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STABILITY OF THE REGIONAL BANKING SYSTEMS IN THE CRISIS AND POST-CRISIS PERIODS[1]

In connection with the recent crises has become more urgent topic of estimating the probability of bankruptcy of financial institutions. However, do not analyze the level of bankruptcies in the «regional banking systems» and its dependence on certain bank characteristics, the economic situation in the region. The subject of this study is to estimate the probability of medium-sized («non-capital») regional banks bankruptcy. Purpose of the article is to identify the main factors that have the greatest impact on the probability of default of the situation of regional banks. The study used an analytical and theoretical method is conducted econometric analysis. For performance revealed a significant difference in the factors influencing the onset of medium-sized regional situation of default («non-capital») banks, compared with larger banks. First to assess the likelihood of bankruptcy is used the concentration index of banks included in the model and significant macro variables. Results are applicable, from our point of view, the evaluation and more precise definition of the probability of default CBR regional banks.

Keywords: behavioral strategies of banks, crisis and post-crisis periods, medium-sized («non-capital») regional banks, regional banking system, the level of competition

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In recent years, a growing number of studies on the development of models with maximum accuracy in determining the forecast probability of the banks default. The need for them is conditioned to influence, that the functioning of the banking system exerted on the state and the development of the Russian economy, and to the heterogeneity of the Russian banking system. However in the specialized literature is throwing light insufficiently up the problem of the predication of regional banks default.

In a series of papers by the authors is highlighted the concept of «regional banking system», is shown out the particular selection strategies of regional banks (Aleksashin, Aleskerov and others, 2012; Aleskerov, Belousova et al, 2011), out specificity of regional banks functioning (Drobyshevskiy, Trunin, 2007; Anzoategui, Pería, Melecky, 2012 etc.). This suggests, that the main factors, that determine the risk of default, are different for banks in different regions. Specificity behavior of regional banks in the crisis and post-crisis periods allows do identify features of their functioning, select a combination of factors, the is most important in a situation of bankruptcy.

Should pay attention to one of the articles of F.T. Alesgerov et al. [2], which is devoted to modeling «patterns» (term of F.T. Aleskerov) of banks behavior. There are important, that patterns of behavior, called optimal for the banking sector (patterns № 1, 2, 3), is characterized mainly regional banks outside the Central Federal District. So, adhere to the pattern №1 «banks hundreds of second and third, enough big players in the regional financial markets, but do not have sufficient resources for the maintenance and development of the branch network, their activities are largely concentrated in one of the «non-capital» regions of Russia» [2]. Among the banks that stable pattern №2, is marked Pervomajskij bank, «a very large bank, whose main activity is concentrated in the regions» [ibid.] In the group of unstable banks, constantly changing its pattern, «are included small banks (fourth hundred and beyond), whose main activity is concentrated in the regions» [ibid.] Moreover, in our view, should pay attention to the fact that, despite the «abnormality» of the pattern №4 , the failures (the defaults) of banks in these regions can't be called common. Thus, the logical conclusion is that the «abnormal» behavior, despite the high risk, you may have reason to regional conditions. It appears that it is the desire to adapt to the changing economic conditions of the region, maintaining competitiveness in a growing number of branches of large banks of other regions.

Importantly, from our perspective, a number of studies that F.T. Aleskerov, V.M. Solodkov, V.Y. Belousova and others [1,2,3,4,5] in evaluating the performance of the bank account of its regional presence by incorporating macroparameters. According to the authors, «increasing the level of financial intermediation in the regions is costly for banks activity. However, it is observed that with an increase in cash income per capita costs of banks reduced» [4, p. 29]. Thus, in the evaluation of cost-effectiveness models of Russian banks are significant indicators that reflect the characteristics and level of socio- and economic development of regions. These studies seem to be important also in terms of estimating the probability of bank failure.

Proof of concept of the difference of behavior, features activities, causes of bankruptcy for banks of different regions can also be seen in studies of Anzoategui and others (Anzoategui D., Pería M., Melecky M., 2012) about the degree of competition in the regions, in the works A.M. Karminsky, A.A. Peresetsky (Karminsky 2012; Peresetsky A.A., Karminsky A.M., Golovan S.V., 2011), etc. It can be assumed that it is the specific features of economic development in the region are caused by the small size and scale of the majority of the «non-capital» of regional banks.

