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DEVELOPMENT OF THE THEORY OF ECONOMIC POLICY FOR GROWTH: DISTRIBUTION OF MONETARY INSTRUMENTS ACCORDING TO THE ECONOMIC TARGETS AND STRUCTURE

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Table of contents

Introduction

Relevance of the research topic.

In recent years, issues of managing economic growth come to the foreground more and more often. The Russian economy is faced with underutilization of its development potential, stagnation, and tightening external restrictions. In the Decree of the President of the Russian Federation "On national targets and strategic targets of the development of the Russian Federation for the period until 2024" [242] breakthrough scientific, technological and socio-economic development of the Russian Federation are listed among the major targets. In the Decree of the President of the Russian Federation "On the national development targets of the Russian Federation for the period until 2030" [241], the first goal is the breakthrough development of the Russian Federation. Thus, the issue of launching economic growth based on the development of key industries and technological renewal of the economy is central at the current stage of development of the Russian economy.

Modern models of economic growth, in which the source of growth is resources on the verge of exhaustion, and the growth rate of the Russian economy itself decreases with increasing monetization with unfolded recession, which affects the dynamics of economic development, make the task of improving the model of economic growth and stimulating it even more complicated. The importance of creating institutions that promote and stimulate economic development is increasing. A special place in the system of economic institutions is devoted to the economic policy for growth and its monetary instruments.

Currently, the existing ideas about the relationship between economic policy, its monetary instruments and economic growth, and an expansion of its institutional instruments go under rethinking. To stimulate economic growth, the precise selection of macroeconomic policy instruments aimed at achieving the necessary GDP dynamics, accompanied by structural changes, which should be based on institutional growth parameters, economic policy theory, structural policy and technological structures, is of great importance.

The evolution of both the world and Russian economies, the development of scientific and technological progress, the formation of new technological structures, and the anticipation of the next tests on the path of economic development led to the evolution of the problems of economic theory, the revision of economic thought, and the emergence of new economic theories. Nowadays, the importance of scientific substantiation of institutional and structural decisions that ensure the effectiveness of economic policy and the use of its monetary instruments in stimulating economic growth is increasing.

The classical theory of economic policy and most theories of economic growth do not explain how monetary policy, in conjunction with fiscal policy, can contribute to technological renewal, changes in the structure of technologies and the sectoral structure of the economy; what instruments or

combinations thereof need to be used to stimulate economic growth in the new reality. The weak application of modern economic research in actual policy planning demonstrates its low practical usefulness. While there are significant achievements of the neoclassical paradigm (substantiation of the importance of monetary rules and stimulating results of monetary policy), macroeconomic regulators are now more actively selecting the necessary instruments when they are reacting situationally to changes in the economic situation.

The limitations of the neoclassical theory in conducting monetary policy in an aggregated form according to the type of the neoclassical model, as well as previously conducted studies on a monetary policy instrument influencing economic growth, for example: the money supply or the key rate creates the need to take into account the influence of monetary policy instruments distributed across objects structure of the economy, which should form the basis for the development of institutional monetary theory and is the determining topic of the dissertation research.

The development of the theory of economic policy for growth is proposed, which makes it possible to solve the problem of assessing the impact of monetary instruments in conjunction with fiscal policy instruments, distributed among objects of the economic structure (sectors and aggregated equivalents of paradigms), which has not yet been solved by Russian and foreign scientists. Expanding the range of the used instruments on the basis of the initial conditions of the “targets-instruments” principle makes it possible for each case to select appropriate instruments to influence changes in the macroeconomic situation. In this case, it is possible to have both a set of necessary macroeconomic indicators or structural-sectoral indicators, as well as a set of monetary and budget policy instruments (instrumental structure).

This theory, in relation to Russian practice, can be used in the development of programs for the social and economic development of the country, the strategy for the scientific and technological development of the country, the main directions of budget, tax and customs tariff policies and the main directions of the unified state monetary policy (in the selection of instruments for economics regulation). Also, the research results can be used in the structural analysis of the management of economic growth and technological changes in the economy of any country in the world. The practical result of the development of the theory of economic policy for growth can be institutional corrections of the implemented monetary policy to achieve macroeconomic targets, institutional corrections of the economy, structural and technological changes. All of the above mentioned problems determined the topic of the dissertation research.

The state of knowledge on the problem and its development.

Fundamentals of ideas about the determinants of economic growth are set out in the works of the classics of political economy T. Malthus, A. Smith, D. Ricardo, V. Petty. K. Marx in his work “Capital” revealed the structural factors of economic growth taking into account social reproduction.

The reproduction approach to economic growth was developed in the model of economic growth proposed by G. A. Feldman and is revealed in the works of L. I. Abalkin, S. Yu. Glazyev, D. S. Lvov, V. I. Mayevsky, A. A. Porokhovsky, V.T. Ryazanov, D.E. Sorokin, O.S. Sukharev, M.N. Uzyakov, K. A. Khubiev, V.N. Cherkovets.

In relation to Russian reality, the "new growth theory" within the framework of J. Schumpeter's approach was developed in the works of V. E. Dementyev, O. S. Sukharev, V. A. Tsvetkov. The works of V. M. Kulkov and V. T. Ryazanov emphasize the importance of national-specific factors for economic growth. The works of I.M. Tenyakov present a system of economic growth factors in relation to the Russian economy, including consideration of monetary factors of economic growth.

The role of institutional factors in economic growth is verified by G. Myrdal, D. North, D. Ajemoglu, S. Johnson, V. Easterly. Institutional factors of economic growth and development, together with political and cultural ones, are considered in the works of Russian scientists A.A. Auzan, A.S. Lungin, R. M. Nureyev, V. M. Polterovich, and V. V. Popov.

An integration approach to the study of the growth model is proposed by V.M. Kulkov, A.A. Porokhovsky, V. T. Ryazanov while using the postulates of modern classical political economy, as well as the evolutionary theory of classical institutionalism, taking into account the provisions of the Keynesian approach.

The structural aspects of economic growth in developing countries are revealed in the studies of H. Singer, H. Leibenstein, P. Rosenstein-Rodan, and A. Hirschman. **A significant contribution to the study of the structure of the economy** was made by local scientists K.I. Mikulsky, A.I. Notkin, Yu. V. Yaremenko. Their works develop issues of balancing the structure of the economy and improving the reproduction process. **The importance of changing the technical and economic paradigm in achieving economic growth, its connection with innovation and finance** are discussed in the works of K. Perez. **Issues of structural modernization of the economy, the theory of transformation of economic systems, technical and economic development, and the innovative nature of economic growth** were developed in the research of Russian scientists L.I. Abalkin, A.G. Aganbegyan, D. R. Belousov, S. Yu. Glazyev, V.E. Dementiev, D.S. Lvov, V.I. Mayevsky, O.S. Sukharev, Yu.V. Yakovets, Yu.V. Yaremenko. **Structural changes in the economy** are studied in the works of J. Alonso-Carrera, E. Brancaccio, P. Einloft, C. Freire, F. A. Gabardo, N. Garbellini, R. Giammetti, J. B. Pereima, X. Raurich, L. Romano, R. M. Samaniego, J. Y. Sun, F. Trau, K. M. Vu, as well as L.A. Berkovich, K.K. Valtukh, R. Vintrovaya, S. Yu. Glazyev, V.E. Dementiev, L.S. Kazinets, A. Neshporov, V.I. Pavlov, O.S. Sukharev, Yu.V. Yaremenko.

The theory of economic policy is represented by the studies of J. Tinbergen, R. Mandell, R. Lucas, W. Eucken, P. Welfens, O. Blanchard, R. Barro, M. Allais, P. Krugman. **Issues of economic**

policy and the use of its instruments, including monetary ones, are presented in the works of Russian scientists A.G. Aganbegyan, S.A. Andryushin, A.O. Baranov, V.M. Gilmundinov, S.Yu. Glazyev, E.L. Goryunov, A.M. Grebenkin, E.T. Gurvich, S.M. Drobyshevsky, M.V. Ershov, O.M. Zamulin, F.S. Kartaev, I.L. Kirrilyuk, E.V. Krasilnikov, A.L. Kudrin, V.I. Mayevsky, N.V. Makeev, S.Yu. Malkov, A.K. Moiseev, V.M. Polterovich, V.V. Popov, O.L. Rogovoy, A.A. Rubinshtein, E.V. Sinelnikova-Murylev, I.A. Sokolov, D.E. Sorokin, O.S. Sukharev, I.M. Tenyakov, B.Yu. Titov, P.V. Trunin, G.G. Fetisov, K.A. Khubiev, A.A. Shirov, K.V. Yudaev.

Issues of using monetary and budget policy instruments within the framework of implementing economic policy to achieve macroeconomic targets are presented in the works of representatives of Keynesian theory: classical Keynesianism (J.M. Keynes), neo-Keynesianism (E. Hansen, R. Harrod); neoclassical synthesis (P. Samuelson, J. Tobin, D. Hicks, Hicks-Hansen model); new Keynesianism (L. Ball, N. Mankiw, D. Romer , J. Stiglitz, S. Fisher); DSGE – models (O. Blanchard, R. Woiters, M. Woodford, H. Gali, M. Goodfriend, L. Christiano, F. Smets); post-Keynesianism **(**F. Arestis, P. Davidson, J. Kregel, M. Lavoie, H. Minsky, D. Papadimitriou, L.R. Ray, J. Harcourt, P. Cherneva, A. Eicher); representatives of monetarist theory: classical monetarism (M. Friedman, A. Schwartz); new monetarism (R. Lagos, R. Wright, S. Williamson), as well as representatives of neoclassical economic theory (L. Walras, S. Jevons, A. Marshall, C. Menger, A. Pigou); new classical school (R. Barro, R. Lucas, T. Sargent, K. Sims, N. Wallace); neoclassical theory of supply (R. Barro, A. Laffer, M. Feldstein, P. Evans); theories of real business cycles (F. Kydland, E. Prescott); modern monetary theory (M. Kalecki , W. Mitchell , W. Mosler); Austrian school (R. Harrison, L. von Mises, M. Rothbard , J. Huerta de Soto , von Hayek); old institutionalism (T. Veblen , J.R. Commons , W.K. Mitchell, J. Galbraith, J. Hodgson); new institutionalism (R. Coase, D. North, O.I. Williamson, E. Ostrom, J. Buchanan and Russian scientists L.I. Abalkin, A.A. Auzan, S.Yu. Glazyev, V.E. Dementiev, B.A. Erznkyan, R.I. Kapelyushnikov, G.B. Kleiner, Y.I. Kuzminov, D.S. Lvov, V.I. Mayevsky, A.N. Nesterenko, A.N. Oleynik, V. M. Polterovich , O. S. Sukharev, V. L. Tambovtsev, A. E. Shastitko).

The impact of monetary policy on economic growth and individual sectors of the economy and the reverse impact, the transmission mechanism of monetary policy are considered in the works of C. Altavilla, N.F. Azad, M. Breitenlechner, Y. Cai, F. Canova, J. Cao, Z. Chen, M. Ciccarelli, E. Claus, G. Coenen, C. J. Costa Junior, V. C. Dang, V. D. Dang, R. De La Pen a, A. C. Garcia - Cintado, M. Ghassibe, M. Harding, F.Holm - Hadullaa, J. Huynh, K. M. Junior, M. Klein, L. Laureys, B. Li, H. Li, X.-L. Li, A. Mandel, R. Meeks, M. R. Mohseni, E. Z. Monte, C. Montes - Galdo´ n, R. R. Moreira, V. H. Nguyen, J. Ni, E. Pasten, P. Pei, M. Rubio, J. Scharler, R. Schoenle, S. Schmidt, T. N. Sequeira, A. Serletis, F. Tan, C. Thuerwaechter, V. J. Valcarcel, V. P. Veetil, B. Wanengkirtyo, M. Weber, X. Wei, L. Xu, Y. Xu, J. Yan, M. Zhan.

Research on the parameters and instruments of monetary policy, for example: the structure of the money supply, money demand, reserve ratios, interest rates, debt, lending and exchange rate changes, are presented in the works of I. P. Alagidede, C. Azariadis, T. Bianco, R.Boucekkine, C. Bua, J. Bullard, Y. Chang, D. Cobham, O. Hulsewig, A.- A. Iddrisu, I. Kaminska, M. Laksaci, K.-S. Lee, H. Li, X.-L. Li, J. Maih, F. Mauersberger, H. Mumtaz, L. M. Murgia, J. Ni, M. Pietrunti, J. Rogers, F. M. Signoretti, A. Singh, M. Song, A. Steinbach, J. Suda, R. Sustek, F. Tan, M. Touati - Tliba, X. Wei, R. A. Werner, W. Wu, Y. Xu, J. Yan, M. Zhan.

This study represents a set of provisions that develop the theory of economic growth policy, allowing to adequately explain, analyze and regulate the distribution of monetary instruments according to the targets and structure of the economy to achieve economic growth, confirming the need to expand the "targets-instruments" principle of J. Tinbergen's theory of economic policy.

The issues of determining the structure of influence of monetary instruments of economic growth policy with the aim of justifiably changing the content of the instruments of influence, as well as stimulating individual elements of the economic system, remain unresolved to this day. A deep theoretical study and practical testing of the results of solving this problem in real conditions is necessary. Thus, the lack of a comprehensive presentation of the problem, the lack of theoretical and methodological developments and practical recommendations on this problem determined the topic, purpose, and objectives of the study.

The object of the study is the theory of economic policy for growth and the sectoral structure of the Russian economy.

The subject of the study is the relationship between the subjects of economic policy for growth and the use of instruments of monetary policy for growth.

The purpose of the dissertation research is to develop a set of provisions that develop the theory of economic policy for growth, allowing to adequately explain, analyze and regulate the distribution of monetary instruments according to the targets and structure of the economy to achieve economic growth, confirming the need to expand the principle of "targets-instruments" of the theory of economic policy of J. Tinbergen. The developed provisions make it possible to overcome limitations of economic policy in an aggregated form similar to the neoclassical model.

To achieve this goal, the following problems were solved as part of the dissertation research:

- to develop an institutional monetary theory of the policy for growth, confirming the need to expand the principle of "targets-instruments" of the theory of economic policy of J. Tinbergen; identify the evolution of J. Tinbergen's principle "targets-instruments" in relation to economic policy according to the introduced and justified criteria;

- to develop a methodology for forming an economic policy for growth in distributing monetary instruments according to the targets and structure of the economy;

- to build an algorithm for the identification of the accumulation effect of monetary policy, as well as assessing the impact of the accumulation effect of monetary policy[1] on economic growth;

- to propose a way to assess the relationship between the integral effect of economic policy for growth and the cumulative effect of monetary policy;

- to propose combinations of a set of monetary instruments for economic policy for growth (key rate, M2 money supply, required reserves of credit institutions for borrowed funds, loans to households, loans to non-financial organisations) to simultaneously achieve several macroeconomic targets (real GDP, GDP growth rate, inflation rate, unemployment) taking into account changes in the instruments;

- conduct a structural analysis of the M2 money supply, on the basis of which to construct an institutional matrix of the influence of monetary instruments of economic policy for growth on the components of the M2 money supply, as well as the components themselves on GDP growth and inflation in Russia;

- to prove that the basic Mundell-Fleming model in relation to Russia describes the impact of fiscal and monetary expansion instruments on macroeconomic targets under the conditions of a floating exchange rate; modify the Mundell-Fleming model by including an additional equation for the third target parameter - inflation and apply it to Russia;

- to propose an instrumental-model apparatus within the framework of the institutional monetary theory of growth policy developed by the author for assessing the influence of macroeconomic policy instruments on the structure of the Russian economy, represented by three sectors (manufacturing, raw materials, transaction) and aggregated equivalents of structures [2];

- to build institutional matrices of the influence of monetary instruments of economic policy for growth on the sectoral dynamics of the Russian economy in 2011-2022 in order to increase its effectiveness depending on the current and necessary state and the influence of monetary instruments of economic policy for growth on the GVA of aggregated equivalents of structures and their growth rates for the Russian economy in 2011-2021 in order to increase the efficiency of policy implementation in the development of technological paradigms, the formation of the structure of technological paradigms.

The research hypothesis is the scientific assumption that in order to develop the theory of economic policy for growth, its methodology, justification for the use of the necessary monetary instruments, selection and distribution of them according to macroeconomic targets, as well as structural

[1] A condition in which an economic policy target becomes less or not at all sensitive to monetary policy measures (negative effect) or becomes more sensitive (positive effect) over time.

[2] The work calculates the equivalents of paradigms, a certain aggregate imitation, tied to the basic industries classified by academician S. Yu. Glazyev as paradigms [138]. A methodological approach was used to identify them and fit them into macroeconomic analysis according to O. S. Sukharev [225].

and sectoral indicators, it is necessary to develop a set of theoretical provisions that will make it possible to justify and harmonize the targets and monetary instruments of economic growth policy in contrast to the neoclassical theories, take into account the influence of monetary instruments distributed among the objects of the economic structure to stimulate economic growth, confirm the need to expand the "targets-instruments" principle of the theory of economic policy of J. Tinbergen .

