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## ADAPTABILITY OF THE BELARUSIAN MODEL OF DIAGNOSTICS OF FINANCIAL STABILITY TO AGRICULTURAL ENTERPRISES

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**Abstract.** The article considers the current state of the agricultural sector of the Republic of Kazakhstan and its capabilities. The role of state support for the agro-industrial complex, characterized by high capital intensity, long payback period, low profitability, and dependence on natural and climatic conditions, which makes it less competitive in comparison with other sectors of the economy, and leads to the fact that the activities of agribusiness entities is more exposed to financial risk, is shown. A comparative assessment of the financial stability indicators of agricultural formations of the dairy sector of the Grodno region of the Republic of Belarus and two agricultural producers of the Republic of Kazakhstan with similar production specialization was carried out in order to determine the likelihood of the onset of the financial crisis using statistical multi-choice models. The scientific novelty of the study is to identify promising areas for assessing the financial stability of domestic agricultural enterprises, including on the basis of studying foreign experience in diagnosing the financial crisis, which will allow predicting and developing the right managerial decision aimed at improving the financial condition of agricultural enterprises.

**Keywords:** financial stability, risk of financial crisis, production efficiency, production and financial factors

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**JEL Classifications:** Q10, Q12, Q13

### 1. Introduction

The transition of the modern economy to building fundamentally new economic relations, increasing the independence of business entities in the implementation of financial policies, and their entry into international markets fundamentally changed the conditions for the functioning of the organization and exacerbated the problem of ensuring the stability of economic development. The basis of sustainable growth and financial stability

of the national economy in market conditions is the financial stability of agricultural enterprises as the most significant structural element of the country's economic system. Financial stability serves as a guarantee of survival and the basis of a firm position of the enterprise, in connection with which there is increasing interest from external and internal users in assessing the financial capabilities of enterprises both in the short term and for the long term.

The strategic orientation of the organization's management system is largely determined by the prevention of the development of crisis phenomena, a necessary element of which is the timely and high-quality diagnostics of the stability of the financial condition of the organization, as a result of which the prevailing goal of financial management is achieved - achieving financial equilibrium with steady economic growth. This is an urgent problem both at the level of an individual business entity, and at the sectoral and regional level, especially for agriculture, since this industry is characterized by an increased risk of economic activity and a low level of cost recovery.

An important aspect is the selection of effective methodological tools for diagnosing financial stability, which is especially important in the context of the digitalization of the economy, characterized by new methods of generating, processing, storing, transmitting information in all spheres of human activity. Thus, the current level of digitalization of the economy allows organizing mechanisms for collecting, processing and delivering basic and effective information to the place of use with minimal use of labor, material and financial resources to perform these functions. Possessing relevant information is a unique competitive advantage of business entities, which allows increasing the accuracy of forecasting their activities and thus ensuring financial stability (Achapovskaya, 2019).

In this regard, the basis of this study is to determine the most effective in terms of prognostic accuracy, substantive capacity, and informational usefulness while at the same time simplicity in applying the approach to assessing the financial stability of agricultural enterprises of the Republic of Kazakhstan.

## **2. Research background**

Diagnostics of financial stability is aimed at assessing the current financial condition of the organization and its dynamics in the future, and therefore, the used diagnostic tools with a high degree of accuracy should identify the risks of crisis and financial insolvency of the organization (Tvaronavičienė, Masood, Javaria, 2018; Jing, Zhang, Hong, 2020).

Note that in domestic and foreign practice, two main approaches to the diagnosis of financial stability are used - coefficient (R-analysis, from ratio) and prognostic (assessment of the probability of loss of financial stability, bankruptcy based on multidimensional factor models). In literary sources, one can find a different classification of approaches (qualitative and quantitative; based on the official methodology and alternative methods).

The prediction of the financial crisis has been the subject of serious statistical research. A significant contribution to solving this problem was made by Western scientists and analysts as well as prominent Russian and Kazakh scientists.

The methods used for predicting the probability of crisis phenomena in the activities of enterprises differ in the scope, composition of indicators used by statistical methods for processing the initial information and constructing prognostic models. At the same time, the models developed on the basis of multiplicative discriminant analysis (MDA-models) and logit-regression analysis (logit-models) was most widely used. The issues of the content of these models, their predictive value, as well as adaptability to the conditions of activity of national enterprises have been investigated by a number of domestic scientists.

