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REALITIES AND EFFECTIVENESS OF THE UKRAINIAN BANKING SYSTEM

ABSTRACT

The paper deals with the analysis of the banking system of Ukraine. It is shown that for Ukraine the frequency and depth of crisis phenomena in the banking sector are exacerbated by the raw material orientation of the economy, underdeveloped domestic market and the circulation of foreign currency (dollarization of the economy). It should be noted that in the pre-crisis during 2006-2007, excessive mortgage lending created a "bubble" in the real estate market, which, comparing its devastating effects, corresponded to this phenomenon in the real estate market in the United States. Although the crisis of 2008-2009 demonstrated the vulnerability of the Ukrainian banking system to numerous economic and political upheavals, no significant changes in banking supervision took place to minimize systemic risks. Restoration of the banking system of Ukraine in 2015-2016 is generally in line with post-crisis trends to streamline the banking system and increase its efficiency in the world. At the same time, the weakness of the institutional environment makes it impossible to use both administrative tools and state development banks to increase productive lending in Ukraine. On the other hand, commercial banks will use refinancing loans instead of private-sector savings to lend. In this case, the probability of the need for financial support from banks increases, which will lead to a significant increase in public debt.

Moreover, a system of vector autoregression models has been developed to research the impact of crisis periods on the performance of commercial banks in Ukraine. The simulation results (mainly the analysis of impulse response functions) allow concluding that interbank lending in post-crisis conditions recovers relatively rapidly (with a lag of two years). Lending to non-financial corporations and non-residents showed a decline and recovery only within four years after the crisis. Lending to the general government sector is growing every year, but at the same time loans to other resident sectors are declining. In addition, during the year after the crisis, the volume of deposits in the banking system is demonstrating a decrease. Other variables do not show any response to the crisis.

Keywords: financial crisis, banks, banking system, financial stability, bank assets, bank liabilities, problem loans, Central Bank, VAR models, impulse response functions analysis

JEL Classification: E44, E47, G01, G17, G21

INTRODUCTION

Crises are a stage of rethinking economic processes, analyzing dominant paradigms, and making the necessary adjustments. The latest rethinking of central banks' monetary policy, its ability to ensure the stability of the banking system and the stabilization of income around a certain equilibrium level is no exception. Analyzing the anti-crisis policy of the central banks of the largest countries in the world, there is no reason to believe that in the post-crisis environment, there was a departure from the classical postulates that price stability is the primary goal of monetary policy. As can be seen primarily in the example of the US Federal Reserve, after a period of highly low-interest rates and the use of non-traditional non-monetary instruments (credit and quantitative easing policies, balance sheet policies, etc.), there is a transition to more conventional monetary policy with a significant increase in interest rates (2016–2018). However, it is possible that the equilibrium interest rate level has dropped significantly in recent decades,

and this may substantially limit the possibilities of traditional monetary policy instruments, such as interest rates or reserve requirements. However, as suggested by MMT theorists, government debt transactions are unlikely to be an effective alternative, as the natural constraint on such a policy is the level of public debt. If this indicator exceeds a certain safe "threshold", there will be problems with confidence in both fiscal and monetary policies.

A robust, stable banking system that optimally redistributes capital in the economy is the key to economic growth in any country. That is why the NBU must continue increasing public confidence in banks, creating a competitive environment for banks' efficient operation, and effectively addressing distressed assets' restructuring. The Ukrainian banking system integrated into the world economy despite all the difficulties.

LITERATURE REVIEW

According to the National Bank of Ukraine, "A stable and efficient financial system, which citizens and businesses trust, is necessary for economic development." We share the opinion of scholars [1], who are convinced that ensuring the financial stability of the banking system requires a precise organizational and economic mechanism, which should include: regulation; external and internal items; objects (parameters of influence of the National Bank of Ukraine on the financial stability of the banking system, parameters of functioning of state banks, parameters of functioning of banks with foreign capital, parameters of functioning of banks with domestic private capital, movement of financial flows in the banking system). The practical significance of the mechanism should be a combination of methodological, organizational-instrumental, information-analytical, methodological support and their direction to ensure the ability of the banking system to maintain financial equilibrium, counteract the negative impact of external and internal factors, neutralize risks and crisis trends.

Some scholars argue that there is an inverse relationship between inflation and the level of independence of central banks [2]. In particular, in countries with weak institutions, the actual independence of the central bank does not always correspond to the formal one. For example, in Ukraine, it is difficult to say that the relationship between inflation and the level of formal independence is consistent.

Ukrainian scientists have successfully identified channels for the impact of external shocks on Ukraine's economy and areas of internal vulnerability of the national economy [3]. This formed the basis for the formation of the conceptual regions of crisis management and the development of a system of measures to combat crises, including instruments of monetary policy of the National Bank of Ukraine, the structural and fiscal policy of the Government, and the banking regulation and capital control.

Fostyak V., Tanchak Y., Druhova V., Aliksieiev I., & Bondarchuk M. [4] studied the deposit policy of Ukrainian banks in the economic instability caused by the COVID-2019 pandemic. The authors obtained unexpected conclusions about the lack of significant impact of the pandemic on the deposit market. Despite all the pessimistic forecasts, there was no significant outflow of deposits in Ukraine. Instead, banks were able to increase the number of funds raised from individuals and legal entities.

It was found that deposit insurance and safety net guarantees do not affect the probability of a systemic bank shock but increase the likelihood of a policy response to such a shock, consistent with the previous literature results [5].

Oleksandr Talavera, Andriy Tsapin, Oleksandr Zholud [6] indicate that banks reduce their lending ratios during significant economic instability, which can be explained by the greater risk aversion of bank managers. In addition, small and least profitable banks are less prone to changes in the macroeconomic environment than their most significant and most profitable counterparts.

Building on the recent literature on corruption in bank lending, Brian Akins, Yiwei Dou, Jeffrey Ng [7] examined the effect of country-level timely loan loss recognition by banks on lending corruption using a unique World Bank dataset that covers more than 3,600 firms across 44 countries. They found evidence consistent with timely loan loss recognition constraining lending corruption because it increases the likelihood of problem loans uncovered earlier. In further analysis, they found timely loan loss recognition was less associated with reduced corruption in countries with significant government ownership in the banking system and deposit insurance schemes. This evidence is consistent with timely loan loss recognition being less of a deterrent to lending corruption when banks are less disciplined by their capital providers.