It seems that it would be logical to build the following logical chain. Smaller «non-capital» banks are different from the major strategy of behavior [8], respectively, exist by different rules. On the basis of F.T. Aleskerov et al [8] it is logical to conclude that the major banks at the moment of crisis to respond to the crisis, building a certain way trajectory behavior. After some time, it is often repeated medium-sized banks. Thus, we can talk about the slow response of small banks in the crisis. In a crisis, it can mean greater stability, but there is a risk of default or default post-crisis «behind the curtain» of the crisis.

Economic studies have repeatedly observed greater stability of small regional banks: the fewer are the cases of defaults. From our perspective, it is quite legitimate to explain this resistance to bankruptcy level of competition in the regions. In the opinion of A. Anzoategui [17], «competition is stronger in regions where there is less concentration of banks, mostly represented by branches of banks and a strong financial and/or economic development». This statement explains also appears different concentrations of defaults in the different regions.

In this paper we focus on estimating the probability of bank failures in the Volga Federal District (PFD) and the Ural Federal District (UFD), as in the

Table 1

Indicators of financial condition

The ratio of the balance sheet profit to net assets
The ratio of loans to individuals to net assets
The ratio of liquid assets to net assets
The ratio of liquid assets to demand liabilities
Logarithm of net assets (as the size of the bank's assets)
The ratio of turns on correspondent accounts to net assets
The ratio of overdue debts to credit economy
The ratio of overdue loans to obligatory reserves with the CBR
Provisions for losses on loans to credit economy
The ratio of equity to net assets
The ratio of deposits to individuals to net assets
The ratio of deposits to legal entities to net assets

period 2008–2010 among the most failed banks registered in these regions.

The sample represented 146 operating banks and 18 bankrupt banks. Most of the sample, mostly medium-sized banks, characterized by low balance and net profit, often negative (to a greater extent, it is typical for the data for 2009–2010), sufficient frequency during recessions and profit growth , decline and increase in liquid assets[1].

For the analysis of quarterly data taken as a number of studies (Karminsky 2012; Peresetsky A.A., Karminsky A.M., Golovan S.V., 2011) proves the high efficiency of their use. Financial indicators of the bank allocated in accordance with the procedure CAMEL. Of indicators after correlation analysis is presented in Table 1.

As repeatedly noted greater accuracy and greater predictive power of the model logit, is used to analyze the probability of bankruptcy regional banks these models. Checking the assumptions we made above about the features of the functioning of medium-sized regional banks, we construct a model of the original logit for the totality of the banks in the sample, including additional dummy variable «region», indicating the geographical location of the head office of the bank. Enabling this variable will determine how the operation within a specific region potentially affects the probability of bank failure, as well as how much the frequency of bankruptcy in a given region. So it is taking the value «1» means that the bank operates in the Volga Federal District, «0» — in the Urals Federal District. The dependent variable is the «default», receiving a «1» if the bank's license revoked or liquidated during the period from 2008 to 2010, and «0» if the bank is valid.

Logical to analyze the results of regressions with different levels of lag (4 and 6 quarter). Thus, we can assess the situation immediately after the onset of the financial crisis and closer to its end. The choice of lag implemented within eight quarters, since comparison of the quality of models shows that this value is optimal lag.

On the basis of Table 2 we can conclude that the model describes 40–51 % of the sample, the accuracy is satisfactory. This result indicates that the choice of variables for the analysis were taken into account, not all explanatory factors. Variables are insignificant relationship of corporate deposits to net assets and the ratio of deposits of individuals to net assets, the ratio of loans to individuals to net assets.

In our view, the reason for the variable relationship insignificance of individual deposits to net assets is not clear until the end. Often it is to work with individuals mainly oriented activities «non-capital» of regional banks, however, may have high demand in the region is used not so much deposits as credit banking products, which accounts for the regularity of the result — insignificance of the variable. In general, this result can also be explained by all the explanatory factors unaccounted for and, as a consequence, low fidelity model.

