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FORECASTING METHODS FOR FINANCIAL SUPPORT OF MILITARY CAPABILITY DURING THE DEMOCRATISATION

Background. *The progressive exhaustion of Ukraine's economy due to the war, which, among other things, led to industrial, demographic, and environmental crises, forced the Government to look for reliable external sources of financial borrowing and material and humanitarian support as well as implementing efficient mechanisms of internal financial sources. During the first year of the Russian-Ukrainian war, international financial support, together with the monetary policy of the National Bank of Ukraine in terms of the emission of funds, was crucial to stabilising the stagnating economy. However, in the following years, the Government pursued an exceptional external and internal borrowing policy, which led us to identify the main bases for verification of the impact of financial support on the development and maintenance of an adequate level of Ukraine's military capability in the context of democratisation, – an essential requirement for Euro-Atlantic integration. The purpose of the article is to make predictions and provide practical recommendations for continuing the relatively successful policy of the Government of Ukraine and the National Bank of Ukraine to attract external and internal borrowing to fill the state budget, allocate funds for the needs of the Ministry of Defence of Ukraine and use financial resources efficiently to ensure national and economic security. The object of the study is the financial support of military capability, i. e. trust funds and Western aid.*

Methods. *To achieve the research objective, we used the method of analysis and hypothesis formulation based on observations of the phenomena that most accurately describe military and economic indicators. The hypothesis was confirmed and established on regression analysis, trends, and forecasts.*

Results. *The indicator of financial support to the state budget from democratic governments is highlighted as well as national trust funds. The variance indicators of democratisation, economic growth and military expenditures are determined. The data of the above indicators are analysed using the double-squared method, and their forecasting was made.*

Conclusions. *It has been found that financial support, due to the appropriate democratisation of public administration processes, is the primary basis for developing Ukraine's military capability.*

Keywords: *financial support, military capability, democratisation, economic shocks, forecasting methods, regression analysis, variance.*

Background

The steady increase in Ukraine's military capability over the past decade was based on a significant change in the geopolitical situation in the region. The beginning of the Russian-Ukrainian war in 2014, the full-scale Russian invasion of Ukraine in 2022 and the prospects of escalation of the military conflict in the territory of European member states of the North Atlantic Alliance by the russian federation (from now on referred to as the "rf") intensify the need to strengthen the military capability of the European region. However, the question arises regarding how critical the military weight on the state's economy can be, including the impact of financing Ukraine's state budget with external commitments, which motivates us to set the first task for this study: provide a regression analysis of crucial military and economic indicators, as well as their relationship with the democracy index. We assume that democratisation, to a certain degree, affects the trust of Western governments and potential investors in the ability of the Government of Ukraine and the National Bank of Ukraine to effectively use and redistribute the allocations received to stabilise the economy. Equally critical is the issue of effective use of state budget funds for defense needs, primarily guided by the norms and standards of the North Atlantic Alliance member states.

It is worth noting that after the end of the Cold War, the ongoing reformatting of NATO's approach to joint military operations by mobile battlegroups (as part of expeditionary forces) led to a decrease in the capabilities of territorial defence, which was an essential element of the Deterrence doctrine (Howorth, 2014). The progressive reduction of weapons and military equipment through their sale or disposal has deprived the European Union states of the ability to respond effectively to full-scale military interventions. Some economically developed leaders of Western Europe could produce and put on the balance military equipment of the latest generations, which is

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undoubtedly more effective. However, the relatively small number of the latest generations of equipment and a significant reduction in technically outdated weapons have left the European Union at risk of a growing threat in the East. However, these facts significantly strengthen Ukraine's role and experience in countering rf's full-scale military, information, and economic expansion. It is important to note that these realities have led to another reformatting of approaches to warfare.

In response to rf's illegal annexation of the Autonomous Republic of Crimea and support for separatists in Donetsk and Luhansk regions, some NATO member states, led by the United States, provided Ukraine with material assistance, including anti-tank missile systems, sniper rifles and engineering equipment (SIPRI..., 2015; 2016). After the conflict escalated in 2022, the number of donor countries providing material, financial and humanitarian support to Ukraine increased. According to various sources, the list of partner states varies between 38 and 42 countries (Antezza et al., 2022). Fig. 1 provides information on donor commitments to Ukraine from January 2022 to October 2023. All countries on these charts are democracies. Thanks to Western support, the Joint Forces of the Armed Forces of Ukraine have been able to achieve significant effects on the battlefield, demonstrating their ability and willingness to counter a stronger enemy, which, in turn, led us to set the second task of this study: to make predictions of the state budget incomes, military expenditures and financial support. *Therefore, financial support is provided exclusively for social welfare needs, which, in turn, has allowed for a significant increase in military spending from the state budget.*

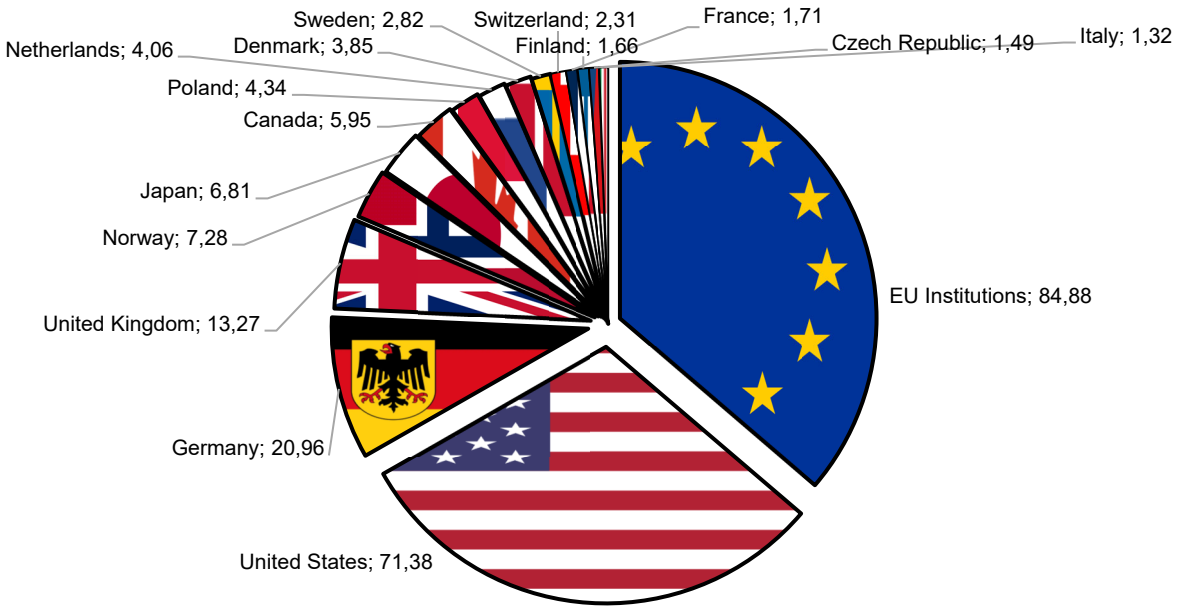


Fig. 1. Commitments Jan. 24, 2022, to Oct. 31, 2023. Data on top 15 donors (in € billion)

Source: created by the author based on Ukraine Support Tracker data (Bomprezzi, Kharitonov, & Trebesch, 2022).

Literature review. J.-W. Lee, and W. McKibbin, point out that the uncertainty caused by war creates a lack of trust in attracting direct investment in the affected economy (Lee, & McKibbin, 2004). D. Bloom, D. Cadarette and J. Sevilla, pointed out that numerous factors exacerbate the risks faced by a war-affected state, and to be able to face new challenges, state institutions must implement tools that facilitate their activities (Bloom, Cadarette, & Sevilla, 2018). Government intervention to minimise the consequences of the war-related catastrophe for the economy *is evident*. D. Weil, underlines the ability of fiscal policy to stimulate aggregate demand and indirectly reduce unemployment, which can be classified as potentially economically stabilising (Weil, n. d.). However, every significant inflation begins with monetary expansion.

In most cases, it resulted from fulfilling harsh (military) needs through the forced printing money (Friedman, 1970). Indeed, in 2022, the currency emission in Ukraine amounted to more than four hundred billion hryvnias, which was a necessary measure, as negotiations between Ukraine and democratic governments on financial support remained incomplete. Already in 2023, thanks to the balanced and practical work of the National Bank of Ukraine, the inflation rate was reduced by almost three times, the exchange rate was switched from a fixed to a flexible mode, and domestic bonds became more attractive to the population.

Baldwin and Mauro, A. Benassy-Quéré, R. Marimon, J. Pisani-Ferry, L. Reichlin, D. Schoenmaker, B. Weder di Mauro, L. Fornaro, and M. Wolf, *focus* on how fiscal and monetary policy can be used to reduce the economic impact of the crisis (Baldwin, & Mauro, 2020; Benassy-Quéré et al., 2020; Fornaro, & Wolf, 2020). In their opinion, the main measures by which the government can stimulate the economy are elements of Keynesian economics. A. Michel explains that in such circumstances, financial market loans, grants and international financial support are provided to extend consumption stimulus measures to the beneficiaries of these funds and lower discount rates to stimulate consumer spending, respectively (Michel, 2023). Attracting financial and material support from democratic governments has allowed, to some extent, to relieve the critically high pressure on the state economy due to the expenditures on the needs of the defence forces.

