3.2. Exchange rate of Ukraine: tendencies and problems

In this section, the main dynamics of the exchange rate of the Ukrainian national currency, the hryvnia, will be considered. From 1996 to 2014 the exchange rate regime in Ukraine was fixed, from 2014 to March 2022 - floating, and after the start of a full-scale war (24.02.2022) since March 2022 to October 2023 - fixed. In October 2023 National Bank of Ukraine announced change of the exchange rate to the managed floating.

As we mentioned, up to and including 2014, the exchange rate regime was fixed, and since 2015 – managed float. Fixation of the exchange rate caused many problems, including reduction of international reserves, loss of competitiveness of domestic producers, devaluation of the national currency, high level of inflation, etc. In fact, the exchange rate fixation reflected the illusion of stability. Therefore, in August 2015, the inflation targeting regime was de facto approved in the Monetary Policy Strategies for 2016-2020, and in December 2016, it was de jure, approved by the Council of the NBU in the Basic Principles of Monetary Policy for 2017 and the medium-term perspective.

The flexible exchange rate regime in Ukraine was maintained until the start of a full-scale war.

After February 24, 2022, the NBU fixed the hryvnia-to-dollar rate at UAH 29,2549; and the hryvnia-to-euro rate at UAH 33,1707. Such actions of the central bank were forced to ensure exchange rate and macro-financial stability, uninterrupted operation of the financial system, balancing the current market situation, fixing the expectations of the population, and maintaining control over the dynamics of inflation. The exchange rate policy of the Central Bank during the war would be considered further in more detail.

There are two main changes in the value of the domestic currency – reduction and increase. If the value of the national currency decreases under demand-supply forces with a flexible exchange rate regime, then the value depreciates. If the price of domestic currency declines, but under a fixed exchange rate regime, then the

currency devaluates. A similar logic in terms is used when the value of the currency increases. The revaluation occurs under the fixed exchange rate regime, and appreciation under the flexible exchange rate system. The dynamic of the exchange rate of the hryvnia (UAH) from 1997 to 2022 is depicted in Figure 3.1.

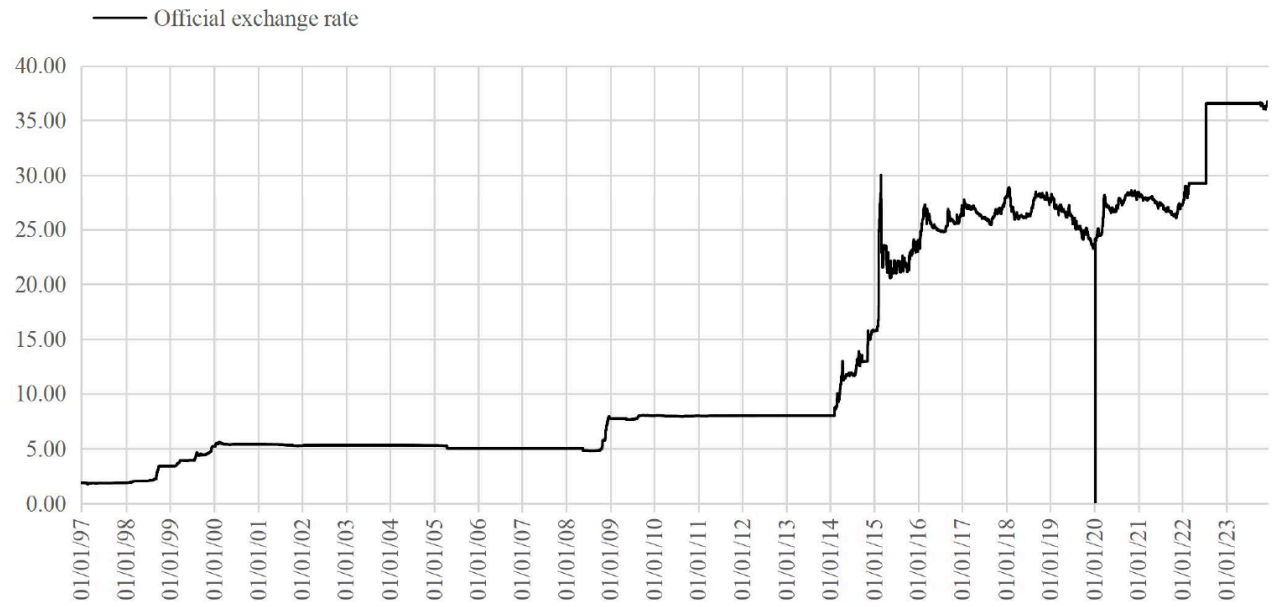

Figure 3.1. The dynamic of the exchange rate UAH/USD

Source: developed by authors based on the data [10]

