“Financial security of Ukraine under martial law: Impact of macroeconomic determinants”

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ARTICLE INFO	Fedir Zhuravka, Svitlana Chorna, Yuriy Petrushenko, Stanislaw Alwasiak, Tetiana Kubakh, Yevgeniya Mordan and John Soss (2024). Financial security of Ukraine under martial law: Impact of macroeconomic determinants. *Public and Municipal Finance*, *13*(2), 1-13. doi:10.21511/pmf.13(2).2024.01
DOI	http://dx.doi.org/10.21511/pmf.13(2).2024.01
RELEASED ON	Friday, 19 July 2024
RECEIVED ON	Tuesday, 07 May 2024
ACCEPTED ON	Tuesday, 16 July 2024
LICENSE	This work is licensed under a Creative Commons Attribution 4.0 International License
JOURNAL	"Public and Municipal Finance"
ISSN PRINT	2222-1867
ISSN ONLINE	2222-1875
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
30	5	1

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

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FINANCIAL SECURITY OF UKRAINE UNDER MARTIAL LAW: IMPACT OF MACROECONOMIC DETERMINANTS

Abstract

Russia's open aggression against Ukraine has resulted in significant changes across all sectors of the Ukrainian economy and its financial sphere, including financial security. The paper aims to identify the impact of the primary macroeconomic determinants, i.e., military defense spending, non-performing bank loans, exchange rate, foreign debt, and state (total) reserves, on the financial security of Ukraine under martial law. The canonical correlation analysis is employed to assess the strength of the relationship between the above macroeconomic indicators and the level of the state's financial security. It was found that the reduction of the state's financial security level in 2022 was 63.9%, explained exactly by the changes in the above macroeconomic determinants after the start of a full-scale invasion. The study determined the degree of influence of each indicator on Ukraine's financial security level. An increase in the level of military defense spending, non-performing bank loans, hryvnia's devaluation, and external debt growth had a direct negative impact on Ukraine's financial security. At the same time, an upsurge in total reserves had an indirect negative impact (through the external debt growth). The research findings confirm the necessity for effective monitoring and management of the macroeconomic indicators to maintain both Ukraine's financial security and macro-financial stability in order to ensure its' sustainable economic development during the postwar recovery period.

Keywords state financial security, macroeconomic determinants, defense spending, public debt, state reserves, martial law, Ukraine

JEL Classification H56, C51, F65

Received on: 7th of May, 2024
Accepted on: 16th of July, 2024
Published on: 19th of July, 2024

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Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

Ensuring national security is contingent upon maintaining financial security, which is, in turn, a primary component of economic security. The financial security of the state is a complex phenomenon that is influenced by numerous factors. This aspect of security is closely linked to the stability and prosperity of the overall economic system and the security of each citizen (Hacker et al., 2010). Disruptions in financial security, a decline in economic activity, or destabilization of the financial system can directly impact the level of income, savings, and welfare of citizens, increasing their vulnerability (Kupenko et al., 2023). At the same time, the financial security of each country, including emerging economies such as Ukraine, is characterized by certain macroeconomic determinants, such as budget spending, non-performing bank loans, exchange rate, foreign debt, state (total) reserves, etc. (Rekunenko et al., 2022). In this context, understanding the interrelationships between the financial security of the state and the indicators that affect it allows for the development of more balanced and prudent measures to strengthen the country's financial security.

The invasion of Ukraine by Russia has had a detrimental effect on the country's financial security. In particular, significant military expenditures for defense operations, restoration of destroyed infrastructure, and support for civilian expenditures have resulted in a rapid increase in the state budget deficit, which is being covered primarily by external borrowing. This resulted in an increased debt burden on Ukraine's economy, which in turn posed a threat to the financial security of the state. At the same time, military aggression, disruption of production ties, and capital outflows have resulted in a depreciation of hryvnia against major foreign currencies, creating significant challenges in servicing external debt. Restoring Ukraine's financial security will require significant efforts and a considerable period following the end of hostilities.

Therefore, it is essential to ensure financial security in order to maintain a country's economy in a strong and resilient state not only in regular times but also during a crisis, such as martial law.

1. LITERATURE REVIEW

A stable national financial system is a key factor in achieving sustainable socio-economic development and maintaining national sovereignty. Many researchers concentrate on a thorough examination of the factors that influence and shape the financial security of a state.

