

# “Banking system stability in crisis periods: The impact of the banking regulator independence”

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## ARTICLE INFO

Atik Kerimov, Azer Babayev, Viktoria Dudchenko, Yaryna Samusevych and Milos Tumpach (2023). Banking system stability in crisis periods: The impact of the banking regulator independence. *Banks and Bank Systems*, 18(3), 221-234. doi:[10.21511/bbs.18\(3\).2023.18](https://doi.org/10.21511/bbs.18(3).2023.18)

**DOI** [http://dx.doi.org/10.21511/bbs.18\(3\).2023.18](http://dx.doi.org/10.21511/bbs.18(3).2023.18)

**RELEASED ON** Thursday, 28 September 2023

**RECEIVED ON** Saturday, 24 June 2023

**ACCEPTED ON** Friday, 22 September 2023

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## JOURNAL

"Banks and Bank Systems"

## ISSN PRINT

1816-7403

## ISSN ONLINE

1991-7074

## PUBLISHER

LLC “Consulting Publishing Company “Business Perspectives”

## FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

**41**



NUMBER OF FIGURES

**1**



NUMBER OF TABLES

**11**

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## BUSINESS PERSPECTIVES



LLC "CPC "Business Perspectives"  
Hryhorii Skovoroda lane, 10,  
Sumy, 40022, Ukraine  
[www.businessperspectives.org](http://www.businessperspectives.org)

**Received on:** 24<sup>th</sup> of June, 2023

**Accepted on:** 22<sup>nd</sup> of September, 2023

**Published on:** 28<sup>th</sup> of September, 2023

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### Conflict of interest statement:

Author(s) reported no conflict of interest

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# BANKING SYSTEM STABILITY IN CRISIS PERIODS: THE IMPACT OF THE BANKING REGULATOR INDEPENDENCE

## Abstract

Local and global financial crises are caused by a wide range of geopolitical, macro-financial, and socio-economic determinants. The purpose of this study is to assess the role of central bank independence in preventing financial crises and mitigating their consequences. Two hypotheses were tested. A measure of the banking regulator independence is the CWN index of the central bank independence. The hypotheses were tested on data from 53 countries suffering from financial crises over the last 40 years (the sample includes both developed and developing countries from different continents). The tools of nonlinear logit regression (modeling the probability of loss of financial stability due to a financial crisis, considering different levels of the banking regulator independence) and panel regression with random effects (modeling the influence of the banking regulator independence on banking activities during crisis periods) were used for calculations. The study did not confirm that a high level of central bank independence is a necessary condition for preventing the occurrence of financial crises in the national economy. On the contrary, the likelihood of financial instability was found to be higher in countries with more independent central banks. Thus, during crisis periods, an increase in the CWN index by 1 ensures an increase in the regulatory capital adequacy parameter by an average of 0.28%, a decrease in return on assets by 0.59%, and an increase in the share of non-performing loans by 1.69%.

## Keywords

independence, central bank, financial crisis, stability, prevention, regulation, banking system

## JEL Classification

E58, E63, G01, G21

## INTRODUCTION

The consequences of the global financial crises have become a trigger for the growth of scientific attention to the problem of the effective functioning of central banks based on their economic and political freedom. Violations of the stability of banking and financial systems proved the need to transform regulatory approaches and led to several institutional and regulatory reforms related to changing the functionality of central banks, expanding their mandate, and improving regulatory and legal support for the functioning of central banks. The evolutionary path of the development of the financial system, its interdisciplinary nature and connection with other sectors prove the decisive role of financial stability in ensuring the stability of economies (Njegovanović, 2023). It has been empirically confirmed that the quality of regulation and administration is the basis for ensuring macroeconomic stability (Zolkover et al., 2022). A country's economic growth largely depends on the impact of inflation, foreign exchange rates and interest rates (Sinaga, 2022; Kashcha & Dun, 2022; Adama et al., 2022; Aiyedogbon et al., 2022), and this influence is intensified in crisis conditions. This determines the growing importance of the regulator's functions in periods of instability. Scientists have proven

that a stable business environment plays an important role in determining the movement of financial flows (Tahat, 2022), and a well-constructed monetary policy promotes investment growth (Olonila et al., 2023). Significant transformations of banking systems and cross-border movement of capital create prerequisites for increasing the risks of transmission of financial shocks between banking systems due to the origin of bank capital (Chumachenko et al., 2021; Babenko et al., 2017). At the same time, the management measures of central banks create constraints on the propagation of financial shocks and the creation of new bubbles in crisis periods (Khan & Suresh, 2022). Along with this, the objectivity of regulatory measures and their compliance with the real needs of the financial sector, and not only the interests of its individual participants, is important.