In 1997, it was observed that the National Bank pursued a policy of restraining the excessive revaluation of the hryvnia, which occurred due to the inflow of foreign exchange funds. The largest fluctuations in the value of exchange rate occurred in 1998-1999, 2008-2009, 2014-2015, 2019-2020, and 2021-2022.

The first devaluation of the hryvnia took place in 1998-1999. The main reasons were the impact of the Asian financial crisis, the fall in GDP, the trade balance deficit, and the growth of foreign debt. Additionally, the expansionary fiscal and monetary policies of the government had a negative impact on the economy. That led to instability that created uncertainty for investors and influenced the exchange rate. Simultaneously, the devaluation stimulated the export of goods producers, which caused the surge in the volume of sales of foreign currency and supply on the market. As a result, the amount of foreign currency reserves of the NBU increased.

From 2000-2004 Ukraine achieved macroeconomic stability. During that period it was observed a sharp economic growth, and low rates of inflation. At the same time, political instability played an important role during that time. There were tensions between the president and parliament, which put downward pressure on the hryvnia. Additional uncertainty was created by the transition to a market-based economy. This was also facilitated by the fact that the position of the dollar in the domestic market was somewhat weakened by its devaluation in international markets [11].

In 2008-2009, the dynamics of the hryvnia exchange rate experienced significant fluctuations. The main factors of currency devaluation:

- global financial crisis and its negative impact on the inflow of foreign funds from abroad to the banking system;
- drop in world metal prices in August 2008 by 15-20%. As a result the export revenue significantly decreased, while the import value grew;
- intensification of the capital outflow due to negative expectations about the devaluation of the national currency.

In general, the dynamics of the hryvnia exchange rate reflected the conjuncture of international markets, where the depreciation of the US dollar was observed. In 2009 the decline of the official exchange rate of the hryvnia was 3.7 % in comparison with 52.5% in 2008.

In terms of exchange rate policy, since 2014, the national currency of Ukraine has been significantly undervalued. This was caused by three simultaneous crises: economic – caused by the annexation of Crimea and the war in Donbas; currency - because the fixed exchange rate had to be abandoned due to the deterioration of the foreign trade balance and the growth of the budget deficit, and banking - because the oligarchic banking system led to an increase in overdue debts and a panicked outflow of deposits. Instead, towards the end of the period (2019-2021), the gradual growth of the exchange rate to the equilibrium is observed.

The key positive and negative consequences for the economy during the float-managed exchange rate regime:

1. The floating regime has allowed the Ukrainian national currency to adjust the market changes and, in that way, make the export more competitive.
2. This regime has contributed to an improvement in the investment climate in Ukraine due to relative stability in the foreign exchange market.
3. As the Central bank smoothed the high fluctuations due to interventions in the interbank exchange market, this put pressure on foreign reserves.
4. There was inflationary pressure as the price of imported goods and services increased due to the depreciation of the currency. This led to a decrease in the purchasing power of consumers.

To conclude, the managed-float exchange regime had a mixed impact on the economy. On one side, this allows to improve the investment climate and external competitiveness. On the other hand, this had a negative impact on foreign exchange reserves and inflation.

The exchange rate policy of the Central bank during the 2022 year will be considered separately. However, before that, it is worth noting that currency devaluation cannot always be viewed from the negative side.

For instance, countries can deliberately maintain a low exchange rate in order to protect the domestic market from foreign competition. Such a policy was observed in China and Japan, at the end of the XX century accumulated foreign currency reserves and pursued a protectionist policy.

For countries with a low or medium level of development, the devaluation of the national currency has a mostly negative effect on the economic development of market relations. This happens because for developing countries, due to the insufficient development of their own production capacities, export is mainly presented by cheap raw materials, and import - technologically and resource-intensive goods. Therefore, during devaluation, it is extremely unprofitable for underdeveloped countries to import labor-intensive goods that are in demand in the domestic market due to high prices. At the same time, prices for export goods will rise.