The theoretical and methodological basis of the dissertation research are the theoretical, methodological and practical works of foreign and Russian scientists on the issues under consideration, on the theory of economic growth policy, the institutional approach to the use of economic growth policy instruments, the problems of implementing monetary policy for growth, presented in fundamental and applied works, monographs, conference materials.

The methodological basis of the study is the use of general scientific methods and research techniques. The use of a systematic approach made it possible to construct a model diagram of the interdependence of types of state economic policy influencing the economic growth; the scheme of operation of the Law on Planning Economic Policy for Growth as a basic economic institution; model-scheme for managing the movement of monetary resources through economic growth policies as part of the institutional approach; model diagram of the impact of institutional levels of economic growth policy interacting with monetary policy instruments on the monetary component and the capital component; institutional model of monetary policy for growth; a model of the circulation of money between economic entities, regulated by the central bank, defining the economic boundaries of monetary growth policy.

Periodization and classification in the work were used to identify problems of economic growth in Russia in 2000-2022, trends in the use of monetary instruments of economic policy for growth in Russia in 2000-2022, research on the evolution of views on monetary instruments and targets of economic policy in economic theories; to present the views of scientists on the use of monetary instruments within the framework of the theory of economic policy for growth. **Also, periodization and classification were applied** in the study of structural monetary policy to stimulate economic growth and the application of the institutional monetary theory of the policy for growth.

The application of the laws of induction and generalization made it possible to identify the main connections between "targets and monetary instruments" of economic policy for growth. **The use of special statistical and economic-mathematical research methods** made it possible to determine the main trends and problems of economic growth in Russia in 2000-2022, features of the use of monetary instruments of economic policy for growth in Russia in 2000-2022, identify the cumulative effect of monetary policy, and evaluate its impact on economic growth; implement a structural analysis of the money supply in the Russian economy; explore the structural distribution of monetary instruments of economic policy for growth according to the targets of economic development; modify the Mundell-

Fleming model for a new growth; determine shifts in the distribution of the money supply across the structure of the Russian economy and the distribution of the money supply into financial and non-financial assets; identify the impact of monetary policy on the sectoral structure of the economy and on aggregate equivalents of structures, as well as propose institutional adjustments to economic policy to overcome macroeconomic problems of growth in Russia.

The work adapts J. **Tinbergen's theory of economic policy, monetary theory, and structural analysis.**

The information and empirical base that provides evidence for the conclusions obtained is based on legislative and regulatory acts, materials from the theory of economic policy for growth, on monetary policy and instruments for stimulating economic growth, managing economic growth based on a structural-sectoral approach, on statistical and analytical materials, provided by the Bank of Russia, the Ministry of Finance, the Federal State Statistics Service, general economic, economic and mathematical and business literature, information from the media, the Internet, as well as the results obtained by the author.

The scientific novelty of the dissertation research lies in the development of provisions that advance the theory of economic growth policy, allowing to adequately explain, analyze and regulate the distribution of monetary instruments according to the targets and structure of the economy to achieve economic growth, confirming the need to expand the principle of “targets-instruments” of the theory of economic policy of J. Tinbergen: about the institutional content of the monetary theory of policy for growth, about the structural monetary policy for growth, about the modification of the Mundell-Fleming model, about the expanded “targets-instruments” principle of the theory of economic policy of J. Tinbergen, etc. The developed provisions make it possible to overcome limitations in the implementation of economic policy in the aggregate form according to the neoclassical model.

The most significant results containing the research novelty of the dissertation are as follows.

1. An institutional monetary theory of policy for growth has been developed, confirming the need to expand the “targets-instruments” principle of J. Tinbergen’s theory of economic policy. The institutional monetary theory of growth policy combines a systemic, dialectical, evolutionary and interdisciplinary approach to the study of monetary policy. It allows to explain differentiated impact of monetary instruments on economic growth taking into account sectoral dynamics, which expands the institutional-evolutionary interpretation of economic growth policy. The main provisions of the institutional monetary theory of policy for growth: on the institutional content of the monetary theory of policy for growth, on the institutional levels of monetary policy for growth, on the structural monetary policy for growth, on the structural distribution of the influence of the components of the money supply on economic growth, on the modification of the Mundell-Fleming

model, on the extended the principle of "targets-instruments" of the theory of economic policy of J. Tinbergen, on institutional corrections of monetary policy for growth.

The evolution of J. Tinbergen's principle of "targets-instruments" in relation to economic policy according to introduced and justified criteria is revealed: targets (economic growth, inflation rate, unemployment rate) are instruments of economic policy, monetary and fiscal policy.

2. A methodology has been developed for the formation of economic policy for growth for the distribution of monetary instruments according to the targets and structure of the economy. Unlike traditional ones, this methodology is based on the integral application of methods both known and proposed by the author, which make it possible to link monetary instruments of economic policy for growth with macroeconomic targets and the structure of the economy, effectively using existing institutions and resources to implement monetary policy for growth. A model diagram of the interdependence of types of state economic policies influencing economic growth; institutional model of growth monetary policy; algorithm for identifying the accumulation effect of monetary policy and assessing the impact of the accumulation effect of monetary policy on economic growth; a method for assessing the relationship between the integral effect of economic policy and the cumulative effect of monetary policy; modification of the Mundell-Fleming model; instrumental and model apparatus for assessing the impact of monetary instruments of economic policy for growth on the structure of the Russian economy, represented by three sectors (manufacturing, raw materials, transaction) and aggregated equivalents of structures have been developed.

3. An algorithm has been constructed to identify the accumulation effect of monetary policy (negative, positive, inertial, neutral), **as well as to evaluate the influence of the cumulative effect [68, 208][3] of monetary policy on economic growth,** which makes it possible to justify the use of its instruments in connection with the targets of economic policy, and to make decisions on their joint use. It is proposed to apply sensitivity coefficients for each target from the corresponding instrument, which show the change in the target parameter per measured unit of the instrument that is influencing monetary policy.

4. A method is proposed for assessing the relationship between the integral effect of economic policy and the cumulative effect of monetary policy to identify the effectiveness of the use of monetary policy instruments in achieving macroeconomic targets, which made it possible to identify weakening influence of monetary policy on the growth of the Russian economy and determine that it ensured the containment of inflation independent of growth, and formed various cumulative effects for certain targets due to different sensitivity to instruments.

[3] A condition in which an economic policy target becomes less or not at all sensitive to monetary policy measures (negative effect) or becomes more sensitive (positive effect) over time.

5. Combinations of a set of monetary instruments for economic policy for growth are proposed to simultaneously achieve several macroeconomic targets, taking into account changes in the instruments themselves. A set of econometric models for Russia for 2000-2020 has been constructed, allowing to assess the relationships between target macroeconomic indicators (real GDP, GDP growth rate, inflation rate and unemployment rate) and monetary instruments of economic growth policy [4], to measure the impact of a set of monetary economic policy instruments on each of the macroeconomic target indicators. In contrast to the well-known concept of monetary policy, the possibility of distributing its influence and selecting a set of instruments to achieve a set of target indicators, taking into account their mutual influence on each other (both instruments and targets), has been demonstrated, which confirms the need to expand the "targets-instruments" principle of J. Tinbergen and reveals the structural content of monetary policy for growth.

6. An institutional matrix of the influence of monetary instruments of economic policy for growth on the components of the M2 money supply, as well as the components themselves on GDP growth and inflation in Russia for the period of 2012-2020, has been constructed. A structural analysis of the M2 money supply was carried out, which made it possible to establish monetary instruments of economic policy[5] influencing the components of M2 and identify the components of M2, which slow down growth and reduce inflation when they increase, as well as determine the close relationship of the interest rate with the changing components of the M2 money supply. This made it possible to solve the problem of distributing the influence of the M2 money supply on the GDP growth rate, the inflation rate and the integral effect of economic policy. This analysis confirmed that the reasons for the economic slowdown were not related to monetization. The rate of increase in the money supply was insufficient for economic growth.

Based on econometric modeling, an insignificant inverse effect of the broad money supply M2 X[6] on the GDP growth rate in Russia for the period of 2000-2021 was determined, which proves the absence of a positive impact of the M2 money supply due to the inclusion of deposits in foreign currency and certificates of deposits and savings, and their low role for the Russian economy. It was determined using empirical, regression and structural analysis that in Russia the policy of increasing interest rates was not the reason for the reduction in inflation, but at the same time it slowed down economic growth and created a potential basis for the inflation development.

[4] The instruments considered are the key rate, the M2 money supply, required reserves of credit institutions for borrowed funds, loans to households, and loans to non-financial organisations.

[5] The following instruments were used as relevant instruments influencing the parameters of monetary policy and its implementation: the amount of the National Welfare Fund, the monetary base (in a broad definition), state budget expenditures, state budget deficit/surplus, the amount of public internal debt of the Russian Federation, the amount of public external debt of the Russian Federation, balances in mandatory reserve accounts deposited by credit institutions with the Bank of Russia, by funds raised, key rate, liquidity absorption (deposits of credit institutions with the Bank of Russia + Bank of Russia bonds with credit institutions), dollar to ruble exchange rate.

[6] M2 + other deposits in foreign currency + debt securities

7. It is proved that the basic Mundell-Fleming model in relation to Russia describes the impact of fiscal and monetary expansion instruments on macroeconomic targets under a floating exchange rate. It has been revealed that according to the Mundel-Fleming model, addressed to the functioning of the Russian economy in 2000-2021, there is no influence of budget expansion on the growth of real GDP. When exposed to monetary expansion, the results of the influence of the M2 money supply are fully consistent with the main plot of the Mundell-Fleming model.

The Mundell-Fleming model was modified by including an additional equation for the third target parameter - inflation, which allowed for the Russian economy for the period of 2000-2021 identify an increase in inflation when implementing budget expansion (with an increase in the budget deficit, an increase in inflation in 2014-2015 and vice versa, with an increase in the budget surplus, a decrease in inflation in 2010, 2016-2018), and with an increase in monetization and a decrease in the key rate - a decrease inflation (2001-2004, 2005-2007, 2008-2010, 2015-2018, 2020). Based on the proposed modification of the model, it was revealed that the use of different fiscal and monetary policy instruments has different effects on the target indicators of the inflation level and the real exchange rate, and a change in the key rate makes it possible to achieve three macroeconomic targets in the Russian economy (real GDP, inflation rate, real exchange rate).

8. As part of the institutional monetary theory of policy for growth developed by the author, an instrumental and model apparatus is proposed for assessing the influence of monetary instruments of macroeconomic policy[7] on the structure of the Russian economy, represented by three sectors (manufacturing, raw materials, transaction) and aggregated equivalents of structures. The work includes calculations of the equivalents of structures, a certain aggregate imitation, tied to the basic industries attributed to Academician S. Yu. Glazyev [138] to ways of life. A methodological approach was used to identify them and fit them into macroeconomic analysis according to O. S. Sukharev [225]:

- based on an empirically determined relationship between the used funds of organisations in M2 and the efficiency of use of funds by type of economic activity in 2017-2020 the effect of the law of diminishing returns has been revealed; increasing the share of funds used by type of economic activity in M2 increases the efficiency of using funds, but only to the level of 80 %;

- based on an empirical analysis of the influence of the M2 money supply on output by economic sectors (manufacturing and transaction -raw materials) in 2011-2021 and estimating the system of equations using the least squares method, the elasticity of output of each sector with respect to the money

[7] Monetary policy instruments: the amount of the National Welfare Fund, the M2 money supply, the amount of the state internal debt of Russia, the amount of the state external debt of Russia, required reserves (balances in the accounts of required reserves deposited by credit institutions in the Bank of Russia, for borrowed funds), key rate, absorption of liquidity (deposits of credit institutions with the Bank of Russia + bonds of the Bank of Russia with credit institutions); Budget policy instruments: state budget revenues, state budget expenditures, state budget deficit/surplus.

supply M2 is determined, and the result was obtained that further monetization of the Russian economy would contribute to the development of the manufacturing sector in comparison with the transaction and raw materials sector;

- based on the empirical analysis of the impact of the key rate on the use of M2 funds by economic sectors in 2017-2020**,** econometric modeling and application of the DOLS model, a result was obtained about a statistically significant dependence of the funds used in the transactional, raw materials and manufacturing sectors on the key rate. The transaction and raw materials sector is more dependent on the key rate in terms of funds used than the manufacturing sector;

- as a result of the implementation of a set of regression models for Russia for 2011-2022, which made it possible to assess the connections between the sectoral structure of the Russian economy and the instruments of economic policy for growth, to measure the impact on the structure of the economy of a set of instruments, a result was obtained on the most significant impact of instruments of economic growth policy on the manufacturing sector of the economy, and to a lesser extent on the raw materials and transaction sectors;

- as a result of the implementation of a set of regression models for Russia for 2011-2021 allowing to assess the connections between economic growth policy instruments and the structure of aggregated equivalents of paradigms, to measure the impact on the structure of aggregated equivalents of paradigms (GVA of the 1-3rd paradigms, GVA of the 4th paradigm, GVA of the 5th paradigm, GVA of the 6th paradigm, growth rates of each aggregate equivalent of structures) of a set of monetary instruments a result was obtained on the most significant impact of instruments on GVA of aggregate equivalent of the 5th paradigm, as well as on the significant impact of GVA of aggregate equivalent of the 1-3rd paradigms, GVA of aggregate equivalent of the 4th paradigm, GVA of aggregate equivalent of the 6th paradigm, and the growth rate of GVA of aggregate equivalent of the 4th paradigm. Instruments have been identified (increasing the M2 money supply, state budget expenditures and reducing external debt) that increase the GVA of individual aggregate equivalents of structures.

9. Institutional matrices have been built:

- the influence of monetary instruments of economic growth policy on the sectoral dynamics of the Russian economy in 2011-2022 in order to increase its effectiveness depending on the current and required state. The institutional matrix allows you to select appropriate combinations of monetary instruments of macroeconomic policy that are optimal and adequate taking into account the current sectoral structure of the Russian economy;

- the impact of monetary instruments of economic growth policy on the GVA of aggregated equivalents of structures and their growth rates for the Russian economy in 2011-2021 in order to increase the efficiency of policy implementation in the development of technological structures, the development of the structure of technological paradigms. The institutional matrix allows you to

select appropriate combinations of monetary instruments of macroeconomic policy, which are the most optimal given the existing structure of technological paradigms.

The theoretical significance of the dissertation research – the developed theoretical provisions that develop the theory of economic growth policy, combining systemic, dialectical, evolutionary and interdisciplinary approach to the study of monetary instruments of economic policy, make it possible to adequately explain, analyze and regulate the distribution of monetary instruments by purpose and structure economy to achieve economic growth, confirm the need to expand the principle of "targets-instruments" of the theory of economic policy of J. Tinbergen.

The practical significance of the dissertation research – the theoretical, methodological and methodological results obtained became the basis for practical recommendations for the selection of specific monetary policy instruments in conjunction with fiscal policy (instrument structure) to achieve various macroeconomic targets, including economic structure objects (sectors and aggregate equivalents of structures) and institutional adjustments of monetary policy in order to overcome macroeconomic problems of growth in Russia.

Provisions for defence:

1. Institutional monetary theory of policy for growth developed as part of the theory of economic policy for growth confirms the need to expand the principle of "targets-instruments" of the theory of economic policy of J. Tinbergen. The institutional monetary theory of policy for growth combines a systemic, dialectical, evolutionary and interdisciplinary approach to the study of monetary instruments of economic policy, allows to explain their differentiated impact on economic growth, taking into account sectoral dynamics, which expands the institutional and evolutionary interpretation of economic policy for growth. The institutional monetary theory of policy for growth is represented by a few basic provisions and has its own methodology. The main provisions of the institutional monetary theory of policy for growth: on the institutional content of the monetary theory of policy for growth, on the institutional levels of monetary policy for growth, on the structural monetary policy for growth, on the structural distribution of the influence of the components of the money supply on economic growth, on modification of the Mundell-Fleming model, on the extended principle of "targets - instruments" of the theory of economic policy of J. Tinbergen, on institutional corrections of monetary policy for growth.

The study, conducted as part of Keynesian monetarist theory, orthodox and unorthodox approaches according to introduced and justified criteria: goals (economic growth, inflation rate, unemployment rate) - instruments of economic policy for growth, monetary and fiscal policy, made it possible to identify the evolution of the principle of J. Tinbergen's "targets-instruments" in relation to economic policy.

2. The developed methodology for the economic policy for growth in terms of distributing monetary instruments according to the goals and structure of the economy in contrast to traditional ones

is based on the integral application of methods, both known and proposed by the author, which make it possible to use existing institutions and resources effectively to achieve economic growth. The developed methodology includes a model diagram of the interdependence of types of state economic policies influencing economic growth; institutional model of monetary growth policy; algorithm for identifying the accumulation effect of monetary policy and assessing the impact of the accumulation effect of monetary policy on economic growth; a method for assessing the relationship between the integral effect of economic policy and the cumulative effect of monetary policy; modification of the Mundell-Fleming model; instrumental-model apparatus for assessing the impact of monetary instruments of economic policy for growth on the structure of the Russian economy, represented by three sectors (manufacturing, raw materials, transaction) and aggregated equivalents of structures.

