CHAPTER 2. ANALYSIS OF MONETARY POLICY AND INFLATION TARGETING IN UKRAINE UNDER MODERN CONDITIONS

2.1. Inflation targeting as the main tool of monetary policy

Inflation targeting (IT) is currently one of the most popular monetary policy frameworks in both advanced and emerging economies [1]. As of 2023, more than 70 central banks around the world [2] have adopted it in some form, including the US Federal Reserve System, the ECB, the Bank of Japan, and the Bank of England.

IMF defines the inflation targeting framework the following way: "[IT] involves the public announcement of medium-term numerical targets for inflation, with an institutional commitment by the monetary authority to achieve these targets" [3]. As can be observed from the definition, inflation-targeting has a simple and straightforward idea at its core: anchoring inflation to the publicly announced goal with the means accessible to the central bank. However, the simplicity of the definition leads to frequent debates about the de jure and de facto adoption of the inflation-targeting framework by a central bank. The commonly recognized features of inflation-targeting are the following [1; 4; 5]:

- public announcement of a quantitative inflation target;
- price stability is explicitly recognized as the main and overriding goal of monetary policy (there should be an official commitment);
- growth of communication with the civil society and institutions about the strategy and aim of central bank policy;
- inflation forecast is used as the main intermediate target

An official announcement of an unambiguous quantitative inflation target is required as such a target serves at least three goals. Firstly, it is meant to stabilize inflation expectations around a specific and commonly known figure. Secondly, it serves as a benchmark for the evaluation of the performance of the central bank's actions. Lastly, it assists in refocusing of public's attention on price level from other measures of national currency value, e.g. nominal exchange rate, which is particularly important for emerging countries adopting inflation-targeting.

An inflation target is usually announced for the medium-term time frame. This is done intentionally to avoid the necessity to achieve an inflation target all the time, i.e. even in the short-term period. The latter could be harmful to the sustained development of an economy, as quite often prices grow faster or slower due to unforeseeable demand- and supply-side shocks. Such shocks, which are inevitable in their nature, make the goal of achieving an inflation target all the time both unattainable (as monetary policy actions almost always affect prices with a lag), and counterproductive (as too frequent and abrupt changes in monetary policy may further destabilize actual inflation and inflation expectations). The length of "medium-term" is rarely defined quantitatively by central banks, though some authors assume that it encompasses a horizon of around 2-3 years [6]. But the idea is that in the medium term, the above-mentioned shocks are offset primarily by the structural changes in an economic system [7]. While the inflation rate approaches its target as a result of the sustained development of an economy assisted with appropriate monetary conditions.

An inflation target is most commonly set as a point with an interval of possible divergences [5]. The point serves as a specific measure of an average change in the value of national currency over a longer time period, while an interval forms a range of comfortable fluctuations of the inflation rate, i.e. the range where no monetary policy response actions are required.

Official recognition of price stability as the highest priority goal of monetary policy is crucial to the implementation of inflation targeting. Price stability is obtained "when economic agents no longer take account of the prospective change in the general price level in their economic decision making" [8]. Importantly, a central bank that chooses to conduct its monetary policy following an inflation-targeting framework needs not only to announce its formal commitment to achieving and sustaining the rate of inflation that agrees with the abovementioned definition of price stability but is also responsible for active actions of proving to the public that inflation target takes precedence in monetary policy decision-making. This is important as the success of inflation targeting depends heavily on the level of trust of the public and financial market players in the central bank.

Particularly for the aforementioned reason, inflation targeting requires expanded communication with the public and the markets about the aim and goals of monetary policy. Also, this increases awareness of the general public about price developments and their drivers. More importantly, increased communication makes the central bank's decisions more predictable, removing an additional source of uncertainty for economic agents.

Increased accountability of the central bank is meant to build the trust of the economic agents in a central bank's ability to achieve its announced goals. The declared numerical target for the inflation rate compared with the actual inflation serves as a simple way of evaluating monetary policy's successfulness which is transparent and comprehensible to any citizen. This is in contrast to another monetary policy framework, namely monetary aggregate targeting. The latter uses more complex concepts for targeting which hinders assessment of and therefore trust in monetary policy.

