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Financial analysis of borrowers and scoring modelling

Due to the instability in the global financial markets and the deepening of globalization processes the level of risk of irrevocability of credits by business entities increases. It is noteworthy that the financial crisis hardly affected savings banks (OJSC «Sberbank of Russia» is not a saving bank, because it provides all types of banking operations, including risk in the securities market) and Islamic banks.

Investment project with the declaration of rejection of percent, as well as of futures transactions takes the acuity of the debt problem off. But, among the inhabitants is widely believed that Islamic finance is connected with the financing of radical movements or the financing of mosques, madrasas and literature. However, despite the name of the Islamic bank as a financial institution, is not a religious institution. Niche of «Islamic banking» is produced by experience, including the non-Muslim countries such as Luxembourg, United Kingdom, United States, South Korea, Hong Kong, Singapore and others. Major obstacles

Table 1

Comparison of methodologies for assessing the solvency of borrowers by banks

Activities	Name of bank							
	Miraf Bank	International bank of Saint - Petersburg	Rosselkhozank	Sberbank of Russia	Sobinbank	VTB	ATF Bank (Kazakhstan)	Tsesnabank (Kazakhstan)
Liquidity ratios								
Absolute liquidity ratio	+	+	+	+	+		-	+
Fast liquidity ratio (acid-test ratio)	-	+	+	+	+		+	+
General late of coverage (current liquidity ratio)	+	+	+	+	+	+	+	+
Financial stability coefficients								
Coefficient of supply by own floating funds	+	+	+	-	+	+	+	_
Funding ratio	_	+	-	-	+	-	-	_
Financial stability coefficient (independence)	+	-	+	+	+	+	-	+
Profitability ratios								
Profitability of sales	+	-	+	+	+	+	-	_
The overall profitability of the reporting period	+	-	-	+	+	+	-	_
Economic profitability	-	-	-	-	+	-	-	_
Equity capital profitability	-	-	-	-	+	-	+	_
Coefficient of turnover intensity	-	-	-	-	-	-	+	-

Table 2

Overall results of regression model estimate for the Omsk region

	Beta	Std.Err.	B	Std.Err.	t(320)	p-level
Intercept			19,27435	1,224144	15,74516	0,000000
K1	0,171116	0,045716	2,34867	0,627483	3,74300	0,000216
K2	-0,242658	0,065268	-1,45158	0,390435	-3,71786	0,000237
K3	0,248744	0,052505	0,33840	0,071429	4,73751	0,000003
K4	0,796708	0,029095	51,08361	1,865527	27,38293	0,000000
K5	0,008140	0,027698	0,66691	2,269205	0,29390	0,769028
K6	0,031897	0,027599	0,22716	0,196548	1,15575	0,248647

Regression Summary for Dependent Variable: Var7
R= ,87081552 R?= ,75831967 Adjusted R?= ,75378816
F(6,320)=167,34 p<0,0000 Std.Error of estimate: 11,940

Table 3

Results of regression model estimate for steppe zone of the Omsk region

	Beta	Std.Err.	B	Std.Err.	t(84)	p-level
Intercept			2,89955	2,981690	0,97245	0,333618
K1	0,578509	0,213352	15,52957	5,727249	2,71152	0,008121
K2	-0,657282	0,175370	-3,24458	0,865691	-3,74796	0,000326
K3	0,065931	0,143087	0,10690	0,231998	0,46078	0,646149
K4	0,878417	0,054979	76,57924	4,792987	15,97735	0,000000
K5	0,063433	0,072622	8,36273	9,574244	0,87346	0,384902
K6	0,041933	0,072434	3,85009	6,650536	0,57891	0,564197

Regression Summary for Dependent Variable: Var7
R= ,89778320 R?= ,80601468 Adjusted R?= ,79215858
F(6,84)=58,170 p<0,0000 Std.Error of estimate: 10,410

to the development of Islamic finance in Russia and partly in Kazakhstan are:

• Uncertainty regarding the demand for Islamic financial products - low number of Muslims for whom compliance of religion norms is important in the financial relations;

• Legal and tax obstacles to the roll-out of Islamic finance;

• Prejudiced sentiments to Islamic finance from the population;

• Lack of qualified personnel in the field of Islamic finance - both economists and Shariah experts.

In bank marketing positioning of Islamic finance comes as «ethic finance» [1].

I believe that secular countries should emphasize not «fully» Islamic banks but the so-called «Islamic window» inside a regular commercial bank, «Islamic branch» rarely «subsidiary».

In Kazakhstan and Russian banking practice is widely used world experience of assessment of the client's solvency on the basis of the ascertainment e of class of the borrower's solvency. The National Bank of Kazakhstan guided experience of other countries and developing guidelines for the analysis of the borrower's solvency (since 1994 there acted «Guidelines for the analysis of the solvency of banks" of the borrower №26). Among the objectives tree and credit policy of commercial banks there is the optimization of credit risks. Banks draw up its regulations of lending taking into account banking laws of the presence countries.

The key moment to determining the probability of bank loans involvement is that organizations must look at ourselves through the eyes of bankers and establish how much of their financial condition satisfies the requirements of the bank. This stipulates for scientific understanding and justification of principles, approaches, elaboration of methods and models, which allows assessing the financial condition and solvency of individual organizations. The significance of the solvency assessment is increasing in the present conditions against a background of increasing of resource scarcity and intensification of competition among businesses entities.

