ENTREPRENEURIAL RISK AND PERFORMANCE: EMPIRICAL EVIDENCE OF ROMANIAN AGRICULTURAL HOLDINGS

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ABSTRACT: *The paper analyses some performance aspects in the significant holdings of Romania agriculture sector. Using the financial analysis tools and information provisioned by the statistical support of companies, we intended to identify the changes manifested in their economic financial environment and the possibility of risk manifestation in agricultural holdings' activity. The results of the empirical case study made on selection of holdings listed in Bucharest Stock Exchange in the period 2007-2012 indicates that in the last years only a few holdings are in healthy zone, some of them have low performance indicators and a less safer financial position and the others present entrepreneurial risk. It can be considered that in agriculture sector among the internal factors of economic financial risk decrease are: investments, a better management of financing sources, equilibrium in financial flows and efficient use of resources.*

Key words: economic performance, bankruptcy risk, agricultural holdings, financial ratios

JEL Codes: G33, L25, Q14

Introduction

In competitive conditions specific to the market and current globalization, the success of companies becoming increasingly dependent on their ability to use in an efficient and sustainable way all the available resources. Performance is not limited only to a favourable correlation report between effects and efforts, for a company to be efficient it must achieve a level of effectiveness higher than that of its competitors.

Therefore performance evaluation of a company is a necessary process by which policymakers have a feedback on the measures taken and their effect on the system. Other stakeholders are also interested in establishing financial performance. Improving efficiency is an expression of the increasing of business value and the possibility of reward.

European legislation in force favours evaluation of firms performance in accounting-based approach using indicators included in the financial statements. On the basis of these indicators are calculated financial rates which allow for assessing the financial position of companies. These rates highlight the performance recorded by companies, aspects linked to deterioration of the financial balance, and the risk occurrence.

Romania's agriculture is an important sector of the national economy. It has achieved 5.3 percent of the gross domestic product in 2012. Romania holds 7.8% of the Utilized Agricultural Area of EU 27 and 21.2% of farm labour force, suggesting the high potential agricultural land of the country [Eurostat, 2011). However, the agricultural practices used do not provide an effective utilisation of this potential. Agricultural activities are conducted on small surfaces which give a subsistence character to agriculture; productivity of labour force is reduced making the agricultural output to about two times lower than average indicator in the EU 27.

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This paper aims to assess the financial health of agricultural holdings in Romania to identify ways to improve performance and reduce the risk of activity. For this study have been selected agricultural holdings listed on the Bucharest Stock Exchange pursued during the period 2007-2012. They have as object of activity crop production and livestock farming. Information needed for performance and risk evaluation originate in the financial statements of the companies.

In order to determine companies' performance, rates are calculated for operational efficiency, balance indicators and rates of profitability. Establishing of the entrepreneurial risk is made using the Altman's model revised (function Z prime). Data analysis on the whole and on individual firms allows determination of performance as well as of the main factors which exercised a more important impact on it and on the degree of risk. The Z prime scores obtained evaluate the selected agricultural holdings according to their degree of safety and financial health.

Literature review

In all areas, the success of companies depends to a large extent on the quality of financial management, where issues of efficiency and profitability aspects rank central. In the literature there are numerous studies that address issues related to performance and its assessment in order to improve it and lower the business risk.

Pershing (2006) considers that improving performance level of any individual, company or organization is the result of the joint action of several processes such as: performance analysis, cause analysis and intervention selection. Increasing performance involves detecting the modality in which the correlations between needs and resources are formed, control the company's ability to generate positive financial flows, analyzing the causes of gaps in performance, and to identify the necessary solutions to solve the existing issues.

Many studies deal with aspects of performance analysis using financial measures provided by the information accounting system. The required performance evaluation indicators are used individually or in the form of rate of structure, balance, liquidity, solvency and profitability. These rates provide information that can determine the situation and the financial position of a company (Gallizo and Salvador, 2003). Some authors consider, however, that financial rates are traditional tools for quantitative analysis of firm performance and are not appropriate and sufficient to ensure a good foundation of decision-making processes in the long term (Sandoval, 2001).

After 1980, based on the theory of Modigliani Miller (1958) regarding the determinants of value, Stern Stewart & Co. has developed a series of modern methods to evaluate performance. These alternative indicators are value-based measures that have been introduced and used in practice in order to maximize on the long-term the firm value, an approach which is more useful for shareholders' interests. They are known as FCF (Free Cash Flow) model, EVA (Economic Value Added) model and MVA (Market Value Added) (Stewart, 1991). Another model is the CFROI (Cash Flow Return on Investment) considered that reflects better than other indicators corporate financial performance because it takes into account inflation and refer to the real rates of return on capital invested (Yalcin et al., 2012).