3. The constructed algorithm for identifying the accumulation effect of monetary policy (negative, positive, inertial, neutral), as well as the assessment of the impact of the accumulation effect of monetary policy on economic growth, allows to justify the selective use of its instruments in connection with the goals of economic policy and make decisions on their joint application. The application of sensitivity coefficients for each target from the corresponding instrument demonstrates the change in the target parameter per unit change in the influential monetary policy instrument.

4. The proposed method for assessing the relationship between the integral effect of economic policy and the cumulative effect of monetary policy allows to identify the effectiveness of the use of monetary policy instruments in achieving macroeconomic goals. The use of this assessment method made it possible to identify a picture of the weakening influence of monetary policy on the growth of the Russian economy and determine that it ensured the containment of inflation independent of growth and formed various cumulative effects for individual goals due to different sensitivity to instruments.

5. In contrast to the well-known concept of monetary policy, the ability to distribute its influence and select a set of instruments to achieve a set of target indicators, considering their mutual influence on each other (both instruments and goals), has been demonstrated, which confirms the need to expand the principle of J. Tinbergen “targets-instruments” and reveals the structural content of monetary growth policy. Combinations of a set of monetary instruments for economic policy for growth can be used to simultaneously achieve several macroeconomic goals, considering changes in the instruments.

6. The structural analysis of the M2 money supply revealed which monetary instruments of economic policy[8] influence the components of M2 and identified the components of M2, which when

[8]The following instruments were used as relevant instruments influencing the parameters of monetary policy and its implementation: the volume of the National Welfare Fund, the monetary base (in a broad definition), state budget expenditures, state budget deficit/surplus, the volume of public internal debt of the Russian Federation, the volume of public external debt of the Russian Federation, balances in mandatory reserve accounts deposited by credit institutions in the Bank of Russia by funds raised, key rate, liquidity absorption (deposits of credit institutions in the Bank of Russia + Bank of Russia bonds with credit institutions), dollar to ruble exchange rate.

they increase slow down growth and reduce inflation, and also determined the close relationship of the interest rate with the changing components of the M2 money supply. The problem of distributing the influence of the M2 money supply on the GDP growth rate, the inflation rate and the integral effect of economic policy has been solved. An institutional matrix of the influence of monetary instruments of economic policy for growth on the components of the M2 money supply, as well as the components on GDP growth and inflation in Russia for the period of 2012-2020 has been constructed. The reasons for the economic slowdown were not related to monetization. The rate of increase in the money supply was insufficient for economic growth. The broad money supply M2X[9] has a slight inverse effect on the GDP growth rate in Russia for the period of 2000-2021**,** which proves the absence of a positive impact of the money supply M2 due to the inclusion of deposits in foreign currency and certificates of deposit and savings certificates, their low role for the Russian economy. In Russia the policy of interest rates increase did not cause a decrease in inflation, but at the same time it slowed down economic growth and created a potential basis for inflation. Institutional adjustments are needed in the distribution of the M2 money supply, taking into account the impact of the components of the M2 money supply on the achievement of macroeconomic goals.

7. Mundell-Fleming basic model in relation to Russia describes the impact of fiscal and monetary expansion instruments on macroeconomic goals under a floating exchange rate. According to the Mundell-Fleming model, there is no influence of budget expansion on the growth of real GDP in the Russian economy in 2000-2021. When exposed to monetary expansion, the results of the influence of the M2 money supply are fully consistent with the basic idea of the Mundell-Fleming model. The modified Mundell-Fleming model with an additional equation for the third target parameter - inflation revealed an increase in inflation with the implementation of budget expansion, and with an increase in monetization and a decrease in the key rate - a decrease in inflation for the Russian economy for the period 2000-2021. Modification of the model made it possible to reveal that the use of different instruments of budgetary and monetary policy in Russia has different effects on the target indicators of the inflation level and the real exchange rate, and a change in the key rate makes it possible to achieve three macroeconomic goals in the Russian economy (real GDP, inflation rate, real exchange rate).

8. Instrumental and model apparatus for the estimation of the influence of the instruments of macroeconomic policy[10] on the structure of the Russian economy, proposed as part of the developed institutional monetary theory of the policy for growth, represented by three sectors (manufacturing, raw materials, transaction) and aggregated equivalents of structures includes: empirical determination of the relationship between the used funds of organisations in M2 and the efficiency of use of funds by type of

[9]M2 + other deposits in foreign currency + debt securities

[10] Monetary policy instruments: the volume of the National Welfare Fund, the M2 money supply, the volume of the state internal debt of Russia, the volume of the state external debt of Russia, required reserves (balances in the accounts of required reserves deposited by credit institutions in the Bank of Russia for borrowed funds), key rate, absorption of liquidity (deposits of credit institutions in the Bank of Russia + bonds of the Bank of Russia in credit institutions); Budget policy instruments: state budget revenues, state budget expenditures, state budget deficit/surplus.

economic activities in 2017-2020; empirical analysis of the influence of the M2 money supply on output by economic sectors (manufacturing and transaction and raw materials) in 2011-2021; determination of the elasticity of output of each sector with respect to the money supply M2 by estimating the system of equations using the least squares method; empirical analysis of the impact of the key rate on the use of M2 funds by economic sector in 2017-2020, econometric modeling and application of the DOLS model; implementation of a set of regression models for Russia for 2011-2022, allowing to assess the links between the sectoral structure of the Russian economy and the instruments of economic growth policy, to measure the impact of a set of instruments on the structure of the economy; implementation of a set of regression models for Russia in 2011-2021, allowing to assess the links between economic growth policy instruments and the structure of aggregated equivalents of paradigms, and to measure the impact of aggregated equivalents of paradigms on the structure.

The effect of the law of diminishing returns has been revealed; increasing the share of funds used by type of economic activity in M2 increases the efficiency of the funds use, but only to the level of 80%. Further monetization of the Russian economy would contribute to the development of the manufacturing sector compared to the transaction and raw materials sector. The transaction and raw materials sector is more dependent on the key rate in terms of funds used than on the manufacturing sector.

The most significant instruments of economic policy for growth are in the manufacturing sector of the economy, and to a lesser extent on the raw materials and transaction sectors.

The most significant impact of the instruments is on the GVA of the aggregated equivalent of the 5th paradigm, a significant impact on the GVA of the aggregated equivalent of the 1st-3rd paradigms, the GVA of the aggregated equivalent of the 4th paradigm, the GVA of the aggregated equivalent of the 6th paradigm, the growth rate of the GVA of the aggregated equivalent of the 4th paradigm. An increase in the M2 money supply, state budget expenditures and a reduction in external debt increase the GVA of individual aggregate equivalents of paradigms. Institutional corrections are needed in the use of monetary instruments of economic policy for growth, considering the results obtained based on the proposed instrumental-model apparatus.

9. The constructed institutional matrix of the influence of monetary instruments of economic policy for growth on the sectoral dynamics of the Russian economy in 2011-2022 increases the efficiency of policy implementation depending on the current and necessary state of the sectoral structure of the economy and allows to select appropriate combinations of monetary instruments of macroeconomic policy that are optimal and adequate given the current sectoral structure of the Russian economy. The constructed institutional matrix of the influence of monetary instruments of economic policy for growth on the GVA of aggregated equivalents of paradigms and their growth rates for the Russian economy in 2011-2021 increases the efficiency of policy implementation in the development of

technological structures, the formation of the structure of technological paradigms and allows the selection of appropriate combinations of monetary instruments of macroeconomic policy that are the most optimal given the existing structure of technological paradigms. Based on institutional matrices institutional corrections in the use of monetary instruments of economic policy are possible to influence the sectoral structure and the development of technological paradigms in Russia.

The dissertation work was completed in accordance with the passport of the scientific specialty of the Higher Attestation Commission: 5.2.1. - Economic theory: clause 9. Macroeconomic theory; clause 12. Theoretical analysis of economic policy and state regulation of the economy; clause 16. Theoretical approaches to the study of economic growth, economic development and economic fluctuations.

Approbation of the work and implementation of the research results. The main provisions and results of the dissertation research were presented and received a positive assessment at international and All-Russian scientific and practical conferences, including: International scientific conference “Reproduction of Russia in the 21st century: dialectics of regulated development”, dedicated to the 80th anniversary of the publication of the book by J. M. Keynes “The General Theory of Employment, Interest and Money” (Moscow, 2016), International Scientific and Practical Conference “External Challenges and Risks for Russia in the Transition of the World Community to Polycentrism: Economics, Finance and Business” (Moscow, 2019), All-Russian scientific and practical conference "Current problems of economic development of the member states of the Eurasian Economic Union" (Moscow, 2021), IX International scientific and practical conference "Russia in the era of global structural transformation: new historical prospects for economic development" (Moscow, 2023).

The author’s contribution to the theory of economic growth policy, the distribution of monetary instruments according to the targets and structure of the economy, the methodology proposed in the dissertation for the development of economic policy for growth were tested in teaching the courses “Macroeconomic analysis of the banking sector”, “Organisation of the activities of the Central Bank” (Faculty of Financial Markets of the Financial University under the Government of the Russian Federation, bachelor level), "Fundamentals of modern monetary policy" (master level at the Faculty of Financial Markets of the Financial University under the Government of the Russian Federation), "Finance", "Financial Security" (Faculty of Economics of the Russian Customs Academy, bachelor level), "Methods of managerial decision making " (faculty of public administration of M.V. Lomonosov Moscow State University, bachelor level), "Theory and mechanisms of modern public administration" (master level of the Faculty of Public Administration of M.V. Lomonosov Moscow State University), "Economics" (Faculty of Economic Sciences of the National Research University Higher School of Economics, bachelor level).

Publication of research results. The main results of the study are presented in 80 published works (total volume – 257.81 p.p./106.35 p.p.), including 6 publications (volume 5.65 p.p./3.07 p.p.) in peer-reviewed academic journals indexed in international databases Web of Science and Scopus , 48 publications (volume 29.31 p.p. / 25.86 p.p.) in peer-reviewed academic journals recommended by the Higher Attestation Commission under the Ministry of Education and Science of Russia for publishing the results of dissertations, 1 monograph (volume 10 p.p.)

The structure of the dissertation is determined by the stated goal and objectives. The work includes an introduction, four chapters, a conclusion, a list of references and appendices. The main text of the dissertation is presented on 301 pages, it includes 33 tables, 83 figures and 27 appendices. The list of references includes 544 sources.

1 Economic growth and the theory of economic policy

1.1 Problems of economic growth in Russia in 2000-2022

The most important characteristic of a country is economic growth, which in aggregate reflects the development of productive forces, the scientific and technological component of economic evolution, supply and demand for goods of individual industries, sectors and other economic parameters. Let us consider the economic dynamics and identify the peculiarities of the formation of economic growth in Russia.

Recently, expanding the potential of the nationally oriented approach, taking into account national specific conditions and factors of economic growth has become increasingly important [135]. Let us consider the national-specific indicators of economic growth in Russia, taking as a basis a set of its national-specific factors from the study by I. M. Tenyakov [235, p.427], emphasizing the indicators of the main macroeconomic targets (increase in real GDP and its growth rate, reduction of inflation and unemployment).

Figures 1.1-1.2 present the dynamics of the structure of economic policy targets: real GDP, GDP growth rate, inflation rate and unemployment rate.

Figure 1.1 presents the dynamics of real GDP (bln. rubles), inflation rate and unemployment rate (%) in 2000-2022. When considering the GDP in 2000 prices, the upward trend is generally maintained, after a fall in 2009, a slowdown trend is seen, which intensified after 2015, as well as a decline in 2022.

Over the study period 2000-2022, the unemployment rate tended to decrease from 10.58% in 2000 to 3.9% in 2022. In some years, the unemployment rate increased overall without breaking the downward trend. The largest increase from 6.21% to 8.3% was noted in 2009, but the downward trend continued as early as 2010. The next episode of a marked increase from 4.6% to 5.8% was noted in 2020.

The inflation rate has generally tended to decline over the period under study, interrupted by increases in the crisis years. Significant increases in inflation were observed in 2008 (13.28%), 2015 (12.91%) and 2022 (11.92%).

Thus, the structure of economic policy targets in Russia in 2000-2022 is represented by the tendency to growth of real GDP and reduction of unemployment. At the same time, the dynamics of inflation with a general tendency to reduce its level has peaks of growth in some years with subsequent decline. The problem is the growth of inflation rate with the reduction of real GDP from 2021.

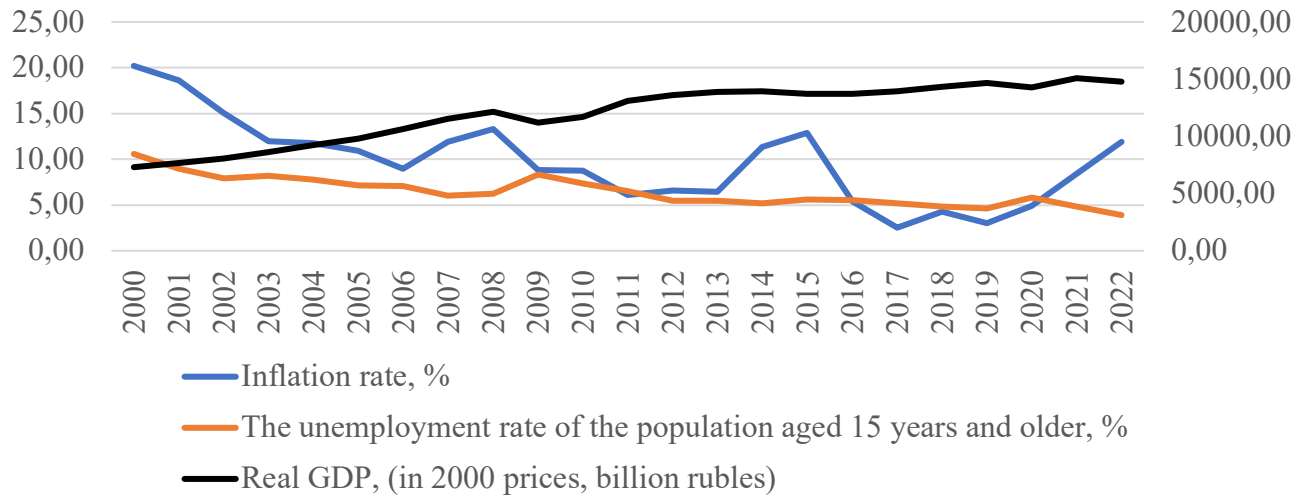

Figure 1.1 - Dynamics of real GDP, billion rubles, inflation rate and unemployment rate (%) in 2000-2022[11].

Source: developed by the author

Figure 1.2 shows the dynamics of real GDP growth rate, inflation rate and unemployment rate (%) in 2001-2022.

The growth model of the Russian economy was initially based on the effect of post-devaluation in 1999-2003, then until 2008 on positive raw material dynamics, after 2011 there was a reduction in the growth rate every year until the recession emerged in 2014 and its unfolding by 2015-2016. After macro parameters never recovered to the level of 2013. The highest growth rate of the economy is presented before the "covid" crisis in 2019 and in 2021. The main reason for the restraint of the growth model in the Russian economy does not depend on current factors, is systemic and lies in the structure of the economy and institutions.

At the same time, it should be noted that the tendency of opposing trends of GDP dynamics with inflation and unemployment indicators is also confirmed by analyzing the GDP growth rate, which is especially evident in the crisis years. The decline in real GDP growth rates in 2009 and 2015-2016 was accompanied by a jump in unemployment and inflation. The exception is 2010, when against the backdrop of accelerating real GDP growth rates there was an increase in unemployment against the background of declining inflation.

Starting from 2020, the GDP growth rate increased by 2021 with a subsequent drop by 2022, while at the same time the inflation rate steadily increased, and the unemployment rate decreased. The trend observed for 20 years has changed, inflation has changed the trend of dynamics.