## 1. LITERATURE REVIEW

Researchers determine that economic growth is not the only prerequisite for the global competitiveness of countries, which is formed by a wide range of country development indicators (Maris, 2022; Moskalenko et al., 2022). The transformational nature of world economies, the reduction in the level of economic growth under the influence of shadowing and corruption of the economy proves the importance of the regulatory environment (Melnik et al., 2021; Tiutiunyk et al., 2022; Bilan et al., 2020; Bozhenko et al., 2022). The development of the banking system and its stable functioning is a prerequisite for economic growth, including innovative development, and a higher level of stability of banks contributes to the growth of attracting resources to the real sector (Kozmenko & Vasylyeva, 2008). Banking stability is the basis for the development of the banking system, providing opportunities for the implementation of strategic initiatives regarding its transformation (Boiko et al., 2021). At the same time, it is determined that the business architecture of banking regulation is the basis for ensuring banking stability and countering financial shocks (Kuznyetsova et al., 2022).

A generalization of the practices of exercising the powers of central banks in the pre-crisis and post-crisis period (Balls et al., 2018) points to the fact that in a number of countries there have been changes in the global approach to the functioning of the central bank in view of the peculiarities of their implementation of monetary policy, macroprudential regulation, coordination of regulatory actions institutions All this points to the importance of considering the context of financial stability in studies of central bank independence. Researchers have con-

firmed that the reason for the inefficient banking system is the unbalanced distribution of resources, which leads to a loss of stability (Rizk, 2022). Internal and external imbalances are the reason for applying a tighter restrictive monetary policy (Vasilyeva et al., 2013). So, for example, the recapitalization policy of central banks has a positive effect on competition in the banking system (Yuni & Attama, 2022). On the other hand, researchers note that the implementation of differentiated supervisory regimes has significant prospects in preventing systemic financial risks (Buriak et al., 2015). Crisis processes in economies are always associated with inflationary fluctuations (Aliyeva, 2022). At the same time, the level of price stability is related to the circulation processes in the economy and largely depends on the chosen model of monetary policy (Kuznyetsova et al., 2017b). The fact that the financial stability of banks depends on the general model of building the banking system is also quite important (Hafez, 2022).

Scientists emphasize the need for reforms in the independence of central banks to maintain their regulatory effectiveness, reduce risks and stabilize the financial sector (Habiba, 2023). It has been empirically confirmed that the level of independence of central banks is closely related to the quality of the general system of public administration in the country (Vasylyeva et al., 2022). Financial crises demonstrate the existing shortcomings in the system of banking regulation and form the basis for the search for their improvement. Scientists prove that regulatory and supervisory measures can mitigate the consequences of financial crises (Vasilyeva et al., 2014). The practice of banking regulation shows the existence of several mechanisms that central banks can use to prevent the loss of insolvency of individual banks

(Kuznyetsova et al., 2017a), as well as to reduce risks in financial markets as a whole (Elhassan, 2021). It was determined that in periods of crisis caused by both economic and political reasons, the approach of the central bank to the implementation of monetary policy and the choice of regulatory measures should change (Danylyshyn & Bohdan, 2022). Researchers prove that monetary policy measures have a positive momentum in the performance indicators of the money market (Suhendra & Anwar, 2022), however, it is important to analyze not only the central bank's measures to stabilize the banking system in crisis periods, but also its preventive role.

The results of a survey among representatives of the political and academic community in the period after the global financial crisis (Blinder et al., 2017) showed that the majority of respondents (about 80% of scientists and about 90% of politicians) believe that the national central bank did not lose the previously achieved level of independence in crisis conditions, and about 10% of government officials believe that the central bank's independence level increased during the crisis. At the same time, the growth of the level of independence of central banks in the crisis and post-crisis period compared to its pre-crisis value has been empirically confirmed in both developed and developing countries and countries with transitive economies (de Haan & Eijffinger, 2016). This confirms an importance of preserving the independence of the central bank in crisis periods. On the other hand, there is a lack of research on the role of central bank independence in avoiding financial crises, as well as in smoothing their consequences. This determined the purpose of this article as studying the influence of banking regulator independence on the probability of loss of banking stability during the financial crisis and on banking activity during the financial crisis and allowed us to formulate research hypotheses:

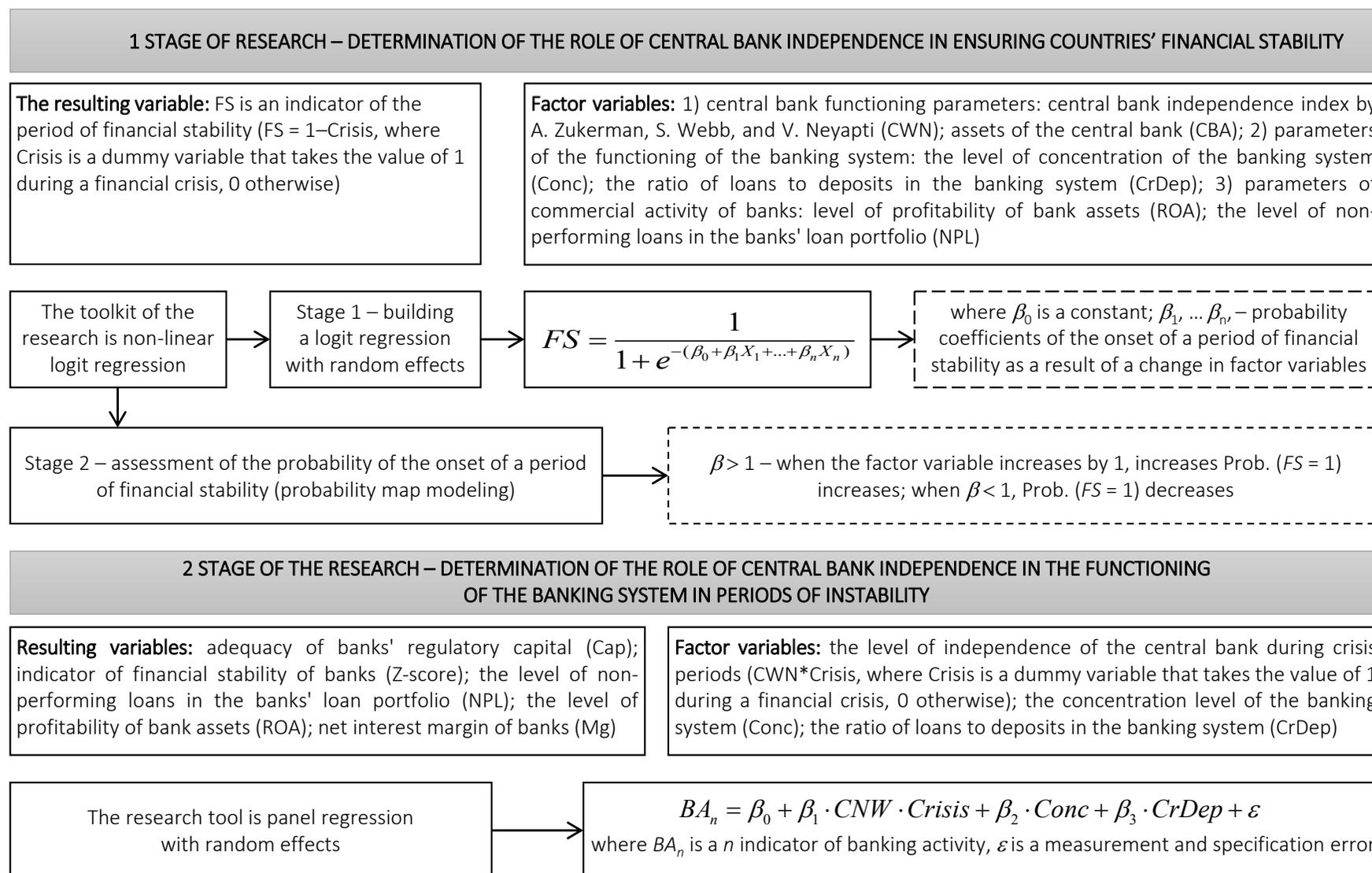
- H1: High level of central bank independence is a prerequisite for preventing the emergence of financial crises in the national economy.*
- H2: High level of central bank independence can help to level out destructive consequences of the financial crises for the functioning of the financial system.*

## 2. METHODOLOGY

Evaluating the role of central bank independence in countering financial crises involves the implementation of two blocks of analysis (Figure 1). At the first stage, it is necessary to assess the potential of a central bank's independence in ensuring counteraction to the emergence of financial crises in the economy. To conduct such a study, you should use logit regression modeling tools, the application of which allows you to estimate the probability of a certain event depending on the influence of several factors taking place in the system under study.