Svensson [9] and other authors in the last decades provided substantial arguments that "the best possible intermediate target is the current forecast of the goal itself". That is why inflation forecast is commonly used by inflation-targeting central banks as an operational goal of monetary policy. Moreover, such forecasts provide a sense of the expected trajectory for inflation over the coming time periods and constitute an important part of a central bank's communication to the general public about the foreseeable future and its planned actions.

Historically, an inflation-targeting framework was first adopted by economies that had already been advanced and had sound financial systems and credible central banks [10]. And it was considered that such a framework had not been suited for emerging market countries due to numerous reasons [11; 12], the most important of which constitute four groups: institutional independence; technical infrastructure; financial system health; economic structure (Table 2.1).

Table 2.1. Prerequisites for successful implementation of inflation-targeting

Institutional independence
Monetary policy demands to be independent, especially from the executive branches of state power. This is needed in order to avoid the monetization of government debt and prevent statesmen who hold elective positions in the government from using their power to affect monetary policy and the business cycle in order to gain advantages during elections. The independence of a central bank is usually achieved by making it a separate institution with its own resources and legal authorities and excluding direct subordination of central bankers from any other body within the state.
Instrument independence: a central bank needs not only to be independent in making decisions about the current policy but in its choice of instruments used for achieving the announced goals.
Security of employment for a governor and/or members of a board of governors of a central bank. It is particularly important that the tenures of key central bank policymakers exceed the tenure of elected statesmen who often are authorized for appointing them.
Freedom from linkage to another nominal anchor, such as the exchange rate or wages. A central bank is highly unlikely to achieve several targets simultaneously, as it will most probably create antagonism in the operational design of monetary policy. If a central bank is committed to targeting inflation, it should be prohibited from targeting any other nominal indicator.
Technical infrastructure
A central bank has adequate forecasting capabilitie and its staff is able to use them to make macroeconomic "forecasts conditional on different assumptions for the monetary policy instrument". This is needed for two purposes: 1) to make reliable inflation forecasts that will serve as an operational target for monetary policy; 2) to link monetary policy instruments with its goals, to improve the understanding of the underlying mechanism of the monetary policy, build confidence in the central bank's abilities to attain the announced goals, and most importantly make informed decisions.
A central bank has access to reliable and comprehensive data, needed for forecasting and substantiation of monetary policy decisions. And the lag in data collection is sufficiently small.
A central bank has "an operating procedure for adjusting monetary instruments" and is able to conduct macroeconomic forecasting on a regular basis.
Financial system health
A sound banking system: banks attract deposits from and provide loans to households and corporations, and have sufficient sources of own funding to sustain their operations.
Developed stock and bond markets: a fairly extensive volume of financial operations designed for the redistribution of financial resources within a state.
Economic structure
Low sensitivity of domestic prices and nominal exchange rate of a national currency to changes of commodity prices. This condition greatly simplifies the task of reaching an inflation target for a central bank.
Financial dollarization is minimized. A high level of financial dollarization imposes significant limitations on the efficacy of a central bank's key instruments as economic agents choose to conduct their business in a currency other than a national one.
Minor exchange rate pass-through into prices. This condition is usually stated for a so-called "fear of floating", i.e. reluctance of a central bank to allow significant exchange rate changes so as to prevent high volatility of inflation and output. If an economy is characterized by a lower exchange rate pass-through, its central bank would be more prone to let a national currency float freely and conduct "classical IT".
Administered prices are either non-existent or their share in price indices is minimized. Inflation-targeting relies heavily on market forces in the attainment of its goals, which is why state-administered prices hinder its proper functioning.

Source: developed by authors based on [10-15]

Even though the above-mentioned prerequisites do help a central bank in the effective implementation of inflation targeting, most of them either could be achieved after the formal adoption of inflation targeting as a monetary policy framework. And there is a growing body of literature proving that the central bank's commitment to such a monetary framework speeds up structural and institutional changes in an economy so that it faster moves to the attainment of the aforementioned preconditions [10]. For example:

- exchange rate pass-through decreases after the adoption of IT [16], though some researchers argue that there is "little indication that inflation-targeting countries have lower pass-throughs" [17];
- high dollarization does not preclude the use of inflation-targeting as a policy rule [18], while inflation targeting has significant treatment effects on lowering actual financial dollarization [19];
- inflation targeting framework assists in a better macroeconomic performance of commodity-exporting economies [1; 20].