We share the opinion of scholars [8] who argue that the impact of investor sentiment on bank credit and how changes in lending may affect bank stability. They analyzed a sample of 2,673 banks from 127 developed and developing countries during the 1997–2016 period. Their results indicate that periods of high investor sentiment positively affect bank lending and encourage bank risk-taking by increasing the number of loans granted, which reduces bank stability. They found that

the impact of investor sentiment on bank stability through changes in growth in bank loans is less harmful in countries where creditor rights protection is more significant in terms of both collateral and bankruptcy. During systemic banking crises, the negative effect on bank stability was weaker since the crisis counteracted any increase in bank credit supply provoked by investor sentiment.

Inna Golodniuk [9] logically concludes that insufficiently capitalized banks are more affected by the change in monetary policy than the average bank, which is consistent with the bank lending channel hypothesis, suggesting that monetary policy may involve the deposits of commercial banks, forcing them to change lending, which affects investment in an economy.

The statements of some researchers are of interest [10], who found that the economic efficiency of acquired banks improved after the takeover (due to reduced dependence on deposits). Still, neither their profitability nor market share in loans did not increase. In general, their findings are in line only with parts of existing multi-country studies for countries with economies in transition.

Recently, massive exits of foreign banks have begun to be observed worldwide. What is the effect of such bank behavior on the market power of the remaining banks and competition between rivals? Do financial crises change this relationship? Aneta Hryckiewicz Lukasz Kozlowski [11] tested these questions on a sample of 226 foreign banks' withdrawals, which occurred between 1996 and 2014 in 54 countries. They documented that the most significant increase in market power is when a divested bank accounts for around 10% of the market share. After this threshold, the effect diminishes and even has a negative sign. In addition, they found that banking market power significantly increases during financial crises; however, in regular times, banks participate in a horserace.

The COVID-19 pandemic has complicated the operating environment for banks around the world. Oleh Kolodziev, Valeriia Shcherbak, Kseniia Vzhytynska, Olena Chernovol and Olha Lozynska [12] developed a model for clustering banks in terms of the level of digitalization on the principles of corporate social responsibility. They proposed a twofold model: the first part includes calculating the level of digitalization of banking, and the second part contains a mathematical simulation of the clustering of bank digitalization levels. Factor analysis identifies the main factors, cluster analysis ranks banks into three categories (A, B, C) of service digitalization, and a dendrogram identifies digitalization drivers. The model was tested on 22 banks. Eight percent of the banks are rated A "Very good" and B "Good". 92% have Level C "Satisfactory".

In their study, well-known Ukrainian scholars [13] examined the impact of the European Central Bank's monetary policy on government bond yields, interest rates and foreign investment inflows to CEE countries. The analysis results show that the ECB's monetary policy has had an overall positive impact on the economies of Poland, Hungary and the Czech Republic.

Anil Ari, Sophia Chen, Lev Ratnovski [14] presented a new dataset on non-performing loans (NPLs) dynamics during 92 banking crises since 1990. The data show similarities across concerns during NPL build-ups but much heterogeneity in the pace of NPL resolution. They documented how high and unresolved NPLs deepened post-crisis recessions and used a machine learning approach to establish pre-crisis predictors of NPL problems. They hope it will help shed light on post-COVID-19 NPL vulnerabilities.

Saibal Ghosh [15] shows that reforms of the credit reporting system lead to a reduction in problem loans by about 40 percent. These effects are primarily due to the reforms of the private credit bureau compared to the state credit registry. The analysis also points to the different impacts on problem loans between banks' business models and countries with varying banking structures. Finally, the results show that the effectiveness of credit reporting systems is much less convincing in times of crisis.

Andreas Haufler and Ian Wooton [16] argue that governments choose minimum capital requirements to optimally solve the trade-off between higher lending volumes and consumer surplus and the expected tax losses faced by taxpayers. A reduction in the costs of screening foreign firms reduces banks' risk-taking and is beneficial for consumers and taxpayers alike.

Ji Wu, Yuanyun Yan, Minghua Chen, Bang Nam Jeon [17], using panel data on approximately 1100 public banks in 43 economies from 2000 to 2018, found consistent evidence that monetary policy's "risk-taking channel" is weakened amid higher economic uncertainty. This finding is in line with the "option value of waiting" hypothesis, which suggests that economic uncertainty may induce banks to withhold their adjustments of risk-taking strategies when monetary policy is altered.

METHODOLOGY AND RESEARCH METHODS

To analyze the impact of the crisis on the main indicators of the banking system of Ukraine, we use the following indicators:

- *cred_ukr* – loans;
- *cred_bank_ukr* – interbank loans;
- *cred_nonfin_ukr* – loans to non-financial corporations;
- *cred_nonres_ukr* – loans to non-residents;
- *cred_other_ukr* – loans to other resident sectors;
- *cred_publ* – loans to the general government sector;
- *dep_ukr* – customer deposits;
- *dep_res_ukr* – interbank deposits to residents;
- *dep_nonres_ukr* – interbank deposits to non-residents;
- *crisis* – dummy variable, which takes the value "1" from 2008 to the first quarter of 2009 and "0" – in other periods.

The annual statistical data for 2005-2019 were used in the modeling. Descriptive statistics of the used data are given in Table 1.

Table 1. Statistical characteristics of variable models that reflect the sensitivity of critical indicators of the EU banking system to the impact of crisis factors.

