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MONETARY POLICY DURING THE WARTIME: HOW TO ENSURE MACROECONOMIC STABILITY

Abstract

In peacetime, the main contribution of monetary policy to macroeconomic stability is to ensure the stability of price dynamics through regulating money supply. During the war, the market principles of the economy and the formation of its prices are violated, monetary transmission mechanisms do not work adequately, the role of the state in ensuring the proper functioning of commodity-money relations increases. Therefore, the purpose of this paper is to generalize approaches to the formulation of monetary policy during the wartime and to substantiate the relevant recommendations for contemporary situation in Ukraine. Theoretical sources, advisory and research materials of international organizations and national macroeconomic regulators, statistical databases were used to achieve the stated aim. The generally accepted principle of modifying monetary policy during the wartime is the use by the central bank of instruments that expand the money supply – purchasing assets on the open market, outright purchase of government bonds on the primary market, special targeted refinancing of credit institutions. The paper suggests the design of the monetary regime of the war period, which provides for the modification of such aspects of the central bank performance as the target of monetary policy, the composition of interest rates on basic operations of the central bank, foreign exchange market regulation and regulation of capital flows, the relationships of the central bank and fiscal authority. It is argued that in the conditions of military economy, the main contribution of monetary policy to macroeconomic stability is achieved through ensuring the stable functioning of the government borrowing market and controlling capital flows.

Keywords

monetary policy, state of war, macroeconomic stability,
Ukraine

JEL Classification

E43, E52, E58

INTRODUCTION

Under normal conditions, the key goal of monetary policy is to ensure price stability in the economy. During a crisis, ranking the monetary policy goals by priority changes. Structural gaps in the crisis economy raise the issue of healthy functioning of money markets, which requires the application of stabilization monetary policy to increase the money supply. Such a modification of monetary policy can be observed in the example of behavior of the central banks of the world's leading countries during the Global Financial Crisis of 2007–2008 and the COVID-19 pandemic. However, the structural crisis of the military economy poses additional challenges to monetary policy.

The war radically changes the nature of economic transactions. Firstly, the war actualizes the conditional obligations of the state to ensure the safe existence of its citizens and the functioning of national business, which requires additional government expenditures and increases the role of the state in the economy. Secondly, the incentives for economic agents are changing – the issue of security against physical destruction is becoming dominant in decisions about consumption, invest-

ment, or savings. Thirdly, the price of military risks cannot be offset in a market way, because the war does not provide additional economic benefits from the cost of resources and capital. By and large, the military economy is an economy of active government policy and government incentives.

The financing of the military economy does not have a significant economic multiplier effect, as the war is accompanied by constant destruction of productive assets and loss of labor resources, problems of conversion and logistics.

The new reality that the entire civilized world has faced since the beginning of Russia's armed aggression against Ukraine requires reconsideration of the macrostabilizing role of monetary policy in the event of military shocks.

Therefore, the purpose of this paper is to generalize the theoretical and methodological foundations of the application of stabilization monetary policy in a military economy, to formulate recommendations on the general framework of Ukraine's monetary policy and a set of its instruments during the state of war.

1. LITERATURE REVIEW

In theory, macroeconomic stability is seen as a necessary prerequisite for sustainable long-term economic growth (Fischer, 1992, Clarida et al., 2000).

According to the UN approach, macroeconomic stability is determined by a set of indicators such as inflation, employment/unemployment rate, volatility in the current account of the balance of payment, public finances, interest rate volatility (including government bond rates), the level of inequality and exchange rate stability (UN, 2016).

The EU normatively defines macroeconomic stability as a combination of four criteria: low and stable inflation, low long-term interest rates, stability of public finances (low deficit and debt), and exchange rate stability (EU, 2012). A similar definition is given by the World Bank experts (Corbo et al., 1992).

To some extent, the area of responsibility of monetary policy covers all aspects of macroeconomic stability. In the modern practice of monetary regulation, monetary policy often focuses on achieving such goals as price stability, financial stability and sustainable economic growth (IMF, n.d.a).

However, while in peacetime the main focus of the central bank's monetary policy is on price stability, in wartime the focus shifts to demand support (Patel, 1953) and the stable functioning of the public finance system (Poast, 2015).

The war radically changes the principles of the central bank activity. Traditionally, the monetary policy of the central bank relies on the functioning of market mechanisms for decision-making by economic agents on price formulation, investment, consumption or savings. The war significantly undermines the market principles of these decisions, hinders the transmission mechanisms, which, in turn, leads to monetary policy failure as a mean for achieving the goal of price stability (IMF, n.d.b).

Whittlesey (1943) notes that the war emphasizes the importance of the central bank, raises its prestige, but reduces its independence. The war expands the scope of the central bank's tasks as a fiscal agent, lender of last resort, management of international reserves, and requires the adjustment of its policies to the needs of public finances.

The war destroys the structural links of the economy, which requires appropriate stabilization policies and adequate financing, which can only be ensured with the full harmonization of monetary and fiscal policies. During World Wars I and II, 60-80% of US federal budget expenditures were financed by borrowing from banks and the Federal Reserve System (Fed), the terms of which were the subject of a particular agreement between the Fed and the US Treasury (Hall & Sargent, 2022).

Kandil (2000) proved that the harmonization of fiscal and monetary policy in times of crisis can

effectively stabilize economic growth at the equilibrium level, while sharp and uncoordinated changes in monetary policy lead to lower output.