The strengthening of the hryvnia exchange rate against foreign currencies can be observed due to the preponderance of foreign direct investment inflows over their

outflows. According to McKinnon's research, such an inflow has a positive effect not only on the exchange rate of the national currency but also on the activities of entrepreneurs and the commodity market as a whole [12]. During the strengthening of the national currency, the volume of export-oriented goods decreases. After all, the products of domestic manufacturers are becoming more expensive compared to foreign analogs. Such a situation is inherent in short-term changes in the exchange rate. With long-term planning and anticipation of the revaluation of the national currency, domestic exporting producers begin to improve their own production processes, modernize equipment, improve management processes, etc. Thus, in the long term, the volumes of export-oriented products will grow. This shows that the revaluation has a positive effect on the level of innovative investments.

Therefore, for the Ukrainian national commodity market, the devaluation of the national currency was an unprofitable direction of exchange rate policy. After all, under such conditions, the country remained a raw material exporter for developed partner countries. Instead, the strengthening of the exchange rate will direct entrepreneurs to the production of technological products for final consumption.

At the beginning of the war in Ukraine the central bank fixed the exchange rate at the level of 29,25 UAH per 1 USD and then has moved the value up to 36.57 on July 21, 2022. A fixed currency regime has its advantages and disadvantages, one of which is the high cost of usage foreign exchange reserves. However, such a policy of the central bank was a forced and necessary step to maintain nominal stability in the conditions of war. The fixed exchange rate policy was complemented by high-interest rates and currency restrictions.

Another important indicator of the exchange market is the real effective exchange rate (REER) and nominal effective exchange rate (NEER), the dynamics of which are depicted in Figure 2.2. The importance of these indexes lies in determining the competitive positions of domestic producers, identifying whether the national currency is undervalued or overvalued, and isolating destabilizing shocks to the economic macro system. These indexes reflect the change in the exchange rate adjusted for the level of inflation in Ukraine and the main trading partners. A fluctuation of +/-11% in a 3-year period is considered optimal [13].

