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AN ASSESSMENT OF THE AGRICULTURAL ENTERPRISES' SOLVENCY WITH THE USAGE OF THE ALTMAN MODEL

HODNOTENIE PLATOBNEJ SCHOPNOSTI POĽNOHOSPODÁRSKYCH PODNIKOV PODĽA ALTMANOVHO MODELU

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The paper deals with the analysis of the relationship between the Z index in Altman model and selected features which characterize agricultural enterprises e.g.: land ownership, cropland area, assets and ownership capital value, profitability, liquidity and debt turnover. In order to provide the presented research a number of 118–123 big agricultural enterprises was surveyed in years 2000–2004. It was stated that the economic forecast of solvency level of agricultural enterprises is relatively difficult. The APA companies have been characterized by the highest degree of Z index, while in enterprises of leaseholders and owners the said indicator was placed on rather lower level of the ambiguous classification. In enterprises with the smallest area of cropland, this indicator was the highest. Together with a profitability growth of land use, the indicator Z has been increased relatively. This kind of relationship has not been found in the case of ownership capital profitability. The lack of current liabilities in enterprises did not determine their solvency explicitly. The enterprises with the highest level of current liquidity were characterized by the highest Z indicator, and generally they were in the area of solvency. The relationships between the debt turnover indicator and agricultural enterprises' solvency were not confirmed explicitly.

Key words: Altman Z index, assets and ownership capital, profitability, liquidity, debt turnover

The assessment of the enterprises' financial situation is a process of arriving financial decisions, which concern gaining the capital, introducing the investments and setting the directions of financial investment allocations, in order to maximize enterprise value (Czekaj and Dresler, 1995). Methods of estimating financial situation of enterprises are diverse, from classical indicators in static and dynamic point of view to more advanced statistic methods. The discriminatory models belong to these methods. They are used to predict financial problems, e.g. the bankruptcy of enterprises and risk of credit rating loss. The discriminatory models belong to the class of the synthetic indicators systems. In last years many models, which enable to forecast the enterprise bankruptcy, were devised in western countries. Models that are presented in the literature, aside from, which quantitative methods were generally used to their construction, are based on the information about enterprise condition, provided by financial indicators.

The first method used to build multidimensional model forecasting insolvency was the discriminatory analysis, which to these days is found the most popular. The discriminatory analysis allows aggregating into one value, the information provided by many indicators, which characterize the current financial situation of the enterprise. The empirical research showed the considerable rightness of the prediction obtained on the grounds of discriminatory function.

The well-known creator of discriminatory analysis fundamentals W.H. Beaver began the trend of assessing enterprises condition in order to predict possible bankruptcy. The comprehensive index analysis, of both enterprises with good financial situation, as well as enterprises, which went to default, enabled to formulate conclusions, which have had the key meaning for all subsequent researches over the insolvency and its prediction. On the basis of dynamic indicator analysis it was stated that only few of financial indexes allow forecasting a

default, because their construction enables to indicate problems of enterprises even few years before their appearance (Hadasik, 1998). The other idea is the multidimensional model of K. Beerman, who undertook the attempt of the discriminatory function introduction for each previous year before the bankruptcy occurrence. It uses constantly the same financial indicators as the series of variables. These values depending on the forecasting period have assigned different variables, what diversify the estimation of the financial default level.

The application of the discriminatory analysis to the prognosis of the enterprises bankruptcy is connected to the first works of E.I. Altman, who first leant the model construction on lineal discriminatory function.^{1/} This model has established one fixed value of Z index, below which the enterprise was threatened with the insolvency. The area of the uncertainty and the safety value were also marked, and exceeding the uncertainty level means in general the unimpeded development of the enterprise. According to this idea of discriminatory functions and on the ground of empirical research there has been accepted the critical point of the Z index value, which enables to generate in principle two groups of examined units: those threatened with the bankruptcy and those being in a relatively good financial situation.

