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Research Article

THE EFFECT OF COMPETITION IN THE MARKET OF BANKING SERVICES ON THE STABILITY OF THE BANKING SYSTEM

Oybek Abdullaevich Ortikov

Independent researcher of Tashkent State University of Economics, associate professor, Tashkent, Uzbekistan

ABSTRACT

The increase in the number of banks and the size of banks in the banking system creates problems related to interbank competition and requires constant research. Competition in the banking services market and the factors affecting it required the use of new regulatory tools after the global financial crisis of 2007-2009. In the post-crisis period, establishing strict prudential requirements for bank supervision and ensuring the stability of the banking system became important. Interbank competition and the stability of the banking system, i.e. in the conditions of competition, the risk appetite of banks is high, and the question of financial stability raises more questions. Many analyzes have been carried out on this issue and there are different approaches. In this article, an econometric analysis of the interrelationship between the stability of the banking system and competition in the market of banking services is carried out, and the causes and consequences are evaluated.

KEYWORDS

Interbank competition, deposit, credit, Central Bank, prudential control, risk appetite, financial stability, capital adequacy ratio.

INTRODUCTION

Currently, commercial banks are experiencing a difficult period in the context of crises and pandemics observed in the national banking and financial system. According to the Decree of the President of the Republic of Uzbekistan No. 5992 dated May 12, 2020, the state share will create equal competitive conditions in the financial market through the privatization of existing commercial banks.

In the post-crisis period, revolutionary and large-scale changes in the field of regulation of international banking activities led to fundamental changes in the understanding of the factors for achieving financial stability, which is one of the pillars of sustainable growth of the world economy. One of the important results of regulatory reforms was to achieve stress resistance of banks, regardless of the state and dynamics of the macro environment. It should reduce the risk of systemic stress in banks, increase the possibility of forecasting the main indicators of bank activity. Efforts by international and national regulators to ensure the continuity and efficiency of the financial intermediation function are aimed at strengthening the economic immunity of banks against external threats and ultimately returning them to the role of one of the engines of economic growth.

Post-crisis regulation has prioritized competition issues, without understanding them, efforts to strengthen market discipline in the banking sector can be minimized in today's environment. Although the modern mechanism of regulation of international banking activity does not include a quantitative assessment of competition, its situation and prospects require careful study in order to minimize imbalance and fragmentation in financial markets and further increase the efficiency of international financial intermediation.

LITERATURE REVIEW

Many scientific studies on the competition in the market of banks' services have been carried out and are being increased. Foreign and local economic scientists and researchers conducted research in this direction. However, in domestic studies, the issue of interbank competition and bank stability has not been studied in detail as a separate research object. The studies were

mainly related to the study of specific services of banks and the competitiveness of other banks. In our study, we analyze the degree of correlation between interbank competition and bank capital adequacy indicators, which are the basis of the stability of the banking system. It is very important to study how the assessment of competition related to capital adequacy affects the financial stability of banks.

In the modern economic literature, there are many works devoted to the relationship between competition and financial stability in the banking system. There are approaches on whether it has a positive or negative effect on competition and financial stability in the banking services market. We form conclusions based on the study of various scientists and researchers of these approaches.

In the research of the researchers Allen and Gale, it is said: "competition helps to increase the efficiency of banking activity in the short term, but in the long term, its influence can affect the financial stability of the banking system in different directions.

Such research has been carried out by Khan, and his increasing opinion contributes to macroeconomic stability. The analysis assessed the relationship between bank competition and macroeconomic stability using macroeconomic data from 48 developing countries from 1999 to 2018 based on two-stage dynamic panel data. The results show that a higher level of bank competition contributes to macroeconomic stability by reducing the volatility of output growth, the volatility of private credit, and the probability of bank default. There is an acceptable level of bank competition, which can lead to economic and financial instability. In addition, financial development enhances the positive effect of banking competition on macroeconomic stability.

At the same time, in a number of studies, the authors come to the opposite conclusions, that is, if the increase of interbank competition increases the risk of financial crises and leads to an increase in the volume of non-performing loans (NPL) in banks, the negative impact of interbank competition on financial stability is reduced in the context of a high level of capitalization of commercial banks.