	CRED_BANK_UKR	CRED_NON-FIN_UKR	CRED_NON-RES_UKR	CRED_OTHER_UKR	CRED_PUBL_UKR	DEP_NON-RES_UKR	DEP_RES_UKR	DEP_UKR
Average	24712.18	575323.6	27059.52	182035.6	3579.349	10927.95	18607.23	575228.5
Median	20121.38	605425.0	17657.64	193653.8	3364.260	9523.890	17653.24	576849.3
Maximum	51048.27	859740.4	67083.54	280555.7	8817.270	32134.79	37131.29	1065338.
Minimum	12098.38	106078.0	556.2500	35677.06	3.950000	1249.290	3785.720	136855.0
Standard deviation	12290.67	248337.2	22146.06	59184.81	3055.163	8989.450	8506.966	286772.7
Asymmetry	0.838622	-0.632502	0.551016	-1.032908	0.263554	1.262369	0.420616	0.081926
Excess	2.505948	2.165703	1.863365	4.168184	1.868723	3.855756	2.846168	1.857114
Jarque-Bera test	1.910771	1.435178	1.566509	3.520153	0.973519	4.441638	0.457086	0.833147
Probability	0.384664	0.487927	0.456917	0.172032	0.614615	0.108520	0.795692	0.659302

In turn, the specification of the model will be as follows:

$$X_{1,t} = C_{10} + C_{11}X_{1,t-1} + C_{12}X_{1,t-2} + C_{13}X_{1,t-3} + C_{14}X_{1,t-4} + \varepsilon_{1t} \quad (1)$$

$$X_{2,t} = C_{20} + C_{21}X_{2,t-1} + \varepsilon_{2t} \quad (2)$$

$$X_{3,t} = C_{30} + C_{31}X_{3,t-1} + \varepsilon_{3t} \quad (3)$$

$$X_{4,t} = C_{40} + C_{41}X_{4,t-1} + \varepsilon_{4t} \quad (4)$$

$$X_{5,t} = C_{50} + C_{51}X_{5,t-1} + \varepsilon_{5t} \quad (5)$$

$$X_{6,t} = C_{60} + C_{61}X_{6,t-1} + \varepsilon_{6t} \quad (6)$$

$$X_{7,t} = C_{70} + C_{71}X_{7,t-1} + \varepsilon_{7t} \quad (7)$$

$$X_{8,t} = C_{80} + C_{81}X_{8,t-1} + \varepsilon_{8t} \quad (8)$$

where, $x_{1,t} = (cred_bank_ukr_t, crisis_t)$; $x_{2,t} = (d(cred_nonfin_ukr)_t, crisis_t)$; $x_{3,t} = (d(cred_nonres_ukr)_t, crisis_t)$; $x_{4,t} = (d(cred_publ_ukr)_t, crisis_t)$; $x_{5,t} = (d(cred_other_ukr)_t, crisis_t)$; $x_{6,t} = (d(dep_ukr)_t, crisis_t)$;

$x_{7,t} = (d(dep_res)_t, crisis_t)$; $x_{7,t} = (d(dep_nonres_ukr_t, crisis_t) -$ vectors of endogenous variables; $C_{10} + C_{20} + C_{30} + C_{40} + C_{50} + C_{60} + C_{70} + C_{80} -$ vectors of endogenous variables; $C_{1j}, (j = \overline{1,4}), C_{21}, C_{31}, C_{41}, C_{51}, C_{61}, C_{71}, C_{81} -$ the matrix of coefficients; $\varepsilon_{1t} + \varepsilon_{2t} + \varepsilon_{3t} + \varepsilon_{4t} + \varepsilon_{5t} + \varepsilon_{6t} + \varepsilon_{7t} + \varepsilon_{8t} -$ disturbance vectors.

The order of constructed vector models of autoregression for analyzing the impact of the crisis on the leading indicators of the banking system of Ukraine is determined based on the calculation of the values of the Akaike, Schwartz and Hannan-Quinn information criteria.

At the same time, testing the models for stationarity based on finding the inverse roots of the AR characteristic polynomial confirmed their stability.

Thus, we will investigate the response of the leading indicators of the banking system of Ukraine to the shock *crisis*, using the constructed VAR models, in particular, the impulse response function in response to perturbations in Cholesky one standard deviation.

RESULTS

Analyzing the Ukrainian banking system, it can be argued that recently the number of existing banks has been declining mainly due to a decrease in the number of banks with domestic capital (Fig.1). As of January 1, 2014, 180 banks had a banking license, and a year later - 163 banks. Since 2014, the interim administration has been applied to up to 39 banking institutions. In 2015, another 44 banks were excluded from the banking register [18, p. 29]. The situation is similar to the number of branches. A significant reduction in the customer base hurt the number of bank branches. In particular, in 2019, Oschadbank ("-303") became the leader among closed bank branches, followed by "PrivatBank" ("-93"). However, FUIB opened 28 new units in 2019. In 2019, banks closed 507 branches, the largest - in the Dnipropetrovsk Oblast - 64 [19, p. 4].

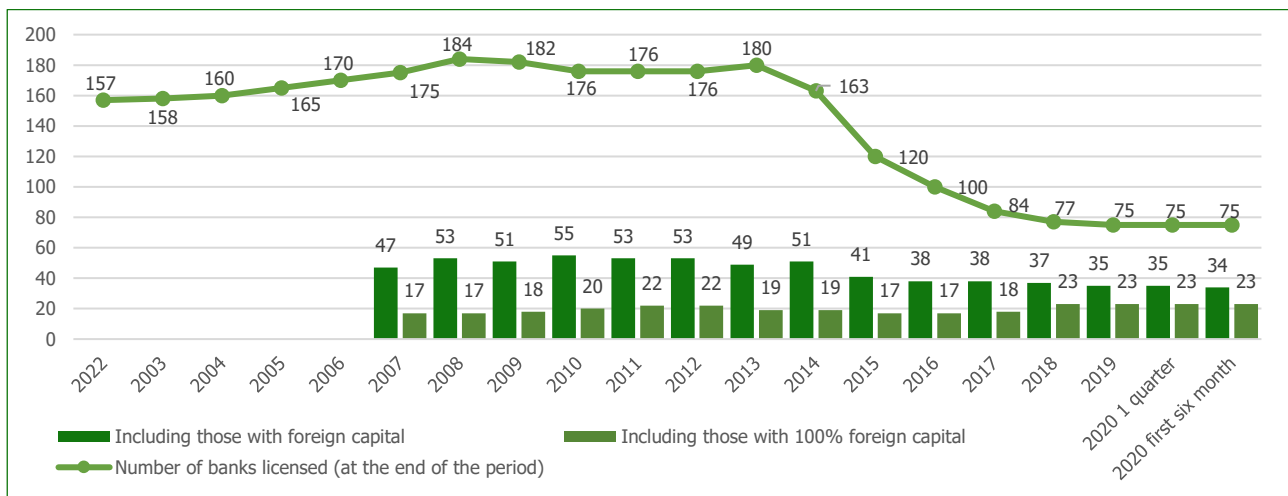


Figure 1. Number and dynamics of Ukrainian banks, 2002–06.2020. (Source: based on [20; 21])