All models are built on the basis of a comprehensive indicator of the probability of bankruptcy for various key indicators (from two to seven or more) that are most responsible for crisis development trends: this is information about the features of the capital structure, cash and material flows, performance results, internal and external relations and others (Tolpegina, Mohun, 2014). Thus, approaches to predicting a financial crisis (bankruptcy) are associated with the formation of a crisis field - i.e. systems of special indicators, indicators that indicate a change in financial stability. At the same time, a system of criteria is developed with respect to which the dynamics of the values of coefficients are studied, indicators, since, as studies have shown, some financial ratios of the failed enterprises significantly differ from those of stable ones.

Despite the high predictive value of the constructed models, there are a number of restrictions on their use for domestic enterprises. For example, some authors attribute the problem of data stationarity, poor quality of financial statements and insufficient data used to build models, as well as the negative impact of the practice of manipulating financial statements and criminal bankruptcies (Kolyshkin, Kazakov, 2018). Another point of view shows that the forecasting results differ significantly depending on the size of the enterprise, its industry affiliation, legal form, degree of state regulation, state presence among shareholders and its share (Fedorova, Khrustova, Chekrizov, 2018).

Monitoring of the results obtained on the basis of the most well-known MDA models during testing of agricultural enterprises of the Grodno region (Republic of Belarus) over a number of years (sample of more than 600 observations) made it possible to identify the following drawbacks in their use for national business entities. Firstly, the over-versatility of most models. The system of indicators included in the model does not take into account the industry specifics of the organization. So, for example, agricultural enterprises are characterized by the presence of a temporary gap in the payment turnover, which is a means of fluctuation during the year in the circulation of working capital. This is manifested in the unevenness of production costs and revenue on the accounts of enterprises, due to the seasonality of agricultural production. As a result, farms are faced with problems such as: a long production cycle, a slowdown in working capital turnover, and frequent interruptions in the labor process. In addition, the features of the agricultural producer are determined by his specialization, that is, a combination of individual sectors of agricultural production in the economy. An important influence on the results of agricultural activities is exerted by biological factors.

Secondly, not entirely justified critical values of integral indicators, which is also related to the lack of industry specifics in accounting models. For example, due to the characteristics of various industries, the significance of indicators included in the models varies significantly. In particular, for trade organizations the value of the financial leverage ratio can be close to unity, while for agricultural organizations the generally accepted criterion for this ratio at a level of no more than 0.5 is very significant. In addition, the industry specifics of organizations are not taken into account when determining the system of indicators, on the basis of which integral indicators are also built.

Thirdly, most models do not take into account the differences in macro- and microeconomic conditions in which the business entities of our republic function (the degree of development of market relations, the role of state structures in managing the national economy). For example, in foreign companies, when assessing their financial condition, an important place is occupied by indicators of their market activity, the possibility of participation in the securities market, whereas in our conditions such a market practically does not exist.

Fourth, there are national characteristics, as well as differences in the legislative and information base. National financial statements differ from the financial statements of the United States and European countries: there are differences in their purpose, in the structure of capital, in the methodology for reflecting inflation factors. In addition, a number of established financial terms, although they coincide in name with the terms of foreign

countries, however, they differ significantly in content. There are differences with respect to the reporting period. So, for example, a fiscal year under IFRS is equal to any 12 months selected at the discretion of the manager. In domestic practice, a fiscal year is equal to a calendar year and lasts from January 1 to December 31.

Fifth, obsolescence of existing crisis-forecasting models has occurred. So, the first Altman model was developed in 1968, the second in 1983, the Fox model in 1973, and Tuffler in 1977. Therefore, these models do not take into account the requirements for the financial and economic development parameters of both the national economies as a whole and individual organizations (Shcherbatyuk, 2015).

Nevertheless, despite the above drawbacks, the approach to the development of statistical multidimensional models to obtain an integrated assessment of the financial stability of organizations and to predict the likelihood of a financial crisis in the foreseeable future is very relevant today.

The choice of the crisis modeling method used is associated with the determination of the most effective approach. Moreover, in the course of numerous studies of bankruptcy forecasting models constructed using discriminant analysis, a number of their significant shortcomings were revealed that do not allow their effective and adequate use in assessing the degree of bankruptcy. For example, these models are not able to quantify the probability of bankruptcy. It cannot be determined by the nominal value, models are able to give only its qualitative degree - as low, high, very high, etc. In addition, in all models using discriminant analysis, there is a so-called “zone of uncertainty”, if you enter a calculated final indicator, you cannot make an unambiguous conclusion about the probability of bankruptcy (Muradov, 2011).