M. Fernando believes that temporary shocks should be financed by debt, as the costs that this entails can be spread over time (Martin, 2020). Thus, following the opinion of Pierre Gourinchas, the most appropriate response to crises is to place government bonds. To finance military needs and minimise the effects of the economic recession, domestic borrowing is a necessary measure, as the challenges of war outweigh the costs of the so-called moral hazard associated with issuing these bonds (Gourinchas, 2023). However, such measures cannot fully satisfy the demand for the consumption of military goods and maintain a high level of military expenditures, which has led to the idea of highlighting external financial support as the primary determinant of the development and maintenance of an adequate level of the military capabilities in wartime.

We also reviewed the scientific literature to study the importance of different forecasting methods. M. Yunatskyi notes that the fundamental aspects of forecasting financial indicators in the domestic literature are not sufficiently studied, so he identifies econometric models, the time series method ('dynamics rows'), the balance method and expert estimation methods as the ones that can best describe the trends in financial indicators (Yunackiy, 2018). However, the question arises as to which forecasting method should be chosen in the context of this study. First of all, we consider the tasks set to determine the trends of financial indicators of revenues and financing of the state budget, as well as expenditures of the Ministry of Defence of Ukraine. Therefore, it is necessary to consider the existing classification of forecasting methods.

Tim Januszowski, Jan Gasthaus, Yuyang Wang, David Salinas, Valentin Flunkert, Michael Bolke-Schneider, and Laurent Callot classify forecasting methods as either "machine learning" or "statistical methods" (Januschowski et al., 2024). Scholars have argued that differences are essential in choosing a particular method, as they generate an understanding of the relevance and effectiveness of different forecasting methods. We considered the characteristics of alternative forecasting methods that allow us to draw meaningful conclusions based on previous research. In a previous paper, we used a linear regression method to forecast military expenditures. However, this method should be replaced by another one since it provides a forecast based on a variable between the minimum and maximum values of the studied indicators (Koval, 2023).

We also reviewed the work of Vinit Sulandari and Juho Juhanto on their proposed hybrid first-order time series model that takes advantage of moving averages to determine the direction of the trend to model stationary residual series after removing the influence of the trend. Researchers have concluded that the hybrid model has a lower root mean square error (RMSE), but this is the first time we have seen this method widely used in other studies. Therefore, in this study, we should use the classical moving average model and, if possible, adapt it to our needs by changing the calculation mechanism. Indeed, Tetyana Kravchenko classifies moving average methods as belonging to formalised (calculated) methods, which are effective for forecasting economic (including financial) indicators and are widely used for interrelationships between economic categories, including the military sector (Kravchenko, 2013).

Finally, O. Kuzmina, Y. Pecherytsia and L. Hryshchuk point out that extrapolation methods (linear regression, moving averages and exponential smoothing) are based on statistically valid trends in the change of specific quantitative characteristics of an object. (Kuzmina, Pecherytsia, & Hryshchuk, 2016). Extrapolation methods are one of the most widespread among all methods of economic forecasting. We follow their recommendations for forecasting using moving average methods, with the prospect of further research on exponential smoothing methods.

Methods

In this paper, we used the regression method of data analysis, i. e. the double-squared method, to identify the level of correlation between variables. We used simple and double-moving average methods to identify trends and forecast indicators. Given the current year's budget data and the need to plan expenditures for the following years, we have improved the simple moving average method by replacing the mean with the median calculation. Also, since we do not know the indicators of the state budget, military expenditures, and financial support from 2025 to 2027, we have changed the proposed forecasting method to calculate forecasts based on an assessment of trends in the following years.

Results

The financial, material, and humanitarian support provided by democratic governments to Ukraine from 2022 to date totals approximately 234 billion euros. For comparison, Ukraine's state budget expenditures and gross domestic product in 2022 were USD 65 billion and USD 160 billion, respectively. It is worth noting that Ukraine's external and internal public debt, as of November 2023, amounted to EUR 87.8 billion and EUR 40.23 billion, respectively, which is 25.8 % more than in 2022 and 78.2 % more than in 2021, meaning that the external and internal commitments of the Government of Ukraine are increasing mainly due to the war and the socio-economic crisis. Indeed, assistance from partners is necessary, but it deepens Ukraine's dependence on donor countries. At the same time, financial support affects the level of public debt, which is at least twice as high as foreign reserves. An infographic on these indicators is shown in Fig. 4.

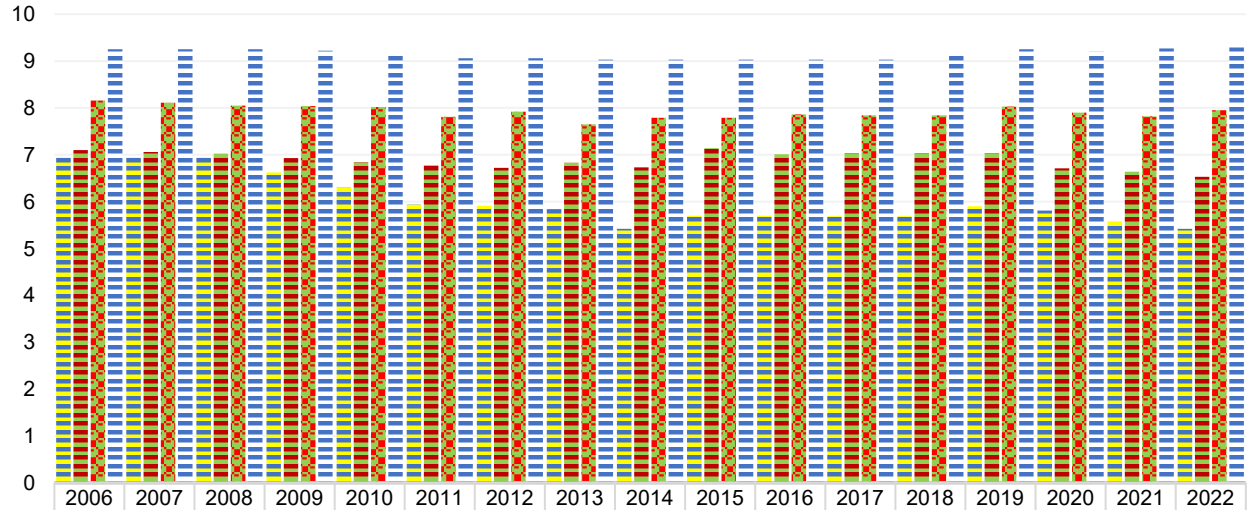
Thanks to the financial and material support of its partners, the Government of Ukraine has managed to significantly increase its military power, which, combined with deeper partnership and military trainings with the forces and capabilities of the North Atlantic Alliance, has stimulated the transformation of the Ukraine's accumulated military potential into the ability to achieve the desired effects on the battlefield. Thanks to this capability, as well as decisiveness and confidence, the armed forces managed to undertake many successful military campaigns to defend Kyiv and liberate Kherson and the Kharkiv region. All this may also indicate an increase in the efficiency of using budget funds for defence, which remains to be seen. Thus, we assume that the effectiveness of budget expenditures is influenced by the country's overall anti-corruption index and, probably, by the democracy and freedom indices.

According to the World Bank, in response to the rf invasion, Ukraine's military expenditures have been increasing (World Bank..., 2023). As a result, according to Global Firepower, military power has also increased (Global Firepower..., 2024). In contrast, Ukraine's economic growth was negative in 2022, reaching a historic low of – 29.1 %. However, 2022 was not the first year when defence expenditures increased. In 2014, after the beginning of the Russian-Ukrainian war, Ukraine's military expenditures grew yearly. Compared to the defence expenditures of European countries, Ukraine's growth was above average. It is reasonable to assume that the increase in military expenditures should go hand in hand with economic growth, i. e. there should be a positive correlation between these two variables. Thus, due to economic growth, an increase in GDP and state budget revenues, an increase in defence

spending is justified, as such expenditures guarantee the security of the capital.

Some scholars argue that increasing military expenditures does not necessarily lead to increasing military effectiveness, i. e., capability. There are positive correlations between economic growth and combat effectiveness on the battlefield. However, we have not found significant evidence of increased effectiveness of using defence forces and equipment due to increased military expenditures. M. Beckley notes that the analysis of many wars from 1898 to 1987 considered the ratio of soldier losses on both sides as an indicator of a particular army's effectiveness during hostilities (Beckley, 2010). However, economic growth and political regime indicators have rarely been used to calculate military effectiveness. In a previous study, we identified a positive correlation between military expenditure and economic growth in Ukraine (Koval, 2023). Also, in the previous study, we analysed inputs and outputs as baseline points for measuring the performance of the armed forces (Pakholchuk et al., 2023). However, the existence of a positive relationship between economic growth and democratisation in Ukraine remains to be seen. We also intend to conduct a study to test the hypothesis that economic growth, democratic system, and military effectiveness positively impact the outcome of a military conflict.