Among the studies, there are also those related to the increase in risk in the banking sector, the decrease in competition and, in this regard, the

change of operational priorities of banks to high-risk instruments, and on the contrary, the increase in the level of concentration in the market of banking services helps to increase the profitability of banks.

Despite many studies on the impact of interbank competition on financial stability, the relationship between the post-crisis mechanism of international banking regulation and interbank competition in the context of financial stability has not been fully studied. It is known that post-crisis regulation began to use strict regulatory tools in accordance with the Basel 3 rules. In countries where interbank competition in the market of banking services is not sufficiently high, if bank capital is calculated based on the IRB (Internal Ratings-Based Approach) approach, the effect will give a different result. This is due to a number of shortcomings in the methodology of forming internal ratings of banks and slightly

unclear criteria for the application of the IRB approach compared to the standardized approach, and increasing the requirements for minimum capital adequacy in the post-crisis period is not only one of the main factors for achieving adequate competition.

The above review of studies reveals mixed findings on the impact of interbank competition on financial stability. The practical significance of these studies lies in the fact that the results of changes in the competitive environment are important for both market participants and financial regulators. Such contradictions of interbank competition require further research to gain a deeper understanding of the prospects for macroeconomic management of competition. It is important to divide and analyze the views of researchers on the impact of interbank competition on the stability of the banking system into two directions (see Table 1).

Table 1
Some research results within the concepts of the relationship between competition and financial stability in the banking sector

Increased competition between banks will negatively affect financial stability	Increased interbank competition has a positive effect on financial stability

The deterioration of the banking system is a consequence of increased competition in financial markets with relatively tight restrictions on banking activities, developed securities market infrastructure, deposit insurance system and transparency of banking activities. [Beck 2008].	Increased competition among banks leads to a decrease in credit costs, which has a positive effect on the efficiency of borrowers, reduces the risk of defaulting on loans and ultimately helps to achieve financial stability [Schaeck, Cihak, Wolfe 2009].
A strong competitive environment forces banks to shift priorities to operations with high-risk instruments in order to increase profits [Allen, Gale 2004; Beck, Demirgüç-Kunt, Levine 2006]	In the conditions of strong competition, the level of capital adequacy is higher, which usually covers the risks of volatility in banking activity and has a positive effect on financial stability. [Lee, Hsieh 2014].
Highly concentrated banking systems are less exposed to the risk of instability than highly competitive systems [Anginer, Demirgüç-Kunt, Zhu 2014; Berger, Klapper, Turk-Ariss 2009].	Increased competition due to the introduction of strict capital standards reduces the negative impact of financial liberalization on financial stability [Amidu, Wolfe 2013].
Instability in the banking system is one of the factors that increase volatility in the financial markets of countries characterized by a relatively high level of interbank competition [Fernandez, Suarez 2016].	Due to increased competition in the banking system, the effectiveness of reducing credit risks is higher for banks in the medium quantum group than for banks in the lower and higher quantum groups [Chen 2016].
The high level of concentration in the banking sector and the requirements for deposit insurance lead to the weakening of the banking sector at the macro level [Soedarmono, Mahrouh, Tarazi 2013].	Increased interbank competition strengthens financial stability in the banking system by minimizing systemic risks [Kouki, Al-Nasser 2017].
The increase in interbank competition contributes to the increase of bank operations using high-risk instruments [Canta, Nielsen, Ulsaker 2023].	Increased interbank competition contributes to stability at the macro level by reducing GDP volatility, credit volume, and the probability of bank default [Khan 2022ahsulotn].
The increase in interbank competition contributes to the increase in systemic risks, regardless of the features of the post-crisis banking regulation mechanism [Batiz-Zuk, Lara-Sanchez 2023].	The strictness of the post-crisis regulation helps to reduce the negative impact of interbank competition on financial stability [Borauzima, Muller 2023].

