

3.3 ENSURING ECONOMIC GROWTH OF THE STATE IN THE CONTEXT OF DIGITALIZATION

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ABSTRACT

The GDP development trends are the basis for analyzing the changes that occur according to various evaluation criteria, and therefore this may affect the formation of state policy in the financial and economic sphere. The conditions for sustainable economic development are created through the introduction of digital technologies, especially in the face of constant changes and challenges in the country. Today, digital technologies are a key factor in the development of society and the economy, and their use and promotion of the country's digital development is not only a strategic necessity but also a key factor in ensuring the country's competitiveness in the international arena. International rankings of the level of digital development of countries are an important tool for comparing the achievements and weaknesses of digital initiatives. The digital economy sector is transforming approaches to doing business and expanding the presence of companies in the digital environment.

KEYWORDS

GDP, sustainable economic development, digital technologies, state policy, financial and economic sphere, digital development, competitiveness, international rankings, digital economy, business transformation.

PREREQUISITES FOR ENSURING THE ECONOMIC STABILITY OF THE STATE AND THE MANIFESTATION OF THE DESTRUCTIVE CONSEQUENCES OF THE RUSSIAN-UKRAINIAN WAR

External and internal threats have a significant impact on the economic development and well-being of the nation. The stability of the banking system, financial discipline, and financial management capacity have an impact on economic security. Effective regulation and supervision are important factors. New technologies and innovations, which are currently being actively developed, are key to increasing competitiveness and adapting to changes in the global economic environment. Jobs and economic growth. The development of small and medium-sized businesses, easy access to credit, and the promotion of entrepreneurship contribute to the growth of the economy. Responding to geopolitical

events and changes in international relations is important to avoid negative impacts on the economy. An effective anti-corruption system promotes transparency and trust in economic institutions. The ability to interact on international markets and conclude profitable trade agreements is important for sustainable economic development. Assessment of these indicators and strategic decision-making can help ensure the sustainability of the economy and its resilience to various challenges [1, 2].

The state is looking for new methods and means of influencing participants in relations in the field of financial and economic security in accordance with modern realities. The legal framework for ensuring financial and economic security is of paramount importance, in particular, the National Economic Strategy for the period up to 2030 was approved by the Cabinet of Ministers of Ukraine on March 3, 2021, No. 179. According to the economic vision of the National Economic Strategy 2030, Ukraine is the most attractive economic opportunity for investment, innovation, and business; the best place for the realization of the hard potential and the implementation of ideas, personal development. The mission of this Strategy is to create opportunities for the realization of the country's existing geographical, resource and human potential to ensure an adequate level of well-being, self-realization, security, rights and freedoms of every citizen of Ukraine through innovative, outpacing economic growth, taking into account the Sustainable Development Goals, in particular in the context of achieving the economic vision [3].

Today, security risks remain the determining factors for assessing the prospects for further development of Ukraine's economy. But the most significant risk is the duration and intensity of active hostilities.

During a full-scale war, Ukraine's economic security depends on the efficient use of available resources and the ability of society to adapt to new conditions. Pre-war reserves, consolidation of society's efforts, self-organization and cohesion of citizens play a key role in ensuring the sustainability and functioning of the economy.

The cost of damage and losses from Russian aggression is already reaching record levels, and the decline in real GDP (**Fig. 3.9**) in Ukraine is deeper than in most countries with experience of armed conflict [4]. In 2022, real GDP declined by 29.1 %, the largest annual economic decline in Ukraine's history. The main reason for the decline in GDP is the full-scale war that Russia started on February 24, 2022, which has consequences. In particular, these consequences include the occupation of certain territories, the destruction of infrastructure and production facilities, the blockade of Black Sea ports and the disruption of logistics ties, and large-scale migration. All of this led to a sharp decline in consumer demand, investment, exports, and harvests [5].

At the same time, Ukraine managed to maintain macrofinancial stability and attract significant amounts of international assistance, which will have a positive impact on the prospects for post-war recovery [4].

The destructive effects of war are manifested not only in the economy but also in the financial system of a country that is engaged in armed struggle. In Ukraine in 2022, the average annual inflation rate was 20.2 %. The rather moderate inflation in Ukraine in 2022, despite the large-scale destruction of the production base and infrastructure, was due to the fact that Ukraine's western border remained open and neighboring countries were not involved in the war. Thus, a significant portion of consumer demand in Ukraine was met by imports. Imports compensated for part of the lost domestic supply (with real GDP falling by 29.2 %, dollar imports decreased by only 4 %), and large-scale foreign aid supported the purchasing power of the population relative to imports. The freezing of energy tariffs in Ukraine with rising global energy prices is also a deterrent to the current inflation rate [4].

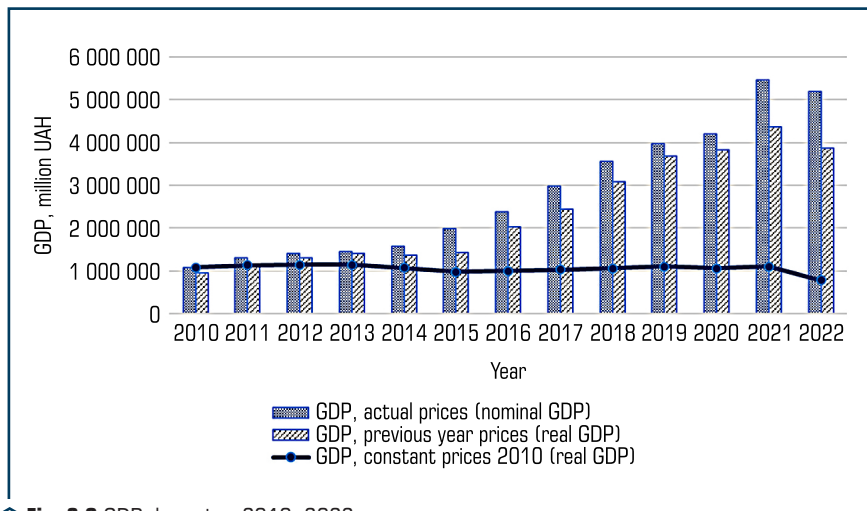


Fig. 3.9 GDP dynamics, 2010–2022
Source: [6]

The situation in which the economy is subject to targeted attacks and influence in war-time requires a comprehensive and balanced approach to economic security management.

