

TIES 2020**International conference «Trends and innovations in economic studies»****MONEY SUPPLY AS AN INDICATOR OF MONETARY
REGULATION**

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Abstract

The level of saturation of the economy with money is determined by several significant factors. In particular, it depends on the development trends of the economy, payment discipline and applicable forms of payments. In modern conditions, the money supply as a macroeconomic indicator correlates and affects the formation of supply and demand, fiscal balance and price stability. Monetary aggregates consist of elements characterized by varying degrees of liquidity and affect income, employment, products and other economic parameters. An analysis of real laws and relationships in the sphere of money supply allow us to assess the qualitative and quantitative composition of monetary aggregates that have a significant impact on the processes occurring in the real Russian sector, which, in the end, has applied interest. The article discusses the theoretical and applied aspects of the formation of the money supply, as well as the specifics of monetary aggregates in the current conditions.

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1. Introduction

The volume of money supply and the structure of monetary aggregates are significant macroeconomic indicators affecting price volatility, changes in the volume of output of goods and services, as well as employment and inflation. Cash flow and their dynamics are the totality of monetary relations, which are reflected in the country's payment system, which makes it necessary to study the categories of money supply and monetary aggregates.

2. Problem Statement

Data on macroeconomic indicators, which reflect the parameters of money and money circulation, allow us to talk about the size of the money supply in a specific time period, as well as about changes in the volume of money supply in the country. This, in turn, makes it possible to draw conclusions about economic development trends and make adequate management decisions.

3. Research Questions

Money supply has an established concept. This question was developed in classical economic theory.

Table 01. Conceptual approaches to the definition of the category of "money supply" (Hayek, 2008; Hayek, 2007; Marks, 1976; Ricardo, 2004; Thornton, 2016; Usoskin, 1976)

Author	The conditions for creating a theoretical premise	Contribution to the definition of money supply
D. Ricardo	The Gold Standard	He discovered the interdependence between the amount of money, its value and prices, when gold was the main unit of settlement.
K. Marx	The study of the regularity of commodity circulation	An objective economic law determines the amount of money in circulation, according to which the necessary amount of metal money is circulated, and the self-regulation mechanism redirects excess money from the sphere of circulation to the category of treasures.
H. Thornton	Contribution to the theory of money	He introduced categories: «means of payments», «currency», which received in England the status of statistical indicators characterizing the number of circulating money, both metal and paper, as well as banknotes, deposits and commercial bills.
F. Hayek	Withdrawal from the gold standard and assessment of the impact of money on prices, employment and other macroeconomic indicators	He revealed the need to take into account all the tools that serve money at least temporarily. Introduced the credit system in the form of a pyramid standing on its top. Its narrowest part or the first segment contains the main currency, the second segment includes money issued by banks, the third contains non-bank commercial loans. According to studies, he came to the conclusion that it is possible to influence the bulk of the main currency and loans issued by banks, but it is very difficult to influence non-bank loans.

Due to the need to manage and control the amount of money in circulation, one of the areas of research of money and money circulation revealed the need to measure money supply. The problem of

measuring money supply has determined the need to introduce the concepts of “narrow” and “broad” money aggregates, which are the “stock” of money in the economy. So, Friedman and Schwartz (1971) focused on money aggregates: M_1 , M_2 , M_3 , M_4 and offered such elements of the money supply as cash (including American Express coins and travelers checks), bank deposits, demand deposits and savings deposits in commercial banks, deposits of mutual savings banks and the postal savings system, shares of loan and savings associations, cash valuation of life insurance policies and state savings bonds. In turn, these aggregates have been implemented in the practice of monetary regulation of economic activity of countries, but the composition and number of monetary aggregates vary depending on the conditions and characteristics of the country's national money market. So, for example, the USA uses money aggregates M_1 , M_2 , M_3 and L , which ultimately form its money supply.

4. Purpose of the Study

The goal is to assess the money supply and monetary aggregates. The article discusses the theoretical and practical aspects and characteristics of the money supply and monetary aggregates.

5. Research Methods

The economy of the Soviet period did not include monetary policy in the toolkit of monetary regulation of the economy. The market economy has made adjustments in the sphere of money and money circulation, which introduced the category of “monetary base” in a narrow and broad definition.

The monetary base in a narrow definition is formed from cash and required reserves of credit organizations in the Bank of Russia. Additionally included balances on correspondent and deposit accounts of credit organizations with the Bank of Russia and Bank of Russia bonds form a broad monetary base.