Reinhart and Sbrancia (2015) and Sargent et al. (2019) note that the scale of the needs of military government budgets makes it impossible to fully finance them on a market basis and leads to the use of direct support them by monetary authorities and even the application of financial repression, which in the future creates long-term post-war debt problems.

In economic theory, the nature of the relationship between monetary and fiscal policy is considered in the context of fiscal and monetary dominance (Sargent & Wallace, 1981; Aiyagari & Gertler, 1985) or active and passive fiscal and monetary policy (Leeper, 1991). Fiscal dominance occurs when large amounts of government borrowings impede adequate monetary transmission in financial markets, which prevents the central bank from effectively transmitting interest rate impulses to financial and commodity markets and achieving inflation targets. In particular, Sargent and Wallace (1981) note that in the conditions of a fiscal deficit, the central bank's ability to influence inflation is limited: if the interest rate exceeds the rate of economic growth, inflation will accelerate regardless of the dynamics of the interest rate.

Fleming (1962) and Mundell (1963) found that the general framework of monetary policy can be represented as a system of regulation of three components: the exchange rate, interest rates, and capital flows. The most manageable framework of monetary policy provides strict control over all mentioned components. Such a framework was widely used in the world practice in the era of the Bretton Woods system (in the period after World War II up to the mid-70s of last century).

In the current context of globalization of capital flows, the use of the monetary exchange rate framework based on a fixed exchange rate can generate risks of instability, if the country has a lack of fiscal discipline and an insufficient level of international reserves (Khatat et al., 2020).

At the same time, Rey (2015) suggest that in view of more powerful impact of capital flows from ad-

vanced countries, monetary regimes on the basis of the floating exchange rate need introduction of the some kind of capital control for preserving interest policy independency. IMF (2022a) indicates that under the extraordinary external shocks application of the capital flows restrictions and foreign exchange interventions are recommended options for ensuring counter-cyclical effectiveness of the monetary policy.

Schmukler (2003) argues that free capital flows under the spill-overs of crisis events can provoke the further financial destabilization through the following effects:

- herd behavior of investors, speculative attacks, irrational actions, "financial bubbles", etc. The chain reaction of financial crisis can arise from asymmetric information, when, for example, investors consider the exchange rate overestimated, resort to speculative attacks on the currency and provoke a balance of payments crisis even in the absence of economic preconditions for such crisis;
- "effects of infection" or transmission of financial shocks between countries. The emergence of financial shocks in one part of the globe almost instantly spills over to another – to the financial markets of countries with similar socio-economic conditions.

During extraordinary events, such as war or economic crisis, the transmission mechanisms of monetary policy are destroyed, which makes impossible to use them effectively to achieve the goals of price stability. In such circumstances, shifting the focus of central bank policy to support economic growth (including the use of large-scale programs to saturate the economy with liquidity) is considered consistent with the central bank's mandate, as it aims to restore its ability to influence price dynamics, namely to restore monetary impulses, which the central bank sends through financial markets to sectors of the real economy. In 2015, this statement was supported by a decision of the EU Supreme Court (CJEU, 2015). The use of this practice became common during the Global Financial Crisis and the COVID-19 Pandemic (IMF, 2021). As the President of the ECB K. Lagarde stated in her speech on the launch of as-

set repurchasing programs during the COVID-19 Pandemic, “Extraordinary times require extraordinary action. There are no limits to our commitment to the euro” (ECB, n.d.).

The theoretical basis for justifying the feasibility of expanding the money supply during economic crises is Fisher’s equation (1922), which links the productivity of the economy (GDP) with the money supply and its velocity:

$$Y = MV, \quad (1)$$

where Y – nominal GDP; M – money supply; V – velocity.

According to modern theoretical findings (Anderson et al., 2017; Blanque, 2021) and empirical data (FRBSL, n.d.), during economic crises, the velocity of money decreases, which is associated with the complication of production and economic relations between companies and increasing level of risk. Anderson et al. (2017) point out that at the beginning of the crisis, it is possible to temporarily increase the speed of money supply due to the desire of consumers to stockpile in difficult times, but in the long run after job cuts and falling incomes – aggregate demand falls and money supply decreases.

A fall in the velocity of money means that part of the money supply is withdrawn from economic circulation, frozen in the accounts of enterprises that have stopped or suspended their activities. In such conditions, the restoration of the pre-crisis level of economic productivity (Y) becomes possible only with an increase in the money supply in the economy (M). That is, the use of monetary instruments to expand the money supply during the crisis (including a significant reduction in interest rates) has a stabilizing effect allowing to maintain liquidity in the economy, reduce risk premiums and interest rates, which saves jobs and counteracts the spiral of bankruptcies (Benigno et al., 2020; Chen et al., 2012).

The war further complicates the problems of macroeconomic stability and increases the role of the state in supporting economic processes. Since the functioning of traditional financial markets is usually complicated during the war, the main

channel for directing additional liquidity to the economy is the fiscal deficit channel (Ohanian, 1997; Poast, 2015).

A specific consequence of the war for monetary policy is the reduction of the neutral interest rate. According to the concept of Wicksell (1907), a neutral interest rate balances the return on investment in financial assets with the return on non-financial investment projects without inflationary consequences for the economy. Laubach and Williams (2003) later proved that a neutral interest rate is positively correlated with economic productivity and consumer sentiment. During the economic crisis (especially the war that takes place on the own territory) the productivity of the economy and potential GDP decreases, this reduces the demand for money and leads to a decrease in their neutral value (Danylyshyn & Bohdan, 2021). The consequence of the fall in the neutral rate is the extension of ground for expansionary monetary policy and the reduction of the loan interest rate in the economy.