[11] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx, https://rosstat.gov.ru/storage/mediabank/trud-3_15-s.xlsx, https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS

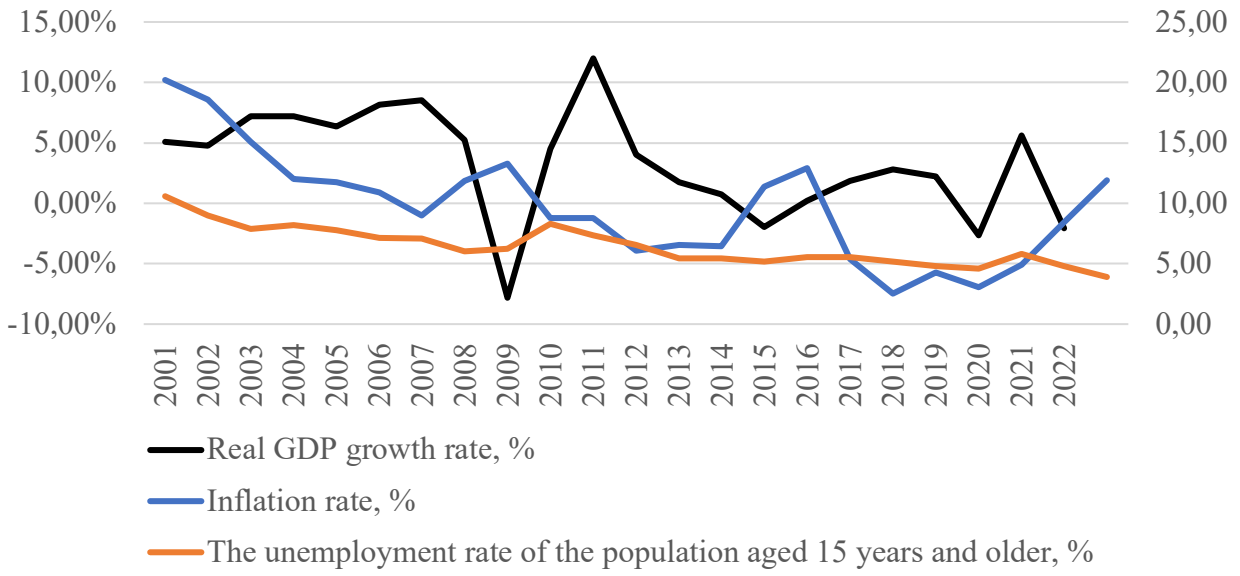

Figure 1.2 - Dynamics of real GDP growth rate, inflation rate and unemployment rate, %, 2001-2022 [12]

Source: developed by the author

Thus, the economic dynamics of the Russian economy is represented by weak positive GDP growth and lagging economic growth rates. The Russian economy for a long time fails to ensure the rate of economic growth, while the main goal of economic policy is economic growth. The structure of economic policy targets is characterised by the following peculiarity: the dynamics of real GDP and real GDP growth rate is opposite to inflation and unemployment, however, starting from 2020 inflation increases, having lost the connection with other macroeconomic targets.

Figure 1.3 shows the dynamics of real GDP, fixed capital investment in 2000 prices (billion rubles), inflation rate and unemployment rate (%) in 2000-2022.

Investments in fixed capital in 2000 prices tended to grow over the period of the study. Their maximum value was reached in 2008, after which fixed capital investment froze, which is a kind of trap for "capital renewal". Only in 2020 did the value of fixed capital investment exceed that achieved in 2008. In 2021 there was again a decline, replaced by growth in 2022.

At the same time, the dynamics of investment in fixed capital largely repeats the dynamics of real GDP (taking into account the difference in scale) and is opposite to the dynamics of inflation and unemployment. On this basis, we can speak about the general trend of real GDP and investment in fixed assets in prices of 2000, and about the opposite trend with inflation and unemployment. However, since 2022, with the growth of investment in fixed capital, real GDP, unemployment and inflation decrease, which reflects the emergence of new factors negatively affecting real GDP.

[12] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx, https://rosstat.gov.ru/storage/mediabank/trud-3_15-s.xlsx, https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS

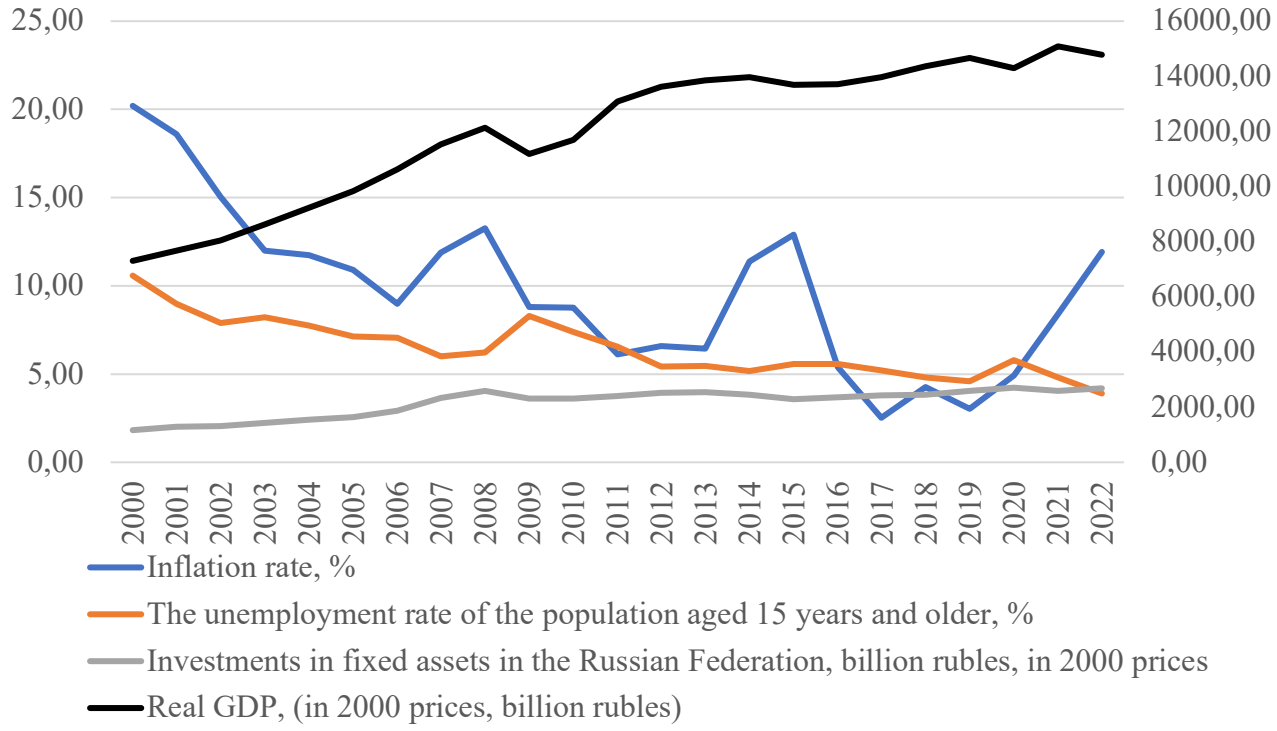

Figure 1.3 - Dynamics of real GDP, investments in fixed assets in 2000 prices, billion rubles, inflation rate and unemployment rate, %, 2000-2022[13]

Source: developed by the author

Figure 1.4 shows the dynamics of real GDP growth rate, investment in fixed capital in 2000 prices, inflation rate and unemployment rate (%) in 2001-2022.

The chain growth rate of investment in fixed capital reflects the trends of changes in the absolute indicator and does not have a pronounced trend. It reached its maximum value in 2007, amounting to 24.77%, and its minimum value in 2009, amounting to 10.95%.

The dynamics of growth rates confirms the assumption that real GDP and investment in fixed assets have similar growth trends (they rise and fall simultaneously and with similar intensity), and the opposite ones - inflation and unemployment. From 2018 onwards, while GDP growth slowed down, accelerating to 2020 and then falling again, fixed capital investment growth rates, on the contrary, had an increase until 2019, slowing down to 2020 and then increasing again. At the same time, unemployment was falling, and inflation was rising.

[13] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx, https://rosstat.gov.ru/storage/mediabank/trud-3_15-s.xlsx , https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS, https://rosstat.gov.ru/storage/mediabank/Invest.xls

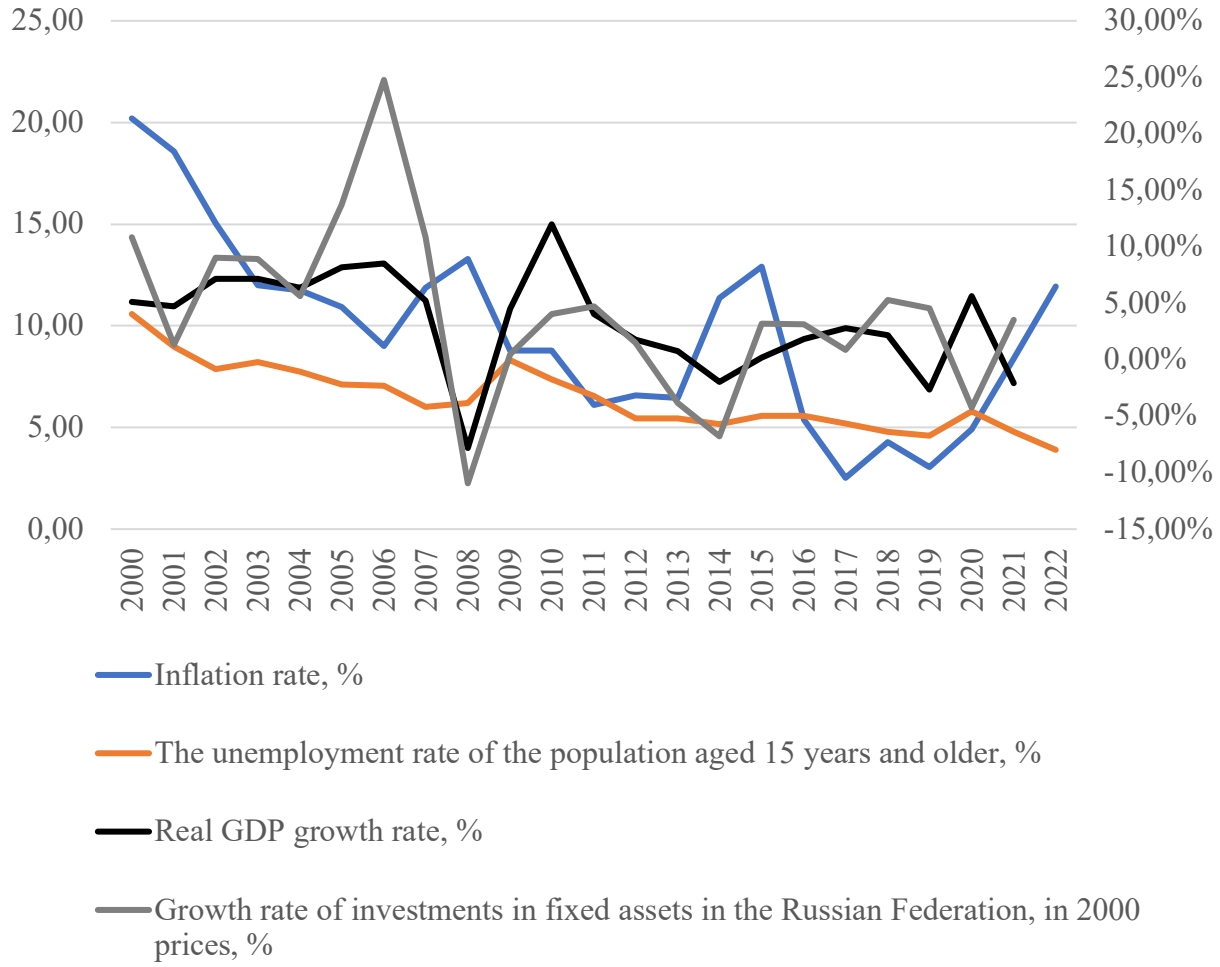

Figure 1.4 - Dynamics of growth rates of real GDP, investments in fixed assets in 2000 prices, unemployment rate and inflation rate, %, 2001-2022 [14]

Source: developed by the author

Thus, the dynamics of real GDP and the dynamics of investment in fixed capital with a tendency to increase are similar, as well as the growth rate of real GDP and the growth rate of investment in fixed capital and opposite to the inflation rate and unemployment rate. However, starting from 2018, the relationship of GDP growth rate and fixed capital investment growth rate is broken, it becomes at times inverse, from 2022 the relationship of real GDP and fixed capital investment in 2000 prices. At the same time, on the same time periods, as noted earlier, there is a decrease in the unemployment rate with an increase in the inflation rate.

Figure 1.5 shows the dynamics of real GDP (billion rubles) and the average annual oil price (RUB per barrel) in 2000 prices in 2000-2022.

When the price of oil in rubles is reduced to the prices of the year 2000, the relationship with real GDP is revealed only at the moment of decline in GDP, thus, it is possible to assume the impact of a

[14] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx, https://rosstat.gov.ru/storage/mediabank/trud-3_15-s.xlsx , https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS, https://rosstat.gov.ru/storage/mediabank/Invest.xls

different factor on both indicators - the crisis of economic phenomena or changes in the exchange rate throughout the period 2000-2020. Despite the fact that during the study period the real average annual price of oil rather tends to decline on the background of the real GDP growth trend, their dynamics do not allow to draw a firm conclusion about their close feedback. The link between them is backwards, but weak enough.

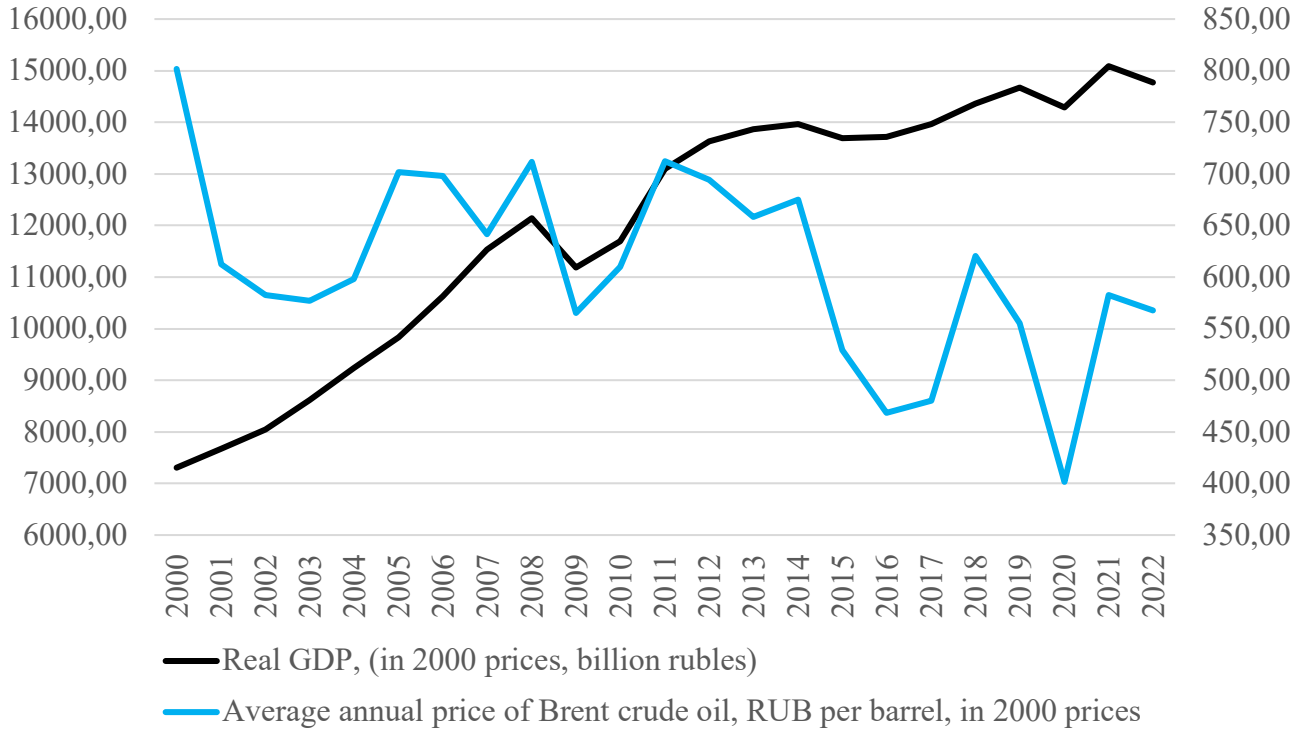

Figure 1.5 - Dynamics of real GDP, billion rubles and average annual oil price, RUB per barrel, in 2000 prices, 2000-2022 [15]

Source: developed by the author

Figure 1.6 shows the dynamics of the inflation rate (%) and the average annual price of oil (rub. per barrel) at 2000 prices in 2000-2022.

It can be seen that, overall, both indicators showed a downward trend during the study period, but that oil price fluctuations were larger than inflation, suggesting a moderate correlation.

Figure 1.7 shows the dynamics of the growth rate of real GDP and the average annual oil price, the inflation rate (%) in 2001-2022. Inflation rates tended to fluctuate more than real GDP and average annual oil prices in 2000 prices.

