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on the topic **«Exchange rate and the factors of its formation in the context of global economic instability»**

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INTRODUCTION

Relevance of the topic. In the modern conditions of globalization of the world economy, which is characterized by a high level of interdependence and rapid changes in economic and financial processes, the role of the exchange rate has acquired particular importance. The exchange rate is one of the important instruments of economic stability, as it directly affects trade relations, the country's investment attractiveness, the level of inflation, as well as the lives of citizens. In the conditions of global economic instability caused by political, financial and natural crises, exchange rate fluctuations can have serious consequences for national economies. This is especially true for developing countries, including Ukraine, which is currently experiencing significant economic difficulties in conditions of war and economic instability.

Analysis of recent research and publications. The study of modern aspects of currency regulation in Ukraine, in particular under martial law, is relevant in connection with the impact of global economic crises and external factors on the national economy. In recent publications, considerable attention has been paid to the mechanisms of currency regulation and its effectiveness in conditions of economic instability. In particular, the authors Antonyuk O. R. and Dermanska M. O. investigate the features of currency regulation during martial law in Ukraine, in particular the impact on the system of control over currency transactions. These studies are important for understanding how state bodies can regulate currency flows during armed conflicts and their impact on the financial stability of the country. The author Boldovska K. focuses on the accounting of international transactions of business entities, which is also an important element in ensuring the effectiveness of currency regulation in conditions of global economic changes. The author points to the need to improve accounting methods to reduce currency risks. Researchers Bondarenko O. S., Kulish A. M. and Myrhorod - Karpova V. V. analyze the principles of implementing currency policy as a means of ensuring the financial and economic security of the state. They investigate how changes in the exchange rate affect the national economy and the stability of the financial sector in conditions of economic crisis and instability. In contrast, Bublyk E. O. emphasizes the strengthening of currency regulation in Ukraine during the escalation of hostilities, which is of critical importance for maintaining the stability of the national currency and ensuring the security of financial flows. Researcher Derkach Y. investigates the use of currency regulation instruments in conditions of martial law, focusing on the importance of these instruments for maintaining economic stability and minimizing negative consequences for the financial system. Other studies, such as the works of Zadoya A. O., Magdich A. S., Matviychuk N. M. and Mylenko V., also provide important results on the analysis of monetary policy, macroeconomic criteria for monetary and financial convergence, and currency regulation instruments during the war, which has a direct impact on Ukraine's foreign economic activity and its exchange rate.

Thus, modern research and publications consider currency regulation as a key tool for maintaining economic stability in conditions of global and domestic crises. Analyzing the works, we can conclude that it is necessary to improve the mechanisms of currency policy in Ukraine to ensure effective management of the exchange rate and financial flows in conditions of martial law and global economic instability.

Purpose and objectives of the research. The purpose of the qualifying bachelor's thesis is to analyze and systematize the main factors influencing the formation of currency exchange rates, as well as to develop recommendations for stabilizing the exchange rate in conditions of global economic instability.

To achieve this goal, it is necessary to solve the following tasks:

- define the concept of exchange rate and its types;
- to systematize the functions of the exchange rate in the national economy;
- to substantiate the mechanisms of exchange rate formation in a market economy;
- to investigate the factors influencing the formation of the exchange rate;
- analyze exchange rate fluctuations of the world's major currencies;
- assess the factors affecting the exchange rate in conditions of economic instability;
- diagnose exchange rate fluctuations in Ukraine under martial law;

- to substantiate the prospects for stabilizing the exchange rate of Ukraine in the context of global economic changes.

The object of the study is the exchange rate of currencies and the processes of its formation in conditions of global economic instability.

The subject of the study is the factors influencing exchange rate changes, as well as the mechanisms that ensure currency stability in the face of global economic fluctuations.

Research methods. The work will use general scientific methods, such as analysis and synthesis, comparison, a systems approach, as well as quantitative methods, in particular statistical methods for analyzing data on exchange rates and economic indicators, correlation and regression analysis to assess the impact of factors on the exchange rate.

Theoretical, methodological and practical significance of the results obtained. The theoretical significance of the work lies in clarifying the theoretical aspects of the functioning of the exchange rate and its dependence on global economic processes. The methodological significance lies in developing recommendations for stabilizing the exchange rate at the national level in conditions of economic instability. The practical significance lies in the possibility of applying the results obtained to forecast exchange rate fluctuations in Ukraine and other countries with transition economies.

The information base of the study includes the works of domestic and foreign scientists, statistical data, reports of international financial organizations, as well as materials related to the economic situation in Ukraine, in particular under martial law.

Structure of the work. The work consists of an introduction, two chapters, conclusions, a list of sources used, and appendices.

CHAPTER 1.
EXCHANGE RATE AND ITS ROLE IN THE MODERN ECONOMY

1.1. The concept of exchange rate and its types

The exchange rate is one of the main elements of currency regulation, determining the ratio of the value of one currency to another on the international currency market. It is an important instrument of monetary policy, directly affecting economic processes in the country, including foreign trade, investment, and inflation expectations. Changes in the exchange rate can cause significant fluctuations in the economic situation, so understanding its functioning is important for effective management of economic processes. The exchange rate has not only economic, but also political significance. It reflects the degree of stability of the country's economy, the level of inflation, the state's external obligations and its currency policy. Depending on how a country regulates its exchange rate, there are different approaches to its definition and stability.

The exchange rate can be determined by various mechanisms depending on government policy, economic conditions and the specifics of the foreign exchange market. The exchange rate has a significant impact on foreign economic transactions, in particular on exports and imports, as well as on the stability of the domestic economy. Exchange rate fluctuations can significantly change the prices of imported goods, which in turn affects inflation in the country [19, p. 98]. A decrease in the value of the national currency can make exports more competitive in world markets, but at the same time increases the cost of imports, which can lead to negative effects for the domestic consumer market. In countries with a high level of foreign debt, changes in the exchange rate can have a significant impact on the balance of payments, since debt obligations are often expressed in foreign currency. This may lead to the need for additional financial injections to maintain stability [13].

The exchange rate is an important tool of economic regulation, reflecting the value of one currency in relation to another. Its level has a significant impact on the economic stability of the country, ensuring financial security and the efficiency of foreign economic operations. Approaches to determining and understanding the exchange rate may vary depending on the specific economic conditions, political situation and macroeconomic strategy of the country. One of the special aspects is its role during crisis events, in particular under martial law, which requires additional attention to the analysis of the stability of the foreign exchange market and monetary policy (Table 1.1).

Table 1.1 – Authors' approaches to the concept of exchange rate

Authors	Approach to the concept exchange rate	Source
Antonyuk O. R., Dermanska M. O.	The exchange rate is considered as a tool of currency regulation in conditions martial law, influence on controlling organs and mechanisms stability economy.	[9, p. 5]
Bondarenko O. S., Kulish A. M., Myrhorod-Karpova V. V.	Exchange rate as a tool financial security that can be adapted to variables the country's economic conditions and ensuring financial stability.	[11]
Bublyk E. O.	Exchange rate as important element of currency regulation in the conditions crisis phenomena, particularly in conditions military actions.	[12, p. 40]
Voronina O. O.	Consideration speakers exchange rate as a factor that directly affects foreign economic operations enterprises and economic stability.	[13]
Donkoglova T. O.	Analysis influence monetary foreign exchange policy market in conditions martial law and the role of the exchange rate in adapting to new economic conditions.	[16, p. 50]
Zadoya A. O., Magdich A. S., Zadoya O. A.	The exchange rate as an important aspect of macroeconomic stability and criteria for monetary and financial convergence for Ukraine.	[17, p. 15]
Kinzerska N. V.	The exchange rate is viewed through the prism of foreign economic activities and accounting, taking into account factors uncertainties on the foreign exchange market.	[18, p. 103]
Kolyada T. A., Mala N. L.	Definition exchange rate as one of the factors that much affects the economic development country, in particular through its interaction with monetary policy.	[19, p. 99]
Lavrov R. V., Sadchikova I. V., Seredyuk I. O.	Study modern trends in currency regulation and the role of the exchange rate in them implementation.	[20, p. 8]

Magdich A. S., Zadoya O. A., Honcharuk B. O.	Analysis exchange rate as a tool currency policies in periods economic crises for stability national economy.	[21, p. 160]

Continuation of table 1.1

Source: compiled by the author based on [9, p. 5; 11; 12, p. 40; 13; 16, p. 50; 17, p. 15; 18, p. 103; 19, p. 99; 20, p. 8; 21, p. 160].

According to the approaches proposed by various authors, the exchange rate acts as an important instrument of currency regulation, which can be adapted to changing economic conditions, such as war or economic crisis. For example, Antonyuk O. R. and Dermanska M. O. consider the exchange rate as an important mechanism of currency regulation in martial law, which is able to stabilize the economic situation through its influence on regulatory authorities [9, p. 5]. This emphasizes the importance of the exchange rate as a stabilizer in periods of economic instability. The authors Bondarenko O. S., Kulish A. M., Myrgorod-Karpova V. V. consider the exchange rate as an instrument of financial security, which can be adapted to changing conditions in the country to ensure financial stability [11]. From their point of view, the flexibility of the exchange rate is necessary to maintain economic security, since it allows responding to external shocks and internal economic challenges.

According to Bublik E. O., the exchange rate is an important element of currency regulation, especially in times of crisis, in particular during periods of military operations. It can act as a tool for maintaining economic stability in difficult conditions [12, p. 40]. In particular, Voronina O. O. focuses on the dynamics of the exchange rate as a factor that directly affects the foreign economic operations of enterprises and economic stability [13]. This confirms the importance of exchange rate stability for enterprises engaged in foreign trade. In contrast, Donkoglova T. O. studies the impact of monetary policy on the foreign exchange market under martial law, emphasizing the role of the exchange rate in adapting to new economic realities [16, p. 50]. This aspect is important for analyzing changes in the foreign exchange market under conditions of geopolitical instability.

Researcher Kinzerska N. V. studies the exchange rate through the prism of foreign economic activity and accounting, emphasizing the importance of taking into account uncertainty factors in the foreign exchange market [18, p. 103]. This emphasizes the need to take into account various economic and political factors when analyzing the exchange rate.

Thus, the exchange rate is a complex and multifunctional economic instrument that plays an important role in currency regulation and ensuring the macroeconomic stability of the country. The authors' approaches to the concept of the exchange rate demonstrate its diversity in application: from an instrument of financial security to a mechanism for adapting to crisis situations. In modern conditions, especially during war or economic crisis, the stability of the exchange rate becomes even more important, since it affects foreign trade, macroeconomic stability and the overall financial condition of the country.

The exchange rate is the main economic instrument that determines the value of one currency relative to another. The choice of a specific type of exchange rate depends on the economic policy of the country, its economic conditions, as well as the stability of the national currency [25]. In the modern world, there are different approaches to the formation of the exchange rate, each of which has its own advantages and disadvantages. The study of types of exchange rates allows us to understand the mechanisms of their functioning and the impact on the economic situation of the country (Table 1.2).

Table 1.2 – Types exchange rate

Exchange rate type	**Characteristics**
Fixed rate	The exchange rate that established by the government or central bank on a permanent basis level and supported on this equal through currency Interventions. This is a system where the state actively intervenes in regulating the exchange rate.
Flexible course	The exchange rate that is determined on the foreign exchange market depending from supply and demand for currency. The central bank does not intervene in the process its definition that gives him possibility fluctuate within market conditions.
Controlled floating rate	It a combined system that combines elements fixed and flexible exchange rate. The exchange rate fluctuates according to market conditions, but the central bank can to intervene in order to avoid excessive oscillation or save stability.

Multicurrency rate	A system in which a country's currency is evaluated not only in relation to one foreign currency, but also to several currencies. This allows reduce risks from oscillation one currency and provide bigger stability.
Double course exchange	A system where two exchange rates are used: the official rate set by the government or by the central bank, and the market rate, which reflects the actual state of the foreign exchange market.

Continuation of table 1.2

Source: compiled by the author based on [23, p. 14].

A fixed exchange rate is one of the most stable types of exchange rate. It is used in countries that seek stability and minimize currency risks. However, a fixed exchange rate can lead to a shortage of foreign exchange reserves, as the state must regularly conduct currency interventions to maintain this rate.

A flexible exchange rate allows a currency to fluctuate freely according to market conditions. In this case, the exchange rate is determined by the supply and demand for the currency in international markets. This allows the economy to adapt to changes in foreign trade and financial conditions, but can lead to instability in the event of sharp fluctuations.

A managed floating exchange rate is a compromise between fixed and flexible exchange rates. Under this regime, the government or central bank can intervene in the market to avoid excessive volatility and maintain the exchange rate at a certain level. This allows for flexibility while ensuring some stability [9, p. 10].

A multi-currency exchange rate is used by countries seeking to reduce the risks associated with the volatility of a single currency. Instead of tying the exchange rate to a single currency (such as the US dollar), a country values its currency against multiple currencies, which allows for a more stable situation for the economy.

A dual exchange rate involves using two different rates for currency exchange: the official rate set by the government, and the market rate, which reflects the real situation on the foreign exchange market. This system helps maintain control over the national currency while taking into account real economic conditions.

Types of exchange rates have different advantages and disadvantages depending on the economic needs of the country. A fixed rate provides stability but requires large foreign exchange reserves, while a flexible rate allows for adaptation to changes but can cause high volatility. A managed floating rate combines elements of flexibility and stability, which makes it popular in many countries. A multi-currency rate helps reduce the risks of dependence on a single currency, while a dual exchange rate is a compromise between market conditions and government control. The choice of a specific type of exchange rate depends on the country's strategic goals and its economic situation [31].

In today's globalized world, currencies play a key role in facilitating international trade, investment and financial flows. Understanding the diversity of currency systems and the principles of their classification is important for participants in international economic relations, from governments and central banks to businesses and individual investors. Table 1.3 summarizes the main criteria used to classify currencies, providing a clear understanding of their characteristics and examples.

Table 1.3 - Criteria for classifying currencies

Classification criterion	**Characteristics**	**Examples**
1	**2**	**3**
By territorial location	Currency of one country or group of countries.	Ukrainian hryvnia (UAH), US dollar (USD), euro (EUR), Swiss franc (CHF), British pound sterling (GBP), Japanese yen (JPY), Canadian dollar (CAD), Australian dollar (AUD)
By degree of convertibility	The ability to be freely exchanged for other currencies	Freely convertible: USD, EUR, GBP, CHF, JPY, CAD, AUD; Partially convertible: currencies of countries with currency restrictions; Non-convertible: currencies whose circulation is limited to the domestic market and are not subject to exchange.
By form of existence	Physical form (banknotes, coins) or non-cash form (bank account records).	Cash: hryvnia banknotes, euro coins; Non-cash: funds on a card account in dollars.

By exchange rate regime	A method of determining the value of a currency relative to other currencies.	Fixed: the exchange rate is pegged to another currency or a basket of currencies (e.g., currency bands); Floating: the exchange rate is determined by market supply and demand; Managed: the central bank periodically intervenes to stabilize the exchange rate.
By role in international payments	The importance of a currency in global trade and financial transactions.	Reserve currencies: USD, EUR, JPY, GBP, CHF (used by central banks to hold reserves and make international payments); Key currencies: widely used in international trade and finance.

Continuation of table 1.3

Source: compiled by the author on the basis of [23, p. 14].

The criterion for classifying currencies by territory is one of the most obvious and is based on the geographical origin of the currency. The national currency is legal tender in the territory of one particular country. It is usually issued and regulated by the central bank of that country. Examples include the Ukrainian hryvnia (UAH), which is the official currency of Ukraine, the US dollar (USD) of the United States of America, and the Japanese yen (JPY) of Japan.

In addition to national currencies, there are also regional currencies used by a group of countries that have close economic or political ties. The most famous example is the euro (EUR), which is the official currency of the European Union member states that make up the eurozone. The Swiss franc (CHF) and the British pound sterling (GBP), the Canadian dollar (CAD) and the Australian dollar (AUD) are also national currencies that have a significant impact on the world stage due to the economic power of the respective countries [17, p. 12].

The degree of convertibility of a currency reflects the possibility of its free exchange for other foreign currencies without significant restrictions on the part of the state. Freely convertible currencies are the most liquid and widely used in international settlements. They include currencies such as the US dollar, euro, British pound sterling, Swiss franc, Japanese yen, Canadian dollar and Australian dollar. These currencies are exchanged on the foreign exchange market at market rates without significant administrative obstacles.

Partially convertible currencies have certain restrictions on their exchange, which may apply to both residents and non-residents of the country. These restrictions may include limits on the amount of exchange, requirements for special permits, or the use of certain channels for foreign exchange transactions. The currencies of many transition and developing countries fall into this category.

Non-convertible (closed) currencies are characterized by the practical impossibility of their exchange for foreign currencies for most entities, except in certain cases controlled by the state. The circulation of such currencies is limited to the domestic market, and they are not used in international trade and investment [23, p. 11].

Currencies can exist in two main forms: cash and non-cash. The cash form is represented by physical money - banknotes and coins - that are used to make payments between individuals and businesses, especially in retail and service sectors. Examples include Ukrainian hryvnia banknotes and euro coins.

Non-cash funds are funds that are recorded in bank accounts in the form of records. The majority of modern financial transactions, especially between legal entities and in large volumes, are carried out in non-cash form through bank transfers, payment cards, and other electronic payment instruments. An example is funds on a card account denominated in US dollars [33, p. 71].

The exchange rate regime determines how the value of one currency is set relative to others. A fixed exchange rate involves pegging the national currency to another, more stable currency (an anchor) or to a basket of currencies at a fixed ratio. Within a fixed regime, there may be exchange rate corridors that allow for minor fluctuations within specified limits.

Under a floating exchange rate, the value of a currency is determined by market supply and demand in the foreign exchange market without significant intervention by the central bank. A managed floating exchange rate is an intermediate option, whereby the exchange rate is determined by market forces, but the central bank has the right to intervene periodically in the foreign exchange market to smooth out sharp fluctuations, maintain a certain exchange rate level, or achieve other economic goals [48, p. 19].

The criterion of role in international settlements reflects the importance of a currency in the global economy and its use in international trade and financial transactions. Reserve currencies are currencies that central banks of different countries hold in their gold and foreign exchange reserves to ensure international settlements, cover payment balances, and implement currency policy. The main reserve currencies are the US dollar, the euro, the Japanese yen, the British pound sterling, and the Swiss franc. Their stability, liquidity, and trust on the part of the international community make them attractive for accumulating reserves.

Key currencies are currencies that are widely used in international trade to make payments for export and import transactions and in international finance to denominate loans, bonds, and other financial instruments. Reserve currencies are usually also key currencies, but there are other currencies that play an important role in certain regions or sectors of the international economy [34, p. 10].

In addition to the criteria mentioned above, currencies are also classified according to the inflationary processes occurring in the countries whose currencies are being compared. This distinction is reflected in the distinction between nominal and real exchange rates.

The nominal exchange rate (NER) is the relative price of the currencies of two countries. It shows how many units of foreign currency can be exchanged for one unit of national currency (or vice versa) at a given point in time. The nominal exchange rate is the rate we see in bank currency quotes and on financial markets.

The real exchange rate (RER) adjusts the nominal exchange rate for relative price levels (inflation) in the two countries. It reflects the purchasing power of the currencies of the two countries after taking into account the difference in price levels for goods and services. In other words, the real exchange rate shows how many goods and services of one country can be exchanged for a certain amount of goods and services of another country.

The real exchange rate (RER) can be calculated using the following formula [12, p. 37]:

$$RER=NER * (P_{for} / P_{dom}) \qquad (1.1)$$

Where:

- RER - real exchange rate
- NER - nominal exchange rate (expressed as the number of units of foreign currency per one unit of national currency)
- P_{dom} - price level in the domestic country (usually consumer price index or producer price index)
- P_{for} - price level in the foreign country (the country whose currency is used for comparison uses similar price indices)

Formula (1.1) adjusts the nominal exchange rate for the ratio of domestic prices to foreign prices [23, p. 8].

If RER>1, it means that goods and services in the domestic country are relatively more expensive than in the foreign country after taking into account the exchange rate. This indicates a decrease in the competitiveness of domestic goods on the international market.

If RER<1, it means that goods and services in the domestic country are relatively cheaper than in the foreign country after taking into account the exchange rate. This can contribute to export growth and increase the competitiveness of domestic goods.

If RER=1, it indicates purchasing power parity (PPP) in the narrow sense for a selected set of goods and services.

Taking into account the real exchange rate is important for analyzing international competitiveness, trade balances, and forecasting long-term exchange rate trends.

The official rate is determined by the state and applied to certain types of transactions, while the market rate is used for other economic transactions. Such a system can help maintain stability in the foreign exchange market while taking into account real economic conditions [50, p. 331].

Thus, the exchange rate is an important economic instrument that affects the competitiveness of a country in the international market, its financial stability and economic policy. The choice of the type of exchange rate depends on the economic situation in the country and the government's goals in controlling currency fluctuations and maintaining economic balance. In the context of globalization and economic crises, countries must adapt their currency policy to changing conditions, choosing an appropriate mechanism for managing the exchange rate, which allows maintaining the stability of the national economy.

1.2. Functions of the exchange rate in the national economy

In the context of economic globalization, the functions of the exchange rate are gaining particular importance, as the interdependence between different economies is constantly growing. The exchange rate serves as an important channel for regulating the balance of payments, stimulating exports and imports, and ensuring internal economic stability. Changes in the exchange rate can significantly affect the country's investment attractiveness, price levels, and ultimately the general state of the national economy.

Systematic and effective exchange rate management can help achieve macroeconomic objectives, such as maintaining the stability of the national currency, reducing the balance of payments deficit, controlling inflation, and stimulating economic growth [25]. At the same time, inappropriate policies or excessive exchange rate fluctuations can lead to negative consequences, including currency crises or economic instability.

The exchange rate is an important instrument of monetary policy, which has a significant impact on the economic situation in the country. The functions of the exchange rate in the national economy provide a relationship between the internal and external economic environment of the country [19, p. 100]. Not only economic stability, but also the effectiveness of foreign economic activity, the investment climate and other important aspects of the development of the national economy depend on the correct choice of the exchange rate mechanism (Table 1.4).

Table 1.4 – Exchange rate functions in the national economy

No	Function	Characteristic
1	Regulation external trade	The exchange rate determines competitiveness goods on the international market, affecting the cost import and export.
2	Inflationary function	Changes exchange rate can to influence internal prices, in particular on prices of imported goods goods that maybe lead to inflation.
3	Regulation balance of payments	Fluctuation exchange rate affects the balance of foreign trade operations, helping reduce deficit balance of payments due to changes in exports and imports.
4	Software macroeconomic stability	Stable the exchange rate contributes economic stability, reducing foreign exchange risks for businesses and the population.
5	Investment function	The exchange rate can affect the level investment, because exchange rate changes may reduce or raise attractiveness investments in the country.
6	Function software foreign exchange reserves	The exchange rate affects the formation foreign exchange reserves countries through trade and others foreign economic operations.