This study was conducted on a sample of 53 countries of the world (USA, Canada, Brazil, Lithuania, Belarus, Azerbaijan, Sweden, Norway, Iceland, Ghana, Nigeria, South Africa, Israel, Kazakhstan, Australia, New Zealand, Venezuela, Chile, Ireland, Netherlands, Belgium, France, Switzerland, Spain, Portugal, Germany, Poland, Austria, Italy, Greece, Bulgaria, Estonia, Ukraine, Finland, Mexico, Colombia, Peru, Bolivia, Argentina, Great Britain, Hungary, Czech Republic, Slovakia, Slovenia, Moldova, Romania, Latvia, Armenia, Georgia, Denmark, Turkey, China, Japan). Research sample includes countries with differences in the history of financial crises, level of economic development, geographical location etc. This allows considering a broad sample of financial crises arising and differences in their consequences. The data of the integral index of independence, calculated by A. Zukerman, S. Webb and B. Neyapti (CWN), the leading experts in the study of this issue, were chosen as a measure of central bank independence in the international context. Statistics for an international sample of countries are based on the study by Garriga (2016), who provides a calculation of the central bank independence index based on the methodology of A. Zukerman, S. Webb and B. Neyapti for the different countries. At the same time, the specifics of the determined goal of the study require the formation of its time horizon covering the period 1970–2012, since calculations of the CWN index are available only to 2012.

So, using data from the World Bank's Global Financial Development statistical base, an array of indicators of financial development of countries was formed. The indicator of the period of finan-



**Figure 1.** Research approach for assessing the role of central bank independence in leveling financial crises

cial stability (FS) was chosen as the resulting variable of the study. At the same time, this indicator is defined as follows:

$$FS = 1 - Crisis, \quad (1)$$

where *Crisis* is a dummy variable that takes the value of 1 during a period of financial crisis (in the year, when countries lose their financial stability), 0 – otherwise.

Two parameters were chosen as factor variables reflecting the peculiarities of the central bank's activities in the country:

- integral index of central bank independence by A. Zukerman, S. Webb, and V. Neyapti (CWN);
- assets of the central bank (CBA).

The general form of the nonlinear logit regression model can be described by the following formula:

$$FS = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \dots + \beta_n X_n)}}, \quad (2)$$

where  $\beta_0$  is a constant;  $\beta_1, \dots, \beta_n$ , are the probability coefficients of the onset of a period of financial stability because of a change in factor variables.

It is worth noting that the research toolkit also allows considering random effects characterizing the national specificity of the country, which determined the specification of the selected model.

At the same time, it determines the need to define a complex of prerequisites for the onset of financial crises, which can form a strategic vision of the central bank's operational targets. For this purpose, a selection of parameters of the functioning of the banking system and commercial activity of banks in the country, which can determine the probability of a financial crisis, was also formed:

- parameters of the functioning of the banking system: the level of concentration of the banking system (Conc); the ratio of loans to deposits in the banking system (CrDep);
- parameters of commercial activity of banks: level of profitability of bank assets (ROA); the

level of non-performing loans in the credit portfolio of banks (NPL).

For the purposes of this study, a factor variable was constructed that allows considering the influence of the level of independence of the central bank on the functioning of the banking system in periods of crisis for the economy. This variable takes the form  $CWN \cdot Crisis$ , where *Crisis* is a dummy variable that takes the value 1 during the financial crisis, and 0 otherwise. In addition, as control variables in the model, the parameters of the functioning of the banking system were considered, which turned out to be relevant factors of influence on ensuring financial stability: the level of concentration of the banking system (Conc); the ratio of loans to deposits in the banking system (CrDep).

The resulting variables of the study are a set of bank functioning parameters ( $BA_n$ ) that are determined by the level of the banking regulator independence (considering financial instability periods), the level of the banking system concentration, and the ratio of loans to deposits in the banking system:

- adequacy of banks' regulatory capital (Cap);
- indicator of financial stability of banks (Z-score);
- the level of non-performing loans in the banks' loan portfolio (NPL);
- the level of profitability of bank assets (ROA);
- net interest margin of banks (Mg).

The sample of research countries and the period of analysis are like the previous block of calculations. The general appearance of the model can be described by the following equation:

$$BA_n = \beta_0 + \beta_1 \cdot CNW \cdot Crisis + \beta_2 \cdot Conc + \beta_3 \cdot CrDep + \varepsilon \quad (3)$$

For this stage of the study, it is adequate to use panel regression modeling tools with random effects, which allows considering the national specificities of the countries chosen for the study.

### 3. RESULTS AND DISCUSSION

On the first stage of the study, the probability of arising financial crises in the countries with different levels of central bank independence was assessed using logit regression modeling. Calculations were carried out using the Stata 12/SE software. Table 1 demonstrates the dependency between the level of central bank independence and the keeping out the financial stability.