In 2015, the National Bank underwent a massive transformation by adopting an inflation-targeting framework for conducting its monetary policy. This transition was one of the most significant reforms that Ukraine has ever implemented. However, the adoption of inflation targeting was not without its challenges. Ukraine's economic conditions at the time of the transition were far more adverse than those faced by other countries that had already adopted this framework. Despite these obstacles, Ukraine successfully made the shift to inflation targeting, and it has continued to be a crucial element of its monetary policy ever since.

The fixed exchange regime kept inflation under control for an extended period until 2014, which marked a turning point for Ukraine [23]. The country faced several significant challenges, including an economic crisis, military conflict in the East, and the annexation of Crimea by russia. As a result, the real GDP declined by 6.8% due to falling domestic and weak external demand. This led to a sharp increase in demand for foreign currency, coupled with a drop in exports, resulting in a rapid devaluation of the hryvnia [21]. In 2015, the IMF intervened to rescue Ukraine, and

one of the reforms implemented was the transformation of the NBU to an inflation-targeting regime.

In the Monetary Policy Fundamentals for 2015, the NBU prioritized achieving and maintaining price stability in the country. To ensure predictability in long-term economic planning and managerial decision-making, it is necessary to maintain low and stable inflation rates over three to five years. The NBU aimed to reduce inflation to 5% per year as a medium-term objective, with an acceptable deviation of one percentage point [21].

Stage I – Set up of technical preconditions	
Before 2015	▪ Development of macroeconomic models; ▪ Implementation of a quarterly forecasting cycle; ▪ The initiation of the reform in the NBU.

⇩

Stage II – Set up of institutional preconditions	
1st half of 2015	▪ Modifications to the decision-making process for monetary policy; ▪ Establishment of the Monetary Policy Committee; ▪ Release of the Inflation Report; ▪ The Draft of Monetary Policy Strategy for 2016-2020.

⇩

Stage III – Implementation of the inflation targeting regime	
2nd half of 2015 - 2016	▪ Adoption of the Road Map for IT Implementation in Ukraine; ▪ Pursuing monetary policy to ensure price stability; ▪ Decision-making based on a predetermined schedule; ▪ Establishment of a systemic approach to communicating monetary policy; ▪ New operational design of market interest rates management.

⇩

The NBU Council officially approved the Inflation targeting regime in December 2016

Figure 2.1. The timeline of inflation targeting regime adoption in Ukraine

Source: developed by authors based on [21, 22]

In March 2016, the NBU released a roadmap for implementing inflation targeting over the next 12-18 months. The Monetary Policy Guidelines established inflation targets for the consumer price index, starting at a 12% annual increase with a 3% deviation and ending at a 5% annual increase with a 1% deviation by the end of December 2019. The NBU emphasized that the inflation target is unchanging, unlike inflation forecasts which are subject to revision based on actual economic developments. The central bank would use monetary policy instruments to keep inflation projections on track.

The NBU has been working on implementing inflation targeting since 2015, focusing on building macroeconomic models, designing quarterly forecasts, and modifying monetary policy decision-making mechanisms. The third stage of reform, the implementation of inflation targeting, began in the second half of 2015. The NBU also affirmed its independence in selecting monetary policies to achieve price stability and ensured that there would be no fiscal dominance [22].

The NBU employs the key policy rate as its primary tool for controlling inflation. This rate is regularly reviewed, and decisions may involve leaving it unchanged, increasing it, or decreasing it [23]. The NBU adjusts the key policy rate to align with its inflation targets. Unlike the prevailing trend in inflation, the regulator uses inflation forecasts to determine the key policy rates for the next six weeks [24].

In addition to using the key policy rate to control inflation, the NBU applies foreign exchange (FX) market interventions as an extra monetary policy tool. These interventions aim to maintain international reserves at sufficient levels, reduce exchange rate volatility, and support key policy rate transmission. However, it is worth noting that FX interventions cannot guarantee a specific exchange rate due to the flexible exchange rate regime in Ukraine. The NBU may also use other methods, including banks' required reserves, repo, and swap transactions, and purchasing or selling government bonds, to achieve its goals [25].