At present, the measures of the central banks to radically reduce interest rates or direct channel the money supply to the economy are called as “unconventional monetary policy” and include the following options: purchase of government bonds, purchase of private assets, setting negative interest rates on central bank deposits, preferential bank refinancing rates for specialized types of lending (Ferrando et al., 2021). The immediate goals of unconventional monetary policy are usually to restore the functioning of financial markets, improve financial intermediation, provide access of the state, firms and individuals to the necessary financing for overcoming the crisis (IMF, 2013).

Ferrando et al. (2021) emphasize that the application of unconventional monetary policy strengthens the monetary transmission of the bank lending channel, forming in firms and individuals’ expectations on resuming access to credit in the future, maintaining the continuity of consumption and investment, preserving economy’s jobs and value added chains.

Numerous authors argue that government bond purchasing programs, implemented in recent years in the world’s leading countries, have achieved the

expected effect. The cost of government borrowings has declined, allowing fiscal authorities to implement anti-crisis programs without the risks to debt sustainability. Banks, in turn, have been able to expand lending to large and small firms as the price and value of their government bond assets have increased and bank capitalization has improved (Altavilla et al., 2016; Chakraborty et al., 2020).

Grosse-Rueschkamp et al. (2019) prove that private asset purchasing programs also achieved a stabilizing effect – the servicing cost of corporate debt decreased, big companies reduced the demand for bank loans, which stimulated banks to expand lending to the economy, including for small and medium-sized businesses.

Heider et al. (2019) concluded that the setting negative interest rates on central banks' deposit operations also had a stabilizing effect – banks with large deposits increased lending to compensate for losses on the keeping of their balances with central banks, which improved financial intermediation.

Maintaining debt stability in the face of high military borrowings requires more radical action than unconventional monetary policy. During World War II and until the 1980s, the normal practice of central banks in all developed countries was to impose certain financial repressions (Reinhart & Sbrancia, 2015): a) direct and indirect restrictions on interest rates; b) the use of various regulatory restrictions on banking institutions aimed at forcing

them to lend to the state; c) direct policy measures to channel bank resources to lending for certain types of activities.

Cukierman (1992) points out that during World War II, central banks used the following types of financial repression: outright purchase of government bonds at low interest rates, targeting by central banks of certain yields on government bonds through open market operations, limiting the upper limit of bank lending rates on loans to public sector entities, a cap on setting interest rates on demand deposits, restrictions on interest rates on savings deposits.

For example, during World War II, the Fed purchased 3-month treasury bills at a fixed rate of 3/8%, 12-month treasury bills at a rate of 7/8% per annum, and targeted yields on long-term fixed-income bonds through open market operations at levels agreed with the US Treasury (maximum 2,5% per annum) (Reinhart & Sbrancia, 2015). Whittlesey (1942) notes that the low interest rate of short-term bonds and the possibility of their use in repo transactions of banks with the Fed has created an active circulation of such bonds in the US financial market. Bonds were used by banks in their operations alongside ordinary money, which supported both the liquidity of banks and the liquidity of public finances.

According to End et al. (2019), during World War II, central banks purposefully contributed to the

Table 1. Interest rates and maturities of government bonds during World War II

Source: Compiled by the authors according to End et al. (2019).

Country	1940	1941	1942	1943	1944	1945	1940–1945		
	Nominal interest rates on government bonds in national currency, % per annum						Average nominal rate, % per annum	Average real rate, % per annum (ex-post)	Average maturity, years
Argentina	4.4	3.9	3.8	3.6	3.6	3.6	3.8	–1.4	30
Australia	3.4	3.2	3.2	3.1	3.1	3.1	3.2	–0.5	14
Canada	2.2	2.3	2.4	2.5	2.6	2.7	2.5	–0.7	11
France	4.5	4.3	3.7	3.7	3.2	3.2	3.8	–19.6	39
Belgium	4.0	4.0	4.0	3.7	3.7	3.7	3.8	–12.7	10
Germany	4.0	3.7	3.6	3.6	3.6	–	3.7	1.1	23
Japan	3.4	3.4	3.4	3.4	3.4	3.5	3.4	–21.5	17
Great Britain	3.0	2.7	2.7	2.7	2.7	2.7	2.8	–4.6	15
New Zealand	3.5	3.3	3.0	2.9	2.8	2.9	3.1	0.3	11
USA	2.2	2.1	2.1	2.1	2.2	2.2	2.2	–2.3	10
AVERAGE	3.5	3.3	3.2	3.1	3.1	3.1	3.2	–6.2	18

lower rates of government borrowing: despite bearing the military risks, nominal and real interest rates on domestic government bonds decreased compared to pre-war levels, and the average maturity of such bonds increased (Table 1).

2. GENERALIZATION OF MAIN STATEMENTS

The general theoretical framework for the formulation of monetary policy is built within three system components – the exchange rate regime, the level of freedom of capital flows and the level of freedom in conducting interest rate policy. The theoretical rule is that a monetary regulator cannot maintain both a fixed exchange rate and independent interest rate policy if the economy maintains the free capital flows. A free cross-border capital flows cause the adjustment of domestic financial markets, which restrains the central bank in making independent decisions and does not allow to achieve both inflation and exchange rate stability goals (Aizenmann, 2010; Ray, 2015).

