Relationship between the Altman Z-Score and Quick Kralicek Test in Assessing Economic Units

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Abstract

The existence of the crisis makes obvious the fact of predicting the financial position in which will be found an economic unit in the future. This constitutes one of the most important tasks of analysts. Altman Z-Score andQuick Test Kralicek are two very important cumulative indicators, on the basis of which, the analyst is able to give a judgment on the financial situation in which an economic unit is, as regard to the risk of bankruptcy (Altman Z -Score) and difficulty paying (Quick Test Kralicek). By analyzing these two indicators, it was foundthat they are connected with each other and lead us to the same conclusion for entities taken as a sample in this study. Through a statistical analysis (Pearson correlation coefficient) will be shown this connection and the conclusions derived from this analysis. Predicting in time unsatisfactory situations avoids the risk of bankruptcy, which is so much evident nowadays.

Keywords: financial position, economic unit, Altman Z-Score, Quick Test Kralicek, analysts, bankruptcy.

1. Introduction

The processof consideration plays an important role in the field of financial analysis. This process leads the interested parties in reaching conclusions related to forthcoming perpective, stability and profitability of an economic unit both by comparing its basic data and by creating standards.

There is no doubt that the consideration process is a necessary tool in judging business events and particularly the effects that union and sale have on business value. Moreover, the use of consideration techniques is an important mechanism of dialog between the management of an economic unit, shareholders or analysts about issues affecting its value. It also constitutes an important tool in considering alternative strategies of the economic unit. In this study, it is intended to analyse the economic unit from, its performance point of view byapplying two of the most important models of consideration, the Altman Z-Score and the Quick Test Kralicek. It is also attempted to evident if there is any relation on the proposed judgement of the economic unit.
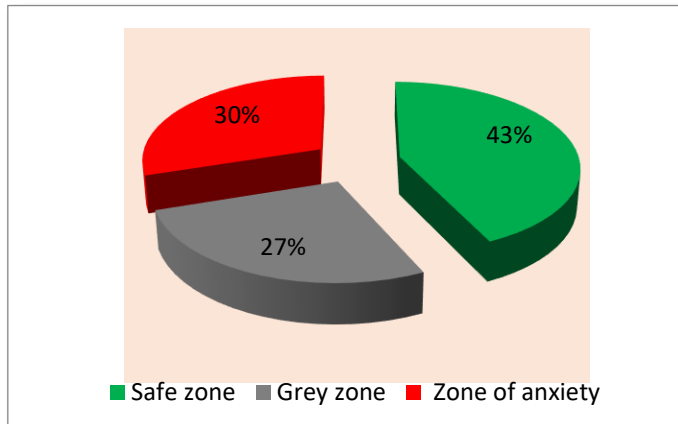
2. Altman Z-Score –an important indicator in determining the bankruptcy of an economic unit

Altman Z-Score and Quick Test Kralicek are two important cumulative indicators on which an analyst bases his judgement about the financial situation of the economic unit, both for the bankruptcy risk (Altman Z-Score) and paying difficulties

(Quick Test Kralicek). By analysing these two indicators, noted their connection and arrive at the same conclusion about the economic units taken as samples in this study.

By applying the Altman Z-Score (graph. 2. 1), was foundthat in 2011, the number of the economies in the "danger zone" (bankruptcy zone) hold a considerable percentage of 30%, whereas 27% are the economic units (grey zone) and economic units that hold 43% are not directly threatened with bankruptcy (green zone).

Taking into consideration the results of this model over years, it is clear that the situation about these economic units becomes somehow clear in favour of those not directly threatened with bankruptcy. As it is clear seen in the graphs (graph. 2. 2, graph. 2. 3) the number of the economies in the "danger zone" reduces (from 30% in 2011 to 25% in 2013) and the number of the economies in the "safe zone" increases (from 43% in 2011 to 50% in 2013).


