

# Monetary Measures of Macroeconomic Regulation of the National Economy

Oleksandr Ivashyna<sup>1</sup>, Natalia Arkhireiska<sup>2</sup>, Adel Bykova<sup>3</sup>, Svitlana Ivashyna<sup>4,\*</sup> and Luydmila Novikova<sup>5</sup>

<sup>1</sup>Full Doctor in Economics, Professor at the Department of Management of Foreign Economic Activity, University of Customs and Finance, Dnipro, Ukraine.

<sup>2</sup>PhD in Economics, Associate Professor at the Department of Banking and Financial Services, University of Customs and Finance, Dnipro, Ukraine.

<sup>3</sup>PhD in Economics, Head of the Department of Economics and Social and Labor Relations, University of Customs and Finance, Dnipro, Ukraine.

<sup>4</sup>PhD in Economics, Associate Professor at the Department of Banking and Financial Services, University of Customs and Finance, Dnipro, Ukraine.

<sup>5</sup>PhD in Economics, Associate Professor at the Department of Banking and Financial Services, University of Customs and Finance, Dnipro, Ukraine.

**Abstract.** Monetary policy occupies one of the key positions in macroeconomic regulation, on the effective implementation of which the stability of economic growth, the reduction of unemployment to natural levels etc. The purpose of the study is to identify the results of the practical application of the monetary theory's theoretical generalisations for the use of effective monetary policy instruments in Ukraine under conditions of socio-economic instability and weak inclusive institutions of national economy development. The study systematises the main vectors of monetary policy improvement and possibilities of its adjustment. By analysing the key aspects of the institutional framework for monetary regulation under conditions of financial instability, it is established that, in coordinating fiscal and monetary policy, the independence of the central bank should be the primary condition for the construction of an optimal macroeconomic policy. The results of the study underline: price stability should be a prerequisite for the resumption of lending and economic activity after the recession caused by the cyclical crisis exacerbated by the COVID-19 pandemic. The results obtained provide insight into the current state and prospects of developing monetary policy in Ukraine, which in turn should be oriented not towards matching the exchange rate parameters with the volume of domestic government bonds issue (DGBs), but towards ensuring strict fiscal measures aimed at overcoming the effects of the budget crisis and achieving macroeconomic balance.

**Keywords:** Inflation; macroeconomic management; monetary policy; monetary supply.

## 1. INTRODUCTION

The economic situation in the country in recent years demonstrates the inability of existing institutions to ensure that the potential of Ukrainian society is harnessed for technological and institutional innovations. The absence or weakness of inclusive economic development institutions leads to a situation where monetary, financial and exchange rate policy instruments are not sufficiently effective to achieve financial stability and ensure economic growth. In this context, the issue of fiscal and monetary regulation of the economy, with the absence or weakness of inclusive institutions for national economy development, is of particular relevance. The relevance of this study from a scientific and practical point of view stems from the need (Aarle & Bovenberg, 1995; Aarle & Bovenberg, 1997; Alesina & Tabellini, 1987; Alesina & Tabellini, 1990; Andersen & Schneider, 1986; Beetsma & Bovenberg, 1997a; Beetsma & Bovenberg, 1997b; Bordo, 2018; Bordo & Schwartz, 2004):

to further develop the theory of monetary regulation of the economy in the context of constructing appropriate inclusive institutions; to identify the specifics of using monetary instruments in the macroeconomic management of the national economy; to improve the practice of implementing monetary measures.

In economic theory and practice, there has been a view since the time of Keynes that fiscal and monetary influence on the economy is extremely effective. As global experience shows, fiscal and monetary measures, reinforced by flexible exchange rate regulation, can ensure the achievement of certain macroeconomic results. Fiscal and monetary measures involve changes in taxes, expenses, money supply and interest rates, as long as certain parameters of inflation are respected. It is inflation that most significantly affects the scale of the multiplicative effects in the economy. Inflation control is therefore the most important focus of monetary policy (Constâncio, 2017; Dixit & Lambertini, 2001; Dixit & Lambertini, 2003a; Dixit & Lambertini, 2003b; Epstein, 2019; Exchange Portal..., 2020).

The processes of the Ukrainian economy in recent years have led to the conclusion that traditional monetary, financial

\*Address correspondence to this author at the Department of Banking and Financial Services, University of Customs and Finance, 2/4 Vladimir Vernadsky Str., 49000, Dnipro, Ukraine.  
E-mail: s-ivashyna7990-1@uohk.com.cn

and exchange rate policies can create conditions for ensuring financial stability, but are not sufficiently effective to ensure stable economic growth. In this context, the institutional organisation of state regulation of the economy becomes very important, and modern economic science provides a theoretical basis for a more realistic modelling, practical implementation and strategic interaction of fiscal and monetary policies (Fagiolo & Roventini, 2017; Fiebiger, 2016).

Meanwhile, the most important point in modern views on the theory and practice of the macroeconomic management of the economy lies not only in the need to justify the option of prudent monetary actions, but also in the understanding of weaknesses in the institutional framework for price stability and economic growth. Consideration of factors related to achieving institutional and financial stability throughout the economic system is crucial. This is why the issue of fiscal and monetary actions is the subject of analysis by financiers and institutionalists. In this regard, the purpose of the study is to identify the results of the practical application of the monetary theory's theoretical generalisations for the use of effective monetary policy instruments in Ukraine under conditions of socio-economic instability and weak inclusive institutions of national economy development (Friedman, 1968; Fullwiler, Bell & Wray, 2012; Furman, 2020; Hansen, 1953; Hicks, 1937).

## 2. LITERATURE REVIEW

Nowadays, there is a large number of academic studies on monetary policy, both in Ukraine and abroad. This issue is reflected in the works of representatives of the classical and neoclassical school, Keynesianism, neoclassical synthesis, monetarism and their modern modifications, and the issue of fiscal and monetary measures efficiency is still discussed within the framework of the Keynesian-monetary debate.

J. Keynes (1936) put forward in his time the idea of the dependence of the interest rate on the investor-acceptable return on capital supply. It did not contradict his views on the limited influence of money on the production process and the efficiency of the fiscal impact on the economy. M. Friedman (1968) drew attention to the impact of quantitative changes in the monetary supply in circulation on investments and production. J. Tobin (1969) supported the ideas of Keynesian theory in the monetary sphere, focusing on the structure and dynamics of the money supply ( $M_3$ ), establishing the impact of the supply of financial assets on the return on investments in the real economy (Krug, 2018; Kuzheliev & Zherlitsyn, 2020; Lavoie, 2019; Minsky, 1992).

