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Вплив рівня монетизації економіки та структури грошової маси на кредитування підприємств аграрного сектору

Анотація. *В Україні ключовою умовою вирішення проблеми неінфляційного підвищення рівня монетизації економіки є розвиток інститутів фінансового посередництва, здатних перерозподіляти грошові потоки в інвестиції. Метою статті є розвиток методології дослідження впливу рівня монетизації економіки та структури грошової маси на кредитну активність банків і розробка на цій основі рекомендацій щодо фінансового забезпечення аграрного сектора економіки. У статті розглядаються наступні індикатори структури та якості грошової маси в економіці: рівень монетизації економіки, частка різних агрегатів у грошовій масі, грошовий мультиплікатор і фактори, що впливають на них. Акцентовано увагу на необхідності наукового обґрунтування потреби економіки в грошах і управління структурою грошової маси для досягнення цілей грошово-кредитної політики. Розкрито роль грошово-кредитної політики в створенні умов для відновлення зростання аграрного сектору. Проведено аналіз макроекономічних індикаторів і здійснена оцінка впливу ключових факторів на стан аграрного сектора й економіку в цілому. Здійснено оцінку рівня монетизації економіки України. Виявлені причини низького рівня монетизації економіки України та сформульовані шляхи його подолання. На основі критичного аналізу різних позицій показано, якою має бути збалансована грошово-кредитна політика в Україні. Доведено, що значне зниження облікової ставки і надмірне збільшення грошової пропозиції призводять до наростання інфляції, підвищення ризиків у фінансовій сфері і дестабілізації ситуації в аграрному секторі, а також в економіці в цілому. Визначено взаємозв'язок емісійного механізму з політикою стимулювання зростання аграрного сектора. Виявлено роль основних інституційних елементів грошово-кредитної політики в активізації поступального розвитку української економіки. Надані рекомендації щодо удосконалення державного регулювання монетарної сфери.*

Ключові слова: *аграрний сектор економіки, рівень монетизації економіки, структура грошової маси, агрегати, мультиплікатор.*

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Influence of the Level of Economy Monetization and the Structure of Money Supply on Lending to the Enterprises of the Agricultural Sector

Abstract. *In Ukraine, the key condition for solving the problem of a non-inflationary increase in the level of economy monetization is the development of financial intermediaries capable of redistributing cash flows to investments. The purpose of the article is to develop a methodology for studying the influence of the level of economy monetization and the structure of the money supply on the lending activity of banks and, on this basis, to develop recommendations for the financial support of the agricultural sector of the economy. The article examines the following indicators of the structure and quality of the money supply in the economy: the level of economy monetization, the share of various aggregates in the money supply, the money multiplier and factors affecting them. The authors' attention is*

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focused on the need for scientific substantiation of the economy's need for money and the management of the structure of the money supply to achieve the goals of state monetary policy. The role of state monetary policy in creating conditions for the resumption of growth in the agricultural sector was revealed. The analysis of macroeconomic indicators was carried out and the assessment of the impact of key factors on the state of the agricultural sector and the economy as a whole was carried out. The assessment of the level of monetization of the Ukrainian economy was carried out. The reasons for the low level of monetization of the Ukrainian economy were revealed and the ways to overcome it were formulated. Based on a critical analysis of various positions, it is shown what a balanced monetary policy should be in Ukraine. It has been proved that a significant decrease in the discount rate and an excessive increase in the money supply lead to an increase in inflation, an increase in risks in the financial sector and a destabilization of the situation in the agricultural sector, as well as in the economy as a whole. The relationship between the emission mechanism and the policy of stimulating the growth of the agricultural sector has been determined. The role of the main institutional elements of state monetary policy in enhancing the progressive development of the Ukrainian economy was revealed. Recommendations for improving the state regulation of the monetary sphere were given.

Keywords: *agricultural sector of the economy, level of the economy monetization, structure of money supply, aggregates, multiplier.*

Introduction. The efficiency and stability of the country's monetary system is a prerequisite and guarantee for ensuring long-term economic development. In this regard, the analysis and assessment of the ability of monetary systems in sustainable operation and the likelihood of a violation of stability, the justification on this basis of the directions of monetary policy is an urgent problem for Ukraine. Since in Ukraine there is a gap between the level of industrialization and the financial potential of the monetary system.