Ukraine's actions and measures during the war indicate important steps towards ensuring economic resilience and support for society. Let's focus on the key points of 2022–2023:

1. Financing defense and social spending. Issuing military bonds and mobilizing financial resources is strategically important to ensure financial support for defense and social programs in times of war.

2. Tax liberalization and deregulation. A wide range of measures, such as simplification of the taxation system, tax and customs privileges, voluntary payment of taxes, unified social tax, and other tax simplifications, are aimed at easing financial pressure on businesses and supporting micro and small businesses.

3. Simplification of the tax administration regime. The moratorium on documentary tax audits and other measures to simplify tax administration procedures help to maintain business activity under martial law.

4. Support for humanitarian and volunteer initiatives. Tax and customs exemptions for humanitarian and volunteer aid are seen as important steps to provide humanitarian aid to the victims and the army.

5. International investment in military bonds. Attracting investments from citizens and business investors in military bonds helps to expand sources of financing in times of war.

These measures allow the Ukrainian state to adapt to the economic challenges of the wartime period and maintain economic stability.

Expanding the participation of entrepreneurs in government programs and providing credit support are important measures to support entrepreneurship in times of war. The implementation of the programs "Affordable Loans 5–7–9 %" and "Affordable Financial Leasing 5–7–9 %" expands the opportunities for entrepreneurs to receive financial support at reduced rates, which helps to intensify business activities. Loan support based on portfolio guarantees can help reduce risks for banks, which contributes to the revival of lending activity in times of economic difficulties. Revitalizing lending activity by banks is an important aspect of ensuring that entrepreneurs have access to the necessary financing, which can be difficult in a time of war. The increase in the amount of debt under the Affordable Loans 5–7–9 % program and the hryvnia loan portfolio demonstrates the effectiveness of the program and the response of businesses to the opportunities for support. These measures help to ensure financial stability and support economic activity, especially in difficult conditions such as martial law.

The measures taken by the state in the monetary sphere during the war have a significant impact on the financial stability and liquidity of the country. The introduction of a 100 % state guarantee for household deposits during martial law is an important measure to ensure stability and restore depositors' confidence in the banking system. This helps to avoid panic and withdrawal of funds from banks. Active refinancing of banks in the first weeks of the war helped to avoid a banking crisis and provided the necessary liquidity. Fixing the hryvnia exchange rate at the level of February 23, 2022, for non-cash transactions (with permission to buy foreign currency to import goods from the government-approved list of critical imports) helped to contain inflation and avoid large fluctuations in the foreign exchange market. The increase in the key policy rate to 25 % in June is a tool to reduce pressure on the foreign exchange market and contain inflation.

A high key policy rate can be used to attract investment and maintain the stability of the financial system. Local commodity shortages and rising producer costs may be the factors that influence inflation. Addressing these aspects may help to reduce the pressure on inflation.

The introduction of the "customs visa-free regime" on October 1, 2022 is an important step for Ukraine in the context of its economic integration with the European Union. The visa-free regime will simplify and reduce customs restrictions for goods exported and imported between Ukraine and the European Union. This may have a positive impact on the volume and diversity of trade operations. Accession to the Convention on the Simplification of Formalities in Trade in Goods and the Convention on a Common Transit Procedure is a step towards further trade facilitation, simplification of customs procedures and reduction of administrative barriers. The customs visa-free regime could have a positive impact on increasing exports of Ukrainian goods to the European Union and facilitate the growth of imports of goods to Ukraine from the EU. This initiative fits into the framework of the overall strategy of Ukraine's economic integration with the European Union, which could lead to deeper cooperation in various areas. Reducing customs restrictions and facilitating trade could make Ukraine more attractive to foreign investors, which could have a positive impact on economic development. These steps are important for deepening economic and trade ties between Ukraine and the European Union and contribute to Ukraine's establishment in the global economic market.

The blockade of seaports, closure of airports, shelling of railway infrastructure and missile attacks across Ukraine have significantly posed risks to the country's foreign trade.

At the end of September 2022, Ukraine demonstrates resilience in the economic sphere, although the war has led to a certain decline in foreign trade. Even in the face of war and geopolitical tensions, Ukraine is resilient in foreign trade. The significant decline in trade turnover demonstrates the country's adaptability to new realities and efforts to maintain stability. Exports experienced a more significant decline (31.6 %) than imports (17.8 %). The losses were primarily driven by non-precious metals and their products, as well as mineral products. Exports of chemical and related products almost halved, while machine building lost a quarter of its volume. Imports were affected by a decline in purchases of machinery, chemicals and related products, finished food products, polymeric materials, and other sectors. Price factors, such as rising prices for energy, grain, and fertilizers, contributed to the decline in physical volumes of trade in goods. Due to restrictions on northern, eastern, and southern trade routes, Ukraine reoriented its main commodity flows to the west. During this period, the share of trade with the European Union increased. Ukraine is actively adapting to the new trade conditions, changing the directions and structure of exports and imports to ensure sustainability in the economy [1, 2].

Digital technologies in finance, such as electronic payments and card accounts, play a key role in ensuring the stability of Ukraine's financial system in the context of the military conflict. Effective development of digital tools helps to maintain stable servicing of business transactions and cash flows of the population, even under difficult conditions, such as difficulties in the supply of cash and the suspension of some bank branches. The National Bank of Ukraine's activities in the extensive electronic payment system, as well as the massive introduction of card accounts for various payments, provide the necessary infrastructure for financial transactions. This not only supports the operation of banks and financial institutions, but also helps to meet the needs of the population in paying for goods and services, receiving salaries, pensions, and other social benefits under martial law. Digital transformation in the financial sector is also proving useful for managing financial operations in times of economic difficulties and emergencies.