Other possibilities for the analysis of firms' performance are based on multiple criteria decision making methods. In these methods the performance is established by using models of regression in which the independent variables are the criteria for evaluation the results; they show the impact of significant factors on the phenomenon under study.

Correlated with the firm performance, in the literature, aspects regarding the risks that accompany the business activity also are presented. The risk is studied through breakeven point method, financial leverage, credit worthiness analysis, econometric models or behavioural models in which managers behaviour influences the performance by risk assumed (March and Shapira, 1987, 1992, Bromiley, 1991).

In the firms practice is widespread the risk approach through the prism of some impact factors that can be determined based on financial ratios. Such an example is the Altman model or Z-

score model, and ZETA models. These are multifactor models that combined several financial ratios derived from the balance sheet to explain the bankruptcy risk of companies. Introduced in 1968 by economist Altman, Z-score model was later revised for a better adaptation to the economic environment (Altman, 2000). ZETA bankruptcy identification models are models of second generation based on the same idea of the correlation of certain financial rates. They express the potential threats and factors which can contribute to deterioration of the financial health of companies. They are models of the form of Z prime and Z double prime (Altman et al, 1977).

Although there have been criticisms regarding the effectiveness of these models in evaluation of performance and business risk in any country (Taffler and Agarwal, 2003), currently the usefulness of ratios analysis is reiterated, showing the power of financial rates to explore the main processes of value creation in firms' activity and bankruptcy risk prediction. Financial rates determined on the basis of accounting information on a longer period of time may be used as tools to maximize the value and success of a company (Bull, 2007).

The research methodology

The present study has as main objective the evaluation of performance and risk of activity in agriculture sector for the agricultural holdings listed on the Bucharest Stock Exchange (BSE). In order to achieve the objective a general theoretical framework and empirical study is carried out.

In the agriculture of Romania, in 2009 there were a total of 866870 commercial farms. These are small in size with an average of 3.7 ha, which represents an economic size 8 times smaller than the average indicator in the EU 27. They use average total assets in the amount of 38849 euro, farm net value added is 5819 euro (around four times less than the average in the EU) and net farm income is an average of 4664 euro according Farm Accounting Data Network.

In order to make the research we used data for the period 2007-2012. They have been taken from the financial statements of companies operating in the agriculture branch of plants cultivation and livestock farming and traded at Bucharest Stock Exchange.

In the sector "Agriculture, hunting and related services" are currently listed on BSE a number of 145 companies. Of them in group CAEN 011 Plants cultivation are 19 companies, in CAEN 012 Livestock farming are 13 companies and 5 companies in group CAEN 013 Activities in mixed farms. Of the total of 37 companies listed in the farming sector (excluding related services for agriculture) only 12 firms (33%) are transacted and they have been selected for the empirical study, the others failed to be traded on BSE.

The objectives of the study refer to some aspects as:

- economic and financial behaviour characterization of agricultural companies listed at BSE;
- performance analysis activity of agricultural holdings;
- to determine the potential financial difficulties and detection the possibility of bankruptcy risk manifestation;
- determining factors which may have a greater influence in the risk appearance.

The assumption underlying this study is: all agricultural holdings selected are equally sound with respect to financial health.

The research methodology is suggested by the necessity to achieve the proposed goals and is based on some methods and procedures specific to financial analysis. The ratio analysis is a suitable tool for assessing the financial position and performance of firms. Also the multi-varied approach based on a second generation Altman model revised (Z prime) allows the risk detection and forecasting the financial health of non- manufacturing companies.

This study contributes through the results obtained from the analysis carried out to a better knowledge of the economic-financial health of agricultural holdings, identification of some impact elements and predicting their viability in the actual context of Romanian economy.

Indicators to financial assess the performance and risk – theoretical framework

The annual reports of companies favour the performance evaluation using some financial indicators that highlight the level of return and risk assumed by managers.

The most useful rates of profitability are: Return on assets (ROA), Return on equity (ROE) and Return on sales (ROS).