Currently, most central banks in the world operate under different variations of the monetary regime of the fixed exchange rate (42%), but in the European region (as in most emerging markets), the predominant monetary regime is inflation targeting – 60% (Figure 1).

The choice of monetary regime depends on the importance for the country of achieving the certain goals. The fixed exchange rate regime is more vulnerable to crises and speculative attacks, as it is prone

to the accumulation of imbalances that may manifest themselves in periods of global instability. At the same time, the fixed exchange rate regime promotes deeper trade and financial integration by reducing transaction costs and uncertainty associated with exchange rate volatility. Instead, the inflation targeting regime provides relatively higher stability, as capital imbalances are automatically offset by flexible exchange rates. However, the inflation targeting regime tends to exaggerate inflation risks and slow down economic growth (Nordstrom et al., 2009; Ostry et al., 2012).

In times of shock, a fixed exchange rate regime combined with tight capital control can provide financial stabilization and predictability for some time, but the downside is the reduction in foreign exchange reserves (Khatat et al., 2020).

In a crisis, the macro-stabilization role of monetary policy changes, its main priorities are to ensure the stability of financial markets and public finance, which are achieved through the instruments of increasing the money supply in the economy (IMF, 2013; CJEU, 2015).

For such conditions, the monetary regime with capital control, that can be combined with both the fixed exchange rate and the independent interest rate policy, is the most appropriate. It not only stabilizes foreign exchange markets, but also to some extent makes it possible to manage inflationary expectations through the exchange rate channel of monetary policy. The latter is especially relevant, because during the war the dependence of the economy on critical imports increased. Capital flow management

Source: Compiled by the authors according to the IMF (2020).

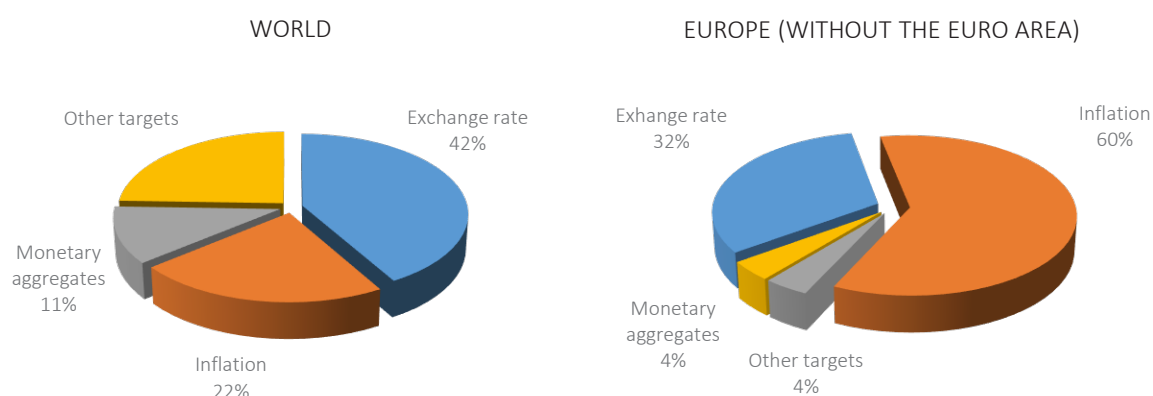


Figure 1. Targets of monetary regimes in 2020

allows the central bank to pursue a stabilizing monetary policy, to avoid excessive exchange rate fluctuations and to reduce the duration of the economy's adaptation to new conditions (IMF, 2022a).

Stabilization (countercyclical) monetary policy implies directing additional liquidity to the economy through conventional monetary policy instruments, such as interest rate management, open market operations, changes in collateral requirements, management of reserve requirements for banks, and also as unconventional monetary policy instruments – asset purchase programs, forward policy guides by public communications.

Interest rate is the main instrument of monetary regulation of money supply in peacetime. It affects the velocity of money supply. When the zero-bound problem is reached, it loses efficiency, which requires the use of other economic stimulus instruments.

Open market operations are an instrument for regulating the money supply by buying / selling securities on the open market to influence short-term interest rates. The expansion of securities purchases by the central bank during the crisis (so-called quantitative easing) indirectly reduces the cost of bank loans to the economy.

Unconventional monetary policy operations are instruments of purposeful saturation of the economy with liquidity and consist of large-scale programs to purchase of the long-term government and corporate assets, including operations on the primary market. They are used in conditions when neither the interest rate nor the open market operations make it possible to adequately stimulate the economy.

Collateral requirements and refinancing rates are an instrument for regulating the money supply by changing collateral requirements for obtaining commercial bank loans from the central bank. In critical situations, the central bank may completely withdraw the collateral requirement ("blank" lending) or set preferential refinancing rates for specialized bank loans.

Reserve requirements for banks in accordance with available deposits. The reduction in this required reserve frees up more capital for banks to offer loans or invest in bonds.

Public communications are an important instrument of monetary policy, which in normal circumstances serves as a tool for managing inflation expectations, and in the extraordinary circumstances – an instrument to prevent panic in financial markets. It should be used so as not to limit the range of possible monetary instruments (Checkley & Piris, n.d.).

According to the results of studying the world experience of monetary regulation, the options of monetary policy instruments in the conditions of extraordinary shocks are generalized (Table 2).

Table 2. Monetary policy tools for extraordinary conditions

Source: Compiled by the authors.