Thus, over the period, the number of banks with 100% foreign capital has tripled and as of the end of 2019, is more than a quarter of all registered banks. Foreign investors wholly own a third of all banks registered in Ukraine. This result may be explained by the consequences of the "recovery" of the banking system in 2015 – 2016 but has deep-rooted causes. Although the number of banks in the liquidation process increased after 2014, this happened before, in 2005 – 2013.

O. Glushchenko suggested that this is because the sector of deposit-taking corporations was in a state of institutional regression, which characterized the number of institutions in liquidation: 20 in 2005 and 21 in 2011. The lowest figure was in 2009 (13 institutions), which can be explained by the pre-crisis "overheating" of the financial system, caused by the presence of excess liquidity in the sector of deposit-taking corporations [22, p. 29].

As of January 1, 2022, there are 71 operating commercial banks in Ukraine, of which 23 with 100% foreign capital [23].

During the study period, banks significantly increased their loan portfolio (Fig. 2).

In the fourth quarter of 2009, banks' assets grew significantly: total - by 5.7%, net - by 8.8%. Banks' investments in NBU certificates of deposit increased the most: by USD 92.2 billion for the quarter (in particular, USD 75 billion in December),

to USD 152.2 billion at the end of 2019. This was due to the record inflow of funds to the accounts of economic entities in December (+ USD 70.7 billion), primarily Naftogaz.

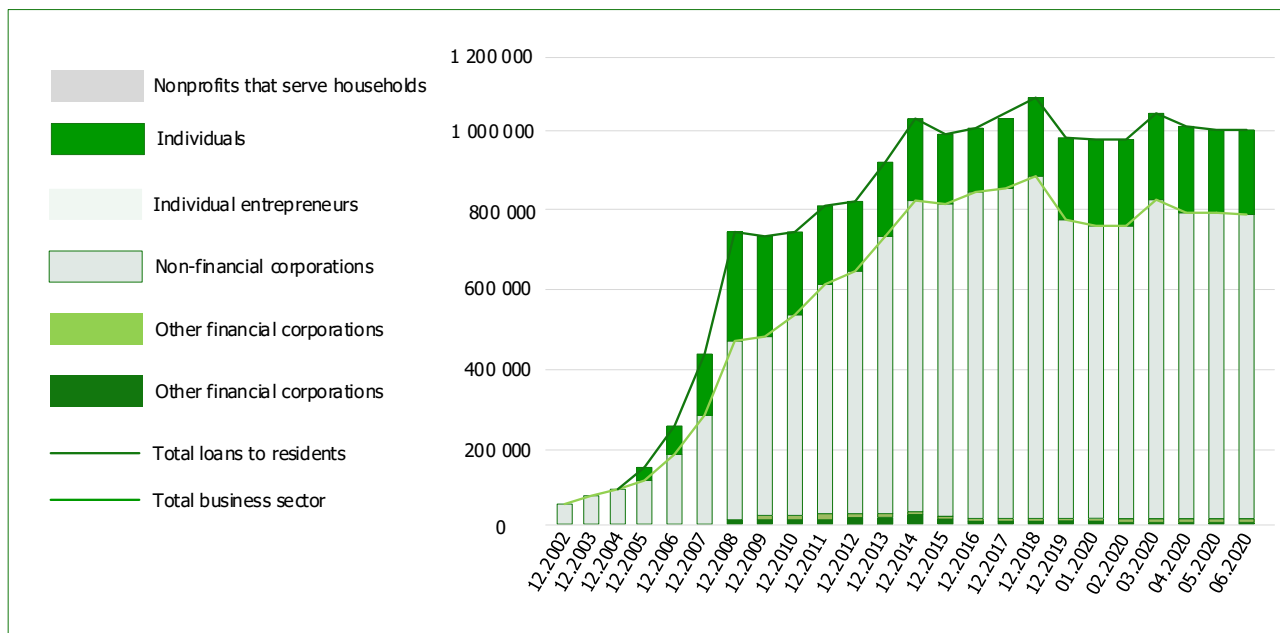


Figure 2. Structure of banks' loan portfolio by areas of lending, 2002–06.2020, USD million, %. (Source: [24; 25])

Net assets of banks increased by 6.3% in the fourth quarter of 2021 due to the growth of the hryvnia. Investments in government securities and clients' loan portfolios increased [26].

It should be borne in mind that almost one in five consumer loans was non-performing during the previous crisis. Moreover, in 2006–2008, excessive mortgage lending created a “bubble” in the real estate market, which had similar destructive consequences as the relevant phenomena in the US real estate market: deteriorating collateral quality, the need for financial support of the banking system, insolvency of borrowers, stagnation aggregate demand.

As foreign experience shows, to prevent banking crises, loans must be used for investment purposes (“productive lending”). This can be achieved through appropriate administrative regulation, the development of small local banks, as in Germany, or the establishment of state-owned banks.

Each of these proposals is not without its weaknesses. Effective administrative regulation suggests the sound quality of the institutional environment. If this is not the case, any organizational measures will be ineffective or may have consequences contrary to the expected. For instance, the Law of Ukraine On Amendments to Certain Laws of Ukraine on Prevention (Minimization) of Negative Influence on the Stability of the Banking System” provides for penalties in the amount of five thousand to ten thousand non-taxable minimum incomes if bank owners do not take measures to increase the amount of authorized capital [27]. Still, there are no examples of the application of such legislation.

However, the establishment of state development banks seems to be the most controversial. This was the case in Japan in the 1950s and 1960s; with less success in South Korea, it became a source of economic problems in Latin America. It is no accident that the initiative to establish the State Land Bank and the Ukrainian Bank for Reconstruction and Development came in 2012 – 2013 when there was a shift towards state regulation of the economy. At the same time, the extent of abuse increased.