Before analysing Ukraine's fundamental military and economic indicators, it is worth noting the choice of countries for comparison. First of all, it is worth highlighting the uncompromising choice of democratic governments, as Ukraine is pursuing a steady course towards Euro-Atlantic integration, which de facto and de jure implies compliance with democratic mechanisms of governance. Next, we focus on the cumulative customary assessment of the levels of military capability and gross domestic product, which can vary upwards or downwards by a margin of 1.3-1.4. This is enough to track the real growth prospects for Ukraine in the short and medium term, based on a rational assessment of opportunities. Finally, we have chosen to compare and set trends with EU countries that have been proactive in supporting Ukraine. Also, for the sake of diversity, we have selected countries from different sub-regions of the EU, such as Northern, Eastern and Southern Europe. These countries are Finland, Bulgaria and Portugal, respectively.



	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
UA	6,94	6,94	6,94	6,62	6,3	5,94	5,91	5,84	5,42	5,7	5,7	5,69	5,69	5,9	5,81	5,57	5,42
BGR	7,1	7,06	7,02	6,93	6,84	6,78	6,72	6,83	6,73	7,14	7,01	7,03	7,03	7,03	6,71	6,64	6,53
PRT	8,16	8,11	8,05	8,04	8,02	7,81	7,92	7,65	7,79	7,79	7,86	7,84	7,84	8,03	7,9	7,82	7,95
FIN	9,25	9,25	9,25	9,22	9,19	9,06	9,06	9,03	9,03	9,03	9,03	9,03	9,14	9,25	9,2	9,27	9,29

Fig. 2. Democracy index

Source: Our World in Data (Democracy index, 2022)

Military expenditures cannot be considered the sole factor of military effectiveness. Military effectiveness can also be influenced by political regimes, cultural values, civil-military cooperation, human and physical capital, international relations, etc. Among all these factors, it would be advisable to single out economic growth and technological development. Significantly, democratisation, particularly the processes of democratic control over the economic and defense sectors, predicts such development. Fig. 2 shows Ukraine's and several European countries' annual democratisation rates. In the case of Ukraine, we can see a drop in democratic development during the period of pro-rf governments, as well as a slight downturn on the eve of a full-scale war. In general, it is widely believed that a democracy scores equal to or greater than seven points indicates a strong level of democratisation. Scores below this level may signal insufficient rights and freedoms of the nation, particularly in preventing ineffective public administration and corruption. Therefore, according to Transparency International, in 2023, Ukraine peaked in the fight against corruption with a record thirty-six points (World Corruption..., 2023). However, this is still below average, and further anti-corruption efforts should include measures to implement European legislation as part of the fourth stage of European integration – negotiations.

Political regimes and anti-corruption levels can indeed explain economic growth (Aidt, Dutta, & Sena, 2008). For example, corruption can negatively impact economic growth in a government with high-quality political institutions and, thus, a high level of democratisation. In a regime with low institutional quality, corruption does not affect growth. High growth rates reduce corruption, which, in turn, increases growth rates. The quality of institutions can play a crucial role in determining the relationship between corruption and

economic growth. Positive trends in such change will not only increase the amount of funding for the state's national and economic defense needs but also guarantee more efficient management of defence, financial, and intellectual resources of democratic institutions. It is worth noting that positive reforms of the Accounting Chamber and the State Audit Service play a crucial role in these processes, as these institutions must effectively check any budget transactions for the facts of illegal embezzlement and misappropriation of budget allocations by officials, etc. First, the development of state audit and control bodies should be influenced by the principles of democratisation based on transparency, accountability, and integrity.

In this way, democratisation can indeed have a positive impact on economic growth. Economic growth affects military expenditures, particularly increased national wealth, and gross domestic product per capita. That is why democratisation processes have offset the authoritarian past and its influence on public administration in the case of Ukraine and some Eastern European countries. Democratisation and the fight against corruption bring a country closer to more trusting relations with other democratic governments of economically developed and developing countries. In turn, states with a high level of democratic control over the economic and defense sectors are likelier to be members of advanced economic and defense alliances that guarantee geopolitical stability and sustainable development. Democratic military-economic unions provide for highly professional budget planning and programming, guided by an ordinary financial discipline; allocation and use of resources based on strategic priorities; and effective operational execution and accountability. In a democratic society, the executive branch, including defense sector organisations, is accountable to the parliament and civil society.

The government should disclose, explain, and justify its actions in building the defence sector, namely how it intends to spend the budget, how it has spent the money after legislative approval and what it has achieved (Greenwood, 2003). By creating the conditions for transparency, accountability and good governance, the budget process is probably the most significant tool for democratic control over the defense and economic sectors. To prove the positive impact of democratic control on economic growth and ultimately to identify them as the basis for the trend of Ukraine's Ministry of Defence expenditures, we propose to use the method of linear regression. Before using this method, it is necessary to identify the indicators that will be used to establish the level of correlation. In Fig. 3, we show the variance in the measures of democratisation, economic growth, and military expenditures of Ukraine and some EU member states from 1996 to 2022. In general, variance analysis is used to quantify the difference between financial indicators' actual and expected behaviour. In our case, we compare maximum, minimum and median rates.

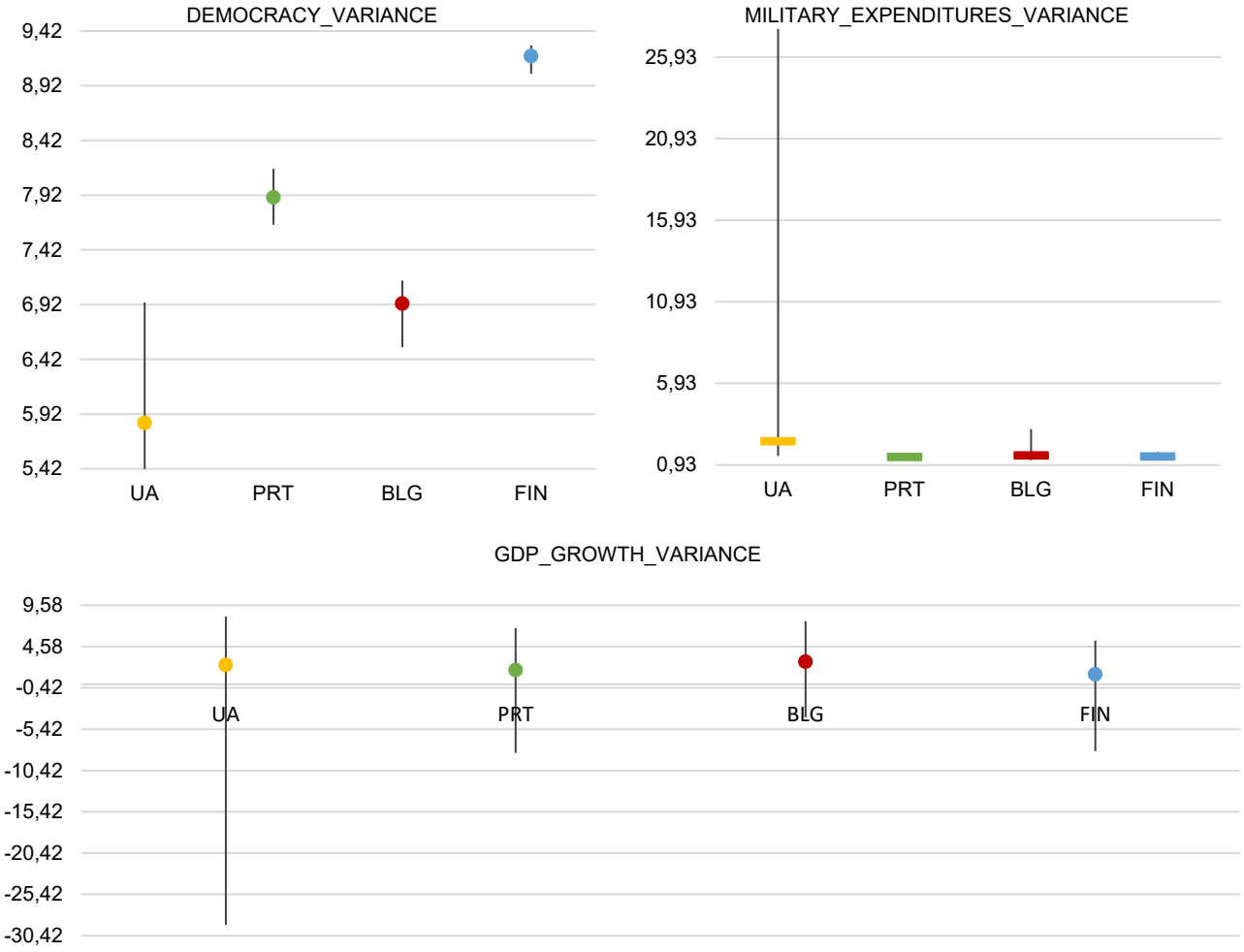


Fig. 3. Variance indicators for the period from 2006 to 2022

Source: created by the author based on World Bank data (World Bank…, 2023).