The models which predict the bankruptcy and take into account the specificity of the Polish economy, are these proposed by: J. Gajdka i D. Stos, D. Hadasik, A. Hołda, M. Pogodzińska i S. Sojak, E. Mączyńska oraz D. Wierzbą (Siemińska, 2002). One of the most well-known and first erected models, which is based on data of enterprises run in Poland, is the model of J. Gajdka and D. Stos. This model has been created with the usage of the lineal multidimensional technique of the discriminatory analysis. From

^{1/} The original form of the Altman's model from year 1968 is following (Altman, 1968).

among 20 selected indicators, five were classified into the main model (Hamrol, 2005). In Holda's model 40 polish enterprises which went bankrupt and 40 of those which continued their activity on the market were analysed. Enterprises became chosen due to their line of business, on the basis of the NACE – Statistical Classification of Economic Activities in the European Community (Prusak, 2005). The received multidimensional discriminatory function divided enterprises into two groups: threatened and not threatened with the bankruptcy (Zaleska, 2002). This model similarly to Altman's has its middle sphere. Presented models were the first signs of this kind of analysis in polish conditions and in the assessment area of the financial situation in enterprises on the stock exchange.

Material and methods

The aim of the elaboration is to qualify the relationships between the value of Z index in the Altman model and chosen variables characterizing the activity of agricultural enterprises. The applied criteria, used to categorise the enterprises, will allow for synthetic estimation of the said group according to the chosen feature.

The investigative period involves years 2000–2004. Researches were conducted in companies of Agricultural Property Agency (APA), enterprises with the lease of the ground from APA and enterprises, in which the land purchase from APA companies appeared.^{2/} The selection of research objects was intentional, and their managers agreed to impart the information.^{3/} The calculation of indicators was made according to variables in current prices. Analysed enterprises are situated on the whole area of Poland and include all provinces. The influence on results of the analysis connected with changes of the number of enterprises in individual legal forms was minimal, and authors' intention was to involve the greatest possible number of them in the research.

The application of a discriminatory analysis for research sector required different estimation of discriminatory function parameters. Altman revised the initial version of the Z function and offered in 1983 its modification with the usage of the same variables with one exception of X_4 variable, in which instead of the market ownership capital value, the balanced value (book value) was adopted. Repeated estimation of variables values and their following assignment did not cause further changes in the construction of particular indicators. This led to the creation of new form of model for those enterprises, which have not been listed on the stock exchange. The new version of the model called Z' function model has the following form (Siemińska, 2002):

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

This version of the model has been approved to the calculations and analysis, and it will be called hereinafter as „Z index.” For this above version of model, the following brackets of the enterprises classification are obligatory:

- $Z' < 1.23$ – the zone of insolvent enterprises,
- $1.23 < Z' < 2.90$ – the zone of ambiguous classification,
- $Z' > 2.90$ – the zone of solvent enterprises.

^{2/} The research became embracing enterprises which co-operate with the Institute of the Agriculture Economics and the Food-Economy – the National Research Institute in Warsaw.

^{3/} To the estimation were subjected 123 enterprises in years: 2000, 2001 and 2003; 122 enterprises in year 2002 and 118 in the year 2004.

By defined in such way the discriminatory function and adopted threshold quantities, the margin of error in prediction was defined on the level of 6% (Zaleska, 2002). The remaining Altman models being more versatile, had a multi-sectorial character.

The chosen model is characterized both by the rightness of the prognosis and simultaneous evaluation of all essential areas in enterprise activity, including the elimination of the contradictory information resulting from them. The sectorial area of usefulness of this model persuaded authors to analyse this group of agricultural enterprises on the base of its principles. Indications of discriminatory analysis models allow for suitably quick detection of enterprises, which are or in the nearest time will be threatened with the bankruptcy. Constant analysis of value changes in the discriminatory function in successive years enables countermeasures against bad financial condition of the enterprise in future (Sabuhoro and Sobolewski, 2006). However, enterprises, which were classified into the zone of the uncertainty, demand careful inference. In the elaboration, it has been assumed that higher Z index in this zone, the probability of the enterprise bankruptcy is higher.