Monetary policy instruments	Options for crisis conditions
Key interest rate	Rate reduction taking into account the level of falling aggregate demand
Interest rate on deposit operations of the central bank	Negative real and (once in a while) nominal interest rates
Bank refinancing	Preferential refinancing rates secured by certain types of assets. "Blank" loans
Open market operations	Purchasing of financial assets to saturate financial markets with short-term liquidity («quantitative easing»)
Specialized asset purchasing programs	Targeted purchasing of long-term government and corporate assets
Interest rate on government bonds	Purchasing of bonds at a fixed rate. Targeting the market interest rate of bonds at a certain level of yield
Reserve requirements for banks	Reduction of requirements if the total liquidity of the banking system is sufficient
Public communications	Explanations of how the actions of the central bank are consistent with the monetary policy objectives

In peacetime, the principles of monetary policy and its targets are based on the idea that economic processes are driven by market incentives. However, in a military economy, the main priority of its subjects' behavior is security, not economic gain. In addition, the giant destruction of productive and social capital causes drastic changes in the level and structure of demand. The capital is not invested in traditional economic cycles, which dramatically reduces the speed of money supply. This changes the nature of formation of macroeconomic indicators, increases the dependence of the functioning of economic processes on government incentives and, accordingly, should be taken

into account when formulating the principles of monetary regulation of the military economy.

Inflation. Within the concept of the neo-Keynesian model of the economy, which underlies the modern practice of using monetary policy instruments (Woodford, 2003), there is a direct relationship between economic growth and inflation rates along the economic cycle. It is assumed that excessive demand (public or private) leads to a situation of overheating of the economy, causes a positive gap in output and rising inflation expectations, which, according to the Phillips equation, are associated directly with the inflation. In turn, demand shocks are fueled by credit resources of the banking sector and depend on the interest rate. That is, inflation and business profits are elastically dependent.

However, the peculiarities of formation of new value in a military economy are radically different from the peacetime conditions. As a rule, enterprises of the military economy operate under low capacity utilization caused by loss of labor or physical capital, problems with suppliers, logistics, security, etc. Under such conditions, inflation arises not as a source of new profits for an overheated economy, but as a source of compensation for losses.

In the military economy prices rise either due to an increase in the costs or due to the growth of specific demand for certain groups of basic necessities (food, fuel, medicines, etc.). In both cases, prices go up without an increase in income of consumers of goods and services. Moreover, security requirements force people to spend both their current income and savings. In such conditions, monetary policy is not able to influence the interest rate, changes in consumer preferences or changes in the pricing policy of producers.

A number of authors (Benigno et al., 2020; Chen et al., 2012; Ferrando et al., 2021) consider it reasonable for central banks in times of structural breakdowns such as war or other insurmountable disasters to temporarily refrain from applying monetary policy to achieve inflation targets, focusing on maintaining demand and liquidity in the economy. During the war, relative price stability was achieved through administrative price

controls and sales rationing, rather than through monetary instruments (IMF, n.d.b).

Neutral rate. Another statement that follows from the generalization of monetary theory is that the neutral interest rate decreases during extraordinary supply shocks.

The value of the neutral rate is one of the benchmarks for central bank decisions to set a certain level of key interest rate to ensure the desired (restrictive or expansionary) effect on the economy. As war destroys the productive and labor potential of the economy, significantly inhibits its productive activity, it reduces the demand for money and, consequently, leads to a decrease in the neutral price of money.

The role of the state. In monetary theory fiscal dominance is considered one of the factors that hinders the effective conduct of monetary policy (Sargent & Wallace, 1981). Public finances, due to large-scale debt financing of the military fiscal deficit, create excessive pressure on the domestic borrowing market, which hampers the achievement of monetary policy goals preventing the proper functioning of transmission mechanisms and closing most of the domestic debt market.

However, an increase in the fiscal deficit during the war is a natural process, which is explained by the actualization of the government contingent liabilities to maintain the safe functioning of economic relations in the country and save the lives of its citizens. This dramatically increases the volume of state intervention in the economic activities of enterprises and the functioning of financial markets. The fiscal deficit and debt during the war increase to volumes that are outside the standard parameters of macroeconomic stability, which requires a special order of their financing to minimize the effects of the crisis. Therefore, in a military economy the strengthening of fiscal dominance over monetary policy is seen as a categorical imperative for the central bank (IMF, n.d.b). The harmonization of monetary and fiscal policy is carried out in such a way that the policy of interest rates, exchange rates and regulation of capital flows meets the interests of financing the government budget, which bears the main burden of the military economy.

Monetary financing of the government budget. In monetary theory, monetary financing of the budget deficit is seen as a powerful factor of inflation, as it leads to unsecured growth of money supply excessively stimulating demand, which grows faster than production and generates price increases. Therefore, monetary emission is often explicitly prohibited by law in the practice of monetary regulation in the normal functioning of the economy (IMF, n.d.b).

However, the realities of the military economy are such that budget needs can exceed tax revenues several times, while market borrowings may be unavailable. Therefore, monetary financing of the fiscal deficit is an acceptable option for wartime policy. At the same time, it is critical to maximize the use of these emission funds in conversion investment projects of newly created and restructured enterprises to ensure a productive circulation of money supply in the economy and to reduce the risk of excessive inflation.