Fig. 3 and Table 1 show that the lowest democratisation scores could have likely caused the economy's weaker ability to recover from military, epidemiological and economic shocks. In addition, some events that have led to political instability in Ukraine over the past decades may also explain the negative economic growth. The obstacles to democratic control over the defense and economic sectors, as well as over public administration in general, were manifested in the form of political persecutions of pro-Ukrainian and democratic leaders (Vyacheslav Chornovil, Georgiy Gongadze, Kuzma Skryabin), and led to revolutions (the Orange Revolution and the Revolution of Dignity). At the same time, it is likely that the change of governments in Ukraine to pro-Western ones, followed by the implementation of relevant reforms and policies of partnership and cooperation in the military, economic and technological spheres, could have caused military conflicts with states with authoritarian political regimes (the Russian-Ukrainian war and the full-scale rf invasion). However, in the case of Ukraine, which has chosen a course of Euro-Atlantic integration, the lack of democratic control over the defense and economic sectors is negatively correlated with economic growth and investment, including financial and material support. Instead, democratisation is linked to the decisiveness of foreign investors to invest in Ukraine's economy.

Democratisation can be a stimulating factor for the ability of democratic governments to provide financial support to recipient states in times of financial, military, and other crises. However, Samuelson, Rogoff, Krugman, Calvo, Reinhart and others argue that the involvement of external financial sources and, as a result, the formation of an excessive debt burden are among the main reasons for the deterioration of the financial environment of developing countries (Calvo, 2014; Eggertsson, & Krugman, 2012; Reinhart, C.M., & Reinhart, V.R. 2015; Samuelson, 1954). P. Krush and D. Mastiuk underline that such external sources can be used only in case of long-term stagnation of the national economy (Krush, Mastiuk, & Valouch, 2017). We believe that Ukraine's emergency military and economic circumstances require financial and material support from partners (external loans and grants, irrecoverable assets) and the search for and implementation of effective domestic borrowing instruments.

As of 2023, Ukraine's external borrowings exceeded state budget revenues by about 6 %. Interestingly, in 2019 and 2020, after the election of Volodymyr Zelenskyy as President of Ukraine and the establishment of the new Government of Ukraine, economic growth was, for some time, even higher than in previous years. However, in 2017–2019, the economic strengthening trends were also very positive as the country had recovered from the significant capital losses between 2010 and 2013 and the outbreak of the Russian-Ukrainian war in 2014. However, throughout this period, the state budget was in deficit. Therefore, financing and transfers to the state budget, mainly from the European Union, the North Atlantic Alliance, the World Bank and the International Monetary Fund, increased Ukraine's public debt gradually. The high debt burden *requires* finding effective ways to fill Ukraine's state budget, mainly through domestic policy.

In turn, the inability to implement the policy of domestic borrowing and production of goods and services to meet the needs of domestic demand and exports may lead to more negative consequences for the socio-economic situation of the state – despite the risks of destruction of human and physical capital because of warfare. An increase in public debt beyond the state budget of Ukraine may indicate the state's insolvency and, accordingly, increase the risk of default. Even if the state receives non-repayable financial and material support from its partners, it depends on such aid. Thus, it will be challenging to overcome future economic and military crises by domestic policy means. Ukraine's public debt and international reserves are shown in Fig. 4. It is worth noting that due to the practical policy of the National Bank of Ukraine in 2022-2023, the level of foreign exchange reserves in Ukraine reached a historic high, reaching USD 40.51 billion in 2023. However, the growth of external public debt in 2023 increased by 42.18 % compared to the previous year.

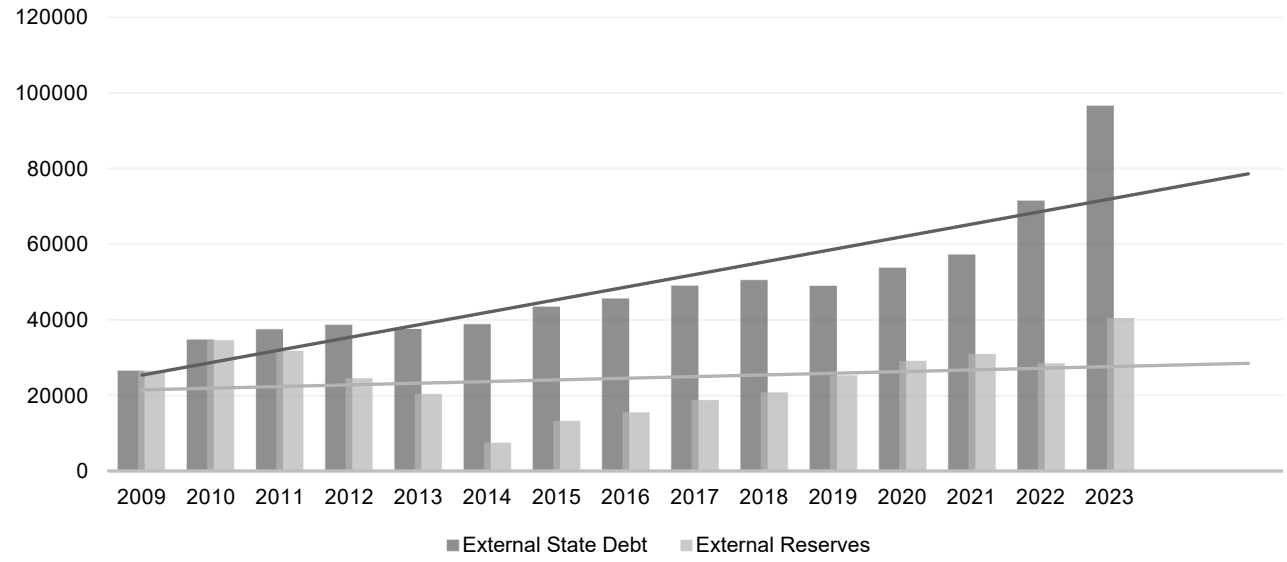


Fig. 4. External public debt and international reserves of Ukraine

Source: The Ministry of Finance of Ukraine (State debt..., 2024).

Table 1 shows the worst and best indicators of democratisation, economic growth and military expenditures for Ukraine, Portugal, Bulgaria, and Finland from 2006 to 2022. A higher level of democratisation does not necessarily lead to higher economic growth. However, it does have a significant impact on how a country can handle economic shocks. It is also worth noting that states with democratic political systems have a better chance of winning a war than authoritarian regimes (Desch, 2002). Shocks from military conflicts destabilise a country's economy, as well as its human and physical capital. However, as a result of effective reforms aimed at democratic control, as opposed to authoritarian rule, socio-economic changes can be positive. Ukraine has succeeded in implementing several democratic reforms, but given its Soviet past, these efforts have been enormous. At the same time, the faster recovery rate from crises can be considered an equally important factor in such democratisation. At the same time, some studies indicate that states with a higher level of democratic development are more vulnerable to economic sanctions than authoritarian ones (Allen, 2008).

Table 1

Indicators of democratisation, economic growth, and military expenditures between 2006 and 2022

	DEMOCRACY_INDEX			
	UA	PRT	BLG	FIN
MIN	5.42	7.65	6.53	9.03
MAX	6.94	8.16	7.14	9.29
MEDIAN	5.84	7.90	6.93	9.19
	GDP_GROWTH_%			
	UA	PRT	BLG	FIN
MIN	-29.10	-8.30	-3.97	-8.07
MAX	8.22	6.83	7.66	5.30
MEDIAN	2.36	1.74	2.75	1.22
	MILITARY_EXPENDITURES_%			
	UA	PRT	BLG	FIN
MIN	1.48	1.24	1.22	1.26
MAX	27.65	1.54	3.13	1.72
MEDIAN	2.37	1.42	1.51	1.44

Source: created by the author based on the source: World Bank (World Bank..., 2023)

Many studies are based on the positive impact of democratisation on economic openness, free market relations and competitiveness, anti-corruption, etc. (Reisinger et al., 1994; Way, 2005; Way, & Levitsky, 2006). According to the Freedom House Ranking, which shows the democratisation statistics of Ukraine and some other post-Soviet countries, including current members of the Euro-Atlantic area, Ukraine accumulated 50 points in 2023 (Ukraine: Country Profile..., 2023), which is a high score compared to authoritarian governments, but critically low compared to democratic ones. Obviously, with the beginning of the Russian-Ukrainian war, the Government of Ukraine's measures to mobilise economic and human resources to counter rf aggression were forced actions that negatively affected the freedom index. At the same time, given the realities of Ukraine's military and economic crisis, the level of freedom and, probably, democratic development have less influence on the outcome of the conflict. In contrast, economic growth and technological development will have a more effective impact on military effectiveness, which is a critical indicator of a full-scale war with an enemy with much greater military and economic capacity.