In order to make the division of the agricultural enterprises, the method of quartiles representing the value of research features according to the established community classification was used. The columns with defined quartiles were arranged according to growing value of the agreed classification criterion, which allowed the separation of four groups of enterprises.^{4/} The first quartile involved enterprises with the lowest quantity of the given feature, the second quartile of the average quantity, the third quartile – higher than average, and the fourth the highest.

Agricultural enterprises were classified due to the criterion of the following quantitative features: the legal forms of farming, cropland area, real property value (thousand zł/hectare), the participation of the equity capital in liabilities in general (%), the profitability of land (thousand zł/ha of cropland), equity capital profitability (%),^{5/} the level of current liquidity and the indicator of debt turnover. In the last two criteria of the agricultural enterprises classification the fifth group was separated, i.e. those enterprises, which did not possess liabilities (classification according to the current liquidity) and debts (classify according to the indicator of debt turnover).

Results

In the Figure 1, the formation of Z index in agricultural enterprises depending on the legal form of farming the land has been introduced. On average in the case of subjected

^{4/} The number of agricultural enterprises groups were separated in the partition on quartiles in years 2000–2004 amounted properly: group I – 31, 31, 31, 29; group II – 31, 31, 31, 29; group III – 31, 31, 30, 31, 30; group IV – 30, 30, 30, 30, 30. The objects partition was made according to the criterion of the current liquidity ratio and was connected with the creation of group V with enterprises which did possesses any liabilities. The number of this group in years 2000–2004 amounted properly: 9, 6, 13, 12, 11. The classification according to the criterion of the debt turnover indicator also separated the group V of agricultural enterprises which did possesses any receivables. The number of this group in years 2000–2004 was shaped as follows: 31, 31, 29, 35, 10.

^{5/} During the classification of enterprises according to the criterion of the capital yield from research were switched off enterprises which possess the both negative equity capital, as well as they noted in the given year the loss. In years 2000–2004 were excluded the following number of enterprises: 5, 7, 8, 7, 1. After the exclusion once again enterprises were selected according to quartiles whose number in years 2000–2004 is following: group I: 30, 29, 29, 29, 29; group II: 29, 29; 28, 29, 29; group III: 29, 29, 28, 29, 29; group IV: 30, 29, 29, 30.

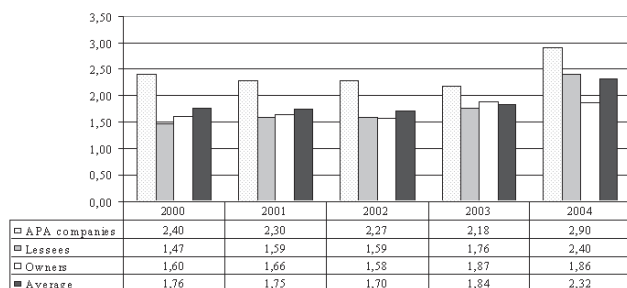


Figure 1 The prognosis of the agricultural enterprises bankruptcy depending on the legal form of the farm land implements^{6/}
Source: Own elaboration

Obrázok 1 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od právnej formy vlastníctva ich pôdy
Zdroj: Vlastné výpočty
(1) Spoločnosť agentúry pôdohospodárskeho vlastníctva (APA), (2) nájom, (3) vlastníci, (4) priemerne

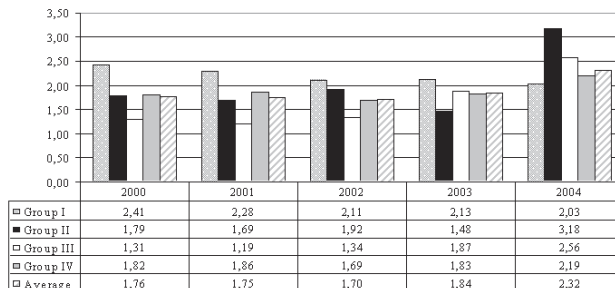


Figure 2 The prognosis of the agricultural enterprises bankruptcy depending on area of cropland in hectare
Source: Own elaboration