Source: compiled by the author based on [15, p. 23].

Depending on the state of the country's economy and monetary policy, the exchange rate performs a number of functions that are interconnected with other macroeconomic indicators, such as inflation, balance of payments, and investment levels. Taking these functions into account is necessary for the formation of an effective economic strategy aimed at ensuring the stability of the national currency and supporting economic development.

One of the main functions of the exchange rate is its impact on foreign trade. The exchange rate of the national currency determines the cost of exported and imported goods, which in turn determines the competitiveness of goods in the foreign market. If the national currency devalues, exports become cheaper and more competitive, which can stimulate an increase in foreign trade. On the other hand, changes in the exchange rate can make imported goods more expensive, which can lead to a decrease in their consumption.

The exchange rate has a direct impact on the level of inflation in a country. If the national currency depreciates, the prices of imported goods increase, which can lead to a general increase in prices in the domestic market. This phenomenon is known as "imported inflation", which is an important factor determining the economic policy of the country [12, p. 37].

Exchange rate fluctuations also play an important role in regulating a country's balance of payments. A depreciation in the value of a national currency can increase exports and reduce imports, which helps reduce the current account deficit. At the same time, a stable exchange rate helps maintain a balance between exports and imports.

Exchange rate stability is an important factor in economic stability. Increased exchange rate volatility can lead to increased risks for businesses and consumers, which can have negative consequences for the economy as a whole. Therefore, ensuring a stable exchange rate is an important component of economic policy [24].

The exchange rate can significantly affect a country's investment attractiveness. If a country's currency depreciates, foreign investors may see this as an opportunity to earn high returns on their investment, as their foreign currency earnings will increase upon conversion. At the same time, too much exchange rate volatility can deter investors seeking stability.

The exchange rate is also important for the formation of a country's foreign exchange reserves. Due to changes in the exchange rate, the national currency can affect the cost of import and export transactions, which in turn determines the volume of foreign exchange receipts and expenditures of the country. To ensure economic stability, the state needs to have a sufficient level of foreign exchange reserves to maintain the value of the national currency [20, p. 5].

In the context of deepening international economic integration, the exchange rate plays a decisive role in the functioning of national economies. It is a key instrument mediating the interaction between the domestic and external economic environments, influencing the competitiveness of domestic producers, price levels, capital flows, and overall macroeconomic stability. Effective exchange rate management is an important element of state economic policy aimed at ensuring sustainable economic growth and the well-being of the population.

The exchange rate is the fundamental price that determines the relative value of goods and services involved in international trade. Changes in the exchange rate directly affect the price competitiveness of national exports and the cost of imported goods. Devaluation of the national currency makes export goods cheaper for foreign buyers, stimulating export growth. At the same time, imported goods become more expensive for domestic consumers, which can lead to a reduction in imports.

Empirical evidence of this can be found in the experience of the United Kingdom after the referendum on leaving the European Union in June 2016. After a significant fall in the British pound, according to the UK Office for National Statistics (ONS), the volume of exports of goods increased by 11.7% in 2017 compared to the previous year. At the same time, rising prices for imported goods led to increased inflationary pressure [28].

The exchange rate is an important channel for inflation transmission, especially for countries with a high share of imports in domestic consumption. The depreciation of the national currency leads to higher prices for imported goods, which can directly affect the consumer price index. This effect of "imported inflation" can have a significant impact on the overall inflation rate in the country. The experience of Argentina in 2018 serves as an example. After a significant depreciation of the Argentine peso, annual inflation in the country rose sharply. According to the National Institute of Statistics and Census of Argentina (INDEC), annual inflation rose from 25.6% at the end of 2017 to 47.6% at the end of 2018. One of the key reasons for this rapid growth was the rise in prices of imported goods, which became significantly more expensive as a result of the fall in the peso [28].

South Korea demonstrated this effect after the Asian financial crisis of 1997-1998. According to the Bank of Korea, after a significant devaluation of the Korean won, the country's current account balance improved from a deficit of US$8.5 billion in 1996 to a surplus of US$40.4 billion in 1998. Export growth and import reduction played a key role in this recovery [28].

Exchange rate stability is an important factor in ensuring overall macroeconomic stability. High exchange rate volatility creates uncertainty for foreign-oriented firms and investors, increasing currency risks and complicating long-term planning.

Countries with pegged or fixed exchange rates often show lower inflation volatility. For example, countries belonging to the West African Economic and Monetary Union (UEMOA) have a fixed exchange rate for their common currency, the CFA franc, against the euro. According to the IMF, inflation in UEMOA countries has been relatively stable in recent decades compared to other sub-Saharan African countries with floating exchange rates [50, p. 331].

The exchange rate can significantly affect a country's investment attractiveness. Depreciation of the national currency can make a country's assets cheaper for foreign investors, potentially stimulating the inflow of foreign investment. However, high exchange rate volatility can deter investors seeking stability and predictability.

A study conducted by the EBRD on countries with economies in transition showed that countries with more stable exchange rates attracted more foreign direct investment relative to GDP. Unpredictable exchange rate fluctuations increase risks for investors, which can lead to capital outflows.

Exchange rate policy has a direct impact on the formation and management of a country's foreign exchange reserves. The central bank can use foreign exchange interventions to smooth excessive exchange rate fluctuations by buying or selling foreign currency. The chosen exchange rate regime also determines the required level of foreign exchange reserves. Countries with a fixed exchange rate usually need larger reserves to maintain the fixed rate.

According to the World Bank, countries with higher foreign exchange reserves relative to imports tend to be less prone to currency crises. Adequate reserves provide the central bank with a “safety cushion” to respond to external shocks and maintain exchange rate stability [48, p. 19].

The exchange rate performs a number of important functions in the national economy, influencing key macroeconomic indicators. The statistical data and empirical examples presented confirm the theoretical basis for the impact of the exchange rate on economic processes. Effective exchange rate management is critical to ensuring sustainable economic development and enhancing the competitiveness of the national economy in the global market. In this context, choosing the optimal exchange rate regime and pursuing a prudent monetary policy that takes into account the specificities of the national economy and global economic trends is a key task for public authorities and the central bank.

Therefore, the exchange rate functions are key to the stable functioning of the national economy. They are interconnected with other economic aspects, such as inflation, balance of payments, investment and macroeconomic stability. Effective exchange rate management is necessary to maintain the country's competitiveness in the world market and ensure the stability of the economic system. In this context, it is important to choose the right exchange rate mechanism that corresponds to the economic situation and the goals of state economic policy.

1.3. Mechanisms of exchange rate formation in the market economy

The exchange rate can be determined by various mechanisms depending on government policy, economic conditions and the specifics of the foreign exchange market. The exchange rate has a significant impact on foreign economic transactions, in particular on exports and imports, as well as on the stability of the domestic economy. Exchange rate fluctuations can significantly change the prices of imported goods, which in turn affects inflation in the country. A decrease in the value of the national currency can make exports more competitive in world markets, but at the same time increase the cost of imports, which can lead to negative effects on the domestic consumer market. In countries with high levels of foreign debt, changes in the exchange rate can have a significant impact on the balance of payments, since debt obligations are often expressed in foreign currency. This may lead to the need for additional financial injections to maintain stability.

The formation of the exchange rate is a complex and multifaceted process that directly affects the functioning of national economies and international economic relations [31]. In a market economy, the exchange rate is determined through the interaction of demand and supply for currency, which depends on the economic conditions of the country, its trade relations, monetary policy, as well as external economic factors. Proper management of the exchange rate formation mechanisms is important for ensuring macroeconomic stability and economic development of the country. The main mechanisms that affect the formation exchange rate, there are market mechanisms supply and demand, government regulation through currency policy , as well as interventions central banks. In the market economy exchange rate may be fluctuate depending from speakers economic indicators, changes in international financial flows, external economic shocks and other factors such as inflation, the level of savings, trade balance and interest rates. State regulation of the exchange rate in a market economy can be carried out through various instruments, such as the establishment of exchange restrictions, interest rate regulation, as well as currency interventions. The government and the central bank can actively influence the exchange rate of the national currency to achieve economic goals, such as price stability, maintaining the competitiveness of export goods or minimizing the impact of external shocks (Table 1.5).

Table 1.5 – Mechanisms formation exchange rate in the market economy

Mechanism	**Characteristic**
Supply and demand	Currency exchange rate formed through interaction demand for currency and its offers on the foreign exchange market.
Currency policy	State exchange rate adjustment through instruments monetary policies, such as establishing interest rates or foreign exchange reserves.
Central bank interventions	Direct purchases or sales currencies on international markets to stabilize exchange rate.
Tariff and non-tariff barriers	Customs tariffs implemantation and quotas to control imports and exports, which also affects the exchange rate of the national currency currencies.
International financial flows	Investments impact, loans and other financial supply and demand operations foreign currencies.

Source: compiled by the author based on [10].

The mechanism of exchange rate formation in a market economy includes several important aspects, among which the demand and supply of currency occupy a special place. The exchange rate can fluctuate depending on the level of demand for currency from importers and exporters, international investors, as well as on the supply of currency through external financial flows and the monetary policy of the central bank. Currency politics is important tool for the government and the central bank, because they can use different strategies to stabilize the exchange rate. At the same time interventions are important in the foreign exchange market, when the central bank buys or sells currency to to stay on course levels. An important part of the mechanisms is the relationship between external economic conditions and the exchange rate. Cost currencies to a large extent depends from global economic processes, such as changes in raw material prices goods or fluctuations in international financial flows.

The exchange rate of the national currency is one of the key elements of the country's economic stability. In Ukraine, the exchange rate is regulated through a number of regulatory legal acts that define the principles of currency policy and mechanisms for influencing the exchange rate of the national currency. One of the main documents regulating currency transactions in Ukraine is the Law of Ukraine "On Currency and Currency Transactions" dated 21.06.2018 No. 2473-VIII, which regulates the basic principles of currency transactions, as well as determines the rights and obligations of subjects of currency relations [1]. This law has been amended several times, in particular, in accordance with the latest amendments made in 2024.

According to the law, the key element of currency policy is the activities of the National Bank of Ukraine (NBU), which determines the basic rules for conducting currency transactions in the domestic market, carries out transactions in the interbank currency market and monitors the implementation of legislation in this area. In particular, the Regulation on the Structure of the Foreign Exchange Market of Ukraine, approved by Resolution of the NBU Board No. 1 dated 02.01.2019, establishes the conditions and procedure for trading foreign currency in the foreign exchange market of Ukraine, determining the basic principles of currency trading and the rules for conducting transactions with foreign currency [5].

One of the important components of the regulatory and legal regulation of the exchange rate is special rules that determine the procedure for conducting currency transactions in emergency situations. In conditions of martial law, the NBU adopted a number of resolutions that allow it to exercise control over currency transactions. For example, the NBU Resolution of July 29, 2022 No. 165 regulates the activity of trading in currency values in cash during martial law, establishing restrictions on the volume of such transactions and introducing special rules to ensure economic stability [4].

To ensure the stability of the exchange rate, other regulatory legal acts related to investment activity also play an important role. The Law of Ukraine "On Investment Activity" dated September 18, 1991 No. 1560-XII regulates the mechanism of attracting foreign investment to the country, which can positively affect the stability of the national currency. The law establishes the conditions for investing foreign capital, in particular in terms of currency transactions, which allows ensuring the stability of the national economy in conditions of exchange rate fluctuations [2].

Another important aspect is the regulation of currency transactions with cross-border movement of currency values. The NBU Resolution No. 3 of 02.01.2019 determines the procedure for moving currency values across the state border of Ukraine, which is an important component for the formation of a stable exchange rate and contributes to the preservation of the state's foreign exchange reserves [7].

A feature of the national monetary policy is the use of special mechanisms to support the financial system in martial law. NBU Resolution No. 18 of 24.02.2022 establishes special conditions for the operation of the banking system during wartime, including restrictions on foreign exchange transactions to protect the economy and prevent currency speculation [8].

In the context of globalisation of the world economy, the mechanism of exchange rate formation is a key element in the functioning of international financial markets and the foreign economic activity of each country. Market-based exchange rate formation involves minimal intervention by the state and its central bank in determining the value of the national currency, giving preference to the forces of supply and demand. Understanding the factors that influence these forces and the mechanism for establishing an equilibrium exchange rate is important for analyzing macroeconomic stability and the effectiveness of foreign economic policy.

In the foreign exchange market, supply and demand for a particular currency are shaped by various economic transactions and the expectations of market participants. Demand for foreign currency is derived from the need of residents to pay for imported goods and services. To make these payments, domestic importers convert their own currency into the currency of the exporting country. On the other hand, the supply of foreign currency is formed by export earnings. Foreign buyers exchange their currency for the national currency to purchase exported products [26]. An increase in imports, for example, of cars, leads to an increase in demand for the corresponding foreign currencies (euro, US dollar), which may put downward pressure on the national currency. Conversely, increased grain exports contribute to the inflow of foreign currency, increasing its supply and potentially strengthening the national currency.

International capital flows related to investment, lending, and other financial transactions also have a significant impact on the foreign exchange market. Demand for foreign currency arises when investing abroad, purchasing foreign securities or direct foreign investments, as well as when paying income on these investments to non-residents. The supply of foreign currency increases due to the inflow of foreign investment into the country's economy and proceeds from the sale of national financial instruments to non-residents. An attractive investment climate can attract foreign capital, which increases the supply of foreign currency and supports the national currency. Capital outflows caused by fears of economic or political instability lead to an increase in demand for foreign currency and weaken the national currency [15, p. 23].

Speculative transactions play an important role in the formation of short-term exchange rate fluctuations. Market participants such as banks, investment funds, and private traders buy and sell currency in order to profit from predicted changes in its exchange rate. Expectations of future depreciation of the national currency can trigger an increase in demand for foreign currency, reinforcing this trend. Positive news and expectations of economic growth can, conversely, stimulate demand for the national currency from speculators, contributing to its strengthening. Although direct state intervention is minimal in a floating exchange rate regime, expectations regarding the future monetary and fiscal policies of the government and the central bank have a significant impact on market sentiment. An announcement by the central bank of an increase in the discount rate may increase the attractiveness of domestic assets and increase demand for the national currency. Concerns about rising public debt or high inflation may undermine confidence in the national currency and lead to an increase in demand for foreign currency.

The equilibrium exchange rate is the result of the interaction of aggregate demand and aggregate supply in the foreign exchange market. It is set at the point where the demand for a particular foreign currency equals its supply. This equilibrium point is dynamic and constantly changing under the influence of the factors mentioned above. When demand for foreign currency exceeds its supply, its exchange rate rises, i.e., the national currency depreciates. In such a situation, buyers are willing to pay more national currency per unit of foreign currency. Conversely, when the supply of foreign currency exceeds demand, its exchange rate falls, i.e., the national currency strengthens, as sellers are forced to lower prices to attract buyers.

Market-based exchange rate formation has a number of advantages for the national economy. One of the key advantages is automatic adjustment of the balance of payments. Depreciation of the national currency makes exports more competitive and imports more expensive, which stimulates export growth and reduces imports, helping to balance the balance of payments deficit. In addition, under a floating exchange rate regime, the central bank gains greater independence in conducting monetary policy, as it does not need to spend reserves to maintain a fixed exchange rate, allowing it to focus on achieving domestic economic goals such as inflation control. The market exchange rate is also considered to better reflect the country's fundamental economic factors, such as inflation, GDP growth rates, and interest rates [17, p. 14].

However, market-based exchange rate formation is not without its drawbacks. One of the main ones is high volatility. The exchange rate can experience significant and unpredictable fluctuations under the influence of speculative attacks, political instability, or unexpected economic news, creating uncertainty for businesses and investors and complicating planning and risk management. In the event of low confidence in the national currency, there is a risk of currency crises, when massive capital outflows and speculative pressure can lead to a sharp depreciation of the currency. In addition, the market may be prone to “overshooting” when short-term fluctuations deviate from fundamentally justified levels due to irrational behaviour of market participants or herd instinct effects.

The market exchange rate is formed under the influence of supply and demand. A clear reflection of this mechanism is the exchange rates set by various market participants. Consider the table of exchange rates in Ukraine as of 10:05 on May 2, 2025 (Table 1.6).

Table 1.6 – Mechanism of market formation of the exchange rate: analysis based on data from May 2, 2025.

Currency	**NBU ex.-rate (UAH)**	**Average bank exchange rate (UAH)**	**Cash exchange rate (UAH)**	**Spread (bank) (UAH)**	**Spread (cash) (UAH)**	**Deviation of cash exchange rate from average bank exchange rate (buy/sell, UAH)**
USD	41,5945	Purchase: 41,2; Sale: 41,90	Purchase: 41.45 Sale: 41.54	0,65	0,09	+0,20 / -0,36
EUR	47,0808	Purchase: 46,90; Sale: 47,60	Purchase: 47.20 Sale: 47.45	0,70	0,25	+0,30 / -0,15
PLN	11,003	Purchase: 10,65; Sale: 11,30	Purchase: 10.93 Sale: 11.05	0,65	0,12	+0,28 / -0,25
GBP	55,4247	Purchase: 55,00. Sale: 55,70	Purchase: 54.80 Sale: 55.50	0,70	0,70	-0,20 / -0,20
CHF	50,2319	Purchase: 49,75; Sale: 51,10	Purchase: 50.50 Sale: 51.40	1,35	0,90	+0,75 / +0,30

Source: compiled by the author based on [52].

Market-based exchange rate formation is a complex and multifaceted process determined by the interaction of numerous economic and psychological factors. Although it has important advantages in the form of automatic adjustment of external imbalances and monetary policy independence, it also carries significant risks associated with volatility and potential crises [12, p. 37]. Understanding the mechanism of market-based exchange rate formation and the factors that influence it is critical for developing effective macroeconomic policies aimed at ensuring the stability and sustainable development of the national economy in the context of global integration.

Thus, the system of regulatory and legal regulation of exchange rate formation in Ukraine is multi-component and dynamic, in particular, taking into account modern challenges such as war and global economic changes. It ensures not only economic stability, but also creates conditions for the effective integration of Ukraine into global financial and economic processes.

Therefore, the formation of the exchange rate in a market economy is a complex process in which various factors interact, including the demand and supply of currency, the economic situation in the country and global economic trends. The government and the central bank have considerable impact on exchange rate stability through monetary instruments and currencies interventions. Support stable exchange rate is important for maintaining economic stability and competitiveness national economy, especially in conditions globalization and economic changes.

1.4. Factors influencing the formation of the exchange rate

The factors influencing the formation of the exchange rate are complex and interdependent, encompassing both domestic economic conditions and external factors. One of the main factors is the demand and supply of currency, which is formed in the foreign exchange markets through the interaction of buyers and sellers of currency. An important role is played by the monetary policy of the central bank, which includes the management of interest rates, money supply and interventions in the foreign exchange market. In addition, the level of inflation in the country has a significant impact on the exchange rate: a high level of inflation usually leads to a devaluation of the national currency. Economic growth and external economic shocks, such as changes in commodity prices or political crises, can also cause significant fluctuations in the exchange rate. Other factors, such as the trade balance, government debt and political stability, directly affect confidence in the national currency, which, in turn, determines its exchange rate on world markets.

The exchange rate is an important economic indicator that determines the value of one national currency in relation to another [18, p. 102]. It has a significant impact on economic processes in the country and interaction with other economies. The formation of the exchange rate is the result of many factors, including both internal and external economic and financial conditions. Changes in the exchange rate can reflect fluctuations in economic stability, inflationary processes, changes in international economic relations and global financial conditions. Understanding the main factors that influence the formation of the exchange rate is necessary for developing an effective currency policy and ensuring economic stability (Table 1.5).

Table 1.5 – Factors influencing the formation exchange rate

Factor	**Characteristic**
Supply and demand for currency	The main factor that determines the exchange rate through interaction demand for foreign currency and its offer.
Monetary policy	Central bank actions regarding money supply management, interest rates and interventions on the foreign exchange market.
Inflation	Difference in levels inflation between countries affects the exchange rate: high level inflation usually leads to a decrease cost national currencies.
Level economic growth	Economic growth countries attracts investors and increases demand for its currency, which maybe promote strengthening exchange rate.
External economic shocks	Fluctuations in commodity prices goods, natural disasters, political crises can cause significant course changes currencies.
National debt	High The level of public debt can negatively affect the exchange rate, as it reduces trust in the national currencies.
Trade balance	Relation between export and import countries affects the demand for the national currency: excess exports over imports strengthens the currency.
Political stability	Political stability contributes trust investors, which has a positive effect on the exchange rate, while political instability maybe to depreciate the exchange rate.
Predictability economic politicians	Stability and predictability economic politicians states contributes exchange rate stability and attracting foreign investments.

Source: compiled by the author based on [9, p. 10].

Formation exchange rate is the result of multiple factors that interact with each other. One of the main factors are the demand and supply of currency, where the exchange rate is determined on the market currency through the purchase and sale of foreign currencies. Monetary politics that includes regulation interest rates and central bank intervention, also affects the stability of the national currency currencies. Inflation is an important factor because countries with high inflation usually are watching devaluation of his/her own currencies [32, p. 355].

Economical growth directly related from increase demand for currency, because investors usually strive invest funds in stable economy. External economic shocks, such as changes in oil prices or others resources, can have considerable impact on the exchange rate as they change capital flows and demand for currency. The high level of public debt may also lead to a decrease cost currencies, because it causes fear of solvency countries.

The trade balance also has value, because countries with positive trade balance (when exports exceeds import) are often observed strengthening of it`s own currency. Political stability contributes preservation exchange rate stability, because investors are looking for reliable economic environment. And, ultimately, predictability economic policies are an important aspect to ensure stability exchange rate, because contributes trust investors to the country [48, p. 21].

The formation of an exchange rate is a complex process that depends on the interaction of numerous internal and external economic factors. As noted in [18, p. 102], the exchange rate is an important economic indicator that reflects the value of one national currency relative to another and has a significant impact on macroeconomic processes. The exchange rate is basically shaped by the interaction of supply and demand in the currency market [25]. Demand for foreign currency comes from importers who want to pay for goods and services, investors who want to buy foreign assets, and speculators who expect the exchange rate to go up. The supply of foreign currency is formed by exporters who sell their proceeds in foreign currency, foreign investors who invest in the national economy, and speculators who expect the exchange rate to fall. For example, according to the State Statistics Service of Ukraine [27], in 2023, imports of goods to Ukraine amounted to $63.5 billion. This created significant demand for foreign currency. At the same time, exports of goods amounted to $35.8 billion, ensuring the supply of foreign currency. Exports exceeding imports may put downward pressure on the national currency.