The conflict of interests arising when undertaking fiscal and monetary measures has traditionally been solved by combining the fundamental principles of neoclassical analysis and Keynesianism (neoclassical synthesis). The basic model of neoclassical synthesis presented to the scientific community by J. Hicks (1937) ( $IS = LM$ ) has stood the test of time. It has been assessed by M. Bordo and A. Schwartz (2004) as being suitable for exposition purposes, macroeconomic analysis of open economies and the economic situation of IMF member countries. Creation of R. Mundell's version of the model  $IS = LM = BP$  (Mishkin, 2007; Mundell, 2001) and the inclusion of the labour market

equilibrium conditions into the analysis by A. Hansen (1953) made it possible to determine realistic multipliers and the effects of fiscal and monetary measures in an open economy.

The modern consensus between the proponents of neoclassics and Keynesianism, reflected in the new Keynesian model of general equilibrium within the framework of the "New Neoclassical Synthesis" (NNS), is discussed by J. Fagiolo and F. Roventini (2017). The New Keynesian model of general equilibrium includes the equation for optimising commodity market behaviour ( $IS$ ), takes into account the advances of "new macroeconomics", institutional factors (usually Taylor rule), and a number of basic monetary principles of M. Friedman. The model's simulation capabilities are weakened by institutional behavioural factors, rational expectations of economic agents and attempts to estimate monetary policy without using an explicit function  $LM$ . The Dynamic Stochastic General Equilibrium (DSGE) models developed on the basis of the New Keynesian model gave the new neoclassical synthesis additional substantiation (Mishkin, 2007).

Currently, the monetary-Keynesian debate continues predominantly within the framework of Modern Monetary Theory (hereafter MMT) and post-Keynesianism. S. Fullwiler, S. Bell and R. Wray (2012) argue that MMT proponents, along with post-Keynesians and institutionalists, have spread the heterodox tradition to study the nature of "modern" money and "financial instability". M. Lavoie (2019) sees MMT proponents as institutional post-Keynesians. The importance of institutional factors in monetary theory has been discussed by B. Fiebiger (2016), R. Nesiba (2013) and others.

A different view is held by G. Epstein: "to overcome the empirical and institutional constraints, MMT proponents introduce insignificant institutional, political and empirical factors into the analysis that disrupt their proposals for macroeconomic policy, which may be of interest to some policy-oriented adherents of MMT. This means that the proposals of monetary theory are now of little practical relevance for the formation of macroeconomic policy" (Exchange Portal..., 2020). One can agree with the opinion of F. Mishkin (2007) that there are and will always remain elements of art in the implementation of monetary policy: in other words, substantive judgements will always be necessary to achieve the desired results in the areas of both inflation and employment.

The Keynesian-monetary debate on the effectiveness of fiscal and monetary measures continues in the context of the strategic complementarity of fiscal and monetary policy instruments. This issue is presented in the studies of S. Schmitt-Grohe and M. Uribe (2005); M. Persson, T. Persson (2006) and L. Svensson (2011; 2020). Within the framework of the above discussion, A. Dixit and L. Lambertini (2001; 2003a; 2003b) concluded that strategic leadership of fiscal policy rather than monetary policy is more appropriate. T. Andersen and F. Schneider (1986) argue that fiscal and monetary policy independence is not always better for society.

The Keynesian-monetary debate on the trade-off between the objectives of output stimulation and inflation containment is reflected in the studies devoted to the issue of public debt management and inflation containment by G. Tabellini and A. Alesina (1987; 1990). More recent studies by B. Aarle, L.

Bovenberg (1995;1997) and have extended the approach of G. Tabellini (1987; 1990): fiscal policy, in addition to its own objectives, can also focus on objectives traditionally considered as monetary ones. The works of R. Beetsma and L. Bovenberg (1997a; 1997b) discuss the possibility of effective interaction between the Central Bank and the Ministry of Finance to resolve the conflict of interests of fiscal and monetary policy related to the regulation of public debt volume and inflation rate in the case of both dependent and independent central banks. The problem of debt sustainability within the framework of the interaction between fiscal and monetary policy is also addressed in the work of S. Pekarski (2007).

Many studies address the specifics of the fiscal and monetary influence on the economy in the context of the global financial crisis. L. Svensson (2011) has investigated the interrelation between monetary policy and financial stability in the context of financial crisis, the role of individual monetary policy instruments, and has also addressed some issues for the developing markets arising from capital flows and exchanges (Schmitt-Grohe & Uribe, 2005; State Treasury..., 2020). V. Constâncio (2017) has investigated the main problems and consequences of the global financial crisis in terms of the competencies of central banks to ensure financial stability, as well as the efficacy of particular monetary policy instruments. Among recent publications, the work of M. Kuzheliev *et al.* (2020) who have established a correlation between macroeconomic dynamics and inflation rates by studying and summarising the impact of inflation targeting and other key monetary policy instruments on fundamental macroeconomic indicators in Ukraine during periods of stability and crisis should also be mentioned.

Ensuring financial sustainability with monetary policy instruments has been described in the theoretical work of N. Minsky (1992). The issues of financial stability as a key prerequisite for the functioning of the national economy and the effective conduct of monetary policy have been the subject of a number of studies by the Swiss National Bank (2020) and L. Svensson (2020). The joint evolution of monetary policy and financial stability for several countries under different exchange rate regimes since 1880 up to the present has been investigated by M. Bordo (2018). In the absence of consensus regarding the ability of monetary policy to maintain financial system resilience in the context of the global financial and economic crisis and subsequent recession with the help of monetary policy, researchers have turned their attention to the effectiveness of the interaction between monetary and macroprudential policies. S. Krug considers macroprudential regulation as an unhindered policy tool that can mitigate the build-up of financial sector imbalances. Macroprudential regulation means limiting credit to an unsustainable part of the real economy through borrowed proceeds (Krug, 2018). The future of monetary and macroprudential policies to address the current challenges of financial and price stability has been explored in the works of L. Svensson (2020).

As the analysis shows, the theories relevant today have not reached a scientific consensus on how to regulate the economy and ensure financial stability with monetary, exchange rate and financial policy instruments. These theories

contradict each other, above all with regard to whether the state should intervene in the economy, and if so, whether in the long-term and/or short-term prospect and whether by monetary or fiscal measures. The dynamics of economic and institutional transformations dictate the need to review management methods, improve macroeconomic regulation tools, and continuously adapt relevant foreign experience. There is no doubt that foreign experience with macroeconomic regulation is important, but to apply it effectively it is necessary to have inclusive institutions that reinforce the effects of monetary, financial and exchange rate policies towards economic development and financial stability.