The concept of the State Targeted Economic “Program of Capital Markets’ Modernisation In Ukraine” provided for the establishment of a state innovation and investment bank, which was to provide loans at preferential rates for banks – the most active participants in the investment market, to guarantee investment loans issued by such banks, to participate in insurance programs for such loans, partial reimbursement of banks' expenses, advisory support of such banks, etc. [28]. In addition, such functions were to be partially transferred from the NBU, which should have significantly reduced the functional load on the National Bank and would allow concentrating of the entire complex of certain specific functions in one specialised banking institution.

Such intentions could hardly have the expected effect. Even in the case of relatively successful projects, it is challenging to avoid difficulties. For example, in Brazil, BNDES provided long-term loans that contributed to the development of the

export sector. Still, there were cases when loans were used for short-term anti-cyclical economy regulation [29]. However, when the bank strays from its leading roles, it does not generate value for shareholders.

The proposal for direct borrowing by the Ministry of Finance from commercial banks is also controversial. This situation threatens a conflict of economic and political interests and has destructive consequences in Ukraine. It can be assumed that such loans will be used to strengthen the political influence of powerful financial and industrial groups, and the inevitable conflict between some of them will immediately affect tensions in the banking system. For its part, this will reduce the credibility and hamper both the mobilisation of savings and the conduct of the monetary policy of the NBU.

Even worse, commercial banks will use refinancing loans from the central bank instead of private-sector savings to provide loans. In this case, financial support from banks may be necessary, which will affect a significant increase in public debt and the threat of default. Without denying the priority of innovative development of products for the domestic economy, which justifies the active use of the credit channel for issuing money through the mechanism of bank refinancing, concomitant risks must be considered. According to O. Melnychenko [30, p. 45–47], the financial support of banks represented by central banks is regulated, while the actions of governments are almost always spontaneous and poorly balanced. An example is the recapitalization of three bankrupt banks during 2008 – 2009, which cost the Ukrainian budget USD 26 billion (in particular, 12.4 billion was used to save Rodovid Bank, 8 billion for Ukrgasbank, and 3.6 billion for Kyiv Bank).

O. Dziubliuk and H. Zabchuk [31] recognize the feasibility of long-term refinancing of commercial banks as a factor in the effectiveness of banks' credit influence on stimulating production but agree that this requires a high level of banking supervision over the targeted use of monetary resources received from the central bank. This is not the case in today's Ukraine. Similar estimates apply to the central bank's open market operations. Although the relevant processes are used in world banking practice, this may be a factor in "displacing" productive lending to the real sector in economies like the Ukrainian one. Thus, despite the reduction of the total volume of loans to residents by 7.5% and the volume of loans to the corporate sector by 13% in 2019, the volume of lending to households (including sole proprietors) amounted to USD 212.5 billion, which is 6% higher than in 2018. Such positive dynamics led to an increase in the weighted average interest rate on loans in national currency to households to 35.8% (in December 2018 – 33.1%) [32].

However, according to surveys of financial institutions, households spend an average of 20% of their income on servicing bank debts, and most borrowers have low incomes, which creates risks of declining solvency, especially given that their incomes are growing at a slower pace [33].

In 2021, the net hryvnia loan portfolio grew by 40.2%. The most active lending banks were state-owned, except PrivatBank (54.7% YoY). In December 2021, hryvnia loans decreased due to the seasonal repayment of loans by farmers and enterprises fulfilling government orders under the Large Construction Project. At the end of the year, lending by foreign banks in foreign currency intensified. Net foreign currency loans grew by 7.8% for the quarter and 9.6% YoY. [26]. A positive trend was observed regarding the banking system's liabilities during the study period, except for 2009 and 2015 (Fig. 3). In particular, the lion's share in the liabilities structure belongs to cash and deposits.

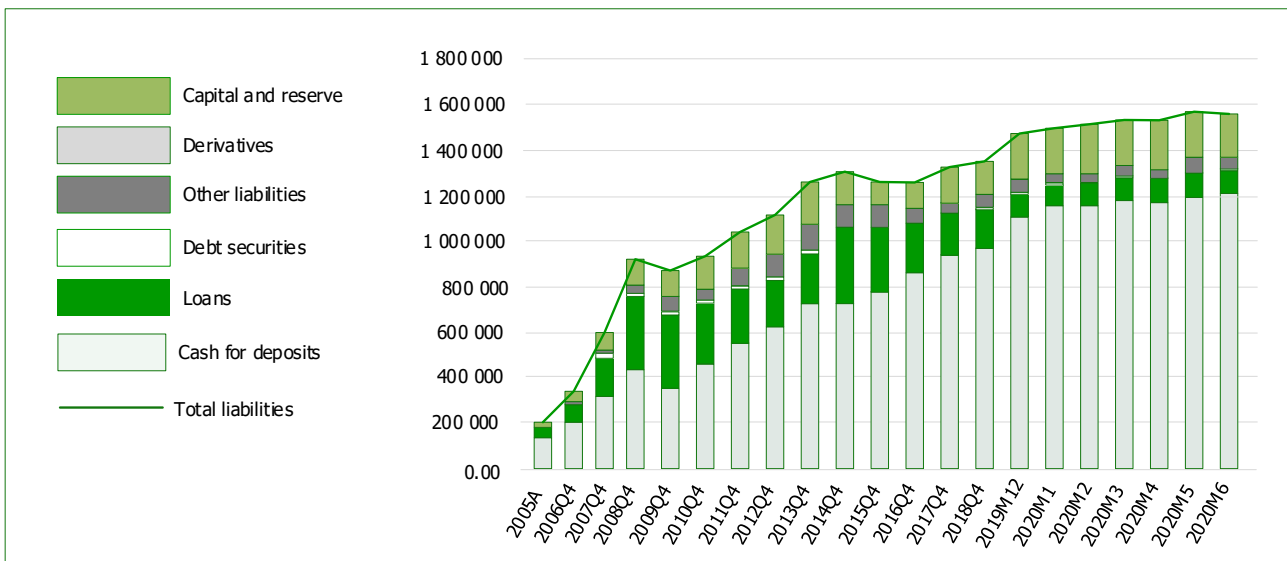


Figure 3. Dynamics and structure of banks' liabilities, 2005–06.2020, UAH million. (Source: [34])

In the client's portfolio, short-term deposits up to one year prevail. It should be noted that during 2019 the deposit market continues to grow. Thus, at the end of 2019, the share of funds on demand was 55.4% of the total portfolio of customer funds (49.3% in 2018). During the study period, the percentage of long-term deposits decreased and, at the end of 2019, amounted to 12.4% (16.8% – in 2018) in banks' total liabilities. The predominance of short-term deposits, together with the early withdrawal by depositors, makes the resource base, formed at the expense of borrowed funds, relatively unstable and slows down the issuance of long-term loans by banks to develop Ukraine's economy.