[15] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, http://global-finances.ru/tsena-na-neft-marki-brent-po-godam/

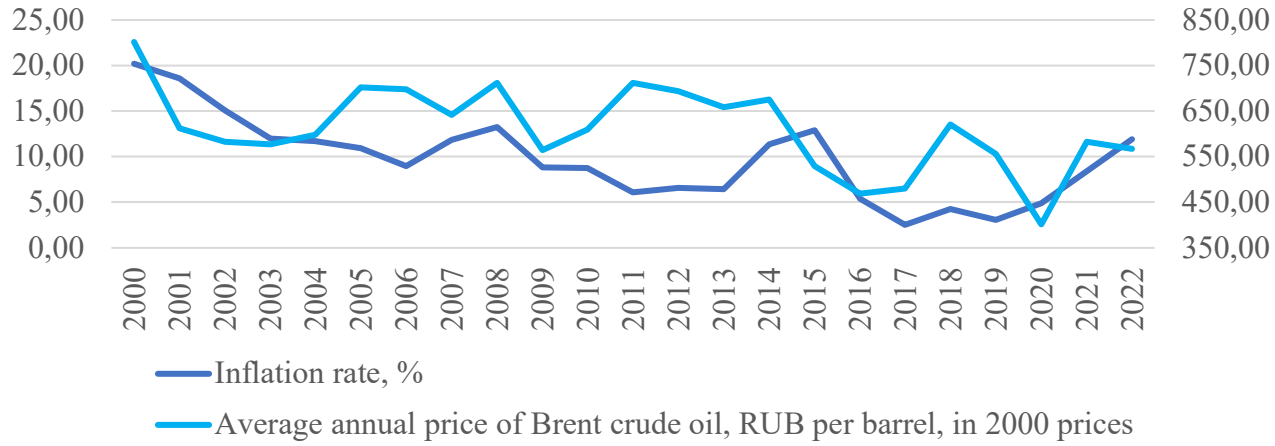

Figure 1.6 - Inflation rate, % and average annual oil price, rub. per barrel, 2000-2022[16]

Source: developed by the author

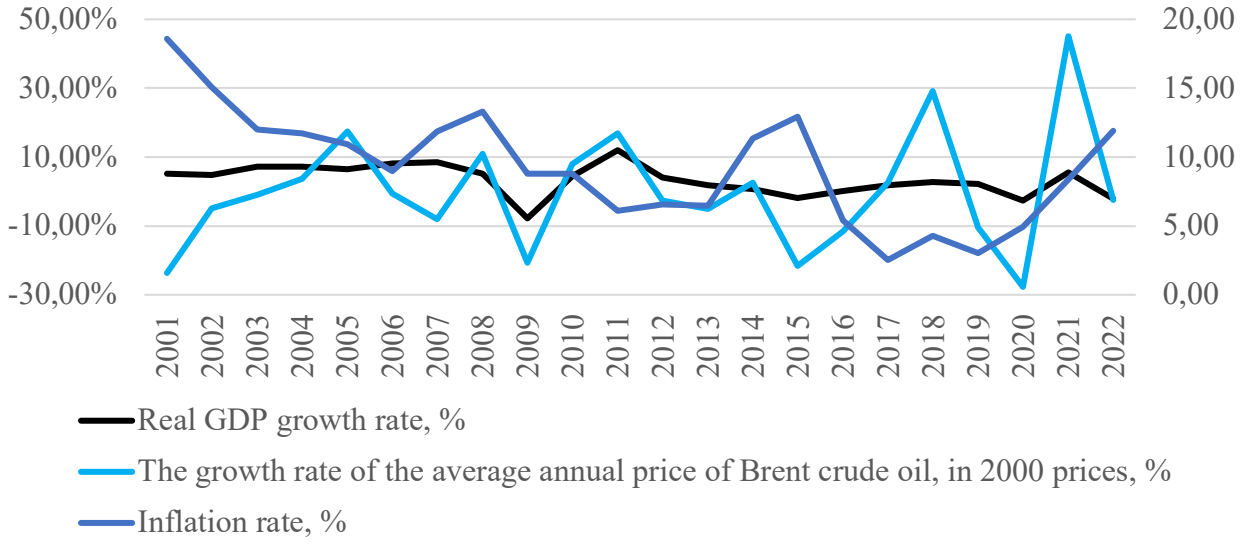

Figure 1.7 - Dynamics of real GDP growth rate and average annual oil price, inflation rate, %, 2001-2022 [17]

Source: developed by the author

Thus, it can be concluded that the relationship between real GDP and the average annual price of oil is inverse and very weak, the relationship between inflation and the average annual price of oil is moderate but not always the same, the relationship between the growth rate of GDP and the average annual price of oil is weak. However, since 2021, the direction of communication has changed, the real GDP has a direct relationship and the price of oil, the inflation rate is reversed, the GDP growth rate and the price of oil have assumed the same direction, opposite the inflation rate. It may be noted that the

[16] Data source: http://global-finances.ru/tsena-na-neft-marki-brent-po-godam/, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx

[17] Data source:: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx, http://global-finances.ru/tsena-na-neft-marki-brent-po-godam/

average annual price of oil is not a major factor in the growth of real GDP, the growth rate of the oil price is a factor influencing the growth rate of GDP, as well as inflation.

It can be assumed that real GDP and its growth rate have moved away from fixed investment and growth, the average annual price of oil and its growth rate.

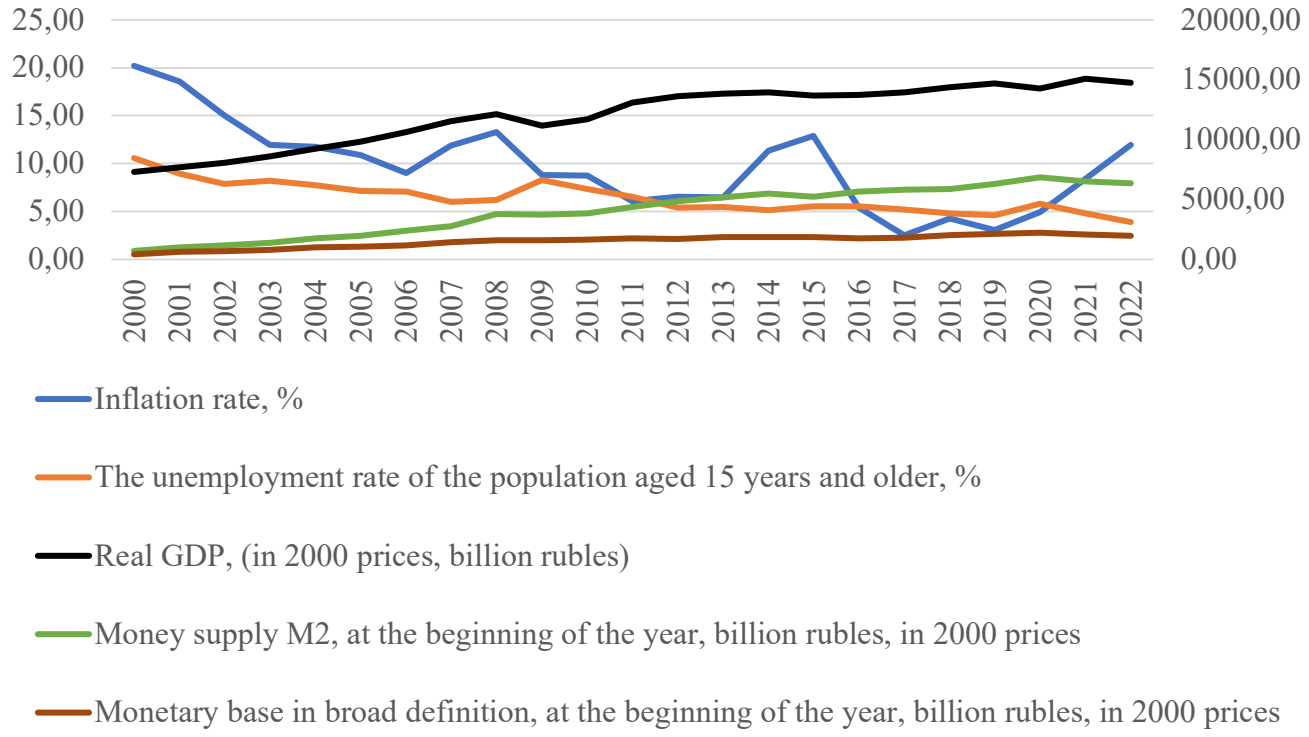

Figure 1.8 - Dynamics of real GDP, money supply M2, monetary base, billion rubles, inflation and unemployment rates, %, 2000-2022[18]

Source: developed by the author

Figure 1.8 shows the dynamics of real GDP, money supply M2, monetary base (billion rubles), inflation and unemployment rates (%) in 2000-2022. It can be noted that real GDP, M2 money supply and the monetary base for the period under study have similar trends, which suggests the presence of a direct relationship of trends. In contrast, inflation and unemployment have opposite trends, which can be interpreted as feedback. Real GDP, money supply and monetary base are growing against a backdrop of declining inflation and unemployment.

[18] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx, https://rosstat.gov.ru/storage/mediabank/trud-3_15-s.xlsx , https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS, https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx, http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx

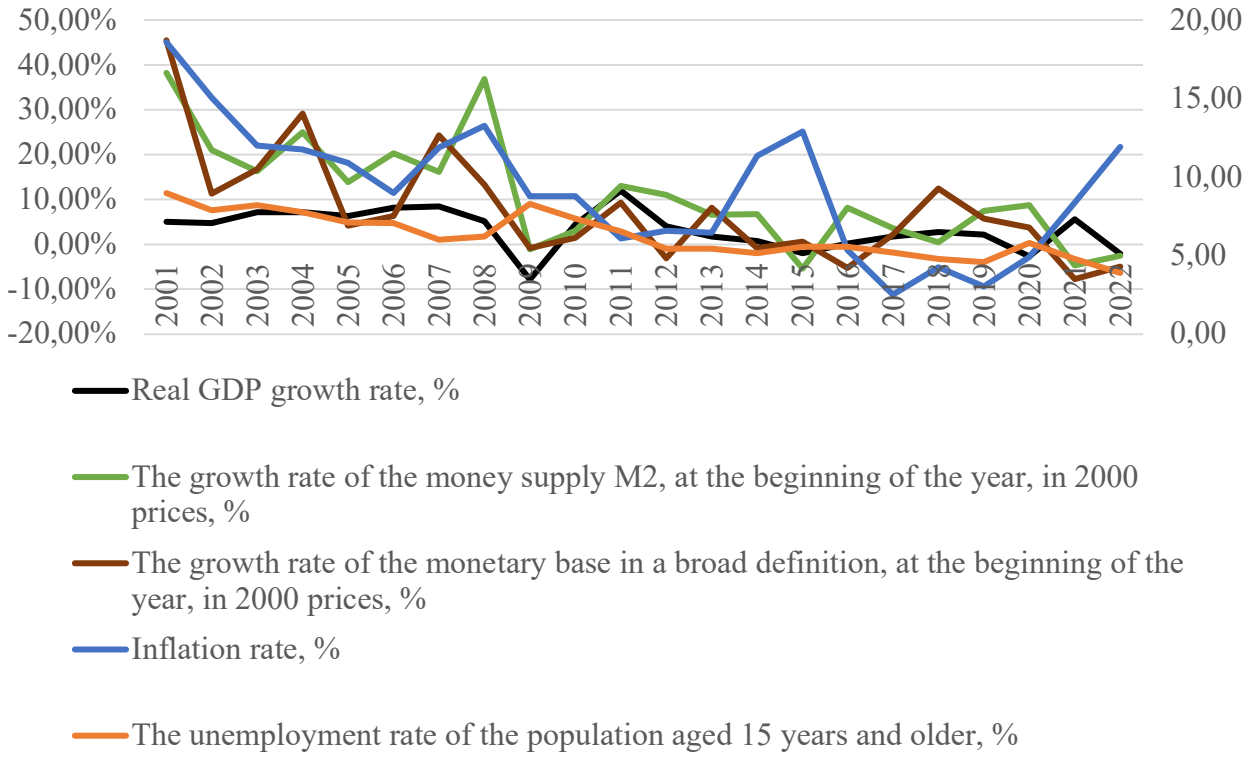

Figure 1.9 - Growth rates of real GDP, money supply M2, monetary base, unemployment rate and inflation, %, 2001-2022 [19]

Source: developed by the author

Figure 1.9 shows the dynamics of growth rates of real GDP, M2 money supply, monetary base, unemployment rate and inflation rate (%) in 2001-2022. on the basis of which one can draw conclusions: GDP growth does not tend to increase significantly over time, but there is a slowdown in the growth of M2 and the monetary base at 2000 prices. The general trend is that there is a correlation between the rate of GDP growth and the rate of growth of the monetary base, and there is a similar correlation with the growth rate of M2, but at times it becomes divergent. It can be assumed that insufficient GDP growth is associated with weak growth of the monetary base and money supply of M2. Since 2021, communication has been disrupted and the opposite is possible, it is possible to assume the presence of a time lag.

Figure 1.10 shows the dynamics of the index of labor productivity in 2003-2021. which is presented by the general downward trend. It reached its lowest level of 95.9% in 2009, 98.7% in 2015 and 99.6% in 2020. After a significant decline in 2020, it showed an increase.

[19] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx, https://rosstat.gov.ru/storage/mediabank/trud-3_15-s.xlsx , https://data.worldbank.org/indicator/SL.UEM.TOTL.NE.ZS, https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx, http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx

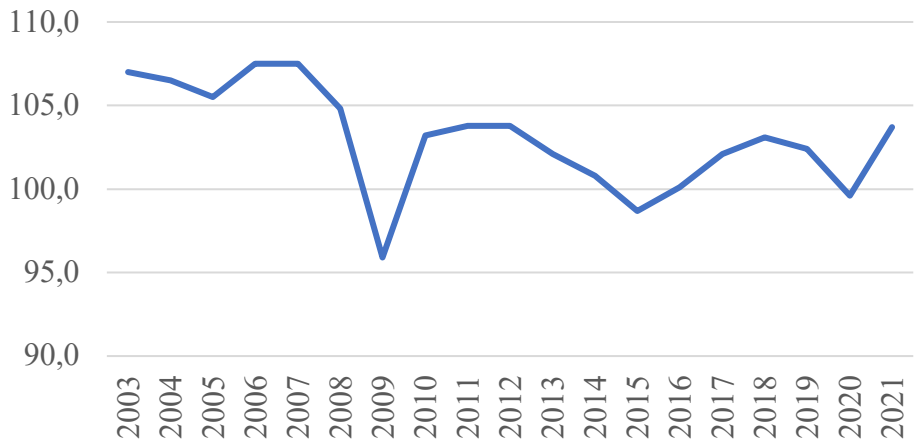

Figure 1.10 - Dynamics of labour productivity index for the Russian Federation, %, 2003-2021. [20]

Source: developed by the author

Figure 1.11. shows the dynamics of the availability of fixed assets and fixed capital investments in 2000 prices for the period 2004-2022. Both indicators show an upward trend throughout the study period.

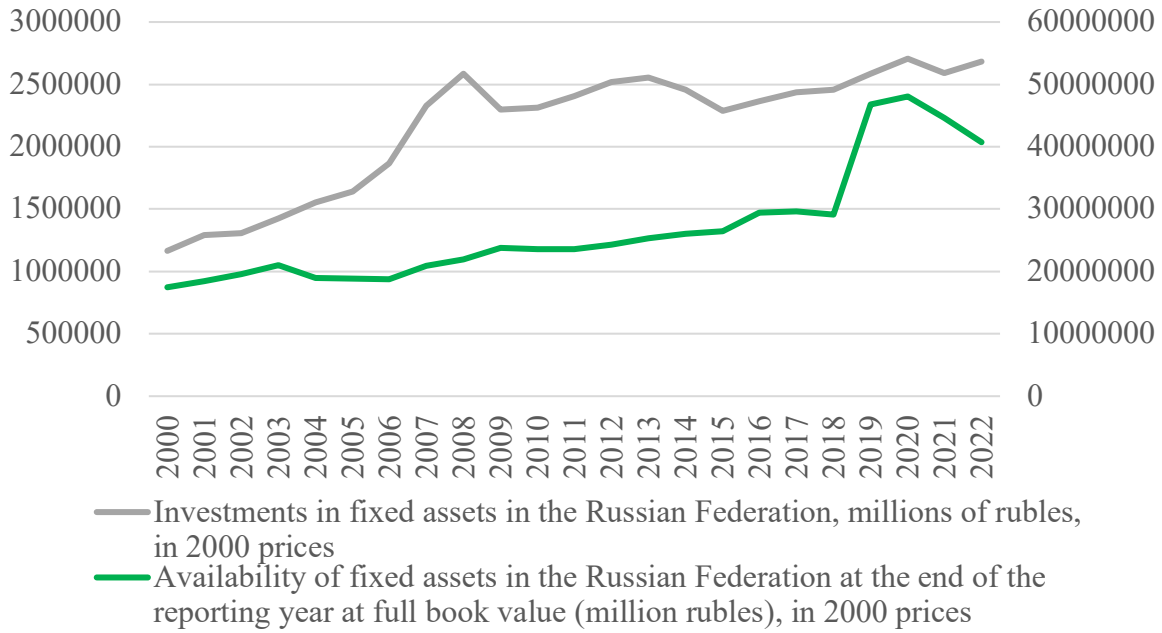

Figure 1.11 - Dynamics of availability of fixed assets and investments in fixed assets, mln. rubles in 2000 prices, 2004-2022[21]

Source: developed by the author

However, the availability of fixed assets has been declining since 2020, with growth following a decline in fixed investment in 2021.

