EMPIRICAL STUDY ON THE IDENTIFICATION AND ANALYSIS OF A PROFILE OF THE AGRICULTURAL COMPANIES

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Abstract

In the current economic environment, marked by a strong instability of the markets, at the real flows and at the cash flows, by significant social changes and with major food price increases, the likelihood of a food crisis is looming more and more obvious. In this situation, in Romania, the agricultural sector can be the engine of economic recovery and the determinant factor in ensuring the food security for our people. In order to streamline this sector, neglected over the past decade, the essential condition is the correct and timely information to investors. They must be given the opportunity and the necessary instrumentation to know the profitability profile of agricultural companies in order to make the best financial decisions. Based on data collected in the agricultural sector companies, listed on the Bucharest Stock Exchange (BSE), this study aims to identify and analyze a profitability profile (for the three types of return: return on assets, return on equity, return on turnover). In analyzing the profitability profile of the firms, the activity objects of agriculture were taken into account (animals breeding and plants crop), the membership of a particular region of the country and the financial structure chosen by specific values of the financial leverage. Moreover, the influence of these factors on the three types of returns examined was determined and estimated. The study was conducted based on a BSE survey-based of 42 listed companies, based on financial information reported for the financial year 2009. In order to obtain the research results, the data analysis methods used were the multiple correspondence factorial analysis (to obtain the profitability profile) and the linear regression analysis with alternative variables, of the Dummy type (to estimate the influence of the factors on the returns). Data were processed using the statistical tools SPSS 19.0 and SAS 9.2.

Key words: profitability profile, financial leverage, agriculture field, multiple correspondence factorial analysis, linear regression analysis

World economy is marked, nowadays, by strong convulsions manifested in all activity fields, whose causes and effects are difficult to identify. This stresses the need to abandon the speculative dimension and to go back to the determinant segment of the economic activity, respectively the production process. Under these circumstances and because of the exponential growth of the world's population, which tends to reach the threshold of 7 billion inhabitants, the maximum capitalization of every economic and environmental opportunity is a vital condition. Insuring the food independence of each nation tends to become, if it has not already, a major concern of decision makers, who must draw the macroeconomic development strategies.

Romania, the owner of a special natural environment, favorable to developing agricultural activities, must find a way to revive the activity of this sector, neglected during the last 20 years. In the conditions of the increase of the prices of food and of with the foreshadowing of a significant food crisis, the development of agriculture can be not only an opportunity to survive, but also a true trigger of economic boost, so necessary to Romanian society.

All these desiderata can be reached only by launching policies of massive investment in the field. This implies increased involvement both from a financial perspective, and by creating the necessary conditions to attract investors and render the activity in agriculture more efficient. We refer here, among others, to giving subventions for the fuel used in works specific to the field, to creating local institutions that would concentrate and solve problems specific to this field, to policies that support and promote traditional agricultural activity segments etc.

The problem of improving the efficiency of the companies that perform their activities in agriculture imposes an evaluation of profitability under all its forms: of the operational activity (return on assets), financing (return on equity) and commerce (return on sales). An entity can perform an efficient operational activity but, because of the reticence of banks and investors in providing resources to a sector characterized by the uncertainties generated by the natural factor, may

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encounter difficulties in insuring the necessary capital, at the opportune moment. Also, entities with an efficient operational activity may face a lack of a market for the resulting products, a situation generated not by objective reasons, specific to the interplay between demand and offer, but by the various engagements taken by our country (the negotiated milk quota, the lack of the right to cultivate genetically modified plants, the elimination of the vaccine against swine fever, etc.). This is why drawing profitability profiles for the companies in the agricultural field according to the geographical area and to their activity field is an important support for adopting correctly based economic decisions, which would guarantee the effectiveness of each entity, in particular, and develop the sector, in general.