Note that this research toolkit does not allow for the traditional interpretation of regression coefficients from the point of view of formalizing the quantitative influence of factor characteristics on the result, since for their interpretation, the equation given by formula (2) should be calculated for each of the values of the factor parameters under study. However, the presented results prove that the relationship between the independence of central banks and the probability of a period of financial stability can be adequately described using the constructed econometric model. At the same

time, to ensure an adequate interpretation of the obtained results, additional calculations should be carried out.

Thus, the specified research toolkit allows you to model a map of the probability of the occurrence of an event, considering the role of the studied factor characteristics. Presentation of this map in the form of Table 2 makes it possible to assess the role of factors of the central bank's functioning in view of the change in the probability of maintaining a period of financial stability in the country.

Note that the influence coefficients presented in Table 2 allow us to interpret their values taking into account the fulfillment of the probability ratios for the occurrence of the event under study. So, provided that the regression coefficient  $\beta > 1$ , there is a pattern of growth in the probability of preserving the period of financial stability Prob. (FS = 1) in case of an increase in the factor variable by 1; and when  $\beta < 1$  – the parameter Prob. (FS) decreases. Thus, it can be determined that

**Table 1.** Results of logit regression modeling of the probability of a period of financial stability in the country depending on the development parameters of the central bank

Factor variable	Coefficient of impact	Standard error	z	P >  z	Lowest 95%	Highest 95%
CWN	-0.6123***	0.1169	-5.23	0,000	-0.8416	-0.3830
CBA	-0.0312***	0.0097	-3.20	0,001	-0.0504	-0.0121
Constant	3.8150***	0.3283	11.62	0,000	3.1714	4.4585
/Insig2u	-0.6720	0.3817	-	-	-1.4203	0.0762
Sigma_u	0.71461	0.1364	-	-	0.4915	1.0388
Rho	0.1343	0.0444	-	-	0.0684	0.2470
Model adequacy parameters						
Wald chi2(2)		30.19	Number of Obs.		1,854	
Prob. > chi2		0.0000	chibar2(01)		24.72	
Log likelihood		-591.6657	Prob. i		0.000	

Note: \*\*\* indicates significance level at 99%.

**Table 2.** Results of modeling the probability map of financial stability in the country under the influence of the central bank's functioning parameters

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
CWN	0.542***	0.063	-5.23	0.000	0.431	0.682
CBA	0.969***	0.009	-3.21	0.001	0.951	0.988
Constant	45.377***	14.900	11.62	0.000	23.841	86.366
Constant	-0.672***	0.382	.b	.b	-1.420	0.076
Model adequacy parameters						
Mean dependent var		0.895	SD dependent var		0.306	
Number of Obs.		1,854	Chi-square		30.190	
Prob. > chi2		0.000	Akaike crit. (AIC)		1,191.331	

Note: \*\*\* indicates significance level at 99%.

**Table 3.** Results of logit regression modeling of the probability of a period of financial stability in the country depending on the functioning parameters of the banking system

Factor variable	Coefficient of impact	Standard error	z	P >  z	Lowest 95%	Highest 95%
Conc	0.0160**	0.0084	1.90	0.057	-0.0005	0.0326
CrDep	-0.0099***	0.0030	-3.28	0.001	-0.0159	-0.0040
Constant	2.4757***	0.7186	3.44	0.001	1.0672	3.8842
/lnsig2u	0.3698	0.4202	-	-	-0.4538	1.1935
Sigma_u	1.2031	0.2528	-	-	0.7969	1.8162
Rho	0.3055	0.0891	-	-	0.1618	0.5006
Model adequacy parameters						
Wald chi2(2)		13.61	Number of Obs.			850
Prob. > chi2		0.0011	chibar2(01)			31.13
Log likelihood		-311.5175	Prob. i			0.000

Note: \*\*\* indicates significance level at 99%; \*\* indicates significance level at 95%.

a high level of independence of the central bank does not prevent the occurrence of financial crises in the national economy, but on the contrary, it can be a factor in increasing threats to the financial stability of the country. In addition, the fact that the increase in assets of the central bank is not a prerequisite is also characteristic financial stability, however, when comparing the values of the obtained coefficients, it can be noted that its influence on the probability of a financial crisis is less significant.

Therefore, the research conducted proves that the direct growth of the independence of central banks does not yet create a sufficient basis for the financial stability of the national economy.

The conducted additional calculations proved that the parameters of the functioning of the banking system are relevant in view of their role in ensuring a period of financial stability in the country (Table 3).