The remote access technologies developed during the quarantine restrictions have proven to be an important tool for preserving jobs and providing basic administrative services in the context of war and forced displacement. The only state web portal for electronic services, the Diia portal, has become an effective tool for citizens and businesses, reaching more than 14 million users. The Diia portal functions not only as a "state in a smartphone" but also as a means of identifying people who have lost their documents (through the eDocument service), provides tools for collecting information about damaged property, assists in applying for social benefits, and informs the population in times of war. Such technologies not only facilitate access to administrative services, but also serve as an effective tool for resolving issues related to the loss of documents, assessing property damage, and as a means of alternative public information and organizing social assistance in times of crisis.

STUDY OF THE DYNAMICS OF INDIVIDUAL INDICATORS OF FINANCIAL AND ECONOMIC SECURITY OF THE STATE

Financial and economic security is "a component of the economic security of the state, which qualitatively characterizes the financial and economic system, determines its ability to maintain normal conditions for the system's performance, is based on the independence, efficiency and competitiveness of the financial and credit sphere, is aimed at development within the framework of the goals set for the system, and in cases of various threats (external and internal), the system is able to withstand them and restore its performance" [7].

As for ensuring the financial security of Ukraine, the "Concept of Financial Security of Ukraine" was developed on behalf of the NSDC (National Security Council of Ukraine) (CJSC "Ukrainian Financial Development Agency" is the project coordinator) [8]. Thus,

the Concept of Ensuring National Security in the Financial Sphere (2012) states that national security in the financial sphere includes "security issues in the budgetary sphere, in the sphere of public debt management, publicly guaranteed debt and corporate sector debt, taxation, real sector finance, banking, foreign exchange market and in the spheres of stock market and non-banking financial sector. The characteristic features of national security in the financial sector are balance, resilience to internal and external threats, and the ability to ensure the effective functioning of the national economy and economic growth of the state" [9]. The "Concept of Ensuring National Security in the Financial Sphere" states that "...the state of national security in the financial sphere depends on the phenomena and factors of both domestic and foreign financial and credit policy of the state, the political situation in the state, the perfection of legislative support for the functioning of the financial system, as well as the state's international obligations" [9].

Statistics show a significant budget imbalance and large deficits. The significant deficit between revenues and expenditures indicates the need for large financial resources to support important sectors, including defense and social services. For example, September 2022 was characterized by revenues from tax and customs payments of 83.6 billion UAH and expenditures of 233.1 billion UAH (including 106 billion UAH for military salaries).

A slight increase in budget expenditures, excluding defense, security, and public order, by 2 pp of GDP (30.2 % of GDP in 2022) against the background of a significant increase in the budget deficit (17.62 % of GDP in 2022) poses a serious challenge to the country's economic stability. An increase in the budget deficit may cause problems of financial sustainability and has a potentially negative impact on the economic situation. The real threat to security and military activity has led to a sharp increase in defense and security spending, which creates a need to limit spending in other budget sectors. After the end of military conflicts, there may be a need for large-scale economic and infrastructure reconstruction. This may lead to an additional increase in spending and, as a result, to an increase in the budget deficit. A significant economic decline and a one-third reduction in real GDP in 2022 could affect tax revenues and lead to financial difficulties [10] (**Fig. 3.10**).

The structure of sources of financing of public expenditures in Ukraine in 2022 is as follows: 41 % of expenditures were financed by tax and non-tax budget revenues, 35 % by external loans and grants, 13 % by monetary financing, and 9 % by borrowing on the domestic market.

In other words, the state's expenditures on military operations and the functioning of the social and humanitarian sphere were almost equally shared by Ukrainian taxpayers and external creditors/donors. The NBU also made its contribution by covering part of the deficit by issuing money. However, the Government's internal creditors played a minimal role, especially if to consider net loans to the Government [4].

Proper financial planning and budget management is an important part of effective economic management in times of war. The main features of the financial situation in Ukraine in 2022 include: a significant increase in budget expenditures, a budget deficit, acceptable performance of the budget revenue side, and large-scale attraction of external financing. All these factors point to the need for careful and effective financial management in times of war to ensure budget stability and economic sustainability of the country [10].

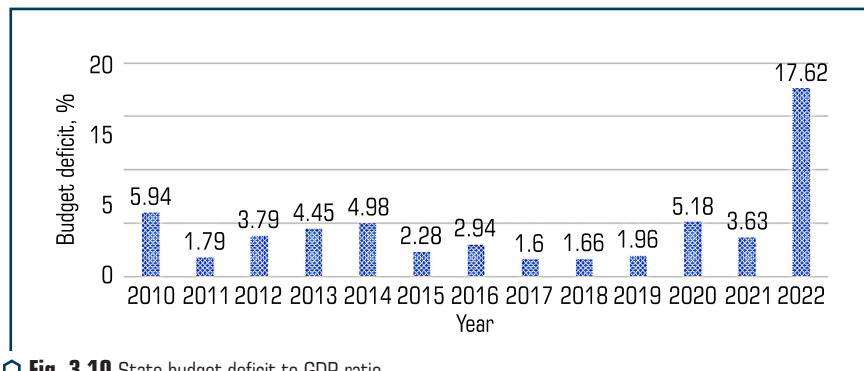


Fig. 3.10 State budget deficit to GDP ratio
Source: [6, 11]

The state of Ukraine's public finances in the context of the military situation is extremely difficult. The military events have led to a sharp decline in the tax base due to a decline in economic activity, shutdown of certain industries and loss of production. The increase in public and publicly guaranteed debt is a response to the need to finance defense spending, humanitarian aid, and other urgent war-related expenses. The IMF's forecast of an increase in gross public debt to 86.2 % of GDP in 2022 indicates serious pressure on the country's financial sustainability. The agreement with international creditors to suspend debt repayments until the end of 2023 is a temporary measure to preserve foreign currency liquidity and reduce the budget deficit. It is also supported by international partners such as the G7 and the Paris Club of creditors. The announcement of the possibility of suspending debt payments to the IMF and other international financial organizations indicates attempts to find ways to reduce financial pressure in the crisis [2].

