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Macroeconomics

Igor MANTSUROV,
Yana KHRAPUNOVA,
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Valery OMELCHENKO

ASSESSMENT OF THE STATE AND PROSPECTS OF COOPERATION BETWEEN UKRAINE AND THE IMF

Abstract

The article considers the chronology of cooperation between Ukraine and the International Monetary Fund (IMF). The significance and role of loans of this institution in the conditions of economic and social reforms are revealed. The effectiveness of Ukraine's interaction with the IMF is assessed and the corresponding risks are investigated; the rationality and necessity of cooperation between Ukraine and the IMF have been proved. Emphasis is placed on the fact that the relations between Ukraine and the IMF must move away from the position of a «passive partner». A systematic analysis of the advantages and disadvantages of such a cooperation is conducted. It is proved that there is a need to develop

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effective and efficient reform measures that would address a range of economic and social issues that should be seen as today's challenges. Recommendations aimed at improving the effectiveness of cooperation between Ukraine and the IMF are proposed. Among them are: (a) use of financial and credit resources for the development of the country's economy through internal transformations; (b) debt burden optimization; (c) creation of favourable conditions for doing business; and (d) creation of a positive image of a solvent country.

Key Words:

cooperation between Ukraine and the IMF; state debt; dynamics of financing and lending to the economy of Ukraine; effectiveness of cooperation; gold and foreign exchange reserves; national economic security; advantages, threats and risks of cooperation between Ukraine and the IMF.

JEL: F33, F34, F52, F53, H63.

6 figures, 1 table, 21 references.

Problem Statement and Literature Review

Relevance of research. Globalization of the world economy requires further improvement in methods of market regulation for national economic systems, including through the use of mechanisms and tools that are supranational in nature. In this context, it should be emphasized that the problem of determining the adequate political role and political functions of the most important and influential international economic and financial organizations, including the International Monetary Fund (hereinafter – the IMF), is particularly acute.

That is why an in-depth analysis of the effectiveness of Ukraine's interaction with the IMF, lending conditions and priorities for the development of this interaction in both the near and strategic perspectives is a scientific problem that is extremely relevant and needs further in-depth study.

Prospects for further research in this area are to develop methodological frameworks for quantifying the benefits and risks of further cooperation of Ukraine with the International Monetary Fund, which will simulate different scenarios of economic behaviour in the global economic environment in general and in particular in cooperation with international financial organizations.

Ukraine has been a member of the IMF since 1994. However, Ukrainian economists and scholars are discussing the ambiguous impact of lending on Ukraine's economic development and deepening cooperation in the future. Contradictions in research are caused by the conditions for providing transactions to Ukraine, as a result of which the consequences that are reflected as strategic priorities in the Memoranda of Interaction between Ukraine and the IMF are not achieved.

Analysis of recent research and publications. Many publications of Ukrainian scientists are devoted to the analysis of cooperation between Ukraine and the IMF, namely: S. Borynets, D. Brukhnova, K. Gladchuk, O. Dzyublyuk, O. Ivanytska, V. Kornienko, M. Kulbidy, I. Mantsurov, O. Rudchenko, Zh. Nesterenko, A. Oliynyk, E. Panchenko, D. Polagnina, N. Reznikova, N. Stukalo, I. Filatova, L. Khominicha, O. Khnikina, V. Shinkar and foreign scientists: R. Stone, L. Erhard, L. Baltserovich, J. Williamson, R. Mandela, A. Zidenberg, T. Killik and others.

Extensive monographs and scientific articles published by these scientists are devoted to various aspects of the International Monetary Fund and its interaction with national institutions of different countries.

For example, in the scientific works of Nesterenko and Shelemeh (2015) is particularly concluded: «...further cooperation of Ukraine with the International Monetary Fund should be based on deep structural reforms, as well as to improve internal and external stability, reduce the devaluation of the hryvnia, cover the budget deficit.»

Last year, under the scientific edition of Professors Igor G. Mantsurov and Alexander Yu. Rudchenko was published a monograph *Management of State Property: Methodological and Analytical Support*, in which, in particular, the authors argue that IMF loans, including, should be attracted for the development on a fundamentally new basis of such state property, the effective functioning of which can significantly increase the growth rate of the national economy (Mantsurov & Rudchenko, 2021).

American researcher Randall Stone in his monograph *The Scope of IMF Conditionality: How Autonomous is the Fund?* (2008) proves that international organizations, including the IMF, are governed by two parallel sets of rules: formal rules, which implement consensus procedures, and informal rules, which provide exclusive access to powerful countries. The new data set, according to R. Stone, obtained from the IMF's records of conditions, provides an opportunity

to study the negotiation process in an important international organization and answer questions about the autonomy of this institution (Stone, 2008).

Many publications of other scientists, both Ukrainian and foreign are devoted to the history of relationships, results and prospects of development; monitoring of cooperation; experience and strategic guidelines of cooperation; analytical assessment of credit relations; the role of credit rating agencies; the impact of tranches; strategic guidelines for cooperation; formation of the national monetary system, etc. (Panchenko & Reznikova, 2014; Shynkar et al., 2016; Gianviti, 2003; Stubbs et al., 2020; Kickert & Ongaro, 2019; International Monetary Fund, n.d.; 2019; The World Bank, n.d.; Sturm et al., 2005; Ukraine, 1998; Vaubel, 1996; Von Stein, 2005; Vreeland, 2003).

However, despite the large number of valuable scientific papers on of cooperation between Ukraine and the IMF, the question of further research and analysis and forecasting of events in order to determine the most rational ways to develop our country's cooperation with the IMF is obvious.

Thus, in particular, the analysis of the effectiveness of Ukraine's interaction with the IMF and the problems of identifying ways to stabilize and stimulate economic growth as a result of deepening Ukraine's relations with the IMF is given insufficient attention.

Research methodology. According to the scientific position of the authors, the methodology of scientific knowledge expresses not only a certain sequence of solving a specific scientific and practical problem, a set of rules and procedures for using the methods used, but also has to take into account other features, namely – to determine the purpose and objectives of research and subject, period of validity; user names; goal; level of use (enterprise, industry, region, national economy); the body that approved the methodology.

The aim of the study is to determine the level of effectiveness of Ukraine's cooperation with the IMF and areas for improvement.

To achieve this goal, the authors have formulated the following scientific objectives:

- define the nature and role of the IMF as a global financial institution;
- to study the development of scientific thought on the functioning of the IMF;
- study the history and analyse the effectiveness of cooperation between Ukraine and the IMF;
- to determine the prospects of the IMF in Ukraine.

The object of the study is the of cooperation between Ukraine and the IMF in the process of further development of the economy, and its subject is the

effectiveness of cooperation between Ukraine and the IMF, which aims to form a new model of economic development, the operation of which should ensure high and stable economic growth.

Research methods. Research methods based on general scientific and fundamental provisions of economic theory, macroeconomics, financial and budgetary management, macroeconomic, financial and banking statistics, etc. The subject of research and specific research tasks led to the use of both general and special methods of cognition, including systems analysis, generalization and systematization, dialectical, historical-logical analysis and synthesis, study of dynamics, variations and relationships, economic forecasting and more.

Information base of the research there are laws of Ukraine, resolutions of the Verkhovna Rada of Ukraine and the Cabinet of Ministers of Ukraine, official publications and methodological materials of the National Bank of Ukraine, the State Statistics Service, international organizations, including the IMF, scientific works of domestic and foreign scientists, own calculations.

Research Results

The International Monetary Fund is a specialized agency of the United Nations, which has a fairly broad autonomy. The IMF was established in 1945 to promote monetary cooperation and trade, which should ensure financial growth and increase employment. The number of IMF member countries is equal a 189. Strategic and operational management of the Fund is carried out by the Board of Directors (Brukhnov & Kornienko, 2020).

To improve the socio-economic development of the country, the IMF should play a particularly important role in overcoming the effects of the global economic crisis, which should be carried out, including in the development and implementation of unified principles of financial regulation (National Bank of Ukraine, 2020). Aiming to: a) strengthen supervision of the financial sector, develop new methods of regulation and adequate assessment of systemic risks; b) development of new instruments of anti-crisis policy and implementation of full-scale «crisis financing»; c) focusing on the development of long-term measures to strengthen the international monetary system in ensuring the stability of world financial reserves (National Bank of Ukraine, 2020).

Thus, it can be argued that the reorientation of the activities of international financial organizations, whose attention is paid to risk assessment within national economies, is very important now. In this context, the IMF monitors global financial flows to create an appropriate legal framework for its use by key players in the global economy in developing measures for their economic policies.

Considerable attention should be paid to the interaction of international institutions and national governments in the direction of formation and implementation of successful regulation of domestic capital movements, and then this will lead to its high efficiency at the international level.

Another role of the IMF, according to the authors, is to monitor foreign exchange. Thus, since 2016, the IMF has strengthened supervision to improve the monetary policy of member countries on:

- development of reporting standards with relevant indicators of the state of the economy;
- transfer of supervision of economic policy on a permanent basis;
- increasing attention to countries that affect regional and global economies (International Monetary Fund, n.d.).

One of the main roles of the IMF belongs to the credit and financial sphere. The Fund provides loans to Member States for (Shynkar et al., 2016):

- overcoming balance of payments problems;
- assistance in stabilizing the economy;
- restoration of sustainable economic growth.

The IMF also plays an important role in the technical sphere. This line of activity assists the member countries of the Fund in their implementation (Shynkar et al., 2016):

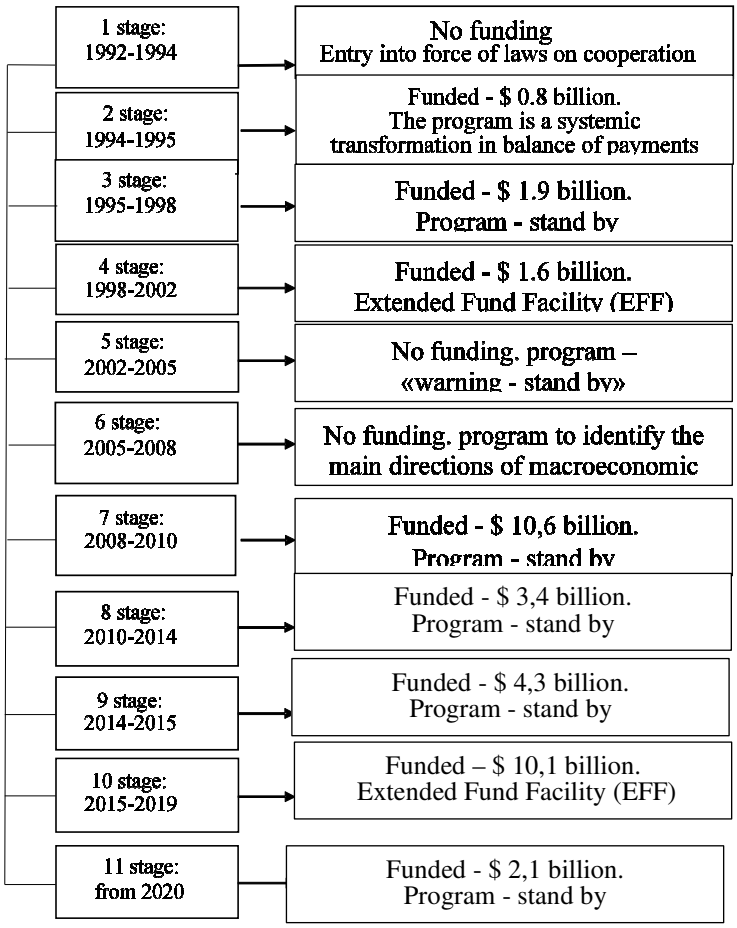
- monetary, budgetary and tax policies;
- banking activities;
- ordering statistics;
- development of financial and economic legislation;
- training for the implementation of financial and economic reforms.

With this in mind, the authors systematically substantiate the view that the role of the IMF, as a global financial institution, is to assist member states in overcoming the effects of the crisis. It is this role that helps member countries that have problems in these areas to improve their performance, which will lead to economic growth in the future (Vreeland, 2006).

The history of cooperation between Ukraine and the IMF is characterized by Fig. 1.

Figure 1

Stages of cooperation between Ukraine and the IMF



Source: created by the authors based on Nesterenko & Kornienko (2020).

Implementation of the penultimate program, Stage 10, began in 2015 with changes in legislation related to energy, banks, rehabilitation of public finances, reforms for state-owned enterprises, and the fight against corruption. Such measures were taken, so the IMF provided Ukraine with two tranches of $6.7 billion. USA, which was aimed at overcoming budget problems and restoring the country's gold and foreign exchange reserves.

In 2016, there was a slowdown in reforms in public administration and the fight against corruption, reducing the impact of personal interests in politics. The IMF then demanded the adoption of 19 bills (International Monetary Fund, n.d.).

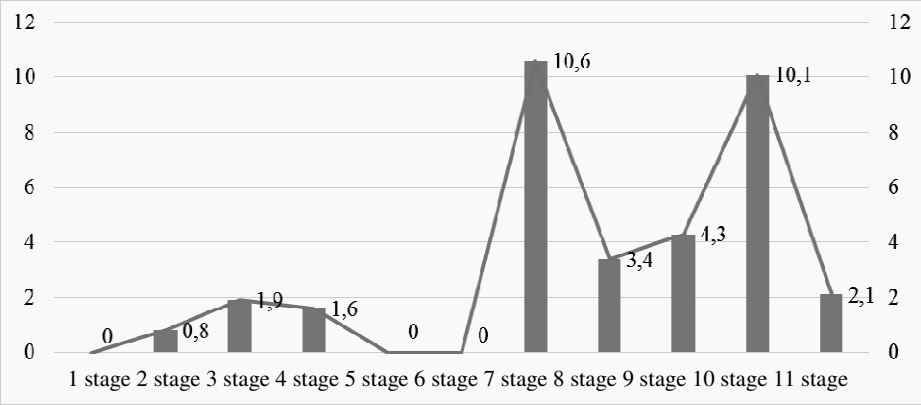
In that year, a transaction of $1 billion was provided in order to renew the reserves of the National Bank of Ukraine.

In 2017, the program was reviewed and the fourth tranche of $1 billion was allocated. which is also aimed at replenishing the reserves of the National Bank of Ukraine. In 2018, the program provided a tranche of $1.4 billion. USA.

The new program of the 11th stage of Ukraine's cooperation with the IMF was approved in 2020 to maintain financial stability and macroeconomic balance, in connection with the consequences of the COVID-19 pandemic.

Figure 2

Dynamics of Ukraine's financing under IMF programs during 1992-2020, billion dollars USA



Source: created by the authors based on International Monetary Fund (2019).

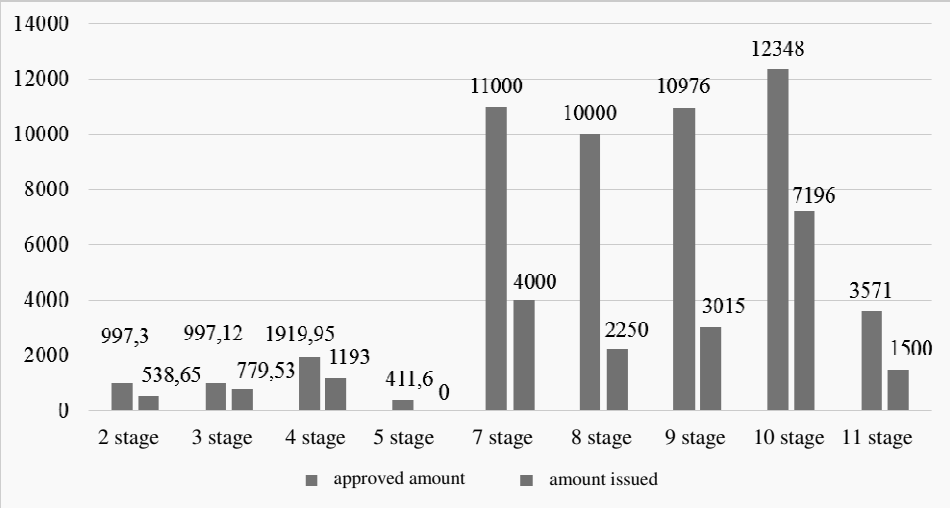
Analysing Fig. 2, it can be concluded that the growth of funding during the 8-10 stages of cooperation between Ukraine and the IMF, i.e., in 2010-2019. The largest tranche from the IMF is observed in Stage 7 (2008-2010), which was caused by the global financial crisis.

It should be emphasized that Ukraine's cooperation with the IMF today leads to an increase in the country's external debt. It should also be noted that each adopted program was discussed in detail, considered at the Government level and, accordingly, the necessary amounts of tranches were approved. However, none of the accepted loan amounts were fully financed by the IMF.

Figure 3 analyses the volume of IMF lending, which was approved and issued during the entire period of cooperation between Ukraine and the IMF.

Figure 3

Dynamics of lending to Ukraine under IMF programs during 1992-2020, million SDRs



Source: created by the authors based on National Bank of Ukraine (n.d.).

According to the results of the analysis of fig. 3 it should be concluded that the amounts approved and paid – under IMF programs – were smaller, i.e., not paid in full, due to non-compliance with the terms of the programs, or changes in the vectors of economic development. Thus, at the 2nd stage the amount paid was less than the approved amount by 46.0%, at the 3rd stage – by 21.8%, at the 4th stage – 37.9%, at the 5th stage – by 100%, at the 7th stage – by 63.6%, at the 8th stage – by 77.5%, at the 9th stage – by 72.5%, at the 10th stage – by 41.7%, at the 11th stage – by 56.0%. That is, the highest percentage of imple-

mentation of the IMF program to finance disbursed funds was observed in the 3rd stage (1995-1998).

Despite some positive results of cooperation between Ukraine and the IMF, the authors would like to draw attention to a number of shortcomings that form a set of negative consequences, primarily for effective social policy.

This is due to the IMF's conditions for receiving the tranche. Such conditions require (International Monetary Fund, n.d.):

- increase the retirement age for citizens of Ukraine;
- increase the price of gas for the population;
- reduce the number of benefits for the population, etc.

It is worth noting some of the most negative factors that exist in cooperation between Ukraine and the IMF:

1. growth of Ukraine's external debt. Compared to 2014, the external debt of our state has increased 4 times. Ukraine's negative image is created by its low solvency, it must be carefully studied and ways to overcome;

2. reform of the pension system and a significant increase in the cost of utility bills. This factor leads to an increase in poverty, especially for the vulnerable.

Ukraine takes out new loans in large sums to repay its debt to the IMF. This has a negative impact on economic growth. In fact, the state's economy is not developing and it is impossible to carry out structural reforms in the short term. The state's balance of payments is balanced by tranches from the IMF, and economic growth is known to be achieved through a positive foreign trade balance and efficient domestic production.

We consider it necessary, to confirm the negative aspects of cooperation between Ukraine and the IMF, to analyse the dynamics of Ukraine's external debt and gold and foreign exchange reserves over the past 10 years, when the largest amounts of tranches were received from the IMF. The results of the analysis are shown in table. 1.

According to the results of Table. 1 it should be concluded that the external public debt increased during 2013-2018, and gold and foreign exchange reserves decreased significantly. A particularly significant decline in Ukraine's gold and foreign exchange reserves occurred in 2014 to $ 7,533 million. USA. The ratio of Ukraine's gold and foreign exchange reserves to external public debt was 19.4%. During the same period, the IMF provided $ 4.4 billion. USA. That is, we see that IMF lending to Ukraine reduces its gold and foreign exchange reserves and increases external public debt.