To identify the relationship between democratisation and economic growth, as well as between economic growth and defence sector expenditures, we used a regression method. In this case, linear regression allows us to track the correlation using only one explanatory and one dependent variable. The higher the absolute value of the correlation coefficient, i. e. the value of R squared, the stronger the relationship between the variables under study. We built dot charts and conducted a regression analysis. We present the infographics and analysis results in Fig. 5 and Table 2, respectively. It is worth reminding that the R coefficient is calculated according to the following formula:

$$r = \frac{\sum(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum(x_i - \bar{x})^2}\sqrt{\sum(y_i - \bar{y})^2}} = \frac{\sum x_i y_i - n\bar{x}\bar{y}}{\sqrt{\sum x_i^2 - n\bar{x}^2}\sqrt{\sum y_i^2 - n\bar{y}^2}}.$$

According to the data in Table 2, which describes the scatterplot in Fig. 5, it is clear that the relationship between democratisation and economic growth is low or non-existent for all countries. However, more is needed to explain the causality or its lack of these two variables. Likely, the reason for these countries' positive median economic growth may indeed be high levels of democratisation. However, the very understanding of democratisation in the context of economic growth is likely to be related to the possibility of these countries belonging to the appropriate economic unions. In order to test this hypothesis, we propose to conduct a repeated regression study based on democratisation and economic growth data for all EU member states between the end of the 2008 global financial crisis and the beginning of the COVID-19 epidemic in 2019. This period will allow us to find out whether democracies are effective in terms of economic growth in the absence of global economic shocks and other crises. At the same time, we propose to use GDP in real prices. The results of the regression analysis are presented in Table 3.

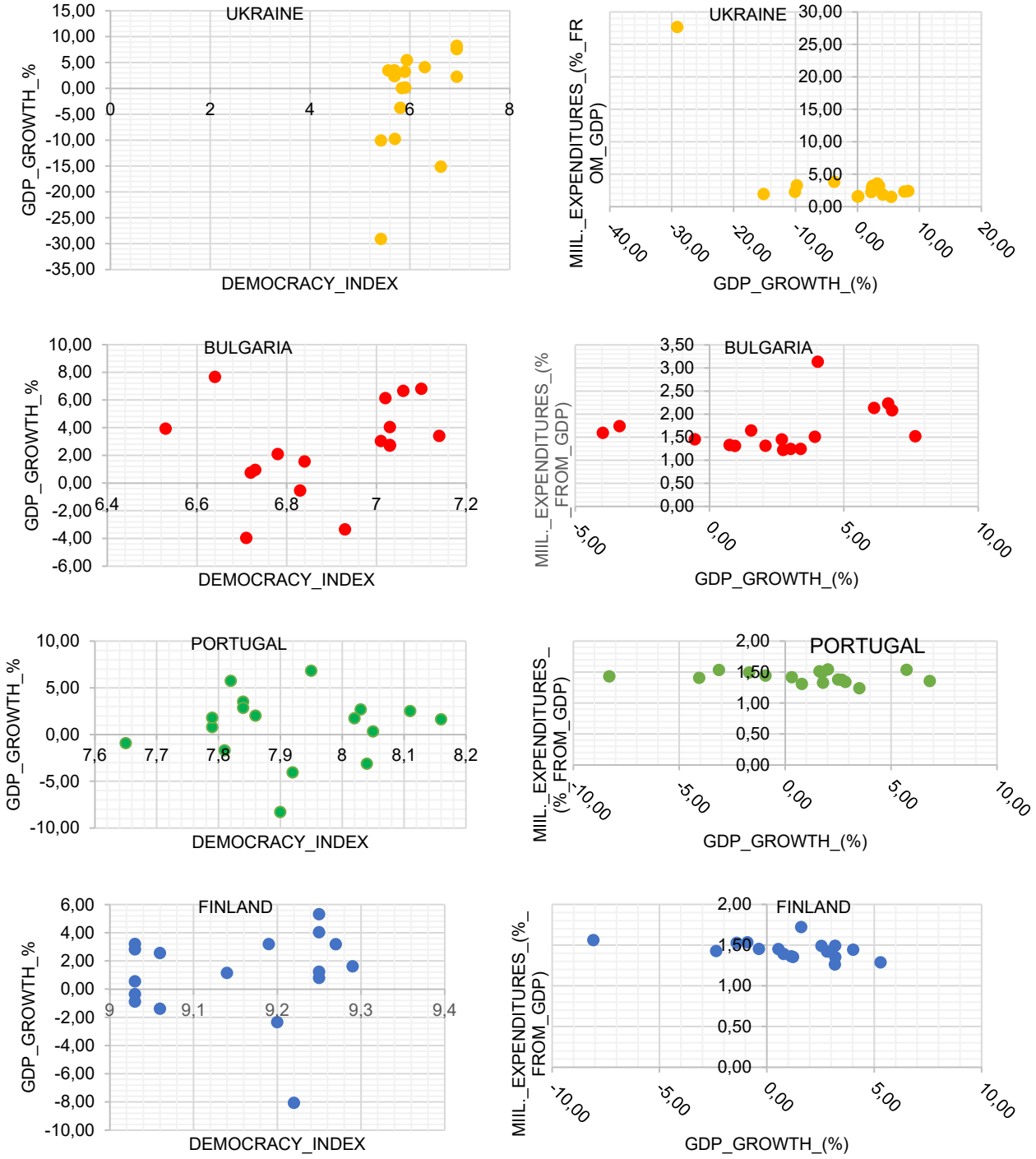


Fig. 5. Scatter plot points of GDP, democratisation and military expenditures

Source: created by the author.

Table 2

Regression analysis of data from Ukraine and some EU member states

	UKRAINE		BULGARIA		PORTUGAL		FINLAND	
	DEM/GDP (1)	GDP/MIL (2)	DEM/GDP (3)	GDP/MIL (4)	DEM/GDP (5)	GDP/MIL (6)	DEM/GDP (7)	GDP/MIL (8)
				Regression Statistics				
Multiple R	0.3832	0.73971	0.27	0.32	0.04	0.21	0.08	0.4358
R Square	0.1469	0.54717	0.07	0.1	0	0.05	0.01	0.19
Adjusted R Square	0.09	0.51698	0.01	0.04	-0.06	-0.02	-0.06	0.136
Standard Error	9.1499	4.2673	3.26	0.48	3.77	0.09	3.18	0.1026
Observations	17	17	17	17	17	17	17	17
				ANOVA				
				Regression				
SS	216.19	330.05	12.8	0.4	0.35	0.01	0.96	0.037
MS	216.19	330.05	12.8	0.4	0.35	0.01	0.96	0.037
F	2.5822	18.1248	1.2	1.72	0.02	0.71	0.09	3.5177
Significance F	0.1289	0.00069	0.29	0.21	0.88	0.41	0.76	0.0803
				Residual				
SS	1255.8	273.148	160	3.52	214	0.12	152	0.1579
MS	83.721	18.2099	10.7	0.23	14.2	0.01	10.1	0.0105
				Total				
SS	1472	603.198	173	3.92	214	0.13	153	0.1949

Source: created by the author.

Table 3

Regression analysis of the European Union data

	EUROPEAN UNION	
	DEM_GDP (1)	GDP_MIL (2)
	Regression Statistics	
Multiple R	0.8794144	0.5444807
R Square	0.7733697	0.2964592
Adjusted R Square	0.7450409	0.232501
Standard Error	0.0264469	21.666945
Observations	10	13
	ANOVA	
	Regression	
SS	0.0190945	2176.0244
MS	0.0190945	2176.0244
F	27.299784	4.6351991
Significance F	0.0007978	0.0543671
	Residual	
SS	0.0055955	5164.0217
MS	0.0006994	469.45651
	Total	
SS	0.02469	7340.0461

Source: created by the author.

The regression analysis of the statistics in Table 3 shows that, when considering the relationship between the level of democratisation and real GDP in the European Union, the correlation is 0.77, which is high. In contrast, the correlation between GDP and military expenditures is 0.3, below average. Similarly, the correlations in Ukraine are 0.15 and 0.55, respectively, low, and average correlations. Ukraine's Euro-Atlantic integration could significantly change the trends of economic growth and efficiency of military budget expenditures (upward), which would be caused by broader democratisation due to the implementation of European legislation and its strict compliance. Currently, the trends in Ukraine's military expenditures are determined mainly by the need to provide defense under martial law. There is a need to study these tendencies, to visualise, and understand the trend of military expenditures in the coming years.

"You can observe a lot by just watching" – Yogi Berra
(Forbes, n. d.).

To visualise the trends in Ukraine's defence expenditures and to forecast defence expenditures for the following years based on these trends, it is necessary to use a mathematical model to describe the time series and predict its future behaviour. In most cases, knowing which method will be most effective for a given data set is impossible. We can test several modelling methods on a given data set and evaluate them for the adequacy of the results provided. We can also calculate more formal quantitative measures such as the mean squared error (MSE) and mean absolute error (MAE). The formula determines the forecast error:

$$e_t = X_t - \hat{X}_t,$$

where X_t – is an actual observation over a period t, and $\hat{X}_t$ – is a forecast for a period t.