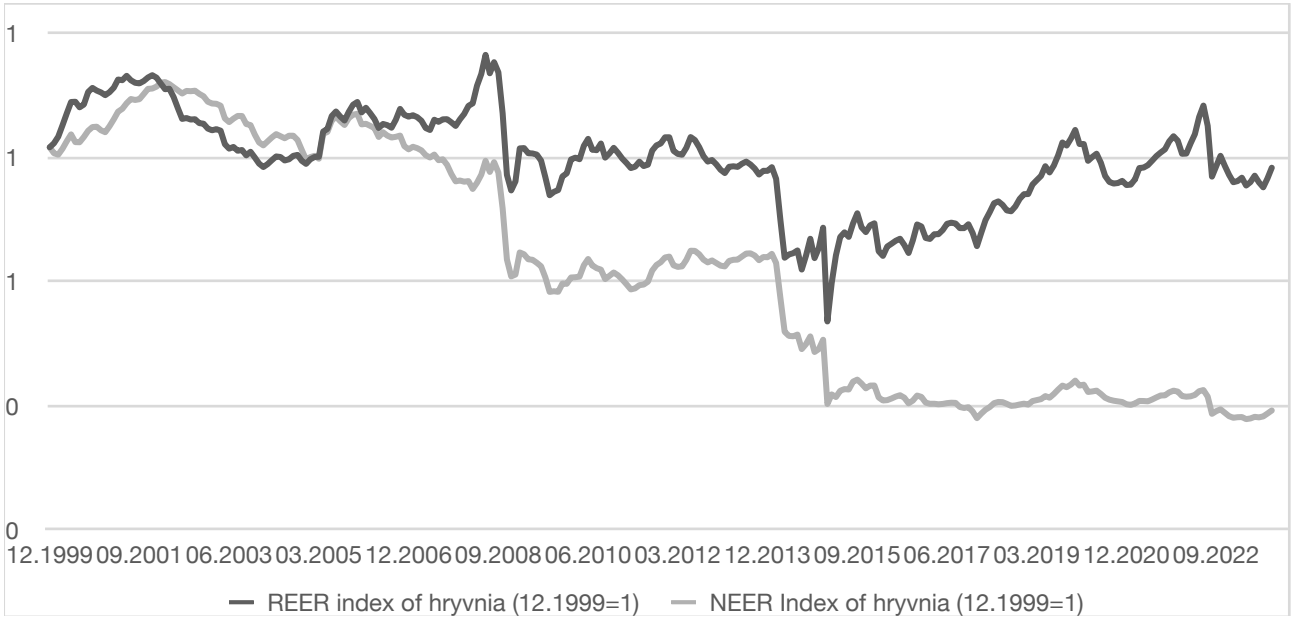

Figure 3.2. The dynamic of the REER and NEER (12.1999-10.2023)

Source: developed by authors based on the [14]

The dynamics of the two indices are synchronous. Since the real effective exchange rate differs from the nominal effective exchange rate it is adjusted for the level of price changes. The highest increases in the REER were in 2008 and 2022. This means that the competitiveness of domestic goods decreases both in the domestic and world markets. The causes are the excess of inflation in the country over the inflation of trading partners, as well as the devaluation of the exchange rate of the national currency, and external and internal shocks. The reverse is the situation with a decrease in the REER index (the end of 2008 and 2015), in which the competitive positions of product manufacturers are strengthened. The main reasons for that were low rates of inflation and graduate recovery of the economy.

Maintaining of fixed exchange rate of gryvnia to US dollars till the beginning of October 2023 influenced the increase of NEER in the 3d quarter of 2023, that mostly totally levered its high decrease in 2022. Despite this, REER decreased as a result of decrease of prices in Ukraine in comparison with the more stable inflation in the countries-partners. Such dynamics is expected till the end of 2023. According to the prognoses of the National Bank of Ukraine, in the next years the stable deficit of the current account and increase of interest to risk assets will influence the

devaluation of dollar and appreciation of the currencies of trade partners of Ukraine. According to this condition the REER will weaken. It will influence the graduate improvement of foreign trade balance of Ukraine. Thought, despite the weakening, REER will remain stronger than its equilibrium level, which will contribute to disinflation [15].

Let`s return to the exchange rate policy of the NBU during the 2022 year. As was mentioned before, since the beginning of the full-scale war in Ukraine on February 24, 2022, the NBU fixed the exchange rate. This currency regime was maintained until October next year. Let's consider the consequences for the economy of fixing the exchange rate and whether it should have been kept fixed in the future.

The positive consequences included the restoration of public confidence and the anchoring of expectations, the appearance of macro stability.

However, the reverse side of such a fixation also insinuates. For example, great pressure on foreign exchange reserves, deterioration of competitiveness, and a larger gap between the official and cash exchange rates. Since the main trading partners are the countries of the European Union, the depreciation of the euro against the dollar leads to even greater losses for exporters.

So, it is obvious that fixing the exchange rate had more advantages at the beginning of the war as a tool for stabilizing expectations and financial activity, but in the long run, the country would have suffered more and more losses. For example, the biggest losses are the reduction of international reserves. In addition, economic imbalances (price level, drop in production) will gradually increase, which will not be reflected due to a change in the dynamics of the exchange rate. Therefore, it was worth considering a potential solution.

To do this, we will consider examples of exchange rate policies of other countries during the war.

In many countries which faced with the fixing of limiting of the exchange rate have proved its effectiveness as temporary anti-crisis instrument to control the inflation and maintain the macroeconomic stability.

It can be considered the example of Israel, which fixed the national currency in 1985 for three years, firstly to dollar than to the basket of currencies with the band of

+-3%. It influenced the decrease of inflation from three-digit to two-digit numbers. In 1989-2004 Central bank of Israel was experimenting with different variants of linking the national currency. As inflation has decreased from 20% to 7% central bank increased the measure of fluctuations of the exchange rate from +-15% to +-26%. In 2003 inflation has achieved its goal: maintaining in the level of 1%-3% for 12 months. In 2005 central bank moved to the floating exchange rate regime.