Table 1

Dynamics of Ukraine's external public debt and gold and foreign exchange reserves in 2009-2019

Years	External public debt, million dollars USA	Gold and foreign exchange reserves, million dollars USA	The ratio of gold and foreign exchange reserves and Ukraine's external public debt
2009	26519	26505	99.9
2010	34760	34576	99.5
2011	37475	31795	84.8
2012	38659	24546	63.5
2013	37536	20416	54.4
2014	38792	7533	19.4
2015	43445	13300	30.6
2016	45605	15539	34.1
2017	48989	18808	38.4
2018	50462	20820	41.3
2019	48941	25302	51.7
2020	53721	29 133	54.2
09/31/2021	54489	28 705	52.7

Source: created by the authors based on International Monetary Fund, 2019).

According to the IMF, public debt management is the process of formulating and implementing public debt management strategies to determine the need to attract the necessary funding to keep spending to a minimum with long-term service while minimizing debt risk (International Monetary Fund, n.d.).

The Cabinet of Ministers of Ukraine represents the interests of the state in the direction of placing state loans and providing guarantees on loans. A special place in the field of public debt management is given to the Ministry of Finance of Ukraine, namely – the Department of Public Debt Management. This department has several structural units that carry out activities for planning and preparation of credit projects, analysis, accounting and servicing of public debt.

In general, public debt is managed jointly by the Ministry of Finance of Ukraine and the National Bank of Ukraine, which consists of:

- refinancing of public debt – repayment of the basic body of debt, as well as interest received from the placement of new debt obligations of the state in both domestic and foreign financial markets;

- innovations – providing for the conclusion of agreements between the borrower and the lender when replacing some debts with others;
- unification – the decision of the state in the merger of several issued loans and the exchange of previously issued bonds and their certificates, certificates of new loans;
- conversions – changes in the initial conditions of government loans and their level of profitability;
- consolidation – anticipation of changes in loan terms with increasing debt;
- deferral of loan repayment – using the method of consolidation while the state refuses to pay income from these debt obligations;
- cancellation of public debt – anticipation of the state's waiver of previously assumed debt obligations;
- restructuring – revision of the terms of debt service (interest on the loan, loan amount, repayment period, debt write-off);
- securitization – the exchange of debt for bonds; exchange of bonds in accordance with regressive ratios (previously issued bonds, which equate to one new one);
- early repayment – providing savings in budget funds with the need for their future maintenance.

Thus, the greatest influence in Ukraine's cooperation with the International Monetary Fund is determined by the Cabinet of Ministers of Ukraine, the Ministry of Finance of Ukraine and the National Bank of Ukraine (Vaubel, 1996).

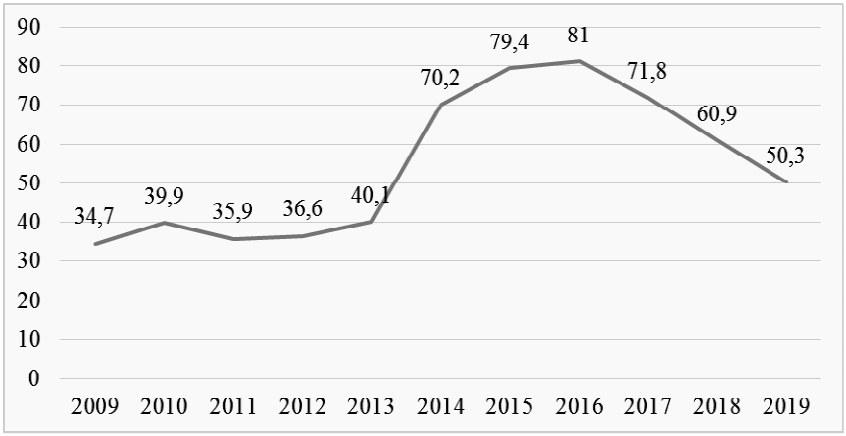
Ukraine's budgetary capacity depends significantly on the regulation of the debt problem, the stability of the national currency and the financial support of international financial institutions. The emergence of problems in the field of public finance is a significant risk factor in the growth of payments for servicing and repayment of public debt. The trend of excessive debt growth is a challenge of recent years for Ukraine. The authors calculated the debt burden of Ukraine to GDP (Fig. 4).

If in 2009 the level of debt burden was 34.7% of GDP, in 2019 it exceeded this threshold and amounted to 50.3%. In general, the dynamics of the debt burden on GDP shows that from 2013 to 2016 this figure increased significantly, it was during this period that most loans were taken from the IMF.

In general, according to the Maastricht criteria, the amount of gross external debt should not exceed 60% of GDP, i.e., in 2019 Ukraine met this condition. In fact, the amount of Ukraine's external public debt during 2014-2018 significantly exceeded the established threshold levels (60%).

Figure 4

Dynamics of Ukraine's debt burden to GDP in 2009-2019, %



Source: created by the authors based on International Monetary Fund (2019).

Thus, the dangerous trend of the budget system in recent years has shown an increase in the general trend the amount of external public debt in foreign currency, which significantly exceeds the budget deficit and increases budget expenditures in financing its maintenance and repayment.

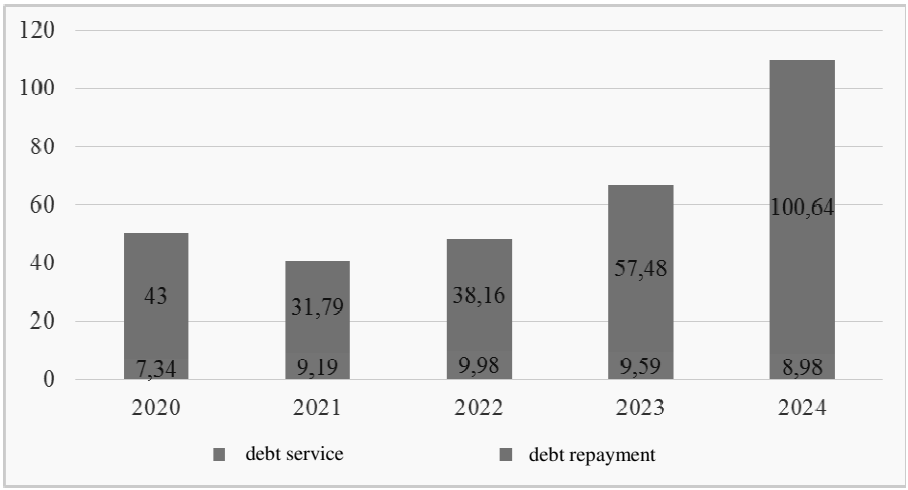
It is worth noting that Ukraine's debt to the IMF will increase in the coming years in terms of their service, so this may lead to risks of balancing the budget fund and reduce funding for other government functions.

The authors forecast the return and servicing of Ukraine's public debt during 2020-2024. The results of the forecast on debt repayment and payments for its servicing are shown in Fig. 5.

According to the results of this forecast, it is expected that in 2020-2024 Ukraine will pay the IMF debt in the amount of UAH 271.07 billion and debt service in the amount of UAH 45.08 billion. That is, IMF debt service is 16.6% of the amount of debt repayment. As you can see, in 2020 Ukraine planned to repay UAH 43 billion and UAH 7.34 billion for debt service, in 2021 – UAH 31.79 and 9.19 billion, respectively, compared to the following years, in 2022 it intends to return 38, UAH 16 and 9.98 billion, respectively, in 2023 – UAH 57.48 and 9.59 billion, respectively, in 2024 – UAH 100.64 and 8.98 billion, respectively. That is, during the analysed period there will be an increase in debt repayment to the IMF (Panchenko & Reznikova, 2014).

Figure 5

Forecast of IMF debt repayment and interest on its servicing in 2020-2024, UAH billion



Source: created by the authors based on National Bank of Ukraine (n.d.).

It is worth focusing on the main factors that have led to the growth of the debt burden in recent years in Ukraine, which include:

- devaluation of the hryvnia, which led to an increase not only in public debt in the national currency, as well as the cost of its maintenance;
- rapid decline in real GDP;
- decline in consumer demand of the population of Ukraine due to significant inflation.

It should be noted that the degree of IMF influence on economic growth depends primarily on the severity of the fiscal and, consequently, economic crisis in the country. Different degrees of these crises require different management tools.

When the fiscal situation exceeds certain limits, the excessive deficit procedure becomes effective. The IMF intervenes not only in fiscal and economic affairs, but also «recommends» public sector reforms, such as the labour market, pensions, and so on.

When the country's economic and fiscal situation deteriorates so much that international financial markets begin to lose confidence in the country's cred-

itworthiness (credit rating agencies) and bond interest rates rise to alarming heights, the IMF can intervene by buying underdeveloped bonds. disappearance, thereby calming the markets. In exchange for such financial support, the IMF provides recommendations on fiscal issues and reforms.

When the economic and fiscal situation becomes so unsustainable that a country loses its creditworthiness and fails to meet its public debt obligations, the IMF can be asked to provide a temporary loan (financial assistance).

The IMF's financial policy is aimed at reforming the exchange rate regime. Note that as of 2019, only 65 countries have agreed to use a floating exchange rate regime (Kickert & Ongaro, 2019). Most countries believe that it is necessary to adhere to a fixed and intermediate exchange rate regime and act in their own economic interests.

Therefore, in our opinion, it is expedient for the IMF to promote the balance and compliance of the currency markets of the member countries of the market environment with increasing flexibility of exchange rate regimes.

When choosing the currency regime of the country, you need to pay attention to the availability of compromise solutions, taking into account the specifics and specifics of the country's conditions. The modern world monetary system is deepened by the IMF's policy towards institutional regulation of international monetary relations. In accordance with Article IV of the IMF's Articles of Agreement, it oversees the state of the world monetary system and the world financial market. Also, in this article it is determined that the IMF pursues economic and monetary policy of 189 member countries to identify possible risks of internal and external instability and develops on their basis recommendations for stabilizing economic development (Schatan et al., 2019).

It should be noted that the priority of financial policy should be the reform of the IMF's supervisory functions, which are to develop recommendations for the management of international reserves of member countries.

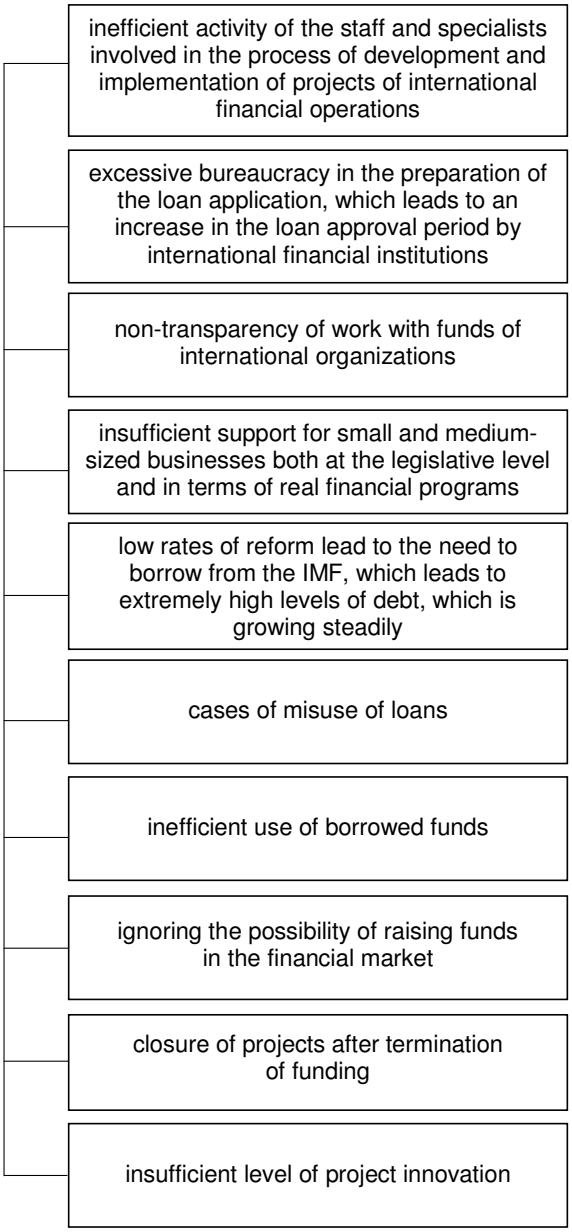
An important direction in improving the IMF's management policy over the supervision of member countries' international reserves is the analysis of management practices and taking into account the negative impact of the global financial and economic crisis. The IMF's recommendations on member countries' national international reserves management should emphasize the importance of risk management systems. This direction determines the importance in stimulating their placement in debt securities of issuing countries and leading world currencies (dollars, euros) (The World Bank, n.d.).

Therefore, the IMF's financial policy should be implemented while expanding the monetary policy of member countries, which includes the subject of supervision and indicators of assessment of the adequacy of international reserves of member countries. A necessary measure is to direct the impact of policy on stabilizing the world monetary system (Sturm et al., 2005).

Risks that could negatively affect Ukraine's economy in its cooperation with the IMF should also be considered. The list of such risks is given by means of Fig. 6.

Figure 6

Risks of cooperation between Ukraine and the IMF



To increase control over the targeted use of funds, eliminate corruption, increase the investment attractiveness and creditworthiness of Ukrainian enterprises, there are various problems on which it is necessary to find ways to solve them (Vaubel, 1996).

In cooperation with the IMF, it is advisable to assess cooperation and analyse the proposed changes, which were confirmed at the conclusion of the agreement. It is necessary to reduce the level of dependence of the Ukrainian financial market on the components of global capital flows.

Maintaining the level of public debt at an economically secure level and assisting in financial and economic reforms to increase the capacity of the financial sector are ongoing. Ukraine needs to develop a prudent fiscal policy that will ensure the stability, stability and balance of the budget system.

Thus, Ukraine's cooperation with the IMF plays an important role in supporting Ukraine's economic reforms, which provides an opportunity to attract financial resources at preferential interest rates. The Ukrainian capital market does not have enough financial resources to meet the financing needs of the state economy. The purpose of IMF assistance should be to implement key projects for the development of the Ukrainian economy, technical assistance, attracting foreign direct investment into Ukraine's economy. IMF financial assistance can increase Ukraine's dependence on its activities, forcing changes in the country's financial policy that affect Ukraine's foreign economic activity and is a negative factor in cooperation.

Conclusions

The article offers a new solution to the scientific problem, the essence of which is to assess the effectiveness of Ukraine's interaction with the IMF and determine the prospects for further cooperation between Ukraine and this international financial organization.

The study conducted in the article allowed to formulate the following conclusions of conceptual, methodological, methodological and applied nature as well as offer systematic recommendations aimed at improving Ukraine's relations with the International Monetary Fund.

Thus, in particular, given that the International Monetary Fund is an important element of both international and national economic security – the issue of improving security in its comprehensive sense should be constantly in the discourse of relations with the IMF.

The authors rightly argue that Ukraine in its relations with the IMF should finally move away from the position of «passive partner» and not follow only the recommendations prepared by experts of this organization, without conducting an in-depth analysis of their advantages and disadvantages and socio-economic consequences.

At the same time, effective reform measures should be proposed for coordination, which would provide for the solution of a complex of economic problems, including: a) financial and macroeconomic stabilization (formal goals of the IMF); b) providing prospects for economic growth (government program goals); c) guaranteeing the economic security of Ukraine (constitutional obligation of the President and other central bodies of state power).

This, of course, requires a coordinated development of relations with the IMF and the formation of a fundamentally new institutional mechanism for organizing and conducting negotiations with the Fund, their examination, discussion and ratification.

The article proves that according to the conceptual principles of this mechanism, there should be a transition from narrow-minded (when negotiations are the sole responsibility of the Ministry of Finance and the National Bank) to a national approach (when the Ministry of Foreign Affairs will take an active part in negotiations, especially in their preparation). parliamentarians, the Intelligence Committee, etc.). And the strategy of relations with the IMF and the directive to negotiate the content of the relevant Memorandum will be approved at a meeting of the National Security and Defence Council. The Memorandum of Cooperation with the IMF, as well as other international agreements, will be considered by the Verkhovna Rada of Ukraine and ratified at its plenary sessions.

Thus, improving Ukraine's cooperation with the International Monetary Fund should take place in the context of using financial and credit resources to build the country's economy through internal transformation, optimize the debt burden, create favourable conditions for doing business and create a positive image of a solvent country.

According to the results of the analysis conducted in the article, the following main directions of improvement and cooperation between the IMF and Ukraine are conceptually outlined:

- improving the efficiency of the IMF's credit potential through targeted use of borrowed financial resources;
- introduction of an open system of reporting to citizens on the use of funds received from the IMF, i.e., ensuring transparency and transparency in the use of significant amounts of funds;
- initiating more systematic protection of own development program and cooperation strategy within the cooperation program when signing lending programs, which will allow reaching a consensus through approval of key lending conditions through dialogue between representatives of the IMF and Ukraine;
- exercising control over the volume and efficiency of the use of borrowed resources, preventing the growth of excessive debt burden, control over the structure and volume of debt;

- achieving a positive impact of credit resources on economic development through more balanced public debt management;
- application of a systematic approach in assessing the factors of influence, diversification of state risks through the introduction of co-financing mechanisms for investment projects and increase control and efficiency of state debt policy.

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Financial and Banking Services Market

Viktor KOZIUK

DRIVERS OF GOLD FRACTION IN GLOBAL EXCHANGE RESERVES

Abstract

Over the last 20 years, central banks have exhibited both declining demand for gold and tendency to substantially expand gold holdings. At the same time, the aggregate share of gold in global exchange reserves remains considerably volatile. Growing political and military instability in the world is a strong argument in favour of central banks' renewed interest in gold holdings. This is confirmed by the actions that some states take. However, on the aggregate level, the positive relationship between geopolitical risks and rising share of gold in exchange reserves is not evident. The same is true for the diversification towards gold from the viewpoint of large exchange reserves hoarding. The uncertainty factor and the benefit of holding / opportunity costs factor play a key role in determining the aggregate share of gold in global exchange reserves. Moreover, gold prices, provided their trend is predictable, better explain the growing share of gold in the exchange reserves than interest rates on the US market. This is due to the growing complexity of the global monetary conditions, which are sensitive to historical context and expectations when it comes to the choice of reserve assets.

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gold; exchange reserves; central banks; geopolitical risks; diversification of reserves; global monetary conditions.

JEL: E58, E59, O23, Q33.

2 figures, 2 tables, 22 references.

Introduction

Foreign exchange reserves continue to be the focus of many studies. Moscow's war against Ukraine has only highlighted the question of the role that external central bank assets play in ensuring geopolitical stability. No less important is the role gold plays in the management of foreign exchange reserves in cases where certain countries take into account the risks of geopolitical confrontations. Special interest in gold is naturally caused by its features as a reserve asset:

1. the precious metal is not someone's liability, meaning it is not subject to sovereign solvency risk;

2. gold does not depend on the behaviour of the issuer of reserve assets, and therefore cannot be subject to restrictions;

3. gold embodies value substantially (intrinsic value).