Based on the data of Table 1, summarizing both hypotheses and approaches, it is necessary to note the following:

1. In the conditions of strong competition due to the negative impact of interbank competition on financial stability, banks tend to lower lending standards in order to allocate more loans to potential borrowers, increase risk appetite and prioritize operations with high-risk instruments. As a result, the quality of assets in the banking system may decrease and, accordingly, financial instability may arise. In such an environment, financially weak banks face difficulties in attracting additional market liquidity and further weakening in the event of insolvency and

bankruptcy causes a weakening of the banking system.

2. The hypothesis that interbank competition has a positive effect on the stability of the banking system is conceptually based on the priority of competition to ensure financial stability. In this case, the cost of loans allocated by banks will decrease, the allocation of loans in high-risk areas will decrease, and as a result, the problem loans of banks will decrease. In addition, the risk of abuse in financial markets is low due to the lack of prospects for bailouts in a banking system with a low concentration of banking services. As a result, the financial stability of the banking system will increase, and the positive effect of interbank competition will be manifested.

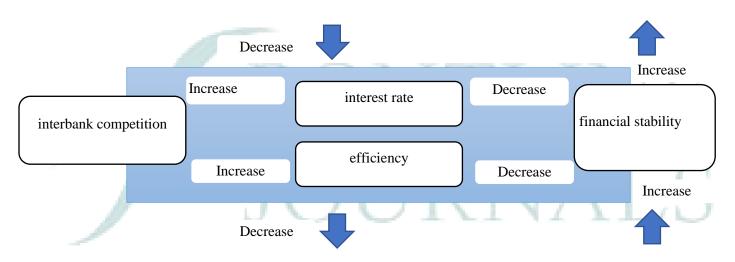Based on these conclusions, the ideas are explained through the following figure.

Figure 1. The impact of interbank competition on the stability of the banking system in the short and long term

The financial stability of the banking system requires finding a conditional average between competition and efficiency in the banking system, which is necessary for the formation of long-term potential of banks. When applying the international principles of effective banking supervision, interbank competition should take into account the characteristics of the national banking system. The above cases of research provide mixed conclusions on the impact of interbank competition on the stability of the banking system. The practical significance of

these studies is that regardless of the trend (increased competition or monopolization (concentration)), the results of changes in the competitive environment can be unexpected for both market participants and financial regulators.

RESULTS

By assessing the impact of interbank competition on the stability of the banking system in the Republic of Uzbekistan, it will be possible to draw appropriate conclusions during the research. Bank stability refers to the ability of commercial banks to carry out their activities effectively and continuously, fulfill their obligations to customers and withstand possible shocks and imbalances of markets and market infrastructures that may arise.

The wide use of econometric models in the implementation of research allows to draw clear conclusions about the changes in it, while revealing the practical significance of the research work. The Panel Data model of data classification in econometrics is based on the analysis of data on objects measured in several time steps. Multivariate econometric analysis of panel data is a very effective method for determining the impact of competition in the banking services market on the stability of the banking system. Panel data allows analysis by combining data over time and across different entities (banks, countries, etc.).

In this article, the factors affecting the stability of banks were studied, and an econometric analysis of the change in the market share of banking services on the stability of banks was carried out.

In the study, econometric analysis was carried out using the method of multi-factor correlation-regression analysis. The following indicators were selected:

X1 - share_assets – the share of the bank in the market of banking assets;

X2 - share_assets – the share of the bank in the credit services market;

X3 - share_capital – the share of the bank in the bank capital market;

X4 - share_deposits – the share of the bank in the market of bank deposit services;

X5 - share_income – the bank's share in the expenses of the banking system;

X6 - share_income – the bank's share in the banking system's income;

X7 - share_earning – the share of the bank in the net profit of the banking system;

X8 – liquidity – coefficient of bank liquidity coverage;

X9 - CIR - operational efficiency of the bank;

Y - CAR is the capital adequacy level of the bank.