Obrázok 2 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od ich hektárovej výmery v ha
Zdroj: Vlastné výpočty
(1) skupina I, (2) skupina II, (3) skupina III, (4) skupina IV, (5) priemer

enterprises, the said index was situated in the area of ambiguous classification, in most of years it was in its lower boarder. This reflects the complexity of agricultural enterprises activity, which depends on the natural conditions and market restrictions (the complex system of the market intervention). The growing tendency of Z index in years 2002–2004 (to 2.32) demands emphasis. In all examined years the highest indicator referred to APA companies, which in its initial fall of index quantity in the area of ambiguous classification in year 2000–2003, next year increased to 2.90. Therefore it can be stated that these companies were found in the area of solvent enterprises. In the remaining groups of enterprises, this indicator was situated in lower quantities of the area of ambiguous classification. In the most of examined years, Z index in owners' enterprises was imperceptibly higher in relation to enterprises of leaseholders. However, it is worth to underline that the tendency of indicator to increase in analysed group of enterprises, with relatively high level in 2004 (2.4) was homogenous. To sum up, it could be ascertained that within the framework of the area of ambiguous classification the quantity of Z index in selected groups of agricultural enterprises was relatively diverse.

The land is a basic factor of the production in agricultural enterprises that is why defining the prognosis of their bankruptcy depending on the said production factor seems to be interesting. Generally, it could be stated that enterprises from all selected groups of land have Z index in the area of ambiguous classification (except from the third group of enterprises in 2001) (Fig. 2). Besides year 2004, the domination of the level of Z index in enterprises with the smallest area of cropland was visible, with decline tendency in investigated years. The most profitable amount of index in these enterprises results from the fact of the possibility of rational saturation of cropland resources by means of production because of small changes of its land area. The situation of decreasing effectiveness of the successive cropland unit due to the increase of the land area does not appear here. Whereas this relationship could have appeared in enterprises with cropland area over the average (the third group), because in general the lowest quantity of analysed index referred to the group of enterprises which in 2001 was in

the zone of insolvency. However, synonymous relations between the group of enterprises with the greatest cropland area and enterprises from the second group (with the average cropland area) did not develop. In farms from the fourth group of enterprises, the adjustment of production efficiency in relation to possessed resources of cropland has already appeared. The highest amount of Z index were yet noted down in the enterprises from the second group in year 2004 (3.18) and it was the only situation in this examined period when these enterprises were in the solvency zone.

In the Fig. 3 the amount of Z index depending on assets value in relation to cropland area has been presented. In the group of enterprises with the highest value of assets, the highest level of Z index was found. A very profitable effect was the growing tendency of index quantity in these enterprises in years 2001–2004 – up to the level of 2.51. This confirms the importance of the assets in improving the degree of the financial liquidity – and by this, the level of the solvency in a considerable manner. In the case of remaining groups of enterprises, no essential relations have been found. Only enterprises from the first group, with the lowest assets value, in 2002 were situated in the zone of insolvency (Z index was on the level of 0.43). In this group of enterprises the quantity of this indicator was the lowest also in year 2000 (1.25). It means that within lower level of assets value there is no fundamental diversity in the development of Z index. Whereas relatively close quantities of analyzed indicator in selected groups were

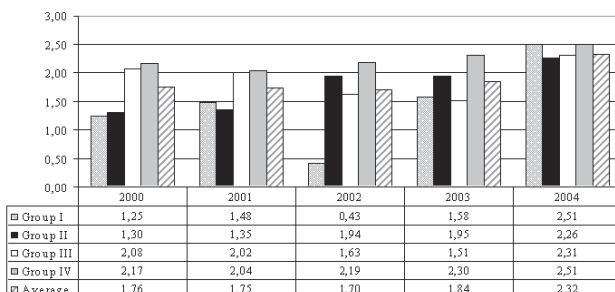


Figure 3 The prognosis of the agricultural enterprises bankruptcy depending on real property value in relation to area of cropland in thousands z/hectare
Source: Own elaboration

Obrázok 3 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od skutočnej hodnoty pozemkov vo vzťahu k ich veľkosti v tis. zlotých/ha
Zdroj: Vlastné výpočty
(1) skupina I, (2) skupina II, (3) skupina III, (4) skupina IV, (5) priemer

^{6/} For the purpose of easier description, in the elaboration were accepted following signatures for each groups of enterprises: companies of Agricultural Property Agency – „APA companies”, enterprises with the lease of the ground from APA – „Lessees”, the enterprise which the land purchase from APA – „Owners”.

noted down in year 2004. It shows diverse relationship between Z index and the level of assets value in particular years. The fact that agricultural production is characterized by relatively high level of dependence on price and natural conditions should also be taken into consideration. Therefore, the amount of Z index in relation to chosen production factors in the following years could reveal ambiguous relationships.