The ability of the company to capitalize, in optimum conditions, upon the products obtained, is evaluated through its return on sales. In this respect, the adopted price policies and production strategies concerning quality gain a special importance. According to the economic conditions on the market, it is possible to rely on a policy of high prices that would insure a significant profit margin, in comparison with the volume of income, or on low prices, tending towards an increase of the market quota. In all these situations, a constant that marks the continuity and profitability of the company's activity is the preservation or improvement of the quality of the products.

The return on assets reflects the entity's ability to pay back the capital invested in the current activity of the company, ignoring its provenience (Mironiuc, M., 2009). In order to be characteristic for an effective operational activity, the value of the indicator must exceed the level of the interest and inflation rate. This determines the owners of financial resources to release capital towards the economic entities.

Evaluated especially by investors and analysts, the return on equity reflects the extent to which the global activity of the organization helps return the capitals made available to it by the shareholders. This refers to the level of the return on assets, together with the degree of indebtedness of the company, the dimension of the return on equity, respectively its ability to distribute dividends to shareholders, as well as insure self-financing by reinvesting the obtained profit.

Mironiuc *et al.* (2011) consider that the dimensioning of the financial structure determines whether or not the development and stability objectives, set by the company's management, are met. Financial independence is insured by the proportion to which the shareholders' equity participates in forming the balance liabilities.

However, financial risk is generated by the dimension of the borrowed resources, which have a coercive effect on the company. Their reimbursement, together with the corresponding interest, must be made irrespective of the economic results of the entity that uses them. Also, these resources determine decisional independence, through the required guarantees. This is why the appropriateness of the type of attracted resource to the specificity of the needs to be funded, as well as balancing the rights with the implied obligations, plays an essential role in the life of economic entities.

MATERIAL AND METHOD

Starting from the ideas presented in the consulted specialized literature, the present study aims to identify and analyze a profitability profile for the companies in the agricultural field quoted in the Bucharest Stock Exchange.

The positivist approach is concerned with a methodological process through which a series of work hypotheses are suggested, which we wish to test based on empirical results (Smith, M., 2003). The validation of these hypotheses justify the essential role of the economic and financial indicators in obtaining a profitability profile, and quantifies at the same time the influence of explanatory factors on profitability.

In order to meet the objectives of the research, this study aims to validate the following work hypotheses:

Hypothesis 1: Based on the data presented in the annual financial statements, for the analyzed sample, we can obtain profitability profiles (corresponding to the operation and to the financial activity) according to regions and activity fields. We attempt to identify these profitability profiles.

Hypothesis 2: At the level of the analyzed sample, the activity field and return on sales have a significant influence on the return on assets for companies in agriculture. We aim to quantify these influences.

Hypothesis 3: At the level of the analyzed sample, the activity field and the return on assets have a significant influence on the return on equity for the companies in agriculture. We aim to quantify these influences.

The empirical validation of these hypotheses has implied selecting quantitative and qualitative variables, symbolized and described in table 1.

Obtaining the operational and financial profitability profiles implies the discretization of the numeric variables considered in table 1 and including category variables specific to the activity field and to the regional location of the analyzed companies. The symbols and descriptions of the qualitative variables are presented in table 2.

Table 1

Analyzed variables

Variable symbol	Meaning	Computing method
Re	Return on assets	Operating income/ Total assets (OI/ A_t)
Rf	Return on equities	Net result/ Total equities (R_{net}/ C_{pr})
Rc	Return on sales	Operating income/ Total sales (R_{exp}/ CA)
LF	Financial leverage	Total debts/ Total equities (D_t/ C_{pr})

Table 2

Analyzed category variables

	Variable symbol	Category label		Variable symbol	Category label
1	Ctg_Re	1 = Operating loss 2 = Re medium 3 = Re high	5	Region	1 = Muntenia 2 = Moldova 3 = Transylvania
2	Ctg_Rf	1 = Financial loss 2 = Rf medium 3 = Rf high	6	Business object	1 = Animals breeding 2 = Growing of plants
3	Ctg_Rc	1 = Commercial loss 2 = Rc medium 3 = Rc high		Dummy_OBJECT	1 = Animals breeding 0 = Growing of plants
			7	Dummy_Muntenia	1 = The company is from Muntenia 0 = The company is not from Muntenia
4	Ctg_LF	1 = LF optimal 2 = LF high 3 = LF critical	8	D_Transilvania	1 = The company is from Transylvania 0 = The company is not from Transylvania

The analyzed population is represented by companies whose activity field is *animals breeding* and *growing plants*, the sample including a number of 42 companies (17 companies in the first category and 25 in the second category).