For example, with the onset of the COVID-19 pandemic, the US Federal Reserve and the ECB took the following steps to support aggregate demand, public finances and reviving the credit process (Altavilla et al., 2016; Ferrando, 2021):

- purchasing programs for government bonds and other assets (OMT and CSPP in the EU and LSAP in the US);
- program of targeted long-term refinancing of bank loans to the corporate sector (TLTRO III in the EU);
- long-term preferential refinancing program for banks (PELTROs in the EU);
- corporate bond lending and redemption program (PMCCF in the USA);
- municipal and regional bond redemption program (MLF in the USA).

3. DISCUSSION

Russia's war against Ukraine has set a special precedent for the modern paradigm of monetary theory. Full-scale fighting took place in the country, in which monetary regulation was carried out under

the monetary regime of inflation targeting, and the banking system was reformed in accordance with international standards. The study of the effects of the military economy on the monetary sphere of Ukraine and the analysis of effectiveness of decisions made by the central bank makes it possible to highlight the problematic issues of monetary theory and improve the practical aspects of its application in specific circumstances of military shocks.

On the eve of the war, the financial system of Ukraine was characterized by the weak development of all channels of monetary transmission – credit, deposit, stock-market, foreign exchange. Thus, the level of bank lending to the economy on performing loans was only 15% of GDP, the ratio of household deposits to their consumer spending – only 20%, the share of non-residents in government bonds – less than 10%. Such indicators were much lower than in other countries with emerging markets and did not allow an adequate transmission of monetary policy impulses to financial and commodity markets.

Just before the war inflation was quite high (11%), but it was not caused by demand factors, rather, by factors of augmenting production costs and world prices (for example, on the eve of the war energy prices increased by 2,5 times). The war only intensified the effects of non-monetary inflation, which accelerated to 18% in May 2022 per year.

The monetary policy response of the National Bank of Ukraine (NBU) in the first months of the war complied with the international standards of behavior of central banks in the face of extraordinary shocks.

The NBU immediately imposed restrictions on the withdrawal of capital from the country, set a fixed exchange rate regime, fixed a key interest rate and abandoned its use as an instrument to influence inflation expectations (suspended the monetary regime of inflation targeting). Bank refinancing of banks was introduced to maintain bank liquidity as well as direct monetary financing of the fiscal deficit to maintain the liquidity of public finances.

The measures taken by the NBU made it possible to maintain the stability of the banking system,

Source: Compiled by the authors according to the NBU.

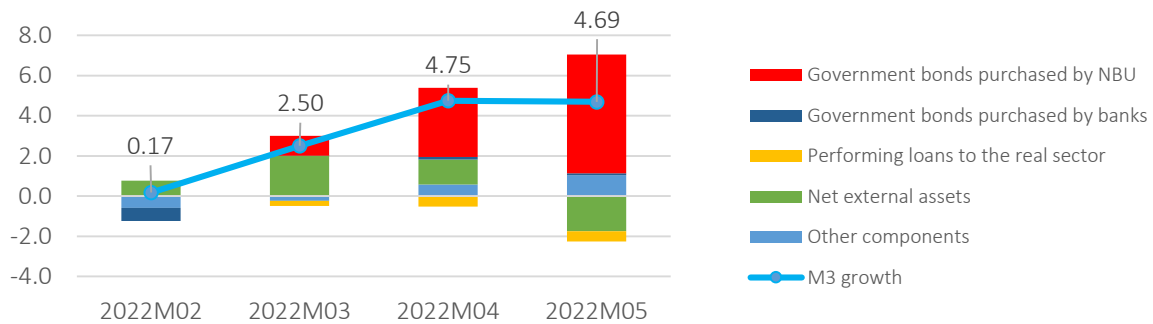


Figure 2. M3 in Ukraine, as % of February 23, 2022 (beginning of the war)

however, the threats to macroeconomic stability persist, and monetary effects in general proved to be restrictive for the economy.

The fundamental problem of the monetary sphere of the Ukrainian economy was a sharp decline in the neutral value of money, i.e. the equilibrium interest rate, which balances the borrower's ability to take a loan with the bank's ability to provide loans without inflation. According to the theory, the neutral value of money (natural interest rate) in the economy decreases under the influence of falling potential GDP and rising supply of savings (Laubach & Williams, 2003).

In Ukraine, real GDP declined significantly (-35%). Bank deposits fell not so much (-8% in real terms). Factors restraining the decline in savings were the money issuance by the central bank (6,5 billion US dollars or 4,5% of GDP) and international aid (7 billion US dollars or 5% of GDP as of June 2022) (NBU, n.d., MFU, n.d.).

Therefore, the value of borrowed money in the economy of Ukraine should be reduced based on the balance of supply and demand of money in order to stabilize the economy. However, the NBU assessed inflation threats significantly higher than the threats of deepening economic crisis and raised the key interest rate (up to 25% per annum). As a result, the economy received a restrictive shock from monetary policy, the credit process stalled, foreign exchange risks and debt stability risks in the fiscal sector intensified.

Restrictive monetary shock. During three months of the war period, the money supply M3 grew much slower than inflation (4,7% vs.

10,6%). At the same time, the main component of the money supply growth was the NBU's money issuance to finance the fiscal deficit - 80% in the growth structure (Figure 2). Instead, the share of bank loans in M3 growth was negative: government bonds purchased by banks increased by only 1% during the war, and bank loans to the real economy fell by 4%. That is, in a period when it is important to maintain the speed of money supply, banks, on the contrary, reduced their intermediary activity. At the same time, banks' balance sheets increased, and the amount of excess reserves that banks passively hold in central bank accounts during the war increased by 60% (NBU, n.d.).