Graph 2. 1. *Appliance of the Altman Z-Score model of2011*
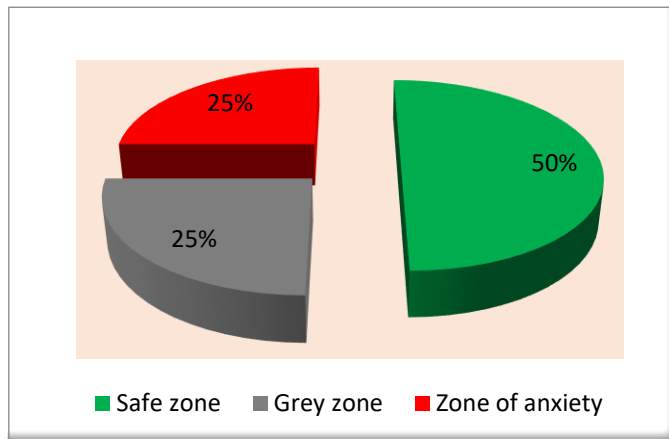

Graph 2. 2. *Appliance of the Altman Z-Score model of2012*
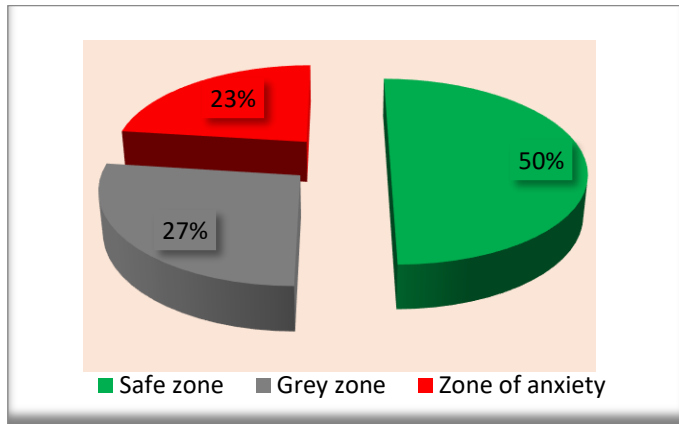
Graph 2. 3. *Appliance of the Altman Z-Score model of2013*

3. Quick Kralicek Test – an important indicator in determining the paying difficulty

Like Altman Z-Score model, the Quick Test Kralicek Test is also an important cumulative indicator which is used to judge the performance of an economic unit. Through the appliance of this indicator in our sample, it was achieved assessed in terms of performance, concretely the paying difficulties of the economic units being analyzed. Based on this indicator, were created the following graphs:
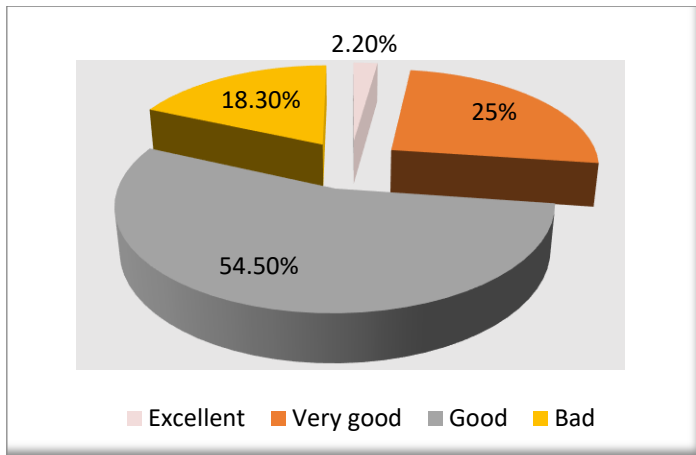
Graph 3. 1. *Appliance of the Quick Test Kralicek of 2011*
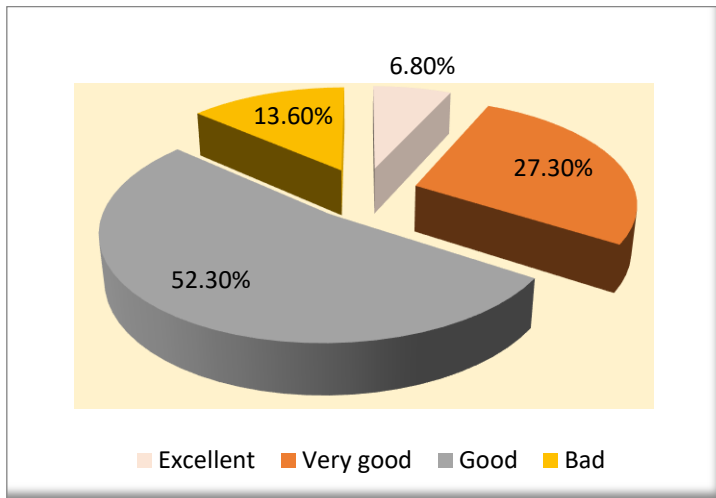
Graph 3. 2. *Appliance of the Quick Test Kralicek of 2012*
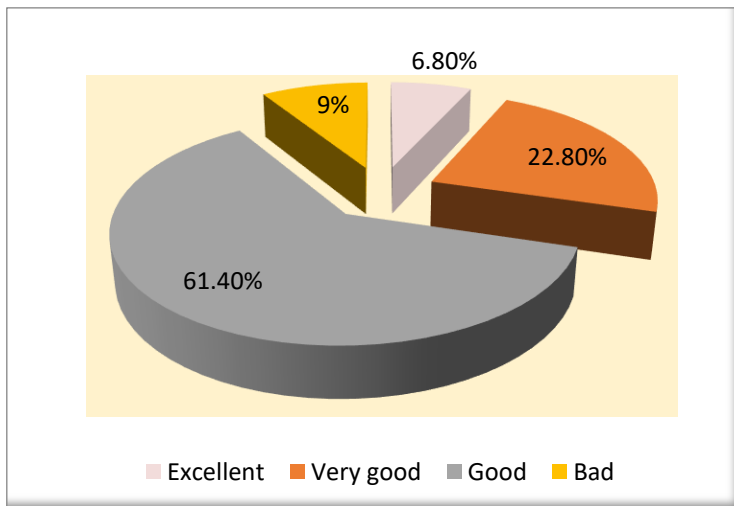
Graph 3. 3. *Appliance of the Quick Test Kralicek of 2013*