Attempts to take into account a variety of institutional factors reflecting national specificities of a country are not always useful in macroeconomic regulation. Such attempts complicate not only the process of implementing monetary policy, but also the theoretical models. For qualitative economic analysis, it is quite difficult to identify those institutional factors for market behaviour that are essential and do not overload it with superfluous conditions. The vast majority of modern macroeconomic models based on the Keynesian approach, the monetary concept, the new neoclassical synthesis or the ideas of MMT proponents contain a significant number of behavioural hypotheses, economic variables and institutional factors the impact of which on economic equilibrium and financial stability is often difficult to understand.

The inclusion of a significant number of institutional factors into macroeconomic analysis can be justified if it makes it possible to explain why the market behaviour of economic agents is inconsistent with neoclassical behavioural microfoundations. An institutional analysis of the factors determining the specifics of the institutional model of the national economy and the economic agents' behaviour in the current socio-economic situation should precede the macroeconomic analysis. The issue regarding the possibility of "fine-tuning" the economy on the basis of fiscal and monetary measures within the framework of Keynesian-monetary-institutional analysis remains open. This means that, even today, the monetary-Keynesian debate cannot be regarded as completed.

Two groups of problems can be distinguished which are jointly addressed by the government and the central bank: the problems of institutional complementarity of fiscal and monetary policy instruments and the ability to transform theoretical macroeconomic models into the models of political-economic management of public revenues; the problems of strategic interaction between fiscal and monetary policy regarding the resolution of conflicting interests related to the management of public debt and the inflation rate. The results of the fiscal and monetary effects on the main parameters of the national economy can be predicted with high probability by a rather simple macroeconomic model of the neoclassical synthesis  $IS = LM$  and its derivatives. The use of a small number of microeconomic functions in the model and the absence of institutional factors help to minimise the problem of the irrationality of economic actors. The current parameters of the function may differ significantly from the calculated ones, the exogenous values are not always determined statistically accurately and with a certain lag. The absence of

interactive development institutions causes the expansion of the already wide bands within which macroeconomic function curves are located and economic analysis is conducted, which does not preclude seeing the main macroeconomic trends before and after political-economic interventions.

### 3. MATERIALS AND METHODS

The research methods provide an opportunity to assess the results of fiscal and monetary measures of the state based on a synthesis of neoclassical and neo-Keynesian approaches to macroeconomic analysis. The study uses Keynesian terminology on the structure of the money supply:  $L_1$  – liquidity, operating cash fund (monetary aggregate  $M_0$ );  $L_2$  – money in banks, speculative cash fund (monetary aggregates  $M_1, M_2, M_3$ ), and only three empirically estimated and integrated microeconomic functions: Keynesian – savings  $\frac{\partial S}{\partial Y} > 0$  and money demand (marginal need for an operating cash fund  $\frac{\partial L_1}{\partial Y} > 0$ , demand response to speculative cash fund as a result of interest rate changes  $\frac{\partial L_2}{\partial i} \leq 0$ ); neoclassical – the reaction of investments to changes in the interest rate  $\frac{\partial I}{\partial i} \leq 0$ . All the behavioural functions are stochastic.

A macroeconomic model  $IS = LM$  was used to distinguish the monetary factors to be taken into account in analysing the effects of autonomous growth in money supply  $M_S$  and expenditure (autonomous investment  $\bar{I}$ ) on the value  $\partial I$ .

$$\begin{cases} L_1(Y) + L_2(i) = M_S \\ S(Y) = I(\bar{I}, i) \end{cases} \quad (1)$$

Let us define the differential of the model equations by  $M_S$  and  $\bar{I}$  and we get:

$$\frac{\partial Y}{\partial M_S} = \frac{\frac{\partial I}{\partial i} \frac{\partial L_1}{\partial Y} + \frac{\partial L_2}{\partial Y} \frac{\partial S}{\partial Y}}{\frac{\partial L_1}{\partial Y} + \frac{\partial L_2}{\partial i} \frac{\partial S}{\partial Y}} \quad (2)$$

$$\frac{\partial Y}{\partial \bar{I}} = \frac{\frac{\partial L_2}{\partial i}}{\frac{\partial S}{\partial Y} + \frac{\partial L_2}{\partial i} \frac{\partial L_1}{\partial Y}} \quad (3)$$

An analysis of the equations obtained leads to the following conclusions. Under tight control of the money supply, the additional demand for an operating cash fund to finance autonomous public expenditure can be met with money from the speculative cash fund when the speculative cash fund reacts to a change in the interest rate in the interval  $-\infty \leq \frac{\partial L_2}{\partial i} < 0$ . When interest rates rise, the increase in autonomous expenditure is compensated by a reduction of investments elastic to interest rates in the interval  $-\infty < \frac{\partial I}{\partial i} \leq 0$ . The economic effect of fiscal measures depends on the magnitude of the multiplier  $\frac{\partial Y}{\partial \bar{I}}$ , the marginal values of which can range from 0 to the maximum value in the Keynesian

basic multiplier model  $\frac{\partial Y}{\partial I} = \frac{1}{\frac{\partial S}{\partial Y}}$ , given the maximum income effect  $\left(\frac{\partial I}{\partial i}\right) = 0$  and the complete emptying of the speculative cash fund  $\left(\frac{\partial L_2}{\partial i} = -\infty\right)$ .

Expansive monetary measures lead to a decrease in the interest rate and an increase in investments elastic to changes in the interest rate in the intervals:  $-\infty \leq \frac{\partial I}{\partial i} < 0$  and  $-\infty < \frac{\partial L_2}{\partial i} \leq 0$ . The maximum multiplier effect is achieved under the condition  $\frac{\partial I}{\partial i} = -\infty$ , and  $\frac{\partial L_2}{\partial i} = 0$ . Expansive monetary actions increase the income multiplier effect when the interest rate elasticity with respect to money demand is weak and the interest rate elasticity of investments is strong.

As can be seen from the given income multiplication conditions, the matching of fiscal and monetary measures can take place within a wide band of  $-\infty < \frac{\partial I}{\partial i} < 0$  and  $-\infty < \frac{\partial L_2}{\partial i} < 0$ . The process of income multiplication will intensify as the marginal rate of saving decreases  $\frac{\partial S}{\partial Y}$ , and money will turn into liquid form without increasing the interest rate as the value decreases  $\frac{\partial L_1}{\partial Y}$ .