It is this specific feature of this reserve asset that often encourages the view of gold as a safe asset, which allows you to hedge the so-called tail risks, or, in other words, the risks of unexpected and hard-to-predict events. Of course, global financial shocks and geopolitical conflicts fall under this definition. There is an additional geopolitical argument in favour of gold: the geopolitical ambitions of countries encourage them to go beyond the traditional bounds of reserve assets dominated by bonds denominated in hard currencies. The geopolitical status of

the country can be considered a motive in the management of exchange reserves.

However, the role of geopolitical factors in the management of exchange reserves is often debated with strong counter-arguments. It is based on the economic criteria of optimal management of reserves, which, in turn, are the practical result of the adoption of portfolio approach to the management of external assets by the central banks. In particular, gold prices are volatile, physical storage of the precious metal in significant volumes is an expensive indulgence, opportunity costs of holding it are significant, and fiscal revaluation losses can be substantial. Accordingly, despite a certain set of advantages to holding gold, there are also drawbacks. This means that the impact of geopolitical factors on the aggregate changes in the share of gold in reserves of central banks may not correspond to the specific portfolio decisions of individual countries, going beyond the dominance of portfolio arguments regarding the optimal share of gold in reserves. In light of this, an empirical analysis of competing hypotheses (geopolitical factors, uncertainty, opportunity costs of holding or diversification motives for larger reserves) is also relevant regarding the extent to which a reorientation in favour of gold is justified if a country is limited in its ability to convert it into currency. This article shows that geopolitical factors are clearly overstated, and instead economic motives may be variable, and the diversification of larger reserves does not necessarily apply to gold.

Literature Review

There are several distinct directions in the economic literature that present significantly different starting hypotheses regarding the role of gold in the management of exchange reserves. Among them is the approach close to international political economy, which emphasises that the choice of reserve assets is determined by geopolitical or historical factors, and not exclusively economic ones. Another approach states that gold plays a special role in reserve management due to the specific behaviour of its prices, and so portfolio optimization entails special treatment for the metal. Yet another approach emphasizes the conflict between diversifying reserves in favour of gold and maintaining liquidity of reserves for reasons of external vulnerability. The growing need to diversify reserves as they continue to accumulate, however, may not contradict the motivation to maintain more liquid reserves in case of an external shock. As a result, gold cannot preclude the choice in favour of a more complex balance of foreign assets.

Conventionally, the geopolitical approach abounds with firm convictions that gold is a special central bank asset. The article of Aizenman and Inoue (2012) emphasizes that an imperial past as a motive to maintain geopolitical

grandeur translates into higher volumes of demand for gold. In other words, imperial narcissism manifests itself in flaunting the ability to make sub-optimal decisions regarding the accumulation of gold due to perceptions of geopolitical freedom of manoeuvre (Koziuk, 2022). The selection of reserve assets for reasons of geopolitical orientation and bilateral relations is also presented in the article by Eichengreen et al. (2019). Direct warnings about the prevailing role of geopolitical motives are presented in the work of Bahrami Moghadam and Baghernia (2020). The historical role of the demand for gold as part of the reserves also depends on the economic power of the countries, in particular due to the significant volumes of exports (Aizenman & Inoue, 2012; Barros, 2020; Oktay et al., 2016). A survey of gold reserve managers also showed that geopolitical motives are important to a third of central banks (Carver & Pringle, 2020).

Nevertheless, there is a problem of correctly interpreting the geopolitical approach. On the one hand, geopolitical motives may be related to the very nature of gold as an asset, as not being a liability, it makes those who own it independent from the issuer of the reserve assets (Bahrami Moghadam & Baghernia, 2020). On the other hand, geopolitical risks are often seen as drivers of behavior on the financial markets, in particular for gold prices; therefore, the demand for gold reflects its ability to perform the role of a safe asset. Numerous articles show that the price of gold and the demand for it on the part of central banks correspond to the motives of improving the stability of the reserves value by investing in safe assets (Baur & McDermott, 2010; Roboredo, 2013; O'Connor et al., 2015; Baur & Lucey, 2010; Beckmann et al., 2015).

The «safe haven» approach seems quite universal, as it allows for the translation of a geopolitical shock into the language of portfolio analysis, and at the same time demonstrates that the demand for gold stabilizes the portfolio in the case of an inverse correlation with other financial instruments (Baur & McDermott, 2010; Roboredo, 2013; O'Connor et al., 2015; Baur & Lucey, 2010; Beckmann et al., 2015; Emmrich & McGroarty, 2013). This has the potential to increase demand for gold and opens up opportunities for central banks to improve the structure of their reserves in the same way that institutional investors do (Emmrich & McGroarty, 2013). In other words, if gold prices are inversely correlated with the yield of bonds (hedging the risk of a decrease in the yield of financial assets), stocks (hedging the risk of collapses in financial markets), the dollar rate and inflation in the United States (hedging inflation risks), then the inclusion of the precious metal in the portfolio improves its stability. However, there is no convincing evidence as to what exactly constitutes the optimal share of gold in central bank reserves (Zulaica, 2020). The portfolio-based approach and the value-at-risk approach give different results (Baur & McDermott, 2010; Roboredo, 2013; Zulaica, 2020). Surveys show that most managers believe the optimal share of gold should not exceed 25% (Carver & Pringle, 2020), while a higher share of gold may meet the narrow specific objectives of a portfolio approach (Zulaica, 2020). At the same time, sensitivity to the selected periods for analysis

shows the extent to which gold is a safe asset. For example, an article by Mokni et al (2022) suggests that the Covid crisis is a good indication that gold has not behaved like a safe asset.

The latter does not mean that, for example, non-economic motives for holding a larger amount of gold cannot be justified based on the characteristics of the portfolio approach. The risk of fiscal losses may also play a role. Significant fiscal losses from holding a suboptimal share of gold in reserves can be acceptable for either a central bank with a lower level of independence, or a central bank directly subordinated to the dominant ideology. That is, if there is a relationship between the amount of reserve holdings and political regimes, as well as between political regimes and the status of central banks (Koziuk, 2021a), then the political regime that potentially generates riskier geopolitical behaviour may require larger amounts of gold reserves (Koziuk, 2022). However, this is no guarantee that, on a collective level, all central banks behave in this way, merely means that economic motives probably dominate in the management of exchange reserves.

A long period of growth in the volume of exchange reserves affected the established beliefs that larger volumes should be more diversified (Beck & Weber, 2010). However, the question of whether diversification should be aimed at increasing the share of gold remains open. On the one hand, gold is mostly passively managed (Aizenman & Inoue, 2012; Aizenman & Marion, 2003). On the other hand, central banks use specific approaches of gold valuation to reduce the impact of revaluation on financial results (Aizenman & Inoue, 2012). Given the volatility of gold prices, it can be assumed that diversification towards gold is not imperative. We can only assume that there is a probability of a certain autonomous increase in the demand for gold to the extent of the increase in reserves (Aizenman & Marion, 2003). But this is not quite an imperative to increase the share of gold in the structure of reserves. Indeed, geopolitical motives can be clearly traced on the example of some countries such as Russia or Turkey (Koziuk, 2022). For India, internal motives for increasing the share of gold are also possible (Ghosh, 2016). The demand for gold is also considered from the standpoint of the optimal share of liquid reserves (Barros, 2020; Gopalakrishnan & Mohapatra, 2017). At the same time, a shift towards holding larger shares of gold than the world average was found for commodity economies (Koziuk, 2021c).

In terms of choosing liquidity versus profitability, the results of empirical tests are also ambiguous. It could be assumed that if the country is more vulnerable to external shocks, it will choose in favour of a smaller share of gold. However, Gopalakrishnan and Mohapatra (2017) show that the demand for gold is strongly driven by the global risk factor expressed by the VIX index, and the external vulnerability of countries encourages higher demand for gold. On the other hand, the paper by Teresa Barros (2020) shows that management of gold is not homogeneous. Central banks from developed countries do not respond to

macro-financial factors. For them, the scale of the economy, the volume of exports and the historical experience of holding gold reserves are more important. Central banks of countries with emerging markets behave differently and take into account opportunity costs. In other words, they take into account the trends in inflation, changes in exchange rates, interest rates, as well as the likelihood of sanctions (Barros, 2020).

At the same time, the analysis of gold reserves is often carried out either in terms of tons (Aizenman & Inoue, 2012; Barros, 2020; Oktay et al., 2016) or specific groups of countries (Aizenman & Inoue, 2012; Oktay et al., 2016). Also, geopolitical motives may be important for some countries (Koziuk, 2022; Barros, 2020), but not for others. This makes it difficult to understand how aggregate demand for gold is behaving and whether there is a shift in favour of larger gold holdings in central bank reserves overall.

In order to avoid a discussion about how to correctly determine the geopolitical orientation of an individual country and its propensity for certain decisions, this article analyses the aggregate behaviour of the gold share in central bank reserves for 2000-2020. At the same time, the paper tests the assumption that such a share can be determined by geopolitical factors, macro-financial factors (including the prices of gold itself, which determine the opportunity costs), or factors motived by reserve diversification. That said, geopolitical motives do not appear relevant with the exception of some countries (Koziuk, 2022) and such factors do not accurately explain the behaviour of gold prices (Koziuk, 2021b). Therefore, the starting hypothesis is that economic motives play a more decisive role in the choice regarding the share of gold in external assets of central banks.

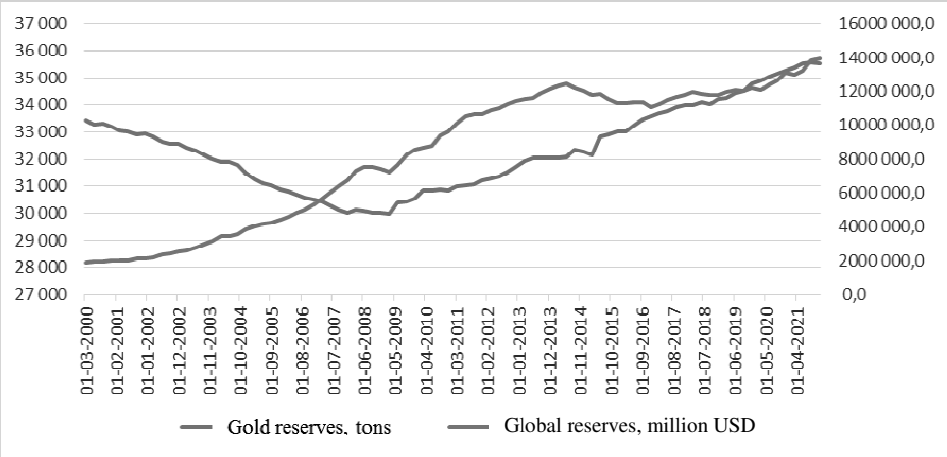
Empirical Analysis: Is Geopolitics Overrated?

Over the past 20 years, the exchange reserves have been on the rise (Fig. 1.). After 2014, the rate of accumulation of external assets by central banks slowed down somewhat. Regardless, the long-term growth trend of global exchange reserves is upward. However, during this period, the behaviour of reserves in gold was not nearly as unidirectional.

Thus, the accumulation of gold reserves had a clear downward trend for almost ten years, and only since 2009 has the trend reversed (Fig. 2.). By the end of 2021, the gold holdings of central banks exceeded the corresponding indicators from the end of 2000, and over the past 10 years, such reserves have grown significantly (Fig. 2.).

Figure 1

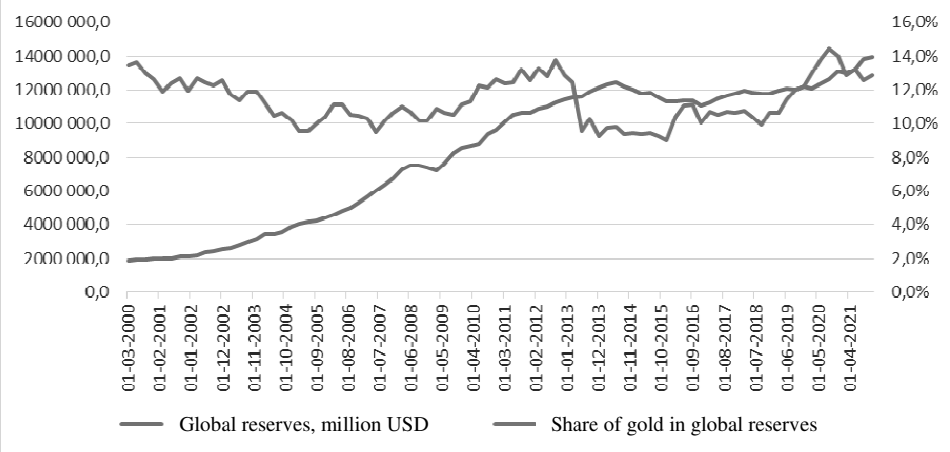
Global exchange reserves in gold and in US dollars



Source: created by the author using the data of World Gold Council.

Figure 2

Global exchange reserves and the share of gold



Source: created by the author using the data of World Gold Council.

Such a sharp break in the trend is difficult to explain solely by the hypothesis that diversification of large reserves prompts an increase in gold holdings. As shown in fig. 2, the share of gold in the central bank's external assets is quite volatile. At the same time, the value of such a share at the end of 2021 returned to the level of 2000, having experienced several breaks in the trend. Comparison of the data from figures 1 and 2 proves that the trends in gold holdings in tons and as a share of reserves do not coincide. It is obvious that the choices regarding gold by a single central bank can be significantly different from such choices by the vast majority of monetary authorities. That is, it can be assumed that the choice in favour of the precious metal is under the influence of more complex factors.

Naturally, the assumption about the geopolitical conditioning of the incentives to increase gold holdings is a traditional argument, given that the number of conflicts in the world has increased significantly since 2014. At the same time, we should not reject alternative hypotheses, if only because the last decade has seen extremely special global macro-financial conditions. They are characterized by both a sharp increase in the level of uncertainty and a significant easing of monetary restrictions in developed countries in response to deflationary risks, slowing growth and Covid-19 stress. Meanwhile, since 2020, the growth of exchange reserves has resumed. In other words, potentially most of the factors that can explain the growing interest of central banks in favour of gold have occurred in recent times. At the same time, increasing demand for gold does not always equate to diversification in favour of gold. For example, provided an increase in reserve holdings and an asset allocation policy that involves a certain share of gold, the demand for gold will increase automatically. Whereas the superiority of gold over other reserve assets must be based on some additional arguments that would have a relatively medium-term effect. Otherwise, a change in market conditions may increase the opportunity costs of holding the chosen asset.

Factors that influence the share of gold in reserves can be roughly divided into:

- geopolitical;
- uncertainty (because uncertainty affects the difficulty of assessing the investment features of certain assets, increasing the «price of error» in terms of holding larger reserves);
- opportunity costs of holding gold (given the fact that they can determine the advantage of this reserve asset over others and gold has specific attractive characteristics);
- diversification (interest in which potentially increases as more reserves are accumulated).

A multivariate regression model was used to empirically assess the behaviour of the aggregate demand for gold from central banks. The time period covers the years 2000-2020. Data – on a quarterly basis.

The share of gold in global exchange reserves was chosen as the dependent variable. This approach differs from those where the demand for gold is mainly presented as the behaviour of reserves in tons (Aizenman & Inoue, 2012; Barros, 2020; Oktay et al., 2016), as it allows for a better assessment of diversification motives under the influence of the amount of holdings. Indicators that had already been used in the analysis of gold prices were chosen as independent variables (Koziuk, 2021b).

GPR – The Geopolitical Risk Index (GPR Benchmark Index). This index measures the level of geopolitical tension based on the analysis of papers in leading international publications (the methodology is presented in more detail in *Measuring Geopolitical Risk* (Caldara & Iacoviello, 2019). If this factor is significant, a direct relationship is assumed.

GEPU – The Global Economic Policy Uncertainty Index. This indicator measures the level of uncertainty regarding economic policy based on the analysis of papers in leading publications (the methodology is presented in more detail in *Measuring Economic Policy Uncertainty* (Baker et al., 2016). It is calculated based on an index of economic policy uncertainty for 20 countries and then weighted based on the GDP indicator. If the economic uncertainty factor is proved effective, as shown in the article by Gopoalakrishnan & Mohapatra (2017), a direct relationship is assumed (however, in this article, the VIX index was chosen as the explanatory variable).

GPrice – gold price (data of World Gold Council). Gold prices can be considered an important factor affecting the efficiency of the portfolio management of central bank reserves. Prices also affect the opportunity costs. If gold prices motivate central banks to increase its share in reserves, then a direct relationship is expected.

FED, 1Y and *10Y* – the interest rate on US federal funds, the yield on one-year and ten-year US Treasury bonds, respectively (US Fed data). These interest rates potentially reflect the impact of global monetary conditions on central banks' choice of reserve assets, and they also indirectly determine the opportunity costs of holding gold. The direction of the relationship, however, is open to interpretation. Low rates, increasing demand for gold, may indicate a decrease in the opportunity costs. High rates, reducing demand for gold, may indicate a shift toward more liquid reserves during times of stress in markets or increased demand for assets whose prices are less volatile. However, the Fed rate and bond term rates can also be interpreted differently in light of inflation expectations and the corresponding motive of hedging inflation risks,

Rbln and *Rgdp* – global exchange reserves (without gold) in billion dollars US and global exchange reserves as % of global GDP respectively (data of World Gold Council). Both indicators test whether holding more reserves really pushes central banks to diversify more. If so, a positive relationship is expected.

Taking into account the change of gold reserves' downward trend to an upward trend, the model is additionally tested for 2000-2009 and 2009-2020. The specifications of the regression equation with and without gold prices are applied across three periods. This is done in order to determine how stable the factors influencing the motives for the share of metal in reserves are under the direct influence on the profitability of holding reserves in gold. Also, variable amounts of reserves are applied separately.

The obtained results of empirical testing are presented in the tables 1 and 2.

Table 1

Results of regression analysis for 2000-2020

	(1)	(2)	(3)	(4)
GPR	0,00005 (1,6936) 0,1142	0,000013 (1,2662) 0,209317	-0,00009 (-1,33587) 0,2029	-0,00005 (-2,69229) 0,0087
GEPU	-0,00004 (-1,1396) 0,2750	0,000075 (4,2704) 0,00006	0,00016 (2,4743) 0,0268	0,000154 (4,9375) 0,00000
GPrice	0,00008 (8,5978) 0,0000	0,00007 (13,9136) 0,0000		
FED	0,01397 (2,8029) 0,01495	0,00034 (0,1764) 0,86044	0,01836 (1,4863) 0,15938	0,003436 (0,96696) 0,336592
1Y	-0,01722 (-3,2734) 0,00605	-0,0004 (-0,1836) 0,85483	-0,02306 (-1,7732) 0,09795	-0,005711 (-1,4138) 0,16146
10Y	0,00646 (2,9017) 0,01237	0,00265 (1,6325) 0,1067	0,00342 (0,62495) 0,54205	0,00087 (0,2881) 0,77407
Rbln		-0,000008 (-15,3655) 0,00000		-0,000003 (-3,9118) 0,000196
Rgdp	-0,01009 (-10,3687) 0,00000		-0,00324 (-2,32698) 0,03549	
Intercept	0,143996	0,094924	0,1391	0,11905
R^2	0,9328	0,8239	0,5509	0,3753
F statistics	F(7,13)=25,794	F(7,76)=50,798	F(6,14)=2,8625	F(6,77)=7,7117

Source: calculated using the *STATISTICA* software.