As the graph 3. 1, which shows the results of the Quick Test Kralicek, for 2011, clearly indicates, only 2. 2% of the economic units according to this test belong to the "excellent zone". 25% of the economic units are lower than the previous belonging to the "very good zone", 18. 3% of them belong to "poor zone". The majority of these economic units belong to "good zone".

The situation improves somehow in 2012, graph 3. 2, when the specific weight of the economic units belonging to "excellent" (6. 8%) increases and the specific weight of those belonging to "poor" (13. 6%) decreases. This means a relative improvement of the situation from one year to the other.

In2013, graph 3. 3, marks again the increase of the specific weight of the number of economic units in the third place in Quick Test Kralicek. The increase of the percentage of this part means a relative deterioration of the liability situation as it

is obvious that the higher the increase of the value average of Quick Test Kralicek the lower the ability of paying liquidation is.

4. The relation Altman Z-Score – Quick Kralicek Test

In order to judge the relation between these two important indicators of the financial analysis, it will becalculated the coefficient of correlation which proves the existence or not of this relation.

From the data gathered during this study and from the calculations of each test mentioned previously it is obvious their relation. In most of the cases they give the same conclusion related to the situation the economic units of our sample are.

The hypothesis raised in this case is about the fact that both indicators are related to each other, strengthening in this way the reached conclusion about the situation that economic unit is.

The higher the figure of Altman Z-Score indicator, the better the economic unit situation is. While the Quick Test Kralicek judges as positive its low figure, may be assumed that the coefficient of correlation that expresses the strength of the relation is different from zero.

We will base our survey on the results extracted from both indicators of 44 economic units under analysis in order to verify this hypothesis.

In order to find the strength and direction of the relation of these indicators, there was used the Pearson correlation coefficient. The Pearson correlation coefficient (Healey, 2009) measures the strength and direction of the linear relation between two variables and describes the direction and level that one variable is related to the other.