Our studies also show that MDA models are more unstable with respect to crisis prediction. In our opinion, the reasons for this, in particular, are as follows: the need for the annual determination of the parameters of integrated assessment models and verification of the classification of farms according to new models; the impossibility of defining clear boundaries for the transition from one type of financial stability to another; increasing the complexity of the analysis due to the need to test the organization simultaneously for three discriminant functions to identify the type of financial stability; lack of opportunity for organizations experiencing financial tensions to identify threats of financial insolvency in the next reporting period (Shcherbatyuk, 2015).

To eliminate the identified shortcomings associated with the use of discriminant models for diagnosing the financial crisis, a method for constructing nonlinear binary choice models, namely, a logit model, was chosen. The advantages of their use over MDA models are determined by the following aspects. First of all, it is worth noting that, in contrast to discriminant forecasting models, which provide only a linear dependence of the probability of bankruptcy on certain factors, the logit analysis operates with the ability to build non-linear dependence models, which can be considered a significant advantage. In addition, unlike discriminant models that can only determine the qualitative degree of probability of bankruptcy, there are no problems with the unambiguous interpretation of the resulting indicator of this probability in logit models. It can take values only in the range from 0 to 1 and determines the nominal value of the probability of bankruptcy. Also in the logit models there are no “zones of uncertainty” inherent in discriminant models (Muradov, 2011).

### **3. Materials and methods**

Kazakhstan has all the possibilities for the production of competitive agricultural products: there is a need for agricultural products in many countries, and therefore markets; there is suitable land for agricultural production; the large population that lives in rural areas. At the same time, it should be noted that Kazakhstan does not implement the above factors to create an effective competitive agro-industrial complex in the country. In this regard, the role of state regulation of agricultural development is increasing.

Over the years of independence of Kazakhstan, the state has developed nine programs of state policy in the field of agriculture. At the present stage, the State Program for the Development of the Agro-Industrial Complex of the Republic of Kazakhstan for 2017-2021 is being implemented (Popova and Mataibaeva, 2019). However, despite the positive aspects due to the functioning of state programs, currently the development trends of the agricultural sector in the Republic of Kazakhstan are very contradictory. Agriculture remains one of the most inefficient sectors of the economy. The level of labor productivity in agriculture with a indicator of \$ 10,585 for 2018 corresponds to only 44% of the indicator of the Republic of Belarus and 63.8% of the indicator of Russia. According to the SWOT analysis of the agro-industrial complex, given in the state program for the development of the agro-industrial complex of the Republic of Kazakhstan for 2017-2021, low labor productivity and low profitability of agricultural producers are among the weaknesses of the industry. The problem of sustainability of agricultural production has become particularly relevant for modern Kazakhstan (Zhakisheva, Mukasheva, Tleushanova, Zhumanova, Assilova, Berstembayeva, 2018)

The unstable financial condition of agricultural enterprises can be judged by the main indicators of financial and economic activity of the agricultural sector of the Republic of Kazakhstan (Table 1).