The mean square error is calculated using the following formula:

$$MSE = \frac{1}{n}\sum_{t=1}^{n} e_t^2 .$$

The average absolute error is calculated using the following formula:

$$MAE = \frac{1}{n}\sum_{t=1}^{n} |e_t| .$$

In order to decide whether the model we have chosen is adequate for forecasting, we need to evaluate the results to see if they meet our assumptions. We suggest using a model without a seasonal component. When using this model, the following methods are worth highlighting:

- Simple Moving Average Method (hereinafter referred to as SMA);
- Double Moving Average Method (hereinafter referred to as DMA).

Using SMA method, trend assessment at a given period t is the average of the last n observations:

$$\hat{T}_t = M_t = \frac{X_t + X_{t-1} + \cdots + X_{t-n+1}}{n}.$$

Predictor (origin t and the scope m):

$$\hat{X}_{t+m} = \hat{T}_t = M_t;\ m = 1.2, \ldots$$

Forecasts should be updated as new information becomes available. Calculations using the DMA method:

$$M_t = \frac{X_t + X_{t-1} + \cdots + X_{t-n+1}}{n}$$
$$M_t^{[2]} = \frac{M_t + M_{t-1} + \cdots + M_{t-n+1}}{n}$$

Calculation (level and slope at a point in time t):

$$\hat{T}_t = 2M_t - M_t^{[2]},$$
$$\hat{b}_t = \frac{2}{n-1}\left[M_t - M_t^{[2]}\right].$$

Predictor (origin t and the scope m):

$$\hat{X}_{t+m} = \hat{T}_t + \hat{b}_t * m; \quad m = 1.2 \ldots$$

At the same time, there are disadvantages to using moving averages, namely:

- the observations used for the calculation have the same proportion ($\frac{1}{n}$);
- it is assumed that the most recent observations will serve as better forecasting indicators, so they should be given more weight;
- the distribution of observations over time leads to different exponential smoothing methods.

Moving on to the forecasting, we have data on the expenditures of the Ministry of Defence of Ukraine from 2009 to 2023. At the same time, there is data on the approved budget of the Ministry of Defence of Ukraine for 2024, but it is not advisable to use it for forecasting as the data is inaccurate. However, the indicator of the approved budget of the Ministry of Defence of Ukraine for 2024 can be used to calculate the forecasting error (mean e_t). Thus, we can forecast the expenditures of the Ministry of Defence of Ukraine for 2024–2027.

One of the available forecasting methods can be used to forecast the expenditures of the Ministry of Defence of Ukraine for the following years. However, each of these methods may have a forecasting error, and thus, the error determines the degree of deviation from the forecasts. That is why we decided to use both methods, calculate each method's error level, and recommend forecasts' outcomes with a lower error.

Moreover, each of these methods assumes that the values of $\hat{X}$ under study are known. First, we need to determine the value of n. We propose to set $n = 4$, which means that we will calculate the moving average (M_t) using the values of X_t for the last four years. Four years is a reasonable period for calculating the average because we plan to forecast for four years. It also allows us to improve the spread of the sample, which is essential because, for example, the increase or decrease in military expenditures between 2010 and 2013 is, on average, three percent. However, in 2022, the increase was at least eight hundred percent.

First, let us make a calculation using the SMA method. Let us estimate the trend:

$$M_{2023} = \frac{X_{2023} + X_{2022} + X_{2021} + X_{2020}}{4},$$

where $X_{t_{2023}}$ – the amount of military expenditures of the Ministry of Defence of Ukraine in 2023.

$$M_{2023} = \frac{118\,012.9981 + 121\,468.043 + 989\,532.3302 + 1\,443\,393.9172}{4} = 668\,101.82 .$$

Thus, we calculated that the moving average for 2023 is 668,101.82. Next, we need to calculate the value of the predictor $\hat{X}_t$:

$$\hat{X}_{2024} = M_{2023} = 668\,101.82 ,$$
$$\hat{X}_{2025} = M_{2023} = 668\,101.82 ,$$
$$\hat{X}_{2026} = M_{2023} = 668\,101.82 ,$$
$$\hat{X}_{2027} = M_{2023} = 668\,101.82 .$$

The data obtained indicate a high probability of inaccuracy of forecasts according to the proposed method. We propose to improve this method by changing the way $\hat{X}_t$ is calculated. Thus, currently, the formula for this calculation is as follows:

$$\hat{X}_{t+m} = \hat{T}_t = M_t;\ m = 1.2, \ldots$$

We suggest the following variation:

$$\hat{X}_{t+m} = \hat{T}_t = M_t;\ m = 1 .$$

In the proposed way, it is necessary to recalculate the forecast. Firstly, there is now a need to calculate the values of M_{2024}, M_{2025}, M_{2026}, M_{2027}, as these values will take on the median values of the corresponding integrals X_t. We proposed to improve this method by considering the approved budget of the Ministry of Defence of Ukraine, which may change during the relevant year. In our case, this year is 2024. Thus, we have made two proposals to improve this method of calculating budget forecasts for the following years:

- *use of the current year's indicator X_t as both an observation and a predictor since the budget year is not complete and, accordingly, may include relevant changes in revenues, expenditures, financing, etc;*
- *calculate the trend estimate at time t (M_t) for both years that are observations and years that require the calculation of predictors. When calculating, use the median rather than the mean. The new indicator should likely be displayed as $\hat{\mu}_{M_t}$, which requires explanation.*

It is necessary to explain the use of these proposals. First, we propose to use the median of the previous four indicators to calculate the trend estimate at time t for the predictors $\hat{X}$, unlike the arithmetic mean that we used to calculate the values of X. Thus, the median is the average value when the set of values is ordered from smallest to largest. The advantage of the median is that it removes the *extreme values* from the data set, giving a more realistic view of what to expect in the future, which is especially important when making forecasts. While the mean may give a more accurate picture of the overall data, the median is a more reliable guide to expectations regarding cost planning (including budgeting).

The choice of Greek letter μ to describe the trend estimate at time $\hat{t}$ because it is commonly used in mathematics and statistics to refer to the arithmetic mean or median of a distribution with a standard deviation. The standard deviation is denoted as σ. The formula for calculating the standard deviation:

$$\hat{\sigma}_{\varepsilon}^2 = \frac{1}{n-2}\sum_{t=1}^{n}\left[X_t - \hat{X}_t\right]^2 = \frac{\sum_{t=1}^{n}\left[X_t - \hat{X}_t\right]^2}{n-2},$$

$$\hat{\sigma}_{\varepsilon} = \sqrt{\hat{\sigma}_{\varepsilon}^2}.$$

Therefore, it is necessary to recalculate first. It is worth noting that when calculating the median, arranging the sample of numbers in ascending order is necessary:

$$M(X_t) = \frac{\left(\frac{4}{2}\right)^{th} + \left(\frac{4}{2}+1\right)^{th}}{2} = \frac{2^{th} + 3^{th}}{2},$$

$$\hat{\mu}_{\tilde{M}_t} = \frac{X_{t-1} + X_{t-2}}{2},$$

$$\hat{\mu}_{\tilde{M}_{2024}} = 1\,076\,790.53,$$

$$\hat{\mu}_{\tilde{M}_{2025}} = 1\,164\,048.73,$$

$$\hat{\mu}_{\tilde{M}_{2026}} = 1\,303\,721.32,$$

$$\hat{\mu}_{\tilde{M}_{2027}} = 1\,164\,048.73.$$

Following these suggestions, we recalculated the estimates of trends and predictors. Thus, according to the data obtained:

$$\hat{X}_{2024} = M_{2023} = 668\,101.82,$$

$$\hat{X}_{2025} = \hat{\mu}_{\tilde{M}_{2024}} = 1\,076\,790.53,$$

$$\hat{X}_{2026} = \hat{\mu}_{\tilde{M}_{2025}} = 1\,164\,048.73,$$

$$\hat{X}_{2027} = \hat{\mu}_{\tilde{M}_{2026}} = 1\,303\,721.32.$$

We have calculated the forecast of military expenditures for 2024–2027. Now we need to calculate the error in the forecast. Calculating the error in the trend:

$$e_{2024} = X_{2024} - \hat{X}_{2024} = 27\,361.03,$$

$$e_{2025} = X_{2025} - \hat{X}_{2025} = 882\,263.21,$$

$$e_{2026} = X_{2026} - \hat{X}_{2026} = 1\,110\,387.26,$$

$$e_{2027} = X_{2027} - \hat{X}_{2027} = 495\,946.91.$$

Calculation of the mean square error:

$$MSE = \frac{1}{4}\sum_{t=1}^{4} e_t^2 = 564\,515\,050\,383.88.$$

Calculation of the average absolute error:

$$MAE = \frac{1}{4}\sum_{t=1}^{4} |e_t| = 628\,989.60.$$

Calculation of the standard deviation error:

$$\hat{\sigma}_{\varepsilon}^2 = \frac{1}{12-2} * 2\,266\,009\,131\,934.76 = 226\,600\,913\,193.48,$$

$$\hat{\sigma}_{\varepsilon} = \sqrt{226\,600\,913\,193.48} = 476\,026.17.$$

Now, let us perform the calculation using the DMA method. As observations (X) of 2024–2027, we will take the predictors ($\hat{X}$) we calculated using the SMA method. The formula for calculating a double moving average:

$$M_{2023}^{[2]} = \frac{M_{2022} + M_{2021} + M_{2020} + M_{2019}}{4} = 300\,621.15.$$