The monetary transmission mechanism in Ukraine operates through several channels, with varying degrees of intensity [26]. Changes in the NBU's key policy rate impact interbank interest rates, which then affect aggregate demand and inflation, primarily through changes in household and business expectations. The transmission

process takes time, typically 9 to 18 months, which is why the regulator bases its policy decisions on future expectations rather than past events. To enhance monetary policy transmission, the NBU implements a consistent inflation-targeting policy that effectively manages expectations [23]. Figure 2.2 provides a summary of the information discussed, highlighting the functioning of monetary policy in Ukraine.

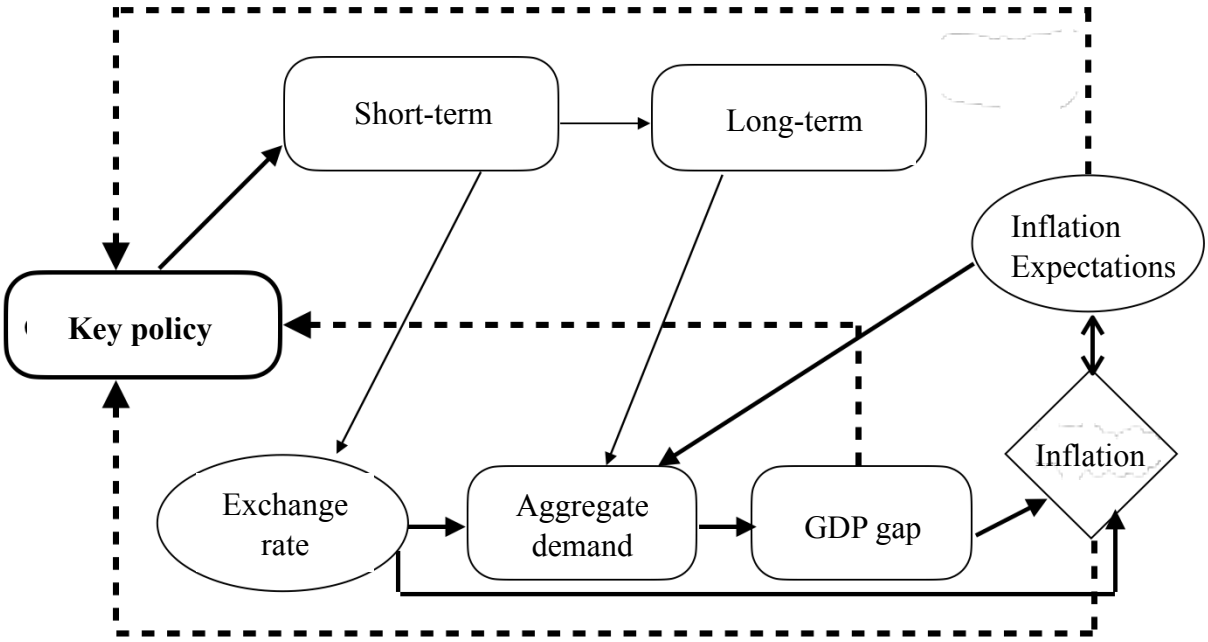

Figure 2.2. The transmission mechanism of the NBU's monetary policy

Source: developed by authors based on [21, 23]

As the interest rate is the primary tool of the central bank, we begin our analysis by focusing on the interest rate channel. The initial step of it is the impact of a modification in the key policy rate on short-term money market rates, specifically the interbank market. Central banks usually succeed in regulating short-term rates by managing bank liquidity. In the event of a liquidity surplus, they absorb excess liquidity. It is possible to achieve this by either selling the deposit certificates or government securities from the NBU`s portfolio or carrying out reverse repo transactions. In case of a liquidity deficit, they inject funds into the banking system by providing loans to commercial banks and accepting liquid collateral. Furthermore, the NBU may also purchase government securities for its portfolio or engage in repo transactions [21, 23].

The NBU communicates its preferred rate level for achieving its monetary policy objectives by setting the key rate. It conducts its transactions based on this key rate to align market rates closer to the desired level. Specifically, when there is a liquidity surplus, the NBU's primary operation involves selling two-week certificates at the same rate as the key policy rate. Moreover, to mitigate market volatility, the NBU also utilizes standing facilities such as certificates of deposit and overnight loans (1 percentage point below/above the key policy rate).

