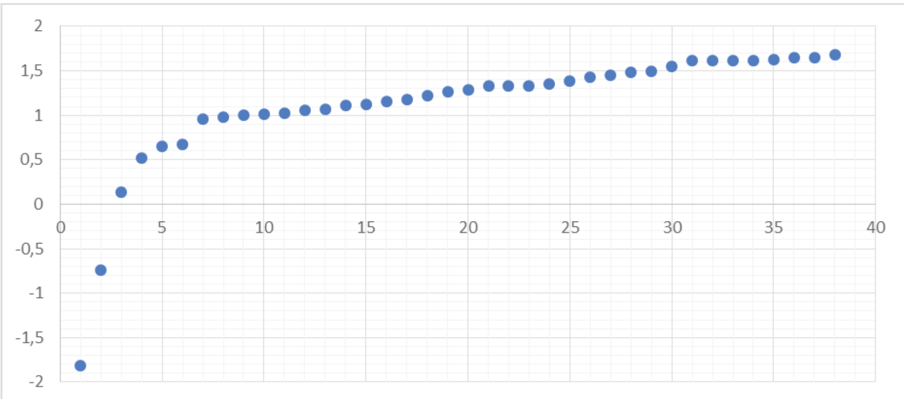
Graph 1



From the analysis of the chart there are two areas, the first area represented by the first 38 positions, the second area represented by the positions from 39 to 82.

The first area of the ascending row RE

Graph 2



The first six values in the string do not seem to belong to the string, and the Grubbs test was applied to them.

Grubbs test for minimum economic risk values

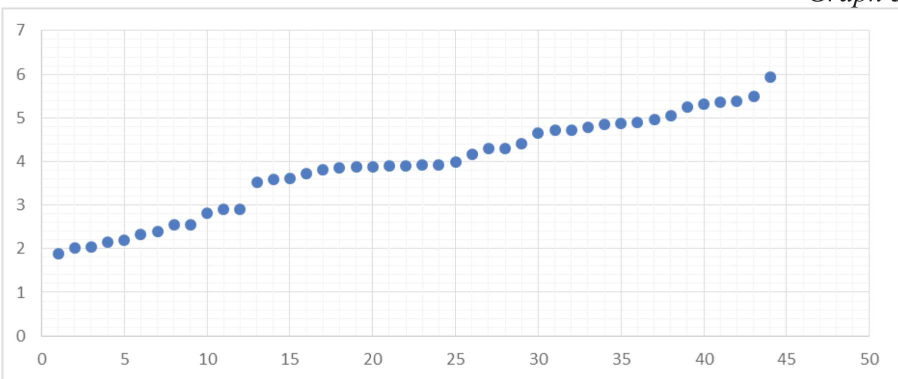
Table 1

n	32					
mean	1,332156					
dispersion	0,237365					
α	0,05					
G_{critic}	2,773345					
t_{critic}	3,213845					
RE_i	-1,81525	-0,73778	0,13446	0,51979	0,65653	0,67704
G_i	13,25975	8,72047	5,04580	3,42242	2,84635	2,75993
It is eliminated	yes	yes	yes	yes	yes	no
The position:	38	42	27	39	44	

The same was done for the second area of the ascending row RE for the maximum value.

The second area of the ascending row RE

Graph 3



Grubbs test for the maximum value of the economic risk

Table 2

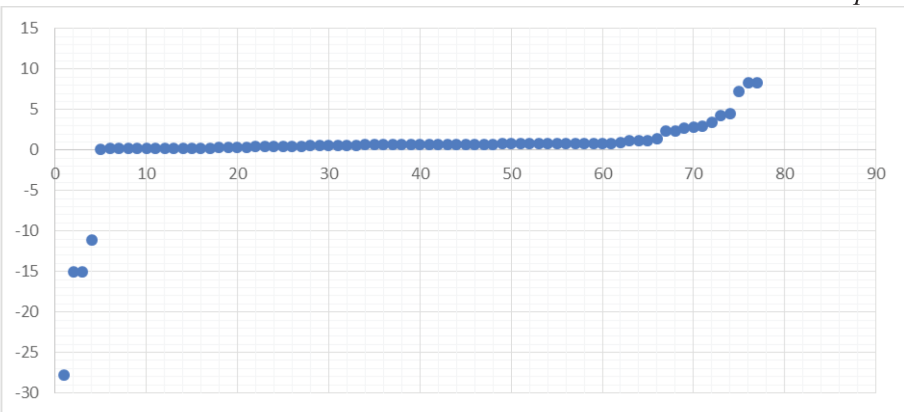
n	43
mean	3,854712
dispersion	1,071171
α	0,05
G_{critic}	2,897023
t_{critic}	3,247372
RE_i	5,941189
G_i	1,94785
It is eliminated:	no

• Elimination of gross errors regarding explanatory variables

The same was done for each explanatory variable. For X1, the ascending string graph shows the first four values and the last three values, for which the Grubbs test was applied in turn.