In Croatia in 1991-1993 national currency was linked to deutsche mark. After the introducing of the new currency in 1994 central bank implemented managed floating, and influenced heavily the fluctuating of the exchange rate by currency interventions. During the year 1994-1996 the exchange rate of national currency remained stable with the average fluctuation of +-1,6% for a year. Together with other stabilization measures it helped to improve inflation and exchange rate expectations, and also decrease inflation from 1903 % in October 1993 to 3% in December 1994.

In Georgia till 2008 it maintained the floating exchange rate regime. After the Russian invasion central bank of Georgia temporary fixed the national currency to the US dollar to avoid the panic on the market and keeping the stable situation of the currency market. But it influenced negatively the international reserves of the central bank. It influenced the decision to adjust the lari exchange rate to the US dollar as a intermediated step to the floating exchange rate. The exchange rate has devaluated in two steps for 15%. The next days after devaluation of national currency the central bank made active interventions for the stabilization of the exchange rate on the new level and renewing trust to the national currency. The Central Bank further decreased the amount of interventions and in January 2009 moved to inflation targeting [15].

The currency interventions remained in all the cases the main monetary instrument. So, the targeting the exchange rate of Croatian currency in 1994-1998 was followed by active interventions on the currency market. Transfer to the higher flexibility of the exchange rate was graduate, long-term and careful. In 2009 it was used the managed floating regime, in 2010-2015 de facto of the crawling peg, and in 2016-2019 – low band +-2%.

Interest rate policy is the additional instrument in maintaining the exchange rate stability. The central banks of Croatia, Israel and other countries used the central bank rate as additional instrument for the decrease of pressure on the international reserves and maintaining the stability of market of currency. At the same time, internal and external facts also influenced the decrease of inflation during the war or in the after-war period. At the same time the premature decrease of the interest rate with the high risks of security and devaluation can influence negatively the exchange rate stability, as it was in the case of Georgia. When the inflation started to decrease in September 2008 the central bank started to decline the central bank rate with the aim to stimulate economic growth. But in the conditions of devaluation of the national currency it effected negatively the trust to it. And as a consequence, it caused dollarization of the economy, and was one of the reasons of speeding up the inflation in 2010. As a result, the central bank of Georgia was forced to increase the interest rate [15].

For Ukraine, in our opinion, a free-floating exchange rate is not a solution, as the high sensitivity of inflationary expectations leads to excessive macroeconomic volatility. A vivid example is the hryvnia exchange rate fluctuations during the first invasion of the Russians in 2014.

In the post-war period, Ukraine will return to a flexible exchange rate, inflation targeting, and restore the transmission mechanism. Ukrainian and American professor Yuriy Gorodnichenko noted, that during martial law the exchange rate should be flexible, the daily fluctuations of which are limited to a narrow range [16].

Thus, the exchange rate will change (rise or fall) under the influence of market forces, but within the corridor and at a rate determined by the central bank. Such a policy was already applied during the COVID-19 pandemic, and in some countries even earlier. This policy made it possible to slow down the pace of exchange rate appreciation and gradually introduce a flexible exchange rate.

Other positive aspects of the proposed exchange rate are the institutional independence of the central bank. It will also prepare for a smooth and safer transition to a flexible exchange rate, reduce pressure on currency reserves, and minimize post-war fluctuations.

When the war started the National Bank of Ukraine fixed the exchange rate with the aim to stabilize the situation of the market and introduced the range of temporary administrative restrictions regarding the currency operations. On the July 2022 central bank of Ukraine changed the exchange rate for 25%. It helped to decrease the pressure on the international reserves and increase the competitiveness of Ukrainian producers. National bank of Ukraine was maintaining active currency interventions. At the same time based on national and international experience, National Bank of Ukraine took into account, that the long-term fixation of the exchange rate can influence the macroeconomic disbalances, which can cause the financial crisis.