In the fourth quarter of 2021, time deposits of households in the national currency grew more slowly (by 9.6% per year). The vast majority of new-time deposits were attracted for three months. The total amount of deposits of individuals in foreign currency for the year decreased by 18% (in US dollars) due to the outflow of time funds [26].

In 2015, 44 banks were excluded from the register of Deposit Guarantee Fund for Individuals, and together with them, the volume of deposits excluded from the record of banks reached USD 86,472,994,973; the number of depositors in 2015 decreased by 1.8 million, or 3.9% – from 46.5 to 44.7 million people [18, p. 30–31].

During 2014, the outflow of deposits from the DGF member banks reached USD 20.5 billion (about 5.1% of deposits of individuals), which exceeded the crisis of 2009. The total outflow of foreign currency deposits from the system (excluding JSC Oschadbank and JSC Rodovid) reached USD 124 billion, or 30.8% [35, p. 10].

The lion's share of deposits belongs to households, but in 2019 there was an increase in the deposit portfolio of the corporate sector.

In contrast to the negative results of 2009–2011 (loss of USD 38,450 million in 2009, USD 13,027 million in 2010, USD 7,708 million in 2011), in 2012 the banking system showed a profit of USD 4,899 million. This positive phenomenon can be associated with completing the bank's provision for bad debts. In 2013, the banking system operated with a profit of USD 1,436 million. Still, one of the main reasons is the enactment of the NBU Resolution No 23 On the Procedures for Creating and Using Provisions Against Possible Losses on Asset Operations by Banks [36], which changed the rules of formation of reserves for active operations of banks. The negative financial result in 2015 can be explained primarily by the deterioration in the quality of banks' assets, which necessitates the further formation of reserves.

Note that during the first quarter of 2020, the banking sector's profit increased by 23.8% and amounted to USD16 billion, of which almost 65% belonged to the nationalized PrivatBank [37]. The profit of the banking sector in 2021 reached a record high of UAH 77.5 billion [38].

The existing high share of non-performing loans (NPLs) in the banking system resulted from credit expansion in previous years when the requirements for the solvency of borrowers were low, and the rights of creditors were insufficiently protected (Fig. 4).

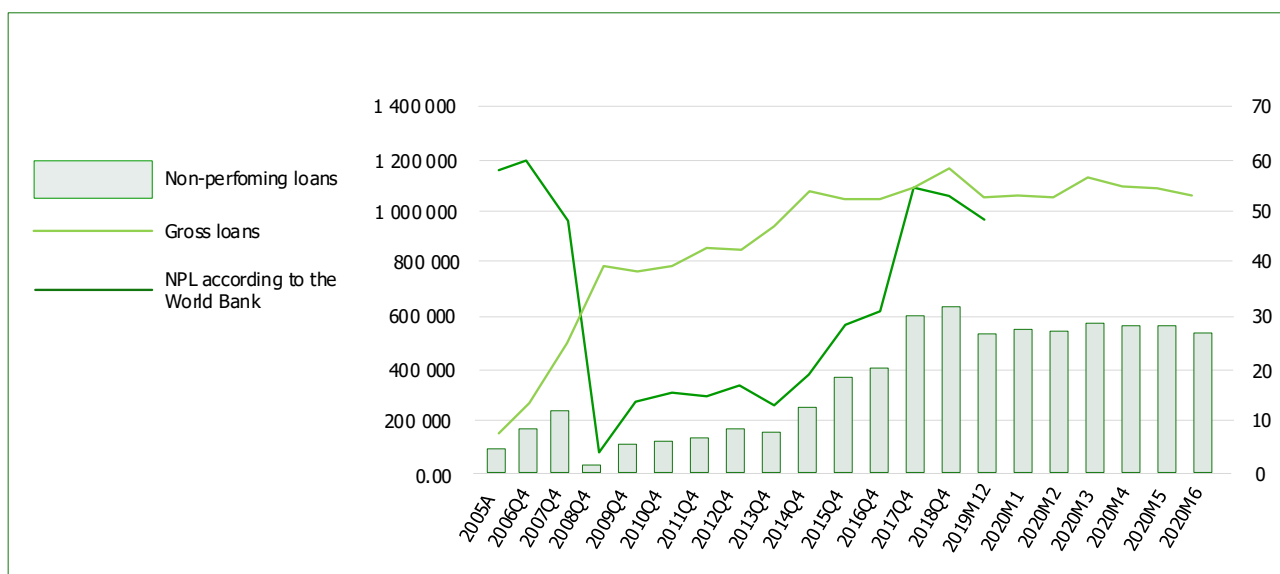


Figure 4. Dynamics of non-performing bank loans, 2005–06.2020. (Based on [25; 39; 40])

Another important reason is the practice of lending to related parties who stopped servicing loans during the crisis.

Today, all non-performing loans are recognized by banks; the level of coverage of their reserves is constantly growing and is approximately 95%. Therefore, in the future, non-performing loans will not significantly affect banks' financial results and capital. However, a large share of them is a burden for the banking sector, especially for state-owned banks, which account for about 75% of the NPL sector (about 45% of PrivatBank). A large share of them is a burden for the banking sector, especially for state-owned banks, which account for about 75% of the NPL sector (about 45% of PrivatBank). The NBU stresses that banks should clear their balance sheets more intensively: non-performing loans should be restructured, sold or written off [19].