Among the foreign researchers of financial analysis and models of diagnostics of financial

Table 4

Results of regression model estimate for southern forest-steppe zone of the Omsk region

	Beta	Std.Err.	B	Std.Err.	t(78)	p-level
Intercept			21,35435	2,33523	9,14443	0,000000
K1	-0,065642	0,329888	-0,52947	2,66087	-0,19898	0,842794
K2	0,196502	0,471834	0,93424	2,24328	0,41646	0,678214
K3	0,100602	0,200471	0,10661	0,21243	0,50183	0,617201
K4	0,763982	0,058735	47,23108	3,63113	13,00727	0,000000
K5	-0,026533	0,097174	-2,93330	10,74268	-0,27305	0,785536
K6	0,081782	0,097568	8,23368	9,82293	0,83821	0,404474

Regression Summary for Dependent Variable: Var7
R= ,87521214 R?= ,76599629 Adjusted R?= ,74799601
F(6,78)=42,555 p<0,0000 Std.Error of estimate: 12,985

Table 5

Results of regression model estimate for northern forest-steppe zone of the Omsk region

	Beta	Std.Err.	B	Std.Err.	t(87)	p-level
Intercept			22,76496	1,959615	11,61706	0,000000
K1	0,239855	0,113397	17,92669	8,475209	2,11519	0,037273
K2	0,154262	0,213960	1,37158	1,902374	0,72098	0,472852
K3	-0,152424	0,247476	-0,21104	0,342637	-0,61592	0,539558
K4	0,822639	0,055655	44,32155	2,998514	14,78117	0,000000
K5	-0,040585	0,106001	-3,00711	7,853997	-0,38288	0,702745
K6	0,094160	0,105155	5,11044	5,707206	0,89544	0,373024

Regression Summary for Dependent Variable: Var7
R= ,87184118 R?= ,76010703 Adjusted R?= ,74356269
F(6,87)=45,944 p<0,0000 Std.Error of estimate: 11,949

Table 6

Results of regression model estimate for northern zone of the Omsk region

	Beta	Std.Err.	B	Std.Err.	t(50)	p-level
Intercept			13,75100	4,570344	3,00874	0,004101
K1	0,211113	0,081017	4,10327	1,574672	2,60579	0,012044
K2	-0,102176	0,085979	-1,10154	0,926918	-1,18839	0,240295
K3	0,173407	0,084048	0,30232	0,146530	2,06318	0,044307
K4	0,755333	0,072109	59,34459	5,665402	10,47491	0,000000
K5	-0,017821	0,066160	-0,92198	3,422849	-0,26936	0,788761
K6	0,082326	0,066163	0,18370	0,147631	1,24429	0,219193

Regression Summary for Dependent Variable: Var7
R= ,89057687 R?= ,79312716 Adjusted R?= ,76830242
F(6,50)=31,949 p<,00000 Std.Error of estimate: 8,6493

Table 7

Combined regression equations consistent with Sberbank's requirements

Zone division	Combined equations
As of 01.01.2006	
Region	$B = 32,60 + 6,36K_1 + 0,77K_2 + 0,38K_3 + 23,95K_4 + 6,70K_5 + 0,26K_6$
Steppe	$B = 34,76 + 21,96 K_1 + 0,18 K_3 + 14,37 K_4 + 29,88 K_5 – 12,13 K_6$
Southern forest-steppe	$B = 31,5 – 32,4K_1 + 1,22K_2 + 0,37K_3 + 24,77K_4 + 14,16K_5 – 0,74K_6$
Northern forest-steppe	$B = 26,46 + 17,36K_1 - 3,05K_2 + 0,85K_3 + 30,97K_4 + 6,21K_5 – 2,24K_6$
Northern	$B = 36,98 + 24,30K_1 + 0,47K_2 + 1,05K_3 + 20,90K_4 + 2,57K_6$
As of 01.01.2007	
Region	$B = 19,27 + 2,35K_1 - 1,45K_2 + 0,34K_3 + 51,08K_4 + 0,67K_5 + 0,23K_6$
Steppe	$B = 2,89 + 15,53K_1 - 3,24K_2 + 0,11K_3 + 76,58K_4 + 8,36K_5 + 3,85K_6$
Southern forest-steppe	$B = 21,35 - 0,53K_1 + 0,93K_2 + 0,11K_3 + 47,23K_4 - 2,93K_5 + 8,23K_6$
Northern forest-steppe	$B = 22,76 + 17,93K_1 + 1,37K_2 - 0,21K_3 + 44,32K_4 - 3,01K_5 + 5,11K_6$
Northern	$B = 13,75 + 4,10K_1 - 1,10K_2 + 0,30K_3 + 59,34K_4 - 0,92K_5 + 0,18K_6$
As of 01.01.2008	
Region	$B = 28,88 + 0,28K_1 - 0,06K_2 + 0,23K_3 + 38,22K_4 - 2,39K_5 + 0,36K_6$
Steppe	$B = 7,30 - 2,96K_1 + 0,23K_2 + 0,55K_3 + 70,84K_4 - 6,83K_5 + 10,65K_6$
Southern forest-steppe	$B = 22,706 + 1,610K_1 + 0,341K_2 + 0,026K_3 + 48,966K_4 - 4,618K_5 - 0,786K_6$
Northern forest-steppe	$B = 33,62 + 3,37K_1 - 0,14K_2 + 0,33K_3 + 26,24K_4 + 3,83K_5 - 0,26K_6$
Northern	$B = 14,52 + 6,94K_1 - 2,54K_2 + 0,34K_3 + 57,50K_4 + 3,85K_5 + 0,21K_6$