Should pay attention to the significance of the dummy variable included a specific region — «PFD». Negative sign of the coefficient suggests that the probability of bank failures in the Volga Federal District is lower than in the UFD. This result may be due to the fact that in the period from 2008 to 2010. — that is in crisis and post-crisis periods — with fewer banks in the Urals is observed in almost the same number of bank failures, as in the PFD[2].

In this case, the table shows the results for the entire set of samples. Comparison of the banking system of the Volga and Urals federal districts through regression is not possible and is not valid, as in this case for logit models will be an unrepresentative sample.

In general, the results to be expected for regional «non-capital» of medium-sized banks. Thus, an increase of overdue loans in relation to credit the economy is strong enough effect on increasing the probability of default. This seems to be indirectly confirmed high-risk policies of the banks we selected regions. The same effect on the

[1] www.cbr.ru; Overview of the Russian Banking Sector (online version) — 2008–2010. [El. resource]. access mode: http://www.cbr.ru/archive/Default.aspx.

[2] The central statistical database (TSBSD). [El. resource]. access mode: http://cbsd.gks.ru.

Table 2

Logit model results for the entire sample with the inclusion of dummy variables by region

	Model № 1 (the post-crisis period — 4 quarter lag)			Model № 2 (the crisis period — 6 quarter lag)	
Variable	**Coefficient**	**Probability**	**Variable**	**Coefficient**	**Probability**
region	–1.57	0.00	region	–1.65	0.00
The ratio of the balance sheet profit to net assets (–4)	31.73	0.00	The ratio of the balance sheet profit to net assets (–6)	29.11	0.01
The ratio of liquid assets to net assets (–4)	1.10	0.49	The ratio of liquid assets to net assets (–6)	3.18	0.18
The ratio of liquid assets to demand liabilities (–4)	–0.03	0.95	The ratio of liquid assets to demand liabilities (–6)	–0.09	0.89
Logarithm of net assets (–4)	–1.17	0.00	Logarithm of net assets (–6)	–1.24	0.00
The ratio of turns on correspondent accounts to net assets (–4)	–0.13	0.15	The ratio of turns on correspondent accounts to net assets (–6)	–0.31	0.01
The ratio of overdue debts to credit economy (–4)	35.18	0.00	The ratio of overdue debts to credit economy (–6)	147.52	0.00
The ratio of overdue loans to obligatory reserves with the CBR (–4)	–0.29	0.00	The ratio of overdue loans to obligatory reserves with the CBR (–6)	–3.02	0.00
Provisions for losses on loans to credit economy (–4)	–23.26	0.00	Provisions for losses on loans to credit economy (–6)	–27.11	0.01
The ratio of equity to net assets (–4)	–13.76	0.00	The ratio of equity to net assets (–6)	–10.45	0.01
The ratio of loans to individuals to net assets (–4)	0.53	0.59	The ratio of loans to individuals to net assets (–6)	1.69	0.19
The ratio of deposits to physical person to net assets (–4)	0.029	0.98	The ratio of deposits to physical person to net assets (–6)	0.08	0.96
The ratio of deposits to legal entities to net assets (–4)	–1.99	0.26	The ratio of deposits to legal entities to net assets (–6)	–2.85	0.29
McFadden R-squared	0.40		**McFadden R-squared**	0.51	
Number of observations	1066		**Number of observations**	781	

probability of default has an excessive increase in the balance sheet profit in relation to net assets. Increase in the ratio of balance sheet profit to net assets indicates that the bank is playing a risky policy that naturally indicates a high likelihood of default. This result is confirmed by the fact that the most frequent reason for the withdrawal of licenses of banks selected regions is the riskiness of the bank's policy orientation almost exclusively on increasing income. It is interesting that in surveys reviewed the probability of bank failure, indicated otherwise influence this indicator. Thus, we can conclude that the effect of the ratio of balance sheet profit to net assets to increase the probability of default is typical for «non-capital» medium-sized regional banks.