The increase in Ukraine's public and publicly guaranteed debt by 13.4 billion USD in 2022 and reaching 78.4 % of GDP (**Fig. 3.11**), and its further projected growth to 6.4 trillion USD by the end of 2023, are significant economic challenges for the country. The Russian invasion and the conflict in Ukraine have had a significant impact on the national economy, leading to lower production, higher costs, and economic uncertainty.

The decline in nominal GDP to 161 billion USD reflects the severe loss of production and business activity due to the military events. Increasing debt levels create financial sustainability issues and may lead to difficulties in paying interest and a decrease in the country's credit rating [12].

Significant monthly defense spending (230–250 billion UAH is spent each month, of which about 1/2 is allocated to defense) indicates the large amount of funding that Ukraine spends to protect the country from enemy invasion and ensure the safety of its citizens.

Obtaining financial support to cover military, social, educational, and medical expenses from Western partners in the form of grants (September 2022: 72.5 billion USD) and loans is an important element of financial management and budget support. The continuation of the trend of increasing debt (in 2023, this trend will remain according to the draft state budget) may require the government to implement strategies to ensure sustainable economic activity and a balanced financial position.

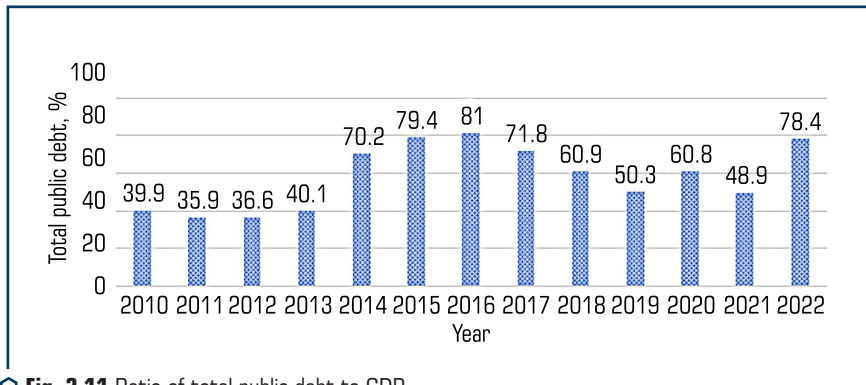


Fig. 3.11 Ratio of total public debt to GDP

Source: [6, 13]

The projected increase in public debt to 106 % of nominal GDP may create significant financial pressure for the country. High debt levels affect the country's ability to service its obligations and pose a threat to financial stability [14, 15].

An increase in the cost of debt compared to economic output (GDP) may indicate an unfavorable financial situation, especially if economic growth is not sufficient to cover the increase in debt service.

The increase in Ukraine's gross external debt by 1.2 billion USD in 2022, which led to its growth relative to GDP from 64.9 % to 82.2 %, indicates significant financial pressure and an increase in the country's external liabilities (Fig. 3.12) [11].

A high level of external debt can create difficulties in servicing these obligations and reduce the country's financial stability.

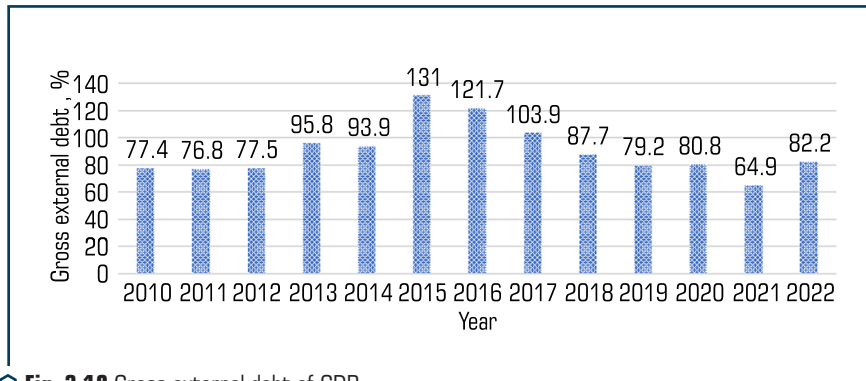


Fig. 3.12 Gross external debt of GDP
Source: [6, 12]

The established National Council for the Reconstruction of Ukraine from the Consequences of the War is noted for its important role in the process of economic recovery and structural modernization. The Presidential Decree on the establishment of this Council recognizes the need for coordination and a systematic approach to the tasks of recovery after the war. Reducing bureaucracy and simplifying procedures for business entities will allow them to receive compensation for damages faster and more efficiently. The termination of state supervision and control measures, as well as the abolition of the requirement to obtain permits, promote entrepreneurial initiative and ease the conditions for business activity. A simplified procedure for conducting business activities by industrial enterprises, including relocation, can encourage enterprises to take effective steps towards recovery and development.

The government's plan of urgent measures to relocate the production facilities of business entities to safe territory is marked by a wide range of measures to ensure not only safety but also the efficiency of the enterprises' operation in the new locations. The plan covers the process of relocating production facilities and personnel from areas where hostilities are ongoing or threatened to safe areas. It includes aspects such as connecting to utilities, simplifying procedures for obtaining land plots, and rescheduling interest payments on loans. Local authorities are actively supporting displaced businesses by helping them find premises, connect to networks, restore logistics and supply and sales markets. They are also providing employment and recruitment services. The launched microgrant program "eRobota" is aimed at creating and developing own business in the conditions of war and martial law, which contributes to the development of

Ukraine's economic potential and support of the population [1, 2]. Through the severe trials of warfare, the Ukrainian country has shown impressive strength and determination of the people, business, local communities and authorities [2].