Obtaining a quantitative assessment of the impact of changes in monetary policy instruments (MPI) and key financial and monetary variables on macroeconomic indicators in Ukraine will make it possible to formulate recommendations for the NBU to improve the efficiency of the MPI transmission mechanism. This is especially important given the high importance of monetary policy in the system of bank lending to agricultural enterprises. This affects the process of maintaining price and financial stability and creating economic conditions aimed at ensuring the growth of the agricultural sector.

Literature review. A high degree of elaboration of the problems of monetary regulation of the economy and the implementation of monetary policy has been achieved in the works of foreign scientists. Thus, according to M. Bahmani-Oskooee and H. Rehman, the level of monetization of the economy is ultimately determined by the degree of development of the financial system and the economy as a whole. However, at the same time, monetization determines the freedom of movement of capital in the economy [1]. R.C. Kumar and A. Tayyab believe that the low level of monetization of the economy in the context of limited external financing leads to the following macroeconomic risks: underfunding of programs that contribute to the development of the social sphere; low level of banks' liquidity; decrease in household incomes and the resulting decrease in domestic demand [2]. Based on the study of the experience of China, India, Malaysia and other countries, Gang Yi concluded that the low level of monetization leads to: a slowdown in economic growth; increasing dependence of the country's economy on short-term investments by non-residents; weakening of the resource potential of the financial sector; overvaluation of money in the economy [3]. According to P.L. Rousseau and C. Stroup, the rate of circulation of the money supply depends on the reproductive structure of the economy. If the state provides investment support for scientific research, and the production of high-tech products has a large share in the structure of the country's economy, then, due to the long production cycle typical for this type of activity, there is a slowdown in money circulation. If the country produces mainly consumer goods, then, due to the relatively short production cycle of their manufacture, the rate of money turnover increases [4]. K. Juselius and J. Toro agree that low monetization of the economy and non-inflationary saturation of its money supply to ensure sustainable economic growth is a problem in macroeconomic science [5]. G. Camera, R.R. Reed, C.J. Waller analyzes the transition to inflation targeting in different countries. In most countries, this regime leads to a decrease in inflation [6]. J.C. Eckalbar provides a theoretical generalization of the accumulated experience of the MPI in the EU at the macroeconomic level, characterizing the various aspects of targeting in the European Union [7].

We believe that inflation targeting in Ukraine is not an easy task, as the Ukrainian economy is characterized by frequent economic shocks that undermine the planning of lending to agricultural enterprises.

Despite a significant amount of scientific research in this area, such problems as improving state regulation of monetary processes in the context of modernization of the Ukrainian economy, the influence of the level of monetization of the economy and the structure of the money supply on the lending activity of banks in terms of financial support of the agricultural sector of the economy have not yet been resolved.

The purpose of the article is to develop a methodology for studying the influence of the level of monetization of the economy and the structure of the money supply on the lending activity of banks and on this basis to develop recommendations for the financial support of the agricultural sector of the economy.

Research methodology. The information basis of the research is the works of foreign scientists devoted to the fundamental research of the theory of the monetary system and institutional theory. The article used such general scientific and special methods and techniques of scientific knowledge, such as analysis and synthesis,

concretization and abstraction, methods of normative, structural, expert and comparative analysis of the monetary sphere.

Main results and discussion. One of the main goals of the MPI is to ensure sustainable economic growth, including through increased investment costs. The lack of an effective mechanism for the "transfer" of capital from the banking sector to the agricultural sector, clear goals and priorities of monetary policy aimed at increasing real investment is one of the problems of the Ukrainian economy.

Excessive level of public debt undermines confidence in the policy of the regulator and in banks, even at the lowest level of inflation. A tough anti-inflationary policy provokes an economic downturn. A prerequisite for economic growth is the expansion of demand for resources from the agricultural sector.