6. Findings

The Bank of Russia, pursuing a monetary policy, began to use monetary aggregates. At the same time, the rules for calculating and analyzing money supply and monetary aggregates according to the methodology of the Bank of Russia determine their sequence from the standpoint of decreasing liquidity, which corresponds to the banking practice of other countries (Golikova & Khokhlenkova, 2000).

As shown in Figure 01, the principle of constructing monetary aggregates is based on the fact that each previous indicator of the money supply is included in the next. Cash in circulation (money aggregate M_0) is an absolutely liquid part of the money supply that can be immediately used as a means of payment and consists of banknotes and coins in circulation (money outside banks).

Aggregate M_0 = cash in circulation outside the banking system
Aggregate M_1 (money) = M_0 + demand deposits in national currency
Aggregate M_2 = M_1 + term and savings deposits in national currency
Quasi-money = term deposits in rubles and deposits in foreign currency
Aggregate M_2X (broad money) = M_1 quasi-money
Aggregate M_3 = M_2X + certificates of deposit, state bonds, promissory notes

Figure 01. Russian monetary aggregates

Russian practice of the formation of monetary aggregates for the period 2011–2018 shown in figure 02.

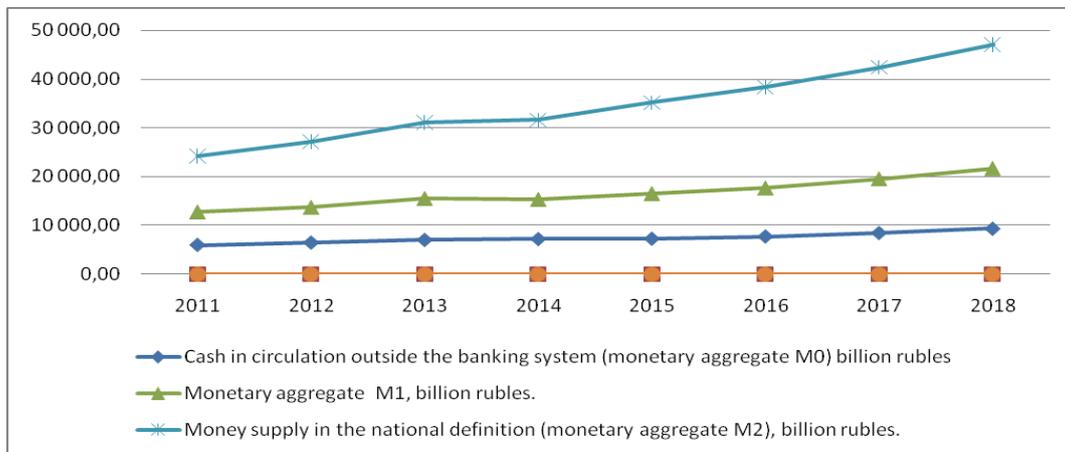


Figure 02. Dynamics of monetary aggregates in the Russian Federation, billion rubles (Official website of the Bank of Russia)

So, according to Figure 02, the amount of cash (M_0) has a tendency to increase, while the growth rate over 8 years amounted to 57.3 %. The highest growth rate compared to the previous year is 110.6 % and recorded in 2018. The lowest level is 0.9 % in 2015.

In general, the M_1 money aggregate also tended to grow and amounted to 169.5 % in 2018 compared to 2011, while in 2014 the growth of the indicator compared to 2013 was negative and amounted to 1.1 %, and the maximum growth for 2011–2018 was observed in 2013, when the growth rate in relation to 2012 was 13.3 %.

The M_2 aggregate grew to 194.6 % for the period 2011–2018, while the highest growth rate compared to the previous year was recorded in 2013 and amounted to 14.7 %, and the lowest was in 2016 and amounted to 9.2 %.

The M_0 aggregate represents all cash and maximum liquid assets that can be used as a means of circulation and payment. This indicator is usually chosen as the object of monetary regulation, when the prevailing share in payment relations is cash, and the economy is in a “liquid trap” and does not respond to changes in interest rates (Khokhlova, Kretova, & Burov, 2019; Muftahova, Nechaev, & Antipina, 2015).

The M_1 aggregate covers a larger volume of means of payment than the monetary base and includes the M_0 aggregate and funds in settlement, current accounts and demand deposits.

Unlike the M_1 aggregate, the M_2 monetary aggregate is the leading one from the position of monetary regulation in the financial markets, where the behavior of economic entities depends, as a rule, on the level of interest rates (Makarevich, 2003; Tayurskaya, Okladnikova, & Bibarsov, 2019; Tyapkina, Ilina, & Mongush, 2016).

Practice has established that the M_0 aggregate is most sensitive to changes in interest rates and turnover (Tayurskaya, Okladnikova, & Solodova, 2018). M_1 and M_2 are sensitive to changes in the consumer price index and gross domestic product.