Table 8

Combined equations with the use of stepwise regression

Zone division	Combined equations
Region	$B = 28,83 + 0,24K_3 + 38,20K_4 - 2,31K_5 + 0,35K_6$
Steppe zone	$B = 6,69 + 2,61K_1 + 0,57K_3 + 70,99K_4$
Southern forest-steppe	$B = 22,80 + 2,35K_3 + 49,72K_4 - 5,44K_5$
Northern forest-steppe	$B = 33,49 + 4,76K_1 + 0,25K_3 + 26,65K_4$
Northern zone	$B = 13,78 + 6,99K_1 - 2,52K_2 + 0,36K_3 + 57,09K_4 + 0,20K_6$

condition we can distinguish: A-bill, S-model, Z-bill and ZETA model of E. Altman, R.G. Holdmen, P. Narayan, W. Beaver, J. Fulmer, A. Vinakor, M. Golder, J. De Palyan, J. Conan, J. Legault, R. Lis, K. Merwin, R. Smitir, J. Blyth, G. Springeyt, R. Taffler, G. Tishou, P. Fitzpatrick, D. Harrigan, B. Hickman, D. Duran, J.. Petty, W. Walker, J. Franshon, I. Romane, P. Pratt, models Ohe - Verbaer, Edvarts-Bell-Olson and others., and of course, the model of supervision of loans by R. Chesser.

In the rise of crisis conditions change priorities of activity change, the need of involvement of borrowed funds increases and requirements of banks to potential borrowers change.

Table 1 summarizes information about the coefficients used by different banks in assessing the solvency of potential borrowers - juristic persons.

By comparing different methodologies of banks, we can conclude about the similarity of trends data analysis, but a deeper analysis of banking methodologies revealed significant differences in the weighted assessments of certain indicators. Rating agencies and banks determine the solvency of the different organizations, using their own methodologies, which are based on an assessment of data from previous periods, and most of them do not take into account specificity of a particular industry.

So because of its specificity economic mechanism of agricultural production cannot demonstrate the high efficiency, in contrast to other industries. Agricultural sector as a socially significant for the country cannot develop without government support. For a reliable assessment of the financial condition and solvency of organizations of the Agricultural industrial complex there is a need to consider specific features of this industry.

Thus, for an adequate assessment of the solvency of the organization is necessary to improve the financial condition assessment tools taking into account the requirements of financial and credit institutions. The main problem of assessing the solvency of organizations is the lack of models considering branch specificity of organizations.

Indicated reasons stipulates the necessity for systematizing the acquired knowledge, scientific justification and elaboration of models adapted to Russian conditions, considering branch specificity of the Russian legal field which is especially important in the modern conditions of development. The urgency of improvement of tools for assessing the financial condition and solvency of organizations is determined by the objective needs and possibilities of its practical use.

The urgency of the problem, its practical significance, deficient scientific elaboration of approaches to the assessment of the financial condition and solvency, practical difficulties in the application of existing methodologies for assessing the solvency and possibilities of reliable assessment of the financial condition of agricultural organizations in the modern Russian economy predetermined the choice of research topic.

The aim of this study is to develop practical recommendations for assessing the financial condition and solvency of the organizations of agricultural complex taking into account the requirements of regulations of banks for the goals of internal and external controls.

In modern conditions a necessary tool to gain knowledge about the mechanism of the studied phenomena are mathematical and statistical research. To investigate the intensity,

Table 9

Combined regression equations consistent with Russian agricultural bank's requirements

Zone division	Combined equations
As of 01.01.2006	
The Omsk region	$B = 31,85 + 24,02K_1 + 0,02K_2 + 0,39K_3 + 0,81K_4 – 0,01K_5 + 0,70K_6$
Steppe	$B = 21,30 + 20,59K_1 + 6,30K_2 + 0,23K_3 + 0,69K_4 + 9,32K_5 – 6,22K_6$
Southern forest-steppe	$B = 26,18 + 28,02K_1 + 0,06K_2 + 0,41K_3 + 1,21K_4 + 1,75K_5 + 3,99K_6$
Northern forest-steppe	$B = 26,02 + 30,63K_1 – 0,01K_2 + 0,61K_3 – 1,47K_4 – 0,02K_5 – 1,61K_6$
Northern	$B = 37,38 +19,61K_1 – 0,09K_2 + 1,13K_3 + 0,51K_4 – 0,86K_5 + 2,40K_6$
As of 01.01.2007	
Region	$B = 21,73 + 48,82K_1 + 1,50K_2 + 0,25K_3 - 0,20K_4 - 0,53K_5 + 0,19K_6$
Steppe	$B = 6,91 + 69,68K_1 + 1,01K_2 + 0,44K_3 - 0,77K_4 - 0,21K_5 + 7,27K_6$
Southern forest-steppe	$B = 24,09 + 46,45K_1 + 1,37K_2 + 0,12K_3 + 0,54K_4 -0,62K_5 + 0,27K_6$
Northern forest-steppe	$B = 25,75 + 40,59K_1 + 2,49K_2 + 0,37K_3 - 1,73K_4 -0,58K_5 -0,81K_6$
Northern	$B = 16,28 + 57,40K_1 + 1,12K_2 + 0,34K_3 -0,23K_4 -1,32K_5 + 0,18K_6$
As of 01.01.2008	
Region	$B = 29,57 + 37,80K_1 + 0,17K_2 + 0,23K_3 + 0,05K_4 - 0,23K_5 + 0,28K_6$
Steppe	$B = 8,91 + 70,66K_1 + 1,47K_2 + 0,37K_3 - 0,53K_4 - 0,32K_5 + 4,91K_6$
Southern forest-steppe	$B = 19,63 + 50,11K_1 + 1,17K_2 + 0,08K_3 + 0,61K_4 + 2,07K_5 - 6,21K_6$
Northern forest-steppe	$B = 33,52 + 26,04K_1 + 0,11K_2 + 0,45K_3 - 0,30K_4 - 0,06K_5 -1,03K_6$
Northern	$B = 16,71 + 53,77K_1 + 1,83K_2 + 0,28K_3 -0,36K_4 - 0,02K_5 + 0,19K_6$