From these indicators:

The dependent variable (Y): the bank's capital adequacy level indicator was used. As independent variables (X), the bank's assets share, capital share and changes in deposits in the banking services market, as well as the bank's main performance indicators were taken. A simple regression model or a multivariate regression model can be used to construct an econometric model. The main purpose of the model is to assess the impact of competition in the banking services market on the stability of the banking system.

A simple regression model might look like this:

$$Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{2t} + \cdots + \beta_n X_{nt} + \epsilon_t \quad (1)$$

Here:

i – selected objects;

t– selected years;

Y_t - the stability index.

β_i - parameters (influence coefficients of variables).

ϵ_{it} – errors, in case of different t and i.

Table 2
Descriptive statistics of factors affecting the stability of JSC "Aloqabank"

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Y
Count obs.	41	41	41	41	41	41	41	41	41	41
min	0,022	0,021	0,022	0,032	0,015	0,018	0,002	0,275	0,340	0,129
Mean	0,026	0,023	0,025	0,039	0,024	0,024	0,023	1,187	0,470	0,144
Max	0,030	0,026	0,028	0,045	0,030	0,030	0,071	2,268	0,582	0,194
Std	0,002	0,002	0,002	0,003	0,003	0,003	0,015	0,444	0,062	0,017
Dispersion	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,197	0,004	0,000

Mediana	0,027	0,024	0,025	0,039	0,024	0,024	0,022	1,143	0,464	0,135
Assimetr	- 0,420	- 0,012	0,021	- 0,645	- 0,976	- 0,549	1,178	0,155	-0,035	1,275
Δx	0,002	0,001	0,001	0,003	0,003	0,002	0,014	0,399	0,048	0,013

In this analysis, monthly statistical data of JSC "Aloqabank" in 2020-2024 were used. During the analysis period, monthly changes in the share of the bank in the services market, financial results and their impact on the adequacy of the bank's capital were evaluated. A total of 41 observations were made and it can be seen that the share of the bank in the market of banking assets reached 3%, the share of the bank in the market of bank capital reached 2.8% and the share in the market of deposit services reached 4.5%.

We will get acquainted with the level of interdependence of these indicators related to the activity of Aloqabank through the following correlation table.

Correlation of factors affecting the stability of JSC "Aloqabank"

	X1	X2	X3	X4	X5	X6	X7	X8	X9	Y
X1	1,000									
X2	0,819	1,000								
X3	- 0,678	- 0,624	1,000							
X4	- 0,131	- 0,097	0,463	1,000						
X5	- 0,460	- 0,285	0,017	- 0,074	1,000					
X6	- 0,482	- 0,226	0,190	- 0,008	0,910	1,000				
X7	- 0,023	0,127	0,368	0,119	- 0,316	0,071	1,000			
X8	0,076	- 0,239	- 0,440	- 0,452	0,134	- 0,025	- 0,307	1,000		
X9	- 0,253	- 0,457	0,229	- 0,043	0,234	0,118	- 0,227	0,203	1,000	
Y	- 0,863	- 0,821	0,674	0,349	0,304	0,325	0,043	0,065	0,254	1,000

It can be seen from the inter-correlation of the variables that the relationship with the bank's capital adequacy indicator mainly showed a high correlation with the share of bank assets and the share in the credit services market. At the same time, there was a correlation with the coefficient of the capital share of some banks (0.674). At the same time, multicollinearity was observed between some indicators, due to high correlation between X1 and X2 (0.819) and between X5 and X6 (0.910). This requires further analysis excluding these indicators. Otherwise, the model may be built incorrectly.

At the same time, we perform a regression analysis on these 9 variables and evaluate the p-values of the regression results in order to increase the statistical significance of the analysis.