Return on Assets is a key profitability ratio that indicates the capacity of all the resources managed by the company to generate profit. It is calculated by dividing net income to total assets of the company. Because ROA shows the level of capitalization it is indicated for performance evaluation in the same branch and less for comparisons between different economic sectors (Susan et al., 2008).

Return on equity express profit return on owners' equity investments in the firm. It is the net profit divided by the total shareholders' equity shown in the balance sheet.

Return on sales (ROS) shows a firm's efficiency to convert sales into profits. It is calculated by dividing the net profit to sales. Currently for most businesses ROS is about 4-5% (Pride et al., 2012).

In the firms activity the risk analysis is necessary because it provides the evaluation and estimation of the fair value of an economic strategy. It depends on the actual environment in which the company operates as well as taking decisions on the use of the opportunities encountered with. The risk management within the company aims to identify the threats in different fields and to reduce them so in this way the company will generate reasonable return for investors. Modern companies use Enterprise risk management (ERM) in order to integrate risk management process in the system, strategy and organization culture (Cowan, 2005)

The entrepreneurial risk is associated with the success or bankruptcy of a business, and resulting from: personal characteristics of the entrepreneur, intangible influences, influences of operations, market climate, business environment (Miles, 2010).

The risk can be studied using various methods by which most commonly used are financial ratios and Altman model. Over time the financial ratios have proven to be useful in identification of the company's bankruptcy risk. Considering the financial ratios used in various studies for risk analysis (Miles, 2010), their significance and legislative regulations in the field (OMPF 3055/2009), in risk analysis, different rates may be used including: current ratio, debt to equity ratio, total debt to total assets.

Current ratio indicates the warranty to cover current liabilities from current assets for a minimum value of 2 (OMPF 3055/2009). This is calculated by dividing current assets to current liabilities and contains the relative expression of working capital. High value indicates the existence of a long-term financial balance and an adequate financing of operating activities. In this case the company has favourable conditions to record performance and business risk is reduced.

Debt to equity ratio (DER) shows the funding policy practiced and provides information about the need for external funding and financial security of the company. If DER is less than zero the company manages funding sources correctly, has a high degree of financial autonomy and a low risk of the activity. In the case of a report higher than zero company is not solvent and its activity risk is high. It is considered that the best companies are those that are based in primarily on their own sources of funding and face a lower financial risk (Wald, 1999). Debt to equity ratio expresses the degree of indebtedness and it should have a level of maximum 66 % in order not to be affected the financial security.

For determining the financial health of companies, a method widely used is the Altman's Z score model. In its original form, it is a mathematical expression that includes five financial ratios. The model was used mostly for studying risk in the publicly traded manufacturing companies (Altman, 1968):

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + x_5$$

where Z represents the overall index;
X_1 - working capital to total assets (percentage);
X_2 - retained earnings to total assets (percentage);
X_3 - earnings before interest and tax to total assets (percentage);
X_4 - market value of equity to book value of total liabilities (percentage);
X_5 - sales to total asset (number of times).

The second generation models (ZETA) have been developed after 1976 by Altman and they are Z prime and Z double prime models. These models have a larger application area because one can apply both in risk analysis of manufacturing companies as well as from non-manufacturing companies, except banks and insurance institutions (BR, 2013).

The financial measures contained in the function Z prime (Z') are the same as in the model developed in 1968, but have other weightings of importance. They express the aspects relating to profitability, liquidity, leverage, and debt and patrimony productivity. The scores obtained provide comparability between companies, between them and the average of the economic sector or among companies from various industries, sectors or countries.

$$Z' = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$$

where for X_4 the market value of equity was replaced with book values of equity.

Concerning the Z double prime model, this excludes sales to total assets ratio in order to reduce its importance in setting up the score. The results obtained are identical to those from the revised five variables Z model (Z prime) (Altman, 2000).

The Z prime model's the key ratios which have a significant impact in the risk manifestation are:

- working capital to total assets ratio which expresses the liquidity of a company's assets related to firm size; the higher it is, it shows better financial management and lower risk;
- retained earnings to total assets is a measure of leverage because the rate is calculated based on the cumulative profits (retained earnings) used by the company over time to finance its activities that means financing from own sources and the use of smaller loans;
- earnings before interest and tax (EBIT) to total assets measures the ability of the assets to generate profit, as an expression of patrimony productivity;
- book value of equity to total liabilities indicates the structure of the financing sources and business solvency as long as the ratio of the two funding sources is higher than one;
- sales to total assets ratio shows the ability of the assets to generate sales and to be competitive in the market conditions.