The main analysis methods for the data used in the study are: *ratio analysis* (Mironiuc, M., 2006), *factor analysis of multiple correspondences* (AFCM) (Lebart, M.J., Piron, M., Morineau, A., 2006) and *linear regression analysis with qualitative independent variables (dummy)* (ARD), based on ANCOVA models.

The data was processed using the SPSS 19.0 and SAS 9.2 statistical software.

RESULTS AND DISCUSSIONS

Determining the financial profitability profiles implies knowing the degree of association between the region where companies perform their activity and the specificity of the analyzed activity field. Therefore, for the analyzed sample, we can synthesize a series of results concerning the percentage of companies that perform their activity in one of the two activity fields, in each of the three analyzed regions.

Table 3

Percentage of the companies in each activity field, according to the region

	Percentage (%)	Region			Total
		Muntenia	Moldova	Transylvania	
Business object	Animals breeding	42.10%	16.70%	47.10%	40.50%
	Growing of plants	57.90%	83.30%	52.90%	59.50%
Total		100%	100%	100%	100%

Of the data presented in table 3 we can notice that, for Romania, the companies in the agricultural field focused on growing plants are the majority, and in this respect the region of Moldova significantly surpasses the other regions, with a percentage of 83.30% of companies whose business object is the one formerly mentioned. At the opposite pole, the region of Transylvania shows a partial equilibrium, as 52.90% operate in cultivating plants, and 47.10% in breeding animals.

Based on these results and taking into account the recorded profitability values for each type of profitability taken individually, figure 1 shows the *operational profitability profile* of the companies in agriculture, for Romania, according

to their economic and commercial profitability, business object, and originating region.

Based on the *operational profitability profile*, at the level of Romanian regions, for the fiscal year 2009, we can notice that most agricultural companies in Moldova focus on growing plants and less on breeding animals. Moreover, companies whose business object is growing plants record average and above average

values of the return on assets and the return on sales. In what concerns companies in Moldova whose activity field is breeding animals, we can notice their polarization: one group is characterized by average vales of the return on assets and the return on sales, and the second group is affected by operational and commercial losses.
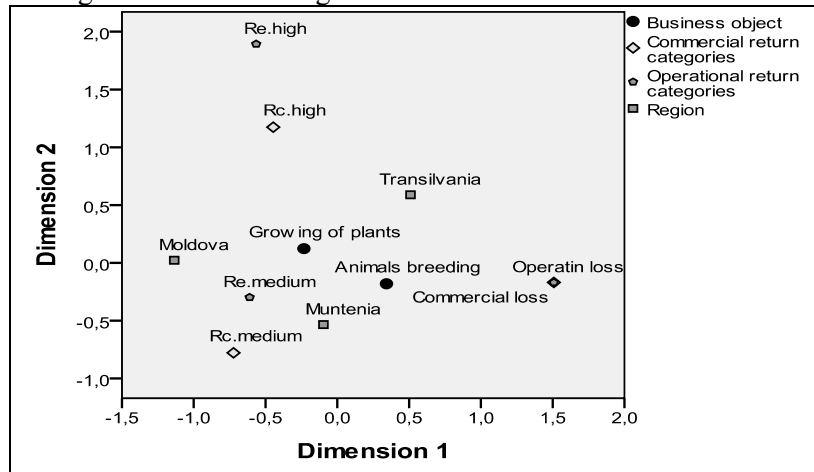

Figure 1 **Operational profitability profile of Romanian companies operating in agriculture**

For the companies in Muntenia (characterized by an approximately equal number of companies operating in breeding animals or growing plants), we can state that their activity is profitable. Therefore, the average values of the ratios between the operational result and the total assets or the sales figure insure the well-functioning of the company: sales lead to obtaining enough profits to insure the necessary resources for investments (updates), with an impact on the company's performance and productivity.