National Bank in its Strategy indicated that fixed exchange rate has its advantages and disadvantages, but in the long-term perspective, the disadvantages may be bigger, than advantages, for example, the currency restrictions may lose its effectiveness, there can increase the market deformations, grow the shadow economy, deepen the external disbalances. In the aim to transfer to a more flexible exchange rate in October 2023 it was announces a managed floating. The graduate transfer to a more flexible exchange rate will be maintained with the constant evaluation of macroeconomic and financial conditions. In October 2023 National Bank of Ukraine moved to the managed floating rate based on the stable progress of decreasing the inflation, maintaining the high level of international reserves and keeping the high level of attractiveness of hryvnia instruments. The movement to the managed floating was a controlled process. The currency market stabilized on the third day, and the amount of interventions decreased to the September level. Graduate improvement of the exchange rate flexibility, to the opinion of the National Bank of Ukraine, will increase the stability of Ukrainian economy and the currency market, influence its adaptivity to external and internal shocks and decrease the risks of currency disbalances. At the same time National Bank of Ukraine announced that it will play the key role on the market of currency and compensate the demand for the foreign currency. The exchange rate will fluctuate in both sides influenced by the market factors. On the early stages of the transit to the more flexible exchange rate the central bank rate will continue to maintain the role of additional instrument of the

stability of exchange rate regime and defense of international reserves. National Bank of Ukraine will maintain strict monetary policy, which will influence the profitability of assets - investments in national currency with the aim to avoid the uncontrolled pressure on the currency market, on the exchange rate and international reserves [17].

According to the announcement of the National Bank of Ukraine, managed floating rate will provide better adaptation to the external and internal shocks and decrease the risks of accumulation the currency disbalances [15].

At the same time the National Bank of Ukraine will limit the exchange rate fluctuations with the help of currency interventions, preventing the high depreciation and appreciation of the currency. The central bank rate policy also will be used to maintain the exchange rate stability.

According to the Strategy of easing the FX restrictions the main stabilization tool of decreasing the inflation and providing the adaptation of economy to the conditions of full-scale war will be maintaining the exchange rate stability.

Beside the maintaining the exchange rate with interventions, National Bank of Ukraine has implemented measures for the increase of the supply of foreign currency and eased restrictions in the non-cash foreign currency. That influenced the increase of operations in August- September 2023 and influenced the decrease of demand on foreign cash. At the same time it were eased other currency restrictions. In the conditions of new regime of exchange rate National Bank of Ukraine will take measures to maintain exchange rate stability and compensate the structural deficit of foreign currency and limit the exchange rate fluctuations with the help of currency interventions [15].

In the current conditions the usage of the central bank rate differs from the classical inflation targeting. Main determinant for the central bank rate is not only the inflation, but also the attractiveness of national currency as the store of value. As a result, people use to convert less amount of their savings into foreign currency. This causes the decrease of pressure on the market of currency and international reserves, and the exchange rate stability increases. That restrains the growth of costs of goods and services, in particular due to low import costs and decreases the pressure on the inflation and exchange rate expectations of citizens and business. To maintain price

and financial stability the National Bank of Ukraine in June 2022 increased the central bank rate to 25%. Improvement of the inflation expectations, prognoses of further decrease of inflation and stable situation of the currency market influenced the process of decreasing the central bank rate in July 2023 [15].

Currency interventions are the influence of the central bank of the country on the currency exchange rate by selling and buying foreign currency. In that way, the financial institution regulates the demand and supply of foreign currency and defines the desired level of the exchange rate. NBU can sell or buy the currency on the interbank exchange rate market. During the buying the NBU releases the hryvnia into circulation and vice versa when the central bank sells the currency, it withdraws the hryvnia from circulation. Figure 3.3 shows the dynamics of the interventions.

The main aims of the interventions are to balance the supply and demand for foreign currency and to maintain the stable exchange rate of hryvnia. This strategy was followed until 2014. In the case of the exchange rate the aims of intervention can be a little different, although monetary authorities can also use them with the goal to avoid unnatural deviations in the exchange rate, normalizing the situation on the market, and accumulating currency reserves [19]. So, from 2014-2016, the National Bank of Ukraine carried out currency interventions with the goal to avoid high fluctuations in the exchange rate and accumulate foreign reserves.