[20] Data source: https://rosstat.gov.ru/storage/mediabank/Index_proizv_truda(07042023).xlsx
[21] Data source: Росстат, https://rosstat.gov.ru/storage/mediabank/Nal_of_pus_ved.xlsx, https://rosstat.gov.ru/storage/mediabank/Invest.xls, https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

Thus, with the general trend of growth in fixed investment, there is an increase in fixed assets and a stagnant productivity index. Since 2020, there has been a decline in fixed assets.

Generally, the reasons for the lack of economic recovery include:

- insufficient demand due to low total expenditures as well as monetization of the economy;

- reducing the supply of products;

- lack of structural orientation and institutional changes within the framework of the implementation of economic policy with a view to forming the structure of the real sector of the economy through the introduction of new technologies and production. In this case, the targets of growth should be formulated in conjunction with the objectives of creating or shaping the structure of the economy and the market.

Structural changes, despite a large number of studies by foreign authors, were not seen as an independent factor of growth. The main role in the structure of the economy was assigned to scientific and technical progress and most of the models that were created were models of the aggregate type. Currently, economic growth is driven by the supply side, taking into account sectoral and sectoral shifts, in particular the allocation of resources across sectors and paradigms. The components of potential growth and the supply side must change to achieve economic growth.

Let us consider the structural parameters of the current Russian model of economic growth on the aggregate supply side [235, p.270, p.278], in which we will include data on the dynamics of GVA by types of economic activity, sectors and paradigms from 2011 to 2022:

- shares of GVA components by types of economic activity in GDP in 2000 prices;

- GVA and its components by types of economic activity in real terms, in % to the level of 2011;

- GVA by sectors in 2000 prices (raw materials, transactional, manufacturing sectors), growth rates of sectors' GVA (%) in 2000 prices; GVA by sectors in GDP (%) in 2000 prices;

- GVA by paradigms in 2000 prices (paradigms 1-3, paradigm 4, paradigm 5, paradigm 6); GVA growth rates by paradigms (%) in 2000 prices; GVA by paradigms in GDP (%) in 2000 prices.

When examining the shares of GVA components by types of economic activities in GDP in 2000 prices, Fig. 1.12 clearly shows that other types of economic activities prevail[22], the share of which has been at approximately the same level since 2011 and is represented by the dynamics from 36.79% in 2011 to 39.84% in 2021. In 2020, the share of other types of activities in GDP reached the maximum value of 42.43%.

[22] Other activities include: provision of electrical energy, gas and steam; air conditioning; water supply; water disposal, waste management, pollution abatement; hotels and catering facilities; Information and communication activities; financial and insurance activities; real estate activities; professional, scientific and technical activities: administrative and related ancillary services; public administration and military security, social welfare, education, health and social services, cultural, sports, recreational and recreational activities, other services; activities of households as employers; undifferentiated activities of private households to produce goods and provide services for own consumption.

Until 2018, the second place in terms of GDP share was occupied by wholesale and retail trade; repair of motor vehicles and motorbikes, the dynamics of which is represented by a trend of gradual reduction from 15.05% in 2011 to 12.74% in 2017, which did not prevent this type of activity from occupying a priority share in GDP. The subsequent decline in its share to 11.34% by 2021 deprives it of priority among other economic activities.

The share of manufacturing in GDP tends to increase from 11.47% in 2011 to 12.87%, which after 2018 forms its primary place in GDP after other activities. The share of mining in GDP had an upward trend until 2018, after which it decreased by 2020 and increased again by 2021 to 11.76%. So by 2021, the share of mining 11.76 per cent starts to trade slightly above the 11.37 per cent. The share of construction in GDP has been on a downward trend since 2011, falling from 6.58% to 4.49% in 2021 and giving way to transport and storage. The share of transport and storage has a weak upward trend from 5.09% to 5.54% in 2021. And the minimum share in GDP is agriculture, forestry, hunting, fishing and fish farming with a slight upward trend from 3.15 per cent in 2011 to 3.87 per cent in 2021.

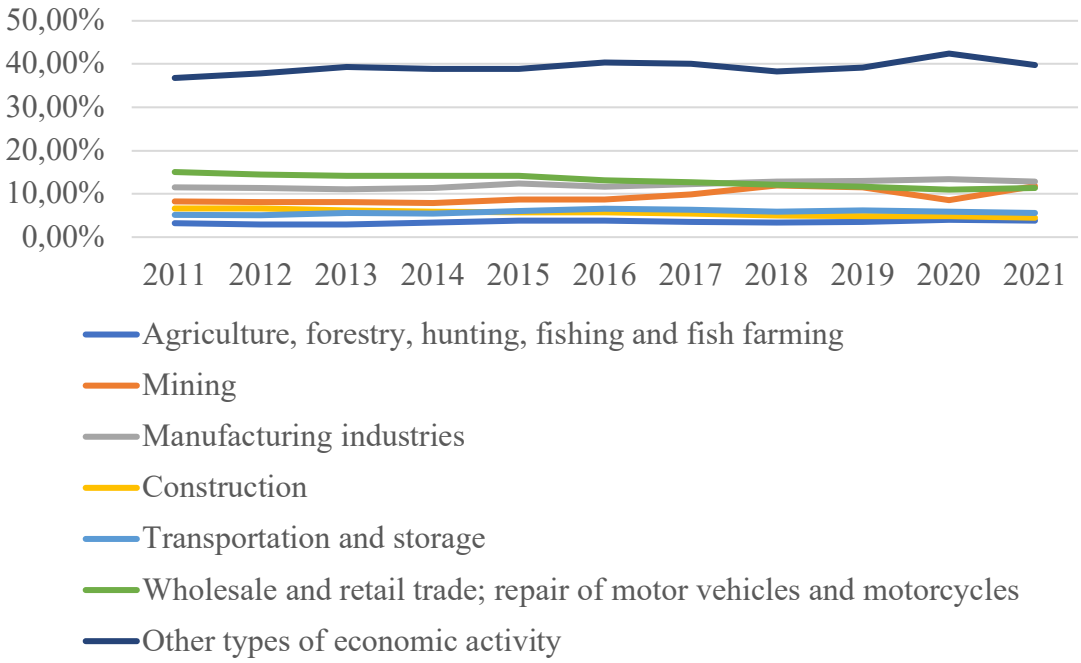

Figure 1.12 - Dynamics of shares of individual economic activities in GDP in 2000 prices, % of GDP, 2011-2021[23]

Source: developed by the author

Thus, from 2011 to 2021 the structure of the economy by types of economic activities in the current Russian model of economic growth has not changed and is represented, first of all, by other types of activities (including financial and insurance activities, public administration and military security, social security, education, various services, etc.), then by trade, manufacturing, mining. The smallest

[23] Data source: рассчитано автором по данным https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls

contribution to GDP is made by construction, transport and storage, agriculture, forestry, hunting, fishing and fish farming.

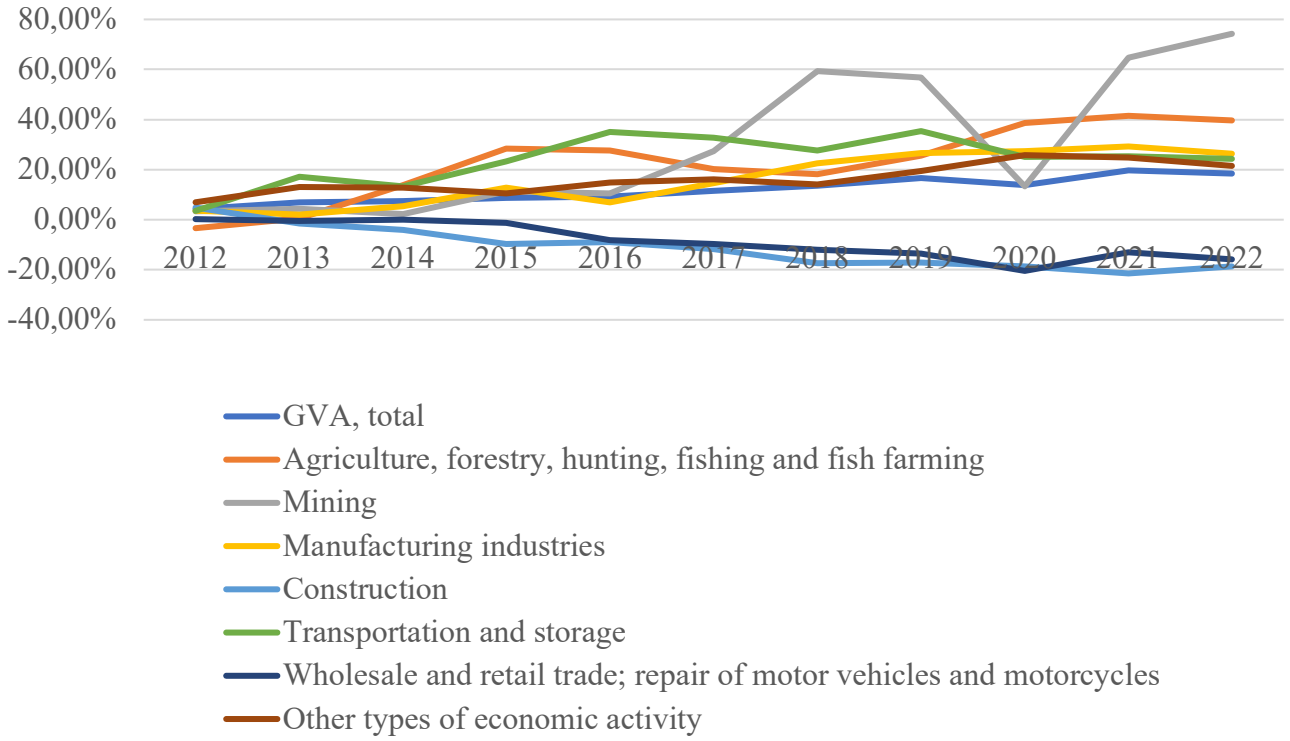

Figure 1.13 - Dynamics of GVA and its components by economic activity in real terms, in % of 2011 level, 2012-2022[24]

Source: developed by the author

Figure 1.13 shows the dynamics of GVA and its components by types of economic activities in real terms, in % of the 2011 level for 2012-2022. GVA of most types of economic activities tend to grow, except for construction and trade. At the same time, the highest growth rate has the extraction of minerals with a sharp deceleration in 2020 and a subsequent significant increase to 74.25% by 2022. Agriculture, forestry, hunting, fishing and fish farming have a significant growth rate from 2019 (25.54 per cent) to 39.69 per cent in 2022. It is important to note the acceleration of the growth rate of manufacturing industries, from 2017 (14.47%) to 26.29% in 2022.Transport and storage, from 2020 has a decrease in growth rate, to 24.34% in 2022. It is possible to note the change of growth rates of elements of the economic structure by types of economic activities. The highest growth rate in 2012 was in other types of economic activities, followed by construction, transport and storage, manufacturing, mining. Trade and agriculture had the lowest growth rate. By 2022, the first place in terms of growth rate was taken by mining, followed by agriculture, then processing, transport and storage, other types of activities. Trade and construction had the lowest growth rate.

[24] Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls

Thus, while maintaining the structure of the economy by types of economic activities during the period 2011-2021, the growth rates of the elements of the structure tend to change significantly, primarily in mining and agriculture. However, it is not yet necessary to speak about structural shifts.

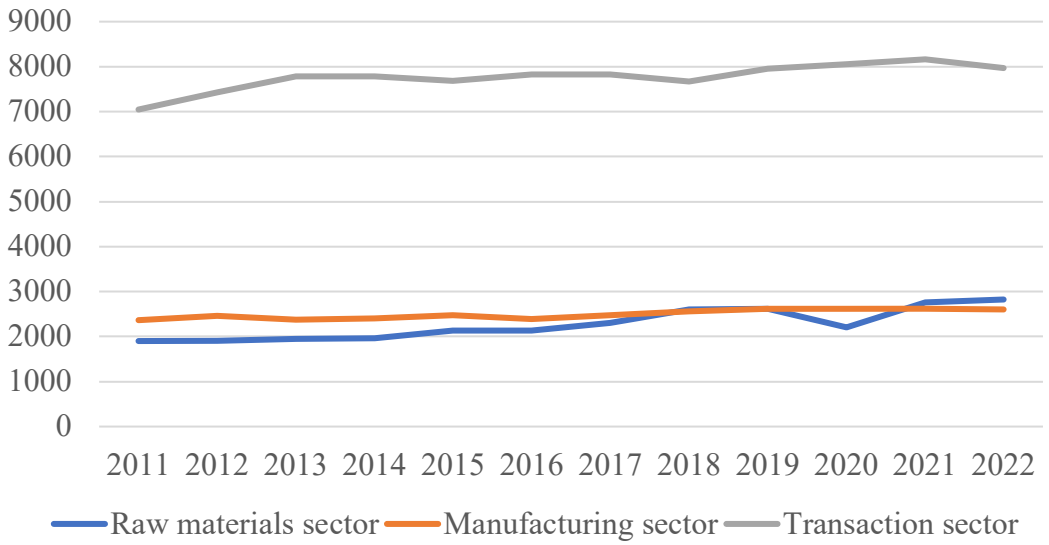

Figure 1.14 - GVA dynamics by sector, billion rubles, in 2000 prices, 2011-2022 [25]

Source: developed by the author

Figure 1.14 shows the trend in GVA by sector, at 2000 prices, from 2011 to 2022. In general, there is an upward trend for all three sectors. The structure of the economy represented by the three sectors has been maintained throughout the study period. At the same time, the transactional sector in 2022 was R7975 billion, the manufacturing sector was R2597 billion, and the primary sector was R2824 billion. Consequently, the GVA of the manufacturing sector is inferior to the transactional sector to a significant extent, and to some extent from 2021 to the raw materials sector.

The dynamics of GVA growth rates of the sectors in 2000 prices (Fig. 1.15) demonstrates that the sharpest fluctuations are characteristic of the raw materials sector: growth in 2015, 2018 and 2021, decline in 2016, 2020 and 2022. The GVA growth rates in 2000 prices of the transactional sector and the manufacturing sector have more stable fluctuating dynamics. By 2022, the growth rate of the raw materials sector was 2.38% of the manufacturing sector - -0.81, of the transactional sector - -2.29%. There is a significant deceleration in the growth rate of the transactional sector.

Figure 1.16 shows the dynamics of GVA by sector in relation to GDP at 2000 prices. Until 2019, the largest share was accounted for by the transactional sector, after that - by the manufacturing sector, and in third place - by the raw materials sector. Starting from 2020, the importance of the shares of the manufacturing and raw materials sectors changed, and by 2022, the share of the transactional sector in

[25]Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls

GDP was 53.98%, the share of the raw materials sector - 19.11%, and the share of the manufacturing sector - 17.58%.

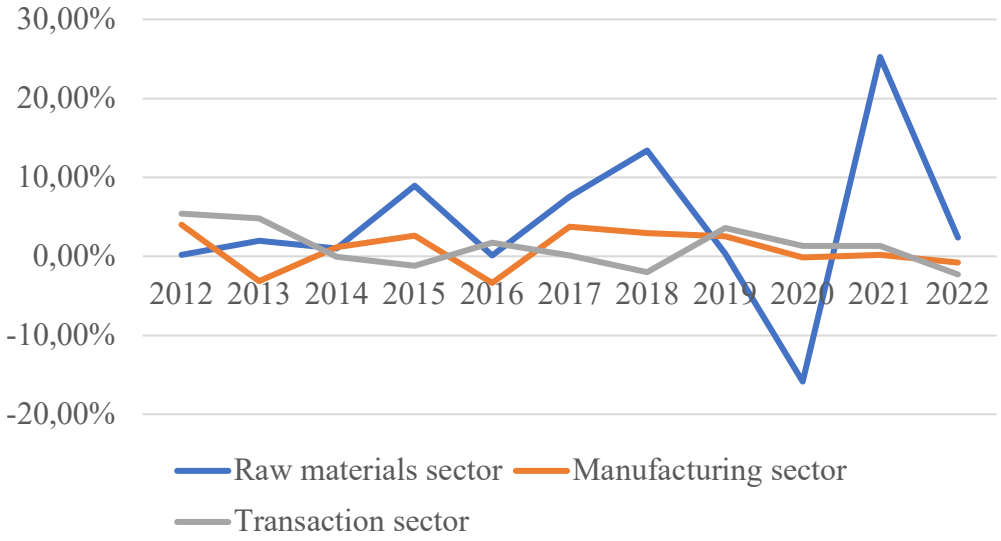

Figure 1.15 - GVA growth rate dynamics by sector, %, in 2000 prices, 2012-2022 [26]

Source: developed by the author

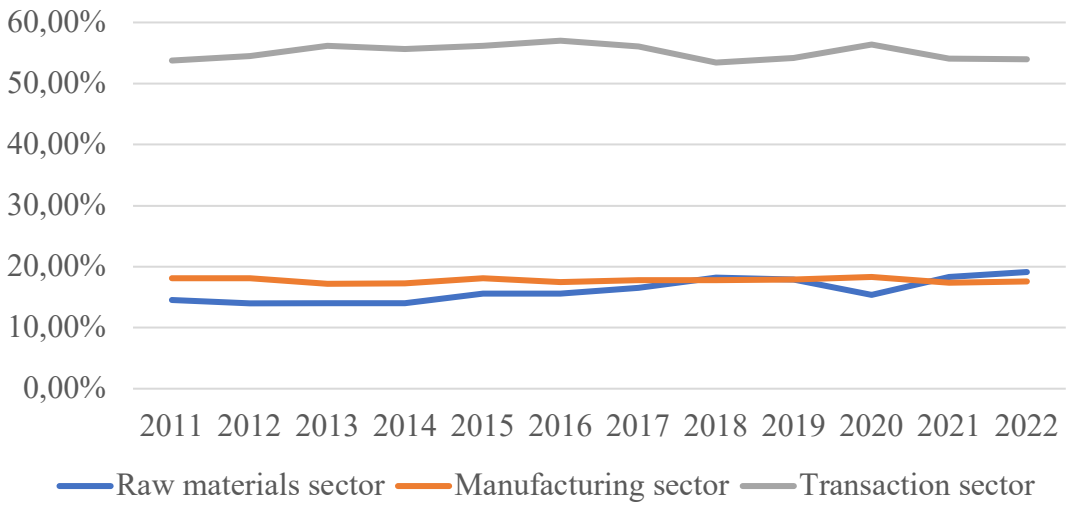

Figure 1.16 - GVA dynamics by sector in relation to GDP, %,
in 2000 prices, 2011-2022[27]

Source: developed by the author

Consequently, we can talk about the outlined structural shift in the economy by sectors, but this is not the structural shift that is desirable for the Russian economy. By types of economic activities the advantage of other types of activities and trade is preserved, the growth rates are accelerated most of all in mining, GVA by sectors is mostly represented throughout the period 2011-2022 by the transactional sector, after 2021 the second place is occupied by the raw materials sector and least of all by processing,

[26] Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls
[27] Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls

by the growth rate of GVA of sectors the greatest rate by 2022 has the raw materials sector, followed by processing and the least transactional, by GVA of sectors to GDP by 2022 the greatest value is represented by the transactional sector. There is a structural shift that further reduces the contribution of the manufacturing sector to the economy.