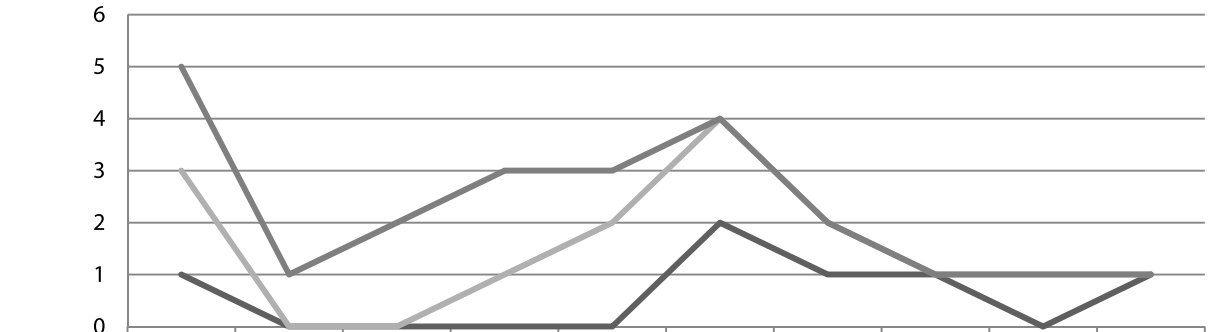
Significantly reduces the probability of default increase in the ratio of reserves for possible losses to credit economy. The growth of capital adequacy in the normal range reduces the probability of default of a regional bank.

Naturally, in our view, to increase the probability of default, provided the growth of lending to individuals as a crisis usually leads to a decrease in the probability of loan repayment term and therefore increase the likelihood of default of the bank. However, you should pay attention to the fact that in models with both greater and less lag with this variable is not significant. Perhaps this is due to insufficient accuracy of the models.

Increasing the ratio of liquid assets to demand liabilities is not significant, as the ratio of liquid assets to net assets, which is quite unexpected in this case because, as a rule, are not large «non-capital» regional banks inherent liquidity problems, often leading to a state of default and are also quite frequent cause of withdrawal. Nevertheless, this result could also be due to the rarity «depositors raids» on the banks surveyed regions.

The results of the econometric analysis show that increasing asset size has little effect on reducing the probability of default of banks. This result is consistent with our expectations, as the majority of medium-sized banks in the sample.

Should pay attention to some differences in the results of the models with a lag of four quar-



	Sverdlovsky region	Chelyabinsky region	Nizhny Novgorod Region	Udmurt Republic	Permsky region	Tyumensky region	Saratovsky region	Samarsky region	Bashkortostan Republic	Kurgansky region
2010	2	1	2	2	1	0	0	0	0	0
2009	2	0	0	1	2	2	1	0	1	0
2008	1	0	0	0	0	2	1	1	0	1

Fig. *Concentration of defaults by area*

ters and with a lag of six quarters. With increasing values lag model accuracy increases. Thus, when a four-quarter lag model's accuracy is 40 %, while in six quarters lag in model accuracy increases to 51 %. In this regard, in our view, it is interesting to contrast the results obtained AM Karminsky, etc. (2012–2013). As pointed out by the authors, with increasing lag accuracy of the model, in contrast, falls, and therefore for further consideration by the authors was «accepted lag of two quarters,» [11, p. 76].

When choosing a lag in four quarters, we move to the beginning of the post-crisis period (beginning in 2010). Selecting a lag of six quarters to evaluate the situation in the banking systems of the Volga and Urals federal districts in times of crisis. Importantly, in the same period a peak of defaults banks in the PFD.

In general, most of the variables show the same effect on the probability of default as models with a lag of four quarters, and with a lag of six quarters. Nevertheless, it should be noted that in the model with a larger quantity lag becomes significant, the ratio of turns on correspondent accounts to net assets, which characterizes the banking activity and the strategic behavior of the bank's management. Furthermore, in accordance with the calculation of marginal effects, several times greater effect in the ratio of arrears on loans to credit economy. Since both of the indicators affect the increase in the probability of default of banks, it is logical to conclude that the impact due to the strengthening of their analysis of the situation in the crisis period. Quite rightly, in our view, would be to assume that the change in the influence of these variables in the models, in comparison with other indicators suggesting the bólshey significance for the stability of the banks surveyed regions. In other words, perhaps these indicators during the crisis have the greatest impact on increasing the probability of default of banks PFD and UFD.