Besides, the central bank can organize prompt and effective control over short-term interbank rates if it does not impose any additional limitations when attracting or issuing short-term facilities. Commercial banks can engage in transactions with either the NBU or with each other, causing short-term interbank rates to generally fall between the central bank's rates for deposit certificates and overnight loans and remain near the key rate [23].

Nevertheless, medium- and long-term interest rates play a crucial role in influencing economic processes by directing temporarily free funds to where they are needed within the banking system. These rates depend on various factors, including short-term interbank rates, competition within the banking system, inflation expectations, demand for loans, etc.

After the NBU adjusted the short-term rate management system in 2016–2017, the relationship between short-term interbank rates and rates on bank loans and deposits strengthened considerably, leading to decreased volatility of short-term rates, and providing banks with a reliable indicator of money value in the market [21, 23].

Besides, the change in interest rates on bank loans and deposits leads to a shift in economic agents' preferences for current consumption, investment, and savings. Rising interest rates tend to encourage savings and reduce investments, which could result in a slowdown of inflation and/or deflation due to a decrease in aggregate demand [26]. This has been supported by the experience of developed countries and developing economies, including a study of the MTM in the Czech Republic, Poland, and Hungary that points out the specifics of transitional economies that switched from a fixed exchange rate to inflation targeting [27].

Some methods can be used to assess the effect of changes in market rates on the components of aggregate demand. For example, the National Bank of Poland uses vector autoregression (VAR) models and semi-structural and structural models [28]. While most models show the existence of transmission, the quantitative results vary. Another way to study the effect of changes in market interest rates on their investment decisions is the usage of data from companies' balance sheets (this method is embraced by the Central Bank of Hungary [29]). In the case of Ukraine, it is worth assessing the effect of the monetary transmission mechanism using several models, including macro models and micro analyses of individual transmission chains. At the same time, the short data sample since the country`s transition to inflation targeting complicates the use of econometric models, and the problem of a short data sample can be mitigated somewhat with assumptions for how the relationship between some variables had been changing after the launch of inflation targeting [26].

In addition to the information mentioned above, the short-term interest rates also impact long-term rates on the financial market, particularly yields on government securities, which are the safest debt instruments, and whose yields serve as a benchmark for investors to assess the return and risk of investing in other securities. The maturity of domestic government bonds varies from several months to years and yields on these bonds of different maturities from the yield curve, which illustrates the relationship between yield and investment term [23].

In the research of Oleksandr Zholud, Volodymyr Lepushynskiy, and Sergiy Nikolaychuk, "The Effectiveness of the Monetary Transmission Mechanism in Ukraine since the Transition to Inflation Targeting," there was a model that estimates the pass-through level of interest rate changes to short-term business loans in Ukraine. The authors of this paper discovered that there is a significant relationship between short-term business loan rates and overnight and key rates (0,92). Moreover, the model indicated a weekly pass-through level of 19%, while the expected long-term transmission should be 15%, suggesting that other factors also impact interest rates. When the researchers used only 2017 data, the model represented a more significant short-term effect, but with lower statistical significance for most

coefficients. Nevertheless, market interest rates still have a weak impact on aggregate demand and, therefore, on inflation in Ukraine considering such factors as lower financial depth and high volatility in nominal and real interest rates during a long period of high and volatile inflation [26].

If we look at the research conducted on monetary transmission in Poland via the interest rate channel, it has been discovered that the key policy rate fully transmitted to money market rates in all cases except short-term interbank rates, which were affected by the global financial crisis of 2008-2009. The further transmission of money market rates to interest rates on business and individual deposits indicated full long-term transmission for all except short-term deposits, which was also affected by the crisis. There was incomplete transmission to interest rates on property loans for individuals, while the transmission to loan interest rates for businesses was statistically higher than one [30].

Moreover, the paper “The Effectiveness of the Monetary Transmission Mechanism in Ukraine since the Transition to Inflation Targeting” emphasized the yield curve concept that lies at the intersection of the interest rate and expectations channels. In Ukraine, the NBU handles the short end of the yield curve, which includes overnight deposits and 14-day certificates of deposit, while the Finance Ministry handles the DGBs with maturities ranging from 6 months to several years [26].