The monetary policy pursued by the central bank is a powerful tool for influencing the exchange rate [12, p. 37]. Interest rate management is one of the key mechanisms. The increase in the discount rate by the National Bank of Ukraine (NBU), as was the case in 2022-2023 with the aim of curbing inflation [29], makes hryvnia assets more attractive to foreign investors, increasing demand for the national currency and contributing to its strengthening. Another tool is currency intervention, when the central bank buys or sells foreign currency on the market to directly influence its exchange rate. According to the official website of the Ministry of Finance [30], the NBU regularly carries out currency interventions to smooth out excessive fluctuations in the hryvnia exchange rate.

The level of inflation in a country has a fundamental impact on its exchange rate [15, p. 23]. According to monetary theory, in particular the works of M. Friedman and representatives of the Cambridge school, high inflation leads to the depreciation of money, including the national currency on the international market. According to the State Statistics Service of Ukraine [27], in 2022, annual inflation in Ukraine was 26.6%, which put significant pressure on the hryvnia exchange rate. The purchasing power parity (PPP) theory assumes that exchange rates are adjusted to equalize the purchasing power of currencies in different countries.

The pace of economic growth also affects a country's exchange rate [22, p. 5]. Strong and stable economic growth usually attracts foreign investors who want to invest in promising markets, increasing demand for the national currency [17, p. 10]. For example, China's economic growth during the 2000s was accompanied by a strengthening of the yuan [37, p. 130].

External economic shocks, such as sharp changes in prices for key export or import goods, natural disasters, or political crises, can cause significant exchange rate fluctuations [47]. For example, Russia's full-scale invasion of Ukraine in 2022 was a powerful external economic shock that led to a significant devaluation of the hryvnia [45].

According to the National Bank of Ukraine [24], in August 2022, the official exchange rate of the hryvnia was adjusted by 25% against the US dollar in a single step.

High levels of public debt can negatively affect investor confidence in the national currency, which can lead to its devaluation [49, p. 544]. High public debt creates risks for future fiscal stability and may raise concerns about the government's ability to service its obligations [17, p. 15].

The state of a country's trade balance (the ratio between exports and imports) is also an important factor influencing the exchange rate. Countries with a positive trade balance usually have higher demand for their national currency, which can lead to its strengthening [13].

Political stability and predictability of economic policy are key factors in maintaining investor confidence and exchange rate stability [46]. Countries with a stable political system and predictable economic policy are more attractive to foreign investment [43, p. 98].

The formation of the exchange rate is a complex and multifactorial process that depends on the interaction of fundamental economic indicators, monetary and fiscal policy, external shocks, and political stability. Understanding these factors and their mutual influence is critical for developing effective currency policy aimed at ensuring macroeconomic stability and promoting sustainable economic development [11].

So, the factors that affect the formation exchange rate, are diverse and interrelated. Currency rate depends from macroeconomic indicators, such as the level inflation, economic growth, trade balance and external factors such as global commodity prices and political stability. Monetary central bank policies and interventions are also important tools which have an impact on the exchange rate. Balanced management these factors are necessary to maintain stability exchange rate that important for the economic development countries and involvement foreign investments.

CHAPTER 2.
PECULARITIES OF EXCHANGE RATE FLUCTUATIONS IN THE CONTEXT OF GLOBAL ECONOMIC INSTABILITY

2.1. Analysis of exchange rate fluctuation of the world's leading currencies

The exchange rate is an important economic instrument that determines the value of one currency relative to another. It affects foreign trade, economic growth, inflation rates, and the macroeconomic stability of a country. Exchange rate fluctuations can be the result of various factors, including economic, political, and financial conditions at both the national and global levels. This process, which involves changes in the demand and supply of currencies, is driven by a variety of factors, such as the economic situation, monetary policy, inflation, foreign trade, and geopolitical factors.

The main factors that determine exchange rate fluctuations are the difference in inflation rates between countries, changes in interest rates, political risks, and the level of public debt. For example, countries with high inflation usually experience their currencies depreciate. High interest rates can attract investors, which helps strengthen the national currency. Political instability or risks associated with future events (elections, wars, changes of government) can cause volatility in currency markets, reducing confidence in a country's currency.

The United States dollar (USD) is the major reserve currency used in international settlements and trade. Fluctuations in the US dollar often reflect changes in global economic conditions, particularly through the policies of the Federal Reserve System (FRS), which sets interest rates and other monetary measures. In recent decades, the dollar has fluctuated due to global economic crises, such as the 2008 financial crisis, as well as changes in US policy, such as the imposition of sanctions against other countries [44].

The Euro (EUR), as the second most important currency in the world, is also subject to significant fluctuations. The currency of the European Union is largely dependent on the economic and political conditions in the Eurozone. The exchange rate of the Euro is influenced by factors such as the level of inflation, economic growth in the EU member states, and policy decisions at the level of the European Central Bank (ECB). For example, during the European debt crisis in the 2010s, the Euro experienced periods of significant volatility caused by economic problems in Greece, Spain, and Italy [50, p. 331].

The Japanese yen (JPY) is an important currency in Asia, and its exchange rate often shows significant sensitivity to global economic changes. Japan is one of the largest economies in the world, and its currency policy is closely linked to the interests of exporters. The yen traditionally strengthens during periods of global financial crises, when investors seek "safe havens". The 1997 Asian crisis and the 2008 financial crisis are examples of such fluctuations [43, p. 98].

Exchange rate fluctuations are also largely driven by external and internal factors. External factors include changes in the global economic situation, such as changes in the demand for oil, gold, and other commodities on which the economies of many countries depend. In particular, changes in the price of oil have a significant impact on the exchange rates of oil-exporting countries such as Russia and Saudi Arabia [46].

Domestic factors, such as changes in economic policy, can also strongly influence exchange rates. For example, decisions by central banks to change interest rates or conduct foreign exchange interventions can lead to significant market fluctuations. In addition, political decisions, such as the imposition of sanctions or trade wars, can change the demand for national currencies [45].

Forecasting exchange rate fluctuations is a difficult task due to the large number of variables that can affect the exchange rate. At the same time, it is important for central banks to understand these fluctuations in order to respond appropriately to market changes, conduct currency interventions, or adjust monetary policy. Currency management strategies are usually aimed at minimizing the negative consequences of exchange rate fluctuations, ensuring economic stability and attractiveness to foreign investors.

Military conflicts significantly affect the economic stability of countries in the war zone. One of the most vulnerable sectors of the economy in wartime is the exchange rate policy. Changes in the political and security situation have a significant impact on the exchange rate of the national currency, which, in turn, affects the level of inflation, foreign trade balances and other aspects of the country's economy. During periods of military conflicts, many states carry out active exchange rate management, which includes interventions in foreign exchange markets, the introduction of currency restrictions or control over capital movements. Central banks often change discount rates in response to military operations: sometimes they raise rates to combat inflation, and sometimes they lower them to stimulate economic activity [12, p. 37].

Monetary integration reduces transaction costs and protects national currencies from speculation. It also promotes the development of other markets, but reduces the independence of economic policies of individual countries. Such integration can take various forms, from pegging the exchange rate to the currencies of other countries (both through hard and soft pegging) to the creation of currency unions with a single currency and a common monetary policy. For example, the monetary union of the European Union has become a model for many states seeking to join the euro or create their own integration associations, guided by the experience of the EU [32, p. 355].

The global currency crisis raised the question of the feasibility of accelerated currency integration, and also stimulated the search for ways to improve the mechanisms of stability of the EU economic and monetary union. Ukraine is not currently considering the possibility of joining the euro, but in the future this issue may become relevant. However, even now the experience of the Eurosystem's currency and monetary policy is useful for the National Bank of Ukraine, since the stability of the eurozone and the predictability of its economic indicators have a great impact on the euro exchange rate, which is important in the conditions of close economic ties between Ukraine and the EU [17, p. 11].

In times of military conflict, ensuring financial stability becomes critically important. This requires not only monetary measures, but also financial assistance, guarantees and reforms in financial regulation. Countries turn to international financial institutions and partners for support, which includes financial assistance, trade support or technical assistance to implement economic reforms. Table 2.1 reflects the experience of several countries in implementing exchange rate policies during military or economic conflicts. It is important to note that countries experiencing crises, in particular military or financial, often resort to tight monetary policies, introducing exchange restrictions or changing the exchange rate. This allows governments to maintain economic stability, but often leads to negative consequences, such as inflation, unemployment and social unrest.

Let us analyze the experience of selected countries that have faced military conflicts and economic crises in the context of their exchange rate dynamics and exchange rate policy. Table 2.1 examines the cases of Iraq (the Gulf War), Yugoslavia (disintegration), Argentina (the 2001 economic crisis), Turkey (the 1994 economic crisis), Mexico (1994 crisis), South Korea (1997 Asian financial crisis), Ukraine (2014 military conflict), Egypt (2011 revolution, economic crisis), and Greece (2010-2018 European debt crisis).

Table 2.1 – Experience of individual countries in implementing exchange rate fluctuations during military conflict

Country	**Military conflict**	**Currency exchange rate policy**	**Consequences**	**Additional measures**	**Duration economic consequences**	**Key factors**
1	**2**	**3**	**4**	**5**	**6**	**7**
Iraq	War in Persia Gulf (1990-1991)	Fixed exchange rate of dinar to US dollar	Sharp fall the value of the dinar and hyperinflation.	Introduction restrictions on circulation currencies and foreign trade, interventions.	After wars economy was recovering many years.	Political instability, military aggression, sanctions.
Yugoslavia	Decay Yugoslavia (1991-1995)	Devaluation of the dinar and transition to a floating exchange rate	Hyperinflation and destruction economy, significant decrease vital equal population	Decentralization financial systems, introduction new currencies.	It lasted until the end of the 1990s, a significant part of the 2000s.	Decay countries, political chaos, social disorganization.
Argentina	The economic crisis of 2001	Government bond default and peso devaluation	Sharp GDP fall, massive unemployment, social riots.	Carrying out currency interventions, introduction foreign exchange controls .	The crisis lasted until 2003, completely restoration by 2005.	High external debt, deterioration financial disciplines.
Turkey	The economic crisis of 1994	Sharp fall in the Turkish lira exchange rate lira, stabilization through intervention	Inflation, high level unemployment, consumer prices have grown.	Carrying out stabilization IMF programs, Central Bank interventions.	Economy stabilized after 1996.	Complicated internal political situation, external debts.
Mexico	Crisis of 1994 (Mexican "Tecquiz" crisis)	Devaluation of the peso, introduction foreign exchange restrictions	High inflation, increase cost external debt.	Introduction currency control mechanisms, IMF assistance.	The crisis continued until mid- 1996.	External debt, high level capital losses.
South Korea	Asian financial crisis of 1997	Falling Korean Won, Floating Exchange Rate	GDP decline, growth unemployment, social and political problems.	Interventions on the foreign exchange market, cooperation with the IMF, reforms economic politics.	After 1999, the economy stabilized .	Financial instability , banking crisis.

Ukraine	Military conflict of 2014 (Russian aggression)	Devaluation hryvnia , introduction foreign exchange restrictions and currency controls	Decrease equal currencies , inflation , fall vital equal population	Credit programs from the IMF, monetary politics , devaluation and reforms .	Economy continues to renew , permanent instability .	Political instability , military actions in the east countries .
Egypt	2011 Revolution , Economic Crisis	Floating rate of the Egyptian pound after devaluations	Inflation, budget deficit, decline investments .	Financial help from international organizations , restrictions on foreign exchange operations .	Restoration economy since 2014.	Political instability, distrust to the government.
Greece	European debt crisis 2010-2018	Devaluation euro (impact economic crisis in the EU)	Recession , unemployment , decline social standards .	Support plan from the EU and the IMF, tough economy, reforms .	Since 2019, the economy stabilized , but debt burden remained .	Eurozone , fiscal restrictions , uncertainty of reforms.

Continuation of table 2.1

Source: developed by the author based on data from [32, p. 355].

The experience of countries that have gone through war and major economic shocks shows different scenarios for how the currency and exchange rate can go and the effects of the policies they pick. In the case of Iraq during the Gulf War, the fixed exchange rate of the dinar against the US dollar could not withstand the pressure of political instability, military aggression, and international sanctions, which led to a sharp decline in the value of the national currency and hyperinflation. The introduction of restrictions on currency circulation and foreign trade, as well as interventions, failed to prevent a prolonged period of economic recovery.

The breakup of Yugoslavia was followed by the devaluation of the dinar and a move to a floating exchange rate amid political chaos and social disorganization. This led to hyperinflation and economic collapse, with a significant decline in living standards. Decentralization of the financial system and the introduction of new currencies were necessary steps to stabilize the situation, but the economic consequences were felt for a long time.

The 2001 economic crisis in Argentina, caused by high external debt and deteriorating financial discipline, ended in default on government bonds and a deep devaluation of the peso. A sharp decline in GDP, mass unemployment, and social unrest were the direct consequences of the crisis. Currency interventions and the introduction of currency controls helped stabilize the situation, and the economy recovered within a few years [13].

The consequences of the 1994 economic crisis in Turkey, caused by a complex domestic political situation and external debt, included a sharp fall in the Turkish lira, leading to inflation and rising unemployment. Stabilization programs supported by the IMF and intervention by the Central Bank helped stabilize the economy after a certain period [46].

The 1994 crisis in Mexico, known as the “tequila crisis,” was caused by high external debt and significant capital outflows, which led to the devaluation of the peso and the introduction of currency restrictions. This resulted in high inflation and an increase in the cost of external debt. Thanks to the introduction of currency control mechanisms and IMF assistance, the crisis was overcome relatively quickly [34, p. 9].

The Asian financial crisis of 1997 had a significant impact on South Korea, causing the Korean won to fall and transition to a floating exchange rate. The country's economy faced a decline in GDP, rising unemployment, and socio-political problems. However, thanks to interventions in the currency market, cooperation with the IMF, and economic policy reforms, the country managed to stabilize the situation relatively quickly.

The 2014 military conflict in Ukraine (Russian aggression) led to a significant devaluation of the hryvnia and the introduction of currency restrictions and currency controls. This resulted in a decline in the value of the national currency, inflation, and a drop in the standard of living. IMF loan programs, monetary policy, and reforms contributed to a partial recovery of the economy, but continued instability remains a characteristic feature [45].

The 2011 revolution and the subsequent economic crisis in Egypt led to the devaluation of the Egyptian pound and a transition to a floating exchange rate. This resulted in inflation, budget deficits, and a decline in investment. Financial assistance from international organizations and restrictions on currency transactions contributed to economic recovery since 2014, but political instability and distrust of the government remained important factors.

The European debt crisis of 2010-2018 had a significant impact on Greece, although the devaluation of the euro was influenced by the economic crisis throughout the European Union. The country faced a deep recession, rising unemployment, and declining social standards. The EU and IMF support plan, austerity measures, and reforms have helped stabilize the economy since 2019, but the significant debt burden remains a pressing issue [48, p. 19].

An analysis of the experience of individual countries that have experienced military conflicts and economic crises shows that there is no universal strategy for managing exchange rates in such conditions. The effectiveness of exchange rate policy depends on the specific characteristics of the crisis, internal economic conditions, external support, and the government's ability to implement consistent and effective measures. Military conflicts tend to have the most devastating effects on currency stability and the economy as a whole, requiring comprehensive efforts for recovery. Economic and financial crises, although less destructive, also require prudent exchange rate policies and structural reforms to minimize negative effects and ensure a sustainable recovery.

Table 2.1 highlights the experience of several countries in conducting exchange rate policies during military conflicts or economic crises, which can have a significant impact on currency stability and the economy as a whole. The countries considered demonstrate different approaches to exchange rate management, as well as measures aimed at overcoming the negative consequences of war or crisis. Iraq applied a fixed exchange rate of its national currency to the US dollar, but this led to a sharp decline in the value of the dinar and hyperinflation. Restrictions on currency circulation and foreign trade, as well as interventions, became part of the corresponding measures. The economy was recovering for many years due to political instability and sanctions. As a result of the collapse of Yugoslavia, the dinar was devalued and the transition to a floating exchange rate was carried out. This caused hyperinflation and social disorganization. Decentralization of the financial system and the introduction of new currencies became necessary to stabilize the economic situation. Argentina faced a default on government bonds and a devaluation of the peso, which caused widespread social unrest. To overcome the crisis, exchange controls were introduced and currency interventions were carried out, which helped to restore the economy by 2005. The sharp fall in the Turkish lira was stabilized through interventions, which led to inflation and increased unemployment. Stabilization programs were carried out jointly with the IMF, which allowed to stabilize the economy after 1996. In Mexico, the devaluation of the peso and the introduction of currency restrictions led to high inflation and an increase in the cost of external debt. The IMF provided assistance, and the country stabilized by mid-1996. In South Korea, the fall in the Korean won was stabilized thanks to interventions in the foreign exchange market and cooperation with the IMF. Economic policy reforms allowed to stabilize the situation after 1999. The devaluation of the hryvnia and the introduction of currency restrictions were the consequences of the war in Ukraine. IMF loan programs, monetary reforms, and currency restrictions were used to restore the economy. The floating of the Egyptian pound after the devaluation led to inflation and a budget deficit. Financial assistance from international organizations helped stabilize the economy since 2014. The euro was devalued due to the impact of the economic crisis in the EU. Greece faced a recession, high unemployment, and a decline in social standards. A support plan from the EU and the IMF helped stabilize the economy, although the debt burden remained until 2019.

Monetary policies during military conflicts often include changes in exchange rates and restrictions on currency circulation to protect the economy from negative consequences. Countries with high dependence on external financing and insufficiently stable domestic economies suffer the most. International assistance and cooperation with international financial organizations, such as the IMF, are key to stabilizing the currency situation and restoring the economy in crisis conditions. Political stability and the absence of social chaos significantly affect the effectiveness of exchange rate reforms. Countries that have experienced internal conflict or political chaos often have longer-lasting economic consequences. Devaluation of the national currency is one of the most common measures in countries during crises, but it can cause serious economic and social problems, such as inflation and a decrease in the standard of living of the population. Fluctuations in the exchange rates of the world's major currencies are the result of various economic, political and social factors, including monetary policy, inflation rates, political risks and global economic changes. Global currency fluctuations have a significant impact on the economies of countries, as they affect foreign trade, inflation and investment levels. Effective exchange rate management is necessary to ensure macroeconomic stability and stimulate economic growth, as well as to minimize potential negative consequences for the national economy.

Exchange rates are key indicators of the state of the global economy and reflect the complex interaction of macroeconomic factors, central bank monetary policy, geopolitical events, and market sentiment. Fluctuations in the exchange rates of major world currencies, such as the euro (EUR), British pound (GBP), Swiss franc (CHF), Canadian dollar (CAD), and Australian dollar (AUD) against the US dollar (USD), have a significant impact on international trade, investment flows, and financial stability (Fig. 2.1).

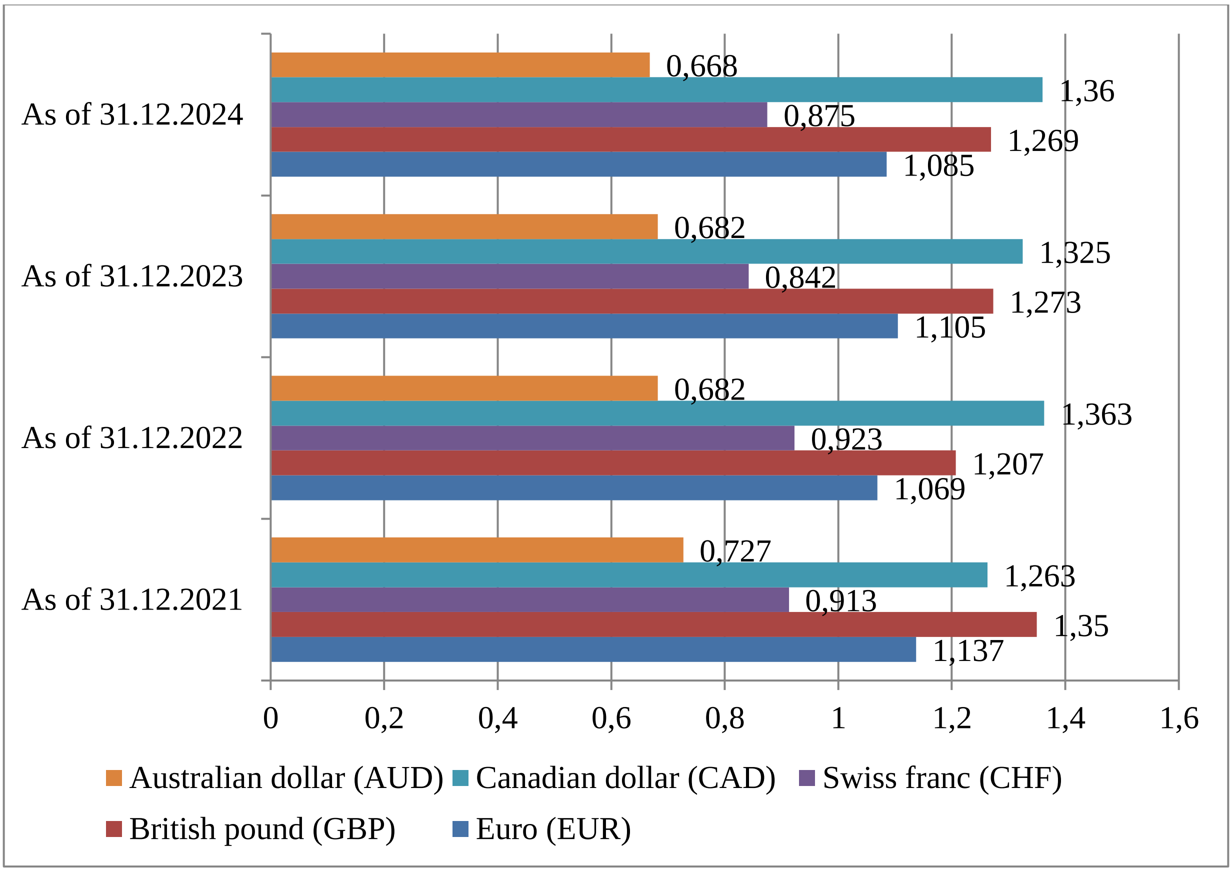


Figure 2.1 – Exchange rates of major world currencies against the US dollar (USD)

Source: constructed by the author based on data from [52].