It seems that a different probability of bank failures can be not only in different regions, but also in various fields, which also marked a different level of development of the banking sector and competition in the banking system (see Figure).

For the analysis suggested a regression with dummy variables, the areas where the most frequent defaults in the period under review, and analyze the results (see Table 3). In addition, for the analysis of the probability of bank failures of belonging to the region should also include macro variables: inflation, unemployment rate, per capita income and the constant population growth in selected regions.

Thus, analysis of statistics shows that inflation is higher in the Volga Federal District, the dynamics of inflation expressed brighter than in the UFD. The unemployment rate is also higher in the PFD, compared to the UFD. Also, if there is a constant in the UFD rather stable during the period in population growth, the PFD with the same stability constant decline in population observed that from our point of view, can't affect the probability of bank failure in these regions[1].

It should be noted that, according to the results of the regression, the highest probability of bank failure is noted in the Perm region, Nizhny Novgorod Region and the Udmurt Republic. Wave of bank failures in the Sverdlovsk and Nizhny Novgorod regions, Udmurt Republic came in 2010,

[1] The central statistical database (TSBSD). [El. resource]. access mode: http://cbsd.gks.ru.

Table 3

Logit model with the inclusion of dummy variables for regions and macro variables

	Model № 1 (the post-crisis period — 4 quarter lag)			Model № 2 (the crisis period — 6 quarter lag)	
Variable	**Coefficient**	**Probability**	**Variable**	**Coefficient**	**Probability**
Permsky region	2.60	0.01	Permsky region	4.36	0.00
Tyumen	0.33	0.78	Tyumen	1.63	0.29
Sverdlovsky region	–0.49	0.71	Sverdlovsky region	1.39	0.42
Udmurt Republic	6.38	0.00	Udmurt Republic	7.58	0.00
Chelyabinsky region	1.15	0.37	Chelyabinsky region	2.67	0.15
Nizhegorodsky region	3.57	0.00	Nizhegorodsky region	3.70	0.00
Saratovsky region	–1.06	0.69	Saratovsky region	2.62	0.02
Inflation	0.42	0.14	Inflation	0.09	0.79
employment	20.62	0.00	employment	16.05	0.00
income	0.00	0.00	income	0.00	0.26
population growth	1.59E–05	0.09	population growth	3.28E–05	0.01
The ratio of the balance sheet profit to net assets (–4)	53.13	0.00	The ratio of the balance sheet profit to net assets (–6)	37.32	0.10
The ratio of liquid assets to net assets (–4)	1.78	0.45	The ratio of liquid assets to net assets (–6)	1.17	0.79
The ratio of liquid assets to demand liabilities (–4)	–1.66	0.01	The ratio of liquid assets to demand liabilities (–6)	–1.28	0.30
Logarithm of net assets (–4)	–0.85	0.00	Logarithm of net assets (–6)	–1.25	0.00
The ratio of turns on correspondent accounts to net assets (–4)	–0.29	0.01	The ratio of turns on correspondent accounts to net assets (–6)	–0.53	0.00
The ratio of overdue debts to credit economy (–4)	42.46	0.00	The ratio of overdue debts to credit economy (–6)	205.94	0.00
The ratio of overdue loans to obligatory reserves with the CBR (–4)	–0.17	0.03	The ratio of overdue loans to obligatory reserves with the CBR (–6)	–2.79	0.00
Provisions for losses on loans to credit economy (–4)	–45.25	0.00	Provisions for losses on loans to credit economy (–6)	–67.41	0.00
The ratio of equity to net assets (–4)	–12.76	0.00	The ratio of equity to net assets (–6)	–11.32	0.06
The ratio of loans to individuals to net assets (–4)	2.30	0.21	The ratio of loans to individuals to net assets (–6)	0.28	0.91
The ratio of deposits to physical person to net assets (–4)	–0.31	0.86	The ratio of deposits to physical person to net assets (–6)	–3.53	0.26
The ratio of deposits to legal entities to net assets (–4)	–20.30	0.00	The ratio of deposits to legal entities to net assets (–6)	–24.98	0.00
McFadden R-squared	0.70		**McFadden R-squared**	0.74	
Number of observations	1066		**Number of observations**	781	

which confirms the hypothesis of the slow response of medium-sized regional banks to crisis events and a later wave of defaults. It is important that while in the Perm region there is the least number of «own» banks, compared with the rest of the treated area.