In the transition from a theoretical (explanatory) model to a political-economic model of government revenue management (decision-making), the main performance indicator of fiscal and monetary measures is considered to be gross (social) income  $Y$ , while the autonomous component of government spending  $\bar{I}$ , the money supply  $M_S$  and interest rates  $i$  are considered to be instrumental variables of macroeconomic policy.

### 4. RESULTS

It is evident that the availability of money in the public sector of the economy acts as the monetary basis for conducting effective macroeconomic measures. The monetary factors of income multiplication prove to be and become determinative not only as a result of autonomous changes in the money supply  $M_S$ , but also when autonomous investments grow  $\bar{I}$ . Any measures aimed at increasing the value of social income ( $Y$ ) by rationalising lending, financing budget deficits or investments as much as possible must be consistent with the monetary measures of the Central Bank. Regardless of how the strategic interplay of fiscal and monetary policy is organised, the question arises of whether the National Bank of Ukraine should give more priority to stabilising inflation or to stimulating issuance. It is clear that in coordinating policies, the independence of the Central Bank should be the primary condition for the construction of optimal macroeconomic policy (The Ministry of Finance...,

2020a; The Ministry of Finance..., 2020b; The National Bank..., 2020a).

Resolving the problem of budget deficits turns into a problem of finding sources for their financing. The easiest way to solve it is to finance the deficit with additional emissions. The necessary liquidity can emerge as a result of an increase in the money supply and credit supply by credit institutions.

The public sector's need for money only means the potential possibility of creating new money. The statistical data presented in Table 1 shows the flow of money into the monetary circulation channels over the period 2014-2020. Some of these funds are not provided by a corresponding increase in the supply of material goods and services.

**Table 1. Rate of Increase in the Money Supply.**

Years	Indicators							
	Monetary Aggregates, mln UAH				Increase Compared to Previous Year, %			
	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>	M <sub>0</sub>	M <sub>1</sub>	M <sub>2</sub>	M <sub>3</sub>
2014	282.947	435.475	955.349	956.728	119.0	113.46	105.42	105.25
2015	282.673	472.217	993.812	994.062	99.90	108.44	104.03	103.90
2016	314.392	529.928	1.102.391	1.102.700	111.22	112.22	110.93	110.93
2017	332.546	601.631	1.208.557	1.208.859	105.77	113.53	109.62	109.63
2018	363.629	671.285	1.273.770	1.277.640	109.34	111.63	105.39	105.68
2019	359.460	760.043	1.435.221	1.466.726	98.85	113.21	112.67	114.79
2020 *	449.335	-	-	1.839.274	125.10	-	-	125.41

Note: \*estimated data.

Sources: compiled on the basis of (Exchange Portal..., 2020; The National Bank..., 2020b; The National Bank..., 2021).

**Table 2. Changes in GDP Volume, GDP Deflator, Producer Price Index and Inflation Indices in 2014-2019 (Until Previous Year, in %), Total Public Debt, Total External Debt.**

Indicators	Years						
	2014	2015	2016	2017	2018	2019	2020
GDP (in 2010 prices)	93.4	90.2	102.4	102.5	103.3	103.1	95.6
Monetary aggregate M <sub>3</sub>	105.25	103.90	110.93	109.63	105.68	114.79	125.4
Consumer price index	112.1	148.7	113.9	114.4	110.9	107.9	105.0
Producer price index	117.1	136.0	120.5	126.4	117.4	104.1	114.7
Total public debt (in % of GDP)	70.2	79.4	81.0	71.8	60.9	50.3	57.3
Total external debt (in % of total public debt)	55.6	66.3	65.3	64.2	64.4	58.0	61.0

Sources: compiled on the basis of (The Ministry of Finance..., 2020b; The State Statistics..., 2020).

In 2020, in a situation with little liquidity advantage on the financial markets and insufficient amount of money  $L_2$  in the speculative cash fund, the monetary actions of the National Bank led to an increase in the money supply in the economy. According to operational data of the NBU, the monetary aggregate M<sub>3</sub> (money supply) over the past 12 months (compared to the figure as of 01.11.2019) has increased by UAH 425.3 billion (+31.9%) – to UAH 1.757 trillion, and the money supply has increased by 25.4% at the end of 2020 (The National Bank..., 2021; The Official Publication of the..., 2020).

General ideas about the scale of the inflationary increase in the payments turnover provide comparative data on the growth rate of the money supply M<sub>0</sub> and the fall in the real

gross domestic product (GDP) (Table 2). A 25.1% increase in the M<sub>0</sub> monetary aggregate in 2020 and a 4.4% fall in real GDP have certainly intensified inflationary trends. However, the National Bank of Ukraine operating under inflation targeting regime has ensured for the second year in a row that moderate inflation of 5% and exchange rate stability has been achieved.

The producer price index, the rise of which is always a precursor to higher consumer inflation, had a negative trend in 2019. For the first time in recent years, it was less than the inflation rate. It is precisely this index that reveals how much the purchasing power of the national currency has changed (Table 2). However, in 2020 the producer price index ex-

ceeded the inflation rate by 9.7%, which causes a certain inflationary pessimism in 2021.

In 2020, the NBU's anti-inflationary measures were conducted quite effectively under challenging conditions. The factors of strong pressure on the monetary sphere on the part of public finance were the security and defence expenditures of UAH 218.0 billion (5.5% of GDP), the need to maintain the public debt of UAH 119.2 billion and the financing of measures aimed at overcoming the consequences of the pandemic (The Ministry of Finance..., 2020a). The amendments to the State Budget adopted by the Verkhovna Rada of Ukraine in May 2020 envisaged a reduction of budget revenues by UAH 119.740 billion (11%), an increase of budget expenditures by UAH 82.39 billion and a significant increase in the state budget deficit compared to what it was before the amendments (The Verkhovna Rada..., 2020).

Although general fund expenditures were executed by 90.3% in 2020, the deficit of the general fund of the state budget of Ukraine was 215.5 billion UAH against the planned UAH 274.5 billion, with the expenses for defence, social expenses, debt service, subventions and subsidies to local budgets fully financed. At the same time, state budget revenues in 2020 of UAH 1.075 trillion exceeded the target figure by 1.5% and state budget general fund revenues (UAH 877.6 billion) exceeded the plan by 2.2% (State Treasury Service..., 2020).