Fighting inflation requires a restrictive monetary policy aimed at raising interest rates and limiting the volume of banks' lending operations. In the event of a downturn in economic activity, the NBU should implement a stimulating MPI in the direction of expanding the scale of lending to agricultural enterprises, weakening control over the increase in money supply and reducing interest rates. Theoretically, the MPI transmission mechanism should act as follows: with an increase (decrease) in the money supply in conditions of constant demand for money by agricultural enterprises, the market interest rate decreases (increases). As a result, investment costs grow (decrease), that is, a significant component of aggregate demands [6]. The level of agricultural production and employment in the economy is changing.

In fact, this mechanism does not always work adequately. In addition to the need to compare the sensitivity of the demand for money on the part of agricultural enterprises and the sensitivity of investment costs to the interest rate, in order to assess the effectiveness of the MPI, it is necessary to take into account such restrictions as the level of public debt, the degree of trust of agricultural enterprises in banks, the availability of long-term investment resources in the economy, the possibility of alternative investments in the banking sector, the creditworthiness of agricultural enterprises. The regulator determines the intermediate goals of the MPI: monetary aggregates (M1, M2, and M3), interest rate [8].

The goals of maintaining stability and monetary aggregates and the interest rate are simultaneously incompatible [7]. Preference is given to one of the goals in accordance with the criteria of dimensionality, controllability and predictability of the impact on the final goal. A certain target parameter was chosen in different countries at different periods of time. In the 1980s, the US Federal Reserve System (FRS) concluded that there was a break in the stable relationship between M1 fluctuations and the level of economic activity. As a result, FRS began to focus not on monetary aggregates, but on smoothing interest rate fluctuations.

In Great Britain, the intermediate target parameter is the value of the monetary base M0, in Germany – the monetary aggregate M3, in Japan it is M2 + the volume of certificates of deposit. Despite the lack of clear advantages of one or another target parameter, during periods of high inflation, almost all countries tried to stabilize the value of one of the monetary aggregates [9]. Since maintaining, a stable interest rate leads to a procyclical change in the money supply, and the MPI should play a stabilizing role.

The operational targets of MPI are the level of reserves or interest rates (interbank or short-term government securities). When setting out the goals of MPI, the NBU notes that the change in the parameters of the monetary base is taken as an operational goal. The operating procedure of the NBU MPI should be based on monitoring the volumes of net international reserves and net domestic assets of the monetary authorities.

Direct and indirect methods of influencing the lending activity of banks that regulate the money supply are possible. The reaction of financial markets to direct methods manifests itself quickly and noticeably, while the use of indirect methods presupposes a high degree of development of self-regulation processes in the banking system, and the effect of their application is slow and ambiguous [10].

When using direct methods, the following instruments are used: quotas for certain types of passive and active operations; introduction of limits on the issuance of certain categories of loans and on the attraction of credit resources; determination of the list of banks admitted to certain types of operations; limiting interest rates and commission rates. Indirect methods of money supply management include establishment of mandatory reserve requirements; determining the refinancing rate of commercial banks; open market operations.

Each of these instruments affects either the money base or the money multiplier. According to the two-tier banking system, banks are set standards for the minimum mandatory coverage in the form of interest-free deposits with the NBU. Their size is determined as a percentage of deposits in banks and is differentiated by types of deposits: demand deposits have a higher standard than term deposits. Changes in the required reserve ratio act through the value of the money multiplier. This tool increases even small changes in reserve requirements. It does not allow the NBU to manage banks' excess reserves, as well as the cash-to-deposits ratio. These parameters depend on inflationary expectations of banks, agricultural enterprises and the population, on the stability of the banking system, on the ratio of projected profit and investment risks. Therefore, in most developed countries, they are not applied.

One of the main indicators of the sufficiency of money in the economy is the level of monetization of the economy (LME). The value of which LME depends on the degree of development of the economy, the rate of economic growth, the level of inflation in the country, and the capitalization of markets [11]. The quality of money in the economy reflects the structure of the money supply (the share of various aggregates and their components). The quality of money in the economy is influenced by the methods of emission and sterilization of

the money supply. This is reflected in the assets and liabilities of central banks' balance sheets.