The evolution of approaches can be clearly traced to changes in globalization processes and the restructuring of finance from its role as an intermediary in the exchange of goods to its position as the basis of financial relations. The primary objective of the state's financial security is to guarantee the stability, sustainability, efficiency, and smooth operation of the financial system. The financial security system is structured in accordance with a defined strategy and set of objectives. It comprises two key subsystems: a managing (subject of management) and a managed (object of management) subsystem, each with distinct functions (Kravchuk et al., 2010). Revak (2014) identifies the key components of a national financial security system as financial security objects (financial resources, the national financial system, and financial interests) and financial security subjects.

Stashchuk (2016) notes that the most crucial aspects of a state's financial system are security and resilience. Both refer to the capacity of the financial system to maintain financial stability in the face of dynamic changes in the external and internal financial and economic environment, as well as to adapt to these changes with minimal loss of resources.

Allen et al. (2014) defined financial security as the analysis of a country's financial stability, including the assessment of its financial systems, public debt management, financial sector stability, and the risk of financial crisis. Tirole (2002) outlines strategies and tools for risk management to ensure the stability of the financial system. In particular, the study emphasizes crisis management based on the analysis of risks that affect national financial security, including financial crises, external shocks, and exchange rate changes.

The identification and analysis of economic determinants is the foundation for effective financial security management. It is essential to analyze macroeconomic indicators, including economic growth rates, the state of the budget and monetary spheres, debt policy, and foreign economic activity (Haber et al., 2018). These and other economic factors form a system of financial security indicators. By monitoring and forecasting this system, potential threats can be identified and neutralized in a timely manner.

At the same time, macroeconomic indicators play a pivotal role in determining the level of financial security. Key determinants include economic growth rates, budget deficit structure and level, public debt indicators, monetary sphere dynamics, exchange rate trends, inflation, etc. Onyshchenko et al. (2019) assert that declining macroeconomic indicators, mounting debt obligations, and foreign exchange market volatility present substantial risks to financial security.

One of the crucial factors influencing the state's financial stability is its debt security, which has a significant impact on its overall level of financial se-

http://dx.doi.org/10.21511/pmf.13(2).2024.01

curity. A high level of public debt and deteriorating debt service indicators can pose significant threats to macro-financial stability, including the potential for debt crises, financial system destabilization, and reduced investment attractiveness. Accordingly, Zhuravka et al. (2021) stress the significance of evaluating the extent of public debt as a pivotal factor influencing the financial stability of the state. It is crucial to assess the current level of debt security and to predict its future trajectory. Furthermore, it is crucial to have an effective system in place to manage Ukraine's external public debt under martial law. This is because an increase in external debt can have a detrimental impact on the country's economic security (Razinkova et al., 2023).

Blikhar et al. (2020) highlight the significance of financial security and the necessity for robust measures to mitigate financial risks during periods of financial vulnerability and insecurity, such as economic depressions, wars, and crises. In such circumstances, the economy is unable to provide an acceptable standard of living for the population, and the growth of external public debt represents an increasingly alarming trend. A reliance on external financial factors raises concerns about the preservation of national sovereignty, as the path out of the debt crisis is associated with significant risks for the country.

A variety of economic and mathematical modeling tools are employed to oversee the financial security system, assess its standing, and identify the influence of pivotal elements. Frolov et al. (2015) highlight the importance of models that predict the values of key economic system parameters. These models support informed decision-making and effective economic system oversight.

Kunytska-Iliash (2022) highlights the necessity of establishing a comprehensive information and analytical system for monitoring the financial security of key sectors of the national economy. This entails the creation of a functional and systemic model to guarantee the financial security of industries, taking into account the particulars of the country's economic growth (systemic and structural approach). It is also crucial to develop a dynamic series of empirical indicators to assess the financial security of key sectors, including their individual components (integral-temporal approach).

In addition to the traditional monitoring of groups of indicators, Dovhan and Rippa (2022) supplement the structural and logical scheme for assessing financial security with an express analysis. While these concepts are currently applied at the micro level (security of business structures), this element enables a more comprehensive view of the financial security landscape. This approach not only facilitates the swift identification of areas requiring attention but also enables the development of robust mechanisms for ensuring the country's comprehensive economic security, which is a crucial aspect of its sustainable growth.

Lepers and Serrano (2020) put forth an approach based on a financial vulnerability index for developing economies. This approach identifies factors affecting financial security and groups 32 indicators around four poles: risk assessment and appetite, non-financial sector imbalances, financial sector vulnerability, and global vulnerability. This approach identifies the source of the risk and how it has spread throughout the financial system. Furthermore, the index's correlation with the business and credit cycles is examined. The results posit that the economic categories of financial stability and financial security are closely related, as both assess the ability of countries' financial systems to absorb external and internal shocks.