Table 10

Combined regression equations consistent with the requirements of Sobinbank

Zone division	Combined equations
As of 01.01.2007	
Region	$B = 21,37 + 2,53K_1 - 1,76K_2 + 0,48K_3 + 2,11K_4 - 0,08K_5 + 48,27K_6 - 0,78K_7 + 0,14K_8$
Steppe zone	$B = 18,44 + 0,25K_1 - 0,36K_2 + 0,48K_3 + 1,74K_4 - 0,11K_5 + 51,84K_6 - 2,20K_7 + 5,03K_8$
Southern forest-steppe	$B = 24,27 - 0,71K_1 + 0,49K_2 + 0,43K_3 + 2,98K_4 - 0,14K_5 + 43,38K_6 + 1,17K_{12} + 1,53K_{13}$
Northern forest-steppe	$B = 24,82 + 15,41K_1 + 0,94K_2 - 0,16K_3 + 2,63K_4 + 0,01K_5 + 40,76K_6 + 1,06K_7 - 1,42K_8$
Northern	$B = 13,24 + 3,641K_1 - 1,16K_2 + 0,44K_3 + 3,53K_4 - 0,13K_5 + 58,26K_6 - 4,86K_7 + 0,04K_8$
As of 01.01.2008	
Region	$B = 28,75 + 1,72K_1 - 0,15K_2 + 0,34K_3 + 0,03K_4 - 0,03K_5 + 37,68K_6 - 2,30K_7 + 0,32K_8$
Steppe	$B = 10,49 - 2,48K_1 + 2,75K_2 + 0,34K_3 + 1,58K_4 - 0,11K_5 + 63,90K_6 - 7,67K_7 + 13,28K_8$
Southern forest-steppe	$B = 22,43 + 1,39K_1 + 0,08K_2 + 0,16K_3 + 0,05K_4 - 0,05K_5 + 50,92K_6 - 0,40K_{11} - 5,25K_{12}$
Northern forest-steppe	$B = 32,56 + 10,12K_1 - 0,15K_2 + 0,33K_3 + 0,19K_4 + 0,27K_5 + 23,14K_6 + 9,53K_7 - 2,80K_8$
Northern	$B = 16,16 + 3,37K_1 + 0,002K_2 + 0,45K_3 + 1,90K_4 - 0,10K_5 + 54,21K_6 + 0,58K_7 + 0,18K_8$

the type and form of causal effects is widely used regression and discriminant analysis. This allows to influence the identified factors and to interfere in the financial process in order to obtain the essential results.

Thus, realization of diagnostic assessment of the financial condition of the commercial organization, identifying of significant factors affecting the level of solvency, allows credit organizations to identify correctly the possibility of crediting of the organization, and the organization itself to develop a complex of stabilization measures aimed at managing these factors.

Modeling was conducted for the agricultural branch, investigators used data of annual reports of the agricultural organizations of the Omsk region for 3 years [2,3,4]. Tables 2-6 presents the general results of the sixfactors regression model, built on the basis of data for the whole of the Omsk region and the four natural economic zones for three years considering the requirements of the Sberbank of Russia. Because of that fact that the Omsk region is bordered upon three regions of Kazakhstan, we can suppose about the possibility of application of these models in the North Kazakhstan.

Correlation index for set up regression equations is always in over the range of 0,7 – 0,9, that, according to Tcheddok scale, gives the evidence of high correlation ratio between solvency class and factors included in the model. Determination coefficient is equal to 0,75 – 0,81. It means that performance indicator for 75-80% depends on selected factors, and 20-25% falls to the share of random and unaccounted factors. Design value of Fisher's ration test in all mentioned tables is higher than theoretical values for confidence level P = (1 – 0,05) = 0,95, and this, in its turn, comply with significance level p is less than 0,0000. Consequently, received regression equations are significant, and not arise from random selection of examination (see table 7)

Research results showed that not all factors are significant in spite of significance of each equation at large.

Having step-by-step correlation carried out, in other words having factors consequently excluded from models according to their least significance, we received combined equations comprising the most significant factors having an impact to financial status and solvency estimate (see table 8).

Regression models consistent with Russian agricultural bank's requirements. Methods of evaluation and analysis of financial status of

Table 11

Discriminant functions results in the region

	Wilks' Lambda	Partial Lambda	F-remove	p-level	Toler.	1-Toler. (R-Sqr.)
K1	0,389362	0,997039	0,5077	0,602305	0,416444	0,583556
K2	0,392247	0,989706	1,7786	0,170427	0,466459	0,533541
K3	0,405494	0,957372	7,6139	0,000582	0,420245	0,579755
K4	0,866587	0,447975	210,7180	0,000000	0,981271	0,018729
K5	0,389198	0,997459	0,4357	0,647194	0,970016	0,029984
K6	0,390552	0,994000	1,0322	0,357314	0,984402	0,015598

Discriminant Function Analysis Summary
No. of vars in model: 6; Grouping: Var7 (3 grps)
Wilks' Lambda: ,38821 approx. F (12,684)=34,483 p<0,0000

Table 12

Combined equations of discriminant credit surveillance models consistent with the requirements of Sberbank