This coefficient can range from -1 to 1. The figure 1 of this coefficient indicates that variables are perfectly related to each other, so the increase/decrease of one variable means the same to the other. The figure -1 of the coefficient means that variables are related in a perfect linear way but, in this case, the increase of one means the decrease of the other and the contrary. The figure 0 of this coefficient means that variables are not related in a linear way with each other. The Pearson correlation is estimated according to the following formula:

$$r = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{[\sum (x - \bar{x})^2][\sum (y - \bar{y})^2]}}$$

Taking into consideration the results of these two indicators for each year, through Excel program, it was made possible the consideration of the Pearson correlation coefficients, as presented below:

In2011:r = - 0. 35

In2012:r = - 0. 4

In2013:r = - 0. 32,

where **r**indicates the correlation coefficient judged from the choiceinitially made and satisfies the supposition we presented related to its value different from zero.

In order to judge statistically the importance of the relation of these two indicators, should be estimatedthat even the correlation coefficient of the popularity is different from zero.

In order to make possible the judgement of our hypothesis, we will base on t-*student spread* test presented below.

Hypothesis can be presented in statistical way as below:

H0: ρ=0

H1: ρ≠0

Where ρ indicates the correlation coefficient of the population related to the case above mentioned. The verification of each hypothesis will be made for each year been studied.

Using student test $t = r\sqrt{\frac{n-2}{1-r^2}}$, where n is the number of economic units we are studying, it results that:

In 2011 the value of this student test is: $t = -0.35\sqrt{\frac{44-2}{1-0.35^2}} = -2.41$

In 2012 the value of this student test is: $t = -0.40\sqrt{\frac{44-2}{1-0.40^2}} = -2.83$

In 2013 the value of this student test is: $t = -0.32\sqrt{\frac{44-2}{1-0.32^2}} = -2.18$

From the charter of student spread, the critic value of the criteria $t = \pm 2.021$, with 42 free levels and 0.025 probability. Comparing the values for each year with the critic value of the criteria, it is judged that H1 is evidented in three cases, thus giving the right to defend our assumption about the relation of two indicators of Altman Z-Score and Quick Test Kralicek.

The verification of this hypothesis is very important for the analysis of these indicators and the results extracted from them related to the financial state of the economic units. Understood in this way that they strengthen each other in the reached conclusions.

5. Conclusions

The economic units continually seek ways to remain competitive in market, however, the risk of failure in achieving the rising requests of economic contemporary activity is present and threatening than ever. The failure of an economic unit appears in the form of bankruptcy.

In recent decades, the phenomena of economic units bankruptcy or the impossibility to accomplish liabilities, has let the whole academic world in concern. The bankruptcy of an economic unit is a multidimensional state with chain reactions about economy and society in general. When the liability problems include some of the financial institutions and economic units and even the consumer itself, the credit risk is the main threaten of global economy. Through the successfully use of Altman Z-Score and Quick Test Kralicek, in this study, there is given a clear idea about the financial state of the economic units taken as samples, the degree of risk and paying impossibility that affects each of them, therefore making a correct positioning of them in market.

Our hypothesis had to do with two important cumulative indicators in judging the state of an economic unit: the Altman Z-Score and the Quick Test Kralicek Test. Taking into consideration our sample made up of 44 economic units, through simultaneous use of Altman Z-Score and Quick Test Kralicek, was reached an important conclusion: both these indicators give the same opinion about the financial state an economic unit is being, classifying it in this way in groups with different risk degrees.

Moreover, it is to be emphasized that despite the field an economic unit is operating in, despite the value of its activities, name and power in market, there exists a factor which plays an important role in determining the final value of the economic unit, the risk. The lower the risk in economic units is, supposing that all other factors remain unchangeable, the higher the determined value will be.

In practical aspect, the evidence existing between two important judging models, Altman Z-Score and Quick Test Kralicek, their role in predicting bankruptcy and paying difficulties is a tool that is given to the runners of economic units. Through the use of these models, these runners will be able to predict on time the paying difficulties and eliminate bankruptcy.

If in Altman Z-Score model there were to be added more economic units, bankrupted or not, will bereached at much more complete conclusions as we suppose there would be included more financial reports in the model which in turn would raise the predicting ability of bankruptcy. What is more, the use of a different method of statistical analysis would mean an identification tool of the results of this model.

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