Table 2

Results of regression analysis for 2000-2009 and 2009-2020

	2000-2009				2009-2020			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
GPR	0,00009 (0,7448) 0,59247	-0,000008 (-1,0601) 0,29817	0,00003 (0,4873) 0,67424	-0,000011 (-0,6597) 0,51464	0,000008 (0,29) 0,78349	0,00001 (1,6839) 0,0998	-0,00034 (-1,5902) 0,1629	-0,00008 (-1,7014) 0,09626
GEPU	-0,00005 (-0,1822) 0,8853	0,00007 (2,7938) 0,00929	0,00012 (1,3974) 0,29714	0,000112 (2,23038) 0,033623	0,000023 (1,4013) 0,22004	0,00003 (5,1976) 0,0000	0,00026 (2,01459) 0,0906	0,000124 (2,71803) 0,009502
GPrice	0,00012 (0,62426) 0,6447	0,000199 (10,6232) 0,0000			0,00008 (23,9737) 0,00000	0,00007 (46,3137) 0,0000		
FED	0,01702 (2,0412) 0,29001	0,000578 (0,4648) 0,64567	0,015599 (2,33299) 0,144485	0,003964 (1,49586) 0,145496	-0,02895 (-5,1572) 0,00359	-0,00515 (-2,9349) 0,00545	-0,04435 (-0,8089) 0,44942	0,014595 (1,1878) 0,24158
1Y	-0,01811 (-1,8312) 0,31821	-0,000298 (-0,1796) 0,85875	-0,01764 (-2,1454) 0,16508	-0,005935 (-1,7103) 0,0979	0,02201 (3,8468) 0,01204	0,00598 (3,6064) 0,00084	0,04294 (0,77241) 0,46919	-0,018086 (-1,5913) 0,11904
10Y	0,00317 (0,3561) 0,78222	0,002401 (1,4683) 0,15318	0,00622 (1,0018) 0,42195	0,008393 (2,48159) 0,01912	0,00716 (8,5604) 0,00036	0,00025 (0,4236) 0,6741	0,000736 (0,09449) 0,92779	-0,001665 (-0,3944) 0,6953
Rbln		-0,00003 (-11,9508) 0,00000		-0,000003 (-3,6288) 0,001085		-0,000007 (-26,2695) 0,00000		-0,000002 (-1,153) 0,2554
Rgdp	-0,01557 (-0,7478) 0,5913		-0,00262 (-1,7135) 0,2288		-0,009295 (-13,929) 0,00003		0,00278 (0,6451) 0,54274	
Inter-cept	0,1758	0,105702	0,10502	0,08567	0,11198	0,08701	0,0496	0,1307
R^2	0,9576	0,9419	0,9411	0,7075	0,9969	0,9902	0,6348	0,4749
F sta-tistics	F(7,1)= 3,2267	F(7,28)= 64,787	F(6,2)= 5,3243	F(6,29)= 11,690	F(7,5)= 226,06	F(7,41)= 588,86	F(6,6)= 1,7382	F(6,42)= 6,3311

Source: calculated using the *STATISTICA* software.

The results of the empirical test can be summarized in terms of selected factors.

Geopolitical factors. In the basic equation (for 2000-2020, Table 1), specifications with gold prices (1-2) show a direct relationship between the dependent variable and the variable characterizing geopolitical risks, but its statistical significance is low. For specifications without gold prices (3-4), the direction of the relationship changes to the opposite and for specification (4) it becomes statistically

significant. That is, geopolitical risks are not convincing drivers of the aggregate behaviour of the share of gold in central bank reserves. Across periods, the results are even more ambiguous, but they only strengthen this interpretation. During the first period (2000-2009, Table 2), the direction of the relationship changes in accordance with the variable characterizing the reserves holdings rather than the inclusion of the gold price variable. During the second period (2009-2020, Table 2), the direction of the relationship is similar to that of the basic equation (Table 1). In all specifications (Table 2), statistical significance is low regardless of the direction of the relationship. The only conclusion that follows from this is that geopolitical factors are not stable and convincing drivers of a shift in favour of a greater share of gold in central bank reserves. Such results are correlated with the conclusions in articles by Koziuk (2022; 2021b) about the clear overestimation of instability in the world as a criterion for decisions central banks make regarding the management of exchange reserves.

Uncertainty factors. In general, uncertainty regarding economic policy theoretically corresponds correctly with the behaviour of the share of gold in central bank reserves (table 1). Only in specification (1) is the direction of the relationship reversed, but in this case the coefficient has no statistical significance. In the remaining cases (specifications 2-4), the direction of the relationship and its statistical significance correspond to the assumptions and do not depend on the specification of the regression equations. Almost the same is true in terms of periods. Only in the first period (Table 2) in specification (1), the sign of the coefficient is negative, but not statistically significant. Whereas in the remaining cases of the first period and in all equations of the second period, the direction of the relationship is direct and mostly statistically significant. Statistical significance is more affected by the reserve size variable than, for example, by gold prices. That is, uncertainty about economic policy can be considered a factor that affects the decisions of central banks regarding the management of reserves. Better statistical properties for this variable in the second period generally support this view, considering that it was in the second period that the level of uncertainty regarding economic policy increased significantly. This is consistent with the results in Gopalakrishnan and Mohapatra's paper (2017), where the VIX index was taken as a measure of uncertainty. A positive answer to the question about the effect of uncertainty on the propensity to larger holdings of gold in reserves, however, does not remove the question of the channels through which uncertainty affects the decisions of monetary authorities. Most likely, the uncertainty corresponds to the effect of factors that characterize the balance of losses and gains from diversification in favour of gold. Otherwise, it would be difficult to explain why uncertainty about economic policy encourages more gold holdings when such a balance is negative for central banks. Gopalakrishnan and Mohapatra's paper (2017), in turn, emphasizes that the exchange rate regime, openness to capital flows, and vulnerability play a role in how central banks respond to uncertainty. Theoretically, the need for greater liquidity in reserves under uncertain conditions should push away from the gold. On the other hand, this works exclusively in

conditions where reserves holdings are not significant. It follows that even if central banks are concerned with reserve liquidity in response to uncertainty, in general the level of reserve holdings and the balance of losses and gains from holding a larger share of gold will also determine how sensitive monetary authorities are to the need for more liquid reserves in response to increasing uncertainty.

Factors of opportunity costs of holding gold. The effect of these factors is seen in the behaviour of 4 variables, which have different economic meanings. Based on the data in Tables 1-2, it can be said that gold prices alone are a strong enough factor to influence the opportunity costs of holding more gold in reserves. Clearly, this is applicable in the conditions of a relatively stable upward trend in gold prices. The latter are in a credible inverse relationship with rates in the United States (Koziuk, 2021b). Therefore, if global monetary conditions are assessed as soft in the medium term, gold prices may indeed shift the balance of losses and gains from holding gold in its favour. In fact, the data in Tables 1-2 supports this. Notably, the coefficient with a positive sign does not reach statistical significance only in specification (1) for the period of 2000-2009. In all other cases, the statistical significance of this variable is quite high. Additionally, the inclusion of gold prices in the equation significantly increases the statistical significance of other variables and the regression itself.

With regard to monetary variables, the situation is less clear-cut. The Fed rate for the entire period is in a direct and insufficiently statistically significant relationship (with the exception of specification (1) in Table 1) with the dependent variable. This is counterintuitive given the clear inverse relationship between the Fed rate and gold prices (Koziuk, 2021a), and the essential role of gold as a criterion for reserve management decisions. The breakdown into periods somewhat clarifies the conclusion. The relationship is direct in the first period, but it is inverse in the second segment (with the exception of specification (4) in Table 2). That is, when the amount of gold in reserves decrease, the higher rate of the Fed motivates banks increase gold holdings. Conversely, when gold holdings begin to grow, the low Fed rate encourages more increasing reserves. And this influence is more statistically significant. In other words, such differences can be explained by the opposite expectations during the two periods with regards to the impact of the Fed on monetary conditions and, accordingly, the balance of benefits and opportunity costs of holding gold.

This outcome is further explained by data on the yield of US bonds as the main reserve asset. The share of gold in central bank reserves is inversely related to the yield of annual US government bonds during 2000-2020, although the statistical significance of this relationship is not high. In general, this does not contradict common sense: a fall in bond yields prompts the search for alternative reserve assets. However, the outcome changes when considering separate periods. In the first period, the relationship is inverse, albeit statistically insignificant, and in the second it is generally positive and significant (with the exception of specification (4) in the second period) (see Table 2). If we assume the opposite

periodic outcomes to those of the Fed rate, the considerations of greater opportunity costs of holding gold should prevail given falling short-term bond yields in the first period, while the considerations should be different for the second period. The divergence between Fed rates and yields was seen as evidence of rising inflationary risks, which were better hedged through gold. The direct relationship between the dependent variable and the yield of long-term bonds confirms the hypothesis that the hedging of inflation risks through gold does not contradict the increase in the yield of longer-term securities. On the contrary, an increase in such yields is evidence of an increase in negative expectations about the future, which correlates with considerations for hedging the risks of uncertainty by increasing the share of gold in reserves. At the same time, across all three periods, the relationship is direct (with the exception of specification (4) in the second period (Table 2)), but not always statistically significant, although it is stronger than in the case of the Fed rate and annual yield bonds. That is, monetary conditions have a sufficiently predictable effect on the propensity to larger holdings of gold in reserves, but their complex structure and interaction with other factors makes this effect quite dependent on the context. In other words, the benefits and opportunity costs of holding gold are complexly structured and sensitive to interactions with other incentives for reserve management.

Diversification factors. The data in Tables 1-2 provide an unexpected answer to the question of whether diversification of larger reserves is carried out in favour of gold. During 2000-2020, the increase of reserves was more likely to prompt a decrease in the share of gold, even if this is counterintuitive. The relationship in all specifications is inverse and statistically significant. In terms of periods, the situation is not much different, except for specification (3) in the case of 2009-2020 (Table 2), where the relationship becomes direct but not quite significant. In a number of other cases, the relationship also loses significance when the sign is preserved. Notably, the amount of exchange reserves in billions of US dollars better describes the relationships in the model than the ratio of exchange reserves to GDP. This can be explained by the fact that central banks, in the process of managing external assets, are guided by the volume of potential transactions, and not by the relative value of the indicator, even if the latter better illustrates its «equipped-ness» with reserves. In general, gold is unlikely to be considered the primary asset in favour of which it is necessary to diversify larger volumes of reserves. Examples of countries with significant foreign assets such as China, Saudi Arabia or Brazil confirm this (Koziuk, 2022b).

The empirical testing results of the behaviour of the aggregate gold share in global exchange reserves paint a fairly complex picture. The factors of geopolitics and diversification turned out to be clearly overestimated despite the strong theoretical arguments in their favour. The factors of uncertainty are quite compelling. However, they must interact with the factors determining the benefits / opportunity costs of holding gold. And this is where there is an interpretive problem. If gold prices alone had a strong influence on the increase in the share of gold in

reserves (like uncertainty about economic policy), then there would have been clearer correlation with factors of global monetary conditions. However, the complex structure of the latter requires consideration of their context; therefore, they affect other decision-making criteria in the process of managing exchange reserves. In general, economic motives for changes in the share of gold in the external assets of central banks dominate over geopolitics.

Conclusions

Over the past 20 years, the demand for gold from central banks has increased significantly. However, the aggregate share of gold in global exchange reserves is volatile, compared to trends in the gold holdings in tons. There are competing hypotheses explaining the demand for gold from central banks. International political economy emphasizes the importance of factors of instability in the world. In contrast, other approaches point out that gold is a way of hedging inflation and uncertainty risks, is a «safe harbour», but gold holdings are sensitive to opportunity costs and subject to portfolio optimization. The share of gold in reserves, in contrast to the volume of gold, is a better indicator of whether economic and non-economic factors simultaneously influence the decisions of central banks regarding the management of external assets, since it allows for diversification decisions based on more complex criteria.

The empirical test showed that geopolitical factors are clearly overestimated. Even if significant for individual countries, they do not affect the aggregate changes in the share of gold in global exchange reserves. The same applies to the increase in reserve holdings. The increase of the reserves in the world does not lead to a systematic increase in the share of gold in them. Gold is not an ideal reserve asset, even if the choice in its favour by individual central banks is dictated by specific motives. Rather, the motivations for hedging the risks of economic policy uncertainty and economic factors (benefits / opportunity costs of holding gold) are more important. However, the propensity to increase the share of gold in reserves under the influence of uncertainty should correspond to how current and expected global monetary conditions affect the balance of costs and benefits of holding a larger share of gold. The complex structure of monetary conditions affects weak and not always theoretically consistent connections between interest rates on the US market and the changes in the aggregate share of gold in central bank external assets.

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INTERNATIONAL EXPERIENCE FOR WAR-TIME MONETARY POLICY: LESSONS FOR UKRAINE

Abstract

Monetary policy directly acts as a significant element of national security. Rather than merely influencing economic security, it is relevant in broader terms as its results indirectly affect the social, ecological and other aspects of societal existence. The paper considers the examples of monetary policy implemented in war-time of different eras based on the existing system of monetary management (Bretton Woods, post-Bretton Woods, inflation targeting, floating exchange rate, etc.). Focus is placed on the changing principles of monetary policy during the war waged by Russia against Ukraine. On the one hand, Russia's monetary policy has returned to the administrative practices of the USSR and has practically suspended conversion of the ruble. On the other hand, Ukraine has employed limited administrative restrictions as the National Bank of Ukraine tries to uphold the main principles of market economy. The author concludes that despite the reoccurrence of some key approaches, in general, the international experience indicates the absence of any particular standards of war-time monetary policy. Therefore, evidently in such conditions it is more reasonable to develop an individual approach to monetary policy that takes into account the experience of other countries in one way or another.

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Problem Statement and Literature Review

Monetary policy directly acts as a significant element of national security. Rather than merely influencing economic security, it is relevant in broader terms as its results indirectly affect the social, ecological and other aspects of societal existence. Increasingly louder, voices are calling for greater attention in monetary policy on ensuring employment of the population and economic growth rather than only purely monetary goals, given the former's important role as elements of economic security.

At the same time, this applies both to the central banks of individual countries and to international institutions, such as the European Central Bank or the International Monetary Fund. In particular, the heads of the IMF and the World Bank promised to use their instruments «to the maximum extent possible», including anti-crisis financing, to help countries deal with the medical and economic problems caused by the coronavirus.

For Ukraine, the security aspect of monetary policy becomes especially important due to the combined humanitarian threats from the effects of the coronavirus pandemic and direct military invasion by Russia, which has forced the country to support the economy in conditions of war.

The peculiarities of monetary policy during war have been used repeatedly and successfully throughout the long history of humankind. In this regard, we can mention, for example, the policy of the Bank of England during the wars with

France (first the monarchy, then the republic, and finally the empire) in the period of 1793-1815 (O'Brien & Palma, 2022).

The peculiarities of shaping monetary policy in wartime have not been widely covered in fundamental scientific works. The issue of monetary (monetary and credit) policy in the wartime period did not be receive significant attention even in the current aggressor country, which appears to have been preparing in advance for the regulation of the economy in wartime conditions. For example, in the textbook *Economics* (Gabitova & Buga, 2019), intended for military universities, a lot of attention is paid to monetary issues in the section «Macroeconomics» (pp. 193-211), but in the section on the war economy, financial policy is limited only to budgetary issues. A similar approach is taken in the joint Russian-Belarusian textbook *War Economy* (Vikulov, 2018).

Of course, we are still more interested in the scientific developments of scientists from democratic countries. In this regard, we can mention the analysis of war periods in the well-known work of M. Friedman and A. Schwartz (2008) on issues of monetary history of the United States, the report of M. Friedman (1952) at the meeting of the American Economic Association in May 1952, in which he considered the experience of three war periods, and the article of the American professor (University of New Jersey) Hugh Rockoff (1981), in which he considered four wars (including the war in Vietnam). In particular, they refer to the close cooperation of the Fed with the Department of the Treasury up to the actual subordination of monetary authority to the main fiscal body, which was terminated only in 1951 as a result of the conclusion of a special agreement (*Treasury-Fed/Monetary Accord*).

Therefore, **the aim of the article** is to consider examples of changes in monetary policy in wartime, to highlight the basic principles and approaches to such policy, and to provide certain recommendations regarding the basics of monetary policy in wartime for Ukraine.

In the course of writing, the author used the historical-comparative method, as well as the horizon scanning method. This made it possible to identify similarities and differences in the conditions for the implementation of monetary policy caused by various internal and external factors, as well as to identify the main risks and potential problems, which could be solved, in part, with the use of modern monetary policy of the state with a market economy.

Discussion of Research Results

During World War II, the Treasury asked the Fed to keep long-term interest rates low to allow for cheaper financing of the national debt accumulated during the war. After the war, the Fed continued its wartime interest rate policy.

However, keeping interest rates low even while the economy was growing ran the risk of overheating the economy and rising inflation. In 1947, the Fed introduced a peg to the Treasury bill rate. However, the Treasury Department insisted that the Fed continue to set a minimum price for government debt by setting an upper limit on its yield. By the time the Korean War began in June 1950, Fed higher-ups viewed the experience of World War II in the context of price control and inflation suppression, but they did not want to repeat this experience during the Korean War. In 1951, the Treasury Department agreed to end the previous agreement and enter into a new one, which allowed the Fed to independently set interest rates if that was necessary to achieve economic stability. The Fed has remained independent since 1951, conducting monetary policy to maintain economic stability without responding to short-term political pressures.

«*A deeper question is why the Fed adhered to this target-zome regime for prices and interest rates immediately after World War II but not in other periods. The explanation, we argue, lies in policymakers' perceptions of the threats to financial stability. In the aftermath of World War II, higher interest rates were perceived to pose a threat to the stability of the banking system. Only when the banks' exposure to bond-market risk has been reduced in the 1950s was policy reoriented to other targets. Our analysis of bank portfolios suggests that fears for the stability of the banking system may have been overdrawn. But it remains true that concern over financial stability, which originated in memories of widespread bank failures in the 1930s, provides the explanation for the singular policies pursued in the aftermath of World War II*» (Eichengreen & Garber, 1991, p. 200).

It was as part of this interaction that the Fed kept interest rates low by supporting the stock market that housed the US government's war bonds. (Although Fed chair M. Eccles preferred to raise taxes). At the same time, researchers emphasized the excessive bureaucratization of such a common monetary policy and its side effects. In general, the American approach consists in strengthening the influence of the government's anti-inflation policy, including administrative control over pricing (rent control), which was overseen by a special government institution (Office of Price Administration whose staff twice exceeded the number of employees of the Treasury), as well as wide use of monetary theory recipes (interest rate influence), etc. Today's calamities (even without taking into account the consequences of the war against Ukraine) according to some experts, require similar steps (Stein, 2021).

However, such views, firstly, still consider the periods before the establishment of the latest post-Bretton Woods world monetary system and the introduction of the inflation targeting system, and, secondly, relate to the monetary policy of the United States, whose currency has a special status is inevitably reflected in the options and instruments of monetary policy. It is no coincidence that J. Friedman, a well-known analyst in the field of geopolitics, speaks of the «weaponized dollar», considering it «perhaps the most powerful weapon in the world» with the help of which the United States creates a coalition with countries

(for example, Japan) that are «far from the fighting but close to the dollar» (Friedman, 2022). And if the war against Ukraine intensifies, the Fed will continue to use this «weapon» by further reducing interest rates and returning to the policy of quantitative easing to ensure economic activity (Manason, 2022).