Зональное деление	Система уравнений
Region	$G_1 = -5,30 - 0,14K_1 + 0,02K_2 + 0,03K_3 + 9,59K_4 - 0,37K_5 - 0,02K_6$ $G_2 = -2,95 - 0,12K_1 + 0,06K_2 - 0,002K_3 + 6,54K_4 - 0,43K_5 - 0,07K_6$ $G_3 = -1,62 - 0,01K_1 + 0,001K_2 + 0,002K_3 - 0,78K_4 - 0,06K_5 - 0,009K_6$
Steppe	$G_1 = -17,92 - 0,83K_1 + 0,39K_2 - 0,009K_3 + 39,44K_4 + 7,96K_5 + 0,24K_6$ $G_2 = -10,70 - 0,25K_1 + 0,25K_2 - 0,08K_3 + 29,98K_4 + 8,79K_5 - 0,54K_6$ $G_3 = -2,69 + 0,14K_1 - 0,09K_2 - 0,005K_3 + 8,30K_4 + 6,95K_5 - 4,28K_6$
Southern forest-steppe	$G_1 = -9,69 - 0,18K_1 + 0,15K_2 + 0,006K_3 + 19,35K_4 - 0,49K_5 - 1,10K_6$ $G_2 = -4,45 - 0,06K_1 - 0,003K_2 - 0,002K_3 + 12,72K_4 - 0,68K_5 - 0,66K_6$ $G_3 = -1,73 - 0,03K_1 + 0,03K_2 + 0,0004K_3 - 2,33K_4 + 0,19K_5 + 0,025K_6$
Northern forest-steppe	$G_1 = -3,29 - 0,72K_1 - 0,10K_2 + 0,10K_3 + 3,95K_4 - 0,53K_5 - 0,25K_6$ $G_2 = -1,93 - 0,13K_1 + 0,03K_2 - 0,01K_3 + 2,66K_4 - 0,60K_5 - 0,55K_6$ $G_3 = -1,34 - 0,23K_1 - 0,02K_2 + 0,01K_3 - 1,06K_4 - 0,60K_5 - 0,12K_6$
Northern	$G_1 = -22,81 - 0,10K_1 + 0,05K_2 - 0,01K_3 + 49,1K_4 + 2,37K_5 - 0,18K_6$ $G_2 = -14,41 - 0,18K_1 + 0,12K_2 - 0,04K_3 + 36,54K_4 - 1,05K_5 - 0,22K6$ $G_3 = -3,96 - 0,10K_1 + 0,13K_2 - 0,01K_3 + 11,66K_4 - 0,99K_5 - 0,06K_6$

Table 13

Combined equations of factor discriminant models consistent with the requirements of Russian Agricultural bank

Zone division	Combined equations
Region	$G_1 = -4,05 + 8,90K_1 + 0,01K_2 + 0,001K_3 + 0,07K_4 + 0,03K_5 - 0,01K_6$ $G_2 = -3,50 + 4,15K_1 - 0,07K_2 - 0,01K_3 + 0,04K_4 + 0,13K_5 - 0,15K_6$ $G_3 = -1,69 - 0,88K_1 - 0,02K_2 + 0,003K_3 - 0,004K_4 + 0,06K_5 - 0,01K_6$
Steppe	$G_1 = -15,66 + 40,82K_1 - 0,39K_2 - 0,19K_3 + 0,54K_4 - 0,19K_5 + 4,94K_6$ $G_2 = -7,98 + 24,02K_1 - 0,46K_2 - 0,15K_3 + 0,42K_4 - 0,03K_5 + 4,09K_6$ $G_3 = -3,05 + 9,83K_1 - 0,73K_2 - 0,04K_3 + 0,10K_4 - 0,05K_5 - 0,19K_6$
Southern forest-steppe	$G_1 = -10,75 + 22,42K_1 + 0,59K_2 + 0,004K_3 - 0,16K_4 + 2,13K_5 - 2,99K_6$ $G_2 = -4,80 + 11,04K_1 + 0,18K_2 + 0,001K_3 - 0,12K_4 + 1,31K_5 - 1,36K_6$ $G_3 = -2,80 - 1,00K_1 + 0,19K_2 + 0,01K_3 - 0,04K_4 + 1,32K_5 - 0,19K_6$
Northern forest-steppe	$G_1 = -2,84 + 4,26K_1 + 0,03K_2 + 0,05K_3 + 0,01K_4 + 0,54K_5 - 0,64K_6$ $G_2 = -3,36 + 1,56K_1 - 0,05K_2 + 0,005K_3 + 0,01K_4 + 0,49K_5 - 0,33K_6$ $G_3 = -1,72 - 0,81K_1 + 0,01K_2 + 0,01K_3 - 0,02K_4 + 0,46K_5 - 0,25K_6$
Northern	$G_1 = -29,26 + 62,70K_1 + 1,64K_2 - 0,10K_3 + 0,22K_4 + 1,99K_5 + 0,06K_6$ $G_2 = -11,51 + 21,98K_1 + 0,51K_2 - 0,05K_3 + 0,12K_4 + 0,69K_5 - 0,47K_6$ $G_3 = -5,17 + 13,12K_1 - 0,66K_2 - 0,02K_3 + 0,07K_4 + 0,26K_5 + 0,02K_6$

"Russian agricultural bank" JSC borrowers was used for model building (see table 9).

Research showed that equity to total assets (K1) and working capital ratio (K3) have the most significant influence on organizations' financial status estimation.

Equation in two indicators is nonlinear:

B = 15,25 + 0,80K3 + 32,89K1 – 0,002K32 – 0,41K3K1 + 29,12K12 (1)

Diagrams are convenient for express-analysis of enterprises; they allow classifying of an organization on the basis of two coefficients, and then breakdown of the rest indicators required for more precise classifying of the organization to certain solvency class. Dependence of financial status and solvency estimate on equity to total assets and working capital ratio over all the Omsk region and by zones looks graphically as follows (see figure 1-2).