While the government securities market has increased in volume and liquidity during last years, it remains relatively shallow. Therefore, the key interest rate is transmitted quickly and completely to government security yields. Despite this, there is still a significant gap between the yield on government securities and the interest rates on individual deposits due to the low level of engagement. In the future, there will no longer be any arbitrage opportunity for the DGB market as it grows.

International experience shows that the establishment of the first stage of monetary transmission and the adoption of inflation targeting both help increase the sensitivity of aggregate demand to interest rate changes. Gradual resumption of lending, further expansion of the DGB market, and lower dollarization are important

factors that can also help strengthen the effect of changes in market interest rates on aggregate demand and inflation.

The second monetary transmission channel is the key policy rate transmission via the exchange rate. In general, in economies with open capital flows, the exchange rate channel enables borrowing at lower interest rates in one country and investing in another with higher yields. If the key policy rate increases, it can attract foreign currency inflows, increase demand for domestic currency, and strengthen it. The issuance of government bonds with different yields in hryvnia and foreign currency in Ukraine means that rate changes can affect the balance between supply and demand for both types of bonds, as well as influence the choice between domestic and foreign currency deposits. This, in turn, can impact the exchange rate [23].

The CPI in Ukraine includes imported and domestically produced goods that compete with imports. When the hryvnia strengthens against the dollar, the cost of imported goods decreases, while local products become more expensive in dollar terms, making them less competitive on global markets. As a result, inflation may decrease, but the trade balance could worsen [23].

Even though no studies have been conducted on the effects of changing interest rates or foreign currency interventions on exchange rates in Ukraine, there seemed to be a strong correlation between monetary policy decisions and exchange rate trends, as was observed in the rate hike cycle in 2017-2018.

After exceeding the inflation targets for 2017 and 2018, the NBU began a cycle of tightening monetary policy by increasing the key rate in October 2017. As a result of the increase in the key rate, yields of domestic government bonds (DGBs) went up in early 2018. Before the rate increased in January-November 2017, DGBs with a one-year term accounted for less than 600 million UAH per month in average placements. During January-February 2018, DGB placements increased by more than ten times, with yields increasing by around 1.6 percentage points. Foreign currency inflows strengthened the Ukrainian currency's exchange rate between 1 January and 28 February [26].

Analyzing the second stage of this transmission channel, historically, the exchange rate and inflation have had the strongest correlations and fastest

transmissions in Ukraine. It is partly due to the country's long history of hard currency pegs that the public pays so much attention to exchange rates. In contrast, the Ukrainian economy is characterized by high levels of openness and dollarization, and it has also an impact on the existence of this strong correlation between inflation and changes in the value of Ukrainian hryvnia to USD [26].

As for inflation transmission, the study was conducted by Oleksandr Faryna, and the researcher used a panel autoregressive model with distributed lags to study the nonlinearity of transmission effects. The results of his study demonstrated that significant devaluations (more than 16% per quarter) lead to a high pass-through (0.2-0.3 during 12 months). Nevertheless, mild exchange rate fluctuations (between 3 and 16%) pointed out no significant impact on inflationary processes. At the same time, inflation was found to have very low elasticity under conditions of strengthening exchange rates [31].

In another research, the effects of anticipated and unanticipated changes in the exchange rate were compared. The industrial and agricultural sectors were observed, and there were found no reactions to expected changes in the nominal effective exchange rate (NEER) and unanticipated changes in NEER had a negative effect. The currency floating, as it has been in Ukraine before the full-scale invasion, also strengthens the impact of unanticipated changes in exchange rates [32].

A foreign currency's role in the assets and liabilities of economic agents is another important aspect of the exchange rate channel. As household and company assets and liabilities are mostly held in foreign currencies, primarily US dollars and Euros, exchange rate fluctuations impact balance sheets significantly [26].