The directive hike of the key interest rate up to 25% per annum occurred against the background of a clear decline in the return on tangible assets of the real economy. Before the war, the ratio of GDP to tangible fixed assets of the economy was about 11%, which roughly corresponded to the basic return on financial assets (the key rate of the NBU before the war was 10% per annum). The emergence of disparity between the return on financial and real assets fundamentally leads to the accumulation of imbalances in the economy, which can lead to financial crisis.

Foreign exchange risks. The war dramatically exacerbates the need for imports, both due to large-scale losses of assets and arms purchases, and due to the cessation or suspension of domestic enterprises that produced goods for the domestic market. Therefore, in order to eliminate fundamental foreign exchange risks it is necessary to stimulate the creation of centers for the generation of new value added within

Source: Compiled by the authors according to NBU, MFU, and DTUS.

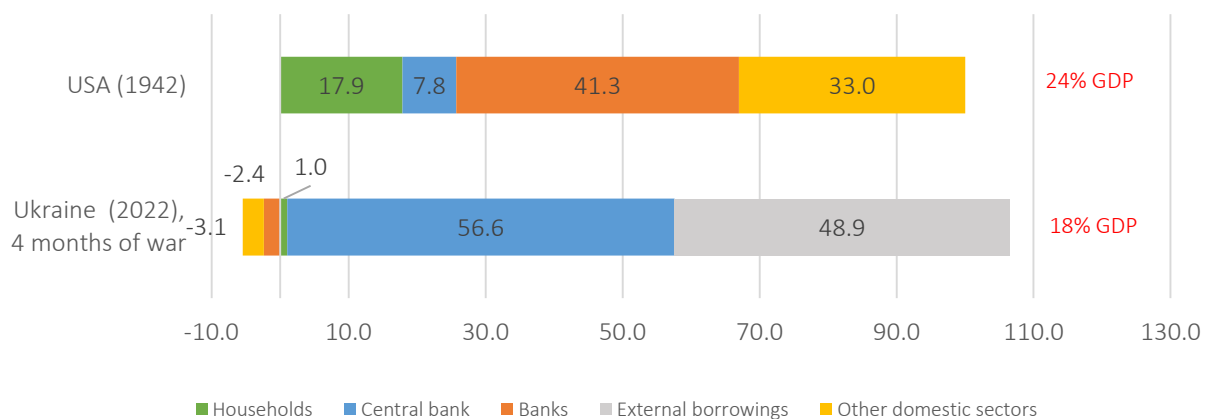


Figure 3. Financing of the fiscal deficits in the USA and Ukraine, % of the total

the country – localized industries that produce import-substituting products. However, the increase in the key interest rate is counterproductive in the context of achieving such stabilization targets.

Fiscal risks. The reduction in real GDP has led to a narrowing of the tax base of public finances, as a result of which the need to finance the fiscal deficit has reached gigantic magnitude – 18% of GDP (IMF, 2022b).

The increase in the key interest rate has driven additional constraints for government finances. According to the new interest rate design of central bank, commercial banks began to receive 23% per annum on NBU deposit certificates (banks' reserve balances, which they keep in the central bank). As a result, government bond yields (11% per annum) became unattractive to banks and the latter stopped lending to the state. All additional fiscal needs were almost completely covered by the direct lending of the NBU and external borrowings (Figure 3).

In contrast to Ukraine, the monetary policy of the US Federal Reserve during World War II was as consistent as possible with the policy and instructions of the US Treasury (Whittlesey, 1943), which made it possible to obtain an optimal structure for financing the federal budget deficit and maintain macroeconomic stability. The Fed lowered the key interest rate, directly purchased government bonds, maintained stable bond yields through open market operations, repur-

chased short-term fixed-rate bills (3/8% per annum), provided technical support for bank loans under government guarantees, and distributed government bonds to individuals and businesses in various parts of the United States, conducted campaigns and provided support for government borrowings.

The Fed's actions helped strengthen the intermediary efficiency of the financial sector. During the war banks' domestic credit (loans and investment to business and government) grew by 25-30% annually (FRS, 1945). During the first year of the war, banks financed 41% of government borrowings to cover the US fiscal deficit, while the Fed – only 8%. The Fed's policy helped stabilize the long-term government bond rates at 2.0-2.4% per annum, with average inflation during the war at 5.2% (DTUS, 1945). The US fiscal deficit was largely aimed at increasing the productivity of the real sector and creating new jobs for government procurement projects. This effectively framed the circulation of money within the economy and contributed to the stabilization of the economy (Table 3).

Instead, during the war in the financial sector of Ukraine, there was an unproductive increase in excess liquidity of the banking system (a twofold increase or +3 billion dollars during 3 months) with an acute liquidity deficit in the fiscal and real sectors. This can be identified as a new threat to the macroeconomic stability of the military economy, as the unproductive accumulation of money supply will sooner or later put pressure on prices.

Table 3. Comparison of the US and Ukrainian monetary policy tools during the war

Source: Compiled by the authors according to the NBU (n.d.), IMF (2022.b), and Whittlesey (1943).