It is important for this study that the inclusion of dummy variables for regions and macro variables improves the accuracy of the model. The model describes 70–74 % of the data. The results obtained are adjusted somewhat as compared with the first model.

The above statistics concentration of defaults in the selected regions, the probability of bankruptcy in the different areas examined seem can be explained primarily by the fact that the concentration of bankruptcies affect the level of competition in the region. Thus, in Banks PFD concentration higher than in UFD and below the level of failures. We can assume that there is an inverse relationship between the level of competition in the region and the level of bankruptcies. To test this hypothesis we include indicators of the level of concentration, because the concentration level

Table 4

Logit model with the inclusion of macro variables and the concentration index

	Model № 1 (the post-crisis period — 4 quarter lag)			Model № 2 (the crisis period — 6 quarter lag)	
Variable	**Coefficient**	**Probability**	**Variable**	**Coefficient**	**Probability**
Inflation rate	0.25	0.33	Inflation rate	–0.00	0.99
Unemployment rate	17.09	0.00	Unemployment rate	16.05	0.00
Per capita income	0.00	0.00	Per capita income	0.00	0.03
Permanent population growth	3.45E–06	0.57	Permanent population growth	1.79E–05	0.02
Specific weight of bank	–0.03	0.76	Specific weight of bank	0.16	0.16
Specific weight of the "own" banks assets	–0.01	0.71	Specific weight of the "own" banks assets	0.01	0.45
The level of the "own" banks concentration	–7.91	0.00	The level of the "own" banks concentration	–8.27	0.00
The ratio of the balance sheet profit to net assets (–4)	36.13	0.02	The ratio of the balance sheet profit to net assets (–6)	24.90	0.19
The ratio of liquid assets to net assets (–4)	2.06	0.35	The ratio of liquid assets to net assets (–6)	3.95	0.30
The ratio of liquid assets to demand liabilities (–4)	–0.58	0.29	The ratio of liquid assets to demand liabilities (–6)	–0.93	0.38
Logarithm of net assets (–4)	–0.63	0.01	Logarithm of net assets (–6)	–1.22	0.00
The ratio of turns on correspondent accounts to net assets (–4)	–0.12	0.20	The ratio of turns on correspondent accounts to net assets (–6)	–0.38	0.01
The ratio of overdue debts to credit economy (–4)	41.29	0.00	The ratio of overdue debts to credit economy (–6)	186.72	0.00
The ratio of overdue loans to obligatory reserves with the CBR (–4)	–0.17	0.02	The ratio of overdue loans to obligatory reserves with the CBR (–6)	–2.52	0.00
Provisions for losses on loans to credit economy (–4)	–43.26	0.00	Provisions for losses on loans to credit economy (–6)	–64.77	0.00
The ratio of equity to net assets (–4)	–11.94	0.00	The ratio of equity to net assets (–6)	–10.17	0.04
The ratio of loans to individuals to net assets (–4)	3.28	0.02	The ratio of loans to individuals to net assets (–6)	4.22	0.02
The ratio of deposits to physical person to net assets (–4)	0.98	0.51	The ratio of deposits to physical person to net assets (–6)	–0.39	0.87
The ratio of deposits to legal entities to net assets (–4)	–14.45	0.00	The ratio of deposits to legal entities to net assets (–6)	–16.97	0.00
McFadden R-squared	0.63		**McFadden R-squared**	0.67	
Number of observations	1066		**Number of observations**	781	

and will take into account regional belonging banks in the sample.

Model assessing the impact of the level of competition and macroeconomic indicators for the probability of bankruptcy regional banks are shown in Table 4.

The model describes 63–67 % of the sample, the accuracy is good enough. In general, the model results with the inclusion of macro variables and the concentration index practically coincide with the results of previous models considered.

However, from our perspective, we should note a significant difference between the results, compared with the first models. In the model with a lag of four quarters insignificant variables inflation, growth of the resident population as well as the ratio of liquid assets to net assets, the relationship turns on correspondent accounts to net assets, the ratio of liquid assets to demand liabilities, the relationship of individuals' deposits to net assets. Significant, compared with the previous results, the relationship variables, are loans to individuals to net assets ratio of deposits of legal entities to net assets.