Subsequently, the issue of financial security of the state during periods of financial vulnerability and insecurity is complex, multifaceted, and requires a comprehensive examination of the factors that influence its level and dynamics.

Thus, the study aims to identify the influence of key macroeconomic determinants, i.e., military defense spending, non-performing bank loans, exchange rate, foreign debt, and state (total) reserves, on the financial security of Ukraine under martial law.

2. METHODOLOGY

2.1. Research method and model

The primary analytical technique employed in this study is canonical correlation analysis, which is conducted between two sets (groups) of samples (Bakhrushin, 2011). This approach is based on the

concept of representing mathematical objects in a way that is called canonical if each object in one set is uniquely associated with one object in the other set, and this association is clearly defined.

This study employs a multivariate linear model, otherwise known as multiple regression. This statistical model enables the description of the dependence of one dependent (target) variable on two or more independent (explanatory) variables.

The model is expressed as follows:

$$Y = \alpha_0 + \alpha_1 x_1 + \alpha_2 x_2 + \ldots + \alpha_m x_m, \qquad (1)$$

which describes the relationship between the outcome variable y and some influencing factors x_1, x_2, …, x_m. The relevant statistical data – n observations (measurements of each) of the indicator – contain information about the values of y, x_1, x_2, …, x_m.

A multivariate linear model allows one to assess the impact of several factors on the dependent variable and to identify the most important indicators.

2.2. Model adequacy

A normal probability plot is a graphical method employed to assess the closeness of the distribution of regression residuals to a standard normal distribution. If the points on the graph are situated along a straight line, it can be inferred that the distribution of the residuals is approximately normal. This is the method by which the adequacy of the model is evaluated, and the correctness of the assumptions of the regression analysis is ascertained.

2.3. Research data and tools

The observation method revealed that the state's financial security indicators are undergoing a notable transformation in response to the advent of military risks, diverging from their patterns observed during periods of relative stability. Accordingly, a canonical analysis was conducted to identify the synergistic effect of the impact, with the main indicators that have changed since the outbreak of a full-scale war in Ukraine selected as the focus. The database utilized in this analysis is the World Development Indicators (WDI) of the World Bank (Table 1).

Table 1. Input data for the canonical analysis

Source: World Bank Development Indicators (WBG, 2023a,2023b, 2023c, 2023d, 2023e).

Period	1-group Left set					2-group Right set	
	Military expenditure, bln USD	Bank non-performing loans, %	Official exchange rate, USD/UAH	External debt stocks, % to GNI	State reserves, bln USD	Financial security index	GDP, bln USD
2002	0.87	47.0	5.33	56.2	4.5	164.68	43.96
2003	1.1	49.0	5.33	52.2	7.0	134.45	52.01
2004	1.32	54.0	5.32	50.0	9.7	110.77	67.22
2005	2.07	58.0	5.12	41.2	19.4	88.38	89.24
2006	2.57	59.8	5.05	51.2	22.4	102.86	111.88
2007	3.53	48.1	5.05	56.9	32.5	74.22	148.73
2008	4.14	3.9	5.27	55.8	31.5	81.40	188.11
2009	2.32	13.7	7.79	91.7	26.5	65.04	121.55
2010	2.59	15.3	7.94	91.6	34.6	60.41	141.21
2011	2.5	14.7	7.97	85.2	31.8	61.39	169.33
2012	2.84	20.4	7.99	74.1	24.6	78.42	182.59
2013	2.90	16.4	8.0	78.3	20.4	75.06	190.5
2014	3.00	23.3	11.9	96.7	7.5	114.04	133.5
2015	2.96	35.4	21.8	125.0	13.3	121.49	91.03
2016	2.94	39.0	25.6	123.2	15.5	63.05	93.36
2017	3.25	54.8	26.6	108.9	18.8	73.93	112.09
2018	4.17	54.4	27.2	92.2	20.8	77.06	130.89
2019	5.42	50.5	25.9	80.2	25.3	109.00	153.88
2020	5.92	43.5	26.96	82.7	29.1	187.30	156.62
2021	5.94	31.7	27.29	69.5	31.0	121.24	199.77
2022	44.00	38.1	32.3	149.3	28.5	67.33	160.5

http://dx.doi.org/10.21511/pmf.13(2).2024.01

The indicators were divided into two groups:

1) an indicator of the country's military defense (military expenditure), changes in the banking system indicators (bank non-performing loans to total gross loans, and official exchange rate), external indicators (international reserves of the country – total reserves, and external debt stocks);

2) calculated index of Ukraine's financial security and the level of GDP as the main macroeconomic indicator of the state's development.