THE DIGITAL ECONOMY SECTOR IN UKRAINE AS A FACTOR OF THE COUNTRY'S ECONOMIC DEVELOPMENT

Digital financial technologies have become an integral part of the modern financial sector due to the massive digitalization of society and business processes. Before the advent of digital financial technologies, the financial sector was largely traditional and conservative, dependent on complex and inefficient systems. With the Internet revolution and the proliferation of mobile technology, financial technology began to evolve rapidly, offering new, innovative solutions that revolutionized the way people interact with financial services. One of the main factors that has contributed to the development of digital financial technologies is convenience and accessibility for users. Modern technologies allow for online financial transactions without the need to visit bank branches or use paper documents. This significantly increases the speed and convenience of transactions for users and reduces costs for companies.

In addition, digital technology capabilities offer new financial products and services that were previously unavailable or difficult to deliver through traditional channels. For example, payment systems using mobile phones, payment gateways for e-commerce, and investment platforms for small and medium-sized enterprises. "The development of digital financial technologies in Ukraine has been particularly noticeable in recent years, due to a number of factors: the global economic crisis that began in 2008 and its consequences; the growth of global digitalization processes; the active spread of the Internet; the development of competition in financial markets; the rapid spread of social networks and messengers; the desire for innovation, increased requirements for ease of use, quality and speed of information; the success of technology companies in other sectors of the economy; the growth of e-commerce; and the growth of the e-commerce industry [16].

In 2022–2023, the main trends in the development of Ukrainian financial technologies are as follows: embedded finance, which is already actively working on specific products in Ukraine; cross-border payments and transfers; forced displacement of part of the Ukrainian population abroad has necessitated the expansion of money transfer opportunities, in particular, the availability of services and the speed of transactions (SEPA is one of the most popular bank transfers); adaptation of Ukrainian financial services to European legislation; improvement of acquiring, implementation of The development of financial technologies in Ukraine continues even in the context of the

Russian-Ukrainian war, which demonstrates the importance of this sector for the country's economic development.

The digital economy sector in Ukraine has the potential to ensure stability and growth of financial revenues, especially in the context of post-war reconstruction. Digital solutions perform not only a financial function, but are also strategically important as they contribute to the efficiency of various industries in which they are implemented. The development of digital infrastructure in Ukraine plays a key role in the country's integration into the EU Digital Market. The analysis of international rankings of the formation and development of the digital society and innovations provides important information about the state of Ukraine's digital economy.

According to the UN E-Government Survey 2022, in 2022, Ukraine ranked 46th in the E-Government Development Index (EGDI) (in 2020 – 69th, in 2018 – 82nd, in 2016 – 62nd, in 2014 – 87th, in 2012 – 68th, in 2010 – 54th). It should be noted, however, that in the past our country managed to occupy better positions, in particular in the first decade of the twenty-first century, the indicators were even somewhat higher and more stable, compared to the chaotic fluctuations in the future. However, it was in 2022 that Ukraine moved to the group of countries with a "very high level of e-government development" (VHEGDI). Leaders among other countries in 2022: Denmark, Finland and South Korea. The e-government assessment shows that there is generally a close relationship between the level of income in a country (expressed as gross domestic product per capita) and the EGDI values [17–19] (**Fig. 3.13**).

The correlation coefficient (r_{xy}) is 0.9529, which indicates (according to the empirical rule (Chaddock scale) for assessing the closeness of the relationship [20]) a strong relationship between the indicators. Since it is direct, when the E-Government Development Index increases, the GDP per capita increases. And vice versa.

This generally confirms that improving the provision of online services requires significant resources as a priority [21].

An analysis of the dynamics of the WEF/WI TSA Networked Readiness Index (NRI) shows that Ukraine has significantly improved its position in the ranking, rising from 90th place in 2011 to 50th place in 2022. Until 2014, there was a particularly difficult period in ensuring the country's innovative development. However, after the Revolution of Dignity, when the vector of the country's further development changed, a number of reforms were implemented, the value of the network readiness index also began to improve. In particular, in recent years, from 2019 to 2022, Ukraine has moved up 17 positions in this ranking, which indicates qualitative changes in the development of the digital economy in the country, and improved conditions for innovation. Leaders in 2022: The United States, the United Kingdom, and Sweden [22, 23]. The group of lower-middle-income countries is headed by Ukraine (50th place), Indonesia (59th place), and India (61st place). Ukraine is the only lower-middle-income economy in the top half of the

NRI ranking. Ukraine's strongest performance is in the People dimension (37th), especially when it comes to individual adoption of digital technologies (7th), where the economy benefits from high adult literacy rates (1st) and higher education enrollment (18th). Improvements have been made in the government sub-level (52nd), partly due to increased trust through initiatives such as the publication and use of open data (23rd) and public investment in new technologies (45th). Ukraine also scores well in technology adoption (45th) and investment due to its international internet bandwidth (33rd) and FTTH/Internet subscription development (9th), improving the ability of citizens to be connected. Its weakest dimension equally concerns the governance (57th) and impact (57th) of digital technologies. Improvements in cybersecurity (84th) and the ICT regulatory environment (82nd) could improve Ukraine's performance in the areas of trust (54th) and regulation (84th) [24].