At the same time, additional calculations made it possible to outline the dependence of the probability of maintaining a period of financial stability depending on the parameters of the functioning of the banking system (Table 4).

Therefore, both studied variables are relevant and have a statistically significant impact on ensuring the stability of a country's financial system. At the same time, it is worth noting the specificity of this influence. Therefore, it is quite natural that the increase in the ratio of loans to deposits, which characterizes the real security of the credit system with enough invested capital, reduces the probability of maintaining a period of financial stability in a country. On the other hand, it is important that the increase in the level of concentration of the banking system turned out to be a factor characterizing the higher resistance of the country's financial system to the realization of financial risks.

**Table 4.** Results of modeling the probability map of financial stability in the country under the influence of parameters of the functioning of the banking system

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
Conc	1.016**	0.009	1.90	0.057	0.999	1.033
CrDep	0.990***	0.003	-3.28	0.001	0.984	0.996
Constant	11.891***	8.545	3.44	0.001	2.907	48.633
Constant	0.370	0.420	.b	.b	-0.454	1.194
Model adequacy parameters						
Mean dependent var		0.867	SD dependent var			0.340
Number of Obs.		850	Chi-square			13.613
Prob > chi2		0.001	Akaike crit. (AIC)			631.035

Note: \*\*\* indicates significance level at 99%; \*\* indicates significance level at 95%.

**Table 5.** Results of logit regression modeling of the probability of a period of financial stability in the country depending on the parameters of commercial activity of banks

Factor variable	Coefficient of impact	Standard error	z	P >  z	Lowest 95%	Highest 95%
ROA	0.3644***	0.0782	4.66	0.000	0.2111	0.5177
NPL	-0.1305***	0.0285	-4.58	0.000	-0.1864	-0.0746
Constant	3.0383***	0.4333	7.01	0.000	2.1890	3.8876
/lnsig2u	0.8474	0.4608	-	-	-0.0557	1.7506
Sigma_u	1.5276	0.3519	-	-	0.9725	2.3996
Rho	0.4149	0.1118	-	-	0.2232	0.6364
Model adequacy parameters						
Wald chi2(2)		48.23	Number of Obs.			723
Prob. > chi2		0.0000	chibar2(01)			30.17
Log likelihood		-239.9818	Prob. i			0.000

Note: \*\*\* indicates significance level at 99%.

On the other hand, an important aspect is studying the parameters of commercial activity of banks in view of their use as indicators of the probability of realization of financial risks in the banking system (Table 5).

Therefore, both studied parameters are relevant for further analysis, the results of which are shown in the Table 6.

Thus, the conducted study proved that the deterioration of the quality of the credit portfolio can quite rightly be used as indicators of a preventive response to the possibility of a financial crisis in the national economy. At the same time, the fact that the increase in the level of profitability of banks is a guarantee of maintaining a period of financial stability and can be a reference point of the macroeconomic forecasting system for planning stabilization measures of the preventive anti-crisis policy of central banks is of scientific interest.

At the same time, it can be noted that the lack of preventive influence of central bank independence in preventing financial crises necessitated the next block of research, focused on determining the place of central bank independence in ensuring the effectiveness of the stabilization recovery system of the national economy. For this purpose, the study of the influence of the independence of the central bank on the parameters of the functioning of commercial banks in crisis periods becomes relevant.

So, the results of assessing the dependence of the adequacy of regulatory capital of banks on the selected factor parameters are shown in Table 7.

It can be noted that a high level of independence of central banks guarantees an increase in the level of adequacy of regulatory capital of banks during economic crisis periods. This shows that for independent central banks, the benchmark of financial stability is the prevention of a decrease in the capi-

**Table 6.** Results of modeling the probability map of financial stability in the country under the influence of the parameters of commercial activity of banks

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
ROA	1.440***	0.113	4.66	0.000	1.235	1.678
NPL	0.878***	0.025	-4.58	0.000	0.830	0.928
Constant	20.871***	9.044	7.01	0.000	8.927	48.795
Constant	0.847	0.461	.b	.b	-0.056	1.751
Model adequacy parameters						
Mean dependent var		0.856	SD dependent var			0.351
Number of Obs.		723	Chi-square			48.226
Prob > chi2		0.000	Akaike crit. (AIC)			487.964

Note: \*\*\* indicates significance level at 99%.