In order to implement the model for determining the synergistic effect of the impact of military determinants on the financial security of the state, the study employed the Statistica 10 software package.

3. RESULTS

The invasion of Ukraine by the Russian Federation on February 24, 2022, resulted in a violation of state security, territorial integrity, and economic stability. The conflict has had a profound impact on all sectors of the Ukrainian economy, including the financial system. The Russian military actions resulted in the destruction of production, transport, and infrastructure facilities, loss of land use due to shelling and mining, suspension of operations of enterprises, migration of labor resources abroad, and other consequences.

Defense spending in 2022 increased by more than 14 times compared to the average value of the pre-war period over the past twenty years, as illustrated in Figure 1. While previously the primary item of state budget expenditures in Ukraine was social spending, particularly on the PAYG pension system, the cost of war has now become the state's primary priority.

The banking sector has not yet returned to its pre-crisis state. Banks have demonstrated resilience during the war period, but the relative stability can be attributed to a lag effect, as banks have not yet recognized the full extent of their lost loan portfolio. In 2022, the ratio of non-performing loans to total gross loans for banks increased by 6.4% compared to the previous year (Figure 1).

In the realm of budgetary affairs, there has been a discernible uptick in government spending per capita. Since the onset of the armed conflict, there has been a notable increase in expenditure on security and defense, infrastructure repair and restoration, military payments, and social assistance to internally displaced persons and victims.

The most significant impact on debt security was observed in external debt, which was caused by

Source: World Bank Global Development Indicators; own calculation of the financial security indicator based on the research methodology of Rekunenko et al. (2022).

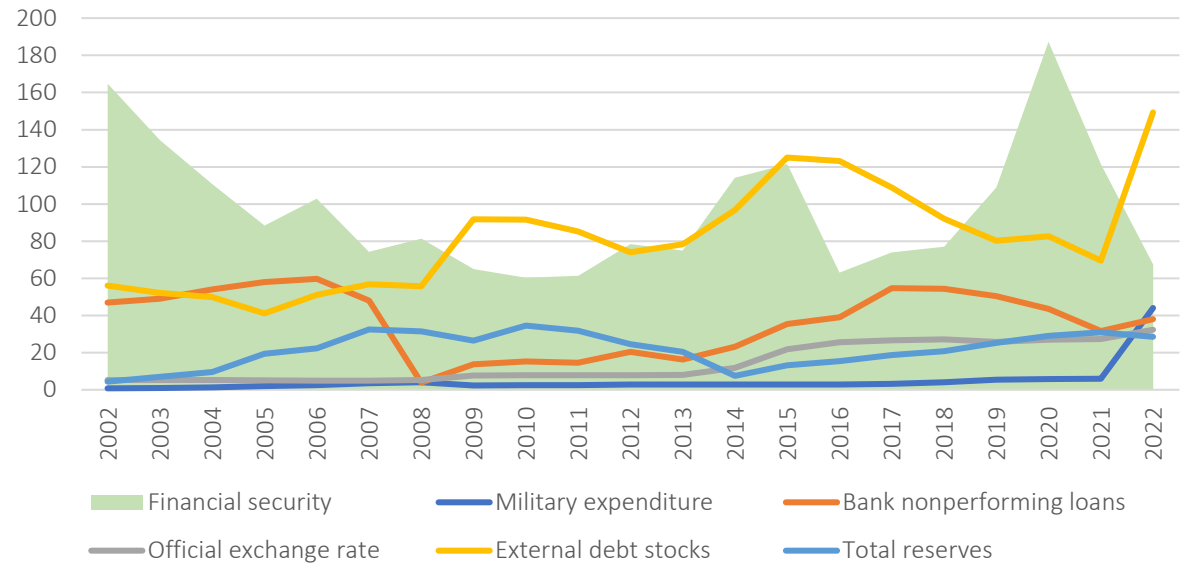


Figure 1. Indicators for determining the effect of impact on the financial security of the state

the outflow of foreign capital from the country due to investment risks and the necessity to borrow in order to cover the state budget deficit (in 2022, external debt increased by 79.8% of GNI). This is largely attributed to the fact that the majority of public funds are allocated toward defense spending.

The foreign exchange market exerted an influence on the exchange rate of hryvnia. The fixed exchange rate regime established by the NBU is not aligned with the actual market exchange rate, resulting in devaluation and inflation. Furthermore, the reduction in exports and foreign direct investment, along with capital outflows, including banking capital, is contributing to a deficit in the foreign exchange market.