**Table 1.** Inflation-adjusted key indicators of financial and economic activity of agricultural enterprises

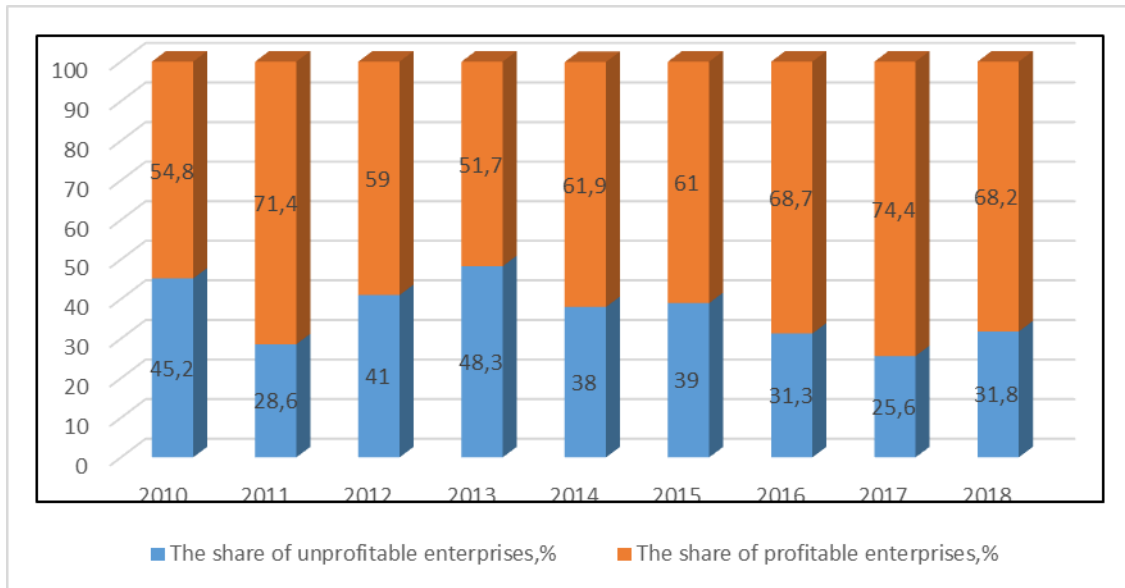
Indicators	2010	2011	2012	2013	2014	2015	2016	2017	2018
Volume	470710377,2	578383054,8	59162483,0	577160430,2	565805881,9	461839818,8	485184551,3	513228898,8	519769326,0
manufactured products and	488356796,2	594151741,1	634661440,8	597103884,0	569257732,1	461993890,1	507780388,2	552311092,8	533748171,0
services provided, thousand tenge	453041485,5	483058820,4	555142523,0	561684905,7	498025404,2	421956168,3	435343873,0	461936902,4	449191776,0
Income from sales of products and rendered services, thousand tenge	35315310,7	111092920,7	79518917,8	35418978,3	71232328,0	40037721,7	72436515,2	90374190,4	84556395,0
Cost of goods sold and services rendered, thousand tenge	106942589,6	110357507,8	148321492,6	126599656,9	143823590,8	203909199,0	176204785,7	131715296,9	158297911,0

Gross profit, thousand tenge	-14030705,3	62642546,3	35202965,0	-27453779,7	17981951,8	-65658826,6	5306877,1	75403866,3	30450622,0
Non-manufacturing expenses, thousand tenge	1414,2	2054,4	1723,6	2123,5	2722,5	2969,1	2999,0	3250,0	3642,8
Profit (loss) before tax, thousand tenge	-2,5	10,6	5	-4	2,8	-11	0,9	12,7	5

Source: compiled by authors according to Internet resource of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan

According to table 1 shows that the performance indicators of enterprises of the agricultural sector of the Republic of Kazakhstan for the period 2010-2018 characterized by high variability, which indicates the presence of high financial risks in their activities. The outstripping growth of production and non-production costs compared with revenue lead to sharp jumps in the dynamics of both operating profit and profitability of agricultural enterprises. Moreover, the maximum loss ratio equal to “-11%” observed in 2011 and 2015, which is due to the significant influence of external factors, the general economic decline in the country. The share of agricultural enterprises that received a negative financial result for 2010-2018, fluctuates at a level of not less than 30% of all enterprises in the agricultural sector (Figure 1). The largest share of the unprofitable result of agricultural enterprises was noted in 2013 - 48.3%, and in 2015 - 39%.

At the end of 2018, the share of enterprises that suffered a loss fell to 32% (in 2010 their share was 45%).