The experience of the war monetary economy of the countries of the Middle East in the time of the Iran-Iraq war of 1980-1988, or that of Afghanistan, Iraq, and Syria in the first decade of the 21st century is not of great value either due to the non-market nature of their economy. In particular, the fiscal component of monetary policy dominated in Shia Iran (some researchers even called «financial repression») with significant restrictions on currency transactions, capital movements, monetary payments, etc. (Jbili et al., 2007; Resolution of the Cabinet of Ministers of Ukraine, 2022). the wide use of the principles of «Islamic banking» was also an additional factor. Similar approaches were typical for other Islamic states of the region.

In this context, the experience of Israel, which has been in a state of military readiness for many decades, could be useful. But it is precisely as a result of such a long effect of the actual martial law that the monetary policy of the central bank takes into account the corresponding risks as if they are business as usual. The results of the corresponding analysis show that the influence of money on the variability of output is significantly reduced during periods of recovery from the crisis. However, it seems that the variables do not depend directly on monetary changes, but are rather explained by monetary policy and price markup shocks in the short and long run (Benchimol, 2016; Georgieva, 2022).

The experience of the Soviet Union during the Afghan war of 1980-89 does not look very suitable either. This period was characterized by an increase in budget expenditures (in part due to direct lending at the expense of the State Bank and deposits of Sberbank of the USSR, which, as we know, resulted in freezes and the subsequent «disappearance» of these deposits) and an increase in the money supply not backed by goods. Under market conditions this would have led to an inflationary rise in prices, but, as goes the catchphrase of the famous then head of the State Bank V. S. Alkhimov, «inflation is forbidden in the USSR», so instead the goods disappeared from shops (albeit at constant prices). Theoretically, all this was well described by the famous Hungarian economist J. Kornai in his monograph *Deficit Economics*. The resulting «repressed inflation» turned first into galloping inflation at the first signs of economic liberalization in the final period of Perestroika and then into hyperinflation in 1992-93.

Therefore, with regard to monetary policy in the conditions of war, in fact, only the experience of the countries of the former Yugoslavia can be used. After the collapse of the old communist regime, the Yugoslav currency fell as most former republics – now independent countries – abandoned it and only Serbia tried to keep it. In 1992, when Belgrade began printing additional dinars to pay the salaries of civil servants and pensioners, hyperinflation erupted in Serbia. At the height of the crisis, prices rose by 2 percent every hour. Money became vir-

tually worthless and Serbs bartered goods or exchanged whatever stable currency, e.g. German marks, they had saved up. By the end of 1994, half of the population spent between 66 and 100 percent of their family income on food alone. Everyday existence was a challenge for many.

However, considering that Serbia acted as the aggressor in the Balkan War, or at least, as the side that supported the separatists, the experience of Croatia is more valuable for Ukraine (Škreb, 1998). Just recently (in mid-December 2021) it was considered at a scientific conference dedicated to the 30th anniversary of the monetary policy of the Central Bank of Croatia. The reports mentioned not only the strengthened cooperation and coordination of the actions by the central bank and the Ministry of Finance, but also the «increasingly harsh monetary policy», which was carried out «not according to the textbook». Along with the introduction of a quasi-fixed exchange rate (which is not only still in use but, according to the Chairman of the Central Bank of Croatia B. Vujčić, will be maintained until the moment Croatia joins the euro area), this made it possible to quell the growing inflation (Croatian National Bank, 2021).

Now, the **war against Ukraine created a completely new situation** that put even the European Central Bank in a dilemma. In the pre-war period, a consensus was reached in the EU on a growth strategy based on the green economy, digital modernization, reforms to the tax system, and industrial policy that responded to new geopolitical and technological challenges from competitors. But the war unravelled these plans, destroying supply chains and creating threats to financial stability.

Thus, it was necessary to forget about the ECB's optimistic forecasts regarding the pan-European economic growth this year, and the ECB itself is forced to avoid long-term decisions for the time being, preferring more flexible approaches (Duguid et al., 2022). The war completely changed the economic situation and the ECB, instead of determining its schedule for the implementation of the already existing programme to support economic growth, was forced to prepare for the implementation of all possible scenarios (Ashworth, 2022). As noted by the chief economist of the international auditing company SRM, a well-known specialist in monetary policy J. Brusuelas:

«*We have most likely arrived at a turning point where elevated inflation will define the economic narrative for several years. That may require much higher interest rates than have been observed in recent years and will diminish the probability of central banks achieving a soft landing for the economy*» (Brusuelas, 2022).

However, in his opinion, the introduction of administrative price control is not at all inevitable since, as the experience of the beginning (the Arab embargo on oil supply) and the end of the 1970s (the Islamic Revolution in Iran) has shown, control over the prices of petroleum products proved counterproductive.

And in general, united Europe, according to French President E. Macron, should give a consolidated response to this shock (Mollet & Riekeles, 2022).

Of course, one cannot ignore the measures of Russia's monetary policy, which, in particular, took care in advance to increase the share of the «yellow» in the total gold and foreign exchange reserves and reduce the dollar share (increasing the volume of reserves in other currencies, first of all, in Chinese Yuan). Since the beginning of the invasion into the territory of Ukraine, the new financial (in a broad sense) policy of the Russian Federation entailed significantly limiting capital transactions, introducing the mandatory sale of 80 percent of foreign currency earnings of exporters, and actually stopping the exchange of rubles for foreign currency for individuals and limiting the possibility of withdrawing foreign currency cash from their bank accounts (in the amount of 10 thousand dollars). That is, the ruble has actually ceased being a freely convertible currency and its exchange rate has turned into a manipulation (Kalwasinski, 2022).

After the start of the war, a two-level Russian ruble market actually emerged: non-residents traded with non-residents, and residents – only with residents. Moreover, on the first level (offshore market), the ruble exchange rate is on average 10-15 percent lower than on the second (onshore market). Under such conditions, the volume of trades on the foreign exchange market of Moscow Exchange in March increased by 28.6 percent (up to 41 trillion rubles).

Such a strengthening of the ruble rate was assessed by most experts as temporary in nature and achieved at too high a price. As Mārtiņš Kazāks, head of the Central Bank of Latvia, figuratively put it: «You can break the windows, turn off the heating and pretend that summer is here». But this will not change the fact that the tools used to support the ruble turn it into the currency of the «Potemkin village» (as the Reuters agency pointed out) (Treeck & Rosca, 2022). The artificial overestimation of the ruble exchange rate (recall that in the USSR it ranged from 90 to 54 kopecks to the dollar in different years with a black market exchange rate of 10-15 rubles) essentially meant the introduction of a special «tax» on all holders of Russian rubles, who wanted to continue buying imported goods (Miller, n.d.). Maintaining such an artificial exchange rate has cost the Central Bank of the Russian Federation (by the end of March 2022) almost 40 billion dollars spent on currency interventions.

Polish Prime Minister Mateusz Jakub Morawiecki also drew attention to the manipulative nature of the ruble exchange rate, pointing out that despite harsh sanctions from Western countries, the ruble exchange rate (which had dropped significantly at the beginning of the war) soon almost recovered (rising from level of 153 rubles for 1 dollar, to the mark of 83 rubles) and remained quite stable. In his opinion, this showed only that Putin and his entourage have been able to change fiscal policy, monetary policy, financial policy in such a way that they are completely immune to sanctions... at least for the next few months (Ukrainska Pravda, 2022).

In addition, the Russian authorities hoped to achieve an increase in demand for their currency by introducing payment in rubles for natural gas supplies abroad (to so-called «unfriendly countries»). According to this idea, gas buyers would have to look for rubles on the world market and since the supply of rubles on the world market is small, they would either have to buy them from the Central Bank of Russia at an inflated rate, or demand the easing of sanctions to increase Western exports to Russia. However, most foreign exchange dealers have managed to avoid transactions with dubious currency, and since Western countries resolutely and unanimously refused to change the currency of payment for long-term contracts, this eventually led to the fact that buyers continued to remit payments in dollars and euros, and Russian banks converted them into rubles that were then transferred to Gazprom. That is, in practice, everything came down to establishing a 100-percent cession of foreign currency receipts from Western consumers for Gazprom alone.

In this regard, it should be noted that the statements of some experts regarding the professionalism of the team of E. Nabiullina (Governor of the Central Bank of Russia) can be taken seriously only with the clarification that they refer to non-market professionalism of the Soviet kind. It is obvious that after the lifting of administrative bans, the exchange rate of the ruble will inevitably collapse, burying hopes for its transformation into an alternative world currency (likened to the Chinese yuan). In addition, «the Neglinnaya professionals» significantly miscalculated believing that Western sanctions would not apply to the assets of the Central Bank of Russia (although there were already such precedents in global practice).

Other, or precisely **market approaches**, were preserved as much as possible in Ukraine. Nevertheless, as the Deputy Chairman of the National Bank S. A. Nikolaychuk stated, the central bank's leadership abandoned the lexical, orthodox policy of inflation targeting, understanding the limited influence of the key interest rate, and was reluctantly forced to resort to certain administrative restrictions (in particular, this concerns the introduction of a fixed official hryvnia exchange rate). In general, the monetary and prudential policy of the National Bank is aimed at ensuring the uninterrupted functioning of the banking system, and therefore the imposed restrictions will be gradually abolished after the end of the war (CASE Ukraine Think Tank, 2022).

Thanks to this approach, a month after the start of the war, the rate of inflation (2.1 percent – for March or 11.1 – in annual terms) exceeded pre-war forecasts (9.2 – in annual terms) with a slight deviation, which the Chairman of the National Bank of Ukraine assessed as moderate even in spite of the war.

It should be noted that for Ukraine, both the internal aspect of monetary policy (issue activity of the National Bank) and the external aspect (e.g., connected to relations with the International Monetary Fund) are important.

As evidenced by world experience, ensuring price stability remains, if not the only, then the most important goal of monetary policy (including in crisis situations of humanitarian and military danger). It can be achieved within one of the four monetary regimes: (a) monetary targeting, (b) exchange rate targeting, (c) inflation targeting, or (d) implementation of monetary policy with multiple goals without a clear nominal anchor. It is through the choice of monetary regime that central banks influence the «price of money», which is a determining factor of a market economy.

The price of money itself has two dimensions – internal and external. The internal dimension determines the development of inflation/deflation processes, which directly affect the redistribution of GDP between individual economic agents and population groups, the level of employment, etc. That is, they determine the level of economic inequality, and hence social tension within society. The external dimension, in turn, determines the exchange rate of the national currency and its dynamics. Thus, it affects the development of the sectoral structure of the economy (exporters-importers), the ratio between domestic and foreign investors, the level of foreign debt, which, in the end, determines the level of international competitiveness of the domestic economy, the place of Ukraine in the global economy and the degree of its economic dependence on foreign countries, transnational corporations/banks and international financial organizations.

Thus, the choice of the strategic direction of monetary policy, its institutional support and the degree of consistency with the economic policy of the government (first of all, with its fiscal component) act as important elements of national security, affecting the interests of not only economic agents, but also individual citizens.

In the pre-war period, criticism from many domestic independent experts was aimed at the fact that the National Bank of Ukraine ignored not only the numerous comments of domestic experts, but also the experience of the ECB and the overall monetary policy of the EU countries (which contradicts the European integration direction of Ukraine's policy). All this meant that the National Bank had a singular goal in monetary regulation – the fight against inflation. As a justification for this approach, references are often made to the legally defined goals of the NBU: in the Constitution (Article 99), its main function is to ensure the stability of the monetary unit (hryvnia). At the same time, the explanation of what is meant by such stability is provided only in the Law on the National Bank. Article 6 of the Law specifies:

«*When performing its main function, the National Bank must prioritize achieving and maintaining price stability in the state. The National Bank, within the limits of its powers, promotes financial stability, including the stability of the banking system, provided that this does not prevent the achievement of the goal defined in part two of this article. The National Bank also promotes the maintenance of sustainable rates of economic growth and supports the economic policy*

of the Cabinet of Ministers of Ukraine, provided that this does not prevent the achievement of the goals defined in parts two and three of this article».

Referring to these provisions, the National Bank believes that promoting economic growth is actually not within their competence, since they have not yet achieved the first goal (price stability), not considering that (a) full price stability is unlikely to be achieved in modern economy, (b) significant inhibition of inflation, and even more so, deflation negatively affect economic processes, and most importantly (c) price stabilization is impossible without economic growth (i.e., these are interrelated processes).

The National Bank of Ukraine does not take into account another obvious thing: modern money is of such a nature that its stability is determined not only by monetary factors, not only by the amount of money issued into circulation, but also by conditions that directly determine commodity prices, bypassing the influence on the money supply. Such conditions include, for example, monopolism and fluctuations in the exchange rate of the national currency. And if inflation is growing as a result of these factors, then extinguishing it by compressing the money supply, which the National Bank constantly does, means inevitably slowing down economic growth, without any effect in terms of price stabilization. Such an anti-inflationary policy can lead to an economic recession and crisis.

Meanwhile, in the conditions of martial law, the situation is fundamentally changing and the National Bank must adjust its approaches to ensuring the stability of the national currency. The task of keeping inflation within the established limits should remain a priority. The stability of the exchange rate in wartime conditions can be ensured by means of a quasi-fixed rate, that is, by keeping it from sharp fluctuations through currency interventions, as well as by introducing tighter control over currency transactions and certain restrictions on export-import operations by the government. It should be taken into account that the goal of ensuring economic growth in the wartime period loses its traditional relevance due to at least two factors. First, industrial structure shifts in the direction of strengthening defence industries and, second, migration of the labour force (refugees abroad and internally displaced persons, the number of which has already reached 3 and 4 million people in the third week of the war, respectively) is significantly high (Libanova, 2022). This is not to mention the direct draft of able-bodied men to the Armed Forces and territorial defence units.

In this regard, the import of vital products (critical imports) becomes especially important. This is why, the government first approved the List of Critically Imported Goods (Cabinet of Ministers Resolution No. 153 of February 24, 2022) and then updated it (CMU Resolution No. 266 of March 13, 2022), adding a number of products, in particular bottled water (mineral and carbonated), fermented or soured milk products, salt, tobacco raw materials, raw materials for the production of goods of light industry and medicine. The list also includes goods necessary for industry and construction, such as polymers, means for soldering and welding metals, glass, metal structures, etc. Clearly, in the future this

list will be supplemented with other goods, including those of industrial importance. Alas, in order to ensure critical imports, the National Bank of Ukraine must increase its currency reserves.

Notably, the IMF changed the format of negotiations with Ukraine from «reforms» to «crisis management» (Georgieva, 2022) and has already taken certain steps to support the National Bank of Ukraine's ability to implement an effective monetary policy. In particular, the Fund transferred $1.4 billion to Ukraine under the Rapid Financing Instrument (International Monetary Fund, 2022), which, according to experts, may be enough for the first month of support for the NBU's monetary policy to counter the devaluation of the hryvnia. In the future, assistance in the amount of approximately 15 billion USD is expected. It is also possible for Western partners to transfer to Ukraine part of the SDRs that they received as a result of the last distribution of 600 billion previously issued SDRs. This practice has already been implemented in relation to the poorest countries, and now it would be logical to include Ukraine in this programme.

This, of course, requires some diplomatic effort. Economic diplomacy could also try to resolve the issue of writing off (or at least deferring) Ukraine's debts to the IMF. As an option, it would be possible to propose replacing the previous agreement on receipt of IMF funds by the National Bank with a swap-type agreement (i.e. transfer to the Fund of the corresponding equivalent amount in hryvnias). At the same time, it is necessary to emphasize that such a device should refer only to the funds that were included in the reserves of the National Bank, and not to the budget of Ukraine (so that foreign investors do not even suspect the possibility of a sovereign default of Ukraine, which would lead to a significant worsening in conditions for attracting funds on the Eurobond market).

Meanwhile, the Ukrainian government has continued to raise funds through the placement of war bonds. In particular, at the last auction held on March 15, 2022, the Ministry of Finance placed 1-year bonds in the amount of 4.85 billion hryvnias, as well as foreign currency bonds in the amount of almost 12 million US dollars. This increased the total amount of government borrowing on the market under this instrument to almost 20 billion hryvnias. In addition, the National Bank purchased 20-billion-hryvnia worth of military bonds.

The foreign exchange market of Ukraine continues to function, albeit under the restrictions introduced for the period of martial law. The National Bank of Ukraine conducts daily operations for the purchase and sale of US dollars with banks. At the same time, the purchase of non-cash US dollars from banks is carried out at the official rate, and its sale to banks – at the official rate increased by 1%. Considering the slight predominance of demand for foreign currency from banks' clients over its supply (taking into account the established restrictions), the balance of the NBU's foreign currency purchase and sale operations for the week of March 7-12, 2022 was negative (-266 million US dollars and – 74 million euros), which partially reduced the positive balance of NBU operations on the foreign exchange market since the start of the war. The official exchange rate of

the hryvnia to the US dollar remains unchanged at 29.25 hryvnias for 1 US dollar (Danulushyn, 2022).

At the same time, the volume of operations on the foreign exchange market of Ukraine at the end of March 2022, compared to the start of the full-scale invasion of Russia, decreased by five times (from 500-700 million dollars per day to 100-200 million dollars). Moreover, 75 percent of the total demand was related to the transactions of individuals with bank cards (mainly – the expenses of refugees abroad), and 25 percent – to payments for critical imports (mainly weapons and fuel) (Ekonomichna Pravda, 2022). Gradually, the National Bank began to record improvements on the foreign exchange market, in particular, reductions in the spread between the official rate and the market rate: if at the beginning of the war the exchange rate at the exchange points reached 40 UAH for 1 dollar, then in a month the market rate stabilized within the range of 31.6–32 UAH. In view of this, the NBU considered the issue of gradually relaxing administrative restrictions (expanding the list of cross-border transfers, reducing payment terms for export-import transactions, etc.). As of April 1, 2022, Ukraine's international reserves amounted to $28.1 billion, which is 2% more than a month earlier. Reserves increased primarily due to the inflow of funds from international partners, which compensated for the sale of currency by the National Bank and payments for servicing the national debt.

Given this situation, we believe that the National Bank could attract additional foreign currency funds from commercial banks of Ukraine (at the expense of foreign currency deposits of legal entities and individuals, interest rates on which could rise to a level close to the value of sovereign loans of Ukraine on the Eurocredit market). Notably, foreign currency deposits of private citizens (that is, those that can be borrowed without significant damage to the economy) amount (in equivalent) to more than 300 billion hryvnias.

Conclusions

Echoing C. von Clausewitz's statement that «war is the continuation of policy by other means», we can say that wartime monetary policy is peacetime monetary policy under new conditions.

As the Chairman of the National Bank of Ukraine K. Shevchenko noted, the rapid transition to wartime monetary policy was eased by the experience of using administrative restrictions previously. Then, further stability was ensured by a sound macroeconomic policy: a small budget deficit, reduction of the debt burden, control over inflationary expectations, a floating exchange rate and significant currency reserves (at the beginning of the war they amounted to 31 billion dollars, and at the end of April – 27 billion dollars) (Ellis, 2022).

In general, the analysis of the experience of monetary policy in the conditions of war proves the absence of any certain, generally accepted (and generally suitable) standard. Therefore, in such conditions it is reasonable to discuss the need for the development of one's own, tailor-made for this specific situation, monetary policy, which would take into account the experience of other countries in one way or another (that is, as a positive or negative example).