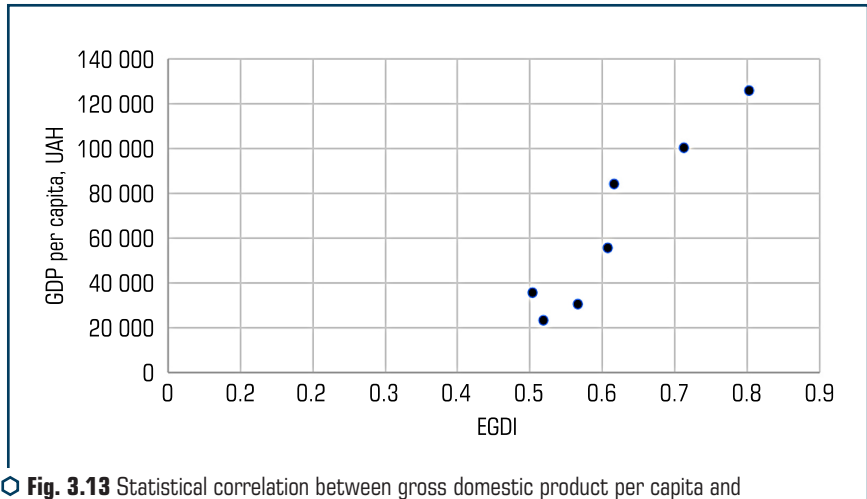


Fig. 3.13 Statistical correlation between gross domestic product per capita and the E-Government Development Index (Ukraine 2010–2022)

Source: [6, 17–19]

The Global Innovation Index (GII) takes into account various aspects of a country's innovation ecosystem, such as scientific and technological achievements, intellectual property, venture capital, technological readiness, access to financial resources, etc. Ukraine, like any other country, can use the Global Innovation Index data to identify areas where there is potential for innovation and competitiveness. In 2022, Ukraine saw a deterioration in its ranking, taking 57th place in the Global Innovation Index among 132 countries. This corresponds to 34th place among 39 European economies.

However, in 2023, there was some improvement, and Ukraine rose to 55th place in the global ranking. At the same time, compared to other European economies, it also ranked 34th among 39 countries [25].

The World Digital Competitiveness Index (WDCR) measures the level of readiness of countries for digital transformation, including the availability of technology, digital infrastructure, and other factors that affect their competitiveness [26].

The WDCR 2021 report ranks Ukraine 54th out of 63 countries, which is 4 positions better than in 2020. However, according to the analysis of Ukraine's position in this ranking, it has not risen above 54–60 positions over the past 7 years (2015–2021), although the 2014 ranking assessed the country's digital competitiveness higher – Ukraine was ranked 50th in the ranking. The relatively low level of Ukraine's position in the digital competitiveness ranking is justified by its low positions in certain factor indicators, namely, digital technologies and digital readiness [27–29].

Leaders among foreign countries in 2022: Denmark, the United States, and Sweden, but Ukraine was not included in the 2022 edition of the digital ranking due to the limited reliability of the data collected.

The analyzed relationship between the change in real GDP and the IMD World Digital Competitiveness Ranking (**Fig. 3.14**) is characterized by a high degree of closeness, which is confirmed by the value of the correlation coefficient $r_{xy}=0.7753$. That is, GDP depends on the IMD World Digital Competitiveness Ranking. With an increase in the IMD World Digital Competitiveness Ranking, GDP increases.

These international rankings help to determine the current state and trends in digital development and e-governance in Ukraine compared to other countries. This allows the government and stakeholders to focus on improving digital infrastructure, developing e-government, and promoting digitalization of all spheres of public life to achieve a high level of competitiveness and ensure integration into the European digital space [30].

An analysis of the relationship between GDP and digital economy indices shows the direct impact of digitalization on the country's financial and economic sustainability [31].

Ukraine is not yet fully ready to move to a digital economy. The idea of transitioning to a digital economy has not been fully explored and the financial system is not ready for full digitalization. This will lead to a lower level of financial security, deterioration of financial conditions for stable socio-economic development of the country, as well as lack of resilience to financial shocks and imbalances, and cyber attacks in the financial sector.

The World Economic Forum's Global Risks Report 2023 keeps cybersecurity high on the agenda, noting that "the Rush War against Ukraine is inspiring cybercriminals, highlighting the challenge for organizations to adjust their investment priorities in response to geopolitical risk. On a positive note, there is an increase in organizations that take cyber risks into account in their decision-making process, as a result of which they are more confident in their cyber resilience and recover better from cyber attacks [32, 33]. Today,

the main risks are typical for the financial and credit industry, but the threat may already become relevant for all industries. Cyber threats are characterized by the fact that they are constantly changing and appear almost every day.

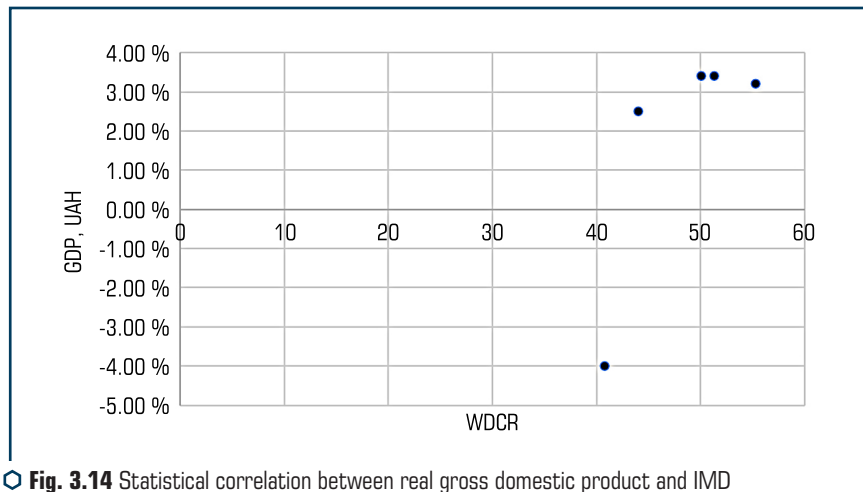


Fig. 3.14 Statistical correlation between real gross domestic product and IMD World Digital Competitiveness Ranking (Ukraine 2017–2021)
Source: [6, 28]

Along with all their innovative power, digital technologies also bring new challenges and risks, such as data and privacy security; regulatory aspects; emerging financial products and services that can be difficult for the general public to understand and evaluate; low levels of financial and digital literacy can lead to risks to personal finances (manipulation, fraud, outright fraud); the dependence of financial systems on digital technologies creates threats of cyberattacks and data security breaches, the demand for cybersecurity professionals is growing, but the cost of protecting infrastructure is also increasing; the implementation of cryptocurrency-related projects can disrupt the financial balance in the world and cause real financial chaos.