Because of considerable risk of the agricultural production the equity capital in general is predominant financing source of the agricultural enterprises activity and simultaneously it marks substantially their solvency. A confirmation of these relations is lower level of Z index in the group of enterprises with the lowest participation of equity capital in financing sources (Fig. 4). This group of enterprises was distinguished by big threat of insolvency in years 2000–2003. Only in year 2004, these enterprises could be qualified for the area of ambiguous classification in the range of potential bankruptcy. As far as Z index is below 1.23 in one or next year it still does not have to reflect a big threat, then the stated period of such situation in the first group of enterprises is dangerous in the scope of further functioning. However, agricultural enterprises with the highest equity capital were characterized by absolutely the highest amount of Z index which hesitated from 3.98 in 2002 to 6.62 in year 2004. It means that this group was located in the zone of solvent enterprises. The remaining groups of enterprises selected according to criterion of the participation of equity capital in financing sources were distinguished by considerably lower Z index, and the second and third group were assigned to the area of ambiguous classification of enterprises in terms of the bankruptcy prognosis (except the third group in year 2004). In all researched years, the growth of Z index together with the increase of the participation of the equity capital level in the structure of financing the activity of the enterprises has been reported. The highest difference in this regard between the first and fourth group of enterprises was ascertained in year 2004 (over 4.92). To summarise, it could be stated that the equity capital diversifies the level of Z index in substantial. This makes the formation of suitable relations between the equity and foreign capital by managers of a great importance.

Generating the profit by enterprise is one of the fundamental circumstances of its functioning. However, in the last term, the depreciation of the importance of profit category as the final effect in enterprises' activity was noticeable. This

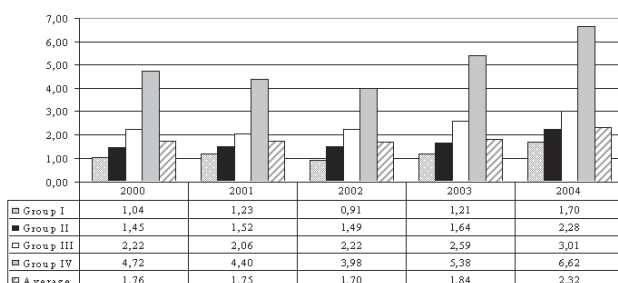


Figure 4 The prognosis of the agricultural enterprises bankruptcy depending on participation of the equity capital in financing resources in %

Source: Own elaboration

Obrázok 4 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od podielu kmeňového kapitálu v ich finančných zdrojoch v %

Zdroj: Vlastné výpočty

(1) skupina I, (2) skupina II, (3) skupina III, (4) skupina IV, (5) priemer

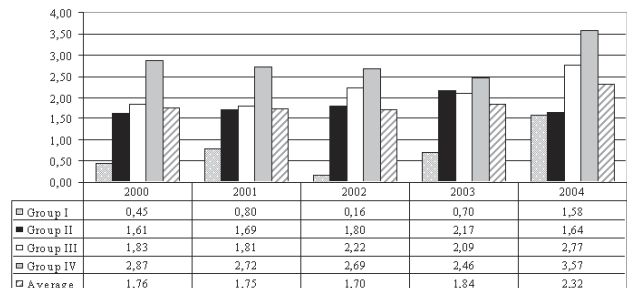


Figure 5 The prognosis of the agricultural enterprises bankruptcy depending on net profit in relation to area of cropland in thousands zł/hectare

Source: Own elaboration

Obrázok 5 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od čistého zisku v vzťahu k rozlohe pôdy v tis. Zlotých/ha