Calculation of the score (level and slope at the time t):

$$\hat{T}_{2023} = 2M_{2023} - M_{2023}^{[2]} = 1\,035\,582.49,$$

$$\hat{b}_{2023} = \frac{2}{4-1}\left[M_{2023} - M_{2023}^{[2]}\right] = 244\,987.11,$$

Predictor $\hat{X}_t$:

$$\hat{X}_{2024} = \hat{T}_{2023} + \hat{b}_{2023} * 1 = 1\,280\,569.60,$$

$$\hat{X}_{2025} = \hat{T}_{2023} + \hat{b}_{2023} * 2 = 1\,525\,556.71,$$

$$\hat{X}_{2026} = \hat{T}_{2023} + \hat{b}_{2023} * 3 = 1\,770\,543.83,$$

$$\hat{X}_{2027} = \hat{T}_{2023} + \hat{b}_{2023} * 4 = 2\,015\,530.94.$$

Calculation of the mean square error:

$$MSE = \frac{1}{4}\sum_{t=1}^{4} e_t^2 = 272\,369\,358\,761.01.$$

Calculation of the average absolute error:

$$MAE = \frac{1}{4}\sum_{t=1}^{4} |e_t| = 470\,897.94.$$

Based on the error calculation results, we found that by using the double-moving average method, the average absolute error becomes smaller than when using the simple moving average method. The results are shown in Fig. 6.

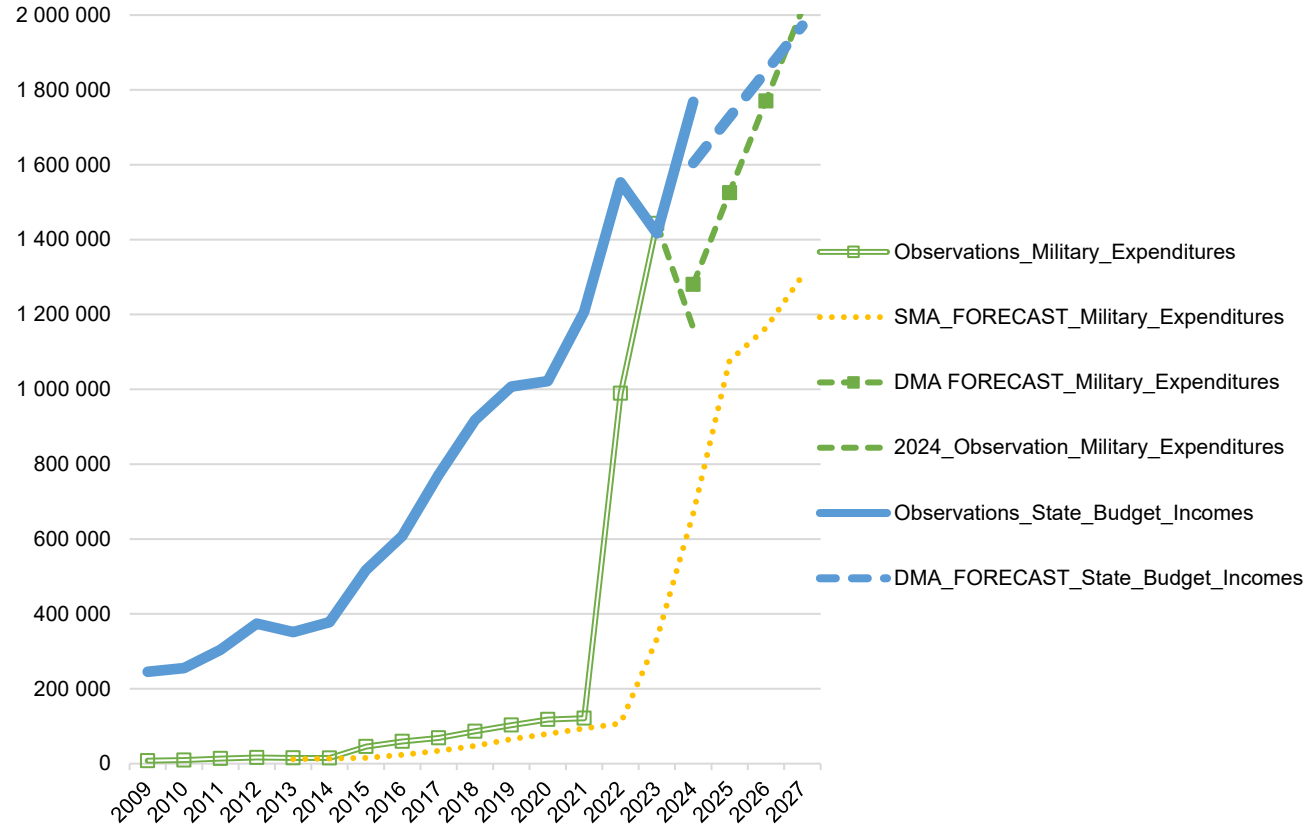


Fig. 6. Trends and forecasts of military expenditures and revenues of the state budget of Ukraine

Source: created by the author.

Fig. 6 shows that military expenditures will likely be higher than Ukraine's state budget revenues as early as 2027. Despite the Government of Ukraine's successful attempts to launch a public revenue strategy until 2030 based on fiscal policy instruments, as well as the successful measures taken by the National Bank of Ukraine, mainly through the use of flexible mechanisms for foreign exchange and domestic borrowing, Ukraine is unable to handle the military weight on its economy by itself, which, unfortunately, makes the country dependent on financial, material and humanitarian support from donor countries. Finally, we present the trend and forecast of the state budget financing for the following years. Fig. 7 shows a trend towards continued support from partners, but it is worth noting that even this short-term outlook is filled with many risks that create a wide degree of uncertainty. Many political, geopolitical, and other factors in the international arena may influence decision-making regarding support for Ukraine in one way or another.

In our turn, we suggest following the practical recommendations for improving Ukraine's military and economic capabilities in the coming years using domestic resources and capabilities, assuming that the Russian-Ukrainian war does not escalate to a more critical stage:

- The National Bank of Ukraine will continue to build on its successful policy of domestic government borrowing and foreign exchange interventions, including the flexibility and floatation of the national currency against foreign ones;
- increasing the amount of foreign exchange reserves, mainly by creating a favourable democratic climate for foreign investors, as well as increasing domestic production to meet domestic demand and exports;
- maintaining the inflation rate in 2024 at a level not exceeding 5–7 %, mainly by not using some monetary policy instruments, including the issuance of funds;
- gradually implementing the fiscal policy strategy until 2030, bringing these mechanisms in line with the norms and practices of the European Union;
- increasing the efficiency of the use of budget allocations by the Ministry of Defence of Ukraine, mainly through the successful implementation of the concept of capability-based planning, programming, budgeting and execution and to develop them;
- improvement of civil-military relations and democratic control over the defence sector, the mechanism of which is provided by Chapter Four of Part VI of the Manual on Civil-Military Relations (Pantev, 2008).