The structure of the money supply in the national definition (monetary aggregate M2) is presented in Figure 03.

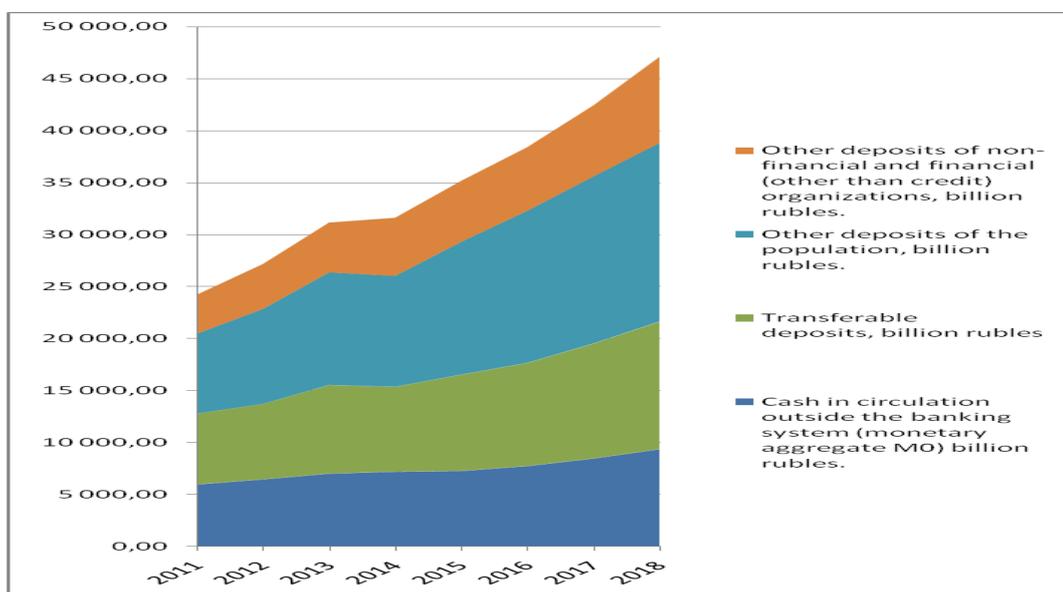


Figure 03. Money supply structure in national definition, billion rubles (Official website of the Bank of Russia)

Figure 03 shows the following trends characterizing the M_2 money aggregate: the share of cash and transferable deposits decreased from 24.5 and 28.2 % in 2011 to 19.8 and 26.08 % in 2018. At the same time, the share of other deposits of the population, as well as non-financial and financial (except credit) organizations increased from 31.8 and 15.6 % in 2011 to 36.5 and 17.6 % in 2018.

The liquidity of M_2 is lower than the liquidity of M_1 , because term deposits and funds in deposits that are able to act as a means of accumulation are included in M_2 . These components of the M_2 aggregate have the ability to turn into cash or funds in current accounts for making payments, but not earlier than the specified deposit condition or with prior notice to the bank and with a loss of interest on term deposits and deposits. Therefore, these funds cannot be used in calculations immediately.

The M_3 unit includes M_2X , as well as money market instruments in the form of deposit and savings certificates of commercial banks, government loan bonds and bills of exchange.

In addition, the active part, which serves the economic turnover, and the passive part, which includes cash accumulations, are distinguished in the money supply. This gradation of quantitative indicators of the money supply forms such statistical indicators as “money” and “quasi-money”. The “money” aggregate is equal to the indicator M_1 , i.e. represents the amount of money outside banks and demand deposits in the banking system that can be used as a means of payment. The “quasi-money” aggregate, which includes deposits of the banking system in rubles and foreign currency, is not called so by chance. These funds cannot be used for sales transactions, and their withdrawal, as noted earlier, is subject to certain conditions. However, they are similar to money in two respects: on the one hand, they can potentially be used to pay off settlement obligations, on the other hand, they help to accumulate money.

The “money” and “quasi-money” aggregates form the “broad money” (M_2X) aggregate. This monetary indicator is used for monetary regulation in countries where foreign currency is considered not only as a means to pay for foreign economic contracts, but also for the purpose of preserving the savings of the population and reducing losses in inflation income.