The LME indicator is calculated as the ratio of the average annual monetary aggregate M2 to nominal GDP [9]. The monetization indicator is related to the demand for money. When using this indicator to assess the sufficiency of the money supply, a problem arises. The problem is related to the fact that GDP does not fully reflect all the economy's needs for money, since not only the final product, but also the intermediate product is actually sold.

The more complete is the structure of the economy, the more stages of product redistribution are concentrated within the country and are provided through the interaction of its economic units, the greater is the need of the agricultural sector for money. Some of the domestic goods are exported. For the sale of products within the country, the money supply is not needed, and for the sale of goods coming in the form of imports, a lot of money is needed. The need for money is experienced by the agrarian and banking sectors, the scale of which fully reflects the GDP (only the cost of financial services provided, but not its circulation) [9]. The degree of development of the financial market affects the level of the economy with money. In developed countries, the scope of the financial market is wider; there is a successfully operating market for property rights and a market for the sale and purchase of businesses [7].

Thus, the refined monetization formula should look like this: nominal GDP; net exports; coefficient reflecting the ratio of the gross social product to GDP; coefficient taking into account the degree of development of financial markets [9].

The second problem is the correct calculation of the annual average M2 – based on a simple arithmetic average at the beginning and at the end of the year, or based on a chronological average that takes into account data at the beginning and end of each month in the period. The second approach is more accurate, but it does not change the general situation: the relative provision of the economies of different countries with money supply in both cases will be obvious.

The third problem is that the structure of the money supply in different countries is not the same, in some countries there is a higher share of liquid components, in others, there is a higher share of fixed-term accounts. The quality of money varies from country to country.

The complexity of the calculations is also related to the fact that the content of aggregates M1 and M2 differs in different countries. The dynamics of the LME may indicate both an adequate reaction of the money supply to changes in the demand for money, and the accumulation of inflationary potential in the form of an imbalance in the monetary sphere. This threatens to increase the rate of inflation in the future. Consider the factors affecting the value of this indicator (1) [8]:

$$M \times V = P \times Q, \quad (1)$$

where is the M – money supply; V – the speed of money circulation; P– price level; Q – the volume of production.

The exchange equation shows that to service the product created over a certain period of time ($P \times Q$), a certain amount of money M is needed, which rotates at a certain speed V. The time for which the complete sale of the manufactured products is carried out is taken as t, but this component is absent in equation (1). If we take t equal to one year, the right-hand side of equation (1), that is, the product of P and Q, with some degree of approximation, is the annual GDP.

GDP can have commodity and value dimensions. The value Q at t, which is equal to one year, represents the GDP in commodity terms, the product P by Q – in value terms.

Our attention is focused on the specifics of such calculations: GDP increases the goods intended for final consumption, the intermediate account is excluded. Based on equation (1), the same volume of GDP is served by different amounts of money. However, the speed of their circulation will be different. According to the State Statistics Committee, Ukraine's GDP in 2020 is UAH 4194.102 billion. The average monthly value of the M2 monetary aggregate in 2020 is UAH 1,462.45 billion. We get the speed of circulation of money, equal to 2.87 turnovers per year.

In practice, economists do not use an indicator of the velocity of money circulation, but an indicator that is inverse to it. We are talking about LME, which can be determined by the formula (2):

$$LME = \frac{M_s}{GDR_t} \times 100\% \quad (2)$$

where is the LME – the level of monetization of the economy as a percentage; M_S – average value of money supply for the period t; GDP_t – GDP created for the period t.

The higher the LME, the lower the velocity of money circulation. The LME value of a certain country depends not only on the deficit (surplus) of the foreign trade balance, hence on the emission policy of central banks regarding the issue of new money to buy excess foreign exchange earnings of exporters, but also on the degree of structured ness of the products produced in the country.

The real velocity of money circulation is much higher than it follows from formula (1). For example, let the country's GDP for a year be equal to UAH 10 billion. Money supply – UAH 5 billion.

According to the formula (1), the velocity of circulation of money V is equal to two turnovers per year. This would be the case if the country produced only simple goods with a zero degree of structuring, but this does not happen. If a country produces many goods with a high degree of structured ness, then a large amount of money must circulate in the production of means of production.