Explanatory variable X1

Graph 4



The test result is presented in table (3)

Grubbs test for explanatory variable X1

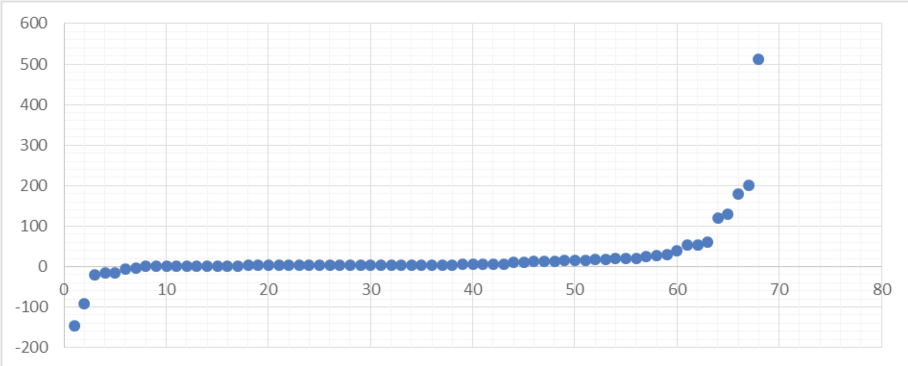
Table 3

n	70						
mean	0,88399						
dispersion	0,90911						
α	0,05						
G_{critic}	3,083916						
t_{critic}	3,324797						
X1	-27,808	-14,994	-14,994	-11,083	7,298	8,299	8,299
G_i	31,5606	17,4656	17,4656	13,1629	7,0555	8,1568	8,1568
It is eliminated	yes	yes	yes	yes	yes	yes	yes
The position:	46	43	28	45	40	51	30

For the explanatory variables X2 to X9 following the application of the Grubbs test, no value was eliminated. For the explanatory variable X10, the ascending string graph (5) shows possible erroneous values.

Explanatory variable X10

Graph 5



From the analysis of the graph of the ascending row X10, the first two values and the last ten for which the Grubbs test was applied are suspicious.

Grubbs test for explanatory variable X10

Table 4

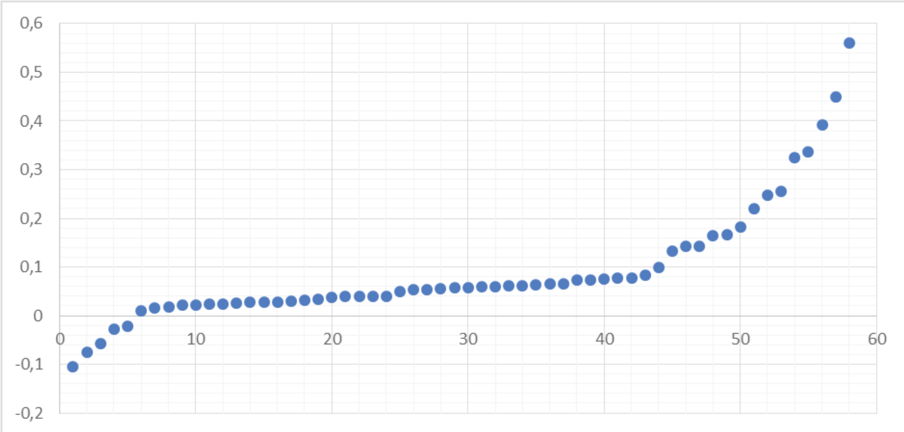
n	60					
mean	8,002746					
dispersion	13,028390					
α	0,05					
G_{critic}	3,026863					
t_{critic}	3,298020					
X10i	-146,059	-91,448	53,082	53,243	60,252	120,587
G_i	11,825	7,633	3,460	3,472	4,010	8,641
It is eliminated	yes	yes	yes	yes	yes	yes
The position:	13	21	24	25	17	16

n	60					
mean	8,002746					
dispersion	13,028390					
α	0,05					
G_{critic}	3,026863					
t_{critic}	3,298020					
X10i	129,248	179,541	200,217	512,041	4098,813	30771,967
G_i	9,306	13,167	14,754	38,688	313,992	2361,302
It is eliminated	yes	yes	yes	yes	yes	yes
The position:	20	12	23	15	10	9

The graph of the explanatory variable X11 highlights the possibility of the existence of two erroneous values, at the beginning and the end of the ascending string.