Concerning the financial security index, the criteria for assessing its level according to the national Methodology of the Ministry of Economy characterize the financial sector, forming a single integrated assessment by sector (Chorna, 2022a, 2022b). However, a significant number of indicators fail to take into account potential threats and do not include relevant external factors. According to Rekunenko et al. (2022), the mechanism for assessing financial security is implemented based on a multiplicative model of nonlinear convolution of the most relevant indicators of varying degrees of influence in terms of opportunity and risk. This approach allows for a comprehensive determination of the level of financial security and a realistic assessment of the situation in the country. Accordingly, the level of financial security in Ukraine, as illustrated in Table 1 and Figure 1, was previously determined using the aforementioned methodology. This methodology is based on modeling tools that allow for the calculation of the level of financial security in response to changes occurring within the country. The greatest fluctuations in the overall level of financial security can be observed during the most significant financial and economic shocks that have occurred in Ukraine. These include the global financial crisis, the Revolution of Dignity, the occupation of the eastern territories, and political elections.

In light of the fact that military risks have an impact on the financial security of the state, an assessment was conducted to determine the strength of the relationship between market financial indicators and the degree of development of the state's financial security. To this end, indicators that have increased significantly since the outbreak of war in 2022 were selected.

Figure 2 shows the results of identifying the synergistic effect of the impact of military determinants on the financial security of the state, based on canonical analysis.

It is crucial to highlight the eigenvalues of the canonical roots, as this model comprises two canonical roots. According to the *p*-value of the Chi-Square test, roots 0 and 1 are statistically significant. However, root 0 accounts for 89.347% of the variance, while root 1 accounts for 67.626%. Therefore, only root 0 should be considered in the subsequent analysis.

According to Figure 3, the canonical correlation (*R*) between the two groups of variables is 0.893, which indicates a strong relationship between them. The Chi-square value of 35.39, with a significance level of $p < 0.05$, confirms the statistical significance of the correlation coefficient *R*. The indicator of acceptability, the canonical root of R^2, is 0.798, confirming the adequacy of the built model.

The "Variance extracted" metric indicates the proportion of the total variance attributable to subsets of the variables under consideration. The variation of market financial indicators (Left Set) is taken into ac-

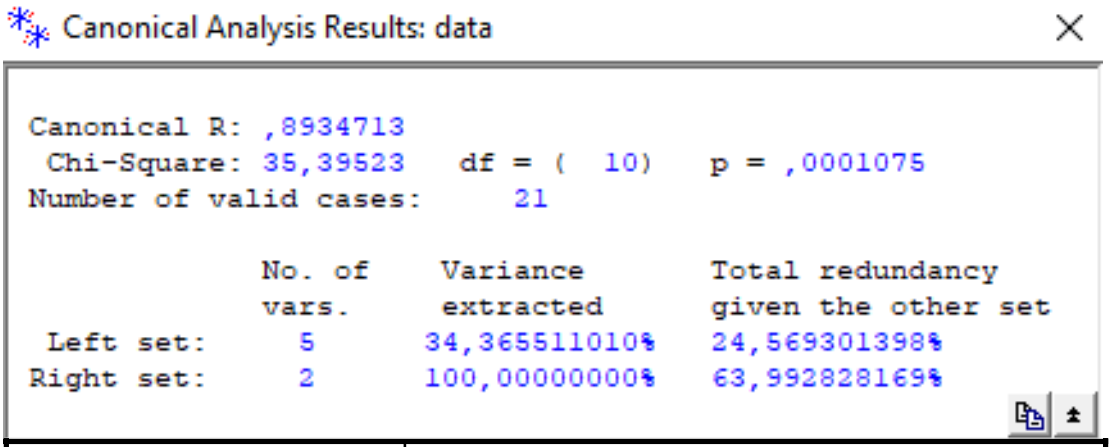
Source: Authors' elaboration in Statistica 10.

	Chi-Square Tests with Successive Roots Removed (data)					
Root Removed	Canonicl R	Canonicl R-sqr.	Chi-sqr.	df	p	Lambda Prime
0	0,893471	0,798291	35,39523	10	0,000108	0,109459
1	0,676269	0,457340	9,78036	4	0,044316	0,542660

Figure 2. Eigenvalues of the canonical roots

http://dx.doi.org/10.21511/pmf.13(2).2024.01

Source: Authors' elaboration in Statistica 10.