Cybersecurity is becoming increasingly important in the context of the modern global economy, as digital technologies and the Internet play a key role in the development of enterprises and contribute to economic growth [34]. The Cybersecurity Ventures Cybercrime Report 2023 predicts a rapid increase in the cost of cybercrime-related losses. Cybercrime losses are expected to reach 10.5 trillion USD by 2025, a significant jump from the 3 trillion USD recorded in 2015. These losses represent the cost of data breaches, stolen funds, intellectual property theft, business disruptions, and recovery

from an attack. The report emphasizes the importance of implementing a risk-based approach to avoid business disruption [35]. The Law of Ukraine "On the Basic Principles of Ensuring Cybersecurity of Ukraine", which came into force on April 5, 2018, establishes the legal and organizational framework for protecting the vital interests of a person and a citizen, society and the state, and the national interests of Ukraine in cyberspace. One of the priorities of the state is to develop and improve the legal framework for effective prevention and suppression of offenses in the field of information technology, protection of electronic information in computer systems and telecommunication networks in order to ensure economic, political, military and other spheres of society [36].

The analysis has shown that there is a direct correlation between GDP and the E-Government Development Index and the IMD World Digital Competitiveness Ranking. Therefore, to ensure economic development and financial and economic security, Ukrainian authorities and business structures should actively implement cybersecurity measures, develop appropriate legislative mechanisms and provide professional training for specialists in this area. The development of financial technologies in Ukraine continues even in the context of the Russian-Ukrainian war, which demonstrates the importance of this sector for the country's economic development. Other indicators of digital transformation, such as the availability of high-speed Internet, the number of electronic trading platforms, and the level of digital literacy of the population, can be taken into account to conduct a more accurate analysis. This approach will allow to better understand the digital impact on economic development and ensure Ukraine's financial and economic security. Thus, the development of the digital economy in Ukraine is an important factor in ensuring both economic and national security, stability, and growth of the country in the context of post-war recovery.

REFERENCES

1. Aktualni vykyky ta zahrozy ekonomichnoi bezpetsi Ukrainy v umovakh voiennoho stanu (2023). National Institute for Strategic Studies (NISS), 16. Available at: https://niss.gov.ua/sites/default/files/2023-05/executive-summary_ecsecurity_2023_gotovee-1.pdf
2. Analychna dopovid do shchorichnoho Poslannia Prezydenta Ukrainy do Verkhovnoi Rady Ukrainy "Pro vnutrishnie ta zovnishnie stanovyshche Ukrainy" (2022). Available at: <https://niss.gov.ua/publikatsiyi/poslannya-prezydenta-ukrayiny/analychna-dopovid-do-shchorichnoho-poslannya-1>
3. Pro zatverdzhennia Natsionalnoi ekonomichnoi stratehii na period do 2030 roku (2021). Postanova Kabinety Ministriv Ukrainy No. 179. 03.03.2021. Available at: <https://zakon.rada.gov.ua/laws/show/179-2021-%D0%BF#Text>

4. Bohdan, T. (2023). Financial and economic consequences of the war. Information portal LB.ua. Available at: https://lb.ua/blog/tetiana_bohdan/550614_finansovoekonomiczni_naslidki.html
5. Komentar Natsionalnogo banku shchodo zminy realnogo VVP u 2022 rotsi (2022). Available at: <https://bank.gov.ua/ua/news/all/komentar-natsionalnogo-banku-schodo-zmini-realnogo-vvp-u-2022-rotsi>
6. Valovy vnutrishnii produkt Ukrainy (2022). Minfin. Available at: <https://index.minfin.com.ua/ua/economy/gdp/>
7. Solomonova, L. V. (2018). Financial and economic security as a component of national security. *Black Sea Economic Studies*, 27, 193–198. Available at: http://bses.in.ua/journals/2018/27_1_2018/38.pdf
8. Kontsepsiia finansovoi bezpeky Ukrainy. Available at: <https://ufin.com.ua/konceptcia/008.doc>
9. Pro skhvalennia Kontsepsii zabezpechennia natsionalnoi bezpeky u finansovii sferi (2012). Rozporiadzhennia kabinety ministriv Ukrainy No. 569-p. 15.08.2012. Available at: <https://zakon.rada.gov.ua/laws/show/569-2012-%D1%80#Text>
10. Bohdan, T. (2023). Implementation of the budget-2022: the main results of the year. Information portal LB.ua. Available at: https://lb.ua/blog/tetiana_bohdan/545981_vikonannya_byudzhetu2022_golovni.html
11. External debt of Ukraine at the end of 2022 (2022). Department of Statistics and Reporting, Department of External Sector Statistics. Available at: https://bank.gov.ua/files/ES/ExDebt_y.pdf
12. Derzhborh Ukrainy za rik zris do 78,5% VVP (2023). Ukrinform. Available at: <https://www.ukrinform.ua/rubric-economy/3698436-derzhborg-ukraini-za-rik-zris-do-785-vvp-minfin.html>
13. Minfin.com.ua: ukrainskyi portal pro finansy ta investytsii. Available at: <https://index.minfin.com.ua/>
14. Parashchy, O. (2024). Derzhborh Ukrainy zris do istorychnoho maksimumu u \$145 mlrd. *Forbes Ukraine*. Available at: <https://forbes.ua/money/derzhborg-ukraini-zbilshivsya-do-80-vid-vvp-zamist-86-analitik-oleksandr-parashchiiy-rozpovidaechomu-tse-pozitivniy-rezultat-v-situatsii-viyni-02022024-18961>
15. Vinokurov, Y. (2022). Derzhavnyi borh Ukrainy perevyschyt 100 % VVP. Shcho tse oznachaie? *Ekonomichna pravda*. Available at: <https://www.epravda.com.ua/publications/2022/10/25/692991/>
16. Liakhova, O., Yurkevich, O., Korets, K. (2023). Fintech market in Ukraine: current conditions. *Black Sea Economic Studies*, 79, 189–195. <https://doi.org/10.32782/bses.79-28>
17. Halushchak, M., Halushchak, O., Mashliy, H. (2023). Electronic Ukraine in the digital world. *Galic'kij Ekonomichnij Visnik*, 85 (6), 174–182. https://doi.org/10.33108/galicianvisnyk_tntu2023.06.174