The problems associated with the shortage of money in 2020 have been resolved, as a large part of the total public sector money needs have been met outside the banking sector through borrowings. Thus, state borrowings amounted to UAH 621.5 billion, which is 93.8% of the plan, and state internal borrowings totalled UAH 389.2 billion or 94.6% of the plan. Meanwhile, public debt repayments amounted to UAH 385.5 billion (99.7% of the plan), and debt service payments amounted to UAH 119.6 billion (88.0% of the plan). A fundamental factor in the financial market has been the demand by non-residents for domestic government bonds (hereinafter "DGBs"). A significant increase in non-resident investments in DGBs enabled the financing of current debt payments, as well as the replacement of some foreign currency debt with hryvnia debt. In 2020, annual revenues from the placement of government bonds amounted to UAH 382.4 billion (UAH 130.8 billion in foreign currency). A total of UAH 32.3 billion, or 92.4% of the plan, has been raised from external sources (The Ministry of Finance..., 2020a). The measures to maximise debt attributable to the non-banking sector have reduced inflationary pressures on government and bank loans. Keeping inflation within the planned 5% range in 2019-2020 has given more reason for cautious optimism regarding price stability. Price stability could be a prerequisite for the resumption of lending and economic activity after the downturn caused by the cyclical crisis deepened by the COVID-19 pandemic.

The practice of public borrowings to finance the state budget deficit will be continued during 2021. In fact, a policy of restrictions aimed primarily at the private rather than the public sector of the economy has continued. The government has failed to reduce public expenditure and thereby improve the condition of the state budget. The deficit limit has been set at UAH 246.635 million (The Official Publica-

tion..., 2020). Borrowing of UAH 497.268 million is planned, including UAH 179.969 million to finance the state budget deficit. The share of total public debt in GDP is defined as 64.6%.

The continuation of the practice of issuing Eurobonds in 2021 can be seen as a manifestation of the complexity of dealing with the budget deficit and government debt. Money holders buy securities not because the securities have high yields, but because they are temporary in nature. High interest rates only make one think that the process of their further increase cannot continue. It is obvious that the National Bank of Ukraine cannot control the investors' intentions. The question arises, what happens when their intentions change? At the same time, recent trading has shown a drop in international investors' interest in short- and medium-term DGBs. If the Ministry of Finance loses control of government revenues, the National Bank will have to implement measures to mitigate money market deficits and reduce the constant pressure on bank liquid assets. That is why inflation is budgeted at 7.3% in 2021.

Although the growth rate of money supply in circulation has not been slowed down in the last year, it has significantly exceeded the GDP growth rate, and the public and private sectors of the economy are short of money. Ukrainian industry has felt their shortage particularly acutely in 2019 due to the reduced money supply  $M_0$ , the high cost of credit and the high exchange rate of the national currency. An increase of the monetary aggregate  $M_0$  by 25.1% in 2021 can therefore be explained by an attempt to conduct a stimulative policy and fulfil certain social obligations.

One of the main consequences of increasing the amount of money must be a change in the interest rate  $\left(\frac{\partial i}{\partial M_s} < 0\right)$ .

Monetary impulses first reduce it and then, if there is an increase in the volume of production, the interest rate rises again. In the monetary market, the interest rate acts as a determinant of the demand for money  $\frac{\partial L_2}{\partial i} \leq 0$ , and in the commodity market – as a determinant of investments  $\frac{\partial I}{\partial i} \leq 0$ .

Despite the growth of the money supply and the suppression of inflation, interest rates in the economy remain high. The result of high interest rates has been a reduction in lending activity by banks. The volumes of lending by banks to the private sector have been steadily decreasing. Starting in 2014 and as of the end of 2019, they were around 25% and, excluding bad debts, less than 15% of banks' loan portfolios. In both cases it is the smallest rate in the Eastern European region (Furman, 2020).

Such behaviour by banks is explained by the fact that the general institutional conditions of running business, significant credit risks and corporate sector indebtedness have become an obstacle to the growth of investment activity in the Ukrainian economy. With a strong interest rate elasticity to changes in money demand and a weak investment elasticity to interest rate changes, expansive monetary actions do not create an income multiplier effect in the economy. Banks continue to refuse lending to the real economy also because, in the context of the global pandemic, the expected profits

are priced very low. Banks are buying DGBs, NBU deposit certificates and actively developing cash loans. There has been an increase in private bank investments in securities and other financial investments. These investments in total assets have increased by 9 percentage points over the two years to 17.5%. The ratio of securities and other financial investments to loans from banks has increased by 12 percentage points to 24.7% in two years (Furman, 2020). Therefore, credit institutions are restraining the supply of funds and credit and are opting for a greater degree of refinancing offers in order to export capital.

In addition to high interest rates, there are several factors that affect the microeconomic functions of the economic agents' behaviour and weaken the economic results of monetary measures. Thus, there are investors on the long-term capital market who are dependent on changes in the market conditions but are inelastic in relation to changes in the interest rate. Such investors work predominantly in construction, which showed an increase of 23.3% in 2019 compared with the previous year (The State Statistics..., 2020). At the same time, mortgage interest rates remain high due to insufficient capital supply by offerors, and the limited mortgage lending market has resulted in a five-year loan cost of 19–20% per annum. In general, the volumes of loans for construction and renovation of real estate remain low (The National Bank..., 2020a). Thus, with the high risk of capital investment, the liquidity advantages are high, so fund owners do not tie up their funds for long periods of time.

There remain other domestic factors that put constant inflationary pressures on the economy and reduce the effectiveness of monetary measures. Thus, due to the acceleration of labour migration, the deepening of qualification imbalances and the formation of shortages of certain labour types, enterprises of certain sectors are negatively affected by wage increases. Considering the rate of inflation, its impact on enterprises has been negligible. Obviously, it is extremely difficult to increase employment, wages and maintain stable prices at the same time.

Although the high interest rate leads to constant restrictive pressure on the private sector of the economy, it enables a lot of borrowing to be covered from outside the banking sector and attracts speculative capital from abroad into the country. The high interest rate on the bonds attracts money to the respective bank accounts. As a result, during 2019 the monetary aggregate grew  $M_3$  by 14.8% and in 2020 – by 25.4%. The increase in the monetary aggregate  $M_3$  can be considered a factor of improving the balance of payments and expectations regarding a possible strengthening of the hryvnia. It was the growth in the money supply  $M_3$  that was the factor in the relatively slow increase in inflation compared to the increase in the exchange rate.