The money is used by agricultural enterprises for the purchase and sale of material resources used for the production of goods. Banks will receive applications from commodity producers for a loan to finance operations. To support the economy, the NBU is forced to issue money. This will not affect the prices of final goods, that is, emissions do not cause inflation. A country in which highly structured goods are produced will strive

for a high level of monetization, that is, the LME will be large (Japan).

There will be a lot of money in the channels of money circulation, and the speed of their circulation from the perspective of the turnover of final goods will be low. Money will remain for a long time in the budgets of the population and corporations [2].

In Ukraine, the production of products with a low degree of structured ness is carried out; therefore a high level of monetization and a large amount of money are not needed. In Ukraine, the velocity of money circulation is high.

The money supply M is measured in the national currency, the velocity of money circulation V – in turnovers per year, the price level P – in the national currency. The volume of production Q is measured in units per year. In the denominator of the equation, there is a quantity t – time. Equation (1) in a new form (3):

$$(M \times V) \div t = (P \times Q) \div t, \qquad (3)$$

The value t shows the internal dynamics reflecting the tendencies of the environment that formula 3 describes. If we do not take into account the time factor, we can make the erroneous conclusion that in the economy, when one of the parameters of the equation changes, equilibrium is restored instantly. That is, if the money supply M increases, the velocity of money circulation V will instantly decrease by the required amount. A feature of equation (1) leads to this conclusion – it lacks a time parameter. In fact, everything happens differently.

As the parameter M increases, the velocity of money circulation V will decrease gradually, and the rate of this decrease will fluctuate. Until the equilibrium is restored, the effect of price increases is observed. It is due to the fact that after increasing M, equation (3) turns into equation (4):

$$(M \times V) \div t > (P \times Q) \div t, \qquad (4)$$

The inflationary effect I is caused by the excess of the left side of equation (4) over the right side (5):

$$I = (M \times V) \div t - (P \times Q) \div t, \qquad (5)$$

If we bring formula (1) closer to reality, we get differential equations. There is a point of view according to which the economic system is in a state of disequilibrium for a longer period of time, and its parameters are described by the equations of nonlinear dynamics. If periods of equilibrium occur in such a system, they are short-term. In fact, fighting inflation by reducing the money supply, that is, by reducing the value M on the left side of equation (3), is not always effective, because the price level P can be maintained at a high level by increasing the velocity of money circulation V. If the value V grows weakly, the reduction M can lead not to a decrease in P (prices), but to a reduction in Q (the amount of products produced). That is, not every increase in the money supply M leads to an increase in prices P. Sometimes it happens that while the increased component M is not compensated by the decrease in the component V, the component Q grows [7, 9].

If, with an increase in the parameter M, the balancing of equation (1) occurs due to a decrease V or through an increase Q, then the population becomes richer. If the balancing of this equation occurs due to an increase in P, then inflation rises.

The 1929 crisis in America showed that there was an imbalance at the macroeconomic level of the form (6):

$$M \times V < (P \times Q), \qquad (6)$$

FRS reduced the money supply (decreased the M) parameter, and corporations increased output (increased the Q) parameter [8, 12]. Since prices did not decrease (the P parameter did not decrease), the population did not have enough money to buy the commodity mass ($P \times Q$).

To calculate the level of monetization of the Ukrainian economy in 2020, we take $t=1$, as M_S we use the monthly average value of the monetary aggregate M2. Let's carry out the calculations: UAH 1462.45 billion / UAH 4194.102 billion * 100% = 34.87%. Table 1 shows data on GDP, monthly average values of the monetary aggregate M2 and the LME of Ukraine.

Table 1

GDP, aggregate M2 and LME of the Ukrainian economy, 2012-2020

Year	GDP, UAH billion	Average monthly value of the monetary aggregate M2, UAH billion	LME, %	Velocity of money circulation
2012	1408,889	771,126	54,73	1,83
2013	1454,931	906,236	62,29	1,61
2014	1586,915	955,349	60,2	1,66
2015	1988,544	993,812	49,97	2,0
2016	2383,182	1102,391	46,26	2,16
2017	2982,920	1208,859	40,53	2,46
2018	3558,706	1210,56	34,02	2,94
2019	3974,564	1285,74	32,35	3,09
2020	4194,102	1462,45	34,87	2,87

Source: Compiled by the authors based on [13].