Canonical Analysis Results: data

```
Canonical R: ,8934713
 Chi-Square: 35,39523   df = (  10)   p = ,0001075
Number of valid cases:      21

              No. of    Variance       Total redundancy
              vars.     extracted      given the other set
 Left set:      5      34,365511010%   24,569301398%
Right set:      2      100,00000000%   63,9928281 69%
```

N=21	Canonical Analysis Summary (data) Canonical R: ,89347 Chi?(10)=35,395 p=,00011 Left Set	Right Set
No. of variables	5	2
Variance extracted	34,3655%	100,000%
Total redundancy	24,5693%	63,9928%
Variables: 1	Military expenditure	Financial security
2	Bank nonperforming loans	GDP
3	Åxchange rate	
4	External debt	
5	Total reserves	

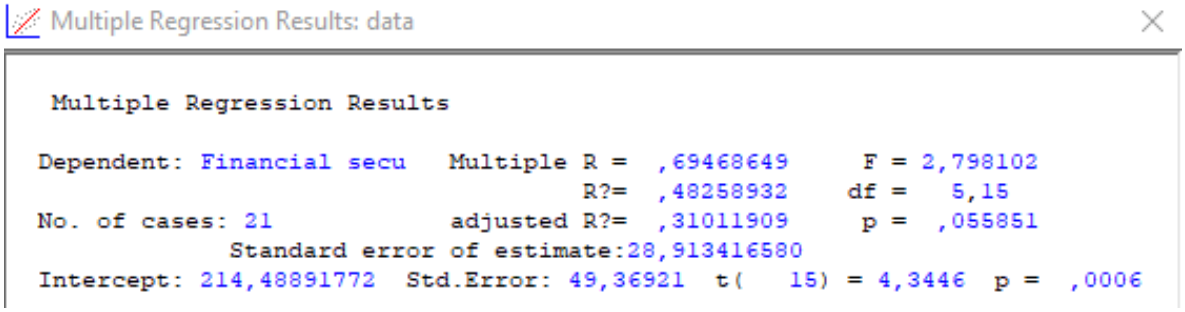
Figure 3. Canonical analysis

count by 34.37%, while the variation of financial security development indicators (Right Set) is taken into account by 100%. Concurrently, "Total redundancy given the other set" indicates that the right part is described by 63.99% by the change in the left part, whereas the right part is described less, namely by 24.56%. In other words, in this model, the effective feature is the development of the state's financial security, the variation of which is explained by 63.99% by changes in such financial indicators as military defense spending, non-performing bank loans, exchange rate, external debt, and reserves. It can be concluded that Ukraine's financial security is largely dependent upon fluctuations in these indicators.

Such an impact from the joint action of several elements of the system, which leads to a change in the quantitative values of the performance indicator, is called a synergistic effect. This indicates the phenomenon when the sum of the results of two or more interacting factors or elements exceeds the total effect that could be expected from each individual factor. The interaction between the aforementioned financial indicators leads to an increase or decrease in the overall result, which is the development of the state's financial security. It is now necessary to ascertain the impact of alterations in these components on the level of financial security.

The objective of the multiple regression analysis was to determine the extent to which the dependent variable (level of financial security) changes when a single factor changes and to identify which indicators have a statistically significant impact (highlighted in red in Figure 4). The analysis also aimed to determine the direction of this impact.

Source: Authors' elaboration in Statistica 10.



N=21	Regression Summary for Dependent Variable: Financial security (data) R= ,69468649 R?= ,48258932 Adjusted R?= ,31011909 F(5,15)=2,7981 p<,05585 Std.Error of estimate: 28,913					
	Beta	Std.Err. of Beta	B	Std.Err. of B	t(15)	p-level
Intercept			214,4889	49,36921	4,34459	0,000578
Var 1	0,107597	0,243181	0,4149	0,93761	0,44246	0,664472
Var 2	-0,245247	0,266449	-0,4933	0,53597	-0,92043	0,371916
Var 3	0,827639	0,335985	2,8280	1,14806	2,46332	0,026343
Var 4	-0,945122	0,356746	-1,1612	0,43831	-2,64928	0,018217
Var 5	-0,582750	0,233232	-2,2028	0,88160	-2,49859	0,024574

Figure 4. Multiple regression analysis

The coefficient of determination R^2 is 0.48, which indicates a low dependence but nevertheless demonstrates a statistically significant relationship. The Student's t-test is employed to assess the statistical significance of the regression parameters. The essence of the *t*-test is to compare the *t*-value with the table value of the *t*-test at a given level of significance and degree of freedom. If the *t*-value exceeds the critical value from the table, the difference between the mean values of the groups is considered statistically significant. For degrees of freedom of 19 (n – 1) and a significance level of 0.05, the table value of the *t*-test is 2.09. Therefore, it is recommended that Variable 1 and Variable 2 should not be included in the model, as their *t*-test values are less than the table values. Nevertheless, at the previous stage, it was determined that the array of this set of indicators is capable of explaining the change in the development of financial security. Consequently, it was decided to retain all the factor variables within the model.