In the last year, the significant demand for DGBs has led to a noticeable increase in the cost of borrowing and an extension of their terms. The continuation of the Eurobond issue in 2021 can be considered an important anti-inflationary factor. However, this practice has made the financial stability of the economy even more dependent on the international financial market situation. Investments by non-residents in the hryvnia-denominated government bonds and other speculative capital inflows from abroad have strength-

ened the exchange rate and reduced the value of imported goods. This has made it more difficult to export, easier to import and has reduced the volume of production in industries where foreign competition exists. Indeed, the high exchange rate of the hryvnia to the dollar has helped to reduce the rates of inflation, but has had a negative impact on budget implementation in 2019 and 2020. Clearly, different macroeconomic outcomes could have been achieved if the exchange rate had been lowered. Moreover, the high interest rate and exchange rate indicate the existence of proper currency circulation discipline during the transition period. This fact proves that the monetary sphere requires strict and careful management, better organisation of work based on more advanced interactive development institutions.

## 5. DISCUSSION

It is rather difficult to provide a definitive assessment of monetary policy measures aimed at achieving and ensuring price stability and creating conditions for economic growth. Monetary policy has become one of the means of implementing the government's strategy to halt and overcome industrial decline. This is demonstrated by the continuation of the reduction in the discount rate at the beginning of 2020 and its maintenance at a low level at the end of 2020 and in 2021 at 6–8%. The real discount rate has actually reached negative values.

The impact of the pandemic on economic activity and the reduction in domestic and external demand, favourable pricing environment on foreign markets, a low imported component of inflation, lower gas and oil prices in the middle of the year have helped to achieve and maintain an annual inflation rate of around 5%. At the same time there were factors that created inflationary pressures: the unsustainable demand for debt assets; the necessity to pay a high risk premium for Ukraine's sovereign bonds, increases in administratively regulated prices and tariffs, and a growing money supply (Fiebiger, 2016).

The NBU has kept the annual inflation rate within 5%, also because it has managed to keep the amount of money in circulation within certain limits. Although the growing dynamics of the money supply are evident. In 2020, the growth rate of money  $M_3$  was 25.4%, almost twice as high as in 2019, and the growth rate of the monetary base was 24.8%. As monetary theory proves, the effect of the money supply growth rate on the inflation rate becomes apparent after 18–24 months. Therefore, the NBU's forecast for money supply growth in 2021 of 13.3% seems very optimistic. Obviously, it will be difficult to keep inflation at 7.3%. The very fact of refusing to keep inflation within the 5% level achieved over the past years indicates the danger of accelerated money supply growth, although the NBU plans to return the annual inflation rate to its previous level in 2022–2023. The central place in monetary policy should be taken by controlling the amount of money in circulation, more specifically the aggregate  $M_3$ .

Based on the general economic situation in Ukraine, two inflationary factors can be identified as being associated with an increase in the money supply of  $M_3$ : a further increase in the public sector's need for loans; the impact of the external financial situation leading to positive changes in the balance

of payments items (Keynes, 1936; Krug, 2018; Kuzheliev & Zherlitsyn, 2020).

At the same time, a rather interesting situation has emerged - the NBU has been selling government bonds to the non-banking sector to finance the needs of the public sector of the economy and simultaneously lending to banks to overcome the difficulties created by its own actions in the first case. A further increase in the yields of DGBs across all maturities indicates a growing demand for loans by the public sector. In the Ukrainian reality, the dependence of monetary policy on the external economic sector should be reduced. The purchase of DGBs by non-residents reduces the government's need for loans and decreases by a corresponding value the amount of funds that the government borrows from domestic creditors. The state of Ukraine's balance of payments has a strong impact on domestic economic policy. The way the government has chosen to finance its chronic budget deficit by selling government bonds to residents and non-residents, IMF loans and other sources is very dangerous, because it can only solve current financial problems. The IMF and other creditors cannot permanently lend money to Ukraine. Debts need to be repaid. It is clear that this constraint is particularly harsh as it is extremely difficult to offer any other way in the context of chronic budget deficits, political instability and inflated social promises.

Anti-inflationary measures based on the existing relationship between income and imports have been used by the NBU as a means to overcome the balance of payments deficit. Formation of positive surplus on the current account of payment balance (+6.6 billion USD, 4.4% of GDP), as a result of favourable price conditions for certain items of Ukrainian export, reduction of energy resources imports and inflow of speculative capital from non-residents for the purpose of buying DGBs has strengthened the position of hryvnia against the dollar in the foreign exchange market. At the same time, keeping inflation within the planned limits and increasing payments for social programmes lead to higher incomes, increasing imports of a wide range of goods that the Ukrainian economy cannot produce. Reducing inflationary pressure on demand decreases the effectiveness of incentives to develop export-oriented production. It is therefore difficult to expect that the current account surplus will be overcome, taking into account the effects of conflicting factors (State Treasury..., 2020).

If the current account surplus can be eliminated within 2021-2023, a change for the better in the terms of trade conditions for exporters can be expected. It is clear that only changes in macroeconomic conditions are not sufficient to increase investment imports. Economic recovery should be accompanied by rapid institutional changes aimed at improving economic and legal market institutions. It turns out that in order to support the real sector of the economy, it is advisable to lower the hryvnia exchange rate. It is necessary to get rid of illusions regarding the possibility of controlling the amount of money in circulation and the exchange rate at the same time. In fact, the government's numerous borrowings from non-residents and the IMF have resulted in the hryvnia's exchange rate being above the level dictated by the market and consistent with the capacity of the national economy (Tobin, 1965; Tobin, 1969).

The existing range of perceptions about the content of monetary processes and monetary policy of central banks is due to the evolution of the monetary sphere. At the same time, at least two stages can be distinguished in the development of state regulation of monetary processes. While the first stage resulted in a synthesis of theories on state regulation of monetary processes with the emergence of one dominant school, no such consensus exists in the current second stage. This situation explains the variety of options for combining fiscal and monetary measures. Monetary measures can be directly aimed at containment of inflation within certain limits and at achieving key macroeconomic objectives. But they can only contribute to the implementation of effective fiscal policy aimed at achieving financial stability and overcoming the cyclical downturn and the economic consequences of the global pandemic.

The effectiveness of state regulation of economic processes depends on inclusive development institutions. The existence of such institutions makes it possible to choose the right approach that is most adequate to national interests and to change the conceptual framework for monetary regulation of the economy when socio-economic conditions change significantly. The effective regulation of the economy by monetary policy instruments is only possible if socio-economic processes are effectively institutionalised.

If the goal of the monetary policy of the National Bank of Ukraine is to create monetary conditions for economic growth and the achievement of financial stability, the key issue is the stability of the hryvnia. The focus is on improving the efficiency of monetary policy instruments, controlling the growth of the money supply, and improving the algorithms for shaping the control and information effects. In doing so, it is important to choose the right components of the money supply that the National Bank is trying to regulate. In recent years, its policy has led to an increase in the monetary aggregate  $M_3$ , which includes those bank deposits in securities on which high interest is paid. The growth  $M_3$  proves the complexity of the current economic situation and the speculative nature of monetary policy measures.