During the period under review, the exchange rates of major world currencies showed significant volatility against the US dollar, reflecting the complex and volatile global economic situation. The euro (EUR) started 2021 at 1.137 against the US dollar. During 2022, the European currency weakened significantly, ending the year at 1.069. This decline was driven by a number of factors, including the energy crisis in Europe caused by geopolitical tensions, as well as the US Federal Reserve's more aggressive policy of raising interest rates. In 2023, the euro showed some strengthening, reaching 1.105 at the end of the year, which may have been related to the slowdown in the pace of rate hikes in the US and the improvement in the economic outlook for the eurozone. However, by the end of 2024, the exchange rate had fallen slightly again to 1.085, which may have reflected new economic challenges or changes in monetary policy in both regions.

The British pound (GBP) also experienced significant fluctuations. Starting 2021 at 1.350, the pound sterling weakened significantly in 2022, ending the year at 1.207. This was influenced by the UK's domestic economic problems, including high inflation and political instability, as well as the general strengthening of the US dollar. In 2023, the pound showed signs of recovery, reaching 1.273 at the end of the year thanks to the stabilization of the domestic situation and changes in expectations regarding the Bank of England's monetary policy. However, at the end of 2024, the exchange rate fell slightly to 1.269, indicating that certain economic challenges remain.

The Swiss franc (CHF), traditionally considered a safe-haven currency, showed relative stability with some fluctuations. Starting 2021 at 0.913 francs per dollar, the exchange rate rose slightly to 0.923 at the end of 2022, which may have reflected increased demand for safe assets amid global uncertainty. However, in 2023, the franc strengthened significantly, reaching 0.842 per dollar before weakening slightly again to 0.875 at the end of 2024. These fluctuations may have been related to changes in global risk sentiment and the Swiss National Bank's monetary policy.

The dynamics of the Canadian dollar (CAD) were closely linked to oil prices and economic ties with the United States. Starting 2021 at 1.263 Canadian dollars per US dollar, the exchange rate weakened to 1.363 at the end of 2022, likely due to the overall strengthening of the US dollar. In 2023, the Canadian dollar strengthened to 1.325 thanks to rising oil prices and the resilience of the Canadian economy. However, by the end of 2024, the exchange rate weakened slightly again to 1.360.

The Australian dollar (AUD), which is also a commodity currency, showed similar dynamics to the Canadian dollar. Starting 2021 at 0.727 Australian dollars per US dollar, the exchange rate weakened to 0.682 by the end of 2022. In 2023, the exchange rate remained at the same level, and by the end of 2024, it weakened further to 0.668. These fluctuations reflected changes in global demand for commodities and the overall strength of the US dollar.

An analysis of the exchange rate dynamics of major world currencies against the US dollar during 2021-2024 revealed significant volatility caused by various global and domestic economic factors. The strengthening of the US dollar in 2022 was a noticeable trend, but the following years were characterized by more complex dynamics, reflecting changes in monetary policy, economic prospects, and the geopolitical situation in various regions of the world.

Table 2.2 shows the annual percentage change in the exchange rate of the five major world currencies (euro, British pound, Swiss franc, Canadian dollar, and Australian dollar) against the US dollar for the period 2022-2024. The calculation is based on exchange rates at the end of each year. An analysis of annual exchange rate changes reveals certain trends. In 2022, the US dollar strengthened against most of the currencies presented. The euro and the British pound weakened significantly (-6.0% and -10.6%, respectively), which could have been caused by both internal economic challenges in the eurozone and the UK (energy crisis, inflation), and the aggressive interest rate hikes by the US Federal Reserve, which increased the attractiveness of dollar-denominated assets. In contrast, the Swiss franc showed a slight strengthening (+1.1%), confirming its status as a safe-haven currency amid global uncertainty. The Canadian dollar and Australian dollar also weakened (+7.9% and -6.2%, respectively), which may have been related to commodity price dynamics and the overall strengthening of the dollar.

Table 2.2 – Annual change in the exchange rate of major world currencies against the US dollar (%)

Currency	**2022, % change from 2021**	**2023, % change from 2022**	**2024, % change from 2023**
Euro (EUR)	-6,0	+3,4	-1,8
British pound (GBP)	-10,6	+5,5	-0,3
Swiss franc (CHF)	+1,1	-8,8	+3,9
Canadian dollar (CAD)	+7,9	-2,8	+2,6
Australian dollar (AUD)	-6,2	+0,0	-2,0

Source: developed by the author based on data from [52].

In 2023, the situation changed somewhat. The euro and the British pound showed a partial recovery (+3.4% and +5.5%, respectively), which may have been a reaction to the slowdown in interest rate hikes in the US and improved economic sentiment in Europe. The Swiss franc, on the other hand, weakened significantly (-8.8%), possibly due to changes in global risk sentiment and the monetary policy of the Swiss National Bank. The Canadian and Australian dollars showed little change (-2.8% and +0.0%, respectively), indicating relative stability against the US dollar during the year.

Preliminary data for 2024 indicate that the complex dynamics will continue. The euro and the British pound again showed slight weakening (-1.8% and -0.3%, respectively). The Swiss franc strengthened (+3.9%), while the Canadian and Australian dollars weakened slightly (+2.6% and -2.0%, respectively). Overall, the annual changes in exchange rates during this period reflect the ongoing adjustment of currency markets to changes in macroeconomic conditions and the monetary policy of key central banks.

Figure 2.2 shows the average annual exchange rate of the five major world currencies (euro, British pound, Swiss franc, Canadian dollar, and Australian dollar) against the US dollar for the period 2021-2024. The average annual values smooth out intra-year fluctuations and reflect general trends in currency values over the year.

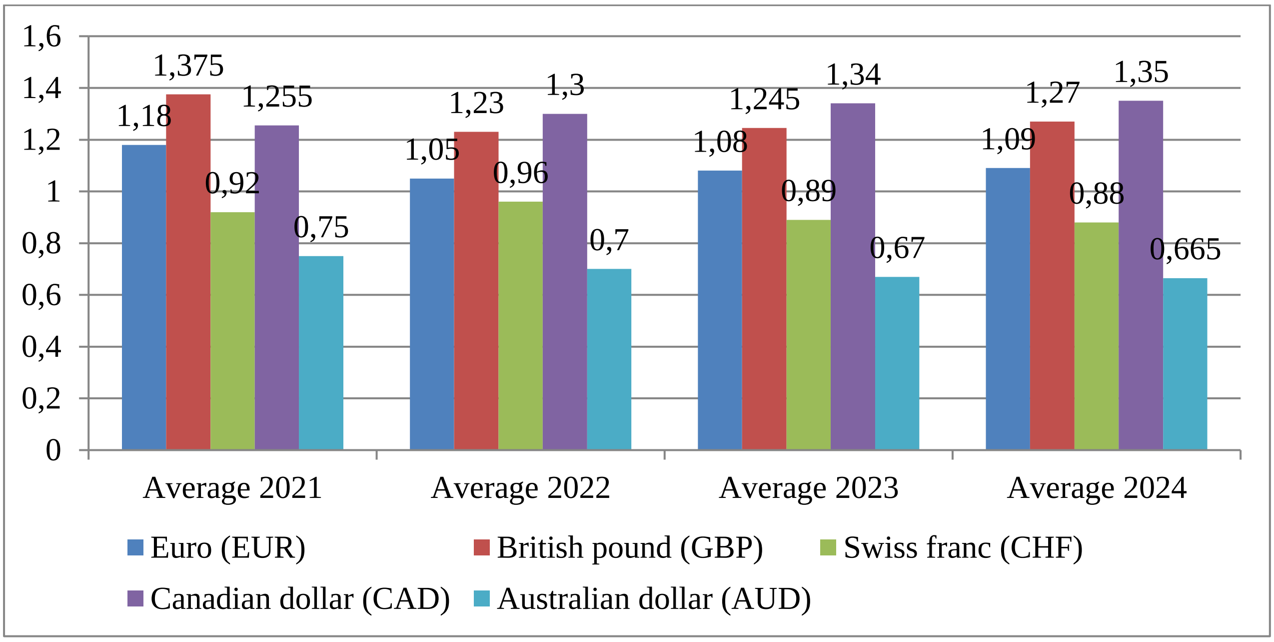


Figure 2.2 – Average annual exchange rate of major world currencies against the US dollar

Source: constructed by the author based on data from [52].

The visualization of average annual exchange rates confirms the trends identified in the analysis of year-end exchange rates. The average exchange rate of the euro (EUR) shows a decline in 2022 compared to 2021, followed by a slight increase in 2023 and stabilization in 2024. This reflects the overall weakening of the European currency under the influence of geopolitical and economic factors in 2022 and its partial recovery in the following years.

The average exchange rate of the British pound (GBP) also shows a significant decline in 2022, reflecting the economic difficulties in the UK. In 2023 and 2024, there will be some stabilization and even slight growth in the average exchange rate.

The average exchange rate of the Swiss franc (CHF) shows growth in 2022, confirming its role as a safe haven in times of uncertainty. In 2023, there is a decline in the average exchange rate, followed by slight growth in 2024.

The average exchange rate of the Canadian dollar (CAD) shows relative stability in 2021, a weakening in 2022, and a further gradual increase in the average exchange rate in 2023 and, according to forecasts, in 2024, which may be related to oil price dynamics and economic ties with the US.

The average exchange rate of the Australian dollar (AUD) shows a decline throughout the period under review, which may reflect changes in global demand for raw materials and the overall strength of the US dollar.

Overall, the analysis of average annual exchange rates provides a clearer picture of the main directions of currency movements during each year, smoothing out short-term fluctuations and highlighting medium-term trends. The visualization of this data in the figure allows for an easy comparison of the dynamics of different currencies and the identification of common and individual patterns in their behavior relative to the US dollar.

Thus, the analysis of exchange rate fluctuations of the world's major currencies shows that these changes are the result of a complex interaction of economic, political and social factors. In particular, differences in inflation rates, changes in interest rates, political risks and external economic events can significantly affect exchange rates. Crises, both economic and political, often cause currency volatility, which can lead to sharp changes in economic indicators, such as inflation, employment levels and trade balances. For example, during periods of war or economic crises, countries may resort to tight exchange rate policies, including interventions, currency restrictions and changes in discount rates to maintain economic stability. However, such measures often have negative consequences, such as high inflation and social upheavals. The key role in the world monetary system is played by the US dollar and the euro, which are subject to fluctuations due to global economic trends and domestic political factors. In times of military conflicts, national currencies can experience significant fluctuations, which affects foreign trade balances and macroeconomic stability of countries.

2.2. Assessment of factors influencing the exchange rate in conditions of economic instability

The exchange rate of the national currency is an important indicator of the economic stability of the country. In conditions of economic instability, the exchange rate can undergo significant fluctuations, which affects the domestic economy, in particular the level of inflation, citizens' savings and the investment attractiveness of the country. The exchange rate is influenced by a number of factors, which can be both internal and external. The factors that determine the exchange rate in conditions of economic instability are complex. Inflation, external debt, political situation, changes in the raw materials market, as well as the monetary policy of the central bank - all these elements can significantly affect the exchange rate of the national currency (Table 2.3).

Table 2.3 – Characteristics of factors influencing the exchange rate in conditions of economic instability

Factor	**Characteristic impact on the exchange rate**	**Mechanism influence**	**Explanation impact on the exchange rate**
1	**2**	**3**	**4**
Inflation	Growing inflation may cause devaluation national currencies.	Higher inflation in the country reduces purchasing ability currency, leading to its weakening.	High inflation leads to the fact that foreign exchange reserves countries decrease, and prices for goods and services are growing, which negatively affects the exchange rate.
External arrears	High external arrears may reduce confidence in the currency countries.	Countries with high level of external debt is often felt necessity payments debts that reduces foreign exchange reserves and can lead to devaluation.	If the country cannot pay off your debt obligation, this maybe cause a crisis of confidence in the national currency, which negatively affects its exchange rate.
Political instability	Political situation may cause fall investment and relaxation currencies.	Uncertainty in the political situations may reduce investment attractiveness countries and causes an outflow of capital.	Political instability causes anxiety among investors and reduces the demand for the national currency, leading to its depreciation weakening.
Raw material prices	Changes prices for oil, gas, metal, agricultural products can greatly affect the exchange rate.	Countries that are major exporters raw materials, can get significant foreign exchange income that stabilizes the currency.	Decrease raw material prices leads to a decline of foreign exchange revenues that increases pressure on the national currency and may cause its devaluation.
Monetary policy	The central bank's decision on interest rates and money supply politics.	Magnification interest rates usually strengthens the currency because high stakes attract investors.	However excessive magnification monetary masses for stimulation economy maybe lead to a decrease cost currencies, especially in conditions economic instability.
Foreign investments	Inflow or ebb of foreign investment maybe significantly influence the course.	Foreign investments increase the demand for the national currency, which strengthens her course.	If investors begin to withdraw your funds through economic instability, this causes deficit foreign currencies and weakening national currencies.
Trust in the national economy	Trust consumers and investors to the economy affects the demand for currency.	High level confidence in the economy stimulates demand for currency, which contributes its strengthening.	Unstable economic situation or expectation economic downturn may cause fall trust in the national currency, leading to devaluation.
Military conflicts	Conflicts or war reduce investment attractiveness and can cause panic on the market.	Military conflicts repel investors and promote withdrawal capital that worsens currency situation.	War and instability due to the military actions much weaken national currency, because international markets and investors perceive such

			situation as risky for long-term attachments.

Continuation of table 2.3

Source: developed by the author based on data from [11].

A particularly important factor is a country's external debt. Countries with large debt obligations often face difficulties in servicing their debts, which can lead to currency devaluation. Also, political instability, such as military conflicts or changes of government, can cause a loss of confidence in the national economy and its currency. These factors together pose a threat to exchange rate stability, especially in conditions when the country's economy is faced with external or internal shocks.

Exchange rate changes in conditions of economic instability are often the result of the interaction of several factors. They can have both short-term and long-term effects on the country's economy. To maintain exchange rate stability, it is important to respond in a timely manner to changes in the external economic situation and conduct an effective monetary policy. Strengthening the economy, reducing external debt, and ensuring political stability can help to keep the exchange rate at a stable level in conditions of instability. Military conflicts always significantly affect the economies of the countries involved in them, in particular, the exchange rate. For Ukraine, which has been experiencing military operations since 2014, these effects become especially noticeable and complex. In conditions of war, risks and uncertainty increase, which negatively affects the stability of the national currency and the economic situation in general. Military conflict significantly complicates international trade: blocking ports, destroying transport infrastructure, and imposing sanctions lead to a decrease in exports and imports. The decline in export earnings reduces the inflow of foreign exchange into the country, which increases pressure on the national currency. Under martial law, the national currency is under significant pressure due to growing uncertainty, capital flight, destruction of production facilities, and disruption of foreign economic relations, leading to sharp fluctuations in the exchange rate and making it difficult to forecast the economic situation. The characteristics of the factors affecting the exchange rate during a military conflict are given in Table 2.4.

Table 2.4 – Characteristics of factors influencing the exchange rate in Ukraine

Factor	Characteristic	Impact on the exchange rate
1	2	3
Military conflict	Military actions related to aggression violate economic stability, leading to a decrease investment attraction and outflow capital.	Strengthening economic uncertainty, decrease trust in the national currencies, growth inflationary expectations, increase risks devaluation.
Sanctions and international limitation	International sanctions imposed of countries, restrict access to international financial markets, affect the external trade and investment.	Restrictions on foreign exchange flow into the country, a fall export revenues that increases pressure on the national currency.
External trade	Decrease export or import because of the crisis or violation logistic ways, in particular locking ports, destruction infrastructure and reduction demand.	Reduction foreign exchange revenues from exports and reduction volumes import leads to a shortage currencies on the market that lowers the national exchange rate currencies.
Inflation	High level inflation in the country, in particular due to the increase war spending, energy resources and goods first necessity.	Decrease cost of national currency due to decline its purchasing capacity in the domestic market, leading to devaluation.
Political instability	Unstable political situation, corruption or uncertainty of political solutions can to influence trust investors and consumers.	Uncertainty and decline trust in the country reduce influx foreign investments that puts pressure on the exchange rate of the national currencies.
Currency NBU policy	Steps that carries out National Bank of Ukraine to stabilize the hryvnia exchange rate: currency, change discount rate and others regulatory measures.	The NBU's actions may restrain or accelerate fluctuation exchange rate depending from policy aimed at stabilization or correction hryvnias on the currency market.
External financial flows	Admission loans, aid, investments from international financial organizations or private investors.	Positive influx of foreign investments and loans maybe strengthen national currency, while the absence of such flows or their loss leads to hryvnias devaluation.
Energy prices	Fluctuation world prices for energy carriers, in particular gas and oil, which are important for the economy Ukraine, significantly affect the budget and trade balance.	Decrease energy prices may reduce import costs and improve balance of payments, which has a positive effect on the exchange rate stability hryvnias.
Financial aid and loans	Engagement international loans and grants (from the IMF, World Bank, EU, etc.) to support economy Ukraine during a crisis.	Positive impact on the currency market thanks to increase of foreign exchange reserves, reduction pressure on the hryvnia exchange rate due to the increase financial stability.

Source: developed by the author based on data from [11].

The exchange rate of the national currency in Ukraine is influenced by many internal and external factors. The most important are military conflict, political instability, international sanctions, as well as changes in foreign trade and financial flows. In crisis situations, such as war, inflation, and blocking of economic channels, there is a decrease in confidence in the national currency and an increase in devaluation risks. At the same time, an effective currency policy of the National Bank of Ukraine and support from international financial institutions can significantly mitigate the negative consequences for the hryvnia exchange rate, helping to maintain economic stability.

Instability in currency markets is a normal phenomenon, but certain periods and currency pairs are characterized by increased volatility. An analysis of exchange rate fluctuations of major world currencies during 2021-2024 reveals such areas of instability and explains their nature (Table 2.5).

Table 2.5 – Range of exchange rate fluctuations of major world currencies against the US dollar in 2021-2024.

Currency	Year	Maximum value	Minimum value	Annual range
Euro (EUR)	2021	1,235	1,086	0,149
	2022	1,148	0,953	0,195
	2023	1,128	1,045	0,083
	2024	1,114	1,065	0,049
British pound (GBP)	2021	1,424	1,316	0,108
	2022	1,360	1,035	0,325
	2023	1,289	1,180	0,109
	2024	1,282	1,200	0,082
Japanese yen (JPY)	2021	102,5	116,3	13,8
	2022	115,1	151,9	36,8
	2023	127,2	151,7	24,5
	2024	140,9	157,9	17,0
Swiss franc (CHF)	2021	0,893	0,947	0,054
	2022	0,915	1,007	0,092
	2023	0,826	0,985	0,159
	2024	0,840	0,918	0,078
Canadian dollar (CAD)	2021	1,202	1,296	0,094
	2022	1,247	1,397	0,150
	2023	1,315	1,390	0,075
	2024	1,344	1,385	0,041
Australian dollar (AUD)	2021	0,800	0,699	0,101
	2022	0,766	0,620	0,146
	2023	0,715	0,635	0,080
	2024	0,689	0,644	0,045

Source: constructed by the author based on data from [52].

Looking at the euro (EUR), it can be noted that the largest annual range of fluctuations was observed in 2022 (0.195), indicating significant volatility of the euro against the US dollar during this period. This was due to a number of factors, including the tightening of monetary policy by the US Federal Reserve, the energy crisis in Europe caused by geopolitical tensions, and general uncertainty about the economic outlook for the eurozone. In the following years, the euro's fluctuation range gradually narrowed, reaching its lowest value in 2024 (0.049), indicating some stabilization of the economic situation in the eurozone and more predictable monetary policy.

The British pound (GBP) also experienced the highest annual volatility in 2022 (0.325). This was due to internal economic problems in the UK, including high inflation and political instability, as well as the general strengthening of the US dollar. In 2021 and 2023, the pound's fluctuation range was significantly smaller (0.108 and 0.109, respectively), and in 2024, it is expected to decrease further (0.082), indicating a reduction in uncertainty in the currency market regarding the British currency.

The Japanese yen (JPY) shows the highest absolute values of the annual fluctuation range among all currencies presented. The peak of volatility occurred in 2022 (36.8), which was caused by a sharp divergence in monetary policy between the Bank of Japan, which continued to maintain an ultra-soft policy, and the US Federal Reserve, which actively raised interest rates. In 2023 and 2024, the yen's fluctuation range remained significant (24.5 and 17.0, respectively), indicating the Japanese currency's continued sensitivity to changes in global interest rates and market sentiment.

The Swiss franc (CHF), as a safe-haven currency, is characterized by relatively lower volatility compared to other currencies, but also shows some fluctuations in its annual range. The largest range was observed in 2023 (0.159), which may have been related to changes in global risk sentiment and the revaluation of the Swiss National Bank's monetary policy. In 2021, 2022, and 2024, the franc's volatility was lower (0.054, 0.092, and 0.078, respectively).

For the Canadian dollar (CAD), the largest annual range of fluctuations was recorded in 2022 (0.150), which may have been related to the general strengthening of the US dollar and oil price volatility, which is an important factor for the Canadian economy. In 2021 and 2023, the volatility of the Canadian dollar was moderate (0.094 and 0.075, respectively), and in 2024, it is expected to decline further (0.041).

The Australian dollar (AUD) also showed the highest annual volatility in 2022 (0.146), which may have been a reaction to changes in global demand for raw materials and the overall strength of the US dollar. In 2021 and 2023, the Australian dollar's fluctuation range was smaller (0.101 and 0.080, respectively), and in 2024, it reached its lowest value for the period under review (0.045).

Overall, the analysis of the annual range of exchange rate fluctuations of major world currencies against the US dollar during 2021-2024 revealed increased volatility in 2022 for most currency pairs, which was driven by a combination of global economic and geopolitical factors. The Japanese yen stood out with a particularly wide range of fluctuations throughout the period. In the following years, there was a downward trend in volatility for some currencies, but markets remained sensitive to changes in the macroeconomic situation and monetary policy of key central banks.

Figure 2.3 shows the volatility of annual exchange rate changes for the five major world currencies (euro, British pound, Japanese yen, Swiss franc, Canadian dollar, and Australian dollar) against the US dollar for the period 2021-2024. Volatility is assessed using the standard deviation (SD) of annual percentage changes in exchange rates.