	Ratio	*Standard error*	*t-statistics*	*p-value*
Y- intersection	0,1946	0,0733	2,6536	0,0124
share_assets	- 5,9480	1,1796	- 5,0422	0,0000
share_loans	0,0201	2,0448	0,0098	0,9922
share_capital	1,2722	1,5488	0,8214	0,4177
share_deposits	1,7992	0,4060	4,4315	0,0001
share_expences	- 0,3531	2,4923	- 0,1417	0,8883
share_income	- 0,1109	2,5685	- 0,0432	0,9658
share_earning	0,0243	0,1827	0,1331	0,8950
liquidity	0,0136	0,0043	3,1367	0,0037
CIR	- 0,0042	0,0206	- 0,2012	0,8419

In order to increase the reliability of the regression results, from the analysis X2 - share_assets – the share of the bank in the market of credit services; X3 - share_capital – the share of the bank in the bank capital market; X5 - share_income – the bank's share in the banking system's expenses; X6 - share_income – the bank's share in the banking system's income; X7 - share_earning – the share of the bank in the net profit of the banking system; We continue the analysis by excluding variables such as X9 - CIR - bank operational efficiency.

	share_assets	share_deposits	liquidity	CAR

share_assets	1,000		
share_deposits	- 0,131	1,000	
liquidity	0,076	-0,452	1,000
CAR	- 0,863	0,349	0,065	1,000

Regression statistics

Plural R	0,934
R-square	0,872
Standardized R-square	0,861
Standard error	0,006
The number of observations	41

Dispersion analysis

	df	SS	MS	F	F value
Regression	3	0,010	0,003	83,660	1,51359E-16
The remains	37	0,001	4,00091E-05		
Total	40	0,012			

	Ratio	Standard error	t-statistics	P-value	Below 95%	Above 95%	Below 95,0%	Above 95,0%
CAR	0,2167	0,0204	10,6332	8,38193E-13	0,17541	0,25800	0,17541	0,25800
share_assets	- 6,2853	0,4468	- 14,0665	2,00249E-16	-7,19065	-5,37994	-7,19065	-5,37994
share_deposits	2,0178	0,3579	5,6382	1,94055E-06	1,29269	2,74297	1,29269	2,74297
liquidity	0,0114	0,0025	4,5102	6,33207E-05	0,00627	0,01650	0,00627	0,01650

Based on the p-values of the regression results, it can be said that all variables are statistically significant. In the regression results, R2=0.87, it can be concluded that the data of this model is highly reliable.

The econometric model of the dependence of the factors affecting the change of the share of banks in the service market from the result of the regression, the impact on the financial stability of the bank, is presented below:

$$CAR = ,02167 - 6,2853 * share\_assets + 2,0178 * share\_deposits + +0,0114 * liquidity + e \tag{2}$$

According to the results of the analysis, it was empirically proven that, with all other variables unchanged, a one percent increase in the share of bank assets in the banking market reduces the bank capital adequacy ratio by -6.2853 percent. Also, a 1 percent increase in the bank's market share of deposit services leads to a 2.0178 percent increase in bank capital adequacy, and a 1 percent increase in bank liquidity leads to a 0.0114 percent increase in bank capital adequacy.

When the presence or absence of autocorrelation in this model was checked by the Darbin-Watson statistical test, the result was 1.42, and it was found that this model is in the range where autocorrelation does not exist (1.29; 2.71).

There is a strong relationship between the stability of the banking system and interbank competition, and they can both support and threaten each other. Maintaining a balance between stability and interbank competition is a pressing issue for banks and the financial system.

The multi factorial and conflicting nature of competition in the banking system makes it difficult to find quantitative tools to assess its state and dynamics. It is complex to take into account the interaction of factors and information needed to assess interbank competition. The tools available in practice today (for example, the Herfindahl-Hirschman index) do not allow for a complete and perfect assessment of competition by assessing only the level of concentration in the banking system.

Conclusion

As a result of international changes in the field of regulation and control of banking activities, a new approach to the assessment of interbank competition in countries is also required.

Interbank competition can serve as a decisive factor for achieving static and dynamic efficiency in banking in the short term, but empirical evidence has proven that in the long term it has the opposite effect, that is, it leads to significant inefficiency.

Intensification of competition in the market of banking services causes negative changes in the financial position of banks, taking large risks in order to obtain high profits in the market of services.

Due to increased competitive pressure, banks are forced to choose new and risky business lines, and high-risk operations result in a higher share

of problem assets and can lead to bank defaults and crises.

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