During times of economic growth and crisis, the hryvnia's real exchange rate has been observed to strengthen and weaken, respectively. These trends are primarily driven by capital flows and foreign currency loans used for capital and production financing. When capital inflows increase, the hryvnia strengthens in real terms, reducing foreign-currency loan costs and increasing corporate assets. This balance sheet effect leads to increased investment and production activity, as well as lower costs for imported investment goods and increased household purchasing power. However, this strengthening weakens price competitiveness and reduces net exports,

resulting in a widening foreign trade deficit during periods of economic growth. Conversely, during crisis periods, the opposite trend occurs. Despite these fluctuations, the impact of exchange rate changes on economic activity in Ukraine is limited due to the offset effect of other channels.

Another monetary transmission channel, which plays a significant role in Ukraine, is the expectations channel. The transition to inflation targeting has resulted in a significant and rapid decline in inflation expectations after the crisis, with clear and irrevocable inflation targets declared in mid-2015. The NBU has still been viewed with low trust considering its history and the experiences of the most recent currency crisis in 2014-2015, and, as a result, inflation expectations remain much higher than its targets. Based on Coibion and Gorodnichenko's study, inflation expectations are significantly influenced by currency exchange rates [33].

Since mid-2016, inflation expectations have remained largely stagnant, despite a temporary but significant increase in actual inflation. To sum it up, if the public trusts the NBU's monetary policy, it is possible to anchor them at a lower level [26].

Interest rate hikes by the NBU in October 2017 - March 2018 increased trust in monetary policy and enhanced the capacity of the expectations channel, despite their unpopular nature. Another factor in the success of the NBU's communication strategy regarding monetary policy was its use of best communication practices. The following elements have been introduced since 2015 as standard features for inflation reduction:

- Public meetings by the NBU Board on monetary policy are held eight times a year since 2018;
- Announcing each monetary decision via a press release or press briefing featuring the regulator's members;
- Issuing of the Inflation Report along with the macroeconomic forecasts by the NBU;
- Release of Monetary Policy Committee discussion summaries [26].

In the research “The Effectiveness of the Monetary Transmission Mechanism in Ukraine since the Transition to Inflation Targeting”, to determine the rationality of economic agents in Ukraine, the following hypotheses were tested:

1. A central bank's key rate changing unanticipatedly harms long-term forward rates according to Rezessy [34]. When the regulator raises its key rate to respond to rising inflation, government securities' yield curves tend to slope upward. Consequently, central banks lower long-term forward yields by taming inflation in this manner.

The analysis of this hypothesis is based solely on obvious evidence due to the limited availability of data. A four-step increase in the key rate was carried out by the NBU in the period from October 2017 - March 2018. There were no expectations for the first two hikes among financial analysts. As a result, the market learned the National Bank is prepared to defend its inflation target, despite not expecting a tightening of policy in the past. This resulted in a rise in current yields on DGBs whilst forward rates remained flat or declined. The market considers the NBU's behavior when determining whether this channel is effective.

2. There is no consideration for current price trends in inflation expectations, or they are unbiased. To examine this hypothesis, the inflation expectations for the following year in the division of months were compared with actual values of inflation in 12 months. According to Ranchhod, bias might exist when forming expectations, as indicated by the mean error that considers the deviation sign [35].

Understatement of expectations is suggested by a negative error, which was observed for all respondent groups except firms, where it is positive but nearly zero. This tendency towards underestimating inflation was a consequence of unforeseen shocks that hastened inflation during the survey period, especially in 2015 and to a lesser extent in 2017. Despite this, the results were encouraging as the expectations had not been anchored at high levels of actual inflation and were expected to decrease. Those expectations can be anchored more closely to the inflation target as we gain experience with inflation targeting. Moreover, it was found that respondents consider factors other than current inflation when forming their expectations [26].

3. The inflation expectations are influenced by forward-looking inflation, not backward-looking. First of all, it is necessary to mention that some quantitative analyses suggest that inflation expectations are not rational not only in developed countries like Sweden but also in developing countries like India [36, 37].

The results of research show that there is a future-oriented component to the expectations of all economic agents. It is no surprise that financial analysts are highly future-oriented, as they associate future inflation expectations with future inflation rates. Their forecasting skills are better, and they already know the NBU's monetary policy goals. In contrast, current inflation indicators primarily determine other economic agents` expectations [26].

A thorough examination of the expectations channel would have been possible but isn't available right now due to the lack of detailed studies of Ukraine's wage and pricing mechanisms and the effects of monetary policy on them. Additionally, short survey periods (especially for inflation targeting periods) would permit accurate estimates of expectations.