**Table 7.** Results of assessing central bank independence in crisis periods on the adequacy of regulatory capital of banks in 53 countries of the world

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
CWN · Crisis	0.286**	0.135	2.12	0.034	0.022	0.550
Conc	0.027**	0.012	2.26	0.024	0.004	0.051
CrDep	-0.022***	0.005	-4.98	0.000	-0.031	-0.014
Constant	15.681***	1.147	13.67	0.000	13.433	17.930
Model adequacy parameters						
Mean dependent var		14.824	SD dependent var			5.138
Overall r-squared		0.029	Number of Obs.			694
Chi-square		33.532	Prob > chi2			0.000
R-squared within		0.048	R-squared between			0.028

Note: \*\*\* indicates significance level at 99%; \*\* indicates significance level at 95%.

talization requirements of banks and the preservation of their satisfactory financial condition even in the conditions of a financial crisis. At the same time, it is important that the level of concentration of the banking system is also a factor in increasing the level of capitalization in the banking sector, while the growth of the ratio of loans to deposits, quite naturally, leads to a deterioration of the resulting parameter.

The next indicator to be assessed is the criterion of financial stability of banks (Z-score). It should be noted that the results given in Table 8 indicate that central bank independence is not characterized by the presence of a statistically significant relationship with this indicator in periods of financial crisis. In this context, it should also be noted that there is no relevant influence of the control variables included in the model.

The next parameter of the research, the importance of the restriction of which in ensuring the

prevention of financial crises in the national economy was confirmed at the previous stage of calculations, is the indicator of the quality of the banks' credit portfolio. Therefore, the simulation results presented in Table 9 indicate that the increasing independence of central banks in periods of financial instability is the reason for the further deterioration of the structure of the banks' credit portfolio due to the increase in the level of non-performing loans. At the same time, it should be noted that the concentration of the banking system also turned out to be a factor that negatively affects this aspect of the financial condition of banks, while the overall ratio of loans to deposits is not characterized by a statistically significant relationship with the resulting parameter of the constructed econometric model.

Given the importance of ensuring the profitability of banks to increase the financial stability of the national economy before the implementation of systemic financial risks, it is necessary to assess

**Table 8.** Results of evaluating the independence of central banks in crisis periods on the indicator of financial stability of banks in 53 countries of the world

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
CWN · Crisis	-0.212	0.157	-1.36	0.175	-0.519	0.095
Conc	-0.003	0.013	-0.26	0.798	-0.028	0.021
CrDep	-0.007	0.005	-1.54	0.123	-0.016	0.002
Constant	12.316***	1.352	9.11	0.000	9.666	14.967
Model adequacy parameters						
Mean dependent var		11.131	SD dependent var			7.066
Overall r-squared		0.002	Number of Obs.			850
Chi-square		4.990	Prob > chi2			0.173
R-squared within		0.006	R-squared between			0.002

Note: \*\*\* indicates significance level at 99%; \*\* indicates significance level at 95%.

**Table 9.** Results of assessing the independence of central banks in crisis periods on the level of non-performing loans in the loan portfolio of banks in 53 countries of the world

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
CWN · Crisis	1.698***	0.187	9.08	0.000	1.331	2.064
Conc	0.039**	0.016	2.39	0.017	0.007	0.070
CrDep	-0.009	0.006	-1.51	0.131	-0.021	0.003
Constant	3.765***	1.444	2.61	0.009	0.934	6.596
Model adequacy parameters						
Mean dependent var		5.734	SD dependent var		6.177	
Overall r-squared		0.046	Number of Obs.		684	
Chi-square		85.981	Prob > chi2		0.000	
R-squared within		0.127	R-squared between		0.005	

Note: \*\*\* indicates significance level at 99%; \*\* indicates significance level at 95%.

the relationship between the independence of the central bank and the specified parameter in crisis conditions of the economy. So, modeling results presented in Table 10 show that the relationship under study is statistically significant. At the same time, one should pay attention to the reverse direction of such an influence – an increase in the integral level of independence of central banks per unit is associated with a decrease in the level of profitability of bank assets by 0.5%. At the same time, the investigated control variables demonstrated differentiated effects of the relationship. Thus, an increase in the level of concentration of the banking system allows maintaining the desired level of profitability of banking activity, while an unreasonable increase in bank loans, not provided with a sufficient financial base of deposits, causes a drop in the level of profitability of assets.

The last of the analyzed parameters of banking activity is the level of banks' net interest margin,

for which there is no relevant connection with the independence of central banks, as shown by the data in Table 11, and the influence of control variables is like that found for the previous indicator.