Zdroj: Vlastné výpočty

(1) skupina I, (2) skupina II, (3) skupina III, (4) skupina IV, (5) priemer

arises from the fact of calculating this result category according to memorial rule in the accountancy, which means that it does not always illustrate the certain amount of cash possessed by the enterprise. Therefore, the distinction of profit and direct possession of certain amount of cash (money flows) is one of the significant determinants of the enterprise survival in the nearest term. In the Fig. 5 the formation of Z index depending on the profitability of cropland use (as a relation of net profit to area of cropland) has been presented. It was ascertained that in years 2000–2003 enterprises from the first group, with the lowest profitability of land, in respect of Z index were found in the zone of the insolvency. Only in 2004, these enterprises could be placed in the zone of ambiguous classification in respect of the bankruptcy prognosis. In the case of enterprises' group with the highest profitability of the land, the size of Z index was shaped in upper limits of the zone of ambiguous classification in years 2000–2003, while in the last examined year, this index amounted to 3.57. Furthermore in all investigated years an increasing level of Z index due to the rise of the land profitability was registered. It means that in spite of reservations concerning profit category, enterprises with the highest profitability of land have still been characterized by the lowest bankruptcy probability. In surveyed groups of enterprises no explicit relationships concerning the level of Z index in dynamic perspective were reported. Only in the second group of enterprises in years 2000–2003 unimpeded tendency of the increase of analysed indicator, and in the fourth group its fall to the level of 2.46 in 2003 year, was registered.

The ratio of equity capital profitability was counted as a relation of net profit (losses) to the value of this capital. In all years, the lowest level of Z index had the enterprises with the lowest profitability of the equity capital, in most years reflecting the zone of the ambiguous classification (Fig. 6). Only in year 2000, this index amounted to 0.68, which means the location in the zone of insolvent enterprises. In the remaining groups of enterprises, there were no explicit relations ascertained in the formation of Z index. In the enterprises with the highest profitability of equity capital the Z index was the highest (in whole researched community) only in years 2002–2003 (amounted properly to 2.56 and 2.61). The highest quantity of this indicator, which was ascertained in surveyed years concerned the second group of enterprises – on level of 3.22 in year 2004, which indicates the zone of solvency, in which, in the same year enterprises from the fourth group (3.04) were situated. To sum up, it could be stated that the lowest profitability of the equity capital determines the threat of the enterprise bankruptcy.

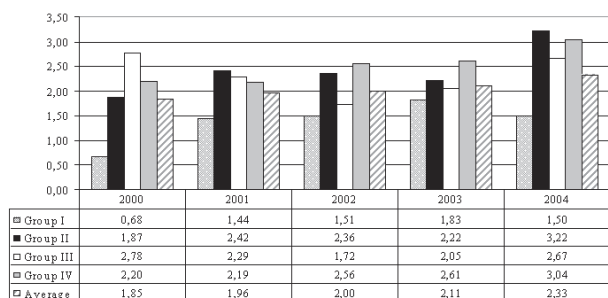


Figure 6 The prognosis of the agricultural enterprises bankruptcy depending on ownership capital yield in %
Source: Own elaboration

Obrázok 6 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od výnosov vlastníckeho kapitálu v %
Zdroj: Vlastné výpočty
(1) skupina I, (2) skupina II, (3) skupina III, (4) skupina IV, (5) priemer

However, achieving higher effectiveness of profitability of equity capital does not have to reflect a decreasing threat of the enterprise bankruptcy. It could be partly caused by the effect of the financial leverage, thanks to which the higher effectiveness of the equity capital could be obtained through rational participation of outside capital, which on the other hand influences the debts level and relations of capital. Generally, it could be ascertained that beginning with the second group of enterprises the Z index was usually marked in the middle of the zone of ambiguous classification.