As you can see in the table1, the level of monetization decreased from 54.73% (2012) to 34.87% (2020). This has a satisfactory effect on the development of the economy. In developed countries, the monetization rate is in the range of 60-80%, and sometimes exceeds 100% (for example, Japan, Switzerland). Formally, the low level of monetization is explained by the specificity of the Ukrainian economy: the relatively high velocity of money circulation is due to the high share of M0 in the structure of the money supply; turnover in the domestic turnover of

foreign currencies and the implementation with their help of a part of the total number of transactions.

A high level of monetization is typical for an economy in which the banking system and financial markets are developed. The increase in non-cash settlements, the volume of deposits for a long time form an increase in the monetary base and lead to a decrease in the speed of circulation of money.

With high inflationary expectations, the population gets rid of money by buying goods, therefore, the velocity of money circulation increases. High inflation means that savings in the bank are losing value; therefore, in the structure of the money supply, a high share of M0 is cash in circulation [2]. Velocity of money, in fact, is the average number of transactions that one currency serves during the year.

This value is influenced by general economic factors (change in the rate of economic growth) and monetary (development of credit operations and mutual settlements, increased use of plastic cards, electronic payments, and change in the level of interest rates in the money market).

As you can see in the table 1, there is a general trend towards a significant increase in the velocity of money circulation: 1.61% (2013) to 3.09% (2019). Obviously, this is due to a change in the structure of the money supply. Cash, despite the fact that it remains a significant element of the money supply, is decreasing its share. The consequence of this effect is the growth in the use of plastic cards and non-cash payments. The range of lending services for agricultural enterprises is also expanding. In real life, this is reflected in the fact that it is possible to purchase goods on credit in any large store. An increase in the velocity of money circulation indicates an increase in the share of cash in the money supply. This situation means that the use of non-cash payments by agricultural enterprises is decreasing, as is the confidence in the banking system as a whole.

A deliberate policy of forming the optimal amount of money in the country is one of the ways to improve the welfare of society [12].

Consider the structure of the money supply. It includes cash in circulation (M0 aggregate), non-cash money in the current and settlement accounts of enterprises, as well as demand deposits of the population (which together with M0 form the M1 aggregate) and urgent accounts of the population and enterprises (which, adding to the M1 aggregate, form unit M2). The quality of these components of the money supply is different. Cash is money of paramount importance, forming a circulating cash desk of households and money intended for transactions. The money on demand accounts of individuals is intended for cashing out and converting it into the circulating cash desk of the population. Current and settlement accounts of enterprises are used for the current payments of firms. Together, these three components provide the transactional demand for money. These assets are associated with the inflation rate in the country [1].

The structure of the money supply in the economy is related to the structure of bank liabilities, and the structure of bank liabilities determines the structure of bank assets. This is the quality of money in the economy [8]. If the banking system lacks long-term resources, its activities are focused either on servicing the economy's need for working capital, or on speculation in financial (stock, foreign exchange) markets. The structure of the money supply makes it possible to estimate the share of transaction money and the share of investment money in the economy. The former cause inflation, while the others create benefit. There is a direct connection between these components of the money supply.

One of the structural indicators reflecting the quality of money in the economy is the share of cash in the monetary aggregate M2. The more developed the economy, the less the share of cash in circulation. Among the factors that reduce the share of cash in circulation, we will single out: the degree of development of the system of non-cash payments; the financial condition of agricultural enterprises, the presence of money in their accounts, this is determined by the stage of the business cycle [7]. The factors that increase the share of cash in circulation are the degree of development of the shadow economy; the rate of inflation and the uncertainty of its dynamics [2].