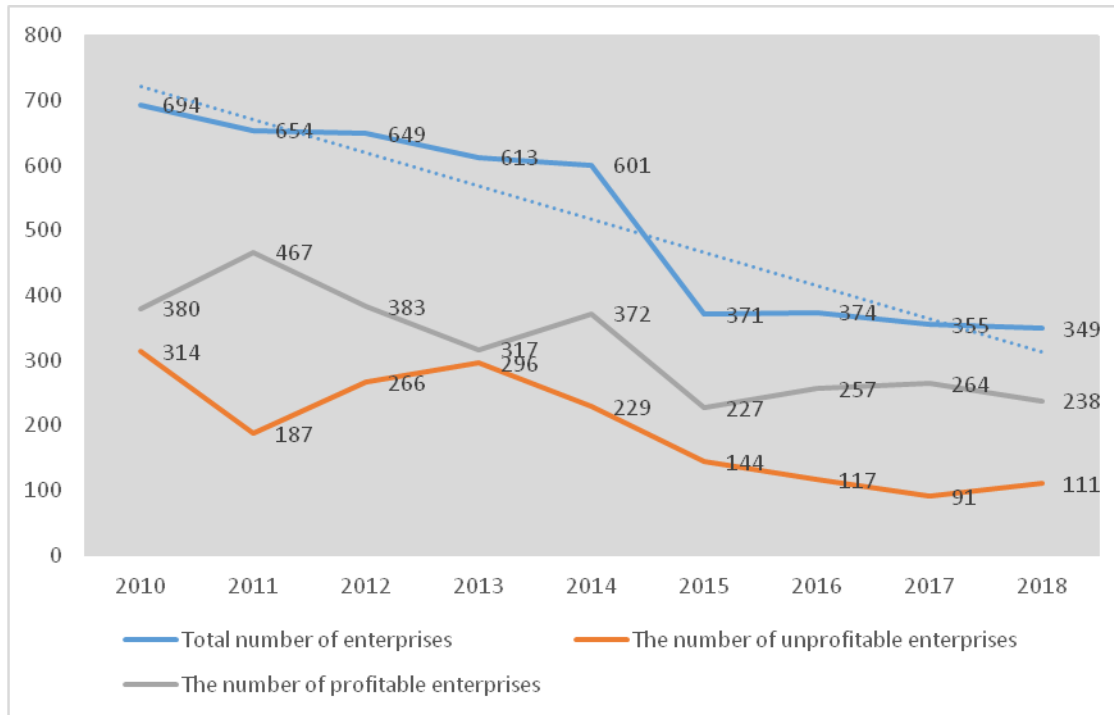


**Figure 1.** Distribution of agricultural formations of the Republic of Kazakhstan by their financial results for 2010-2018, %

Source: compiled by authors according to Internet resource of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan



This decrease was greatly influenced by the trend of a decrease in the total number of agricultural enterprises by almost 50% in 2018 compared to 2010 (Figure 2) .At the same time, the peak decrease in the number of enterprises was observed against the background of general financial instability in the country in 2015, when the number of agricultural formations declared insolvent amounted to 38%.



**Figure 2.** Distribution of agricultural units of the Republic of Kazakhstan by their number for 2010-2018

Source: compiled by authors according to Internet resource of the Committee on Statistics of the Ministry of National Economy of the Republic of Kazakhstan

The problems of sustainable development of agricultural production are multifaceted, they include various factors: natural and logistical, economic, including financial and social, the development of scientific research and organizational and managerial.

The success of agrarian reform is largely determined by the mobilization of domestic resources and opportunities by each agricultural enterprise, the ability to choose the right strategic course of development and the ability of the manager to manage entrepreneurial risk in achieving the goals (Baranova, 2016).

Thus, the development of the agricultural sector of the economy in the face of intense competition and globalization of markets determines the increasing role of strategic management of organizations in the agricultural sector. An important task of strategic management is the creation of instrumental techniques to identify, evaluate and analyze existing threats to the financial stability of agricultural enterprises.

The use of a crisis-forecasting model constructed using logit-regression to diagnose the financial stability of agricultural organizations of the Republic of Kazakhstan must meet a number of requirements. So, the crisis-forecasting (logit-regression) model should be universal in nature and smooth out differences in the specifics of the production and financial activities of organizations, as well as temporary differences, which is especially

important in agricultural production, since the climatic conditions of management are an important factor in the sustainability of agricultural organizations (Utibaev, 2017).

Two agricultural enterprises were chosen as the object of research: the first is the leading agricultural enterprise in the market for milk and dairy products - PK "Agrofirm" Rodina ", located in the Akmola region of the Republic of Kazakhstan, and the second - the cooperative of workers "Mambetov and K", young but a promising enterprise in the direction of dairy farming, located in the North Kazakhstan region.

As a methodological base, the logit model built for agricultural enterprises of the Grodno region of the Republic of Belarus was chosen (Tolpegin, Mohun, 2014):

$$Z=27-5,00 \times X_1+15,96 \times X_2-15 \times X_3-1,16 \times X_4-63,68 \times X_5-0,39 \times X_6+47,44 \times X_7,$$

where:  $Z$  – the value of the crisis forecast model;

$X_1$ - current ratio;

$X_2$  - financial leverage ratio;

$X_3$  - current assets turnover ratio;

$X_4$  - ratio of own working capital;

$X_5$  - ratio of financial liabilities with assets;

$X_6$  - return on equity;

$X_7$  - total assets turnover ratio.