The score obtained from the function Z prime can be interpreted as follows (Altman, 2000):

- Zone I of bankruptcy risk, for Z '<1.2
- Gray area, 1.2 <Z '<2.9
- Zone II of financial health for Z '> 2.9

In the empirical study on selected agricultural holdings in Romania, in order to carry out the analysis we used Z prime function.

Results and discussions

Applying Altman's Z revised model for companies of the branch Plants cultivation and Livestock farming transacted on BSE and some Financial ratios has led to obtain information on the efficiency of the activity and the risk grade expressed both at the level of each company as well as

the total. For all the selected holdings of agriculture, the statistical indicators of financial security are presented in Table 1.

Table no. 1.

Performance and risk indicators, 2007-2012

Profitability and risk indicators	**Min**	**Max**	**Mean**
Current ratio	0,188 HOLS 2012	23,972 HOLS 2008	1,04
Total debt to total assets ratio	0,009 HOLS 2012	0,989 PAJY 2012	0,541
Return on assets	-0,149 AVOR 2010	0,59 AVLE 2007	0,005
Return on equity	-4,345 AVLE 2007	0,96 PAJY 2007	0,012
Return on sales	-168,654 HOLS 2011	27,96 HOLS 2008	0,007
X1 Working capital/Total assets	-0,331 AVLE 2007	0,904 AVOR 2011	0,015
X2 Retained earnings/total assets	-5,49 PAJY 2008	0,037 CCEV 2008	-0,033
X3 EBIT/Total assets	-1,49 AVOR 2010	0,72 PAJY 2007	0,009
X4 Equity/Liabilities	0,011 PAJY 2012	95,811 HOLS 2012	0,824
X5 Sales/Total assets	0 PAJY 2012	4,339 CCFD 2011	0,714
Average Z' Score (selected holdings)	-6,37 PAJY 2008	39,16 HOLS 2012	**1,07**

Source: data calculated on the basis of the financial statements of companies (www.bvb.ro).

The data presented in Table 1 show that in the group of analyzed companies, the performance indicators were modest. On overall the assets managed by the companies had an average profitability (ROA) of only 0.5% reflecting the reduced operating efficiency.

The lowest level of ROA was -14.9%, the highest being 59%. Return on equity was also lower on average 1.2%, with a minimum of -434.5% and a maximum of 96%.

During the analysis period the agricultural holdings had a low efficiency of sales, ROS averaging 0.7%. Current ratio was greater than one which shows that companies were able to finance operating activities. But its level is low (below 2) which indicates particular vulnerability of agricultural holdings linked to the need to appellate to loans.

The average level of debt to equity ratio (DER) was 54.1% high, that shows diminish financial autonomy and increased risk by taking bank credits.

The study of the score obtained on the whole of analyzed agricultural holdings shows that in the period 2007-2012, their activity was quite close to the gray zone, fits however in risk area, with a Z score for the total group and period of 1.07. Analysis of average financial rates shows the components that had a role in the manifestation of the entrepreneurial risk.

On the analyzed agricultural holdings liquidity of the assets is low. The rate value of Working Capital/Total Assets shows that firms financed their current activity during the period of analysis only at a rate of 1.5 % from stable financing sources. To fill the need for additional funding sources to the current activity, they have turned to loans which meant diminishing financial security and an increased risk. The highest level of liquidity was 90.4 % and the lowest -33.1 %.

Leverage ratio is negative. This situation is due to substantial losses recorded in some of the holdings and dividend policy. Rate also indicates that the agricultural companies are dependent on

credits and use in small part financing of assets of retained earnings. This rate ranged from -5.49 to 0.037.

Rate of profitability (EBIT/Total Assets) is positive but very low (0.9 %). This shows a low level of productivity of agricultural holdings that fail to use their operating capacity at a more advanced level.

The rate of financial security (Equity/Liabilities) shows that the agricultural holdings had a disadvantageous funding structure, the external financing sources exceeded internal sources. The rate of 0.82 is less than one and shows financial insecurity of agricultural activities, which are dependent on loans.

Sales/Total Assets ratio reflects a low contribution of assets companies in agriculture to achieve value. The level of the rate is subunit and suggests that they have a rate of growth for turnover lower than the growth rate of total assets. The assets don't have the capacity to generate sufficient value for companies to achieve higher revenue from the sale of production and this is one of the major causes of the lack of performance and precarious financial situation in the group of firms considered.