Money issue in a developed market is subject to the effect of the money multiplier, that is, an increase in money in the dynamics of a certain coefficient. In the process of bank issue, situations of large growth of money supply may arise in comparison with its initial increase (primary issue). For example, the Central Bank buys securities for UAH 10 million and, paying with their seller, issues money (banknotes) for this amount. The seller can put the money received into his account in a commercial bank, which, by increasing its assets, can issue loans for UAH 10 million, carrying out a new credit issue and thereby increasing the money supply.

This effect is called the money multiplier [2]. It can be written as (7):

$$10\,000\,000+K*10\,000\,000+K^2*10\,000\,000+K^3*10\,000\,000+\ldots, \text{ or (8)} \quad (7)$$

$$10\,000\,000*(1+k+k^2+k^3+\ldots.+k^n) \quad (8)$$

and the general formula for recording the money multiplier in our case (9):

$$10\,000\,000 * \frac{1}{1-k}. \quad (9)$$

Since the value of the pre-issued money supply is not constant, but a variable, in general terms, the money multiplier formula has the following form (10):

$$K = E \div (1-k) \quad (10)$$

where E – is the primary issue; k – is the money multiplier.

The money multiplier coefficient can be represented in the form of formula (11) or (12):

$$m = 1 \div r, \quad (11)$$

$$m = (1+c) \div (r+e+c), \quad (12)$$

where c – is the ratio of cash in the non-banking sector to the total volume of deposits in the banking

system; *r* – the rate of mandatory reserve funds of financial institutions in the NBU; *e*– is the ratio of banks' excess reserves to the total volume of deposits in the banking system [10].

The relationship between the monetary base *H* and the money supply *M1* (money multiplier) is presented in the formula (13):

$$M1 = \frac{1 + g * (1 - a - b)}{a + b * (1 - g) + g * (1 - a)} H \quad (13)$$

where $H = MR + UR + MH$; *MR* – minimum backup coverage; *UR* – excess reserves; *MH* – cash in circulation; *D* – demand deposits; *K* – loans from commercial banks; $\alpha = MR / D$ – is the required reserve ratio; $\beta = UR / D$ – is the rate of excess reserves; $\gamma = MH / K$ – the share of cash in the total amount of loans from commercial banks [8, 10].

So, the money supply increases with decreasing α, β, γ.

Banking multiplier – the process of increasing money in deposit accounts of commercial banks as they move from one commercial bank to another. The banking multiplier mechanism can be used not only in the case of loans, but also when the NBU buys securities or currency from commercial banks. As a result, the banks' resources invested in active operations decrease, and the free reserves of these banks used for lending operations increase, that is, the mechanism of bank multiplication is activated.

The NBU can turn on this mechanism even when it reduces the rate of deductions of required reserves. The free reserve of banks is increasing, which leads to an increase in lending and the inclusion of a bank multiplier.

Banking animation is a combination of deposit and credit expansion processes. The essence of money connects them: money of the NBU (money in the reserve account) and money of a commercial bank (money in the client's deposit accounts). The money in the reserve account is the NBU obligation and at the same times the bank's assets [9].

The example. An agricultural enterprise serviced by Aurora Bank sold export earnings with the bank's participation on the interbank currency exchange in the amount of UAH 5 000, which was credited to a correspondent account with the NBU. Aurora Bank credited the amount to the current account (demand deposit). Part of this amount must be deposited in a special account of required minimum reserves. According to regulatory documents, the required reserves ratio (R) is 2.5%; the amount of the reserve will be UAH 119. The bank will keep UAH 4881.

This amount is the bank's excess reserves. The bank using these funds can provide a loan to another client. The second client was granted a loan in the amount of UAH 4881, as a result of which the excess reserve of UAH 4881 was reduced to zero, while bank deposits increased by the same amount. Then the client will pay with funds from the deposit for the equipment and transfer the entire amount to his counterparty in Veles Bank. Because of this operation, Veles Bank will receive UAH 4881 to its account with the NBU and will increase its reserves. Then this amount will be credited to the client's current account. This bank will form a reserve for UAH 122 from the deposit amount and transfer it to a reserve account with the NBU. Veles Bank will convert the difference between the amount of the reserve and the required reserve (4881-122 = 4759) into a loan. In addition to the existing deposits and loans, we receive a new deposit in the amount of UAH 48810 and a loan of UAH 4759.