Explanatory variable X11

Graph 6



Grubbs test for explanatory variable X11

Table 5

n	58		
mean	0,091303		
dispersion	0,122485		
α	0,05		
G_{critic}	3,014072		
t_{critic}	3,292382		
X11i	-0,10476	0,56007	0,45038
G_i	1,60072	3,82717	2,93160
It is eliminated	no	yes	no
The position:	36	31	29

The graph of the explanatory variable X12 highlights the possibility of the existence of six erroneous values, at the end of the ascending string.

Explanatory variable X12

Graph 7

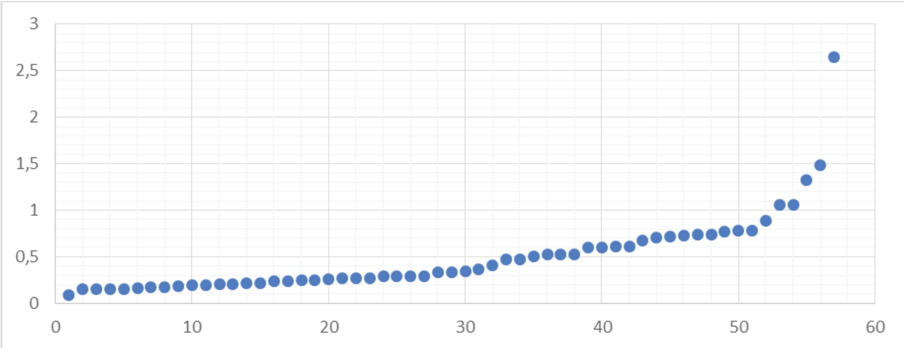


Table 6: Grubbs test for explanatory variable X12

n	52					
mean	0,394933					
dispersion	0,222204					
α	0,05					
G_{critic}	2,972240					
t_{critic}	3,274910					
X12i	2,65133	1,48583	1,32023	1,060253	1,056571	0,884232
G_i	10,15459	4,90944	4,16419	2,99418	2,97761	2,20202
It is eliminated	yes	yes	yes	yes	yes	no
The position:	29	26	55	57	56	58

At this stage, following the application of the Grubbs test for values suspected to be erroneous, 30 records as being affected by gross errors.

Records deleted as affected by gross errors

Table 7

Source	10	X10	X10	X10	X10	X10	X10	X10	X10	X10
The position	No.9	No.10	No.12	No.13	No.15	No.16	No.17	No.20	No.21	No.23

Source	X10	X10	X12	RE	X1	X12	X1	X11	RE	RE
The position	No.24	No.25	No.26	No.27	No.28	No.29	No.30	No.31	No.38	No.39

Source	X1	RE	X1	RE	X1	X1	X1	X12	X12	X12
The position	No.40	No.42	No.43	No.44	No.45	No.46	No.51	No.55	No.56	No.57

After deletion of the 30 records, it was found that records 1 and 7 were duplicated and record 7 was deleted.

- **Checking the dependency between the explanatory variables**

To verify the possible dependencies between the explanatory variables, the Pearson linear correlation coefficient, r_{XiXj} was calculated. With r_{XiXj} tcalc was calculated. For t_{calc}, the significance level α was calculated with the $t\text{-}_{Student}$ test.

With the data from the two tables, the Colton empirical rule was applied as follows: if the absolute value of the Pearson correlation coefficient is greater than 0.4 and the associated significance level is lower than the significance threshold of 0.05, then those variables were considered correlated.

- **The qualification stage of the explanatory variables in the model**

For the qualification of the explanatory variables in the regression model, the bottom-up technique was applied, introducing the explanatory variables in the model in ascending order, starting with one variable, then with two, three and so on, until all the independent variants are exhausted. With the regression module from Excel, the parameters of the regression model were determined and based on the determination coefficient R^2, the classification of each model was performed.