According to the NBU, the volume of NPLs in Ukraine for the first time in recent years fell below 50% and, at the end of 2019, was 48.4%. Today, the largest seller of problem loans in Ukraine is the DGF and Prozorro. Sale arranged the sale of assets (property) of banks. However, the Fund implemented the largest pools of NPL assets together with international consultants. The Guarantee Fund cooperates with four foreign consultants – FFN, DebtX, Cohen & Company Financial Ltd (represented in Ukraine by Exito Partners & Cohen Ukraine) and KPMG.

As of January 1, 2021, the share of non-performing loans was 30.67%, and on January 1, 2022 – 30.02% [41]. In this context, we can agree that Ukraine's cooperation with MFIs contributes to improving macro-financial stabilization indicators, the formation of a competitive market environment, the stabilization of the national currency, the intensification of the investment process development of private enterprise [42]. It is hard to deny that it was due to the support of the Ministry of Defense, and specifically the IMF, that the banking system of Ukraine was able to improve in 2015 – 2016. The recent insistence on the non-return of bankrupt banks to their former owners (primarily PrivatBank) is also of constructive importance.

We can agree that the nationalization of PrivatBank is the best of all possible solutions [43]. In our opinion, the withdrawal of more than a third of banks from the banking system of Ukraine was positive. It strengthened the confidence of economic agents in the banking system in general and financial policy in particular. The problem arose much earlier than in 2014.

As noted in 2011, the crisis of 2008–2009 revealed the vulnerability of the Ukrainian banking system to external and internal economic and political shocks, highlighting several weaknesses in banking institutions [44]. Even then, the NBU was required to objectively assess the strengths and weaknesses of the existing system of regulation of the banking sector and, in particular, banking supervision, the effectiveness of applying specific monetary policy instruments to minimize systemic risks.

Many problems appeared at the initial stage of the domestic banking system, in particular, due to low capital requirements and licensing requirements [45]. The banking system remained underdeveloped, financially unstable, low-capitalized, and vulnerable to external and internal influences.

The situation changed for the better only in 2015–2017, when there was a radical recovery of the banking system. The calm response of the financial market to the crisis in connection with the COVID-19 pandemic is the best evidence of the effectiveness of the implemented reforms. As stated in the government's "Principles of Strategic Reform of the Public Banking Sector" [46, p. 3], in contrast to the two previous crises, there are no concerns about the banking system suffering significant losses, and therefore in the post-pandemic period will act as a catalyst for positive change. The Ukrainian banking sector is expected to grow healthy during the economic recovery, as lending will grow faster than nominal GDP due to borrowing to retail businesses (individuals) and small and medium-sized businesses. Low inflation and lower interest rates will support this increase in lending. It is expected that the reduction of net interest margin, increase in operating expenses and cost of risk will lead to a decrease in ROE in the banking sector from a record high of 31% in 2019 to 15 – 20% in 2024 – 2025. Now, of primary interest for Ukrainian banks is to improve business processes through internal reorganization, reduce risk management and improve the efficiency of corporate governance [47].

At the same time, the NBU emphasizes the need to clear banks' balance sheets by restructuring non-performing loans. As of mid-2019, the volume of non-performing (default) loans in the loan portfolio of Ukreximbank amounted to USD 2 billion (89%), Ukgasbank – USD 4 billion (56%), Oschadbank – USD 5 billion (45%), "PrivatBank" – USD 27 billion (38%) [32].

Based on the stress test conducted in 2019, the NBU concluded that Ukrainian banks are sufficiently capitalized and profitable in the current macroeconomic conditions. The sector's resilience to systemic risks is also growing. However, banks must be aware of the weaknesses of their balance sheets and business models, as, in a crisis, their negative impact on financial stability is multiplied.

Analysis of impulse response functions allows us to conclude that some variables (*cred_nonfin_ukr*, *cred_nonres_ukr*, *cred_other_ukr*, *dep_ukr*) fall after the onset of shock in a variable crisis, the leveling of which occurs after the fourth year.

Analyzing the impulse response functions allows us to conclude that interbank lending in the post-crisis environment resumes relatively quickly (with a lag of two years) (Fig.5). Lending to the general government sector is growing every year (*cred_publ*), but at the same time, loans to other resident sectors are declining (*cred_other_ukr*). Also, a year after the onset of the crisis, the volume of deposits in the banking system decreases. The other variables do not demonstrate any reaction to the crisis.