A 25% increase in the monetary aggregate  $M_0$  in 2020 contributes to formation of a negative current account balance of payments and weakening of the national currency exchange rate. The expectation of a "weak" hryvnia always creates an increased demand for imported goods, worsens the state of the payments balance and raises expectations of further devaluation and depreciation. It is obvious that it will be extremely difficult to achieve the core inflation parameters planned for 2021 of 7.3% under conditions of a pandemic and significant social obligations of the government, just as it is impossible to lose control of it.

The desire to ease monetary policy in 2021 might provoke price instability and lay down such a trend for the future. In this context, the issue of preserving the independence of the National Bank of Ukraine deserves special attention. It turns out that influencing its level of independence through political decision-making is quite easy. This can be explained by the fact that public expenditure changes insignificantly and remains at a fairly low level when the respective institutions change. In a situation where government agents cannot harmonise their actions and try to obtain certain mon-



etary preferences from the Central Bank, the independence of the Central Bank enables the implementation of prudent anti-inflationary measures. Regardless of how the strategic interplay of fiscal and monetary policy is organised, the independence of the Central Bank is the primary condition for the construction of optimal macroeconomic policy.

In Ukraine, reducing inflation by exclusively monetary means leads to the desired results. As a result, the trade-off choice between reducing public debt and containment of inflation has to be abandoned. The range of monetary policy objectives cannot be unduly narrowed to controlling inflation, as it poses significant risks to economic growth. The priority of the National Bank's targets should be aimed at curbing inflation, avoiding critical growth in public debt and a strong strengthening of the hryvnia. The contradictory nature of these objectives is precisely why the interaction between fiscal and monetary policy needs to be made more effective. Given the non-monetary nature of certain inflation factors (rising prices of monopoly products), the methods of dealing with it should be expanded.

## 6. CONCLUSION

Interest rates remain the NBU's main monetary policy instrument. Changes in interest rates have a regulatory impact on liquidity  $\frac{\partial L_2}{\partial i}$  and the state of the monetary market  $\frac{\partial i}{\partial i}$ . A gradual decrease in the National Bank's discount rate and easing of foreign exchange restrictions should contribute to lowering the cost of credit resources and boosting credit financing of investments. If the fiscal or monetary actions of the government do not create even weak impulses of income multiplication, then one should not expect that matching fiscal and monetary actions within a wide band  $-\infty < \frac{\partial i}{\partial i} < 0$  and  $-\infty < \frac{\partial L_2}{\partial i} < 0$  will lead to income growth.

With the high elasticity of money demand and the low elasticity of investments in relation to interest rate changes, budget deficits, and hard-to-predict exchange rate movements, one cannot rely solely on monetary policy as an effective way of dealing with profound economic problems. Monetary policy should focus not only on price stability, matching the exchange rate parameters with the volumes of DGBs issuance, but also on ensuring strict fiscal measures aimed at overcoming the consequences of the budget crisis and achieving macroeconomic equilibrium. Monetary regulation focused on price stability in the short-term period should be complemented by macroprudential regulation focused on financial stability in the long-term period.

The novelty of the study is that it is determined that the rate of inflation impact on enterprises has been negligible. Also, it is extremely difficult to increase employment, wages and maintain stable prices at the same time.

In order to prevent inflation, the following used factors are considered successful:

- 1) the increase in the monetary aggregate M3;
- 2) the continuation of the Eurobond issue;
- 3) the high exchange rate of the hryvnia to the dollar.

Defined that the monetary sphere requires strict and careful management, better organization of work based on more advanced interactive development institutions.

The materials of this paper can be used for further scientific research of the monetary regulation of the economy in the context of constructing appropriate inclusive institutions, and constitute a practical value for improve the practice of implementing monetary measures and using monetary instruments in the macroeconomic management of the national economy.

Proceeding from this analysis, practical recommendations are provided for improve the practice of implementing monetary measures in management of the national economy.

Thus, it is the absence of interactive institutions for the development of the national economy that makes it impossible to create credible monetary incentives for the development of the national economy, to revive demand and stop industrial degradation, limiting the fiscal and monetary potential of stimulating the economy.

## REFERENCES

- Aarle, B. and Bovenberg, L. (1995). Monetary and fiscal policy interaction and government debt stabilization. *Journal of Economics*, 62(2), 111-40.
- Aarle, B. and Bovenberg, L. (1997). Is there a tragedy of a Common Central Bank? A dynamic analysis. *Journal of Economic Dynamics and Control*, 21, 417-447.
- Alesina, A. and Tabellini, G. (1987). Rules and discretion with non-coordinated monetary and fiscal policies. *Economic Inquiry*, 12, 619-630. <https://doi.org/10.1111/j.1465-7295.1987.tb00764>.
- Alesina, A. and Tabellini, G. (1990). A positive theory of fiscal deficits and government debt. *Review of Economic Studies*, 57, 403-414. <https://doi.org/10.2307/2298021>
- Andersen, T. and Schneider, F. (1986). Coordination of fiscal and monetary policy under different institutional arrangements. *European Journal of Political Economy*, 2(2), 169-191. [https://doi.org/10.1016/0176-2680\(86\)90002-9](https://doi.org/10.1016/0176-2680(86)90002-9).
- Beetsma, R. and Bovenberg, L. (1997a). Central Bank independence and public debt policy. *Journal of Economic Dynamics and Control*, 21, 873-948.
- Beetsma, R. and Bovenberg, L. (1997b). Designing fiscal and monetary institutions in a second-best world. *European Journal of Political Economy*, 13, 53-79.
- Bordo, M. (2018). An historical perspective on the quest for financial stability and the monetary policy regime. *The Journal of Economic History*, 78(2), 319-357. doi:10.1017/S0022050718000281.
- Bordo, M. and Schwartz, A. (2004). IS-LM and monetarism. *Duke University Press*, 36(5), 217-239. [https://doi.org/10.1215/00182702-36-Suppl\\_1-217](https://doi.org/10.1215/00182702-36-Suppl_1-217).
- Constâncio, V. (2017). *The future of monetary policy frameworks*, 1-22. [https://www.ecb.europa.eu/press/key/date/2017/html/ecb.sp170525\\_lecture.en.pdf](https://www.ecb.europa.eu/press/key/date/2017/html/ecb.sp170525_lecture.en.pdf)
- Dixit, A. and Lambertini, L. (2001). Monetary-fiscal policy interactions and commitment versus discretion in a monetary union. *European Economic Review*, 45, 977-987. doi: 10.1016/S0014-2921(01)00134-9.
- Dixit, A. and Lambertini, L. (2003a). Interactions of commitment and discretion in monetary and fiscal policies. *American Economic Review*, 93(5), 1522-1542.
- Dixit, A. and Lambertini, L. (2003b). Symbiosis of monetary and fiscal policies in a Monetary Union. *Journal of International Economics*, 60(2), 235-247. [https://doi.org/10.1016/S0022-1996\(02\)00048-X](https://doi.org/10.1016/S0022-1996(02)00048-X).
- Epstein, G. (2019). The empirical and institutional limits of modern money theory. *Political Economy Research Institute (PERI)*, 52, 772-780. <https://doi.org/10.1177/0486613420912464>
- Exchange Portal Take-Profit. (2020). <https://take-profit.org/statistics/money-supply-m1/ukraine/>
- Fagiolo, G. and Roventini, A. (2017). Macroeconomic policy in DSGE and agent-based models redux: New developments and challenges