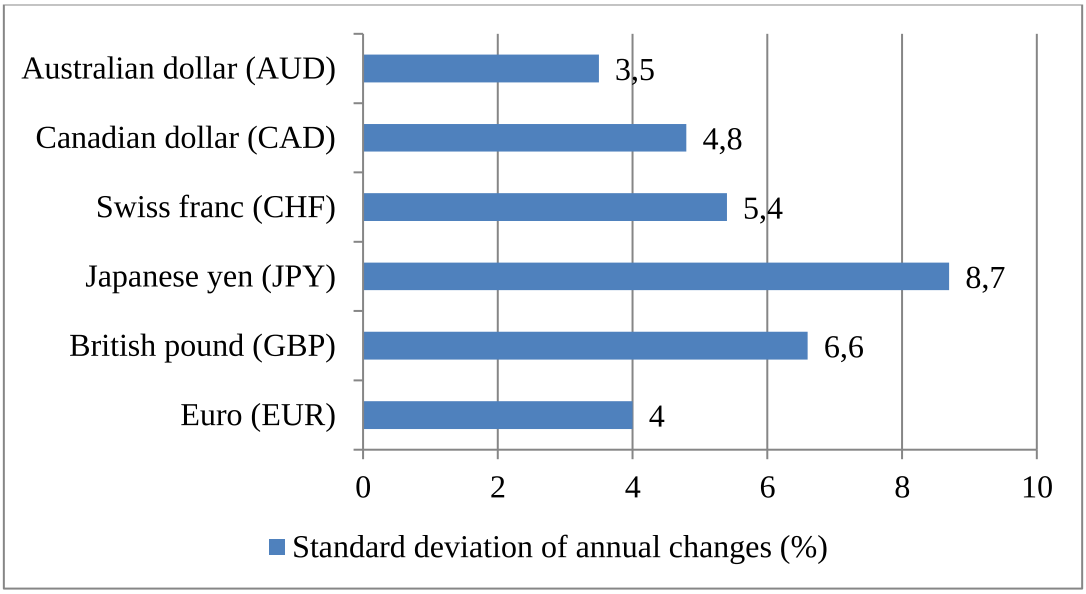


Figure 2.3 – Standard deviation (SD) of annual changes in the exchange rates of major world currencies against the US dollar in 2021-2024.

Source: constructed by the author based on data from [52].

An analysis of the standard deviation of annual changes in the exchange rates of major world currencies against the US dollar in 2021-2024 revealed that the Japanese yen was the most volatile currency against the US dollar (8.7%). This confirms its significant sensitivity to changes in monetary policy and global economic sentiment during the period under review. The British pound (6.6%) and the Swiss franc (5.4%) also showed relatively higher volatility compared to the euro (4.0%), the Canadian dollar (4.8%) and the Australian dollar (3.5%), which were characterized by lower volatility. These data provide important information for investors and international traders in assessing currency risks and making informed financial decisions.

Thus, in conditions of economic instability, the exchange rate of the national currency is influenced by many factors, among which inflation, external debt, political and military instability, commodity prices and monetary policy play a key role. The analysis shows that in conditions of crisis, confidence in the national economy and external financial flows become especially critical, which can both stabilize and increase devaluation pressure. To minimize the negative impact, it is necessary to conduct a balanced currency policy, stimulate the attraction of foreign investment and maintain macroeconomic stability.

2.3. Analysis of exchange rate fluctuations in Ukraine under martial law

The imposition of martial law in Ukraine in February 2022 dramatically transformed the functioning of the foreign exchange market and prompted the National Bank of Ukraine (NBU) to introduce a set of temporary currency regulation measures. The purpose of these interventions was to curb devaluation processes, prevent capital outflows, and ensure macrofinancial stability in the face of an unprecedented shock. The evolution of the NBU's foreign exchange policy during this period can be clearly divided into several stages, each characterized by a specific set of instruments and response to the dynamics of the military and economic situation.

The first stage of currency regulation, which began with the full-scale invasion on February 24, 2022, and lasted until July 21, 2022, was characterized by the dominance of the strategy of fixing the hryvnia/US dollar exchange rate at 29.25 UAH/USD. This step was aimed at curbing panic in the market and preventing uncontrolled devaluation of the national currency. In order to maintain the fixed exchange rate, the NBU applied strict administrative restrictions, including the suspension of the foreign exchange market at the initial stage, limiting cash withdrawals, a ban on the purchase of foreign currency by individuals (with certain exceptions), restrictions on cross-border transfers of funds, and the mandatory sale of 100% of foreign exchange earnings by exporters. These measures, while restricting economic activity, helped stabilize currency expectations at a critical time.

The second period of currency regulation (July 21, 2022 - October 03, 2023) was marked by a gradual adjustment to the new economic realities and a partial easing of certain administrative restrictions. The key event of this stage was the adjustment of the official hryvnia exchange rate to 36.57 UAH/USD. US DOLLAR. This decision was dictated by the need to increase the competitiveness of Ukrainian exports, balance the balance of payments, and bring the official exchange rate closer to market values. At the same time, the NBU expanded the scope for purchasing foreign currency for certain purposes, including for critical imports, but key administrative restrictions, such as limits on cash withdrawals, restrictions on most transfers abroad, and mandatory sales of foreign currency earnings, remained in place. The NBU's active foreign exchange interventions on the interbank market played an important role in maintaining the relative stability of the exchange rate.

The third and current period of currency regulation, which began on October 3, 2023, is characterized by a transition to a regime of managed exchange rate flexibility. The abandonment of the fixed exchange rate means that the value of the hryvnia is determined on the interbank foreign exchange market under the influence of supply and demand. However, the NBU retains the right to intervene in the foreign exchange market to smooth out significant exchange rate fluctuations and prevent market destabilization. This period saw further gradual easing of certain currency restrictions, although some of them remain in place to prevent significant capital outflows. Managed flexibility is aimed at increasing the resilience of the FX market to external and internal shocks and facilitating a gradual return to more market-based exchange rate mechanisms.

Throughout the period of martial law, the NBU used a range of instruments to ensure the relative stability of the exchange rate. These included administrative restrictions, foreign exchange interventions using international reserves, an increase in the key policy rate to stimulate the attractiveness of hryvnia assets and curb inflation, and coordination with the government in the area of fiscal and monetary policy. International financial assistance also provided significant support to the stability of the foreign exchange market, allowing the NBU to increase its international reserves.

The issue of currency exports by Ukrainians during evacuation to other countries is difficult to quantify due to the lack of centralized accounting and the use of different channels for moving funds. However, it is clear that the significant outflow of population at the initial stage of the war was accompanied by the export of cash for priority needs, and later on, bank cards and international transfers were actively used. Currency restrictions imposed by the NBU had a restraining effect on the overall volume of outflows.

Legislative regulation of the exchange rate in 2022-2025 was based on the Law of Ukraine “On Currency and Currency Transactions” [1], but numerous resolutions of the National Bank of Ukraine, which set temporary restrictions and determined the mechanisms of the foreign exchange market functioning under martial law, played a key role in operational management. The systematization of these regulations reflects the evolution of the NBU's foreign exchange policy from rigid exchange rate fixation to managed flexibility, which reflects adaptation to the changing macroeconomic situation and gradual economic recovery.

During the military conflict, Ukraine actively receives international financial support from various countries and organizations, which manifests itself in the form of loans, grants and military aid. The receipt of significant amounts of foreign currency contributes to an increase in foreign exchange reserves, which helps stabilize the hryvnia exchange rate. At the same time, the military conflict reduces Ukraine's attractiveness for investors. A decrease in the volume of foreign direct investment (FDI) leads to a reduction in foreign exchange revenues necessary to maintain the stability of the national currency. The high level of risk and uncertainty negatively affects the determination of potential investors. The dynamics of foreign direct investment in Ukraine by year can be seen in Table 2.6.

Table 2.6 – Dynamics of foreign direct investment in Ukraine for 2021-2023. (million USD)

Years	**FDI to Ukraine**		**FDI from Ukraine**		**Balance**	
	Volume, million USD	**Deviation, million USD**	**Volume, million USD**	**Deviation, million USD**	**Volume, million USD**	**Deviation, million USD**
2021	6687	7555	-198	-280	+6885	-824.7%
2022	1152	-5535	529	727	+623	-91.0%
2023	4247	3095	42	-487	+4205	575.0%

Source: constructed by the author based on data from [29].

Table 2.6 shows the dynamics of foreign direct investment (FDI) to and from Ukraine for 2021-2023, as well as it's balance. Analysis of these indicators allows us to assess the impact of foreign direct investment on the exchange rate of the national currency in conditions of economic instability. In 2021, the volume of FDI to Ukraine amounted to 6,687 million USD, which is 7,555 million USD more than investments from Ukraine. This means a significant inflow of capital from abroad, which contributed to an increase in the country's foreign exchange reserves. However, the investment balance in 2021, which is +6,885 million USD, was very high, as indicated by a positive deviation (at -824.7%). Such dynamics indicate the stability of the financial situation in Ukraine, since the increase in foreign exchange receipts helps to maintain the hryvnia exchange rate.

In 2022, there was a significant decrease in the volume of foreign direct investment in Ukraine - only 1,152 million USD, which was almost six times less than in 2021. This was undoubtedly due to the start of hostilities in Ukraine, which led to a significant reduction in international investment flows. In addition, there is a significant drop in the volume of FDI from Ukraine (-5,535 million USD), which indicates a capital vanishing from the country. However, the investment balance remained positive (+623 million USD), although the deviation compared to the previous year (-91.0%) indicates a decrease in the country's investment attractiveness. These factors significantly affected the volatility of the exchange rate, as a decrease in investment inflows reduces the supply of foreign currency on the market, which may increase pressure on the hryvnia.

In 2023, there is a partial recovery of foreign direct investment in Ukraine, the volume of which amounted to 4247 million USD. This became possible due to the stabilization of some economic processes and the support of international partners. FDI from Ukraine remains at a rather low level, which is the result of limited investment opportunities in war conditions. The balance in 2023 increased to +4205 million USD, which demonstrates positive changes in the economic situation, although the deviation is still +575.0%. Such an improvement indicates the restoration of confidence in the Ukrainian economy and the gradual return of investment activity.

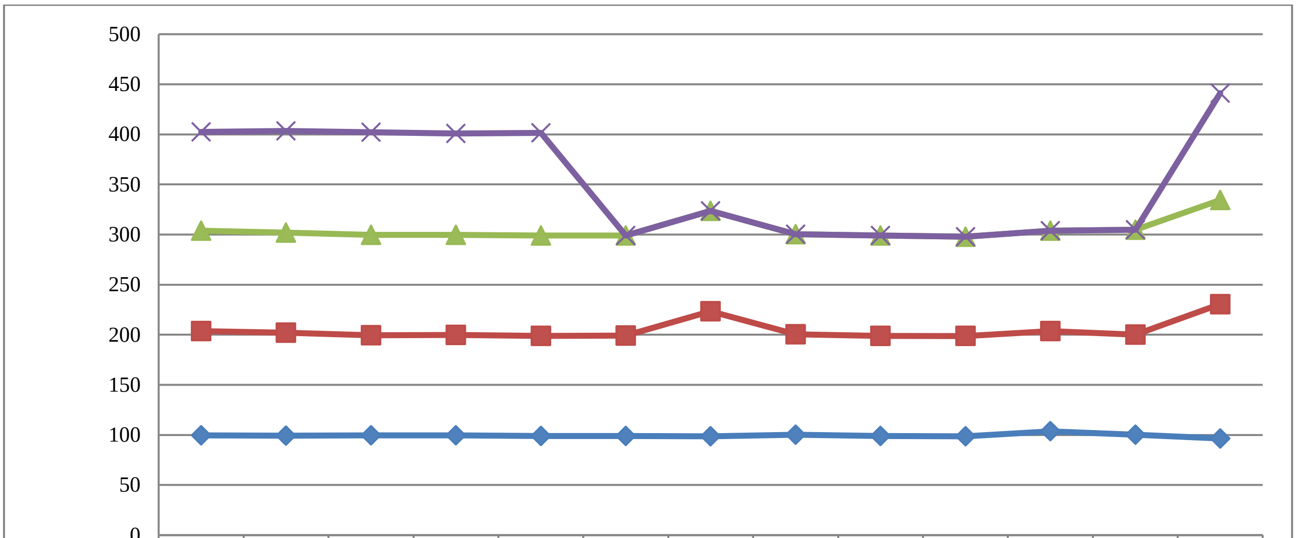
In general, the data in Table 2.4 show a significant impact of economic instability caused by the military conflict on the dynamics of foreign direct investment in Ukraine. The largest decline in 2022 reflected the negative consequences of the war, when investment inflows significantly decreased due to increased risks and uncertainty. At the same time, the resumption of investment activity in 2023 indicates some positive changes in the conditions of post-war adaptation and support from international financial institutions. These fluctuations in FDI volumes directly affect the foreign exchange market, since a decrease in investment inflows reduces the supply of foreign currency, increasing pressure on the national currency. Given the significant dependence of the hryvnia exchange rate on the level of foreign investment, Ukraine needs to work on restoring investment attractiveness, attracting financial resources, and maintaining the stability of the foreign exchange market in conditions of economic instability.

Ukraine is heavily dependent on imported energy resources, particularly natural gas and oil. Fluctuations in world prices for these resources directly affect the exchange rate of the national currency. The increase in the cost of energy resources leads to an increase in the cost of their import, which negatively affects the country's trade balance and creates additional pressure on the hryvnia.

The introduction of economic sanctions and trade restrictions against the aggressor country, as well as possible corresponding restrictions on Ukraine, complicate the implementation of foreign economic operations. Sanctions policy limits access to international financial markets and reduces the possibility of attracting credit resources, which negatively affects the stability of the exchange rate (Appendix C) [51].

The military conflict caused a significant devaluation of the hryvnia. Reduced export earnings, capital outflows, and reduced foreign direct investment led to increased demand for foreign currency, which weakened the national currency. At the same time, international financial assistance partially offset this negative impact, restraining excessive depreciation of the hryvnia. The dynamics of the hryvnia devaluation indices against the US dollar in 2021–2024 demonstrate significant fluctuations, reflecting periods of stability and crisis phenomena in the Ukrainian economy (Figure 2.4).

The exchange rate of the national currency is an important indicator of the country's economic stability, especially in conditions of military conflict and economic instability. The dynamics of the hryvnia devaluation indices against the US dollar for 2021–2024 demonstrate significant fluctuations, which indicates the influence of both internal and external factors on the foreign exchange market of Ukraine.



	January	February	March	April	May	June	July	August	September	October	November	December	Per year
2024	98,8	101,3	102,5	101,3	102,6								106,7
2023	100	100	100	100	100	100	100	100	100	99,2	100,2	104,5	103,9
2022	104,3	102,8	100	100	100	100	125	100	100	100	100	100	134,1
2021	99,5	99,3	99,6	99,7	99	99,1	98,5	100,3	99	98,7	103,6	100,2	96,5

Figure 2.4 – Dynamics of hryvnia devaluation indices against the dollar USA from 2021 to 2024 (%)

Source: constructed by the author based on data from [30].

In 2021, the hryvnia exchange rate remained relatively stable, although there were minor fluctuations. Overall, the devaluation of the national currency for the year was

3.5%. This is explained by the relatively favorable macroeconomic situation, control by the National Bank of Ukraine (NBU), and stable export revenues. A sharp deterioration in the situation occurred in 2022, when economic risks and uncertainty increased as a result of a full-scale military invasion. The devaluation index reached its peak in July 2022 (125%), reflecting the sharp depreciation of the hryvnia after the NBU's decision to officially adjust the exchange rate. Overall, the hryvnia depreciated by 34.1% over the year, which was a result of reduced exports, a decline in economic activity, and an outflow of investment. In 2023, the situation partially stabilized due to international financial assistance, NBU currency interventions, and the adaptation of the economy to wartime conditions. The devaluation index remained at 100% for most of the year, with a slight weakening of the hryvnia at the end of the year (104.5% in December). Overall, the devaluation rate for the year was 3.9%, indicating a gradual reduction in the shock impact of the war on the foreign exchange market.

The hryvnia exchange rate continues to be volatile due to external economic factors, such as changes in energy prices and the international political situation. These fluctuations create uncertainty among market participants, making it difficult to accurately forecast the economic situation.

The dynamics of the commodity structure of Ukraine's exports can be seen in Appendix G and Fig. 2.5.

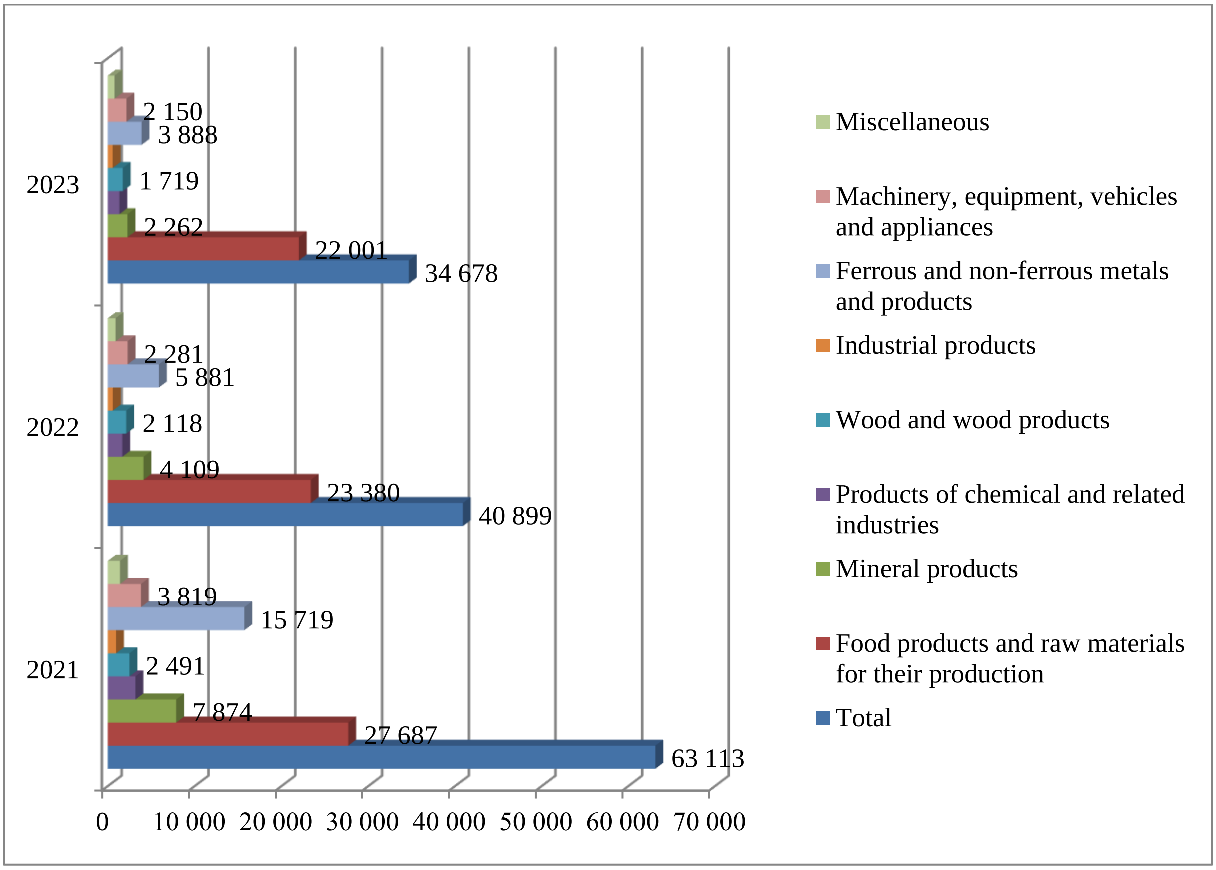


Figure 2.5 – Dynamics of the commodity structure of exports in Ukraine for 2021-2023. (million USD)

Source: constructed by the author based on data from [29].

The dynamics of the commodity structure of Ukraine's exports for 2021-2023 reflects significant changes in export volumes and their composition. Total exports over three years decreased from 63,113 million USD in 2021 to 34,678 million USD in 2023. This indicates a significant impact of economic instability and external economic factors, in particular the military conflict, on Ukraine's foreign trade.

Food products and raw materials for their production occupy the largest share in the export structure, although they show a decrease in volumes: from 27,687 million USD in 2021 to 22,001 million USD in 2023. This decline is associated with disruption of supply chains and reduced access to international markets due to military actions.

Mineral products, which include energy carriers, have significantly decreased in exports, from 7,874 million USD in 2021 to 2,262 million USD in 2023. This decline is due not only to domestic problems, but also to a general decrease in demand for energy carriers, as well as the blockade of ports, which has complicated exports.

Chemical and related industries also experienced a decline in exports. The decline from $3,173 million in 2021 to $1,329 million in 2023 is a result of both lower demand for chemical products and difficulties in transporting goods due to infrastructure disruptions.

Ferrous and non-ferrous metals and products from them also showed a sharp decline, from 15,719 million USD in 2021 to 3,888 million USD in 2023. The decline in volumes is due to both a decrease in production capacity due to the war and a decrease in external demand.

Machinery, equipment, vehicles, and other manufactured goods also declined, although less significantly, indicating limited imports of investment goods and difficulties in financing industrial purchases.

The decline in Ukraine's total exports from 2021 to 2023 indicates significant economic difficulties caused by external economic and domestic instability, including the military conflict. Key export items, in particular energy products, ferrous and non-ferrous metals, and chemical products, have been hit the hardest. This indicates serious disruptions in supply chains and export operations, which reduces foreign exchange earnings in the country. The decline in export earnings negatively affects the exchange rate of the national currency, as the reduction in foreign exchange flows worsens the balance of payments and increases pressure on the hryvnia. Factors caused by the military conflict – blockade of ports, reduction in production capacity, and sanctions – continue to have a negative impact on Ukraine's trade balance.

Table 2. 5 provides a detailed description of the main factors that directly affect the exchange rate of the hryvnia during the military conflict.

Table 2.5 – Characteristics of the impact of martial law on the exchange rate in Ukraine

Factor	Characteristic influence	Impact on the exchange rate
Military actions	Violation of territorial integrity, destruction of infrastructure, destruction of enterprises.	Intensifies uncertainty that causes decrease trust in the national currencies and devaluation of hryvnias.
Loss economic ties	Interruption of external trade, closing ports, complications	Foreign exchange reduction revenues contributes growth demand for foreign

	logistics, reduction volumes export and import.	currency, which strengthens pressure on the hryvnia.
Sanctions and trade limitation	Implementation of sanctions from other states against Ukraine and relevant restrictions from the aggressor country.	Restrictions on access to international financial markets reduces opportunities receiving foreign currencies that contributes devaluation.
Loss of investment attractiveness	Decrease of equal direct foreign investments due to increased risks.	Reducing the inflow of foreign investment reduces foreign exchange income that increases pressure on the exchange rate.
Defense spending	State budget spending on defense and reconstruction after combat actions.	Growing budget deficit and the need for involvement loans may strengthen devaluation pressure on the hryvnia.
International financial help	Incoming financial assistance from international organizations (loans, grants, assistance).	Improves foreign exchange reserves that may promote stabilization of exchange rate, lowering pressure on the national currency.
Internal inflation	Growing prices for goods and services due to destabilization economic situations.	High inflation may worsen real cost of hryvnias, reducing its purchasing ability.
Socio-economic instability	Equal unemployment increase, decline of income population, migration and displacement of people.	Increased social High-voltage reduces domestic demand and production possibilities that may promote reduction of economic activities and strengthen pressure on the hryvnia.