The overall analysis of performance and risk should be supplemented by elements aimed at companies as individual entities. The specific characteristics of their production activity and of financial management give them a certain financial health so that they can be distinguished and falling within different areas of risk. In calculus of all financial ratios and Z' scores we used the average level of indicators. In this way it was eliminated the specific influences of the years and some general tendencies of the performance and risk manifestation in agriculture were obtained.

Distribution of firms' financial security and risk manifested during analysis period is shown in Table 2 and Figure 1.

Table no.2.

Agricultural holdings according to the level of business risk, 2007-2012

Agricultural holdings	Z' Score - average	The Risk (I-bankruptcy zone, G-gray zone, II-non-bankruptcy zone)
CCOM	1,96	G
CCEV	0,83	I
PAJY	1,46	G
LEUY	0,69	I
HOLS	14,08	II
AVIM	-0,09	I
AVLE	0,06	I
AVBW	1,89	G
AVZU	1,4	G
AVRE	1,25	G
AVOR	6,89	II
CCFD	3,29	II
Total	**1.07**	**I**

Source: own calculated data

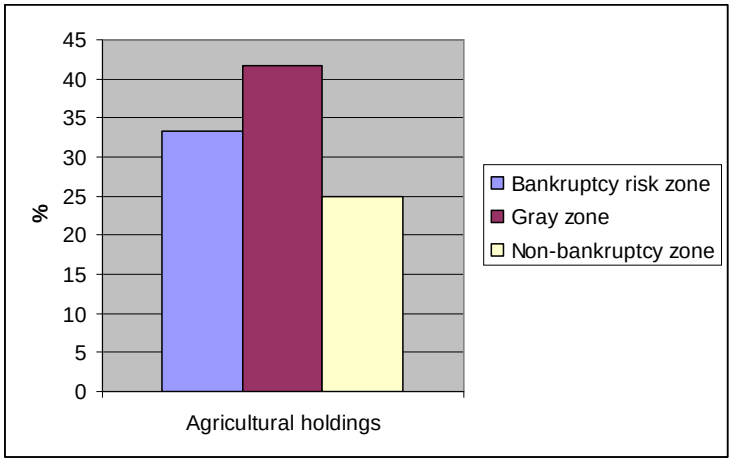

Figure no. 1. - Distribution of selected farms, 2007-2012

It can be noticed from Figure 1 that in the area of financial safety are only 25% of agricultural companies, most of them being in the gray area, an area in which entrepreneurial risk is within acceptable limits. A significant number of firms 33% are operating on criteria of low efficiency and have a high degree of bankruptcy risk. Their lack of performance contributed to the deterioration of the overall industry profitability in the period under analysis.

Conclusions

The purpose of this study was to evaluate and to classify firms in agriculture listed to Bucharest Stock Exchange according to the degree of their financial security. For analysis we used the model Z prime in contrast to the traditional function of Z, it being more accurate to characterize the elements that favour the bankruptcy risk within companies in the private sector (Altman, 2000). It was determined an average Z prime score for each company and also for all group in order to have a synthetic measure of financial situation. Utilization of average financial ratios in Z' model allowed formulating some conclusions with a more general character.

The results obtained show that the risk is constantly present in the activity of Romanian agricultural holdings and the financial health is very different from one company to another.

Most of the companies are in the gray area which is an alarm signal. These companies must rethink their growth strategy in the next few years to avoid a worsening financial security and the risk of bankruptcy. Other holdings are already evolving towards bankrupt, showing lack of efficiency and operating and financial risk. A third of total analyzed holdings have high financial security accounts and they have an advantageous combination of factors by which depend the manifestation of entrepreneurial risk: the existence of a sufficient positive working capital to ensure the financing of investment and operating activity in order to achieve development by using mainly their own sources; increase the liquidity of the assets of the companies; efficient resource management involved in economic activities in order to increase the profitability of assets managed; combining all sources of financing and managing advantageous debt without affecting the financial security; strong stimulating of sales and acceleration of the assets rotation leading to increased profitability. The ways identified to a better management of entrepreneurial risk for the agricultural holdings are in accordance with the findings of recent studies carried out in other countries (Praveena et al, 2012, Simic et al., 2012).

The main findings put in evidence that among the causes which favoured the poor financial situation of agricultural holdings on the whole are: low liquidity of assets, reduced performance of assets and capitals used, and almost the exclusive dependence on bank loans.

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