However, as we originally expected, increasing ratio of deposits of legal entities to net assets involves decreasing the probability of default of banks. Marked feature is explained, from our point of view, exposure to regional «non-capital» banks such phenomena as «bank panic». While entities

may prove more persistent and committed to a particular bank. Increase in the ratio of loans to individuals to net assets increases the probability of default of banks PFD and UFD, which also corresponds to our expectations.

The insignificance of the variable rate of inflation can be explained, in our opinion, the weakening of the variable due to the interaction with other macro variables used. Naturally significant variable is the level of employment. Since most of the sample compile data on the banks of the Volga Federal District, which is characterized by the employment rate is lower than in the Urals, it is logical that an increase in the unemployment rate in the region increases the probability of default of banks.

Characteristically, in the post-crisis period is insignificant rate constant population growth in the region, while in the model with a lag of six quarters of this figure has little effect on increasing the probability of default of banks. Most likely, this result is because during the crisis increased the outflow of population that could be of some, albeit minor, risk of default of the bank.

Not quite clear is the changing nature of influence in the ratio of the balance sheet profit to net assets in the model with a lag of six quarters, compared to the one where the lag used in four quarters. In the model with a greater lag variable becomes insignificant. Perhaps the lack of influence in this case, the probability of default due to the fact that during the crisis period (from mid-2009, where we move, if we take the lag 6 blocks) had no failures associated with high-risk banking policies aimed at maximizing profits. This hypothesis is confirmed statistically.

It should be noted that, according to the results of econometric analysis, do not affect the probability of default of two of the three indicators used concentration: the share of the bank in the region and the proportion of assets «own» the region's banks in total banking assets in the region. The first indicator of the above-calculated quarterly as a percentage value of the total assets of each bank's total assets of head offices of banks and branches, located in the region. Second value is the ratio of total assets of banks registered in the area to total head offices of banks and branches, located in the territory of the region.

However, the concentration index is significant «own» banks in these regions. Increasing the concentration index influences to reduce the likelihood of bank failures PFD and UFD. Dany index calculated by us as the ratio of the number of banks (credit institutions) registered in the region (regions, territories, and republics) to the number of bank branches located in the same area. Its disadvantage is that it does not take into account the share of banks and branches of banks operating in the region. In this case, the study should calculate the Herfindahl-Hirschman Index, that would get adjusted and more accurate results. However, data on the amount of assets of branches of credit institutions are not made public. Nevertheless, the concentration index «own» banks can also conclude on the degree of concentration of the banking system in the region and its direct impact on the level of bank failures in the region.

Summarizing, we can conclude that the probability of default on the banks of the regional banking system affects a combination of factors. Among them, one of the most important seems to the external environment, regional belonging. Compared with the results obtained AM Karminskaya and others, the results of this study show that in the models estimating the probability of bankruptcy macro variables — unemployment, the level of per capita income, growth in resident population — are significant. The strongest influence on the increase in the probability of bank failures has selected regions unemployment. Insignificant effect of a constant population growth. In addition, it should be noted the effect of increasing the concentration index «own» banks surveyed regions to reduce the likelihood of default. In this paper, the effect of the concentration index for the probability of bankruptcy «non-capital» of regional banks was reviewed for the first time. It specified index at the moment should be recognized the determinant in assessing the likelihood of bankruptcy «non-capital» of regional banks.

From our perspective, it should also take into account the dependence of the nature of the influence of individual variables on the probability of default of banks in different time periods: during the crisis and post-crisis period, which lead to the model in which the figures are taken from the lags in the four and six quarters. Significantly, that depending on the period of the changing nature of the impact on the probability of default only certain variables. These include the ratio of turns on correspondent accounts to net assets ratio to balance profit and net assets — among macroeconomic variables — constant rate of population growth in the region. It may be noted that several times, the influence in the ratio of arrears on loans to credit economy model with a lag of six quarters, that is, during the crisis period. Therefore, these variables are based on the analysis conducted econometric most sensitive to the period.

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