The analysis conducted proves that, despite the significant place of financial stability in the system of central bank goals, the growth of central bank independence is not a sufficient prerequisite for ensuring the stability of the national financial system without fulfilling several additional restrictions on the development of the banking sector. In addition, the results obtained regarding the connection between the level of independence of the central bank and several parameters of the functioning of the banking sector testify to the existence of a significant potential for improving the anti-crisis policy of the central bank under the conditions of ensuring its independence.

**Table 10.** Results of assessing the independence of central banks in crisis periods on the level of profitability of bank assets in 53 countries of the world

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
CWN · Crisis	-0.591***	0.083	-7.12	0.000	-0.754	-0.428
Conc	0.014**	0.006	2.50	0.012	0.003	0.025
CrDep	-0.008***	0.002	-3.83	0.000	-0.012	-0.004
Constant	1.613***	0.472	3.41	0.001	0.687	2.539
Model adequacy parameters						
Mean dependent var		1.414	SD dependent var		2.537	
Overall r-squared		0.104	Number of Obs.		849	
Chi-square		81.457	Prob > chi2		0.000	
R-squared within		0.081	R-squared between		0.188	

Note: \*\*\* indicates significance level at 99%; \*\* indicates significance level at 95%.

**Table 11.** Results of assessing the independence of central banks in crisis periods by the level of net interest margin of banks in 53 countries of the world

Factor variable	Coefficient of impact	Standard error	t	P >  t	Lowest 95%	Highest 95%
CWN · Crisis	0.036	0.105	0.35	0.728	-0.169	0.242
Conc	0.030***	0.008	3.59	0.000	0.014	0.046
CrDep	-0.014***	0.003	-4.63	0.000	-0.020	-0.008
Constant	4.235***	0.849	4.99	0.000	2.572	5.898
Model adequacy parameters						
Mean dependent var		4.613	SD dependent var			4.393
Overall r-squared		0.027	Number of Obs.			849
Chi-square		40.954	Prob > chi2			0.000
R-squared within		0.049	R-squared between			0.016

Note: \*\*\* indicates significance level at 99%.

The study allowed us to refute the hypothesis that a high level of independence of central banks prevents the occurrence of financial crises. Such findings confirm the results of a study by Wachtel and Blejer (2020) regarding the greater vulnerability to financial crises of countries with independent central banks. On the other hand, the confirmed positive influence of central bank independence on the level of bank capitalization partially correlates with the results obtained by Andries et al. (2022) regarding the positive impact of central bank independence on the level of systemic risks dissemination in the banking system. Herewith, Andries et al. (2022) also found that during periods of crisis, high level of central bank independence is a reason for the increase banks' risks, which confirms the results obtained in the current study regarding the deterioration of the structure of banks' credit portfolio during periods of crisis due to a high level of central bank independence.

The results regarding the negative impact of a high level of independence of central banks on

the indicators of the banking market in crisis periods indicate the need to introduce additional measures for the implementation of monetary policy and complementary activity of other regulators. This correlates with the recommendations given by Balls et al. (2018) on the need to coordinate the actions of central banks with other areas of activity of regulatory bodies in crisis periods.

Limitations regarding the interpretation of the obtained results are determined by the sample of countries chosen for the calculations. However, the research methodology can be expanded for a wider sample of countries or for a longer period of analysis. It is also of scientific interest to conduct Partial calculations for regional samples of countries or for the countries involved into the same type of systemic financial crises are also a subject for the further research. This might help to identify the significance of the independence of central banks more deeply as a factor in smoothing the consequences of financial crises.

## CONCLUSION

On the first stage of the study, the hypothesis that the increasing independence of central banks is a prerequisite for ensuring financial stability and reduces the likelihood of crises was disproved. At the same time, the increase in the level of concentration of the banking system and the profitability of bank assets demonstrated the effect of preventing financial crises. It was also confirmed that the increase in the ratio of loans to deposits and the increase in the share of non-performing loans are attractors of the occurrence of financial crises. At the second stage, it was found that the effectiveness of the monetary policy of central banks in crisis periods is not determined by the degree of their independence. Thus, the increase in the level of independence of central banks mostly determines the deterioration of the parameters of the banking system in periods of crisis (particularly an increase in the CWN-index by 1

led to an increase in the share of non-performing loans by 1.69% and a reduction in the return on assets by 0.59%). That is why it is more important not only to create conditions for the implementation of a balanced policy of the central bank, including its independence, but also to comprehensively improve preventive anti-crisis policy and post-crisis recovery measures of the national financial system, considering the factors that indicate and accelerate financial instability.

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## FUNDING

This research was funded by the Ministry of Education and Science of Ukraine and contains the results of the project no. 0121U100469.

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