As a result of the conducted researches a complex of regression models was created allowing evaluating the financial condition of the agricultural organizations and making reasonable credit opinion, taking into account the requirements of Sberbank of Russia, Russian Agricultural bank and Sobinbank during potential borrowers evaluation.

Formulation of discriminant models complex taking into account the requirements of Sberbank. All organizations were divided into groups depending on Z – account readings received in advance and limits set for credit capacity classes to create combined equations in accordance with the proposed methods. The results of discriminant functions all over the region and by natural-economic regions are presented in tables (see table 11).

Discriminant Function Analysis Summary
No. of vars in model: 6; Grouping: Var7 (3 grps)

FIGURE 1. FINANCIAL DIAGNOSTICS OF ORGANIZATIONS IN THE OMSK REGION

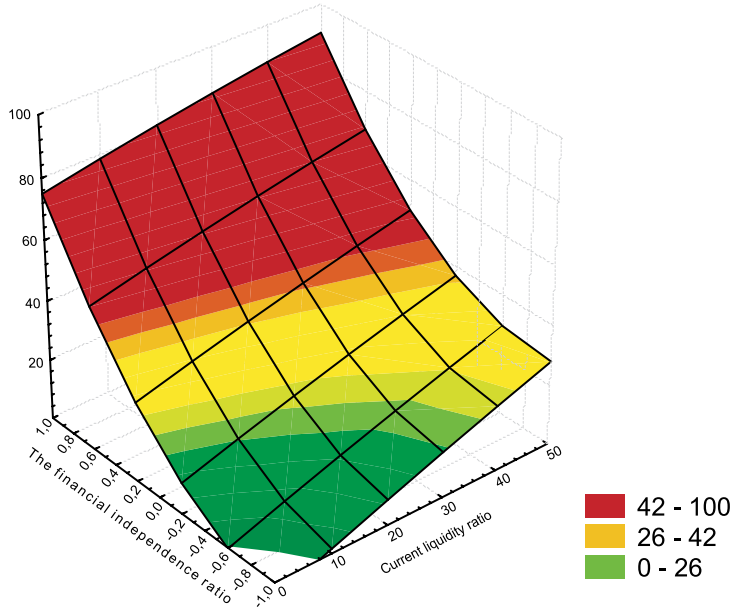


Table 14

Combined equations of factor discriminant models consistent with the requirements of Sobinbank

Zone division	Combined equations
Region	G_1= - 4,18 – 0,08K_1 + 0,06K_2 + 0,02K_3 + 0,005K_4 – 0,01K_5 + 9,22K_6 – 0,86K_7 + 0,01K_8 G_2 = - 3,17 – 0,04K_1 + 0,04K_2 – 0,001K_3 - 0,01K_4 – 0,01K_5 + 4,22K_6 + 0,04K_7 – 0,15K_8 G_3 = - 1,63 + 0,002K_1 – 0,01K_2 – 0,01K_3 – 0,001K_4 – 0,003K_5 – 0,84K_6 – 0,04K_7 – 0,01K_8
Steppe	G_1 = -15,81 + 0,06K_1 - 0,04K_2 - 0,03K_3 - 0,24K_4 - 0,13K_5 + 40,04K_6 + 10,71K_7 - 1,43K_8 G_2 = -8,93 + 0,16K_1 + 0,02K_2 - 0,05K_3 - 0,42K_4 - 0,10K_5 + 25,84K_6 + 10,21K_7 - 1,49K_8 G_3 = -3,32 + 0,29K_1 - 0,16K_2 + 0,01K_3 - 0,60K_4 - 0,05K_5 + 9,92K_6 + 8,00K_7 - 4,63K_8
Southern forest-steppe	G_1 = - 8,60 - 0,02K_1 - 0,05K_2 + 0,01K_3 + 0,01K_4 - 0,02K_5 + 20,77K_6 - 1,74K_7 - 0,88K_8 G_2 = - 3,77 - 0,01K_1 - 0,05K_2 + 0,004K_3 + 0,001K_4 - 0,03K_5 + 9,81K_6 - 0,35K_7 - 0,71K_8 G_3 = -1,76 - 0,03K_1 + 0,05K_2 + 0,003K_3 + 0,001K_4 + 0,003K_5 -2,83K_6 + 0,29K_7 + 0,06K_8
Northern forest-steppe	G_1 = -2,47 + 0,64K_1 - 0,008K_2 + 0,05K_3 + 0,02K_4 + 0,03K_5 + 3,71K_6 - 0,01K_7 - 0,54K_8 G_2 = -3,14 + 0,09K_1 - 0,04K_2 + 0,01K_3 - 0,09K_4 - 0,02K_5 + 1,28K_6 - 2,59K_7 + 0,20K_8 G_3 = -1,37 + 0,06K_1 - 0,04K_2 + 0,02K_3 - 0,01K_4 - 0,001K_5 - 1,15K_6 - 0,84K_7 - 0,01K_8
Northern	G_1 = -27,64 – 0,02K_1 – 0,44K_2 + 0,01K_3 + 1,14K_4 – 0,12K_5 + 63,02K_6 – 5,21K_7 + 0,08K_8 G_2 = -11,53 + 0,03K_1 – 0,19K_2 – 0,006K_3 + 0,37K_4 – 0,05K_5 + 22,84K_6 – 2,02K_7 – 0,46K_8 G_3 = -5,21 – 0,07K_1 -0,07K_2 + 0,007K_3 – 0,71K_4 – 0,02K_5 + 13,77K_6 – 0,64K_7 + 0,02K_8

Table 15

KThe classification table of forecasts determining the percentage of data correctness

	Observed		Predicted		
			VAR00007		Percentage Correct
			0,00	1,00	
Step 1	VAR00007	0,00	115	4	96,6
		1,00	2	149	98,7
	Overall Percentage				97,8

Note. Classification Table (a); a The cut value is ,500.