When constructing this model, if the value of the function  $F(Z_i)$  of the enterprise tested by this model is equal to zero or lower, then there is no likelihood of a financial crisis. On the contrary, if the value of the function  $F(Z_i)$  of the tested company is equal to one or higher, then the risk of a financial crisis is high.

The methods and procedures of regression analysis served as the main method for studying the statistical relationship between the value of the integral indicator and its factor indicators. The following regression model was used (Kusainov, 2011):

$$Y = b_0 + \sum b_i X_i + \sum b_j Z_j$$

where  $Y$  – the result variable;

$X_j$  – factor variation variables;

$Z_j$  – factorial categorical (attributive) variables;

$b_0, b_i, b_j$  – parameters (coefficients) of the model.

Parameters  $b_i$  for variables  $X_i$  represent the magnitude of the change in the productive variable  $Y$  when the values of the corresponding variational characteristics change by one.

Parameters  $b_j$  for variables  $Z_j$  show the magnitude of the change in the effective variable  $Y$  if the corresponding attributive characteristics are taken into account. Categorical variables  $Z_j$  take values either 0 or 1. Note that in our problem variational variables are absent.



The advantages of using the proposed logit-model for agricultural producers of the Republic of Kazakhstan are as follows: it is quite easy to use, since it involves the calculation of 7 coefficients and their simple substitution into functional equations; on its basis, it is possible to identify agricultural organizations that are at the point of financial crisis and evaluate the “borderline” values of financial stability ratios, showing the transition from one type of financial stability to another; the model allows ranking agricultural organizations by the degree of proximity of the organization to the point of financial crisis; on its basis, the risk of the financial crisis is accurately predicted, which indicates its high practical significance.

#### 4. Results and Discussion

At the first stage, the value of the logit model (Z) of agricultural enterprises of the Grodno region for 2017-2018 was calculated with their subsequent ranking by level Z. In this case, 4 groups of enterprises were selected by type of financial stability, where the value of the integral indicator is presented as a range of values (Table 2), then a grouping of enterprises was carried out with the definition of average values for the group in accordance with the type of financial stability (Table 3).

**Table 2.** The boundaries of the values of the logit-model (Z) in the grouping of enterprises by the level of financial stability

Business groups	Indicator value Z
1) A group of enterprises with a low risk of crisis	«-51» and lower
2) A group of enterprises with a moderate risk of crisis	from «-50» to «-11»
3) A group of enterprises with a risk of crisis above the average	from «-10» to «0»
4) A group of enterprises experiencing a high risk of crisis	«0» and higher

Source: compiled by authors

**Table 3.** The value of the logit model (Z) in accordance with the type of financial stability of agricultural organizations in the Grodno region (Republic of Belarus)

Year	Group of enterprises by level of risk of crisis	The number of objects in the group	Group average							
			Z	X1	X2	X3	X4	X5	X6	X7
2017	Low risk	3	-77,11	20,52	0,07	1,02	0,95	0,05	16,41	0,49
2018		3	-95,73	24,98	0,04	0,95	0,96	0,04	10,87	0,48
Absolute change (+, -)		0	-18,63	4,46	-0,03	-0,07	0,01	-0,01	-5,54	-0,01
2 years on average		x	-86,42	22,75	0,05	0,99	0,95	0,04	13,64	0,48
2017	Moderate risk	4	-16,12	5,75	0,41	1,14	0,81	0,28	13,47	0,42
2018		3	-14,68	6,61	0,27	1,07	0,85	0,21	10,51	0,44
Absolute change (+, -)		-1	1,44	0,87	-0,14	-0,07	0,04	-0,06	-2,95	0,02
2 years on average		x	-15,40	6,18	0,34	1,10	0,83	0,24	11,99	0,43
2017	Above Risk Level	3	-3,41	4,18	0,26	1,39	0,75	0,20	10,94	0,53