Continuation of table 2.5

Source: developed by the author based on data from [31].

Violations of territorial integrity and destruction of economic infrastructure lead to serious economic losses. They also increase the level of uncertainty in financial markets, which significantly reduces confidence in the national currency, contributing to its devaluation. Each shelling or destruction of enterprises worsens economic forecasts, which is reflected in the exchange rate.

Interruptions in trade relations, port closures, and logistics restrictions have a direct impact on export and import volumes. Reduced foreign exchange earnings increase demand for foreign currency, leading to its appreciation against the hryvnia.

The introduction of sanctions by both Ukraine and the aggressor country creates serious restrictions on foreign economic activity. These restrictions reduce access to international financial markets and limit the possibility of attracting foreign investment or loans. As a result, the country faces a deficit in foreign exchange earnings, which negatively affects the exchange rate.

Risks associated with the military conflict significantly reduce Ukraine's investment attractiveness. Lack of investor confidence and a reduction in foreign direct investment contribute to a reduction in foreign exchange earnings, which further increases the demand for foreign currency and increases pressure on the exchange rate.

Increasing government spending on defense and post-war reconstruction is leading to a widening budget deficit. To finance these expenditures, the government is often forced to borrow, which can increase the burden on the national currency, putting additional pressure on the hryvnia exchange rate.

Assistance from international organizations in the form of loans and grants has a positive impact on Ukraine's foreign exchange reserves. This support helps to reduce pressure on the hryvnia, providing additional foreign exchange earnings to cover the deficit and stabilize the economic situation.

Military actions contribute to economic instability, which leads to rising inflation. Rising prices for goods and services depreciate the real value of the hryvnia and reduce its purchasing power. This, in turn, causes even greater demand for foreign currency, which intensifies devaluation pressure.

Rising unemployment, falling incomes, and migration contribute to a decline in domestic demand. The worsening socio-economic situation and low economic activity reduce production, which also has a negative impact on the exchange rate, as the supply of the national currency decreases.

Thus, factors related to martial law directly affect the stability of the national currency exchange rate. Military actions, sanctions, economic restrictions and a decrease in investment attractiveness increase pressure on the hryvnia, contributing to its devaluation. At the same time, international financial assistance can have a softer effect on the exchange rate, improving foreign exchange reserves. Therefore, to stabilize the exchange rate in conditions of military instability, it is necessary to reduce dependence on external factors, attract investment and promote the development of domestic production.

The dynamics of the main indicators of the impact of martial law on the exchange rate policy of the National Bank of Ukraine for 2021-2024 is presented in Table 2.6.

Table 2.6 – Dynamics of the main indicators of the impact of martial law on the exchange rate policy of the National Bank of Ukraine for 2021-2024.

Year	**Amount of foreign exchange reserves, million USD**	**Dynamics of the hryvnia exchange rate to the US dollar**	**Discount rate, %**	**Currency NBU interventions, million USD**	**Other NBU measures**
2021	28,450	Initial value: 27.00; final: 29,10	Initial value: 10,00; final: 12,50	2,100	Discount rate change
2022	25,800	Initial value: 29, 10; final: 33,20	Initial value: 12,50; final: 15,00	3,500	Currency interventions
2023	22,600	Initial value: 33, 20; final: 31, 80	Initial value: 15,00; final: 17,00	2,800	Increase discount rate
2024	20,500	Initial value: 31, 80; final: 33,50	Initial value: 17.00; final: 16.50	2,200	Currency swaps with international partners

Source: developed by the author based on data from [29].

The assessment of factors affecting the exchange rate in conditions of economic instability involves the analysis of key macroeconomic indicators, such as the volume of foreign exchange reserves, the dynamics of the hryvnia exchange rate, the discount rate and foreign exchange interventions of the National Bank of Ukraine (NBU). For Ukraine, in conditions of military conflict, these factors have become even more important for ensuring exchange rate stability and supporting the national currency. The table showing the dynamics of these indicators from 2021 to 2024 allows us to clearly trace how various macroeconomic measures and changes in financial markets affected the hryvnia in conditions of war.

Since the start of the war, Ukraine’s foreign exchange reserves have declined, from $28,45 billion in 2021 to $20,5 billion in 2024. This is a result of lower foreign exchange earnings due to lower exports and investments, as well as significant spending on defense and economic recovery. The decline in foreign exchange reserves could put additional pressure on the exchange rate, limiting the NBU’s ability to support the hryvnia through foreign exchange interventions.

The hryvnia exchange rate fluctuated significantly during 2021–2024. From an initial value of UAH 27,00 per dollar in 2021, the rate reached UAH 33,50 per dollar by the end of 2024. This shows how military actions and economic instability affected the devaluation of the national currency, with the NBU using various tools to correct this process, including changes in the discount rate and currency interventions.

The discount rate is an important monetary policy tool that affects the level of inflation and the stability of the national currency. In 2021, the rate was 10%, but by the end of 2022 it had increased to 15%, and in 2023 – to 17%. This shows the growth of inflationary pressure in wartime conditions, as well as the need for the NBU to increase the discount rate to contain inflation and reduce devaluation expectations. In 2024, the rate was reduced to 16.5%, which indicates an attempt by the NBU to stimulate economic activity after a certain period of stabilization.

The NBU has been actively using foreign exchange interventions to support the stability of the hryvnia. In 2021, $2.1 billion was spent, in 2022 – $3.5 billion, in 2023 – $2.8 billion. These interventions helped to reduce exchange rate volatility, but the volume of foreign exchange reserves spent indicates the complexity of the situation and the need to actively intervene in the market to prevent a sharp devaluation of the hryvnia.

In addition to foreign exchange interventions and adjustments to the discount rate, the NBU also took other measures to support the hryvnia exchange rate. In 2024, for example, the NBU conducted currency swaps with international partners to obtain additional foreign exchange reserves and ensure financial stability.

The reduction in foreign exchange reserves in wartime conditions creates additional risks to the stability of the hryvnia, as it limits the NBU’s ability to conduct effective foreign exchange interventions. It also leads to a devaluation of the hryvnia, which becomes more vulnerable to changes in international financial markets. The increase in the discount rate from 10% to 17% for the period from 2021 to 2023 is the

NBU’s response to rising inflation and economic challenges. This helped to reduce inflationary pressures, but also made lending more expensive, which could worsen the situation in the economy. Despite significant foreign exchange interventions, the volume of which increased throughout 2022, the interventions could not always effectively stabilize the hryvnia exchange rate due to limited foreign exchange reserves and external economic factors, such as sanctions and restrictions on financial flows.

The military conflict and economic instability in Ukraine significantly affect the exchange rate policy of the NBU. Changes in foreign exchange reserves, interventions and discount rates demonstrate the importance of monetary instruments in supporting the hryvnia in wartime conditions. However, achieving exchange rate stability also requires stabilizing the economic situation in the country, in particular through attracting international financial assistance, investments and improving foreign trade.

The dynamics of changes in Ukraine's international reserves are shown in Fig. 2.6.

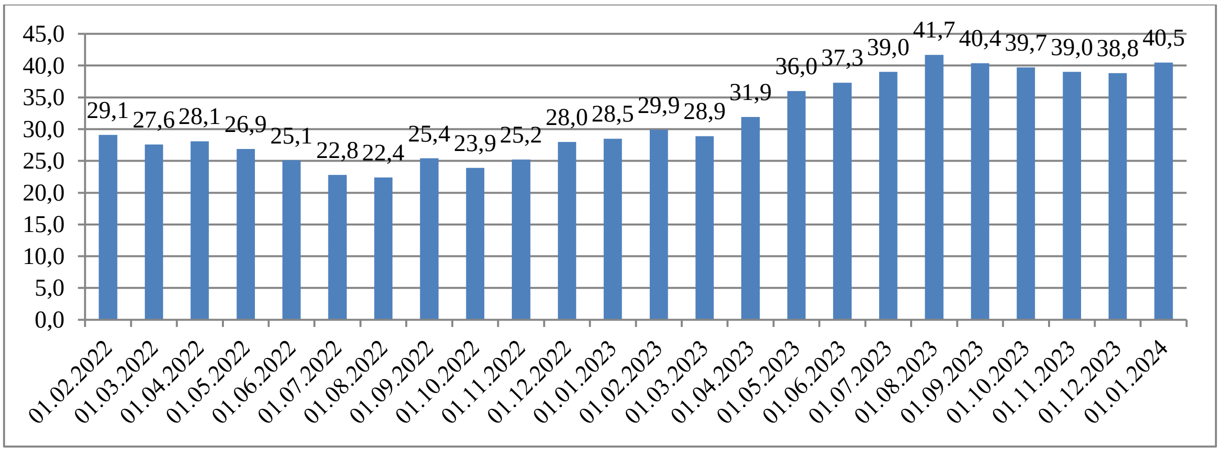


Figure 2.6 – International reserves of Ukraine, billion USD

Source: developed by the author based on data from [51].

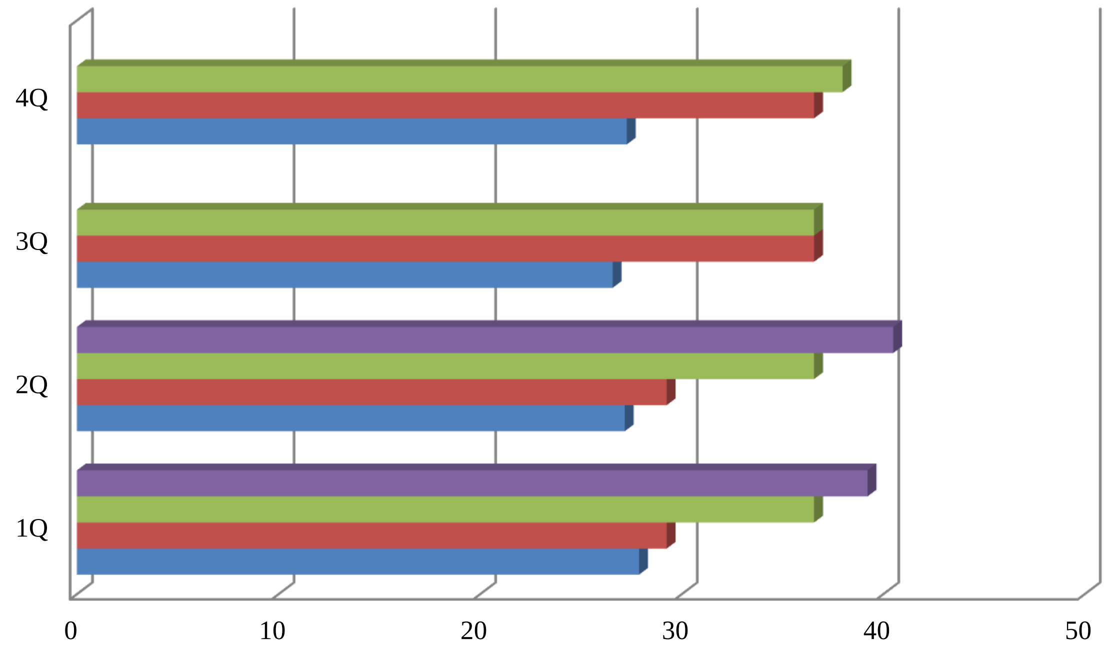
The dynamics of Ukraine's international reserves in the face of economic instability is a key factor affecting the hryvnia exchange rate. In 2022 happened significant fluctuation reserves through the military actions and macroeconomic risks. Reduction reserves in the first half of the year (from $29.1 billion in February to $22.4 billion in August) was caused outflow capital, necessity financing of critical imports and active currency interventions National Bank of Ukraine (NBU) to support hryvnia. In the fall of

2022, there was a restoration of reserves, which became possible thanks to international financial help, income loans from international partners and tough monetary NBU policy.

During 2023, reserves demonstrated stable growth, reaching a peak in August at $41.7 billion. This explained stabilization of economy, building up international support, as well as effective using foreign exchange reserves for regulating the foreign exchange market. However, in September-December 2023, the reserves something decreased to $38.8 billion, which could be a result of active servicing external debts and necessity carrying out foreign exchange interventions. By the beginning of 2024, they had grown to 40.5 billion USD, which indicates a continuation of politicians support macroeconomic stability.

Dependence of foreign exchange reserves from external support – international reserves significantly fluctuated due to the influence military actions, macroeconomic factors and international financial help. Their growth in 2023 became possible thanks to involvement external loans and grants. The role of the NBU's foreign exchange interventions - in 2022, significant amounts of reserves were spent to support the hryvnia exchange rate, demonstrating their strategic importance for stabilizing the economy. Impact economic policy on reserves – tough monetary foreign exchange market policy and control helped stabilize situation and promote building up reserves in 2023 . Necessity further support – despite the positive dynamics, level international reserves remains critically important for macroeconomic stability. Their further preservation and growth depend from economic recovery, effective management finances and stability external help.

Let us analyze the dynamics of the official exchange rate of the hryvnia to the US dollar (for 1 unit) on the last day of each quarter, using the indicators of the development of the foreign exchange market of Ukraine (Appendices A-D), presented in Fig. 2.7.



	1Q	2Q	3Q	4Q
2024	39,2214	40,5001		
2023	36,5686	36,5686	36,5686	37,9824
2022	29,2549	29,2549	36,5686	36,5686
2021	27,8852	27,1763	26,576	27,2782

Figure 2.7 – Official exchange rate of hryvnia to US dollar (for 1 unit) on the last day of the quarter

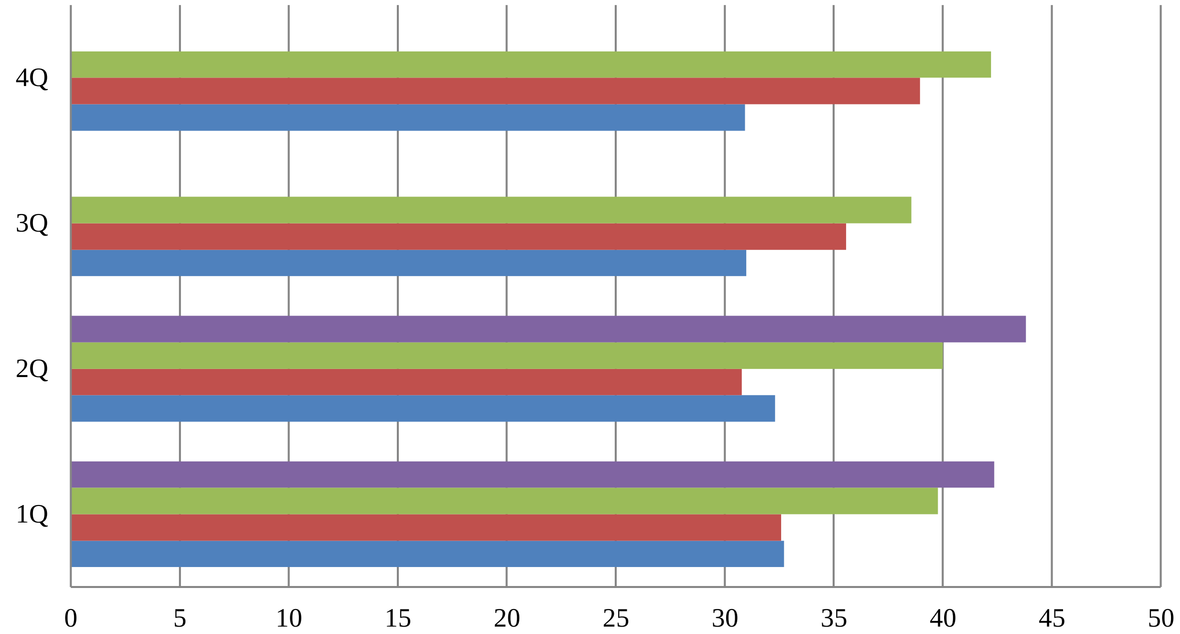
Source: constructed by the author based on data from [29].

An analysis of the official hryvnia to US dollar exchange rate for the period from 2021 to 2024 allows us to understand how economic and political events affect the exchange rate of Ukraine. During 2021, the hryvnia to US dollar exchange rate remained stable, with a gradual decrease. Since the beginning of the year, it was at the level of 28.1929 UAH per dollar, and on the last day of December it increased to 27.2782 UAH per dollar. Such a slight decrease indicates the stability of the national currency, which was due to the relatively stable economic situation and the absence of serious political or military crises. 2022, in turn, became a turning point due to the outbreak of the war in Ukraine. The hryvnia exchange rate increased significantly: from 28.7839 UAH per dollar at the beginning of the year to 36.5686 UAH per dollar in August-December. This increase occurred due to political instability, decreased confidence in the national currency, and a massive outflow of capital from the country. Against the backdrop of economic decline and military operations, the hryvnia exchange rate began to devalue rapidly. During 2023, the hryvnia exchange rate remained steadily high at 36.5686 UAH per dollar for almost the entire year, with minor fluctuations in October and November (36.3659 UAH and 36.3752 UAH). These changes reflect certain market fluctuations and the impact of international aid, which stabilized the currency. However, the war and ongoing economic tensions continued to put pressure on the hryvnia, so the exchange rate remained high. In 2024, the hryvnia exchange rate continued to grow, reaching 37.8746 UAH per dollar in January and 40.5001 UAH per dollar in May. This indicates a further weakening of the hryvnia in the context of the continuation of the war, military spending, as well as an increase in the need for imports. The exchange rate continues to fluctuate under the influence of factors of economic and political instability.

The entire period from 2021 to 2024 indicates significant instability of the national currency, especially in war conditions. The hryvnia exchange rate shows a constant increase in 2022 and 2023 due to political instability, loss of investor confidence and economic difficulties arising from the armed conflict. The beginning of the war in Ukraine in 2022 significantly affected the exchange rate, where the hryvnia exchange rate decreased by 7 UAH in a few months. This indicates a high level of volatility of the national currency in conditions of military conflict. During 2023, the hryvnia exchange rate remained stable, although it remained high. However, in 2024, the growth of the hryvnia exchange rate indicates continued pressure on the foreign exchange market, in particular due to wars, increased imports and increased economic costs. International financial assistance and loans have partially helped stabilize the hryvnia exchange rate, but in the future Ukraine will need to implement structural economic reforms to ensure long-term exchange rate stability.

Thus, the hryvnia exchange rate reflects a complex economic and political context, which includes both internal problems and external factors, including international financial support.

The official exchange rate of the hryvnia to the euro (for 1 unit) on the last day of the quarter is shown in Fig. 2.8.



	1Q	2Q	3Q	4Q
2024	42,367	43,8171		
2023	39,7812	40,0006	38,5543	42,2079
2022	32,5856	30,7776	35,5611	38,951
2021	32,7233	32,3018	30,981	30,9226

Figure 2.8 – Official exchange rate of hryvnia to euro (for 1 unit) on the last day of the quarter

Source: constructed by the author based on data from [29].

Analysis of the official hryvnia to euro exchange rate (per 1 euro unit) on the last day of each quarter for the period from 2021 to 2024 shows how changes in the Ukrainian foreign exchange market were caused by various economic and political factors. During 2021, the hryvnia to euro exchange rate was quite stable with minor fluctuations. At the beginning of the year, the rate was 34.1035 UAH per euro and by December it had decreased to 30.9226 UAH per euro. The largest decrease in the exchange rate occurred in the first half of the year, which reflected the overall stability in the economy and the absence of serious crisis phenomena. This indicates a positive dynamics of the hryvnia in conditions of general economic growth and moderate inflation.

2022 was a challenging year for the hryvnia due to the outbreak of war. The euro exchange rate rose sharply in the middle of the year, reaching UAH 38.951 per euro in December after more stable indicators at the beginning of the year. At the beginning of 2022, the exchange rate was at UAH 32.0293, but due to political and economic instability, as well as huge fluctuations in supply and demand in the foreign exchange market, the hryvnia exchange rate against the euro rose sharply. In August 2022, the exchange rate reached UAH 36.9965 per euro, and by the end of the year it had already exceeded UAH 38, which is evidence of the worsening economic situation due to the war, increased import costs and decreased exports.

In 2023, the hryvnia exchange rate against the euro continued to be volatile due to ongoing military tensions and general economic difficulties. During the year, the exchange rate fluctuated from UAH 39.8762 in January to UAH 42.2079 in December. In the first half of the year, the exchange rate was quite high, reflecting the continued pressure on the foreign exchange market and the need for financial resources to support the economy in wartime conditions. However, overall, the hryvnia failed to strengthen due to the lack of economic growth and the continuation of hostilities.

At the beginning of 2024, the hryvnia exchange rate against the euro continues to rise, reaching UAH 41.0845 in January and UAH 43.8171 in May. This increase indicates continued financial difficulties, increasing demand for imports, and high costs of supporting the country in wartime. The value of the euro is therefore also increasing due to the instability of the economic situation and inflationary pressures.

At the beginning of 2021, the hryvnia exchange rate against the euro was quite stable, indicating the absence of serious internal economic shocks. The situation changed after the outbreak of the war, when the foreign exchange market underwent significant changes. The beginning of hostilities in 2022 caused a sharp weakening of the hryvnia against the euro, as political instability, economic losses, decreased confidence in the national currency, and increased import costs led to a significant increase in the euro exchange rate. Throughout 2023, the hryvnia exchange rate against the euro remained at high levels, which is a consequence of the continuation of the military conflict and economic recession. Instability in the foreign exchange market persisted, and the devaluation of the hryvnia continued. The beginning of 2024 shows a further increase in the hryvnia exchange rate against the euro, indicating the deepening of the country's economic problems. The increase in import costs, military spending, and instability in the foreign exchange market contributed to the strengthening of the devaluation of the national currency. In general, the hryvnia exchange rate against the euro demonstrates significant instability, which is caused by both internal factors (economic problems, inflation, capital outflow) and external factors (war, international financial assistance).

Under martial law, the foreign exchange market experiences a massive capital flight from the country, which puts additional pressure on the national currency. Initially, military operations are accompanied by uncertainty about the future economic situation of the country, which forces investors to seek more stable foreign exchange assets. This leads to a decline in the hryvnia exchange rate against the US dollar and the euro.

2022 became a critical year for the Ukrainian economy, as the war led to significant changes in the exchange rate. Before the war, the hryvnia exchange rate against the US dollar was stable, fluctuating at around 28-29 UAH per dollar. However, with the start of hostilities in February, the dollar exchange rate rose rapidly, and by mid-year the dollar exchange rate had risen to 36 UAH, and this growth continued until the end of 2022. This devaluation of the hryvnia was due to a number of factors, including: inflationary expectations, reduced export revenues, disruption of logistics chains, and increased demand for imports, in particular military equipment and energy carriers.