18. E-Government Development Index (2022). Country Data 2022. United Nations. Available at: <https://publicadministration.un.org/egovkb/Data-Center>
19. E-Government Development Index. Ukraine 2003–2022 (2022). United Nations. Available at: <https://publicadministration.un.org/egovkb/en-us/Data/Country-Information/id/180-Ukraine/dataYear/2012>
20. Bradul, A., Varava, L., Turylo, A., Dashko, I., Varava, A. (2021). Forecasting the effectiveness of the enterprise to intensify innovation and investment development, taking into account the financial component of economic potential. *Eastern-European Journal of Enterprise Technologies*, 4 (13 (112)), 89–100. <https://doi.org/10.15587/1729-4061.2021.239249>
21. Khaustova, M. (2022). Public policy in the context of digitalization of society. International experience in implementing programs and digitization strategies. *Analytical and Comparative Jurisprudence*, 2, 209–216. <https://doi.org/10.24144/2788-6018.2022.02.40>
22. Kotelevets, D. O. (2022). The Main Obstacles to the Development of Digital Economy Infrastructure in Ukraine. *Business Inform*, 12 (539), 127–132. <https://doi.org/10.32983/2222-4459-2022-12-127-132>
23. Khaustova, V. Y., Reshetnyak, O. I., Khaustov, M. M., Zinchenko, V. A. (2022). Analyzing the ICT-Sphere Development in Ukraine According to International Indices and Rankings. *Business Inform*, 5 (532), 40–56. <https://doi.org/10.32983/2222-4459-2022-5-40-56>
24. The network readiness index 2022 (2022). Press Release. Washington. Available at: <https://networkreadinessindex.org/nri-2022-edition-press-release/>
25. Informatsiini materialy shchodo stanu innovatsiinoi diialnosti (2023). Ministry of Economy of Ukraine. Available at: <https://www.me.gov.ua/Documents/Print?lang=uk-UA&id=69b9a9bf-5fbc-4035-8c0f-ac26b853c0eb>
26. Roshchuk, M. (2020). Ukraina v mizhnarodnykh reitynhakh tsyfrovoho rozvytku: stratehuvannia ta perspektyvy. *DICTUM FACTUM*, 3 (8), 49–58. Available at: <https://df.duit.in.ua/index.php/dictum/article/view/163/141>
27. Khaustova, V. Y., Reshetnyak, O. I., Khaustov, M. M., Zinchenko, V. A. (2022). Analyzing the ICT-Sphere Development in Ukraine According to International Indices and Rankings. *Business Inform*, 5 (532), 40–56. <https://doi.org/10.32983/2222-4459-2022-5-40-56>
28. IMD World digital competitiveness ranking (2022). Available at: <https://imd.cld.bz/Digital-Ranking-2022>
29. Bakalinska, A. (2022). Prerequisites for the formation and development of information economy in Ukraine. *Proceedings of Scientific Works of Cherkasy State Technological University Series Economic Sciences*, 67, 87–96. <https://doi.org/10.24025/2306-4420.67.2022.277701>

30. Shtal, T., Pliekhanov, K. (2023). Ukraine's position in international rankings assessing the level of digital development of countries. *Digital Economy and Economic Security*, 8 (8), 22–28. <https://doi.org/10.32782/dees.8-5>
31. Lutsyk, Y., Demenev, O., Parkhomenko, P., Telehin, V. (2023). Preservation of financial and economic stability as a guarantee of stabilization of the state's economy and reliable financial support for defense and security needs in the context of full-scale russian aggression against Ukraine. *Air Power of Ukraine*, 1 (4), 74–80. <https://doi.org/10.33099/2786-7714-2023-1-4-74-80>
32. At Least 10 Years of Cyber Risk Ahead – WEF's Global Risks Report (2023). Available at: <https://10guards.com/ua/articles/at-least-10-years-of-cyber-risk-ahead-wefs-global-risks-report-2023/>
33. Global Cybersecurity Outlook 2023 (2023). Available at: https://www3.weforum.org/docs/WEF_Global_Security_Outlook_Report_2023.pdf
34. Ramachandran, R. (2019). Cybersecurity and its Critical Role in Global Economy. Information Systems Audit and Control Association (ISACA). Available at: <https://www.isaca.org/resources/news-and-trends/isaca-now-blog/2019/cybersecurity-and-its-critical-role-in-global-economy>
35. Cybersecurity Ventures Report on Cybercrime (2023). Information portal eSentire. Available at: <https://www.esentire.com/cybersecurity-fundamentals-defined/glossary/cybersecurity-ventures-report-on-cybercrime>
36. Pro osnovni zasady zabezpechennia kiberbezpeky Ukrainy (2017). Zakon Ukrainy No. 2163-VIII 05.10.2017. Available at: <https://zakon.rada.gov.ua/laws/show/2163-19#Text>