The article calculates paradigm equivalents, a definite aggregate imitation, tied to the basic industries, attributed by academician S.Y. Glazyev to paradigms [138]. A methodical approach to their allocation and integration into the macroeconomic analysis of O.S. Sukharev is used [225]. The dimensions of technological paradigms are quantified according to the methodology proposed by O. S. Sukharev and E.N. Voronikhina [224] for the breakdown and measurement of paradigms by gross value added by economic activity [224, pp.81-83] [28] for the third, fourth and fifth paradigms, as well as for domestic spending on research and development in priority areas - for the sixth paradigm[29].

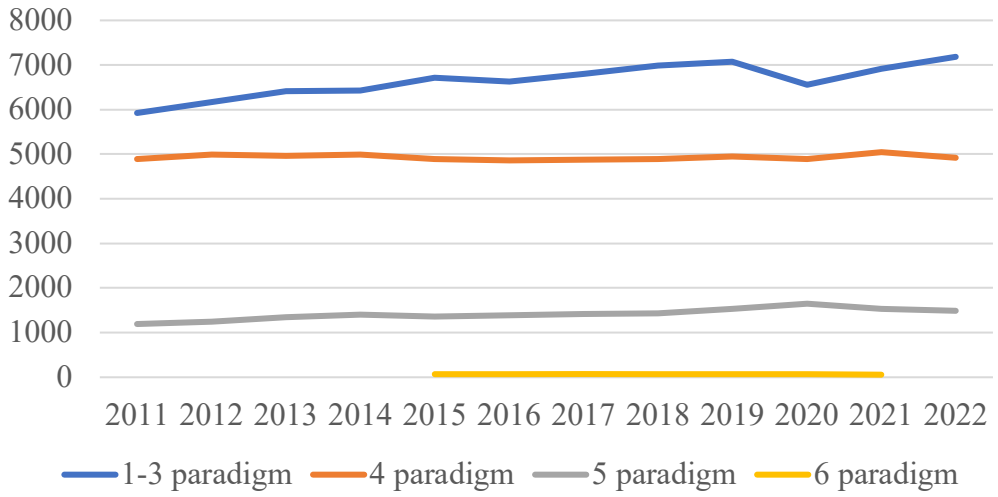

Figure 1.17 - GVA dynamics by aggregated equivalents of technological paradigms, billion rubles, in 2000 prices, 2011-2022 [30]

Source: developed by the author

Figure 1.17 shows the dynamics of GVA by aggregated equivalents of technological paradigms, in 2000 prices. Note that data on the sixth paradigm are available only from 2015, while for the rest - from 2011. In general, we can note a slight increase in the GVA of all technological paradigms in general for the period under consideration. The structure of the economy by paradigms does not change over the period under study, the basis is formed by paradigms 1-3, followed by paradigm 4, paradigm 5 and the lowest value is formed by paradigm 6.

[28] Data source: Росстат https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011.xls
[29] Data source: Росстат https://rosstat.gov.ru/storage/mediabank/nauka-5.xlsx
[30] Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls

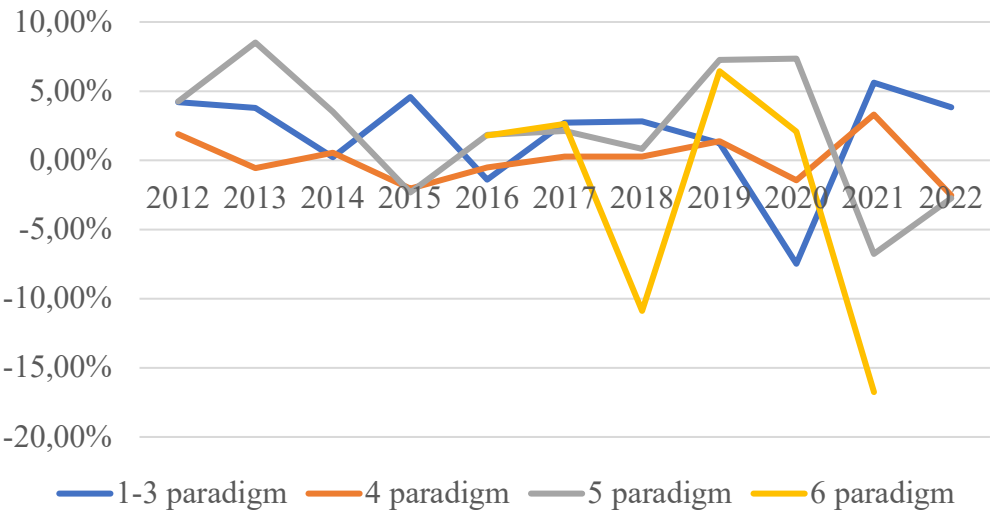

Figure 1.18 - Dynamics of GVA growth rates by aggregated equivalents of paradigms, %, in 2000 prices, 2012-2022[31]

Source: developed by the author

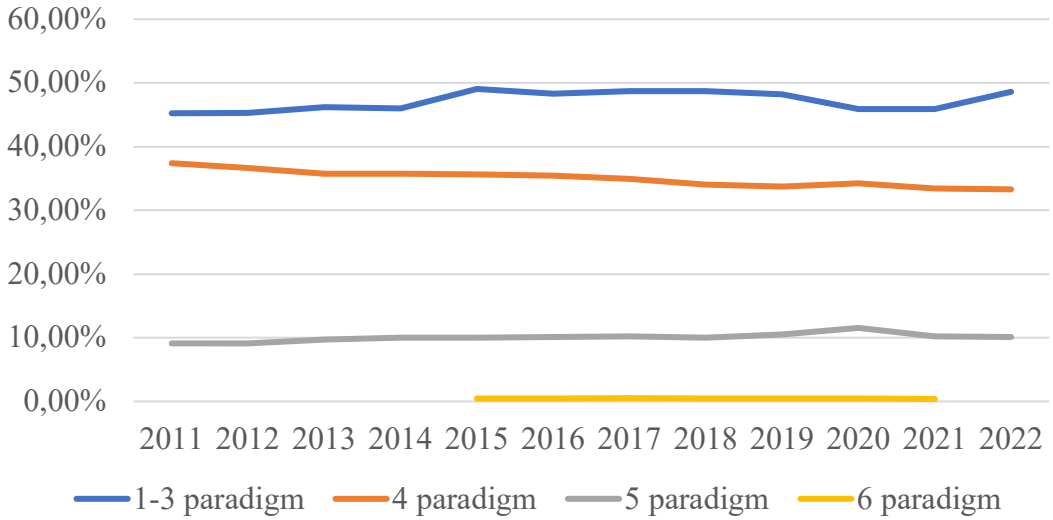

Figure 1.19 - GVA dynamics by aggregate equivalents of paradigms as a percentage of GDP, %, in 2000 prices, 2011-2022.[32]

Source: developed by the author

Figure 1.18 shows the dynamics of chain growth rates of GVA by aggregated equivalents of technological paradigms. After slight fluctuations in the period from 2016 to 2017, in 2018 GVA of the 6th paradigm sharply decreases. In 2020, the GVA of all paradigms declines, with GVA of paradigms 1-3 declining most significantly. In 2021, the decline in GVA of the 6th paradigm becomes even more significant. Thus, by 2022, the highest growth rate is 3.84% for paradigms 1-3, (-2.54%) for paradigm

[31] Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls
[32] Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls

4, (-2.74%) for paradigm 5, and (-16%) for paradigm 6 in 2021. Thus, the rate of growth of paradigms supports the absence of structural shifts and the previous trend.

Figure 1.19 shows the dynamics of GVA by aggregated equivalents of paradigms as a percentage of GDP, in 2000 prices. The share of GVA of paradigms in GDP remains fairly stable. By 2022, after a slight increase, the share in GDP of paradigms 1-3 was 48.62 per cent, of paradigm 4 - 33.29 per cent, of paradigm 5 - 10.12 per cent, of paradigm 6 - 0.39 per cent by 2021. Thus, we can conclude that structural shifts are not yet planned in terms of aggregate equivalents of paradigms.

Consequently, the economic dynamics of the Russian economy for 2000-2022 is presented as follows:

- weak positive GDP growth, lagging economic growth rate, gradual reduction of unemployment, unstable inflation rate. The structure of economic policy targets is characterised by the following peculiarity: the dynamics of real GDP and real GDP growth rate is opposite to inflation and unemployment, however, starting from 2020 inflation increases, having lost the connection with other macroeconomic targets;

- the dynamics of real GDP and the dynamics of investment in fixed capital with an upward trend are similar as the growth rate of real GDP and the growth rate of investment in fixed capital and opposite to inflation and unemployment. However, starting from 2018, the relationship of GDP growth rate and fixed capital investment growth rate is broken, it becomes at times inverse, from 2022 the relationship of real GDP and fixed capital investment in 2000 prices. At the same time, on the same time periods, as noted earlier, there is a decrease in the unemployment rate with an increase in the inflation rate;

- the average annual oil price is not the main factor of real GDP growth, the rate of oil price growth is not the main factor influencing the GDP growth rate, and it is also a factor of inflation;

- it can be assumed that real GDP and its growth rate are out of the influence of such factors as investment in fixed capital and its growth rate, average annual oil price and its growth rate;

- growth of real GDP, money supply and monetary base is taking place against the background of declining inflation and unemployment rate, there is a link between the dynamics of GDP growth rate and monetary base growth rate, the same link can be traced with M2 growth rate, but at times it becomes multidirectional. It can be assumed that insufficient GDP growth rate is associated with a weak growth rate of the monetary base and money supply M2. From 2021, the relationship is broken and becomes reversed, we can assume the existence of a time lag.

The structural parameters of the current Russian model of economic growth on the aggregate supply side are characterised by the following:

- for many years, the Russian economy has been structured in such a way that the dominant sector is the transactional and raw materials or raw materials sector, and the non-dominant sector is the manufacturing sector. When the transactional sector dominates in GDP in comparison with the

manufacturing and raw materials sectors, the "service economy" increases and the growth rate becomes limited by the specifics of the services provided. However, in recent years it is possible to speak about an outlined structural shift in the economy by sectors, but this is not the structural shift that is desirable for the Russian economy. There is a structural shift that further reduces the contribution of the manufacturing sector to the economy and increases the contribution of the raw materials sector. Russia's current export-raw material model of development has exhausted the possibilities of ensuring high rates of economic growth, but Russia has not been able to abandon its dependence on raw materials;

- there are no structural shifts in the aggregated equivalents of paradigms. The established structure of technological paradigms has not changed for many years and demonstrates the prevalence of 1-3 aggregate paradigms, followed by the 4th paradigm and the compressed 5th paradigm. The Russian economy is clearly experiencing technological stagnation. However, radical structural shifts in the economy and change of technological paradigms are based on new technologies. Industry, generating technological changes, creates demand for consumer goods. The technological characteristics of the economy in Russia remain unchanged;

- in the Russian economy, the formation of economic growth was influenced by structural shifts. The absence of structural shifts for our country is a transition to stagnation. The oil complex has ceased to be a driver of economic growth in our country, but it remains the basis for modernisation. Technological lag is the main problem of the Russian economy today;

- the need for a new growth model in Russia has been discussed for several decades, but such a model has not been formed. In order to achieve a new model of economic growth in the Russian economy, structural changes are necessary, as the existing structure is a brake on economic growth. What is needed is not just industrial growth as a condition for economic growth, but structural changes that transform the sectoral and factor basis of economic growth. It is structural changes through new technologies that are at the heart of the new growth of the Russian economy.

The economic dynamics of 2000-2023 demonstrates contradictions coming from the specifics of its institutions and production relations [19,48]. Russian scientists, considering the place of the Russian economy in the system of the world economy, conclude that it has signs of semi-peripheral type economies, the modernisation of which is possible only with a qualitative change in the economic model [118]. It is necessary to change the model of economic growth in Russia in order to increase its quantitative and qualitative results [234]. Balancing between the rate of economic growth and the rate of inflation and unemployment is of great importance in the formation of a new growth model.

With an increasing number of external and internal challenges and shocks, the current export-raw material model of development has exhausted the possibilities to ensure the growth of the Russian economy and improve the living standards of the population. The bloating of the export-raw materials sectors is taking place with simultaneous restriction of the development of machinery and equipment.

Export-oriented industries that exploit natural resources have a weak link with the rest of the economy and their income does not ensure progressive economic shifts [118]. There is a need for structural modernisation of the economy, development of high-tech industries, introduction of new technologies with reliance on internal sources of development. Economic growth cannot be based solely on raw materials and fictitious sectors. The new growth model should be based on changing the quality of GDP dynamics, which requires a structural shift of resources between sectors and paradigms. The development of the manufacturing sector of the economy and high technologies can solve the task of accelerating economic growth in Russia. Their contribution to the growth rate should be gradually increased, which can be realised through both investment in fixed capital and technological renewal.

In the current geopolitical conditions, the choice of concrete actions, "the art of management and politics" becomes important for Russia [135]. The role of the state as an institution that regulates the distribution of economic resources [142] is increasing. It is necessary to form an optimal relationship between the resources of the state and private owners with the interests of achieving national targets [189]. Since the classical models of economic growth do not take into account the structural and institutional parameters of economic dynamics, the distribution of activities and sectors of the economy, the elements of GDP by contribution to the growth rate, the problem of reasonable growth management arises. It is the different structures of the economy that affect economic dynamics in different ways, and institutional adjustments have an impact on sustainability and growth rate. Extensive Russian studies devoted to the issues of formation of a new growth model are generally poorly related to the tools and measures of economic growth policy.

The problem is that the factors related to the movement of resources between sectors of the economy are practically not paid attention to, while it is the basic resources that affect the sectoral proportions in the economy and are determining the rate of dynamics of sectors and activities, their contribution to the rate of economic growth. In order to change the structure of the economy with technological renewal, it is necessary to increase resources and institutional adjustments, which should ensure the flow of resources for the formation of growth, to those elements of the economic system that can make the greatest contribution to economic dynamics. It is necessary to apply monetary instruments of economic policy, which will contribute to the formation of a new model of economic growth. Unjustified economic policy may be one of the reasons why the highest growth rate of the economy is not achieved.

1.2 Monetary instruments of economic policy for growth in Russia in 2000-2022

One of the characteristics of today's economy is the inability to identify priority decisions and allocate limited resources for effective implementation. Monetary instruments of economic policy of growth together with instruments of fiscal policy should become a mechanism for ensuring strengthening of internal sources of support of economic growth in Russia and ensuring high rates of economic growth [23].

Modern economic policy is based on the theoretical basis established in previous years. Based on standard approaches, the economic development goal is formulated, represented by measurable aggregates and from the arsenal of available tools are selected. At the same time, the mutual determinations of fiscal and monetary policies and their instruments are poorly researched. The distant cumulative effects of their combined influence are interesting. We study the dynamics of indicators characterizing the structure of instruments of monetary and budgetary policy in Russia for the period 2000-2023.