In 2023, the hryvnia exchange rate continued to be under pressure, despite the availability of international financial assistance. During the year, the hryvnia exchange rate against the US dollar remained within the range of UAH 36-37, and the exchange rate against the euro increased to UAH 42. The reasons for this fluctuation were stable military operations, the continuation of the economic recession and restrictions on the foreign exchange market to support the national currency. In addition, the exchange rate was also influenced by external factors, in particular, changes in international financial markets, a decrease in export volumes due to the blockade of Ukrainian ports and other economic restrictions.

To stabilize the hryvnia exchange rate, the National Bank of Ukraine used several monetary policy instruments. One of the main instruments was the introduction of administrative measures, such as restrictions on foreign exchange transactions and fixing the official exchange rate at 36.5686 UAH per dollar. This allowed to partially maintain stability in the foreign exchange market, but significant devaluation expectations and continued military operations did not allow the exchange rate to remain stable for a long period. Another important step was the involvement of international financial organizations to provide loans and assistance, which allowed to reduce exchange rate pressure by ensuring the inflow of foreign currency.

The prospects for the stability of the hryvnia exchange rate will depend on several factors: the cessation of hostilities, the stabilization of the political situation in Ukraine, and the recovery of the economy. In conditions of martial law, the best prospects for exchange rate stability appear when logistics channels are restored, exports resume, and international aid continues to flow into the country. However, this may take several years, and even under the best of circumstances, the stability of the hryvnia may remain at risk.

Therefore, martial law is the main factor in exchange rate fluctuations. The beginning of military operations leads to a significant increase in uncertainty in the foreign exchange market and a massive capital outflow, which leads to the devaluation of the hryvnia. The hryvnia exchange rate against the dollar and the euro experienced significant fluctuations in 2022-2023, which is a consequence of economic instability, reduced exports, increased import costs, and other crisis factors. The monetary policy of the National Bank of Ukraine, in particular administrative measures and international financial assistance, allowed to reduce pressure on the foreign exchange market, but did not fully stabilize the hryvnia exchange rate. The forecast for the stability of the hryvnia exchange rate depends on the duration of military operations and the resumption of economic activity. In the short term, the hryvnia will remain under pressure, but with the emergence of positive signals on international markets and political stability, there is an opportunity for the national currency to gradually strengthen.

2.4. Prospects for stabilizing Ukraine's exchange rate in the context of global economic changes

National exchange rate currencies is one of the most important indicators of countries economic stability. For Ukraine, which is in conditions of military aggression, stability hryvnias are not the only question of economic development, but also national security. The war that continues, directly affects all the aspects of economic life, in particular on foreign exchange market. Global economic changes such as fluctuations energy prices, recessions in developed countries, change economic situation in Ukraine, yet more complicating stabilization exchange rate. War in Ukraine has direct impact on the currency market, as it leads to significant economic losses, decrease investment attractiveness and growth inflationary expectations. In a result of military actions, is happening significant abbreviation production, decrease income population and economic destabilization, which causes outflow capital and increase demand for foreign currency. Also decreasing foreign exchange receipt from export, especially in conditions of locking ports and reduction export agricultural products and metals. All these factors lead to devaluation of hryvnia, which is one of the main consequences of wars.

Global economic changes such as growing energy prices, changes in international trade and financial flows also have a major impact on Ukraine's exchange rate. Since Ukraine is a large importer of energy resources, fluctuations of oil and gas prices directly affect currency reserves states. Each growth on energy prices increases government expenses and private consumers who additionally weakens the hryvnia. At the same time, the reduction volumes world trade through global economic crises and trade war also contributes reduction foreign exchange revenues to Ukraine, leading to additional pressure on the currencies national exchange rate.

One of the main measures that can promote stabilization of hryvnia exchange rate, there is support of international financial assistance and funding through mechanisms lending from institutions such as the International the International Monetary Fund (IMF) and the World Bank. These organizations can give Ukraine loans and grants that allows strengthen foreign exchange reserves and stabilize the hryvnia exchange rate. In addition, an important aspect is the introduction of effective monetary policies aimed at reducing inflation and control volumes monetary masses. Support programs national production and exports can also help save foreign exchange income and reduce dependence from import.

War leads to significant growth of inflationary processes in Ukraine. High inflation reduces real cost of hryvnias, creating conditions for it further devaluation. Moreover, the high level of dollarization Ukrainian economy, when most savings population stored in a foreign currency, also increases the demand for dollars and is one of the reasons for the depreciation of the hryvnia. To stabilize the exchange rate, it is necessary reduce level dollarization through incentives confidence in the hryvnia. This can be achieved by introducing tools that allow save savings in the national currency, as well as an increase interest rates.

The stability of the national currency exchange rate is an important indicator of the country's economic stability. For Ukraine, which is in the midst of military operations, economic crisis and global economic changes, the stability of the hryvnia exchange rate is not only an economic issue, but also a political one. The prospects for stabilizing the exchange rate in Ukraine directly depend on internal factors, such as the political situation, economic recovery, as well as on external factors, in particular global economic changes, fluctuations in energy prices, the state of international trade and financial flows. Table 2.7 considers the main factors that affect the stability of the hryvnia exchange rate in the conditions global economic changes.

Prolonged hostilities significantly affect the country's economy, creating additional pressure on the national currency. They cause a decrease in Ukraine's investment attractiveness, capital outflows, and a decrease in foreign exchange earnings. The restoration of stability and peace will contribute to an improvement in the economic situation and, accordingly, a strengthening of the hryvnia.

Table 2.7 – Perspectives stabilization Ukraine's exchange rate in the context of global economic changes

Impact factor	**Characteristic influence**	**Potential impact on the hryvnia exchange rate**	**Prospects stabilization**
Military actions in Ukraine	Long-lasting combat actions create economic instability, increase defense spending.	Decrease trust in the national currencies, devaluation hryvnias.	Restoring peace is a key factor in stabilization.
Global economic recession	Slowdown of economic growth in developed countries and global financial crises.	Decrease of export income, outflow capital.	Global economic stability contributes strengthening of hryvnias.

Energy prices	Fluctuation prices for oil, gas and other energy carriers affect costs Ukraine for import energy carriers.	Growth energy costs may lead to a fall in the hryvnia exchange rate.	Transition to renewables sources energy may reduce dependence from import.
International financial help	Loans and grants from international financial institutions.	Support national currency due to increase foreign exchange reserves.	Engagement of international financial resources may stabilize the hryvnia.
Inflation in Ukraine	High inflation in the country reduces real cost hryvnias.	Depreciation of national currencies, devaluation.	Inflation control through monetary policy politics and promotion interest rates.
Trade politics and exports	Growth exports, in particular agricultural products and metallurgy.	Positive impact on currency turnover and strengthening hryvnias.	Development export sectors may promote exchange rate stability.
Dollarization of economy	Growth of using foreign currencies on the market.	Decrease demand for the hryvnia, devaluation national currencies.	Decrease of dollarization through incentives confidence in the hryvnia.
Global trading wars and sanctions	Trade restrictions between countries, introduction sanctions.	Impact on volume external trade and currency flows.	Diplomatic effort can reduce negative influence sanctions on the exchange rate.

Continuation of table 2.7

Source: developed by the author.

Economic growth slowdown in developed countries and global financial crises can reduce demand for Ukrainian products on international markets. This may reduce foreign exchange revenues and, as a result, devaluation of hryvnias. However, the improvement of global economic situations can have a positive impact on stability national currencies [11] .

Because Ukraine is a large importer of energy resources, fluctuations oil and gas prices can much to influence the economic situation in the country . Growth energy prices increases costs states and populations that maybe lead to additional pressure on the exchange rate market . At the same time , the decline dependencies from imported energy resources through development alternative sources energy maybe to weaken this influence .

International support of financial organizations, in particular loans from the IMF and the World Bank, contributes strengthening foreign exchange reserves Ukraine. This can have a positive impact on stability of hryvnias, because additional reserves allow National Bank of Ukraine support exchange rate [41, p. 158] .

High inflation reduces real cost of hryvnia and may lead to its devaluation. Application monetary policies aimed at reducing inflation, such as an increase interest rates, maybe help to stabilize the exchange rate.

Export development, in particular the agricultural sector and metallurgy, provides receipt foreign currency into the country. Growth foreign exchange reserves helps support stability national currencies. Investments in export industries can become the basis for improving the exchange rate.

High level of economy dollarization may increase the demand for foreign currency, which in turn leads to devaluation hryvnias. Decrease of equal dollarization due to the increase confidence in the hryvnia may help to strengthen national currency.

Sanctions and restrictions on international trade arena can create additional problems for Ukrainian export and import. However diplomatic efforts and improvements trading relations can reduce negative impact on the exchange rate.

Building a comprehensive forecast model of the development of the hryvnia/US dollar exchange rate fluctuations in the context of the post-war economic recovery in Ukraine is a complex task that depends on a large number of interrelated and often unpredictable factors. These include the pace of gross domestic product (GDP) recovery, inflation, balance of payments, public debt, monetary policy of the National Bank of Ukraine (NBU), the volume and timing of international financial assistance, the geopolitical situation and global economic trends. Given these determining factors, we can outline several possible scenarios for the development of the hryvnia/US dollar exchange rate in the medium term.

To illustrate the potential trajectories of the hryvnia exchange rate against the US dollar in 2025-2027, let's plot the forecast ranges at the end of each year, reflecting the baseline, optimistic, and pessimistic scenarios (Figure 2.9).

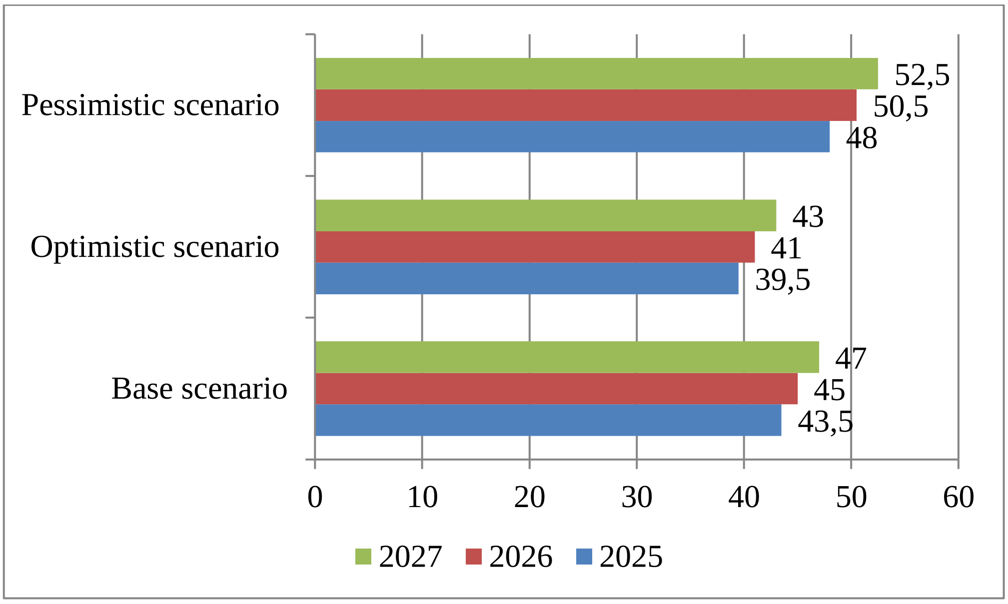


Figure 2.9 - Projected dynamics of the hryvnia exchange rate to the US dollar (UAH/USD)

Source: author's elaboration.

The base scenario assumes a moderate pace of post-war economic recovery in Ukraine, accompanied by a stable but not too intense inflow of international financial assistance. Inflationary pressures will remain significant, putting gradual pressure on the hryvnia exchange rate. The NBU will continue its policy of managed exchange rate flexibility, intervening to smooth out sharp fluctuations but allowing for a gradual weakening of the hryvnia in line with macroeconomic fundamentals. The recovery of export potential will be gradual due to infrastructure constraints and logistical difficulties.

The optimistic scenario assumes a rapid and successful economic recovery in Ukraine, driven by significant international financial support, effective implementation of structural reforms, and increased domestic investment. Rapidly increasing export potential and significant foreign capital inflows will help strengthen the balance of payments. Under these conditions, the NBU will be able to conduct a looser monetary policy, and inflation will decline faster, creating favorable conditions for stabilizing or even slightly strengthening the hryvnia.

The pessimistic scenario considers the possibility of a protracted and complicated post-war recovery process, characterized by insufficient international assistance, ineffective reforms, and high security risks. Low economic growth, high inflation, and a large balance of payments deficit will create significant depreciation pressure on the hryvnia. Capital outflows may increase as investor confidence declines. The NBU will be forced to resort to large-scale foreign exchange interventions to contain the hryvnia's collapse, but fundamental economic imbalances may lead to a gradual and significant weakening of the hryvnia. A deterioration in the global economic environment could also have a negative impact on the exchange rate.

Prospects of hryvnia exchange rate stabilization in the conditions of wars and global economic changes depend from many factors. One of the main factors of stability is the cessation of wars and reconstruction political and economic stability in Ukraine. In parallel with this an important aspect is active monetary policy policy of the National Bank of Ukraine, aimed at reducing of inflation and exchange rate stability. Export development industries, as well as reductions depends on energy carriers import and can become important factors for strengthening hryvnia in the long term perspective .

Thus, the stability of the hryvnia exchange rate in the context of global economic changes depends on a combination of internal and external factors, in particular, the end of hostilities and the stabilization of the political situation. Global economic changes, in particular, recession, fluctuations in energy prices and trade wars, have a significant impact on the foreign exchange market, but can be compensated with domestic economic reforms and the involvement of international financial resources. External and internal economic factors, such as rising energy prices, inflation, dollarization of the economy and international aid, directly affect the exchange rate. Therefore, the possible stabilization of the hryvnia is possible with the war over, effective economic reforms are implemented and support is provided by international financial institutions. At the same time, solving the problem of dollarization and developing export potential are important steps towards the stability of the national currency exchange rate. The prospects for stabilizing the exchange rate lie in reducing dollarization of the economy, developing of export sectors and effectively using international financial assistance.

CONCLUSIONS

As a result of the research on the topic "Exchange rate and factors of its formation in conditions of global economic instability", it was found that the exchange rate is an important economic tool that affects macroeconomic processes and the stability of national economies. Having considered the concept of the exchange rate, its functions and mechanisms of formation, we can conclude that the exchange rate is determined by many factors, among which the most important are the demand and supply of currency, the level of inflation, monetary policy, as well as external economic factors, such as commodity prices and global economic trends.

Particular attention was paid to the analysis of exchange rate fluctuations in conditions of global economic instability, in particular in conditions of martial law in Ukraine. Exchange rate fluctuations observed in crisis situations cause significant economic and social consequences for the country, including a decrease in the purchasing power of the population and an increase in inflationary pressure. It was found that instability in foreign exchange markets has a significant impact on the country's economy, in particular on foreign economic operations and financial security.

In conditions of economic instability, it is important to use effective mechanisms for regulating the exchange rate, in particular through the monetary policy of the central bank, currency interventions and changes in interest rates. Prospects for stabilizing the exchange rate of Ukraine in the context of global economic changes include the need to adapt to new conditions, strengthen financial stability and strengthen confidence in the national currency through measures aimed at reducing of inflation and stabilizing the economy as a whole.

The analysis of exchange rate fluctuations demonstrates the importance of monetary policy in ensuring the economic stability of states. As the examples show, changes in exchange rates will largely depend on internal and external economic factors, such as the political situation, the level of inflation, interest rates and financial crises. Fluctuations in exchange rates during military conflicts, as the experience of countries such as Iraq and Yugoslavia shows, lead to significant economic difficulties, including inflation and a decline in living standards. Forecasting these changes is a difficult task, but for the stability of the national economy it is important to understand the main factors affecting the foreign exchange market and to respond to them promptly through appropriate monetary and financial measures.

In conditions of economic instability, the factors affecting the exchange rate of the national currency are diverse and interrelated. The main ones are inflation, external debt, political situation, changes in the commodity market, monetary policy, as well as international factors such as foreign investment and military conflicts. All of these factors can cause exchange rate fluctuations, which negatively affects the country's economy. In particular, high levels of inflation and external debt, political instability, falling commodity prices and military conflicts can weaken the national currency, increasing inflationary pressures and reducing the country's investment attractiveness. Therefore, to maintain a stable exchange rate, it is necessary to take into account all these factors and develop effective monetary policy and economic stabilization strategies.

An analysis of exchange rate fluctuations in Ukraine under martial law shows that the national currency exchange rate has become a reflection of serious economic shocks caused by the war and political instability. With the beginning of the armed conflict in 2022, the hryvnia exchange rate has undergone significant fluctuations, which was a consequence of a decrease in investor confidence, a decrease in export revenues, and an increase in import costs. Along with this, international financial assistance contributed to the partial stabilization of the foreign exchange market. However, despite some of positive moments, the national currency remained under significant pressure due to military spending and the need for imports. The growth of the hryvnia exchange rate in 2024 is the result of a prolonged economic burden, which indicates the need for structural reforms to achieve long-term stability.

The prospects for stabilizing Ukraine’s exchange rate in the context of global economic changes depend on a combination of internal and external factors. War, global economic recessions, fluctuations in energy prices, declining export revenues, and high levels of dollarization of the economy are the main challenges to the stability of the hryvnia. However, the restoration of peace and political stability, as well as international financial support, in particular loans and grants from the IMF and the World Bank, can create conditions for strengthening the national currency. The successful implementation of a monetary policy that will help to control inflation and reduce the level of dollarization will also be a key factor in stabilizing the hryvnia exchange rate in the context of global economic changes.

Therefore, to maintain economic stability in the face of global economic instability and martial law, Ukraine needs to continue an improvement of currency regulation mechanisms, which will reduce the impact of negative external factors on the currency market and ensure long-term economic stability.

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APPENDICES

Appendix A

Indicators of the Ukrainian foreign exchange market for 2021

Indicators of the Ukrainian foreign exchange market for 2021	January	February	March	April	May	June	July	August	September	October	November	December
Official exchange rate of hryvnia to foreign currencies on the last day of the month :												
- up to USD (for 1 unit)	28,1929	27.9301	27.8852	27.7500	27.5004	27.1763	26.8867	26.8601	26.5760	26.3265	27.1739	27.2782
- up to euro (for 1 unit)	34.1035	34.1459	32.7233	33.6427	33.3896	32.3018	31.9239	31.6963	30.9810	30.5032	30.6481	30.9226
- to the Russian ruble (for 10 units)	3.6888	3.7782	3.6704	3.7355	3.8161	3.7357	3.6696	3.8161	3.6590	3.7404	3.6439	3.6397
Weighted average hryvnia exchange rate for cash transactions foreign currency:												
selling:												
- US dollar	28.2669	27.9495	27.7999	27.8874	27.5956	27,1940	27.1685	26.8725	26.7766	26.4342	26.5851	27.2059
- euro	34,1949	33.6603	33.1017	33.2101	33.3451	32.7182	32.0757	31.4784	31.3962	30.5311	30.2613	30.6143
buying:												
- US dollar	28.1166	27.8114	27.6812	27.7598	27.4574	27.0732	27.0615	26.7314	26.6457	26.2967	26.4413	27.0779
- euro	34.0899	33.5650	32.9166	33.1447	33.2811	32.6274	31.9381	31.3543	31.3133	30.4000	30.0973	30.5233
Course of interventions National Bank of Ukraine :												
dollars USA (weighted average per 1 US dollar):												
selling	28.4500	0.0000	0.0000	27.9800	0.0000	27.4846	0.0000	26.9600	27.0300	26.4300	26.9209	27.2159
buying	28.1644	27.7174	27.6456	0.0000	0.0000	27.1373	26.9485	26.7646	26.7082	26.3047	26.0797	27.1595
Amount operations banks on the foreign exchange market Ukraine on the terms of " tod ", "tom", "spot" (without NBU operations):												
from cashless in foreign currency (millions of US dollars equivalent):												
selling	6,929.8	8,958.0	10101.2	8,971.2	7,670.4	9,894.8	10180.2	10504.3	10872.6	9,545.8	11914.7	12114.3
buying	6,929.8	8,958.0	10101.2	8,971.2	7,670.4	9,894.8	10180.2	10504.3	10872.6	9,545.8	11914.7	12114.3
interventions National Bank of Ukraine :												
sales (million USD equivalent)	20.0	0,0	0,0	50.0	0,0	99.5	0,0	20.5	7.0	49.6	792.6	236.5
- million US dollars	20.0	0,0	0,0	50.0	0,0	99.5	0,0	20.5	7.0	49.6	792.6	236.5
- million euros	0,0	0,0	0,0	0,0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
purchases (millions of US dollars equivalent)	40.0	200.0	50.5	0,0	0,0	682.8	188.0	368.8	146.6	752.2	1 177,8	84.0
- million US dollars	40.0	200,0	50.5	0,0	0,0	682.8	188.0	368.8	146.6	752.2	1 177,8	84.0
- million euros	0,0	0,0	0,0	0,0	0,0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amount cash transactions in foreign currency, Total (million US dollars equivalent):												
selling	1,085.6	1,340.0	1,455.6	1,372.2	1,450.1	1,613.5	1,780.8	2,200.9	1,998.4	1,876.5	2,141.9	1,982.3

buying	1,069.7	1,301.3	1,715.4	1,841.6	1,696.6	1,943.3	2,068.5	1,992.2	1,972.0	1,810.0	1,866.0	2,236.0

Continuation of Appendix A

Indicators of the Ukrainian foreign exchange market for 2021	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Balance (sales minus purchase , million US dollars equivalent)	15.8	38.7	-259.7	-469.4	-246.5	-329.8	-287.7	208.7	26.4	66.5	275.9	-253.7
including amount cash transactions foreign currency of non-banking financial institutions (million US dollars equivalent):												
selling	719.8	881.3	1,074.2	1,034.0	1,078.3	1,221.3	1,275.6	1,410.9	1,345.1	1,282.2	1,366.4	1,421.7
buying	730.9	884.4	1,070.7	1,033.3	1,084.7	1,223.1	1,278.7	1,410.7	1,344.9	1,283.8	1,365.8	1,416.2
Balance (sales minus purchase , million US dollars equivalent)	-11.0	-3.1	3.4	0.7	-6.4	-1.8	-3.1	0.2	0.2	-1.6	0.6	5.5
selling (only million US dollars)	550.9	675.2	825.7	790.9	820.7	896.9	941.4	1,026.3	1,011.0	975.6	1,051.3	1,057.3
buying (only million US dollars)	556.2	676.2	822.1	788.1	824.4	896.6	941.2	1,027.0	1,011.1	974.9	1,052.5	1,049.3
Balance (selling minus buying , only million US dollars)	-5.3	-1.0	3.6	2.8	-3.6	0.3	0.3	-0.7	-0.01	0.8	-1.2	7.9
Amount operations customers banks with cashless in foreign currency (millions of US dollars equivalent):												
selling	4,903.8	6,318.9	7,220.3	6,349.4	5,838.6	7,237.0	7,674.8	8,965.6	8,911.3	9,075.9	11291.0	11165.0
including on "forward " terms	59.5	79.1	38.2	39.9	4.3	58.0	52.8	13.1	0.0	14.8	45.3	17.3
including on swap terms	407.7	326.6	340.5	206.7	228.9	74.7	54.7	266.2	391.6	587.6	591.3	771.0
buying	5,142.6	6,061.3	7,507.3	6,869.0	6,289.9	7,239.2	7,904.6	8,449.3	9,080.0	8,745.2	10812.5	12006.6
including on "forward " terms	161.1	206.7	271.2	326.4	308.8	194.2	174.1	397.5	404.2	305.0	605.5	677.1
including on swap terms	410.2	326.6	340.5	206.7	228.9	74.7	54.7	266.2	391.6	588.5	591.3	804.9

Source: constructed by the author based on data from [29].