- **Estimation of model parameters by a variable and model validation**

In the qualification stage for the regression model with one variable, the explanatory variable X8 was ranked first. The regression model of a variable is described by the equation $y_i = a_0 + a_1 x_i + e_i$ and the determination of the model parameters was done by solving the system of two equations with two unknowns, described by the equation

$$\begin{cases} na_0 + a_1 \sum_i^n x_i = \sum_i^n y_i \\ a_0 \sum_i^n x_i + a_1 \sum_i^n x_i^2 = \sum_i^n y_i x_i \end{cases}.$$

Equation

$$\begin{cases} a_1 = \frac{n \sum_i^n y_i x_i - \sum_i^n x_i * \sum_i^n y_i}{n \sum_i^n x_i^2 - (\sum_i^n x_i)^2} \\ a_0 = \frac{\sum_i^n y_i - a_1 \sum_i^n x_i}{n} \end{cases}$$

leads to parameters:

$$\begin{cases} a_1 = 3{,}67327 \\ a_0 = 1{,}67721 \end{cases} \quad (19)$$

Statistics of the one-variable regression model

Table 8

Symbol	Name of statistical indicator	Indicator value
R	Coefficient of determination.	0,90341948
R^2	Coefficient of determination.	0,81616676
Rc^2	Corrected coefficient of determination	0,81241506
s_r	Residual mean square deviation.	0,66302823
n	Number of observations.	51

The ANOVA dispersion analysis for the one-variable regression model becomes:

ANOVA dispersion analysis for the one-variable regression model

Table 9

Source of variation	Degrees of freedom df	The sum of the squares SS	Dispersion Means Square MS	F calculating
Regression *SPE*	1	95,63	95,6346	217,546
Residual *SPR*	49	21,54	0,4396	
Total *SPT*	50	117,18		

The regression model of a variable is validated because:

$$F_c = 217{,}546 > F^*_{(p,k,n-k-1)} = F^*_{(0{,}95,1{,}49)} = 4{,}03839 \quad (20)$$

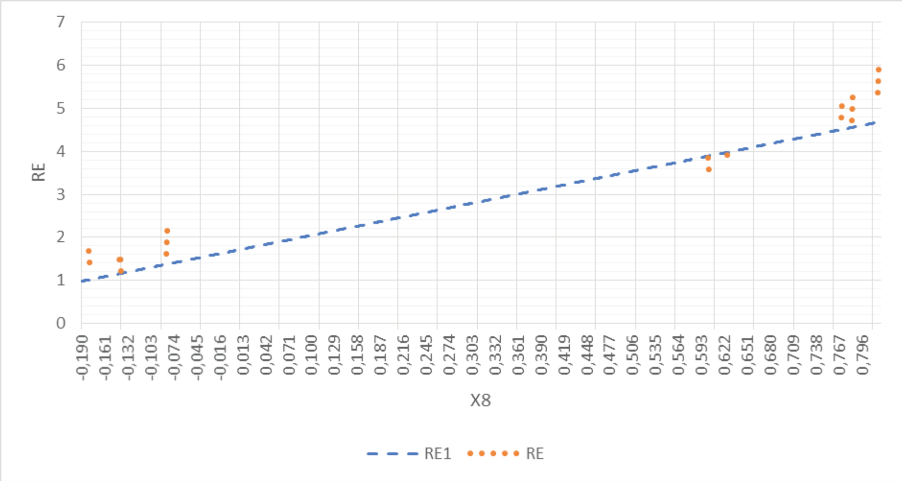
With the values of the parameters in equation (19) and X8 calculated by formula (9), the economic risk of a variable, RE1, becomes:

$$RE1 = 1{,}67721 + 3{,}67327 * \frac{Current\ assets - Debts}{Fixed\ assets\ +\ Current\ assets} \qquad (21)$$

The regression line described by equation (21) is shown in graph (8).

Regression line for the economic risk of a variable

Graph 8



- **Estimation of model parameters with two variables and model validation**

The two-variable regression model and the determination of the model parameters was done by solving the system of two equations with two unknowns for the free term.