When choosing an object of regulation, it is necessary to take into account the ability of the Central Bank to influence the monetary aggregate and monitor its dynamics. In this case, the monetary aggregate should possess some mandatory properties: dynamics close to the dynamics of the general price level, which allows influencing macroeconomic processes; be easily determined for the possibility of the Central Bank affecting the money supply in circulation; to be accessible to the understanding of economic agents in order to provide them with the opportunity to navigate when developing an economic strategy (Khokhlova & Pakholchenko, 2015; Khokholova, Kretova, Kuznetsova, & Tsaregorodtseva, 2017; Vovseenko, 2018).

The M_3 aggregate is not used for the reason that the difference between M_3 and M_2 is tenths of a percent. To assess the state of the aggregate money supply, the dynamics of the money supply and the change in the values of macroeconomic indicators such as gross domestic product, consumer price index, commodity circulation, and average rate on credit investments are usually compared. At the same time, the functional dependence of the money supply and monetary aggregates on these indicators is established.

7. Conclusion

In Russia, the main monetary aggregate assessing the state of the money supply and representing the object of monetary regulation is indicator M_2 .

Therefore, an increase in the share of non-cash funds in the banking system has a positive effect on macroeconomic processes and allows monetary authorities to have a greater impact on their dynamics.

Thus, the money supply not only ensures the implementation of payment relations between business entities, but also is an object of regulation of economic activity. The basis of this process is the change in demand for money, the ratio between the components of the money supply, as well as the implementation of monetary policy measures by the Central Bank.

References

- Friedman, M., & Schwartz, A.J. (1971). *A monetary history of the United States 1867–1960*. Princeton: Publ. by Princeton univer. press.
- Golikova, Yu. S., & Khokhlenkova, M. A. (2000). Bank of Russia: organization of activities: studies. *Central Bank of the Russian Federation*; Mosk. bank. school. Kn. 1. Moscow: Deca.
- Hayek, F. A. (2007). *The Pure Theory of Capital*. Chicago.
- Hayek, F. A. (2008). *Prices Production and other works*. Alabama: Ludwig von Mises Instit.
- Marks, K. (1976). The poverty of Philosophy in Marx-Engels. *Collected Works. Vol. 6: Marx and Engels, 1845–1848*. New York: Int. Publ.
- Khokhlova, G., & Pakholchenko, V. (2015). Cash Turnover: Construction Models and Progress Prospects. *Economic annalis-XXI, 1–29(2)*, 27–30.
- Khokhlova, G., Kretova, N., & Burov, V. (2019). The problems of investment activity of entrepreneurship and methodological aspects of credit risks assessment. *ICRE 2019 IOP Conf. Ser. Mater. Sci. and engineer.*, 667. Retrieved from: <https://doi.org/10.1088/1757-899X/667/1/012038>

- Khokholova, G., Kretova, N., Kuznetsova, I., & Tsaregorodtseva, E. (2017). Improvement of financial instruments of innovative activities stimulation Advances in Economics, Business and Management Research. *Atlantis press*, 38. Retrieved from: <https://doi:10.2991/ttiess-17.2017.51>
- Makarevich, L. M. (2003). *In the world of money*. Moscow: Tumer.
- Muftahova, O., Nechaev, A., & Antipina, O. (2015). The use of financial and credit tools to minimize the risks in the organization of production. *Int. J. of Econ. and Financial Issues*, 5(4), 1060–1065. *Official website of the Bank of Russia*. Retrieved from: www.cbr.ru/statistics/macro_itm/dkfs/
- Ricardo, D. (2004). On the principles of political economy and taxation, by Liberty Fund, Inc
- Tayurskaya, O. V., Okladnikova, D. R., & Solodova, N. G. (2018). Investment in the regional economy: challenges and prospects. *Proc. of Int. Conf. on Res. Paradigms Transform. in Soc. Sci. "The European Proceedings of Social & Behavioural Sciences" EpSBS* 1161–1168.
- Tayurskaya, O. V., Okladnikova, D. R., & Bibarsov, K. R. (2019). Problems of labour market development in remote regions – information society: health, economy and law. *Mater. of the Int. sci. and pract. conf.* (pp. 313–319). (Network Institute of Continuing Professional Education).
- Thornton, H. (2016). *An enquiry into the nature and effects of the paper credit of Great Britain (1802)*. Creative Media Patners, LLC.
- Tyapkina, M. F., Ilina, E. A., & Mongush, J. D. (2016). The Effect of Innovative Processes on the Cyclical Nature of Economic Development *IEJME. Mathem. Ed.*, 11(6), 1519–1527.
- Vovseenko, E. A. (2018). Financial Instruments and Hedging: New Rules of IFRS European. *Proc. of Soc. and Behavioural Sci., L.* <https://dx.doi.org/10.15405/epsbs.2018.12.167>
- Usoskin, V. M. (1976). *Theory of money*. Moscow: Thought.