Appendix B

Indicators of the Ukrainian foreign exchange market for 2022

Indicators of the Ukrainian foreign exchange market for 2022	January	February	March	April	May	June	July	August	September	October	November	December
Official exchange rate of hryvnia to foreign currencies on the last day of the month :												
- up to USD (for 1 unit)	28.7839	29.2549	29.2549	29.2549	29.2549	29.2549	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686
- up to euro (for 1 unit)	32.0293	33.1707	32.5856	30.6869	31.5031	30.7776	36.9965	36.6564	35.5611	36.4095	37.9344	38.9510
- to the Russian ruble (for 10 units)	3.7128	3.6448	3.5149	4.0756	4.6209	5.5594	6.0292	5.9973	6.3087	5.9296	6.0094	5.0708
Weighted average hryvnia exchange rate for cash transactions foreign currency:												
selling:												
- US dollar	28.1391	28.4890	30.1622	31.1292	34.9203	35.4844	37.7585	40.1042	41.6404	40.5848	40.3397	40,1910
- euro	31.7564	32.3614	33.9124	33.5605	36.3414	37.4668	38.2623	40.4681	40.6155	39.1113	40.1564	41.8091
buying :												
- US dollar	28.0063	28.1764	29.2549	30.4188	34.5235	35.1725	37.3310	39.8760	41.4648	40.3697	40.1601	39.9963
- euro	31.4815	31.9549	32.4255	32.6817	36,2018	37.0528	37.7364	40.0794	40.4373	38.8538	40.0129	41.6507
Course of interventions National Bank of Ukraine :												
dollars USA (weighted average per 1 US dollar):												
selling	28.3544	28.7907	29.5474	29.5474	29.5474	29.5474	29.7961	36.9343	36.9343	36.9343	36.9227	36.9260
buying	28.4028	28.6809	29.2549	29.2549	29.2549	29.2549	36.3981	36.5686	36.5686	36.5686	36.5686	36.5686
Amount operations banks on the foreign exchange market Ukraine on the terms of " tod ", "tom", "spot" (without NBU operations):												
from cashless in foreign currency (millions of US dollars equivalent):												
selling	10,189.3	9,884.4	392.7	576.8	633.8	399.5	1,252.5	1,331.8	975.5	1,126.5	1,484.1	917.3
buying	10,189.3	9,884.4	392.7	576.8	633.8	399.5	1,252.5	1,331.8	975.5	1,126.5	1,484.1	917.3
interventions National Bank of Ukraine :												
selling (million USD equivalent)	1,511.2	1,261.5	2,475.9	2,244.3	3,410.6	3,986.8	2,117.0	1,641.4	2,792.1	2,079.6	1,632.7	3,193.1
- million US dollars	1,511.2	1,261.5	1,390.9	1,685.3	3,091.0	3,986.8	2,117.0	1,641.4	2,792.1	2,079.6	1,632.7	3,193.1
- million euros *	0.0	0.0	1,084.9	559.1	319.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
buying (millions of US dollars equivalent)	197.7	951.2	699.7	41.0	56.4	26.7	922.0	311.7	39.4	47.7	63.9	29.6
- million US dollars	197.7	951.2	616.9	15.5	41.3	26.7	922.0	311.7	39.4	47.7	63.9	29.6
- million euros **	0.0	0.0	82.8	25.5	15.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amount cash transactions in foreign currency, Total (million US dollars equivalent):												
selling	1,629.8	1,408.4	71.4	68.8	188.6	852.4	1,046.7	1,353.8	1,438.6	1,371.9	1,370.0	1,424.4

buying	1,627.5	1,415.1	72.1	62.7	216.9	865.0	1,024.9	1,176.0	1,289.2	1,144.0	1,130.4	1,191.5

Continuation of Appendix B

Indicators of the Ukrainian foreign exchange market for 2022	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Balance (selling minus buying , million US dollars equivalent)	2.2	-6.7	-0.7	6.1	-28.2	-12.6	21.8	177.8	149.3	228.0	239.6	232.9
selling (only million US dollars)	1,260.4	1,085.5	53.4	50.0	134.1	604.5	770.8	1,032.1	1,089.0	1,063.0	1,064.9	1,107.3
buying (only million US dollars)	1,178.8	1,053.4	51.9	44.4	148.8	598.0	723.7	843.8	912.3	819.5	815.5	864.9
Balance (selling minus buying, only million US dollars)	81.6	32.1	1.5	5.6	-14.7	6.5	47.1	188.3	176.7	243.5	249.4	242.3
including amount cash transactions foreign currency of non-banking financial institutions (million US dollars equivalent):												
selling	1,098.2	921.0	3.1	12.8	132.3	707.6	822.9	955.8	1,039.7	960.6	943.3	993.4
buying	1,105.7	915.9	4.9	15.8	136.4	714.3	829.5	959.6	1,043.8	958.8	947.2	994.0
Balance (selling minus buying , million US dollars equivalent)	-7.4	5.2	-1.8	-3.0	-4.2	-6.7	-6.6	-3.8	-4.1	1.7	-3.8	-0.5
selling (only million US dollars)	813.2	698.2	2.2	8.8	95.6	494.1	602.0	700.6	763.4	707.6	704.3	746.1
buying (only million US dollars)	820.3	695.1	3.7	10.9	97.9	498.0	605.9	703.1	765.8	704.5	709.3	744.8
Balance (selling minus buying , only million US dollars)	-7.1	3.1	-1.5	-2.1	-2.4	-3.9	-4.0	-2.5	-2.4	3.2	-5.0	1.3
Amount operations customers banks with cashless in foreign currency (millions of US dollars equivalent):												
selling	7,449.7	8,882.1	3,060.4	2,986.7	3,698.4	3,970.4	8,908.7	10,117.6	10,791.2	8,565.6	8,479.2	8,663.8
including on "forward " terms	189.9	45.9	4.3	10.4	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0
including on swap terms	416.8	158.3	28.3	51.4	196.1	215.8	999.1	5,438.7	6,767.2	4,449.7	3,477.5	3,627.6
buying	9,344.7	9,149.0	3,104.7	3,236.9	4,835.3	5,669.8	8,415.2	9,614.1	11,559.4	8,993.7	8,355.4	10,181.3
including on "forward " terms	775.2	562.9	13.4	20.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
including on swap terms	416.8	158.3	28.3	51.4	196.1	280.4	1,021.3	5,439.7	6,768.6	4,450.3	3,490.7	3,627.6
* in the original currency , million euros	0.0	0.0	970.2	515.6	303.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
** in the original currency , million euros	0.0	0.0	73.2	23.5	14.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: constructed by the author based on data from [29].

Appendix C

Indicators of the Ukrainian foreign exchange market for 2023

Indicators of the Ukrainian foreign exchange market for 2023	**January**	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**
Official exchange rate of hryvnia to foreign currencies on the last day of the month :												
- up to USD (for 1 unit)	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.3659	36.3752	37.9824
- up to euro (for 1 unit)	39.8762	38.6110	39.7812	40.3461	39.2802	40.0006	40.2584	39.7903	38.5543	38.5624	39.9582	42.2079
- to the Russian ruble (for 10 units)	5.2053	4.8571	4.7363	4.4848	4.5236	4.2034	4.0128	3.8050	3.7693	3.9059	4.0988	4.2119
Weighted average hryvnia exchange rate for cash transactions foreign currency:												
selling:												
- US dollar	40.5171	39.8897	38.5517	37.7810	37.5925	37.2391	37.2854	37.7985	38.0749	38.0468	37.6928	37.8299
- euro	42.9027	42.3652	40.8702	41.0658	40.9721	40.5469	41.2338	41.4371	40.9234	40.4355	40.4807	41.1663
buying :												
- US dollar	40.2825	39.6590	38.2984	37.5026	37.3461	36.9126	36.9227	37.4245	37.7360	37.7408	37.4036	37.5914
- euro	42.6751	42.1547	40.6268	40.7720	40.7019	40.2058	40.8464	40.9890	40.5473	40.0932	40.2075	40.8688
Course of interventions National Bank of Ukraine :												
dollars USA (weighted average per 1 US dollar):												
selling	36.9321	36.9329	36.9338	36.9339	36.9333	36.9332	36.9343	36.9343	36.9336	36.5334	36.1846	37.2149
buying	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.5686	36.5973	36.1637	36.8908
Amount operations banks on the foreign exchange market Ukraine on the terms of " tod ", "tom", "spot" (without NBU operations):												
from cashless in foreign currency (millions of US dollars equivalent):												
selling	554.6	962.0	1,301.1	907.1	759.7	734.3	869.9	850.5	784.0	1,391.2	2,090.2	2,420.6
buying	554.6	962.0	1,301.1	907.1	759.7	734.3	869.9	850.5	784.0	1,391.2	2,090.2	2,420.6
interventions National Bank of Ukraine :												
selling (million USD equivalent)	3,110.6	2,458.7	1,674.1	1,374.1	1,990.9	1,847.5	1,945.8	2,368.8	2,692.1	3,351.5	2,456.6	3,559.2
- million US dollars	3,110.6	2,458.7	1,674.1	1,374.1	1,990.9	1,847.5	1,945.8	2,368.8	2,692.1	3,351.5	2,456.6	3,559.2
- million euros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
buying (millions of US dollars equivalent)	28.5	27.7	5.2	3.7	63.3	49.6	12.9	4.5	0.7	14.0	3.7	6.1
- million US dollars	28.5	27.7	5.2	3.7	63.3	49.6	12.9	4.5	0.7	14.0	3.7	6.1
- million euros	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Amount cash transactions in foreign currency, Total (million US dollars equivalent):												
selling	1,268.0	1,286.9	1,517.7	1,399.8	1,627.4	1,574.1	1,507.5	1,669.3	1,547.7	1,748.8	1,713.3	2,065.9
buying	1,074.5	1,081.8	1,236.8	1,194.9	1,377.2	1,397.7	1,382.4	1,488.6	1,365.0	1,368.7	1,338.6	1,258.4
Balance (selling minus buying , million US dollars equivalent)	193.5	205.1	281.0	204.9	250.2	176.4	125.1	180.8	182.7	380.1	374.7	807.5
selling (only million US dollars)	969.1	1,003.4	1,152.8	1,056.7	1,251.2	1,170.5	1,095.1	1,162.2	1,109.9	1,299.8	1,270.0	1,603.5
buying (only million US dollars)	786.8	798.8	931.4	886.0	1,047.9	1,067.2	1,017.7	1,065.8	1,025.9	1,033.9	1,000.3	939.4

Indicators of the Ukrainian foreign exchange market for 2023	January	February	March	April	May	June	July	August	September	October	November	December
including amount cash transactions foreign currency of non-banking financial institutions (million US dollars equivalent):												
selling	884.9	883.4	1,039.9	996.9	1,134.8	1,123.8	1,118.1	1,213.1	1,117.5	1,140.7	1,105.0	1,069.2
buying	886.8	884.8	1,039.8	999.9	1,138.3	1,128.4	1,122.0	1,210.4	1,113.8	1,140.7	1,104.1	1,068.8
Balance (selling minus buying, million US dollars equivalent)	-1.8	-1.4	0.2	-3.0	-3.5	-4.5	-3.9	2.8	3.8	0.0	0.8	0.4
selling (only million US dollars)	664.9	677.2	787.8	744.6	859.2	845.8	822.8	854.4	827.8	856.5	820.4	797.7
buying (only million US dollars)	668.3	676.8	789.5	746.5	862.7	849.5	824.5	851.5	825.0	854.9	821.7	798.1
Balance (selling minus buying , only million US dollars)	-3.4	0.4	-1.6	-1.9	-3.6	-3.7	-1.8	2.9	2.8	1.6	-1.3	-0.4
Amount operations customers banks with cashless in foreign currency (millions of US dollars equivalent):												
selling	10246.8	9,686.1	12785.4	9,855.7	9,268.0	8,844.5	7,639.4	7,276.0	6,792.2	6,435.9	7,468.4	7,642.4
including on "forward " terms	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
including on swap terms	6,798.5	5,577.7	8,070.4	5,971.0	5,194.1	4,663.8	3,524.0	3,008.8	2,828.1	2,657.3	2,976.9	2,731.3
buying	11,556.9	10,429.2	13,226.8	10,399.7	10,149.2	9,673.0	8,630.3	8,526.8	8,626.6	8,607.8	8,831.3	9,789.6
including on "forward " terms	65.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
including on swap terms	6,800.1	5,579.2	8,072.9	5,973.0	5,199.0	4,665.3	3,525.0	3,036.6	2,828.7	2,678.3	2,977.3	2,731.8

Source: constructed by the author based on data from [29].

Appendix D

Indicators of the Ukrainian foreign exchange market for 2024

Indicators of the Ukrainian foreign exchange market for 2024	January	February	March	April	May
Official exchange rate of hryvnia to foreign currencies on the last day of the month :					
- up to USD (for 1 unit)	37.8746	38.2077	39.2214	39.6688	40.5001
- up to euro (for 1 unit)	41.0845	41.2968	42.3670	42.4972	43.8171
- to the Russian ruble (for 10 units)	4.2322	4.1607	4.2382	4.2547	4.5105
Weighted average hryvnia exchange rate for cash transactions foreign currency:					
selling:					
- US dollar	38.5649	38.3393	38.9394	39.6415	40.1666
- euro	42.1589	41.5586	42.4531	42.7807	43.4163
buying :					
- US dollar	38.2674	38.0205	38.5912	39.2950	39.7935
- euro	41.7676	41,2027	42.0273	42.4248	42.9854
Course of interventions National Bank of Ukraine :					
dollars USA (weighted average per 1 US dollar):					
selling	37.9239	38.1616	38.9454	39.4517	39.9369
buying	37.5638	38.0699	38.2984	38.9485	40.1559
Amount operations banks on the foreign exchange market Ukraine on the terms of " tod ", "tom", "spot" (without NBU operations):					
from cashless in foreign currency (millions of US dollars equivalent):					
selling	1,778.5	1,933.7	2,536.8	2,677.9	2,681.8
buying	1,778.5	1,933.7	2,536.8	2,677.9	2,681.8
interventions National Bank of Ukraine :					
selling (million USD equivalent)	2,549.1	1,540.6	1,813.6	2,313.4	3,083.3
- million US dollars	2,549.1	1,540.6	1,813.6	2,313.4	3,083.3
- million euros	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0
buying (millions of US dollars equivalent)	16.0	31.9	25.9	30.9	11.1
- million US dollars	16.0	31.9	25.9	30.9	11.1
- million euros	0.0	0.0	0.0	0.0	0.0
- million other currencies in dollar terms equivalent	0.0	0.0	0.0	0.0	0.0
Amount cash transactions in foreign currency, Total (million US dollars equivalent):					
selling	1,890.9	1,855.1	1,783.6	1,945.2	2,242.7
buying	1,005.8	1,122.4	1,255.4	1,276.2	1,271.2
Balance (selling minus buying , million US dollars equivalent)	885.2	732.7	528.1	669.0	971.5
selling (only million US dollars)	1,481.1	1,366.5	1,294.0	1,314.5	1,598.5
Buying (only million US dollars)	747.0	849.0	949.3	955.3	943.6
Balance (selling minus buying , only million US dollars)	734.1	517.6	344.7	359.2	654.9
including amount cash transactions foreign currency of non-banking financial institutions (million US dollars equivalent):					
selling	848.1	940.2	1,039.7	1,052.6	1,072.2
buying	852.7	944.6	1,040.3	1,051.9	1,065.4
Balance (selling minus uying , million US dollars equivalent)	-4.6	-4.4	-0.5	0.7	6.8

Indicators of the Ukrainian foreign exchange market for 2024	**January**	**February**	**March**	**April**	**May**
selling (only million US dollars)	628.9	704.5	778.1	777.3	787.7
buying (only million US dollars)	633.2	708.0	778.1	775.1	784.4
Balance (selling minus buying , only million US dollars)	-4.4	-3.5	0.0	2.2	3.3
Amount operations customers banks with cashless in foreign currency (millions of US dollars equivalent):					
selling	6,773.6	6,779.4	6,948.1	6,968.6	7,208.9
including on "forward " terms	0.0	0.0	0.0	0.0	0.0
including on swap terms	2,602.4	2,055.2	2,273.9	2,118.9	2,465.7
buying	7,657.9	6,935.0	7,607.1	7,970.9	8,709.5
including on "forward " terms	0.0	0.0	0.0	0.0	0.0
including on swap terms	2,602.7	2,055.5	2,274.3	2,119.2	2,464.8

Source: constructed by the author based on data from [29].

Appendix E

Dynamics of the commodity structure of exports in Ukraine

Name groups goods	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**
TOTAL, million USD	50,552	35,420	33,560	39,701	43,341	46,091	45,143	63,113	40,899	34,678
Food goods and raw materials for it`s production	16,670	14,478	15,250	17,739	18,594	22 123	22,161	27,687	23,380	22,001
Mineral products	5,291	2,672	2,391	3,517	3,883	4,405	4,963	7,874	4 109	2,262
Chemical products and industries related	3,730	2,436	1,832	2,052	2,381	2 171	2,308	3,173	1,668	1,329
Wood and wood products	1,954	1,540	1,510	1,647	1,965	1,780	1,758	2,491	2 118	1,719
Industrial ware	704	503	463	575	649	697	722	946	569	557
Ferrous and non-ferrous metals and products made from them	14,953	9,164	8,099	9,890	11,402	9,994	8,782	15,719	5,881	3,888
Machinery , equipment , transport means and appliances	5,432	3,339	2,748	2,862	3,002	3,426	3,390	3,819	2,281	2,150
Miscellaneous	1,818	1,288	1,267	1,419	1,465	1,495	1,059	1,404	893	772
Structure, %										
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Food goods and raw materials for it`s production	33.0	40.9	45.4	44.7	42.9	48.0	49.1	43.9	57.2	63.4
Mineral products	10.5	7.5	7.1	8.9	9.0	9.6	11.0	12.5	10.0	6.5
Chemical products and industries related	7.4	6.9	5.5	5.2	5.5	4.7	5.1	5.0	4.1	3.8
Wood and wood products	3.9	4.3	4.5	4.1	4.5	3.9	3.9	3.9	5.2	5.0
Industrial ware	1.4	1.4	1.4	1.4	1.5	1.5	1.6	1.5	1.4	1.6
Ferrous and non-ferrous metals and products made from them	29.6	25.9	24.1	24.9	26.3	21.7	19.5	24.9	14.4	11.2
Machinery , equipment , transport tools and equipment	10.7	9.4	8.2	7.2	6.9	7.4	7.5	6.1	5.6	6.2
Miscellaneous	3.6	3.6	3.8	3.6	3.4	3.2	2.3	2.2	2.2	2.2
Tempo growth to previous year,%										
TOTAL	**85.5**	**70.1**	**94.7**	**118.3**	**109.2**	**106.3**	**97.9**	**139.8**	**64.8**	**84.8**
Food goods and raw materials for it`s production	97.8	86.9	105.3	116.3	104.8	119.0	100.2	124.9	84.4	94.1
Mineral products	83.9	50.5	89.5	147.1	110.4	113.4	112.7	158.7	52.2	55.0
Chemical products and industries related	73.6	65.3	75.2	112.0	116.0	91.2	106.3	137.5	52.6	79.7
Wood and wood products	97.5	78.8	98.1	109.1	119.3	90.6	98.8	141.7	85.0	81.2
Industrial ware	83.2	71.4	92.0	124.2	112.9	107.4	103.6	131.0	60.1	97.9
Ferrous and non-ferrous metals and products made from them	89.0	61.3	88.4	122.1	115.3	87.7	87.9	179.0	37.4	66.1
Machinery , equipment , transport tools and equipment	63.6	61.5	82.3	104.1	104.9	114.1	98.9	112.7	59.7	94.3
Miscellaneous	72.4	70.8	98.4	112.0	103.2	102.0	70.8	132.6	63.6	86.5

Source: constructed by the author based on data from [29].

Appendix F

Summary table indices devaluations hryvnias relatively US dollar from

2014 to 2024 (%)

	January	**February**	**March**	**April**	**May**	**June**	**July**	**August**	**September**	**October**	**November**	**December**	**Per year**
2014	100.0	121.3	113.4	103.7	104.2	99.2	101.5	109.6	98.8	100.0	116.3	104.7	**197.3**
2015	102.4	166.3	87.3	90.1	99.8	99.6	100.6	103.2	97.7	108.0	104.2	99.3	**150.8**
2016	107.4	106,0	96,8	96,1	99,8	98,8	99,9	105,1	99,4	98,4	100,2	104,4	**112,2**
2017	101,5	100,3	99,5	98,3	99,1	98,9	99,4	99,4	103,4	101,1	101,1	102,7	**104,5**
2018	99,8	96,3	98,1	99,6	99,7	100,8	102,0	105,1	100,1	99,5	100,4	98,1	**99,3**
2019	100,2	96,8	101,3	97,4	101,4	97,5	95,6	100,5	96,2	102,6	96,6	98,8	**85,5**
2020	105,7	98,2	112,4	97,6	99,7	99,3	103,8	99,6	102,7	100,5	100,2	99,2	**119,4**
2021	99,5	99,3	99,6	99,7	99,0	99,1	98,5	100,3	99,0	98,7	103,6	100,2	**96,5**
2022	104,3	102,8	100,0	100,0	100,0	100,0	125,0	100,0	100,0	100,0	100,0	100,0	**134,1**
2023	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	99,2	100,2	104,5	**103,9**
2024	98,8	101,3	102,5	101,3	102,6								**106,7**

Source: compiled by the author based on data from [30].