Finally, it should be noted that the experience of many countries, as well as the theoretical conclusions of well-known researchers, testify that it is necessary to start preparations for the post-war recovery of the economy even during martial law. In particular, the authors of a special report for the American Agency for International Development (USAID), who reviewed many examples of post-war economic revival – from the Marshall Plan to the reconstruction of Iraq, selected the main principles of successful economic recovery. Among them, seven can be highlighted.

First, preparations for the post-war period of development should begin in advance, when the armed conflict is still ongoing, and involve various sponsors, as well as representatives of various national organizations that will be able to play a certain role in the future post-war government. Second, the new post-war government and existing donors must be well integrated and structured so that they can achieve their goals without fuelling political divisions. Third, even in the early stages of a recovery, it is important that economic growth and job creation are driven primarily by private sector leadership, not public spending. Fourth, the first steps of recovery should focus on solving key political and social problems, in particular, creating social assistance programmes for vulnerable population groups and ensuring privileges for war veterans, in order to give them a real opportunity to make a decent living in the new society. Fifth, the modernization policy should include the provision of complete and truthful information, which will ensure confidence on the part of investors and donors. Sixth, recovery priorities and time-consuming activities should be identified at the very beginning of the programme. Seventh, kick-off of the economic revival must be used to implement the necessary political reforms and institutional changes, since their implementation may be significantly complicated or even impossible after this window of opportunity closes (Lewarne & Snelbecker, 2004; Friedman, 2022).

This also applies to the monetary sphere, which is confirmed by the widespread practice of post-war monetary reforms: not only after the First and Second World Wars, but also after the Balkan and Persian Gulf wars. Moreover, in the latter case, the limited and/or delayed nature of the monetary reform can be considered one of the reasons for the depressed state of the post-war economy (Farzin, 1995; Baker, 2002; Inter Crim Press, 2008).

Thus, it can be concluded that the monetary policy of the war and post-war periods should form a single whole, and the victory in the monetary realm is forged simultaneously with the military victory.

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International Economic Relations of European Countries

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POST-WAR RECOVERY OF EUROPE: EXPERIENCE AND LESSONS FOR UKRAINE

Abstract

The paper studies the problems of a country's recovery after a war or a military conflict. The European experience of restructuring the economy after World War II is investigated. The main focus of the paper is on the analysis of post-war Modernization and Re-Equipment Plan of France, entitled the Monnet Plan, and European Recovery Program, better known as the Marshall Plan. The plan for recovering the French economy is of interest to Ukraine due to the similarities in problems and challenges faced by France in 1946 and Ukraine now. Therefore, the paper reviews the methods and approaches employed by the French experts trying to modernize their country. It also determines the risks that the French tackled while implementing the Monnet Plan. The author highlights the progressiveness and identifies the peculiarities of the Marshall Plan used to restructure post-war Europe. Suggestions for its adaptation opportunities in the current Ukrainian conditions are based on the results of the generalization and systematization of the European experience. The author argues that Ukraine's recovery should start from the structural transformation and transition from the agrarian raw economy to an industrial and innovative kind, achieved through es-

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tablishment of modern high-tech digital Industry 4.0. Notably, Ukraine itself must show initiative in this if it wishes to avoid being side-lined as a middling agrarian state. Here, a strong and unyielding position of the national elite is of paramount importance, as is their defence of the national interests and the right of the Ukrainian state to innovative development EU membership. It is of key importance that the issue of granting Ukraine financial support is resolved, as it is a condition of ensuring its resilience and sustainability of its post-war economic growth. On its part, Ukraine must ensure transparency in the use of the international aid, eradicate corruption and misuse of funds allocation.

Key Words:

post-war recovery of countries; Monnet Plan; Marshall Plan; restructuring; modernization; post-war economic growth; structural transformations; innovative development.

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18 references.

Introduction

Russian military aggression against Ukraine continues, but all experts unanimously call to start planning the recovery of the Ukrainian economy today. In this context, it is appropriate to recall and analyse how Europe, and France in particular, recovered after the Second World War.

The plan for restoring the French economy is of interest to Ukraine due to the similarities in problems and challenges faced by France in 1946 and Ukraine now. Of course, it cannot be transferred to Ukrainian reality in all its details, but that is hardly the goal. Today we live in a completely different world economy, a different world that has gone through two industrial revolutions since the middle of the last century, and today is in the process of the Fourth Industrial Revolution,

which is fundamentally different from the previous two (Amosha et al., 2021). However, we are interested in the methods and approaches used by European countries for effective post-war economic recovery, which can be used or taken into account in Ukraine.

Literature Review and Problem Statement

Many in-depth scientific works are devoted to the study of economic restructuring after wars and military conflicts, in particular in European countries after the Second World War. For example, E. Reinert (2019) postulates that all today's rich European countries used the same strategy for the post-war reconstruction of their economies: they abandoned a raw material orientation in favour of the processing industry and necessarily went through a period when emulation – the desire and aspiration to match or surpass – was their main priority. In particular, Germany was saved by the production strategy, the conscious development of trade and industry, separated from agriculture and the production of raw materials. In his opinion, the Marshall Plan (plan for the reindustrialization of post-war Europe) is the most successful development project in the history of mankind, considering the number of countries that managed to get out of poverty with its help (Reinert, 2019).

T. Judt (2006) also emphasizes the progressiveness and importance of the Marshall Plan for the reconstruction of Europe. The researcher notes that the most important achievement of the Plan was that it blocked the causes of the decline in the European economy and its return to the indicators of the interwar years, namely the deficit of goods production, mutually destructive protectionism and the decline of trade (Judt, 2006).

European post-war economic growth, which lasted until 1973, is studied by B. Eichengreen. He argues that the main components of the European growth miracle during this period were significant volumes of investment and export growth, as well as a number of domestic and international agreements, including the creation of the European Payments Union and the European Coal and Steel Community, which solved the problems of interstate cooperation (Eichengreen, 1994).

M. Kelly considers the method of post-war reconstruction of France to be one of the most successful examples in history of eliminating the consequences of war. In particular, the researcher emphasizes the key role of cultural and intellectual reconstruction of the French national identity, noting that the powerful public consensus on the restoration of the national identity in 1944-1947 largely helped to ensure the future of today's prosperous France (Kelly, 2008).

The reasons for the rapid post-war recovery of Belgium (1944-1960) are studied by I. Cassiers (1994). She is convinced that the «Belgian economic miracle» of the immediate post-war period is connected with bold institutional reforms in the social and monetary spheres. At the same time, she notes that in the 1950s, the country's economic growth slowed down, which, in her opinion, is explained by defence spending and the lack of industrial restructuring.

An article by Braun and Kvasnicka (2014) analyses how the mass immigration of millions of German exiles to West Germany after World War II affected the structure of its economy. The authors point out that this powerful wave of migration largely determined the rapid economic revival and the establishment of a highly productive industry in West Germany.

The category of «key workers» as an element of socio-economic stability of territories is studied by M. Raco (2006). Based on archival research, he analyses how government programmes to support key workers affected the resolution of economic problems of the post-war period in Great Britain, and also concludes that these programmes contributed to the targeted emergence of different classes of specialists and workers with the necessary qualifications.

Nevertheless, despite the significant number of scientific works studying the experience of the post-war reconstruction in Europe, in the conditions of a new emerging historical reality caused by the large-scale military invasion of the Russian Federation into the territory of independent Ukraine, this direction of research requires further scientific exploration.

The paper aims to summarize and systematize the experience of Europe's recovery after World War II, to investigate the methods and approaches used by European countries, in particular France, in the modernization and restructuring of the post-war economy, and consequently to put forth suggestions regarding the possibilities of adapting the European experience to the conditions of modern Ukraine.

Research Methodology

In the research process, general scientific methods of theoretical analysis were applied: logic and historical periodization, comparison, generalization and systematization. The research is based on the provisions of the neo-Schumpeterian economic school, which emphasizes structural changes in the economy carried out via innovations, and institutional theory. It relies on theoretical developments and practical European experience in solving the problem of effective recovery and structural transformation of the post-war economy.

Research Results

European Recovery Program

After the Second World War, European countries, in particular Germany, were in a difficult socio-economic situation. In May 1945, immediately after the surrender of Germany, the Morgenthau Plan was enacted, proposed by the US Treasury Secretary Henry Morgenthau and approved by the anti-Hitler coalition back in 1943. Its essence was to completely eliminate the industry of Germany to protect the world from a new German attack, and to turn it into an agricultural country. However, a year later it became clear that the total deindustrialization of the country was leading to serious economic problems, including a decrease in productivity in agriculture. Former US President Henry Hoover, sent to Germany to find out the causes of the economic problems that were accumulating in the country, made a disappointing conclusion: it was impossible to turn post-war Germany into an agricultural country without destroying or displacing its entire population (Reinert, 2019). That is, the consequences of the deindustrialization of the German economy were so devastating that they endangered even the food self-sufficiency of the country's population. So the Morgenthau Plan had to be abandoned.

At the same time, it became clear that not only Germany but other European countries too would not be able to cope with the post-war recovery on their own. US Secretary of State George C. Marshall addressed this: «The truth of the matter is that Europe's requirements for the next three or four years of foreign food and other essential products – principally from America – are so much greater than her present ability to pay that she must have substantial additional help or face economic, social, and political deterioration of a very grave character.» (The Editors of Encyclopaedia Britannica, 2021).

Having assessed the extent of the destruction caused by the war, understanding and being moved by the vulnerability of Western European countries to Soviet expansionism, the United States took the initiative to provide economic and political assistance to Europe in its recovery and preservation of democratic values. US President Harry S. Truman noted that the US will not allow Europe to become a depression zone and easy prey for communism (Monnet, 2000). The United States officially announced its intentions in June 1947, when J. C. Marshall, in a speech at Harvard University, suggested that European countries themselves develop a program for the reconstruction of Europe with the assistance of the United States. «…The initiative, I think, must come from Europe. The role of this country should consist of friendly aid in the drafting of a European program and of later support of such a program so far as it may be practical for

us to do so…» (Monnet, 2000). This speech marked the official start of the European Recovery Program (hereinafter – the Program), named **the Marshall Plan** after him.

The European response to J. C. Marshall's proposal was swift and positive. Initially, aid was offered to almost all European countries, including the Soviet Union, but the latter refused to participate due to the incompatibility of its main provisions with the principles of the closed Soviet economy. Under pressure from the Soviet Union, its satellite countries also refused American aid. As a result, 16 of the 22 invited European countries accepted the US offer, all of them – Austria, Belgium, Great Britain, Greece, Denmark, West Germany, Ireland, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, France, Sweden, Switzerland – received assistance under the Marshall Plan (The Editors of Encyclopaedia Britannica, 2021).

The US Congress authorized the creation of the Program, and H. S. Truman signed it in April 1948. *The concept of the Program was fundamentally different from the terms of previous financial assistance provided by the US for the reconstruction of Europe*. First, the countries themselves had to decide whether to accept American aid or not and how to use it. Second, the Program required European governments to plan and calculate future investment needs themselves. They had to learn how to negotiate and agree with each other and with the United States to develop multilateral trade and economic relations. The Program also provided for the development of cooperation between governments, enterprises and trade unions in the planning of increased production volumes and the conditions that could facilitate this. Third, the Program was not an ordinary emergency fund, but a program for the strategic recovery and growth of Europe. And, fourth, the amount of aid at that time was huge. The USA spent about 13 billion dollars on its implementation: at the prices of early 2000s, the Marshall Plan would have cost about 201 billion dollars (Judt, 2006). And this despite the fact that the destructive impact of the war was not as total as it was imagined from the very beginning. For example, in the Ruhr region, which experienced the largest number of bombings, two-thirds of all factories and equipment remained intact (Judt, 2006).

It is important to note that almost all financial assistance (more than 90%) came in the form of grants and only the rest came as loans (The Editors of Encyclopaedia Britannica, 2021; History.com Editors, 2020; National Archives, n.d.; Library of Congress, n.d.). Priority was given to large industrial states (Great Britain and France), as it was believed that the modernization of these countries would have a positive effect on the recovery of the whole of Europe. These two countries received the largest amounts in absolute terms. Germany's allies (Italy) and countries that maintained neutrality (e.g., Switzerland) received a smaller amount of aid per capita.

France, in particular, came out of World War II significantly exhausted. But much less known is the fact of how economically weak it was before the war. For

example, the productivity of a French worker was 3 times lower than that of an American worker and 1.5 times lower than that of an Englishman. One French farmer provided agricultural products for five consumers, while an American farmer provided for fifteen. The average age of machines in the French industry was 25 years, while in the USA it was 5-6 years, and in Great Britain – 8-9 years, where there were twice as many machines. The fact that in 1945 the most modern enterprise in France was a metallurgical factory built in Lorraine by the Germans in 1906 is quite telling (Monnet, 2000). Inaction and the preservation of the unfavourable dynamics in the country's economy threatened its total decline and required urgent action.

Thus, it was decided to prepare the **Modernization and Re-equipment Plan of France** (Plan de Modernisation et d'Équipement) (hereinafter – the Plan), the main initiator and curator of which was the well-known French politician, economist and diplomat Jean Monnet, after whom the Plan was nicknamed. In December 1945, J. Monnet presented his Plan for the reconstruction of France to Charles de Gaulle (at that time the Chairman of the Provisional Government of the French Republic and the future President of France). Soon after, the General Planning Commission was created for its detailed development and headed by Monnet (Judt, 2006).

It must be said that the leadership qualities, charisma and patriotism of Jean Monnet played a decisive role in the modernization of France. He took on a very difficult and responsible mission. Moreover, its main difficulty, surprisingly, was not in the preparation of the Plan, although, of course, this was a very trying task, but in preventing excessive interference from officials. According to J. Monnet, the Plan had to be handled exclusively by the best and most experienced specialists in their field, who would also be enterprising and active, and «burn» for their work. He envisioned the Plan and the team involved in it as a kind of superstructure held above other state structures and directly accountable to the country's prime minister (Monnet, 2000).

At the first stages of work on the Plan, the problematic task was to determine the *priority industries*, which were to receive targeted support and subsequently give impetus to the development of national production throughout the country. The Plan developers narrowed it down to two industries that set the prospects of the country's revival in general: energy production and steel production. Nevertheless, other industries also needed attention. Groups of stakeholder representatives – so-called modernization commissions – were created in each industry due to the lack of information about their real condition and since the capacity for their development depended not on ministries but on real enterprises, their directors, engineers, workers and trade unions.

Each commission could form subcommittees to study narrow issues. J. Monnet, as general commissioner of the Plan, and his staff managed the activities of the commissions. They issued directives, monitored the progress, coordinated the work between the commissions so that each of them took into ac-

count the needs and limitations of other industries. The Plan Commissioner was responsible for the complexity of work carried out in various areas and was directly accountable to the Prime Minister of the country. He played the role of a permanent representative of the prime minister in relations with the ministries, which ensured him a wide reach and eliminated the need to constantly coordinate his actions with various departments, thanks to which the whole thing progressed quite quickly.

Accordingly, the administrative staff of the Plan was also given the opportunity, avoiding bureaucratic obstacles, to influence an entire set of executive authorities. The Plan staff itself was small and consisted of about thirty people. All other specialists and experts were involved as consultants when necessary. *The ultimate goal of the Plan staff was to form a holistic vision of the situation, identify priority sectors of the economy, provide specific proposals for their development and set them tasks for the near future.*

A year after the creation of the General Planning Commission, in January 1947, the French government approved the first comprehensive national plan for the modernization of France, aimed primarily at solving the post-war crisis in the country. Its essence was reduced to four goals.

First, enlist the support of the people in the modernization of the country, overcoming the inertia of the past years and making up for the socio-economic lag to other countries. This was a key objective. J. Monnet was convinced that it was simply impossible to restore the French economy without the active participation of the French people in this process (Monnet, 2000). The French people had to be aware of their role and responsibility in fulfilling the difficult task set before the country.

Second, rise to the level of the scientific and technological revolution, from which the country lagged even before the war. In 1946, the French economy stagnated, while in other countries participating in the war, on the contrary, significant technical progress was observed. Moreover, this progress was not just physical, it was in the minds of the people who sought to restore their countries and increase their strength (Monnet, 2000). Overcoming the technical and psychological gap that had formed between France and other countries was the goal of the Plan. The scientific and technological revolution and the restructuring of industry, which was to be carried out on its basis, were recognized as an urgent necessity, as the owners of large capital took measures to preserve the existing production capacities rather than ensuring its technical restructuring and renewal.

Third, increase productivity and strive for full use of available human resources.

Fourth, develop the volumes of national production and foreign trade in those industries and sectors in which the positions of France are the most advantageous.

In the interwar and post-war periods, French production could barely meet its own needs, so the country had to buy more abroad than sell. As a result, for a long time France had a negative trade balance, while it covered a third of its imports at the expense of the capital interest placed abroad. The increase in the volume of industrial production and exports was supposed to stabilize the economy, reduce the import dependence of the commodity market, and increase the volume of capital investments.

During 1946, more than a thousand people, the most authoritative in their field, participated in the development of the Plan as members of commissions, subcommittees, experts, and consultants They became a real team, whose actions were directed and coordinated by the General Planning Commission. J. Monnet noted that without this oversight, they would only have had a set of different ideas without proper conclusions, and without such a number of participants, the conclusions made by the commissions would not have pertained to all the population groups (Monnet, 2000).

The work of commissions and experts resulted in the choice of following priority sectors of the French economy: (a) coal industry, (b) electricity production, (c) ferrous metallurgy, (d) construction, (e) transport, and (f) agricultural engineering. These became the basis for country's modernization in the subsequent years after the end of the war.

Modernization programmes were developed for each of these industries. The authorities were tasked with implementing them in cooperation with enterprises. After that, specific projects were immediately launched, e.g., the construction of Donzère-Mondragon dam and the establishment of the French ferrous metallurgy company Usinor. These, in fact, started a large-scale modernization of the industry and agriculture of France. For continuous financing of the Plan's projects, the National Fund for Modernization and Conversion was created.

The implementation of the Monnet Plan was carried out at the expense of foreign loans, mainly from the USA, because in the conditions of payment deficit, France was not able to quickly restore its economy on its own. So, the American side was presented with a Plan with all calculations and forecasts. The parties had to agree not only on significant amounts of loans for the reconstruction of the country, but also on military debts under Lend-Lease. The result of the negotiations was, firstly, the agreement of the US to write off most of France's military debt with deferred payment of its balance for tens of years, practically without interest. Secondly, the granting of a loan to France, which was to be paid in instalments over five years; reports for the tranches had to be submitted every year, providing evidence of the effectiveness of the funds spent. Despite the fact that the amount of the loan did not cover all expenses and needs, the main thing that France sought was to start financing the Plan according to the agreed scheme without pause.

Notably, loan funds were to be spent not on final consumption, provision of services and housing construction, but exclusively on the projects aimed at restarting the economy and giving it a powerful impetus. This, however, caused social discontent, strikes and protests among the population.

It should also be noted that due to the lack of private capital, all major projects in France were financed by the state. In such conditions, the French public sector grew rapidly: the post-war French government nationalized banks, insurance companies, utilities, air transport, mines, the ammunition industry, aircraft construction and even, as T. Judt points out, the Renault concern as a punishment to its owner for military aid to Germany. By May 1946, a fifth of all industrial capacity in France was state-owned (Judt, 2006). The nationalized enterprises had to be quickly restored, their export potential and ability to produce competitive goods had to be increased, because France would have to maintain the rate of economic growth on its own in a few years, and more, repay the foreign debt. This was the main risk in the Plan's implementation, and it was exacerbated by the fact that foreign loans did not await the moment when the country would finally recover and get back on its feet.