Wilks' Lambda: ,38821 approx. F (12,684)=34,483 p<0,0000

Analyzing the obtained values, it should be noted that the value of Wilks' Lambda equal to 0.22 - 0.40 shows good ability of a variable to distinguish (discriminate) predicted groups. Estimated value of the Fisher' ratio test exceeds the table value, it means that the resulting equations are not the result of random selection, and are meaningful.

As a result of conducted researches combined equations was created for the whole region and for every natural-economic region (see table 12).

The following combined equations was worked out as a result of the formulation of the complex of discriminant models, taking into account the requirements of Russian Agricultural bank and Sobinbank (see tables 13-14).

To classify an organization according to financial position the abovementioned systems of equations are used, which help to determine the maximal value – G, indicating if an organization belongs to one of the groups of financial strength. The organization under test belongs to group where the final value is higher.

To formulate the logit-regression model the author used financial indicators calculated on the basis of the annual financial statements of agricultural organizations of the Omsk region. 6 basic factors covered by the methods of Sberbank of Russia were used during formulating of the model. The overall results of the evaluation of the six factor regression model are presented in table 15-17.

Significant equation of the regression is obtained by using all of selected six coefficients simultaneously. According to the results of the realized modelling we the following equation of the regression:

4 Y = –13,03 + 2,79K1 – 0,64K2 + 0,84K3 + 16,49K4 + 3,33K5 + 0,58K6. (2)

4 In this model, a high error is shown by absolute liquidity ratio, ccoefficient of supply by own floating funds, profitability of sales. However, this model is built under the regulation of the Sberbank of Russia, therefore, an exception of the model, for instant, absolute liquidity ratios, profitability of sales (as poorly reflecting the real financial situation in agriculture) is pointless. [5]

4 The probability of coming delays in payments on the credit is calculated according to the formula:

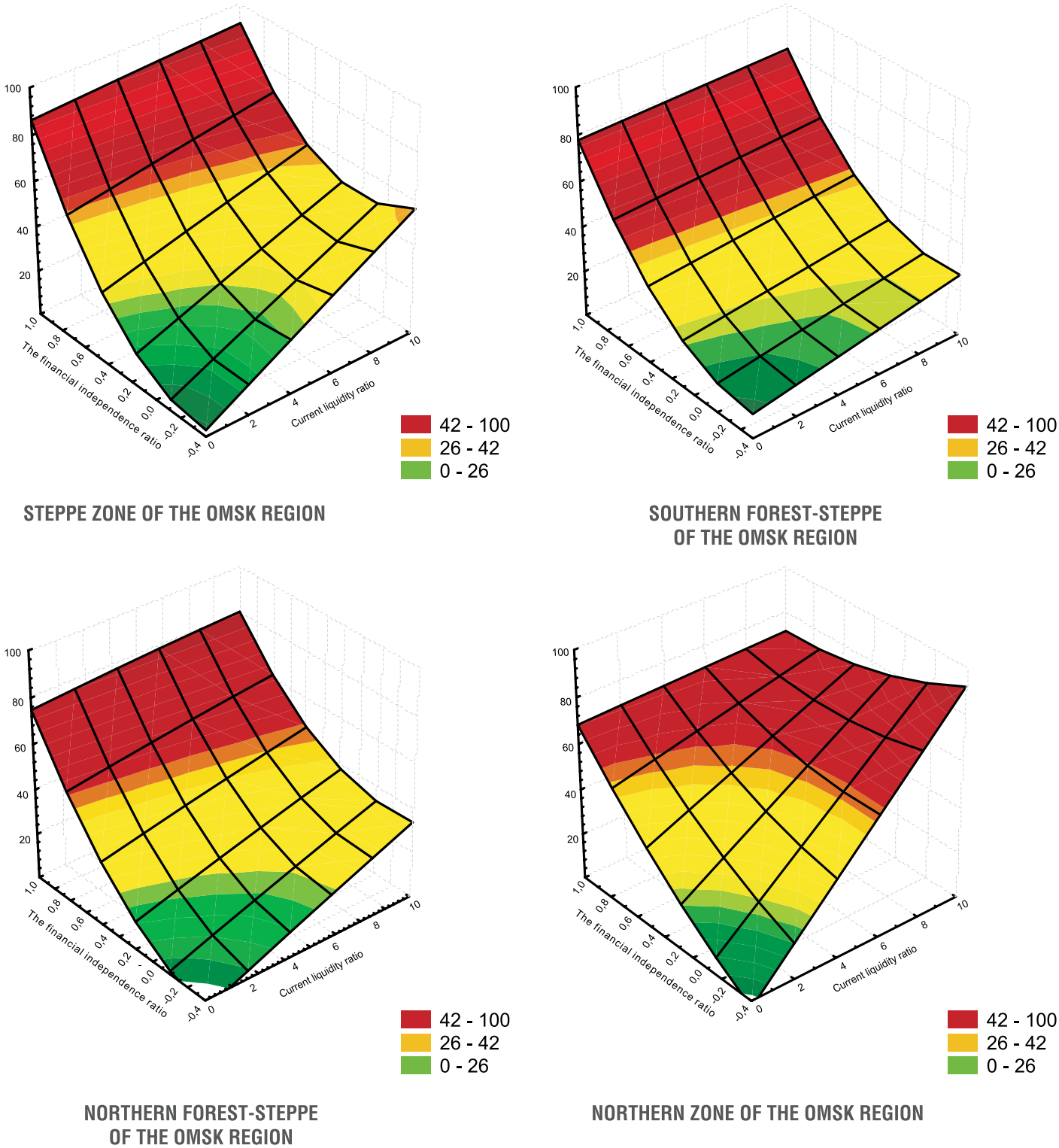
$$P = \frac{1}{1+e^{-y}}. \quad (3)$$

If the p will be less than 0.5, we can assume that the bankruptcy will not happen, or is supposed to be a financial collapse.