The resulting multiple regression equation is as follows:

$$Y = 214.48 + 0.41 \cdot Var_1 - 0.49 \cdot Var_2 + 2.82 \cdot Var_3 - 1.16 \cdot Var_4 - 2.20 \cdot Var_5, \quad (2)$$

where Var_1 is the military defense spending; Var_2 is the non-performing loans of banks to total gross loans; Var_3 is the official exchange rate; Var_4 is the amount of external debt; Var_5 is the state reserves.

The analysis of the model leads to the following conclusions regarding the impact of indicators on the level of financial security of the state:

1) the impact of military spending growth is positive; with a 1% increase in all current and capital expenditures on the Armed Forces of Ukraine, the Ministry of Defense, and other state institutions involved in defense projects, the level of financial security of the state will increase by 0.41%;

2) there is an inverse relationship of the second-factor attribute: with a 1% increase in non-performing bank loans to the total amount of gross loans, the level of financial security will decrease by 0.49%;

3) a directly proportional impact was found in the context of the dependence on the official exchange rate and the level of financial security, specifically by 2.82%;

http://dx.doi.org/10.21511/pmf.13(2).2024.01

Source: Authors' elaboration in Statistica 10.

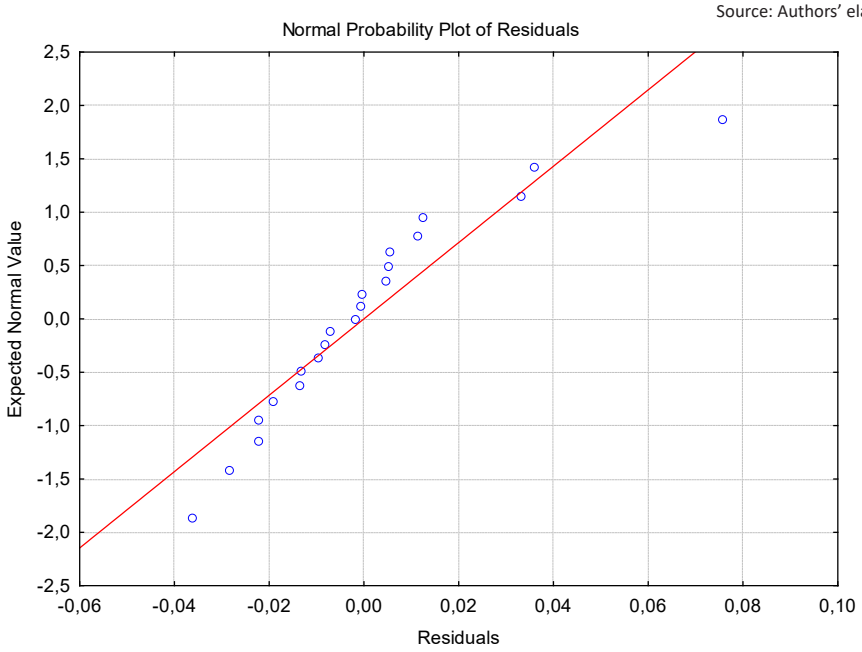


Figure 5. Normal probability graph of multiple regression analysis

4) a negative impact on financial security in the amount of a 1.16% reduction is caused by a 1% increase in the volume of external debt;

5) if the state reserves increase by 1%, financial security will decrease by 2.20%.

The normal distribution graph demonstrates a lack of significant deviation, thereby confirming the adequacy of the model (Figure 5).

In light of the model's conclusion that a 1% increase in the country's total reserves will result in a 2.20% decrease in financial security, it is essential to provide a detailed explanation of the result.

The selected indicator, "Total reserves" from the World Bank database, represents the total amount of foreign currency and gold reserves that a country has in its account. It should be noted, however, that the indicator also encompasses other types of reserves that a country may hold, such as borrowing rights from the International Monetary Fund or Special Drawing Rights (SDRs).