- ahead. *Journal of Artificial Societies and Social Simulation*, 20(1), 11-12. <http://jasss.soc.surrey.ac.uk/20/1/1/1.pdf>
- Fiebigger, B. (2016). Fiscal policy, monetary policy and the mechanics of modern clearing and settlement systems. *Review of Political Economy*, 28(4), 590-608. <https://doi.org/10.1080/09538259.2016.1225445>
- Friedman, M. (1968). The role of monetary policy. *The American Economic Review*, 58(1), 1-17.
- Fullwiler, S., Bell, S. and Wray, L. (2012). Modern money theory: A response to the critics. *SSRN Electronic Journal*, 821. <http://dx.doi.org/10.2139/ssrn.2008542>
- Furman, V. (2020). Myths and reality of lending in Ukraine. [https://dt.ua/finances/mifi-i-realnist-kredituvannya-v-ukrayini-338378\\_.html](https://dt.ua/finances/mifi-i-realnist-kredituvannya-v-ukrayini-338378_.html)
- Hansen, A. (1953). Business cycles and national income. *The Economic Journal*, 63(250), 410-413. <https://doi.org/10.2307/2227136>
- Hicks, J. (1937). Mr. Keynes and the "Classics": A suggested interpretation. *Econometrica*, 5(2), 147-159. <https://doi.org/10.2307/1907242>
- Keynes, J. (1936). The general theory of employment, interest and money. <https://www.marxists.org/reference/subject/economics/keynes/general-theory/>
- Krug, S. (2018). The interaction between monetary and macroprudential policy: should central banks 'lean against the wind' to foster macro-financial stability? *Economics*, 7(12), 1-69. <http://dx.doi.org/10.5018/economics-ejournal.ja.2018-7>
- Kuzheliev, M. and Zherlitsyn, D. (2020). The impact of inflation targeting on macroeconomic indicators in Ukraine. *Banks and Bank Systems*, 15(2), 94-104. doi:10.21511/bbs.15(2).2020.09.
- Lavoie, M. (2019). Modern monetary theory and Post-Keynesian economics. *Real-World Economics Review*, 89, 97-108. <http://www.paecon.net/PAEReview/issue89/Lavoie89.pdf>
- Minsky, H. (1992). The financial instability hypothesis. *Levy Economics Institute Working Paper*, 74, 1-10.
- Mishkin, F. (2007). Will monetary policy become more of a science? *NBER Working Paper Series*. <https://www.nber.org/papers/w13566.pdf>
- Mundell, R. (2001). Notes on the development of the international macroeconomic model. *Columbia University Department of Economics Discussion Paper Series*, 0102-33. <https://core.ac.uk/download/pdf/161436668.pdf>
- Nesiba, R. (2013). Do institutionalists and Post-Keynesians share a common approach to Modern Monetary Theory (MMT)? *European Journal of Economics and Economic Policies: Intervention*, 10(1), 44-60. <https://doi.org/10.4337/ejeep.2013.01.05>
- Pekarski, S. (2007). Fiscal and monetary policy interaction and the sustainability of public debt. *HSE Publishing House*, 5(4), 492-518.
- Persson, M. and Persson, T. (2006). Time consistency of fiscal and monetary policy: A solution. *Econometrica*, 74, 193-212.
- Schmitt-Grohe, S. and Uribe, M. (2005). Optimal fiscal and monetary policy in a medium-scale macroeconomic model. *NBER Working Paper*, 20, 383-425.
- State Treasury Service of Ukraine. (2020). <https://www.treasury.gov.ua/ua/file-storage/2020-5>
- Svensson, L. (2011). Monetary policy after the financial crisis. *International Scientific Conference "Asia's Role in the Post-Crisis Global Economy"*. <https://www.bis.org/review/r111201a.pdf>
- Svensson, L. (2020). Macroprudential policy and household debt: What is wrong with Swedish macroprudential policy? *CEPR Discussion Paper*, DP14585. <https://larseosvensson.se/files/papers/macroprudential-policy-and-household-debt-what-is-wrong-with-swedish-macroprudential-policy.pdf>
- Swiss National Bank. (2020). <https://www.snb.ch/en/iabout/finstab>
- The Ministry of Finance of Ukraine. (2020a). <https://index.minfin.com.ua/finance/debtgov/2020/>
- The Ministry of Finance of Ukraine. (2020b). <https://www.mof.gov.ua/uk/previous-years-budgets>
- The National Bank of Ukraine. (2020a). <https://bank.gov.ua/ua/news/all/zvit-pro-finansovu-stabilnist-gruden-2019-roku>
- The National Bank of Ukraine. (2020b). <https://bank.gov.ua/ua/news/all/makroekonomichniy-ta-monetarniy-oglyad-traven-2020-roku>
- The National Bank of Ukraine. (2021). [https://bank.gov.ua/admin\\_uploads/article/MFS\\_2020-01.pdf?v=4](https://bank.gov.ua/admin_uploads/article/MFS_2020-01.pdf?v=4)
- The Official Publication of the State Fiscal Service of Ukraine. (2020). <https://www.mof.gov.ua/uk>
- The State Statistics Service. (2020). <http://www.ukrstat.gov.ua>
- The Verkhovna Rada of Ukraine. (2020). <https://zakon.rada.gov.ua/laws/show/294-20#Text>
- Tobin, J. (1965). Money and economic growth. *Econometrica*, 33(4), 671-684.
- Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, 1, 15-29.

Received: June 21, 2022

Revised: Jul 10, 2022

Accepted: Oct 14, 2022

Copyright © 2022– All Rights Reserved  
This is an open-access article.