Thus, the bank multiplier is a quantitative assessment of the process of multiplying money in the deposit accounts of commercial banks [2].

The banking multiplier mechanism can operate within a two-tier banking system. The NBU (first level) manages this mechanism. Commercial banks (second tier) force him to act automatically, regardless of the wishes of the heads of individual banks. In the event of a decrease in the norm of required minimum reserves of the NBU, banks will have an increase in free reserves. This will lead to an increase in lending and the inclusion of a banking multiplier mechanism. Of all banks' investments in active operations, only credit investments create new deposits, that is, they allow them to perform the issuing function of the banking system. The greater the share of loans in the assets of the banking system, the greater the volume of its issuing activities.

The study of macroeconomic indicators characterizing the monetary system of Ukraine revealed a number of negative trends that form inflationary expectations: growth in inflation; decrease in the level of monetization; an increase in the share of cash in the money supply; an increase in the speed of circulation of money; decrease in the money multiplier. The consequence of these trends – an increase in inflationary expectations in Ukraine – has a satisfactory effect on the volume of GDP and is a prerequisite for slow growth of the national economy.

Conclusions. According to the study results, monetary policy should be more focused on real economic growth and reflects the active role of the NBU in achieving the goals of state economic policy with the operational independence of the NBU. It is possible to preserve the potential of the NBU independence principle and at the same time avoid its negative consequences through detailed legislative regulation of its activities and responsibilities. This requires specifying the goal of ensuring the stability of the financial market and, in general, the activities of the NBU as a mega-regulator.

State support for agricultural enterprises should be "inscribed" in the concept of coordinating monetary policy. So, the issuance of loans can be performed by all types of banks, regardless of the size of the capital. This makes it possible to provide lending to both large enterprises and enterprises of medium and small agribusiness. The combination of financial and monetary methods of supporting agricultural enterprises leads to a decrease in credit risk in cases where the loan is secured by state (municipal) guarantees. This leads to the need to improve the methodology for the formation of monetary policy, determines the monetary processes in the Ukrainian economy for the forecast period.

In the document "On the basic principles of monetary policy ..." it is necessary to reflect not only the directions of monetary policy development, but also the features of

credit policy and its role in stimulating bank lending to agricultural production, investment and innovation projects. It should be borne in mind that the institutions of the credit system (not only banks) are also institutions of the monetary system. The emission mechanism based on the multiplication of deposit money because of banks' lending operations is a way to optimize the money supply for the growing demand of the agrarian sector of the economy.

It has been substantiated that the role of monetary policy is to create favourable conditions for expanding the lending activity of banks and improving the payment and settlement mechanism. In the macroeconomic aspect, effective monetary policy leads to a decrease in inflation rates, stability of financial markets, equalization of the level of various financial instruments, an increase in the long-term deposit base of banks, and a decrease in systemic risks. Carrying out monetary regulation, the NBU does not directly influence the state of the agricultural sector.

Its main task is to create the prerequisites for the formation of savings of agricultural enterprises with their subsequent transformation into productive investments. Under such prerequisites, it is necessary to understand the stability of the inflation rate, the exchange rate of the national currency, and the low level of credit rates. To maintain an appropriate level of business activity of subjects of agricultural production, it is possible not only to allow a reduction in real money supply, but also to be careful about a decrease in its growth rates.

It is proved that in recent years it has not been possible to intensify the lending activities of banks as the basic structures of financial support for the development of the agricultural sector of the economy. It is necessary to significantly adjust the course of monetary policy in the direction of providing favourable conditions for raising production investment, expanding agricultural production, increasing incomes, stimulating innovation activity. The mobilizing role of state regulation can be successful only if it is implemented through mechanisms to intensify entrepreneurial activity in the agricultural sector.

The results of the article can be used to improve the regulatory framework governing the coordination of cash flows at the macro level to ensure the stable development of the national monetary system, taking into account the external and internal factors of its development. The theoretical provisions and conclusions contribute to solving an important problem of creating adequate monetary conditions for the modernization of the agricultural sector of the economy.

4 References

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