In the qualification stage, the pair formed by the explanatory variables X8 and X11 was ranked first and by replacement the equation becomes:

$$\begin{cases} 7{,}088 * a_1 + 0{,}304 * a_2 = 26{,}035 \\ 0{,}304 * a_1 + 0{,}358 * a_2 = 2{,}425 \end{cases} \qquad (22)$$

By solving the system of two equations with two unknowns (22) the parameters of the regression model of two variables were obtained:

$$\begin{cases} a_0 = 1{,}49517 \\ a_1 = 3{,}51076 \\ a_2 = 3{,}79042 \end{cases} \qquad (23)$$

Two-variable regression model statistics

Table 10

Symbol	Name of statistical indicator	Indicator value
R	Coefficient of determination.	0,926550
R^2	Coefficient of determination	0,858496
Rc^2	Corrected coefficient of determination	0,852600
s_r	Residual mean square deviation.	0,587736
n	Number of observations.	51

The ANOVA dispersion analysis for the regression model of two variables becomes:

ANOVA analysis for the two-variable regression model

Table 11

Source of variation	Degrees of freedom df	The sum of the squares SS	dispersion Means Square MS	F calculating
regression *SPE*	2	100,5945	50,2972	145,606
Residual *SPR*	48	16,5808	0,3454	
Total *SPT*	50	117,1753		

The two-variable regression model is validated because:

$$F_c = 145{,}606 > F^*_{(p,k,n-k-1)} = F^*_{(0{,}95,2{,}48)} = 3{,}1907 \quad (24)$$

With the values of the parameters in equation (23), with X8 calculated by formula (9) and X11 calculated by formula (12), the economic risk of two variables, RE2, becomes:

$$RE2 = 1{,}49517 + 3{,}51076 * X8 + 3{,}79042 * X11 \quad (25)$$

where:

$$X8 = \frac{Current\ assets - Debts}{Fixed\ assets\ +\ Current\ assets} \quad (26)$$

$$X11 = \frac{Gross\ profit}{Fixed\ assets\ +\ Current\ assets} \quad (27)$$

- **Estimation of the parameters of the three-variable model and validation of the model**

Of the 12 explanatory variables analysed, the maximum number of independent variables that could be considered in the regression model were the groups of three variables. Groups larger than three variables could not be performed, as any combination would have contained two or more correlated variables.

In the qualification stage, the group of three variables consisting of the explanatory variables X2, X7 and X11 was ranked first.

The parameters of the regression model of three variables were determined with the regression module in Excel and are:

$$\begin{cases} a_0 = -1{,}93564 \\ a_1 = 5{,}43200 \\ a_2 = 1{,}95076 \\ a_3 = 4{,}93226 \end{cases} \tag{28}$$

Statistics of the regression model of three variables

Table 12

Symbol	Name of statistical indicator	Indicator value
R	Coefficient of determination.	0,955865
R^2	Coefficient of determination	0,913678
Rc^2	Corrected coefficient of determination	0,908169
s_r	Residual mean square deviation.	0,463905
n	Number of observations.	51

The ANOVA dispersion analysis for the regression model of three variables becomes:

ANOVA analysis for the three-variable regression model

Table 13

Source of variation	Degrees of freedom df	The sum of the squares SS	dispersion Means Square MS	F calculating
regression *SPE*	3	107,06055	35,68685	165,82528
Residual *SPR*	47	10,11475	0,21521	
Total *SPT*	50	117,17530		

The three-variable regression model is validated because:

$$F_c = 165{,}82528 > F^*_{(p,k,n-k-1)} = F^*_{(0{,}95{,}3{,}47)} = 2{,}80236 \tag{29}$$

With the values of the parameters in equation (28), with X2 calculated with formula (3), X7 calculated with formula (8) and X11 calculated with formula (12), the economic risk of three variables, RE3, becomes:

$$RE3 = -1,93564 + 5,432 * X2 + 1,95076 * X7 + 4,93226 * X11 \quad (30)$$

where:

$$X2 = \frac{capital}{Capital + debt}$$

$$X7 = \frac{Receivables + House + Bank\ accounts}{Fixed\ assets + Current\ assets}$$

$$X11 = \frac{Gross\ profit}{Fixed\ assets + Current\ assets}$$

• Checking the models

For the analytical representation of the economic risk, three functions were determined by the regression method, RE1 of one variable, defined by equation (21), RE2 of two variables defined by equation (25) and RE3 of three variables defined by equation (30). In order to decide which of the three functions best matched the economic risk, RE, defined by equation (1) as a weighted average of the Z_A score, determined with the Altman model, and Z_{CH}, determined with the Canon-Holder model, applied the criterion of Gaussian concordance.