Another risk was the high level of inflation due to the emission of money to cover the budget deficit. To solve this problem, a special Balance Commission was created in the Plan management, which developed recommendations for balancing the relations between production and consumption. Since resources were too limited, and therefore it was almost impossible to increase production, the commission had to resort to reducing the level of consumption in the country by devaluing the franc, imposing an emergency tax (part of this tax was directed to the Modernization and Conversion Fund) and introducing other socially unattractive measures. In the end, this made it possible to curb inflation. But the problem of reviving French industry did not go away: France still experienced a shortage of products and did not provide itself with the most necessary items. Fortunately, the country's problems were solved within the framework of the Marshall Plan, under which the first comprehensive national plan for the modernization of France was expanded and adapted.

The Marshall Plan was aimed at rebuilding cities and towns, reconstructing industrial and agricultural production, infrastructure, establishing financial stability and eliminating trade barriers between European countries to promote trade and economic relations between these countries and the United States. At the same time, it applied temporary tariff for the protection of the national industry and established strict rules regarding currency transactions. As E. Reinert (2019) notes, in his homeland, Norway, the implementation of this plan led to a ban on the import of clothing until 1956, cars for private use – until 1960, and also significantly limited money transfers abroad. Along with the economic reconstruction of Europe, the Marshall Plan also aimed to stop the spread of communism on the European continent (History.com Editors, 2020).

In the end, the implementation of the Marshall Plan made it possible to achieve good results: the program promoted European industrialization, in particular, the rapid recovery of the steel, mechanical engineering and chemical industries, stimulated the attraction of large investments in Western Europe, supported the development of democratic governments, and also had a positive effect on the economy of the United States itself, creating markets for sales of American goods.

Despite this, after the conclusion of the Marshall Plan, its impact on the recovery of Western Europe became the subject of much debate. As experts note, the reports of that time indicate that when the Program started Western Europe was already on the way to recovery, so the program for the recovery of post-war Europe only accelerated these processes, and was not decisive in this case (History.com Editors, 2020). Such an opinion can be both refuted (by the example of France) and confirmed by the reconstruction of other states, in particular South Korea. Indeed, the aid that was given by the USA to South Korea after the Korean War of 1950-1953 exceeded even the aid given to France and Great Britain under the Marshall Plan, but it did not bring the same success as in Europe. The fact is that the Koreans really had nothing to revive. An agrarian country without industry, almost without electricity, with an uneducated population, a corrupt state apparatus, a stagnant economy dominated by the oligarchy, could not effectively use foreign aid. South Korea's economic boom began in the early 1960s with the rise to power of a military government led by Park Chung-hee. His leadership qualities, dedication to the cause, focus on the complete eradication of corruption and oligarchy, recovery of the economy, reformatting of the South Korean education system, together with financial support from the USA (by the way, only in the form of grants) and the transfer of American technologies created the South Korean economic miracle.

Therefore, the foreign experience of the post-war reconstruction of different countries shows that nothing is impossible. Admittedly, professional leadership of the national elite and financial assistance (primarily grants) of the allies, their support and patronage played a decisive role in these processes.

Proposals for Adapting the European Experience to Modern Ukraine

The first thing to focus on is the similarity of the structural problems of prewar Ukraine and France. In particular, the national economy's distinguishing features before the start of the war were its structural imbalance and low technological complexity, raw material export orientation and low competitiveness (Kindzerski, 2021; Pidorycheva & Antoniuk, 2022). If we look at this model of the economy through the prism of the Morgenthau Plan, then its reproduction in the pre-

war form will mean the country's decline. There are no prospects for such an economic model, its only alternative is technological and digital reconstruction.

In fact, after what Ukraine had to go through and what its people are still going through, the country simply cannot afford to limit itself to achieving the pre-war, too modest for its potential, level of socio-economic development. Therefore, the post-war reconstruction of Ukraine should be aimed at a radical change in the structure of the economy. The transition should be made from an agrarian-raw-material type of economy to an industrial-innovative one. The new economy should be based on the creation of a modern high-tech, digitalized industry in the context of Industry 4.0 spreading around the world. Moreover, Ukraine itself must initiative this if it wants to avoid the fate of a mediocre, routine existence as an agrarian country. Because it is not a fact that Ukraine's allies will offer it a scenario of innovative development rather than something like the Morgenthau Plan. Some countries are interested in Ukraine only as a supplier of agricultural products and raw materials without ambitions for the production of capital- and science-intensive goods. The food crisis and long-term specialization of Ukraine in the export of products with a low degree of processing, cementing its reputation as the «breadbasket of Europe» will also encourage this. Because of the war, Ukraine's export opportunities are narrowing even more, and the agrarianizing of the economy is only intensifying. For instance, according to the First Deputy Minister of Agrarian Policy and Food of Ukraine T. Vysotskyi (in an interview with «Kyiv» TV channel), the share of agricultural products in the structure of Ukrainian exports may increase from 40% to 70% in 2022. Therefore, the risks of finally turning into an «agrarian superpower» remain. In order to prevent this, a strong political will, a clear and unyielding position of the national elite in defending the national interests of Ukraine and its right to innovative development are needed.

Ukraine, as in the case of the Marshall Plan, should offer its own version of a comprehensive plan for the post-war reconstruction of the national economy on new technological bases – a plan that will help the country achieve prosperity in the long term (hereinafter referred to as the Plan). The concept development of such a Plan and its fundamentals should follow the example of post-war France. The work should be carried out by the best, most qualified specialists, by zealous, active and enterprising scientists, by entrepreneurs, industrialists, educators, representatives of innovative structures, and public organizations not indifferent to the future of Ukraine, by authorities and officials with a clean reputation. The principles of equality and equity of the parties should be used as the guide. The identity of the leader remains a question: who will be ready and professionally able to spearhead the vital mission of curatorship over the development of the Plan? Who can rally specialists and the population of Ukraine for the sake of a common goal – effective reconstruction of the country, transition of the national economy to a higher level of scientific and technological development? Does Ukraine have its own Jean Monnet?

When developing and agreeing on the main positions of the Plan, it is necessary to eliminate as many bureaucratic obstacles as possible, speed up all coordination procedures, and establish the accountability of the Plan curator directly to the Prime Minister of Ukraine. The developed Plan should become the national policy of Ukraine, the programme for its transformation, all other strategies and documents should be consistent with the Plan and aim at its implementation. The Plan should entail a holistic view of the post-war conditions in the country, clearly identify the priority tasks, priority activities or groups of activities capable of reloading the economy, and provide impetus to sustainable economic growth in the long term. According to the experience of France, each type of activities requires the development of modernization programmes that will detail the work on specific projects. The National Recovery, Reconstruction and Development Fund should be created to finance work under the programmes.

One of the main priority tasks should be the reconstruction of the damaged areas and construction of new enterprises to provide people with work. Another is solving the housing issue: at first, these can be modular houses (1-3 stories), which are quickly (in 2-3 months) assembled and disassembled, they can be erected on free territories of the western regions, until regular permanent housing can be built for Ukrainians. In such newly constructed areas, it is necessary to quickly assemble similar modular buildings for educational institutions, hospitals, shops, pharmacies, etc. It is advisable to place relocated enterprises evacuated from the war zone here. Such measures should be implemented urgently to support internally displaced persons and to encourage the return of Ukrainians who have gone abroad, because some of them currently simply have nowhere to return.

At least for now, there is every reason to believe that the European Union (EU) and the United States will support Ukraine's aspiration to build a strong, democratic, industrially developed country with a diversified, competitive economy capable of generating the added value required by the market to ensure a high standard of living among citizens and the national security of the state. There are several reasons for this conclusion.

First, Europe feels responsible and guilty when it comes to Ukraine because of its loyalty to Putin's regime in the pre-war period even after the Russian occupation of Crimea and part of the territory of Donbas in 2014-2015.

Second, Ukrainians are currently defending not only their country, its independence and freedom, they are defending the whole of Europe, the right of Europeans to progress and prosperity, «giving the EU a powerful reminder of why it was founded in the first place», as the Bregman (2022) aptly notes.

Third, the fact that Ukraine's application for EU membership received positive signals from the leadership of the European Commission and individual EU member states, in particular Poland and the Baltic states. It is obvious that the

European Union needs a successful Ukraine, not a hotbed of instability and decline in Europe.

Effective reconstruction and modernization of Ukrainian industry, infrastructure, social and communal facilities can be ensured only under the condition of significant political, financial, advisory assistance from the EU and the USA, as well as skilful use of this assistance by Ukraine. The European Union and its member states have the political will to help our country rebuild after the war, there is commitment to this cause. For instance, the EU plans to create a solidarity trust fund modelled after the recovery fund of EU member states after Covid-19. It will finance investments in the reconstruction of Ukraine and reforms in agreement with the Ukrainian government (Valero, 2022). Here, it is important to note that non-refundable financial aid from foreign countries should make up the lion's share (80-90%) of international financial aid to Ukraine. These funds should be aimed at projects on the construction of new large city-sustaining industrial enterprises, reconstruction of affected enterprises using new technological and digital tools, reconstruction of civilian infrastructure and housing. It is necessary to agree on such a financing scheme today. The successful solution of this issue will directly affect the sustainability of Ukraine's post-war economic growth. So far, foreign countries have been more inclined to lend. According to the Minister of Finance of Ukraine S. Marchenko, only 10% of the total amount of international financial aid is planned to be allocated to grants (Obozrevatel, 2022). This is unacceptable as today Ukraine fights for the freedom and democratic values of the entire civilized world.

Finally, it will be extremely important for Ukraine to ensure the transparent use of foreign funds in order to maintain the high level of trust that has been established between the authorities of Ukraine and the EU leadership, and not to ruin it due to corruption and misuse of funds. This will determine, without exaggeration, the fate of the Ukrainian state – chances of its accession to the EU, continued dialogue with European partners on equal terms without an inferiority complex, broad support and all kinds of assistance in recovery.

Conclusions

The scale of destruction after the Second World War opened up new opportunities for Europe and its countries, which were in a difficult economic situation on the eve of the war. This is primarily about France, which in the interwar and post-war period had many problems similar to today's Ukraine. The persevering tendency of France lagging behind other countries in many socio-economic parameters after the war threatened an irreversible decline of the French economy. Such circumstances required a quick response: introduction of radical structural changes and cultural and intellectual enrichment of the French

nation at the same time, uniting the country around a common goal – effective national restoration. Therefore, a decision was made to engage in modernization. Jean Monnet undertook this important mission when he promised Charles de Gaulle to prepare a plan for the modernization and re-equipment of France. The first version of this Plan, prepared under his leadership and approved by the French government in January 1947, was aimed at solving the post-war crisis in the country.

Its essence can be summarized in four main goals: (a) to win the support of the people in the modernization of the country, to involve the population as much as possible in the fulfilment of the difficult task of rebuilding the post-war economy set before France; (b) to make up for the scientific and technological lag behind other countries, to carry out the reconstruction of industry on new technical bases and begin its implementation urgently; (c) to increase the volume of industrial production and develop export potential in those industries in which the country has relative advantages; and (d) to increase labour productivity and fully utilize available human resources.

The plan established a list of priority sectors of the French economy, which were to receive priority funding, giving impetus to the development of national production throughout the country. These industries included coal industry, ferrous metallurgy, power generation, construction, transport and agricultural engineering. Modernization programmes with details on specific projects were developed for each of them. Projects under the Plan were mainly financed through foreign loans received from the United States.

The second version of the Monnet Plan was expanded and adapted as a general Plan for the reindustrialization of post-war Europe, later called the Marshall Plan. It is currently considered a progressive programme for the reconstruction of post-war Europe due to its features. First, it obliged European governments to negotiate with each other in order to speed up the transition of bilateral trade and economic interstate relations to mutually beneficial multilateral ones. Second, it also required a commitment of European governments, businesses and trade unions to cooperate in order to take coordinated action to increase production volumes and the create conditions favourable to this. Third, it gave the European countries the freedom of choice and actions in determining the directions and priorities of Europe's reconstruction, allowing them to plan future investment needs for the implementation of projects in modernization, re-equipment and construction of enterprises, infrastructure and housing. Fourth, it focused on strategic recovery and ensuring Europe's economic growth in the long term. And fifth, strong financial support from the USA, mainly on a non-refundable (grant) basis meant that more than 13 billion US dollars were spent on the implementation of the Marshall Plan, of which grants accounted for 90% of all aid.

What lessons can Ukraine learn from the European experience of post-war economic recovery and modernization?

To start, merely recreating the agrarian and raw material model of the economy in its pre-war form is unacceptable, as it will lead to an irreversible «agrarianization» and decline of the country. The post-war reconstruction of Ukraine should be aimed at creating an innovative industrial economy through technological and digital transformation on the basis of Industry 4.0. Ukraine should push for such a scenario of post-war development by establishing a comprehensive plan for post-war reconstruction of the country on new technological bases. This Plan must be submitted to Ukraine's allies for joint refinement and approval. The Plan should be developed by the best and most qualified specialists with a clean reputation, tenacious and enterprising experts invested in the future of Ukraine. The Plan should clearly define the course for the European integration of Ukraine. The Plan should become the national policy of Ukraine, the program of its structural transformation.

During the preparation of the Plan and its approval by various ministries and agencies both within the country and by international partners, all possible bureaucratic obstacles must be eliminated in order to speed up this process as much as possible. It is important to decide on the curator of the Plan – a person who will be ready and professionally able to oversee the development of the Plan. One of the main priority tasks should be the reconstruction of the damaged areas and construction of new enterprises to provide people with work to support internally displaced persons and to encourage the return of Ukrainians who have gone abroad.

A strong political will, a clear and indomitable position of the national elite in defense of national interests and the right of the Ukrainian state to innovative development and membership in the EU will be of vital importance to the approval of Ukraine's chosen development scenario by its international partners. The agreements must be made now on the provision of financial aid to Ukraine, mainly on a non-refundable basis, as a condition for ensuring the sustainability of its post-war economic growth, taking into account to the Marshall Plan and the South Korean experience. An urgent task for Ukraine is to ensure the transparency of the use of international aid, to counteract manifestations of corruption and misappropriation of foreign funds. Without exaggeration, the future of the Ukrainian state will depend on the successful completion of this task.

Further research could potentially focus on forming specific recommendations to legislative and central executive authorities regarding the post-war recovery of Ukraine through industrial and innovative development.

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Regionalization in European Economic Space

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SUSTAINABLE DEVELOPMENT OF CENTRAL AND PERIPHERAL REGIONS OF SLOVAKIA

Abstract

Aspects of regional and local sustainable development are turning into key elements of strategic planning documents in EU countries. The topic of sustainable development includes issues of both urban and peripheral areas. It encompasses the classic fields of environmental protection and green energy, as well as the parameters of social inclusion, creative capital development, community and neighbourhood building, etc. The paper reviews the implementation of sustainable development goals in Slovakia with a focus on the programme promot-

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ing green infrastructure and the practice of mixed-use urban spaces. The principles of green infrastructure are introduced in Slovakia in line with the concepts of NECONET ecological networks and ÚSES systems of territorial environmental sustainability. The 2030 Environmental Strategy of Slovakia covers three areas, namely water protection and biodiversity, climate change and air protection, and green economy. Prominence is given to the development of renewable energy in the country. The paper determines the main obstacles to the development of Slovakian green infrastructure compared to that of the EU. These include a lack of financing, slow adoption of legislation, and lack of regulation in the land ownership rights.

Key Words:

sustainable development; green infrastructure; ecological networks; mixed use; renewable energy.

JEL: Q01, R10, R58.

6 figures, 35 references.

Introduction

In modern times, it has become obvious that competition between localities (regions) is often more important and intense than competition between entire countries. Therefore, ensuring a high level of local economic development becomes one of the strategic priorities for governments. Thus, the World Bank website states that local economic development provides local governments, representatives of the private and non-profit sectors, and local communities with the opportunity to work together to improve the local economy. It aims to increase competitiveness, thereby stimulating sustainable inclusive growth (Lishchynskyy, 2016; Lishchynskyy et al., 2019; 2021).

In general terms, local economic development can be defined as a structural and dynamic process that, thanks to the effective use of local resources, leads to a long-term improvement in the standards of living of the population in a locality or region within the framework of a separate state (Blakely, 2004; Tello, 2010). In industrialized countries, local economic development has traditionally been considered in the context of changes affecting the ability of the local economy to stimulate economic growth, generate jobs and create new wealth for local residents (Blair, 1995). However, over the last decade, the view of the concept has gradually shifted from local growth to local sustainable development capable of ensuring the welfare of the local community in the future. The sustainable local development is an output of synergy of economic, social and environmental sustainability, which are reflected in policies and functions of local governments (Vitálišová, 2017).

Theoretical Foundations of Regional and Local Sustainable Development

A large number of definitions and interpretations of sustainable development can be found in scientific literature. The World Commission on Environment and Development (1987, p.41) interprets sustainable development as «development that meets the needs of the present without compromising the ability of future generations to meet their own needs». D. Blewitt (2012, p.13) believes that sustainable development «is about protecting and conserving the planet's natural environment and promoting social equity and a degree of economic equality within and between nations».

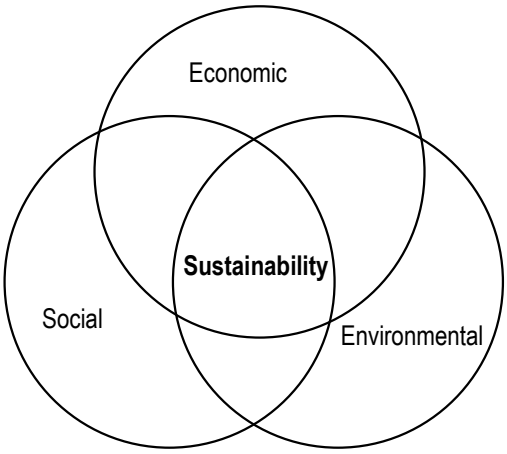
Since sustainable development is the main goal of many institutions, there is a constant need to critically rethink the foundations of what they are trying to achieve, the price of the benefits from specific investors whose interests may be dominant. In this regard, the main emphasis is on management decisions related to specific people and the local environment (Elliott, 2013).

It is worth noting that R. Hansmann and co-authors interpret sustainable development as an integrated concept with three fundamental dimensions: environmental, social and economic (Hansmann et al., 2012). These three integrative concepts of sustainability can be represented as circles (fig.1).

In Fig. 1, the intersection of the three circles represents the goal of sustainable development as an aspiration to maximize beneficial outcomes in all three areas. The middle of the overlapping circles reflects the principles of sustainable development. A similar vision of sustainable development is reflected in the «planner's triangle» of S. Campbell (Fig. 2).