	Ukraine 2022	USA 1942
Prerequisites		
Inflation	20%	11%
Fiscal deficit	18% GDP	24% GDP
Real GDP growth	–35%	+19%
Monetary policy framework		
Fixed exchange rate (or gold standard)	Yes	Yes
Restrictions on capital flows (or gold flows)	Yes	Yes
Subordination of monetary policy to the fiscal policy	No	Yes
Central bank operations		
Key interest rate	↑ up to 25% per annum	↓ up to 0.5% per annum
Central bank interest rate paid to banks on the balances of their funds in the central bank (deposit certificates)	23% per annum	Not applicable
Purchasing of government bonds in the primary market	Yes	Yes
Measures to reduce the cost of market government borrowings, including:	No	Yes
purchasing of government bonds on the open market to maintain a certain level of yields	No	Yes
purchasing of short-term government bills at a fixed rate and their subsequent sale to commercial banks	No	Yes
refinancing of banks at a preferential discount rate secured by government bills and bonds (repo)	No	Yes
Purchasing of bank bonds on the open market	No	Yes
Changes in bank reserve requirements	No	Yes
Technical support for loans under government guarantees	No	Yes

The experience of the United States shows that in the presence of a clear and coherent plan for financing the military economy, the use of large-scale monetary stimulus measures allows maintaining macroeconomic stability. During the four years of the war, the US fiscal deficit was almost 100% of GDP, but in 1943–1953 inflation remained moderate – an average of 4.7% per year, while the real GDP increased by 43% in 10 years (BEA, n.d.).

Given the above-mentioned circumstances, the macro-stabilization effectiveness of Ukraine's monetary policy can be enhanced by the following:

- harmonization of monetary policy measures with fiscal policy priorities;
- reduction of the key interest rate taking into account changes in the potential GDP and neutral interest rate in the economy;
- cancellation of interest remuneration of banks for passive accumulation of funds on deposit accounts of the central bank;
- introduction of instruments of the targeted preferential refinancing of bank loans, which

will strengthen monetary transmission and support economic activity of businesses.

The use of monetary stimulus gives better results when combined with certain instruments of fiscal policy, which productively links the money supply in targeted projects of job creation and new added value generation, and namely:

- public investments in new enterprises;
- state aid for business expansion and job creation;
- government guarantees to loans and compensation of credit interest rates;
- government procurements of goods and services;
- nationalization of systemically important businesses, which are threatened with bankruptcy.

By combining these instruments of monetary and fiscal policy the money supply of the military economy will be optimized, the money supply

will be concentrated in the process of creating new value added, part of which will be redistributed through public finances (taxes and other charges), which will reduce the need for additional money emission by the central bank and contribute to macroeconomic stabilization.

CONCLUSIONS

The implementation of monetary policy in a military economy faces a number of fundamental obstacles that significantly reduce the effectiveness of conventional monetary instruments, namely:

- distortion of market principles of business behavior in pricing and investment: state price regulation, shortage of goods and security factors play a much higher role than expected profits;
- a significant reduction in the neutral value of money due to falling demand for money from the real economy;
- change in the nature of inflation, the determinants of which are mainly non-monetary structural factors of cost growth, rather than factors of demand growth;
- increasing vulnerability of financial markets to panic attacks;
- enhancing role of the state in ensuring the functioning of commodity-money relations;
- increasing share of the shadow economy.

In general, this weakens the ability of the banking system and financial markets to transmit the impulses of monetary policy to commodity markets.

The key threat to the macroeconomic stability of the military economy is an increase in the volume of money emission and debt financing of the fiscal deficit due to the reduced ability of the state to carry out adequate tax collections from the economy. A by-side effect of this problem is unproductive multiplication of the money supply within the financial sector. For example, in 2022 in the military economy of Ukraine, the balance sheets of commercial banks increased by 40%, and their lending to the real and fiscal sectors decreased. Therefore, an important goal of money circulation in the military economy is to increase the efficiency of financial intermediation, which can be achieved through the use of central bank instruments to expand the money supply.

The monetary support of the national producer and job creation can restrain the growth of prices due to the concentration of the new money supply in the objects of generating new value added while applying measures to limit consumption. A historical example of this situation was demonstrated by the United States during World War II, when the huge federal budget deficit (generally about 100% of GDP), not only had no negative consequences for inflation, but even vice versa – after inflation at 11% in 1942 in the following war years it dropped to 3% per year (on average).

Based on the results of generalizing theoretical principles and world experience of monetary regulation in the economy, the design of monetary policy for the conditions of the military economy of Ukraine is proposed:

- harmonization of monetary policy decisions with fiscal policy priorities;
- setting a fixed exchange rate regime;

- introducing full control over the cross-border capital flows;
- shifting the priorities of monetary policy from inflation to the goals of supporting aggregate demand;
- setting (reducing) the level of the key interest rate taking into account changes in aggregate demand and the neutral value of money in the economy and abandoning the use of the key rate as an instrument for managing inflation expectations;
- abolition (or drastic reduction) of the central bank's interest rate on deposit operations (paid on banks' reserve balances);
- introducing the instruments for preferential targeted refinancing of bank loans to support monetary transmission and financial intermediation of banks;
- support for the domestic government bond market, including a limited monetary emission and outright purchase of bonds, targeting of interest rates on long-term bonds, repo transactions with banks on short-term bonds.

The implementation of these initiatives will be successful if the fiscal policy measures aimed at economic conversion, creation of new jobs and new value-added centers for the effective concentration of the new money supply are implemented in parallel. This will harmonize the military economy's cash flows, reduce the demand for imported products, improve the intermediary functions of banks, protect the economy from excessive inflation and devaluation, and maintain macroeconomic stability.

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