2018		2	-3,58	3,50	0,83	1,18	0,81	0,36	8,43	0,36
Absolute change (+, -)		+1	-0,17	-0,68	0,57	-0,21	0,06	0,16	-2,51	-0,17
2 years on average		x	-3,50	3,84	0,54	1,29	0,78	0,28	9,69	0,45
2017	High risk	1	2,79	1,53	0,82	1,62	0,34	0,45	6,13	0,55
2018		3	6,03	2,54	0,42	1,25	0,57	0,27	5,91	0,48
Absolute change (+, -)		+2	3,24	1,01	-0,40	-0,37	0,23	-0,18	-0,22	-0,07
2 years on average		x	4,41	2,04	0,62	1,44	0,45	0,36	6,02	0,52

Source: compiled by authors

Thus, the results of testing agricultural enterprises of the Grodno region according to the crisis forecast model for 2017-2018 showed that in 2018, 8 households (72.7% of the total number of households) were not threatened by the financial crisis, since the value of logit regression was less than zero, with 6 households experiencing sufficient financial stability, while 3 households are characterized by insufficient stability, and 2 households are approaching this state.

The testing of the presented logit-model on the data of agricultural enterprises of the Republic of Kazakhstan is presented in table 4. As you can see, the values of financial stability ratios and the values of the logit-model (Z) are more similar to the data of agricultural organizations of the Grodno region for an enterprise assigned to the group with a financial risk level above average (CW "Mambetov and K").

Whereas in a high-risk enterprise (Agrofirm Rodina LLP), both the coefficient values and the integrated value of the logit-model (Z) significantly differ from those of Belarusian agricultural producers.

**Table 4.** The value of the logit model (Z) of agricultural organizations of the Republic of Kazakhstan in comparison with the data of agricultural organizations of the Grodno region (Republic of Belarus) in accordance with the type of financial stability

Indicator	Z	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>	X <sub>6</sub>	X <sub>7</sub>
<b>"Agrofirm "Rodina" LLP (high level of financial risk)</b>								
2017 year	59,33	0,91	0,83	1,8	-0,095	0,45	15,46	1,8
2018 year	59,32	1,14	0,93	1,76	0,125	0,48	7,86	1,76
Absolute change (+, -)	-0,01	0,23	0,1	-0,04	0,22	0,03	-7,6	-0,04
2 years on average	59,325	1,025	0,88	1,78	0,015	0,465	11,66	1,78
Deviation from the average values in the Grodno region	54,92	-1,01	0,26	0,34	-0,44	0,11	5,64	1,26
inc.	92,57	-98,54	29,89	19,27	-2923,33	22,58	48,35	71,04
<b>CW "Mambetov and K" (the level of financial risk is above average)</b>								
2017 year	0,98	1,96	0,49	1,12	0,49	0,33	28,36	0,53
2018 year	-12,55	2,79	1,26	1,01	0,64	0,56	26,49	0,34

Absolute change (+, -)	-13,53	0,83	0,77	-0,1	0,2	0,2	-1,9	-0,2
2 years on average	-5,785	2,375	0,875	1,065	0,565	0,445	27,425	0,435
Deviation from the average values in the Grodno region	-2,289	-1,47	0,33	-0,22	-0,22	0,17	17,74	-0,01
inc.	39,57	-61,68	37,83	-20,70	-38,32	37,98	64,67	-2,18

*Source:* compiled by authors

Nevertheless, the level of financial ratios of enterprises of the Republic of Kazakhstan as a whole indicates its compliance with the group into which these enterprises were classified. So, we can conclude that the model for diagnosing financial stability and forecasting crisis conditions proposed for Belarusian agricultural enterprises can be applied to similar enterprises of the Republic of Kazakhstan.

### Conclusions

The results of the study made it possible to establish that in order to diagnose the financial crisis of agricultural enterprises; one should take into account the specifics of the industry and analyze the influence of not only indicators of financial stability, but also indicators of the efficiency of economic activity. Testing the presented logit-model allows us to conclude that the model built for Belarusian enterprises is quite applicable for the diagnosis of financial stability and the risk of crisis for agricultural enterprises of the Republic of Kazakhstan. The conducted research gives the basis to determine the advantages of using logit-regression models: they are more universal in comparison with discriminant ones; they are quite easy to use, on their basis it is possible to identify agricultural enterprises that are at the point of a financial crisis and evaluate the “borderline” values of financial stability ratios, showing the transition from one type of financial stability to another; models allow ranking agricultural enterprises by the degree of proximity of enterprises to the point of financial crisis, which indicates their high practical importance.

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