If the p will be less than 0.5, we can assume that the bankruptcy will not happen, or is supposed to be a financial collapse.

So, in present time the banks have the opportunity to work out and approve the internal assessment methodology the borrower's solvency, that's why to assess the financial condition of a potential borrower banks apply their criteria, which are different from f other banks. To satisfy the need for borrowed funds organizations of financial position must comply with the requirements of the appropriate bank. Therefore, the basis for the investigations included requirements of the relevant established by appropriate internal methodologies (regulations) of the assessment of borrower's solvency. Studies have shown that industrial specificity in banking methods almost is not taken into account, and the requirements for borrowers are significantly

FIGURE 2. FINANCIAL DIAGNOSTICS OF ORGANIZATIONS IN ZONAL BREAKDOWN



STEPPE ZONE OF THE OMSK REGION

SOUTHERN FOREST-STEPPE OF THE OMSK REGION

NORTHERN FOREST-STEPPE OF THE OMSK REGION

NORTHERN ZONE OF THE OMSK REGION

Table 16

Data prediction summary

Index	VAR00007 = 1	VAR00007 = 0	Total
Total in extraction	119	151	270
Predicted	117	153	270
Correct	115	149	264
Incorrect	4	2	6
Correct, %	96,6	98,7	97,8
Incorrect, %	0,4	1,3	2,2

Table 17

Data for regression equation formulation

Index	*B*	S.E.	Wald	Df	Sig.	Exp(B)
Step 1						
K_1	2,796	3,930	,506	1	,477	16,379
K_2	–,639	,529	1,461	1	,227	1,528
K_3	,844	,295	8,192	1	,004	2,325
K_4	16,486	4,059	16,499	1	,000	14,243
K_5	3,333	1,838	3,288	1	,070	28,009
K_6	,579	,541	1,143	1	,285	1,783
Constant						
Constant	–13,030	2,955	19,443	1	,000	,000

different.

The advantage of simulation to regulations is the ability to consider industrial specificity, regional characteristics, stage of the life cycle of the company, size of company and other economic conditions.

As a result of creation a system of regression equations there was obtained a tool, which allows financial analysts of organizations and credit analysts of banks to assess the financial condition and solvency of agricultural organizations, which are in favorable economic conditions.

Considering that the regression equations allow us to determine the significance of each indicator included in them, there are allocated two the most important indicators, using which it is possible to carry out an initial assessment of the organization from the position of compliance with the requirements of the bank. For this purpose there are graphics, created with the use of two of the most significant indicators of equations. Graphics are suitable for express analysis of the households, they let on the basis of two coefficients relate an organization to a particular group, and then it is necessary to calculate other indicators for a more correct classification of the organization to a class of solvency.

To get a confidence in the ability of the organization in the future to pay for its obligations for banks it is necessary to predict the financial condition of the organization. For this purpose there are discriminant models. The system of discriminant model was also created using the requirements of the internal bank's methodologies. There were obtained discriminant equation as well as for the region and the natural economic zones of the region. An additional validation of the created models was realized. Modeling allows not only to relate to the corresponding group of financial condition or solvency of existing class organization, but with the addition of new data organization program will automatically detect its class credit.

The created system of discriminant equations is the tool, which allows to financial analysts and management of the organizations, as well as credit analysts of banks to predict financial condition and solvency of companies in crisis economic conditions.

Also, according to the proposed methodology, there was created a complex of the logit- regression models allowing predicting the financial condition and solvency of organizations in different economic conditions. Models can be used by credit analysts of banks, financial analysts and the management of organizations to project the financial condition of the organization.

Suggested methods for assessment of the financial condition and solvency of organizations are acceptable to the Russian conditions, they are adapted to the agricultural sector. Models created at the regional data array, moreover, the creation of models for natural economic zones of the area makes it easier to take into account their specificities and to work out a model, allowing determining more accurately the financial condition and evaluating the solvency of agricultural organizations in various areas. In order to adapt some foreign models at application in practice of bank management in Kazakhstan there is a need to set their intervals of the class definition of financial stability, making the model in the criterion.

The proposed model allows organizations to assess their financial situation from a position of the banks and get information according the requirements of credit institutions. Timely receipt of this information will allow taking management decisions that improve financial condition of the organization.

List of used literature

1. Patlasov O. Yu., SS Kairdenov "Islamic banking products: the perception of customers in secular states" // "Science of Man: Studies in the Humanities." - 2013. - №4. - Pp. 25-33

2. Patlasov O. Yu., Vasina N. V. "Models assessing the solvency of borrowers of agricultural organizations." // "Finance and Credit." - 2013. - № 39. - Pp. 18-24.

3. Patlasov O., Vasina N.V. " Modeling assess of the possibility of borrowing business structures" //" Audit and financial analysis." 2009 № 5. Pp. 102 - 109.

4. Patlasov O. Y., Vasina N. V. FINANCIAL MODELING OF BORROWERS' CREDITWORTHINESS // OLSZTYN ECONOMIC JOURNAL. 2010. № 5 (1). Pp. 159 – 173

5. Patlasov O.Y., S.S. Kairdenov "Компанияның несиесін ақтай алатын бағаны қаржылай модельдеу бойынша логит-регрессиялық техника // Вестник КарГУ. – 2013. – № 3. – Pp. 125-139.