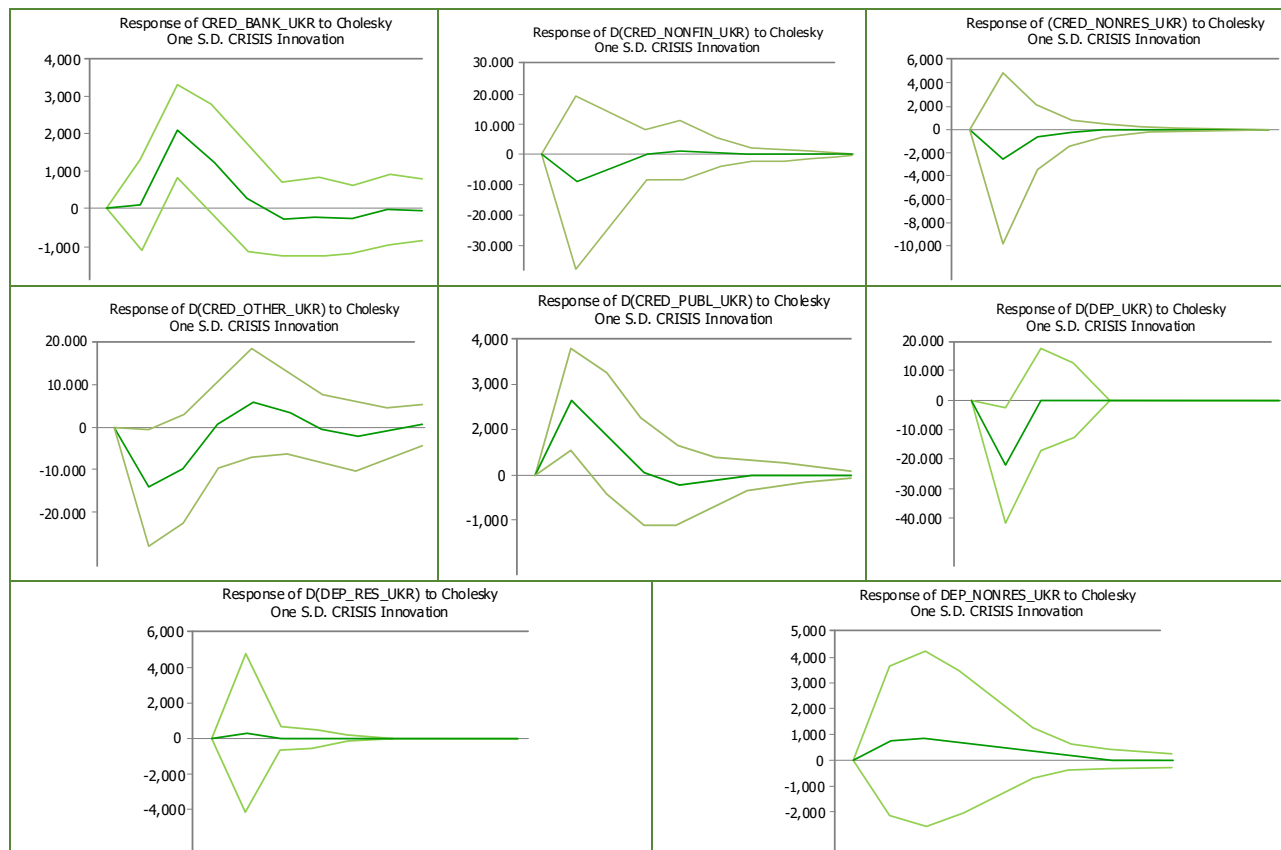


Fig.5. Graphs of impulse response functions for models that reflect the sensitivity of the leading indicators of the banking system of Ukraine to the influence of crisis factors.

DISCUSSION

In Ukraine, despite significant changes for the better since 2015, which led to the recovery of the banking system, curbing inflation, and achieving monetary stability (in the transition to a floating exchange rate), it is too early to say about a reliable banking system, especially in terms of a significant share in banking assets of state banks (over 50%). Ukraine needs to increase savings, which have been declining since the early 2000s. This structural feature distinguishes Ukraine from the CEE countries, where savings have grown steadily over the past two decades. Obviously, in 2005 – 2008 the policy of accelerated credit growth—against the background of declining savings – was too risky and had destructive consequences. The lack of favorable dependence of lending volumes on net savings may explain the instability of the domestic banking system.

CONCLUSIONS

Rehabilitation of the Ukrainian banking system in 2015 – 2016 is generally in line with foreign post-crisis trends to streamline the banking system and increase its efficiency but has much more profound reasons. Capitalization requirements have not been met since the mid-1990s. In the pre-crisis years of 2006 – 2007, excessive mortgage lending created a "bubble" in the real estate market, which in its destructive effects was equal to the corresponding phenomena in the US real estate market. Although the crisis of 2008 – 2009 demonstrated the vulnerability of the Ukrainian banking system to numerous economic and political shocks, no necessary changes in banking supervision were made to minimize systemic risks.

The weakness of the institutional environment makes it impossible to use both administrative tools and state development banks to increase productive lending in Ukraine. Even worse, commercial banks will use refinancing loans from the central bank instead of private-sector savings to provide loans. In this case, there is a growing likelihood that financial support from banks will be necessary, which will result in a significant increase in public debt and the threat of default.

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РЕАЛІЇ ТА РЕЗУЛЬТАТИВНІСТЬ ФУНКЦІОНУВАННЯ УКРАЇНСЬКОЇ БАНКІВСЬКОЇ СИСТЕМИ

Ця стаття присвячена аналізу банківської системи України. Показано, що для України частоту та глибину кризових явищ у банківській сфері підсилюють сировинна орієнтація економіки, недостатньо розвинений внутрішній ринок і присутність в обігу іноземної валюти (доларизація економіки). Необхідно констатувати, що в докризові 2006–2007 рр. надмірне іпотечне кредитування створило «бульбашку» на ринку нерухомості, яка за своїми руйнівними наслідками кореспондувалася з відповідними явищами на ринку нерухомості в Сполучених Штатах. Хоча криза 2008–2009 рр. продемонструвала вразливість української банківської системи до численних економічних та політичних потрясінь, суттєвих змін у банківському нагляді для мінімізації системних ризиків не відбулося. Відновлення банківської системи України у 2015–2016 рр. загалом відповідає посткризовим тенденціям щодо впорядкування банківської системи та підвищення її ефективності у світі. При цьому слабкість інституційного середовища унеможливорює використання і адміністративних інструментів, і державних банків розвитку для збільшення продуктивного кредитування

в Україні. З іншого боку, комерційні банки використовуватимуть позики рефінансування замість заощаджень приватного сектора для надання позик. У цьому випадку зростає ймовірність необхідності фінансової підтримки з боку банків, що призведе до значного збільшення державного боргу.

Крім того, для дослідження впливу кризових періодів на показники діяльності комерційних банків в Україні розроблено систему векторних моделей авторегресії. Результати моделювання, насамперед аналіз функцій імпульсної реакції, дозволяють зробити висновок, що міжбанківське кредитування в посткризових умовах відновлюється відносно швидко (із лагом у два роки). Обсяги кредитування нефінансових корпорацій і нерезидентів демонструють падіння та відновлення тільки через чотири роки після кризи. Кредитування сектора державного управління з кожним роком зростає, але водночас зменшуються кредити іншим секторам-резидентам. Крім того, упродовж року після настання кризових явищ зменшується обсяг депозитів у банківській системі. Інші змінні не демонструють жодної реакції на кризові явища.

Ключові слова: фінансова криза, банки, банківська система, фінансова стабільність, активи банків, пасиви банків, проблемні кредити, Центральний банк, VAR-моделі, аналіз функцій реакції на імпульси

JEL Класифікація: E44, E47, G01, G17, G21