These are defined by international organizations as foreign exchange assets. The term "general reserves" is used to indicate the financial buffer that a country has at its disposal in order to ensure its financial security. Conversely, an increase in total reserves resulting from assistance from the IMF, the EU, and other borrowings from various lenders of last resort (which is typical for Ukraine) may be indicative of financial insecurity and potential economic challenges.

There are many historical examples, including those of Argentina, Venezuela, Greece, and Pakistan, where a country that has attracted external funds, which are recorded in the balance of payments account and reflected in the total amount of reserves, subsequently failed to fulfill its obligations and was on the brink of default. Consequently, an increase in total reserves is inversely proportional to the value of the state's financial security and negatively affects its level under martial law when Ukraine attracts a significant amount of resources from international partners.

4. DISCUSSION

In the context of the national security, the financial component represents the material basis on which the ability to ensure the protection of state and civil interests, as well as the sustainable development of the country's financial system, depends.

The study results are in line with Getmanets and Korobtsova (2023) who offered empirical confir-

mation of the significant impact of financial security on a country's defense capabilities.

The risk of a debt burden is particularly acute during a military conflict. The financing of military spending through external borrowing inevitably leads to an increase in public debt. Concurrently, military spending results in a dearth of resources for civilian public spending. The paucity of funds allocated to social and economic sectors diminishes the overall level of protection afforded to these sectors, thereby increasing their vulnerability to crises. Consequently, it is of paramount importance to adopt a balanced approach to public debt management in order to minimize the negative impact on the country's socio-economic development. Zhuravka et al. (2021), Razinkova et al. (2023), and Blikhar et al. (2020) have corroborated this approach.

In general, the research findings affirm the results of Doroshenko et al. (2021) that each component of financial security is influenced by war, which ultimately determines the level of financial security of the state. The potential for military risks is considerable. These include an increase in the number of refugees, fiscal imbalances (in particular, due to changes in the share of personal income tax of local communities due to military units on their territory), a decrease in the ability of the budget system to finance planned expenditures, a steady decline in the competitiveness of Ukrainian producers due to continued underinvestment, a reduction in domestic production capacity, a halt in foreign investment flows, a threat to food security due to unfavorable processes in the agricultural sector, and a decrease in the efficiency of infrastructure.

In such circumstances, the formulation of effective public policy and the monitoring of potential threats have become the fundamental basis for a policy of strengthening the financial security of the state. In the context of post-war recovery, it is necessary to enhance the quality of control and management of financial security decisions at the state level. Lyeonov et al. (2023) successfully proved that good governance should be carried out in the context of institutional, tax, social, and investment channels of the shadow economy.

In addition, financial threats are not limited to the borders of one country; therefore, Ukraine should actively cooperate with the international community in the field of state financial security. This suggested measure is aligned with the findings of Cherniavskyi et al. (2021) and Orlov et al. (2021), who clearly demonstrate the need to improve the conceptual framework for Ukraine's economic security in the foreign economic sphere. The economic security models used in European countries can serve as an example for the formation of a new ideology of national security in Ukraine, which should be based on economic development, protection against external and internal threats, efficient use of resources, and meeting the socio-economic needs of the population.

CONCLUSION

The aim of the study is to identify the influence of key macroeconomic determinants, i.e., military defense spending, non-performing bank loans, exchange rate, foreign debt, and state (total) reserves, on the financial security of Ukraine under martial law.

The study results revealed that macroeconomic indicators accounted for approximately 64% of the overall changes in the level of financial security of Ukraine since the commencement of a full-scale Russian invasion in 2022. The study determined the degree of influence of each indicator on the level of financial security of Ukraine:

1) Increase in defense spending and external public debt. The need to finance extensive defense expenditures, infrastructure rehabilitation, and social spending forced Ukraine to significantly increase its external borrowings, increasing the debt burden on the economy.

http://dx.doi.org/10.21511/pmf.13(2).2024.01

2) Increase in non-performing bank loans. Military actions, economic instability and a decline in business activity have led to a deterioration in the quality of bank assets, which increases credit risks and threatens the stability of the financial system.

3) Growth of state reserves and exchange rate. Although the increase in reserves is traditionally viewed as a positive factor, in times of war, they are used mainly to stabilize the national currency, which may limit the NBU's ability to support other aspects of financial security.

These factors are decisive in the deterioration of the state's financial security in the context of Russia's military intervention.

The research findings confirm the necessity for effective monitoring and management of the macroeconomic indicators to maintain Ukraine's financial stability in order to ensure its' sustainable economic development during the postwar recovery period.

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ACKNOWLEDGMENT

This research is financially supported by the NATO SPS Program "Security of territorial communities: evidence from the Eastern European countries".

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