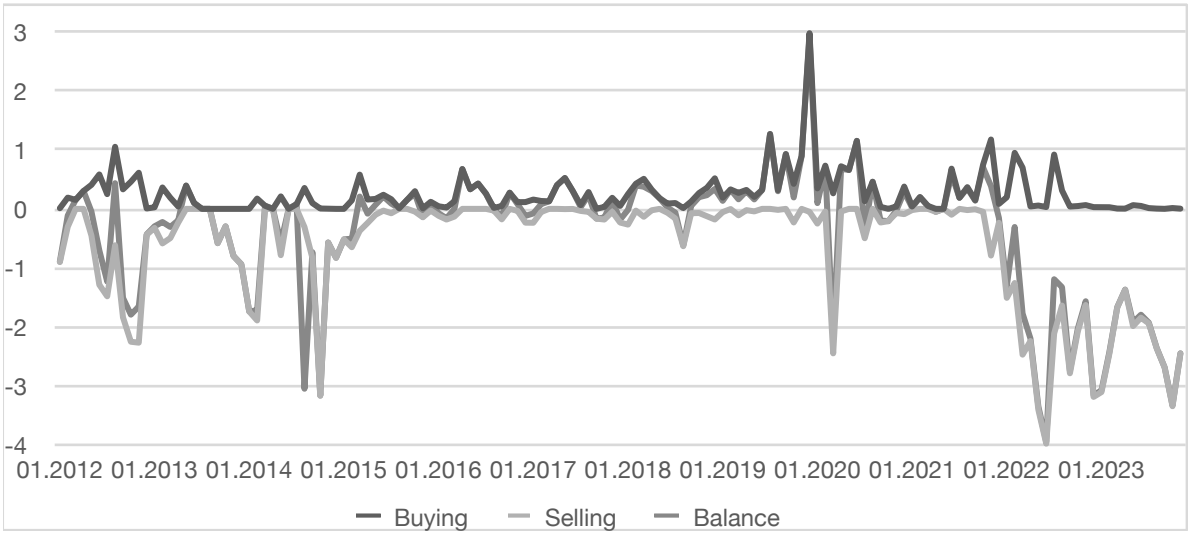

Figure 3.3. The dynamic of the foreign interventions

Source: developed by authors based on the [18]

On September 6, 2016, the board of the NBU presented the "On the approval of the Strategy of currency interventions of the National Bank of Ukraine for 2016-2020" [20], in which were described the main principles of the currency interventions in accordance with inflation targeting. The purpose was not only to accumulate foreign reserves and smooth the excessive fluctuations, but also maintenance of the transmission of the policy rate.

In 2016-2020, in accordance with the currency intervention strategy, the National Bank of Ukraine did not buy currency during the period of fluctuations in the direction of devaluation of the hryvnia but replenished international reserves only under favorable conditions on the foreign exchange market. At the same time, starting in April 2018, to increase the transparency of monetary policy, the NBU constantly announces the volume of foreign currency purchases to replenish international reserves [21].

Since the beginning of 2020, foreign exchange interventions have been carried out using interventions at the best rate, foreign exchange auctions, and interventions at a single rate. Some of the biggest sales of the currency are observed at the end of 2022. For comparison, in December 2022, the number of sales increased 13 times, compared to December of the previous year. It is worth noting that with the beginning of the full-scale war in 2022, the volume of currency sales fluctuated between 2-3 billion US dollars. At the end of the 2022 year, the value reached 3,19 billion US dollars. However, the highest was in June – 3,99 billion US dollars.

This adjustment of the exchange rate was caused by significant gaps in the balance of payments and the non-rhythmic inflow of international aid. This has a significant impact on the foreign reserves, the dynamics of which will be analysed further (Figure 3.4).