Unlike companies in Moldova, those in Transylvania develop almost in the same proportion activities directed towards growing plants and towards breeding animals. From the

profitability viewpoint, we can notice a strong contrast, a polarization of the companies in agriculture, into two main categories: companies with a high return on assets and on sales and companies with operational and commercial losses. Analytically, companies whose business object is growing plants show high values of the return on sales (due to the efficiency of product usage activities) and of the return on assets. In an analogous manner, companies whose business object is breeding animals mainly show commercial and operational losses (caused by negative operational results, determined first of all by the associated costs).
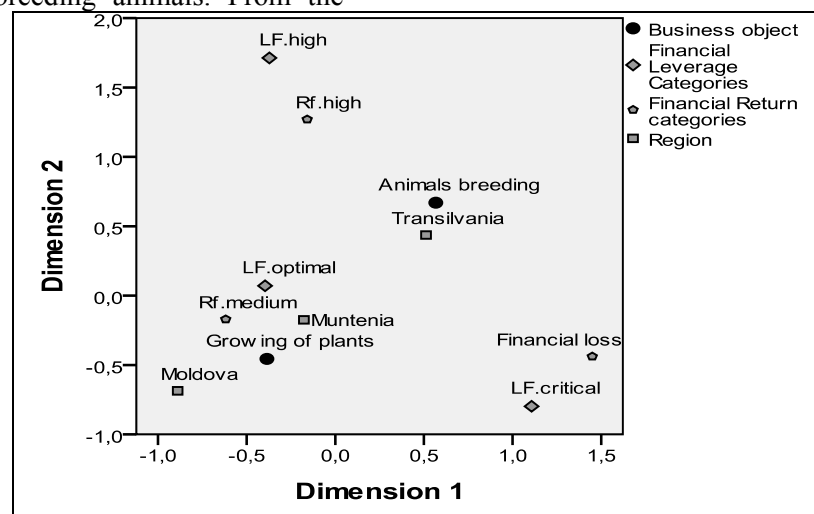

Figure 2 **Financial profitability profiles of Romanian companies operating in agriculture**

In what concerns the *financial profile* of companies in agriculture, figure 2 shows a significant differentiation of the companies in Moldova and Muntenia compared to those in Transylvania. Therefore, the regions of Moldova and Muntenia are mainly characterized by companies whose business object is growing plants (corn in Moldova and wheat in Muntenia) and that have average values of the return on equities, obtained based on an optimal degree of indebtedness. As a result, the financial expenses associated to financial debt will not significantly diminish the net result of the companies, determining sufficient triggers of the return on equity.

Unlike the above mentioned companies, those in Transylvania record either high values of the financial leverage, accompanied by high values of the return on equity, or critical values of the financial leverage and implicitly financial losses. This can be explained, on the one hand, by the investment policy chosen by each individual company: we can notice that an increase in the degree of indebtedness of the companies with an agricultural profile in Transylvania for making investments determines the consolidation of their financial position and performance and obtaining financial results that would allow paying the shareholders. The other category of companies with an agricultural profile (animal breeding) is characterized by a strong polarization of the financial profile. It is possible to identify a group of entities which, with a high degree of indebtedness, obtain a significant return on equity, as the expression of efficient management and investment policies, as well as a series of companies with critical values of the financial leverage (caused either by the negative values of the equity resulted from the reported annual losses, or from oversized debts), with implications on the net result, mainly affected by the associated financial expenses. These reduced financial results (sometimes negative) will not allow paying the contributors of equity to an extent that would justify their expectations and the taken risk, questioning thus the decision to preserve the participants in the concerned companies.