In the Fig. 7 the formation of Z index according to the level of current financial liquidity has been presented. This indicator was counted as a relation of current assets to current liabilities. In group of enterprises with the lowest current liquidity ratio in years 2000–2003, the Z index was located in zone of insolvent enterprises. In all examined years, the increase of Z index was registered together with the increase of current liquidity ratio. Beginning from year 2001, in the fourth group of enterprises the degree of Z index reflected the zone of solvent enterprises. The second and third group of enterprises was found in the zone of ambiguous classification. The fact that Z index level was formed in the area of ambiguous classification zone in the group of enterprises without current liabilities (except the year 2000) was considered interesting. One of the reasons of such situation could be higher long-term debts in these enterprises, which is connected to higher incurred financial costs. Besides these enterprises do not use current trade or bank credits, that is why they do not benefit from the financial leverage. It

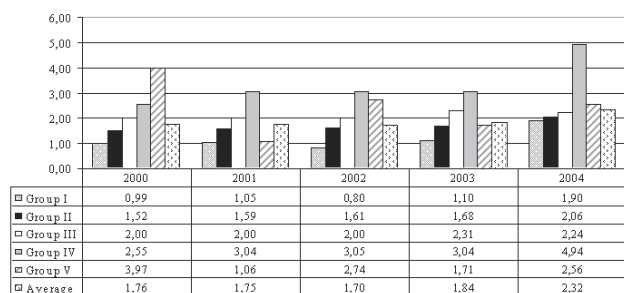


Figure 7 The prognosis of the agricultural enterprises bankruptcy depending on current liquidity ratio
Source: Own elaboration

Obrázok 7 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od stupňa krátkodobej likvidity
Zdroj: Vlastné výpočty
(1) skupina I, (2) skupina II, (3) skupina III, (4) skupina IV, (5) priemer

contributes to the fall in profitability of the enterprises' activity and decreases the level of the working capital. In the end, the Z index can be of lower degree. From previous researches arises the fact that enterprises, which do not possess liabilities, were often marked by lower effectiveness of cropland use, work resources and profitability of equity capital (Wasilewski 2005).

Debts of enterprise, from the management point of view, are an essential instrument describing the financial liquidity. The policy of maintaining the level of debts on the rational level should be a tool encouraging contractors to purchase (cooperate), but on the other hand the competence of their retrieval is very important either. In the Figure 8 the changes of Z index depending on the rotation of enterprises' debts were presented. In most of years all groups of enterprises according to the degree of Z index were found in the zone of ambiguous classification. Only in the first group of enterprises in year 2001 and also in the third group in year 2002 appeared the threat of the insolvency. In most of investigated years, the domination of enterprises from the fourth group was visible, whereas the difference in relation to the second group was very marginal. Enterprises from the second group according to Z index level were characterized by domination in years 2001–2002. The reason of such relationships might lie in the concept of strategy in debts management. The average term of the debts turnover could be an encouragement for consumers to cooperate, what generates additional income, and by this also profits. In the case of the highest debts rotation, their turnover in days is shorter. It might lead to better financial condition, but simultaneously it contributes to the decrease of sales income. It could have been suggested that managers of enterprises from the second and fourth group shape the level of debts in rational way. In the case of enterprises without debts (the fifth group) the Z index in year 2004 only, was on the level reflecting enterprises from the solvency zone (3.67).

In other years the degree of this index reflected the area of ambiguous classification in this respect – on relatively similar level in selected years. With reference to level of Z index in the fourth group of enterprises (with the fastest debt turnover), in enterprises without debts in general the Z index was on lower levels (except year 2004). It means that the lack of debts is reflects lower sale scale and might be the reflection of its too rigorous conditions. This results in the decline of activity efficiency and makes impossible to ascertain synonymously if the enterprises are solvent or not.

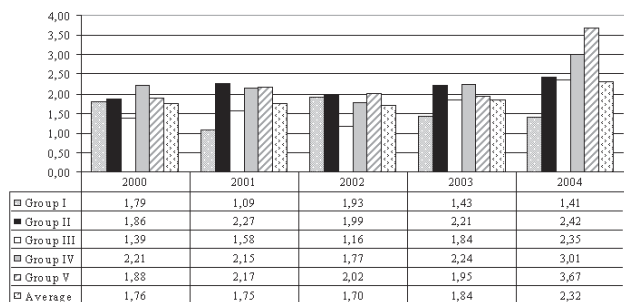


Figure 8 The prognosis of the agricultural enterprises bankruptcy depending on debt turnover ratio
Source: Own elaboration