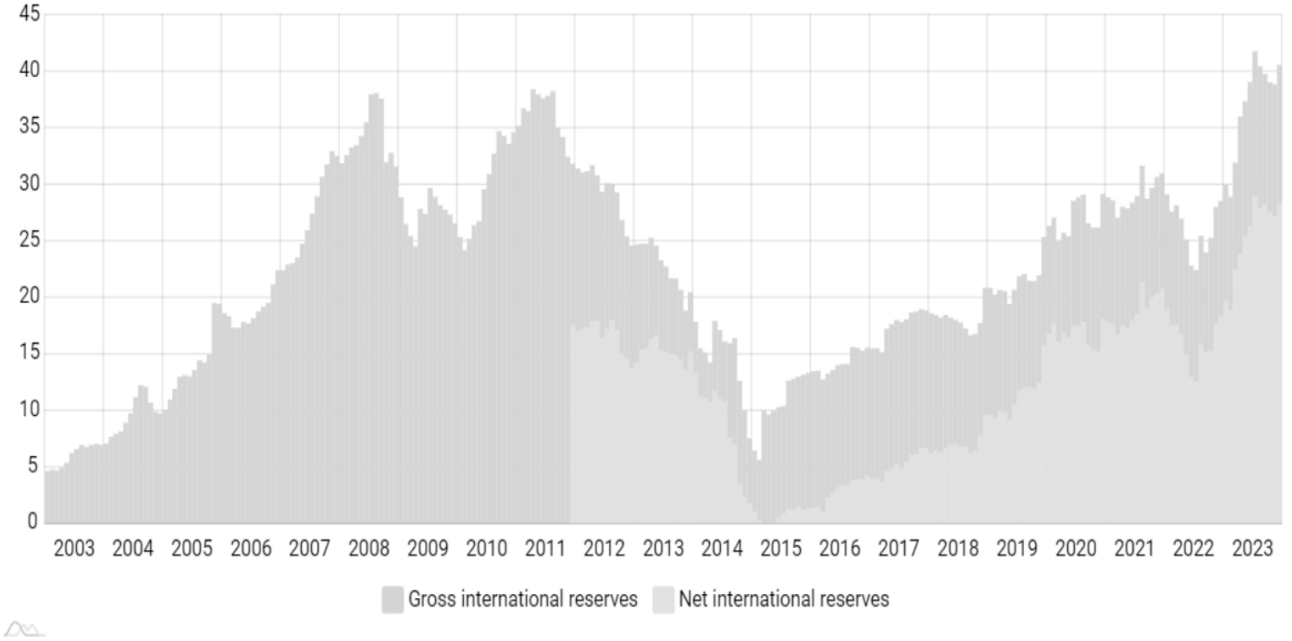

Figure 3.4. The dynamic of the international reserves, USD billion, in equivalent

Source: developed by authors based on the data [22]

International reserves consist of liquid financial assets with the help of which the country's regulators can achieve the defined monetary goals. They are primarily used to manage the currency's value, stabilize the financial system, and meet international payment obligations. Understanding the distinction between gross and net international reserves is essential for assessing a country's financial health and its ability to respond to economic challenges. The difference between gross and net currency reserves lies in that net reserves do not include funds borrowed from the IMF. By excluding borrowed funds, net reserves provide a clearer picture of a country's own reserve assets. This measure is often seen as a more accurate indicator of a country's reserve strength because it reflects the resources that are readily available and under the country's control.

The figure shows that the largest decline in reserves occurred at the end of 2014 and at the beginning of 2015 when the decision was made to switch from a fixed to a floating exchange rate. Then, there was a gradual increase in the number of reserves. Regular monitoring of these reserves helps a country's monetary authorities to make informed decisions about monetary policy, exchange rate management, and

other aspects of economic governance. It also provides critical information for international investors, rating agencies, and global economic observers regarding the country's economic resilience and stability.

The role of international financial aid from abroad during the crisis period is essential for any country. Such financial support ensures the solvency of the country, and its ability to fulfill obligations on time, and compensates part of the economic losses incurred due to different shocks that led to the crisis. Since the beginning of the full-scale war in Ukraine, many countries, and regions provided significant financial, humanitarian, and military aid, without which Ukraine could not conduct defensive action, carry about citizens, and maintain the economy.

It is prognosed that the general amount of financial support in the form of grants and loans in 2023 will amount to 45 billion dollars. This resources will be the main source of covering the budget deficit, which will maintain at 29% of GDP in 2023. International help allows to finance the big budget deficit and to maintain the high level of international reserves for the central bank and balance the currency market [15].

It is rather important to understand, that international aid influences the amount of the international reserves, budget deficit. It has a high influence on the governmental policy in the country and macroeconomic stability.

3.3. Exploring the relationship between exchange rate dynamics and trade competitiveness of Ukraine

The main relationship between exchange rate dynamics and trade competitiveness of Ukraine is represented by Vector Autoregressive model (VAR). This model is based on the reproduction of the dynamics of the time series based on its historical values, and long-term memory of series. Thus, a feature of these models is a high empirical level.

Since it was important to investigate the short-term forecast and analyze the relationships between the variables, therefore, the VAR model was chosen. Let's move on to the first stage of building the model - data selection and preparation.