In order to quantify the connections established between profitability values and the business object of the companies in agriculture, we suggest two econometric models through ARD:

- $Re = \beta_0 + \beta_1 Rc + \beta_2 Dummy\_OBJECT + \varepsilon$, to determine the influences of the return on sales and of the activity field on the return on assets;
- $Rf = \gamma_0 + \gamma_1 Re + \gamma_2 Dummy\_OBJECT + \varepsilon$, to determine the influences of the return on assets and of the activity field on the return on equity.

The results of processing the database using the statistical tool can be found in table 4.

Table 4

Estimations of the parameters of regression equations

Model 1 **Re** - dependent	Variable	Coefficients estimations		Associated Sig.	Model 2 **Rf** - dependent	Variable	Coefficients estimations		Associated Sig.
Sig ANOVA = 0.00	Constant	β_0	0.045	0.00	Sig ANOVA = 0.00	Constant	γ_0	-0.097	0.00
	Rc	β_1	0.050	0.00		Re	γ_1	0.027	0.00
$R^2 = 0,353$	Dummy_OBJECT	β_{02}	-0.050	0.00	$R^2 = 0,705$	Dummy_OBJECT	γ_2	-0.045	0.00

For model 1, we can state with a confidence of 95% that for an increase by 1% of **Rc**, irrespective of the activity field, the average level of **Re** will increase by 5%. In this sense, the increase in the operational result based on the sales figure, through a policy that capitalizes on the finite products of agricultural companies, will determine results able to support their activity and future investments for modernization and technological updates. In what concerns the differences between the business objects, we can state that Romanian agricultural companies concerned with growing plants have a return on assets 5% higher than those concerned with breeding animals, and the differences are generated by additional operational expenses, as well as by the operational cycles that dictate the activity of these companies.

For model 2, we can state with a confidence of 95% that for an increase by 1% of **Re**, irrespective of the activity field of the agricultural companies, the average level of **Rf** will increase by 2.7%. We can notice that an increase of the sales figure will determine an operational result enough to cover certain financial losses, and the net result obtained will be able to be used for paying the shareholders' equity. In what concerns the business object, the companies concerned with growing plants have an average level of **Rf** 4.5% higher than that of companies concerned with

breeding animals. These differences come from the difficulty to rapidly capitalize upon the finite products, from the additional operational expenses, as well as from the completely different operational cycles, which may not lead to a fast return on investment in the case of companies which operate in animal breeding.

Based on these results, we can draw the conclusion that, from the point of view of profitability, agricultural companies concerned with growing plants are more profitable than those concerned with breeding animals. In order to reduce these differences, it is necessary to adopt strategic measures at the national level, which would significantly contribute to increasing the profitability of these companies, through a series of protectionist policies that would ensure an appropriate market for them, the reduction of operational costs through subventions and access to funds based on foreign resources with low interest rates.

CONCLUSIONS

Based on the results of the research and on the validation of the three work hypotheses, it was possible to identify operational and financial profitability profiles for Romanian agricultural companies quoted in the Bucharest Stock Exchange. Moreover, it was possible to identify and estimate a series of influences of specific factors (activity field) on the level of the return on sales and on equity. The knowledge of these profiles comes from the importance of strategic decisions of the investors in placing capitals, or of managers in making the best decision in order to

maximize the expected results and implicitly the company's profitability.

The limits of the study come from the low number of companies subject to analysis, caused first of all by the current economic conditions that have determined the insolvency of certain companies, a reduction in the activity of others, or their reorganization.

Future directions of the study include obtaining profiles in time, in order to be able to determine a trend with the purpose of making forecasts. Moreover, based on the noticed return fluctuations, we can identify the main causes that triggered them, in order to suggest measures that would minimize them or limit their negative effects.

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