Based on the available data on inflation expectations, Ukrainian researchers found that these expectations are a function of not only current and backward-looking inflation but also future inflation expectations. It is also necessary that economic agents are better at making predictions than simply using naïve forecasts. This mainly applies to skillful analysts, who already have a superior level of understanding of regulator goals and the way it conducts its monetary policy. Enterprises and households still have weak links to the NBU's inflation target in terms of their inflation expectations. It is due to the initial low level of trust, the short time of inflation targeting regime work in Ukraine, and considerable inflation shocks of recent years.

Maintaining a consistent monetary policy for a long time can lead to inflation expectations anchored near the NBU's inflation target, according to the study's results. A more comprehensive analysis would be possible with more data, especially for timeframes during which the NBU used inflation targeting as a basis for monetary policy.

Moreover, it is necessary to mention that there are two monetary transmission channels, which don`t have such power in Ukraine as the three previous ones. They include credit and asset channels.

In general, the credit channel theory suggests that tighter monetary policy increases the premium for external financing due to imperfections in the credit market, such as the principal-agent problem and information asymmetry. Borrowers have a better understanding of their investment project's success chances than creditors, leading to a risk premium on all types of external financing. This results in adverse selection and moral hazard, causing a gap between the cost of external and internal funds. Therefore, an increase in the central bank's key rate decreases aggregate demand and loan supply.

A credit channel consists of two components: the lending channel and the balance sheet channel. They operate differently. In the lending channel, credit resources in the banking sector are reduced by tighter monetary policy. On the other hand, the balance sheet channel relies on the financial accelerator principle, where changes in interest rates have a direct impact on cash flows and collateral values. Hence, as interest rates increase, net worth decreases, and external financing premiums increase [21].

However, the credit channel's contribution to the monetary transmission mechanism in Ukraine is not outstanding, as evidenced by recent studies. Commercial banks prefer to finance reliable borrowers despite monetary conditions, particularly those affected by the armed conflict [38]. Additionally, institutional factors, such as poor creditor rights protection, restrict the fast resumption of lending. As well, large corporations can borrow from their parent companies and issue Eurobonds instead of borrowing from banks. Moreover, the corporate sector's dependence on bank lending has reduced in recent years, financing only 5.3% of investments in 2017 [21].

Another monetary transmission channel is the asset one. In theory, it works the following way: a central bank's key rate hike leads to a decline in asset prices, particularly bonds (yield increase), stocks, financial derivatives, and commodity futures. These prices serve as the foundation for consumer prices, collateral appraisal

(especially real estate), and real estate prices themselves. As a result, asset prices affect consumption through the wealth effect and liquidity of households [39].

However, the asset price channel works best in countries with developed stock and commodity markets, like the US, and has limited capacity in Ukraine. The main reason for it is that the stock market in Ukraine is still in an early stage, with stocks playing no significant role in household financial assets. Similarly, government securities account for only UAH 36,1 billion in the circulation of individuals and UAH 115,7 billion – legal entities as of May 1, 2023 [40].

The asset price channel's effect may be noticeable to some extent via substantial amounts of foreign currency held by households as savings. A tighter monetary policy that strengthens the hryvnia exchange rate reduces the real value of household savings in foreign currency. This may affect households' long-term consumer and investment decisions.

In summary, the NBU has been successful in implementing the inflation-targeting regime and resolving the banking system crisis since 2016. Research conducted by Ukrainian scholars has shown that the interest rate, exchange rate, and expectations channels have been effective. However, the credit channel remains ineffective, and the asset price channel is underdeveloped. The reasons for this include an underdeveloped financial system, low stock market development, and the limited role played by long-term investment institutions such as pension funds, as well as historical factors such as high and volatile inflation, low trust in the central bank, and structural changes.

2.2. The monetary policy experience during the war and post-war periods

During a crisis, the objectives of a monetary policy shift to address the unique challenges presented by a military economy. In such an economy, government expenditure rises, and the state's role in the economy becomes more prominent. Furthermore, economic decisions are dominated by security concerns, and the economic multiplier effect is limited due to the destruction caused by war [41].