Figure 1

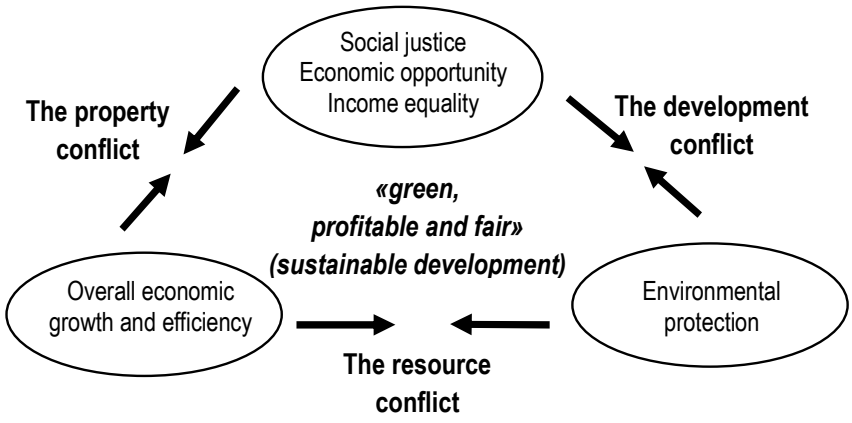
Three pillars of sustainability



Source: Hansmann, R., Mieg, H. A., & Frischknecht, P. (2012). Principal sustainability components: Empirical analysis of synergies between the three pillars of sustainability. *International Journal of Sustainable Development & World Ecology*, *19*(5), 451-459. https://doi.org/10.1080/13504509.2012.696220

Figure 2

Planner's triangle



Source: Campbell, S. (1996). Green cities, growing cities, just cities?: Urban planning and the contradictions of sustainable development. *Journal of the American Planning Association*, *62*(3), 296-312. https://doi.org/10.1080/01944369608975696

S. Campbell (1996) presents a theory that forms three main goals for planning: general economic growth and efficiency, environmental protection and social justice, economic opportunities, income equality. According to Campbell, the middle of this triangle is «green, profitable and fair», and for planners, therefore, it should be the ideal of sustainable development. This theoretical approach highlights serious conflicts in the areas of economic growth, environmental protection and social justice, where no point can exist in isolation. And at the heart of the triangle lies mutual dependence, which is based on both opposition and cooperation. Thus, even theoretical models reflect the complexity of achieving the goals of sustainable development and its inherent application of compromises between stakeholders.

Green infrastructure can be one of the levers used to achieve sustainable development, even if it closer to the natural and environmental areas. In 2015, the member states of the United Nations adopted the 2030 Agenda for Sustainable Development, which contains joint guidelines with 17 sustainable development goals. These goals must be achieved while mitigating climate change and working to conserve oceans and forests. The eleventh Sustainable Development Goal «Make cities inclusive, safe, resilient and sustainable» contains numerous sub-goals, which often emphasize strengthening inclusive and sustainable urbanization, protecting cultural and natural heritage, and reducing the environmental impact of cities (United Nations, 2015).

Sustainable Development of Slovakian Regions

Aspects of sustainable development are starting to play an instrumental role in the implementation of national, regional and local strategies in Slovakia. For instance, issues of environmental protection are under the jurisdiction of the Ministry of Environment of the Slovak Republic and its regional offices in cooperation with the Ministry of Investments, Regional Development and Informatization of the Slovak Republic. Meanwhile, local authorities are usually responsible for the implementation of sectoral policies.

Aspects of sustainable development apply to both urban and rural areas. They cover a wide range of issues: environmental protection and ecology, social justice, development of communities and neighbourhoods, walking and cycling paths, public transport and stationary parking spaces, greenhouse effect and water purification, continued support for established development areas, social construction, preservation of local identity, tourism development, etc. All this and more, including tools for the development of local cooperation and public-private partnership, temporal phasing, participation in public and international funding projects, architectural and urban design competitions.

In 2021, Slovakia approved a new 10-year environmental protection strategy called *Greener Slovakia – Environmental Policy Strategy of the Slovak Republic*. The 2030 Environmental Strategy was developed by the Institute of Environmental Policy (IEP) under the Ministry of the Environment in cooperation with 160 experts from other ministries and sectors. The government's action plan sets specific and measurable targets to be achieved by 2030 (Ministry of Environment of the Slovak Republic, 2019).

The strategy covers three areas, including water and biodiversity protection, climate change and air protection, and the green economy. In addition, the strategy proposes better protection of national parks and forests (75% of the area of national parks is to become an area without human intervention by 2030). The strategy also mentions green public procurement, which is expected to increase to 70% by 2030. Environmental education should also become part of formal education.

The principles of green infrastructure of Slovakia are determined in line with the concepts of NECONET (National Ecological Network) and systems of territorial environmental sustainability ÚSES (Slovak – Územný systém ekologické stability) (Slovak Environment Agency, 2020). According to D. Bennett (2004), ecological networks are coherent (coordinated) systems of natural or semi-natural landscape elements that are established and managed to support or restore ecological functions as a means of preserving biodiversity and providing appropriate opportunities for the sustainable use of natural resources. Ecological networks in Slovakia are implemented at several levels: NECONET – at the national level, ÚSES – at the interregional, regional and local levels.

It is worth noting that the ÚSES toolkit, being part of the land consolidation process, is more adapted to the development of green infrastructure in peripheral zones, outside the boundaries of large cities. However, the greening of territories is also considered one of the key priorities of modern urban planning.

Thus, the general consensus among researchers is that urban green spaces ensure the ecological integrity of cities and have a positive effect on the health of the population. The main proven advantages include: reduction of air pollution due to absorption of certain substances from the atmosphere (Nowak et al., 2006); a more moderate temperature of the settlement due to the provided shade and cooling of the area (Cummins & Jackson, 2001); noise absorption; groundwater replenishment noise absorption; groundwater replenishment (Escobedo et al., 2011). Numerous studies have found a link between green spaces and the health or mortality of the population (Dzhambov et al., 2020, Coutts et al., 2010). There is a strong correlation between the presence of parks and local physical activity and related health promotion (Sallis et al., 2012). The positive influence of parks on reducing the level of obesity has also been confirmed (Ogden et al., 2008). In addition, green spaces are associated with psychological well-being (Ernstson, 2013) and reduced stress (Woo et al., 2009).

The 2030 Environmental Strategy of Slovakia provides for several main directions of projects for the development of green infrastructure of cities, for example, greening public spaces and roofs, increasing the collection of rainwater, connecting transport projects with nature, expanding city parks and urban green areas, as well as promoting biodiversity in urban areas.

Such initiatives are focused on creation of ecological networks and protection of biodiversity but, unfortunately, statistics show that in practice they do not bring positive results. About 60% of the world's ecosystem is degraded and overloaded. Only 17% of biotopes and species and 11% of key ecosystems are in good condition protected by European legislation. This negative phenomenon is also present in Slovakia (Izakovičová & Świąder, 2017).

When considering the principles of planning for the sustainable development of cities in Slovakia, the concept of *mixed use* cannot be avoided. A typical general plan of a city, district or redevelopment zone consists of coloured polygons that represent different functional purposes, e.g. residential, commercial, industrial, agricultural, cultural, sports, green areas, with different protection levels. However, if such a monofunctional approach is used, some areas are left idle for a significant part of the day, while certain structural shifts may even lead to the total abandonment of the territory. To avoid such consequences, planners often employ the principle of mixed use, wherein certain parts of the building are used concurrently for residential and other purposes (for example, basements or lower floors are given over to commercial, industrial, institutional establishments). Of course, designing the entire city according to the principle of mixed use will not solve all problems, but it often allows for a significant reduction in the volume of the housing-only areas and shorter commutes.

For example, the capital of Slovakia, Bratislava, is an example of urban development done according to the zonal principle since the 1960s. The current general plan of the city was formed in 2007 and provided for the use of a mixed approach. According to A. Bindzárová's research, the share of mixed-use areas in Bratislava is only 5% (Fig. 3).

Since 2017, the Ministry of the Environment of the Slovak Republic and the Slovak Environmental Agency have been organizing the ENVIROMESTO competition. The aim of this competition is to raise general awareness about the preservation and protection of the environment, as well as to promote and reward cities that apply environmental policies. This competition includes four categories, one of which is dedicated to nature and landscape protection and green infrastructure. So far, three competitions have been held. The first winner in this particular category was the city of Nitra, the second was the city of Banská Bystrica, and the third was the city of Púchov (Fig. 4).

Figure 3

Mixed-use areas in Bratislava (highlighted in black)

Source: Bindzárová, A. (2016). Type and size of urban cell as tools for sustainable urban (re)development. Procedia Engineering, 161, 1482-1489. https://doi.org/10.1016/j.proeng.2016.08.614

The main campus of the Slovak University of Agriculture is also located in Nitra. In 2019, this university started the project «Green infrastructure at the green university». This project focuses on the development of green infrastructure that improve environmental conditions within the city and adapt urbanized areas to climate change (Central Registry of Projects, 2019). There were, of course, earlier projects and funding opportunities too, such as green infrastructure funding to improve water retention or the funding of 38 green infrastructure projects in early 2018 (Ministry of Environment of the Slovak Republic, 2019).

Re-elected in 2020, the government presented a Manifesto that explicitly mentions the concept of green infrastructure in the context of combining green, grey and social infrastructure to achieve cumulative benefits. The Manifesto also mentions the goal of focusing on green measures to curb or slow surface water runoff and enhance rainfall retention. Slovakia will also actively support the achievement of the Sustainable Development Goals (Ministry of Agriculture and Rural Development of the Slovak Republic, 2018).

Figure 4

Winners of the ENVIROMESTO competition in the category of environmental protection and green infrastructure development

Source: Central Registry of Projects. (2019). Agreement on the provision of a non-refundable financial contribution [in Slovakian]. https://www.crp.gov.sk/data/att/89067.pdf

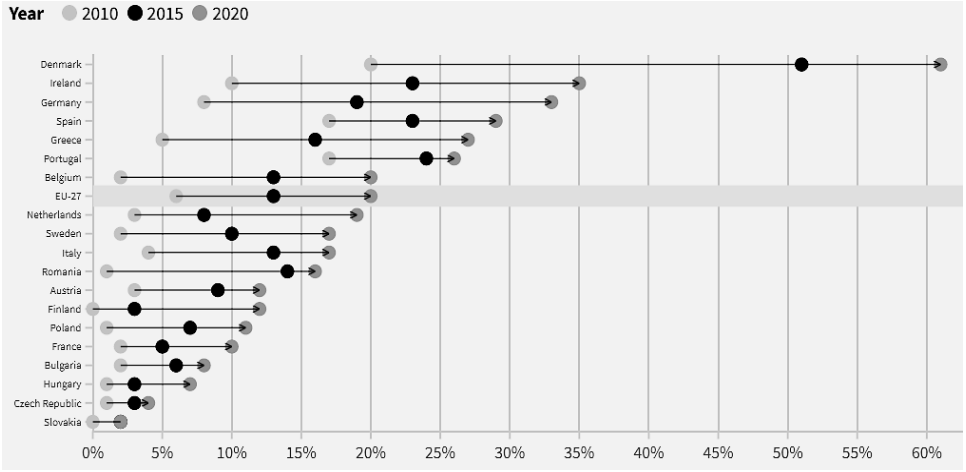
An interview with representatives of Slovak municipalities (Uher, 2020) highlights the main obstacles to the development of green infrastructure (compared to the average parameters for the EU). These are lack of funding (noted by practitioners, but not mentioned by representatives of scientific research institutions), slow adaptation of legislation and land ownership rights. Respondents also noted the frequent prioritization of grey infrastructure over the green and the blue (especially characteristic of urban centres), as well as insufficient public awareness of the prospects for the development of green infrastructure. Reportedly, the advantages of green infrastructure are often ignored when developing strategic priorities for local development, which results in a lack of documentary support for objects of existing and new green infrastructure in cities and peripheral territories.

The transition to renewable energy sources is one of Slovakia's weaknesses compared to other EU members in terms of local sustainable development. In particular, the share of renewable electricity sources in the EU has increased significantly in recent years, reaching 38% in 2020 (compared to 34.6% in 2019). For the first time it has overtaken electricity production based on fossil sources, which fell to 37%. This is an important milestone in the European transi-

tion to clean energy. However, the growth of renewable energy sources is still too slow. Growth in wind and solar generation needs to nearly triple to meet European Green Deal targets by 2030, from 38 TWh per year on average in 2010-2020 to 100 TWh per year on average in 2020-2030. Encouragingly, wind and solar increased by 51 terawatt hours in 2020, well above the 2010-2020 average, despite some impact from Covid-19. However, at the same time many countries continued to see almost zero growth rates for wind and solar energy. This especially applies to Slovakia, where energy generation from the sun and the wind does not provide even 5% of country's needs (Fig. 5).

Figure 5

Share of wind and solar electricity in total energy generation

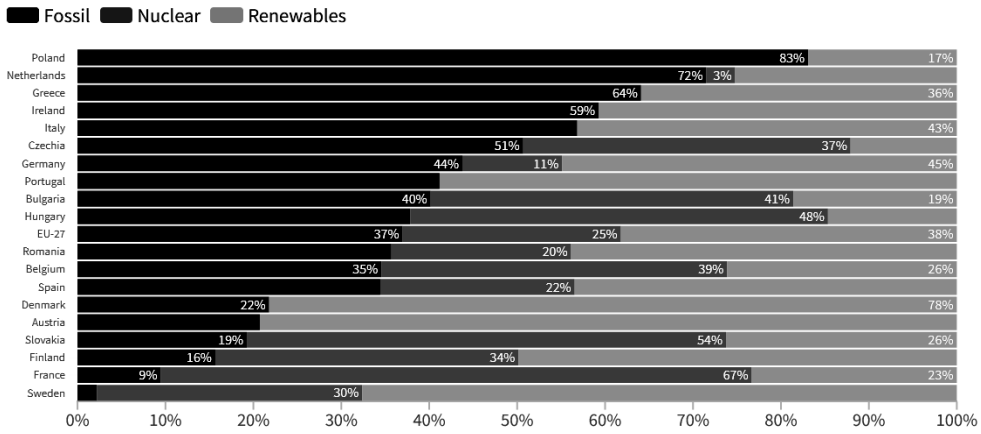


Source: Jones, D. (2022, Mar 30). Global Electricity Review. EMBER. https://ember-climate.org/insights/research/global-electricity-review-2022/

At the same time, the structure of renewable and traditional sources in Slovakia is far from the worst. Fossil sources account for only 19% of energy generation, while a lion's share falls on the production of nuclear energy (Fig. 6).

Figure 6

Ratio of energy production from traditional, nuclear and renewable sources



Source: Jones, D. (2022, Mar 30). Global Electricity Review. EMBER. https://ember-climate.org/insights/research/global-electricity-review-2022/

Conclusions

Therefore, issues of sustainable development concern both urban and peripheral areas and cover both the classic areas of environmental protection and green energy, and parameters of social inclusion and development of creative capital, community and neighbourhood building, etc.

Despite some obstacles, Slovakia has managed to achieve notable progress in the development of green infrastructure over the past decade. The country's environmental strategy until 2030 covers three areas, including water and biodiversity protection, climate change and air protection, and green economy. Aspects of green infrastructure are included in numerous strategies and laws at both the pan-European and Slovak levels, and their role as a separate category of competitiveness has increased the level of public awareness of the green infrastructure issue. The principles of green infrastructure are introduced in Slovakia in line with the concepts of NECONET ecological networks (national level) and ÚSES systems of territorial environmental sustainability (regional and local levels). However, because of the great criticism associated with the ineffective use of ecological networks and ÚSES (the weakest part is monitoring and control), the reform of the planning and regulatory system is preparing. The result

should be a landscape-ecological plan that should reflect the ecological restrictions/protection, but also allows the effective exploitation of economic, social and innovative potential of territories.

Special attention in Slovakia is paid to the development of renewable energy sources. Although the share of traditional sources of electricity is relatively low, it is not accompanied by a high level of energy generation from solar and wind electricity (the bulk of the energy generation comes from nuclear power). Nevertheless, the fuel crisis in the EU caused by the invasion of the Russian Federation into Ukraine can significantly affect sustainable territorial development both positively (stimulate renewable energy sources) and negatively (reduce funding for less urgent priorities).

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Reviews

Oleh BILORUS

NECESSITY AND POSSIBILITY OF OVERCOMING DIVERGENT TENDENCIES BETWEEN ECONOMIES OF UKRAINE AND THE EUROPEAN UNION

JEL: Y3.

On the eve of the historic moment of Ukraine's candidate-country status and the start of the negotiation process on accession to the European Union, the SI «Institute for Economics and Forecasting of the NAS of Ukraine» has published the results of the collective work on problems and prospects of overcoming divergent tendencies in socio-economic development of Ukraine and EU countries[1].

The authors of the monograph outline the theoretical and methodological essence of the integration processes at the current stage of globalization, their role in the convergence / divergence of socio-economic development of the

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European Union and evolution of its institutional environment. The contradictions of globalization and localization as a general basis of modern convergent-divergent processes are highlighted. After all, the conceptual principles of divergence and convergence allow us to explore a diverse spectrum of key areas of human activity, contribute to the practical orientation of political courses not only of individual states but also of regional unions. In this regard, the monograph analyzes the effectiveness of convergence / divergence processes for key macroeconomic indicators, in particular in the investment, innovation, and social spheres. Recently a clear trend has been found towards increasing differences between the socio-economic systems of Ukraine and the European Union, primarily on such criteria as a welfare level and a labour productivity level. Particular attention is paid to the impact of regional and global crisis phenomena, in particular the COVID-19 pandemic, as well as the actualization of global trends in divergence and risks for Ukraine.

The authors' empirical assessments demonstrate the emerging trend of socio-economic divergence between Ukraine and united Europe, which requires immediate development and implementation of a domestic state policy aimed at overcoming this trend, as well as stimulating convergence processes.

The Association Agreement between Ukraine, on the one hand, and the European Union, the European Atomic Energy Community and their Member States, on the other hand, is the basis for large-scale approximation of domestic legislation to the norms and rules of the EU. At the same time, the implementation of the outstanding Ukrainian commitments must be considered as a gradual integration into the EU, and as a prerequisite for Ukraine's development strategy in the broadest sense of the term.

The authors thoroughly analyzed the sectoral problems of the Association Agreement implementation, in particular: advantages and main disadvantages of the EU-Ukraine Deep and Comprehensive Free Trade Area; development of own industrial production and overcoming the trend of deindustrialization; regional differentiation; development of the metallurgical industry; agri-food complex; energy complex and transport. The identified problems allowed them to state that as of December 2021, economic relations between Ukraine and the EU were those of partners and competitors. That is, on the one hand, they are coordinated, and on the other hand, they do not determine any consequences for each of the parties. Given the difference in economic weight of the parties, this increases the potential benefits and risks primarily for Ukraine.

The divergence of the Ukrainian socio-economic macrosystem is manifested in the divergence of elements at different levels of the systemic hierarchy. The object of divergence is not only spatial units (regions, cities, rural settlements, territorial communities), but also industries, sectors, spheres of the economy and society (science and technology, education, healthcare and environment). Moreover, divergent tendencies are observed in the macrosystem's structure – in the relationships between its elements.

Collective scientific work is information-rich, contains model calculations, and also a lot of statistical and visual graphic material. However, some conclusions and recommendations are debatable, given the radical changes in the Ukraine–EU relations since February 24, 2022.

The research results presented in the collective monograph will be very useful not only for scholars in the field of international economic relations, public administration and national economy administration, but also for students of higher educational institutions, politicians, representatives of public organizations, as well as for all those who are interested in the fate of the European integration based on the principles of sustainable economic development.

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