Obrázok 8 Prognóza bankrotu poľnohospodárskych podnikov v závislosti od stupňa zadĺženosti
Zdroj: Vlastné výpočty
(1) skupina I, (2) skupina II, (3) skupina III, (4) skupina IV, (5) priemer

Conclusions

The elaboration presented Z index formation in Altman model for a group of agricultural enterprises with different law forms of land purpose in relation to chosen features of their classification. On the basis of conducted researches the following conclusions has been formulated:

1. The prognosis of the solvency level in agricultural enterprises is comparatively difficult. The agricultural production depends on natural conditions, the degree of the state intervention on agricultural market, the level of the supply on agricultural products etc. APA companies were on the highest level of Z index, while in enterprises of leaseholders and owners this indicator was placed in lower limits of the ambiguous classification zone. Simultaneously in enterprises with the smallest cropland area, the indicator was the highest. It reflects the problem of investing in the same financial outlays for every hectare of cropland. However, the great importance of enterprises assets in maintaining their solvency was ascertained at the same time, which referred also to participation of the equity capital in the structure of funds.
2. Together with higher level of the profitability of land use Z index also grew. Managers of enterprises should maximize the efficiency of production factor use. Such relationships were not registered in the case of the ownership capital profitability, which depends on relations between the equity and outside capital. The lack of current liabilities in enterprises did not signify explicitly their solvency, because these enterprises were found in the zone of ambiguous classification. However, enterprises with the highest level of current financial liquidity were characterized by the highest Z index, and in general were situated in the zone of solvent enterprises. Liabilities reflect the scale of the enterprise activity – partly they contribute to the increase of their activity effectiveness. However, it is essential to maintain low level of debts. The relations between debts turnover ratio and the level of enterprises' solvency were not ascertained. The importance of the debts management is multifaceted, and its too rigorous vindication could lead to decline of the sale and farming efficiency scale.
3. The Altman's model reflects the situation of agricultural enterprises based on their solvency. These enterprises function on the level of relatively low profitability that is why, according to most of established criteria of their group classification, these enterprises have been found in the zone of ambiguous classification. Agriculture is marked by comparatively high risk of business activity, therefore the assessment of the current solvency of agricultural enterprises is most of all advisable.

Súhrn

Článok podáva analýzu vzťahu medzi indexom Z podľa Altmanovho modelu a vybranými charakteristikami poľnohospodárskych podnikov, ako sú napr. forma vlastníctva pôdy, výmera pôdy, celkový majetok a hodnota vlastnickeho kapitálu, zisko-

vosť, likvidita a zadlženosť. Do predkladaného výskumu bolo v rokoch 2000–2004 zahrnutých 118–123 veľkých poľnohospodárskych podnikov. Bolo zistené, že ekonomická predpoveď úrovne platobnej schopnosti poľnohospodárskych podnikov je pomerne náročná. Spoločnosti APA boli charakterizované najvyšším stupňom indexu Z, zatiaľ čo v nájomných podnikoch a podnikoch v osobnom vlastníctve bol tento ukazovateľ na pomerne nízkej úrovni. V podnikoch s najmenšou výmerou pôdy bol tento ukazovateľ najvyšší. Index Z sa relatívne zvyšoval spolu so ziskovosťou rastu využívania pôdy. Takýto vzťah však nebol zaznamenaný v prípade ziskovosti vlastnickeho kapitálu. Nedostatok krátkodobých pasív v podnikoch explicitne nepodmieňoval rast ich platbyschopnosti. Podniky s najvyššou úrovňou krátkodobej likvidity boli charakterizované najvyššou úrovňou indexu Z a vo všeobecnosti sa pohybovali v oblasti platbyschopnosti. Vzťahy medzi indikátorom zadlženosti a platbyschopnosťou podnikov neboli explicitne potvrdené.

Kľúčové slová: Altmanov index Z, celkový majetok a hodnota vlastnickeho kapitálu, ziskovosť, likvidita, zadlženosť

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