To apply Gauss's concordance criterion, the expression was calculated:

$$s_k^2 = \frac{\sum (RE_i - \widehat{REk_i})^2}{n - k - 1} \quad (31)$$

where:

RE_i - The individual values of the economic risk calculated by the formula (1);

$\widehat{REk_i}$ Estimated values for RE1, RE2 and RE3 in point i;

n - Number of observations;

k - Number of explanatory variables in the model.

From the functions that estimate the economic risk, the function for which was chosen s_k^2 defined by equation (31) has a minimum value, respectively RE3, for which $s_k^2 = 0,2152$, according to the table 14.

Gaussian concordance criterion for model selection

Table 14

No.Crt.	The regression model	s_k^2
1	RE1, the model of a variable defined by the equation (21).	0,4396
2	RE2, the two-variable model defined by the equation (25).	0,3454
3	RE3, the three-variable model defined by the equation (30).	0,2152

As presented for method Z, the result given by the Z_A score differs from the result given by the Z_{CH} score, reason for which for the definition of the economic risk a weighted amount was proposed between the two scores. Based on the assessment criteria and the ratings for Z_A and Z_{CH} respectively, the following economic risk ratings, as set out in Table 15, have been established:

Economic risk assessment - proposed ratings

Table 15

$Z_A \backslash Z_{CH}$	Danger	Observation	Good	Very well
Bankruptcy	Bankruptcy	danger	Observation	Satisfactorily
Deficit	danger	Observation	Satisfactorily	Good
Solvent	Observation	Satisfactorily	Good	Very well

By replacing the ratings for Z_A and Z_{CH} with the corresponding value thresholds and choosing the lowest positive value for each rating proposed in Table (15), the following levels of significance for economic risk were obtained from Table (16):

Significance levels for economic risk RE3

Table 16

Threshold	Qualifying	Meaning
$RE \geq 2,44$	Very well	Probability of bankruptcy below 10%.
$1,72 \leq RE < 2,44$	Good	Probability of bankruptcy between 10% - 25%.
$0,94 \leq RE < 1,72$	Satisfactorily	Probability of bankruptcy between 25% - 40%.
$0,70 \leq RE < 0,94$	Observation	Probability of bankruptcy between 40% - 60%.
$0,46 \leq RE < 0,70$	danger	Probability of bankruptcy between 60% - 85%.
$RE < 0,46$	Bankruptcy	Probability of bankruptcy over 85%.

The comparison was made between the results obtained by applying the Altman model, the Canon-Holder model and the three-variable regression model. The result of the comparison of the three models is presented in table (17).

Comparison of the three models Z_A, Z_{CH}, RE_C

Table 17

Model score Altman Z_A	1,552	5,205	6,244	10,903
Model qualifier Altman	Bankruptcy	Solvent	Solvent	Solvent
Model score Canon-Holder Z_{CH}	1,879	1,513	5,487	11,371
Model qualifier Canon-Holder	Very good	Good	Very good	Very good
Regression model score REc	1,482	2,394	5,457	4,666
Qualifying REc	Satisfactorily	Good	Very good	Foarte bine
Qualifying REc	Satisfactorily	Good	Very good	Very good

The analysis of the results obtained with the regression model of three explanatory variables, the significance levels in table (16) and the comparison between the three models for assessing the economic risk in table (17) show that the proposed regression model can be used to assess the economic risk on the balance sheet database for new customers with whom new contracts are to be signed.

Conclusions

From the article entitled *The construction of the regression model for economic risk analysis*, a series of both theoretical and practical conclusions can be drawn. Thus, a first conclusion that emerges from the study undertaken by the authors highlights that the methods, models or indicators used are a result of the way in which the scientific research on economic entities was carried out.

Also, the models presented in this study can be extended, restricted, but brought in accordance with the data, with the evolutions so far, we can draw conclusions for future estimates.

Another conclusion that emerges from the research done by the authors is that the regression model with three explanatory variables can be used to assess economic risk based on data from the balance sheets of economic entities.

Last but not least, in this study it was shown that if we start from the assessment criteria and the ratings for Z_A and Z_{CH} according to the scoring method using the Altman model and the Canon-Holder model, we can establish some ratings for economic risk, which can be a decision support. in signing new contracts.

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