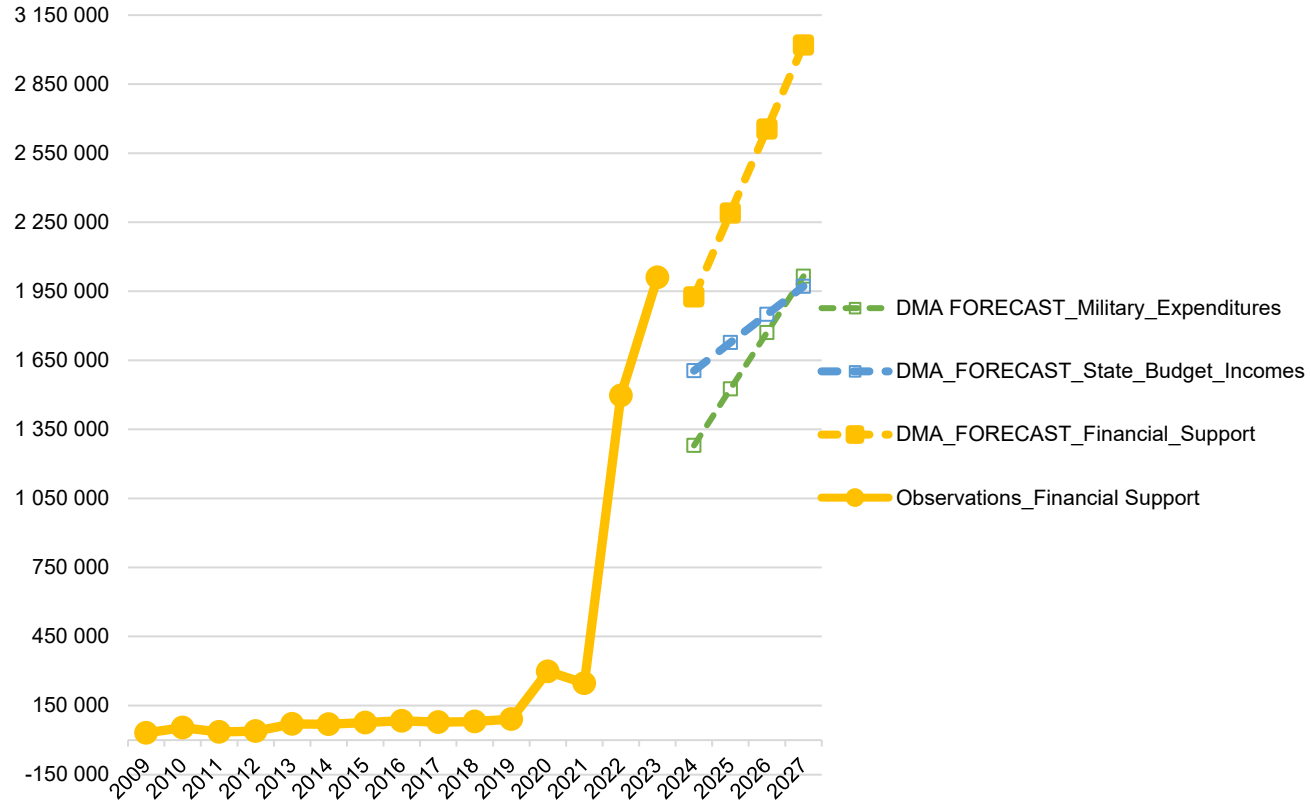


Fig. 7. The financial support forecasting

Source: created by the author.

Discussion and conclusions

Thus, we could examine the military-economic situation in which Ukraine was placed throughout the war via the prism of identifying critical issues faced by other democratic governments in crisis. We have extrapolated some of the authors' findings as ways to deal with the multiple challenges confronting the Ukrainian economy and defence sector. We have reviewed the effective strategies the Government and the National Bank of Ukraine implemented to stabilise socio-economic development under martial law. Indeed, the strategies were in line with the recommendations of reputable academic works, and the prospects for further implementation of effective mechanisms to counter new stages of threats to economic and defense seem to be free of uncertainty, at least if democratic governments continue to support Ukraine proactively.

We have identified effective methods of accumulating the economic and military capabilities of the state through closer cooperation with the Western bloc states, as such cooperation leads to Ukraine receiving significant financial, material and humanitarian resources. Also, having analysed and compared key military-economic and democratic indices, we conclude that Ukraine has a positive trend of economic growth and military capability in terms of moving away from authoritarian principles of state-building and choosing the direction of integration into leading economic and military alliances. This direction involves implementing the best practices and norms of the civilised world of the twenty-first century. Finally, we offer our vision of recommendations for accelerating the transformation process, given the rather critical situation in which the people of Ukraine find themselves.

Implementation of the recommendations can improve the mechanisms for filling Ukraine's state budget with more than just external debt commitments. Such measures will still not be enough to minimise the risks of economic shocks from the Russian-Ukrainian war and maintain a high level of budget allocations for defence until the European continent's military tensions subside. That is why we assume that in the coming years, Ukraine will depend on donor countries' financial support. This trend will be relevant until the end of the Russian-Ukrainian war and the completion of Ukraine's Euro-Atlantic integration through its accession to the European Union and NATO. According to the norms and practices of the North Atlantic Alliance and the European Union, budget processes should be based on transparency, accountability and flexibility principles and implemented through planning, programming, preparation, and execution.

"Planning is Everything. The Plan is Nothing" –
US President Dwight Eisenhower
(Bacon, 2021).

Planning for a crisis management strategy – whether through the placement of domestic bonds, financial assistance from partners, or, most likely, by attracting foreign direct investment in production and exports – will be more effective than eliminating such planning. The cohesion of planners around a unifying idea will generate positive effects. At the same time, such cohesion and public administration, including the allocation and reallocation of budgetary resources for defense needs, should be based on democratic principles. Such an

approach is attractive to foreign investors and democratic governments that provide Ukraine with financial, material, and humanitarian support to stabilise the economy and counteract rf's terrorist expansion.

However, there are considerable risks that financial support from partners may be significantly reduced due to the exhaustion of donor countries, as well as the growing need for these states to build up military and economic power to potentially counter rf's growing ambitions to further enslave nations to the West of the rf-Baltic and rf-Finland borders. However, due to the ability of the Government of Ukraine and the National Bank of Ukraine to implement effective mechanisms for filling the state budget and reserves from domestic sources, as well as exports, attracting foreign direct investment, etc., the trust of partners will grow significantly, which can also be a reliable indication of the intentions of democratic governments to continue financial support for Ukraine. For example, Fig. 7 clearly shows the estimated amount of financial resources to be provided by partners until 2027.

We are aware of the development of Ukraine's defence sector and economy depending on international financial support, and we once again emphasise the high efficiency of the Government's financial policy in accumulating resources and transforming them into capabilities and tools. We share the same opinion as the Governor of the National Bank of Ukraine, Andriy Pyshnyi, on the importance of combining fiscal policy and domestic borrowing to stimulate economic growth, which, in turn, has been confirmed by positive dynamics as of early 2024. Therefore, further development of the economy and military capability should be based on a combination of domestic policy of accumulating financial resources and external borrowing. In fact, the financial mechanism envisages financial support for the military potential at the expense of state trust funds in combination with financial support from partners.

The forecast of military-economic indicators once again highlights the dependence of the economy and military capability on foreign support and the search for and implementation of effective mechanisms of domestic accumulation. This indicates at least that Ukraine is in a state of uncertainty, and the best decision that can be made is to improve the ability to manage limited resources in the most efficient way. A final point would be the need for the prospective research to develop a model for the effective use of budget funds, primarily through their optimisation, with a preliminary expert assessment, given the many risks and the overall level of corruption and democratisation in the country. We argue that military effectiveness is not only based on the level of military expenditures, but should be measured by the ratios of inputs and outputs, which is critical at least for assessing the effectiveness of the institutions of the armed forces.

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МЕТОДИ ПРОГНОЗУВАННЯ ФІНАНСОВОГО ЗАБЕЗПЕЧЕННЯ ВІЙСЬКОВОГО ПОТЕНЦІАЛУ У ПЕРІОД ДЕМОКРАТИЗАЦІЇ

В с т у п . ***Поступове виснаження економіки України внаслідок війни, що призвела до промислової, демографічної та екологічної кризи, змусило Уряд до пошуку надійних зовнішніх джерел фінансових запозичень, матеріальної та гуманітарної підтримки, а також імплементації ефективного механізму внутрішніх фінансових джерел. Упродовж першого року російсько-української війни міжнародна фінансова підтримка, разом із монетарною політикою Національного банку України, у розрізі емісії грошових коштів були критично необхідними для стабілізації економіки у стані стагнації. Проте наступні роки Уряд дотримувався винятково курсу зовнішніх і внутрішніх запозичень. Це спонукало визначити основні підстави для перевірки впливу фінансового забезпечення та фінансової підтримки військового потенціалу України в умовах демократизації – основної вимоги євроатлантичної інтеграції. Мета статті – здійснити прогнозування і надати практичні рекомендації щодо продовження успішної політики Уряду України та Національного банку України для залучення зовнішніх і внутрішніх запозичень для наповнення державного бюджету, розподілу асигнувань на потреби Міністерства оборони України та ефективного використання фінансового ресурсу задля гарантування національної та економічної безпеки. Об'єкт дослідження – механізм фінансування, тобто фінансове забезпечення військового потенціалу.***

М е т о д и . ***У процесі дослідження використано метод аналізу. На основі проведених спостережень за явищами, які найточніше описують воєнно-економічні показники, висунуто гіпотезу, підтвердження якої здійснено на основі регресійного аналізу, трендів та прогнозів.***

Р е з у л ь т а т и . ***Висвітлено індикатори доходів і фінансування державного бюджету від демократичних урядів. Встановлено показники дисперсії демократизації, економічного зростання та військових видатків. Проаналізовано дані вищезазначених показників за допомогою методу подвійних квадратів та здійснено їхнє прогнозування.***

В и с н о в к и . ***Встановлено, що фінансове забезпечення завдяки належному стану демократизації процесів державного управління є основним фундаментом розвитку військового потенціалу України.***

К л ю ч о в і с л о в а : ***фінансове забезпечення, військовий потенціал, демократизація, економічні шоки, методи прогнозування, регресійний аналіз, дисперсія.***

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