Figure 1.20 shows the dynamics of annual averages of the key rate. It can be seen that during the study period from 2000 to 2022 the rate had a tendency of gradual non-linear decline. The decline from 31.4 per cent in 2000 to 10.2 per cent in 2007 was followed by a slight increase in 2008 and 2009. The next key rate increase took place in 2015 from 7.9% in 2014 to 12.4% in 2015. The rate then declined until 2020, with a slight increase in 2019. In 2021, the rate on average rose to 5.6% (from 4.9% in 2020) and sharply increased to an annual average of 10.54% in 2022.

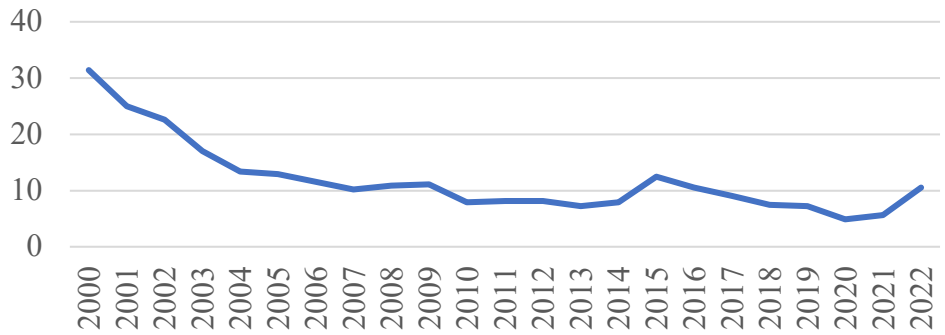

Figure 1.20 - Dynamics of the average annual key rate, %, 2000-2022 [33]

Source: developed by the author

Figure 1.21 shows the dynamics of required reserves of commercial banks in 2000 prices. Increasing from 2000 to 2004, they declined sharply in 2005, and after some growth in 2009 they

[33]Data source: https://cbr.ru/hd_base/KeyRate/ и http://www.cbr.ru/statistics/idkp_br/refinancing_rates1/#highlight=ставка%7Cрефинансирования%7Cставки%7Cставке

declined again due to the crisis. Since 2012, the amount of required reserves has stabilised until 2020. From 2000 to 2022 their value in constant prices increased by 20 per cent.

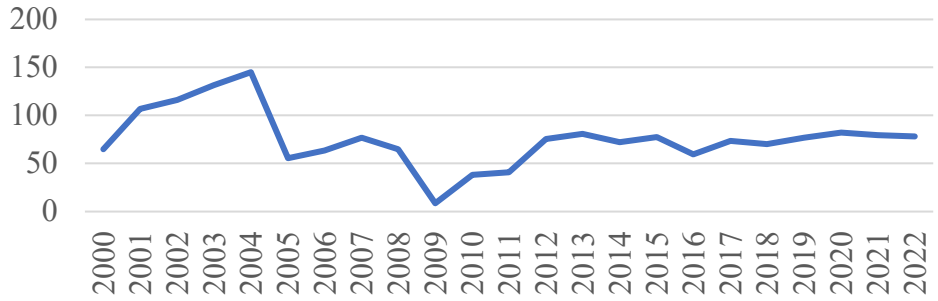

Figure 1.21 - Dynamics of balances of mandatory reserve accounts deposited by credit institutions with the Bank of Russia on attracted funds at 2000 prices, billion rubles, 2000-2022[34]

Source: developed by the author

It is important to note that the monetary policy instruments - key rate and required reserves of credit institutions in some time periods have multidirectional dynamics, i.e. reserves decrease with the increase in the key rate or vice versa, thus the use of instruments neutralise each other in the direction of money saturation of the economy. Thus, such dynamics was present in 2004, 2007, 2009. After clearly expressed multidirectional dynamics of application of the mentioned instruments is not observed.

The dynamics of the liquidity absorption indicator in 2000 prices, presented in Figure 1.22, shows an increase in the absorption of money supply in 2008, 2011, 2015, very significant in 2019. In 2022, the increase in the indicator does not appear as significant but is still present. In 2022, compared to 2000, in constant prices, liquidity absorption has increased by 72.9 times.

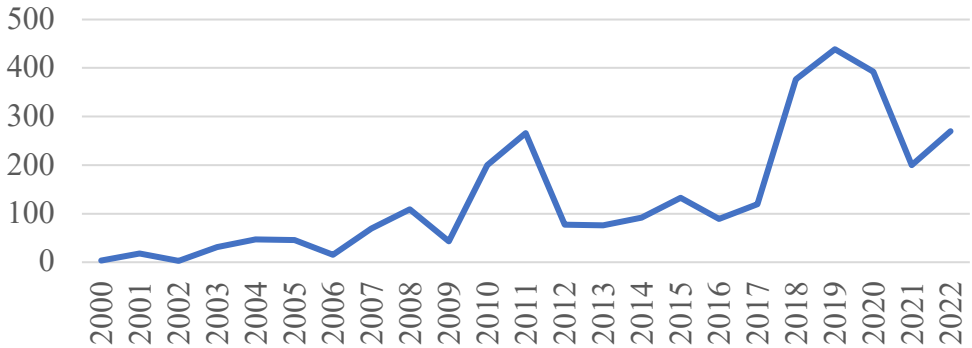

Figure 1.22 - Dynamics of liquidity absorption in 2000 prices, %, 2000-2022 [35]

Source: developed by the author

When comparing the above figures, it is clearly seen that during the period of key rate reduction from 2017 to 2021, liquidity absorption increased significantly at the same time, which probably compensated for the use of the key rate instrument. Since 2021, monetary policy instruments are aimed

[34] Data source: https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[35] Data source: https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx

at money supply compression: the key rate increases, required reserves of credit institutions are at a stable level and liquidity absorption increases.

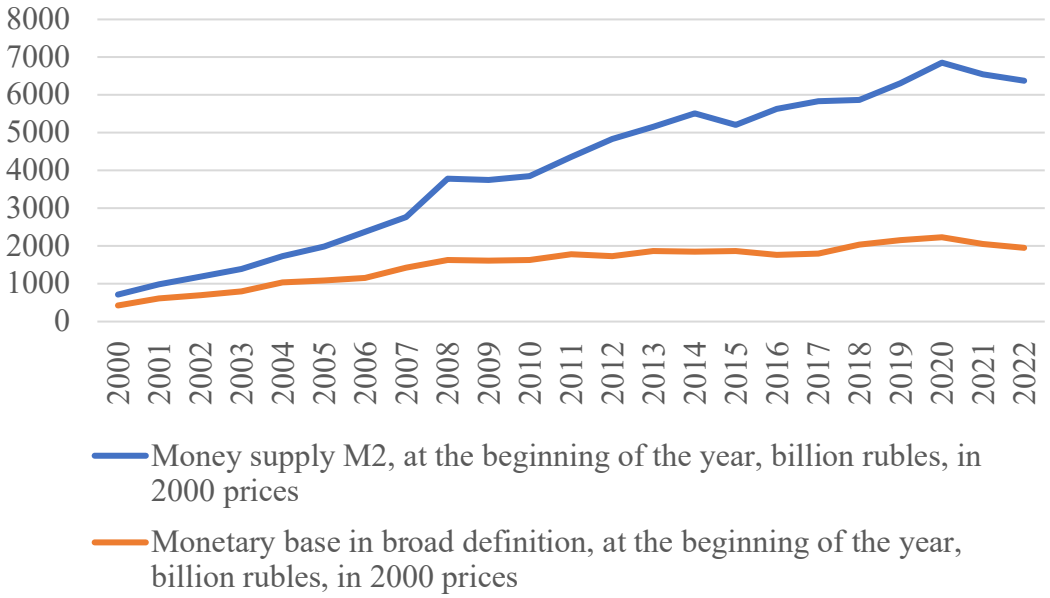

Figure 1.23 - Dynamics of money supply M2 and monetary base, in 2000 prices, billion rubles, 2000-2022[36]

Source: developed by the author

Figure 1.23 shows the dynamics of money supply M2 and monetary base in 2000 prices. It can be seen that during the period under study both indicators in general tended to grow. The value of money supply M2 from 2000 to 2022 increased by 8.9 times, and the monetary base - by 4.6 times. At the same time, in the period after 2021 there is a tendency of reduction of money supply M2 and monetary base in prices of 2000.

The growth of the money supply of M2 and the monetary base at 2000 prices, as shown in Figure 1.24, tends to slow down. Periodic shifts in the acceleration and deceleration of growth rates have not been common, but both rates have slowed down since 2020 and have begun to increase since 2021.

[36] Data source: https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx, http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx

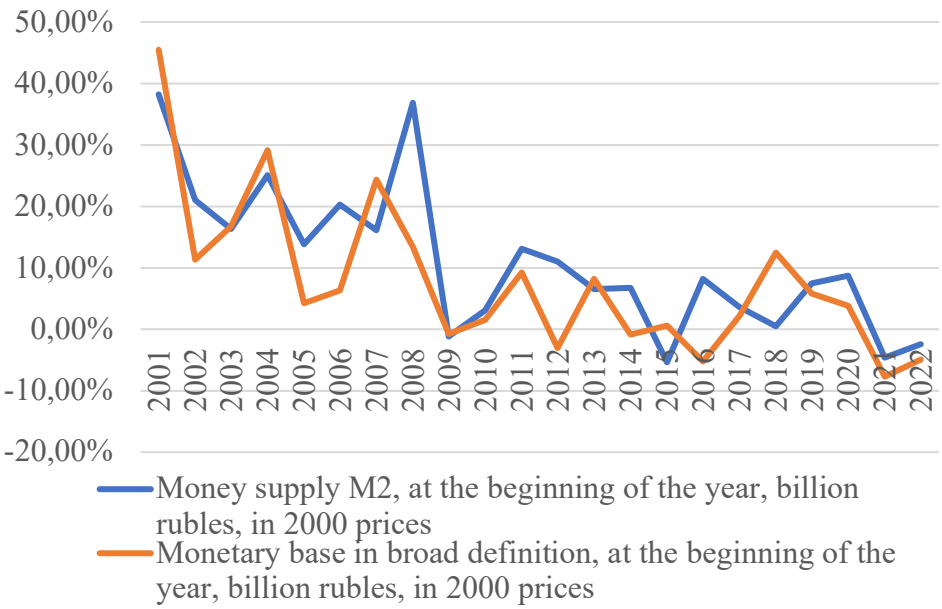

Figure 1.24 - Dynamics of the growth rate of money supply M2 and monetary base, in 2000 prices, billion rubles, 2001-2022[37]

Source: developed by the author

Figure 1.25 shows the dynamics of the monetary base to GDP ratio in 2000 prices, in per cent. Since 2000, there was an upward trend up to 2009, amounting to 14.38%, after some decline and by 2020 again growth to 15.63% with a further decline to 13.26% by 2022.

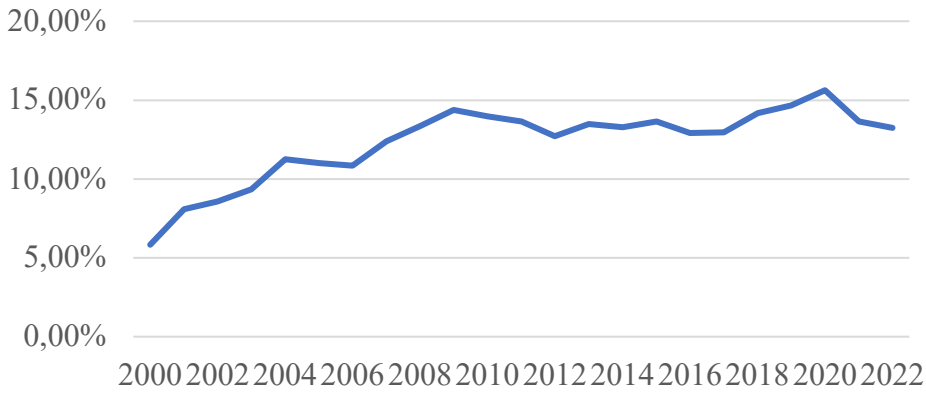

Figure 1.25 - Dynamics of monetary base to GDP ratio %, 2000-2022[38]

Source: developed by the author

Figure 1.26 shows the ratio of the monetary base growth rate in broad definition to GDP in 2000 prices. As can be seen, the growth rate of the monetary base over the period under study tended to slow down, reaching a negative value in 2016, then it accelerated to 12.48% by 2018, followed by a slowdown again by 2021 to -7.72% and an increase again by 2022 to -4.92%. while maintaining a negative value. The GDP growth rate was increasing in 2021 followed by a deceleration by 2022. Thus, the relationship

[37] Data source: https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx, http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx
[38] Data source: http://www.cbr.ru/vfs/statistics/ms/mb_bd.xlsx, https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

between the growth rate of indicators was observed at separate intervals, currently the growth rates have multidirectional trends.

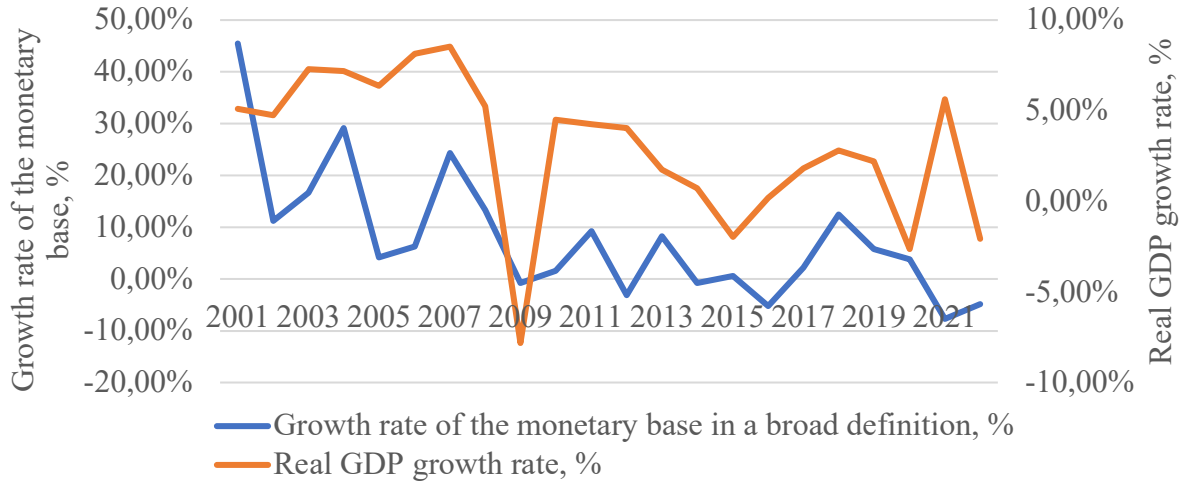

Figure 1.26 - Ratio of the growth rate of the monetary base to real GDP %, 2001-2022[39]

Source: developed by the author

Figure 1.27 shows the ratio of money supply M2 to GDP in 2000 prices in % for 2000-2022. There is a steady upward trend of M2 to GDP, reaching 47.99% in 2020 with a subsequent decline to 43.18% by 2022.

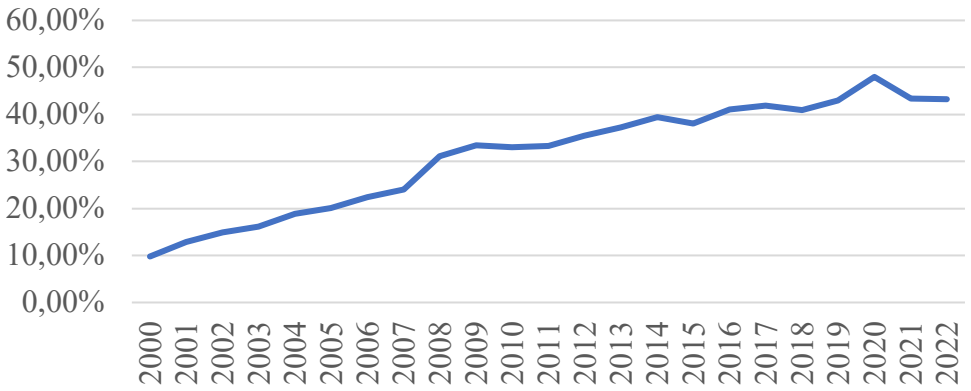

Figure 1.27 - Dynamics of money supply ratio M2 to GDP %, 2000-2022 [40]

Source: developed by the author

Figure 1.28 shows the ratio of growth rates of money supply M2 and real GDP in 2000 prices in 2001 - 2022, which have similar trends in some time periods, e.g. slowdown in 2009, 2015, increase in 2011, 2019. From 2020 onwards, the trends are multidirectional. For example, the growth rate of money supply M2 increased in 2000, slowed down significantly in 2021, started increasing again to -2.46% by

[39] Data source: http://www.cbr.ru/vfs/statistics/ms/mb_bd.xlsx, https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

[40] Data source: http://www.cbr.ru/vfs/statistics/ms/mb_bd.xlsx, https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

2022, while maintaining a negative value. The growth rate of real GDP, on the contrary, decreased by 2020, increased in 2021 and slowed down again by 2022.

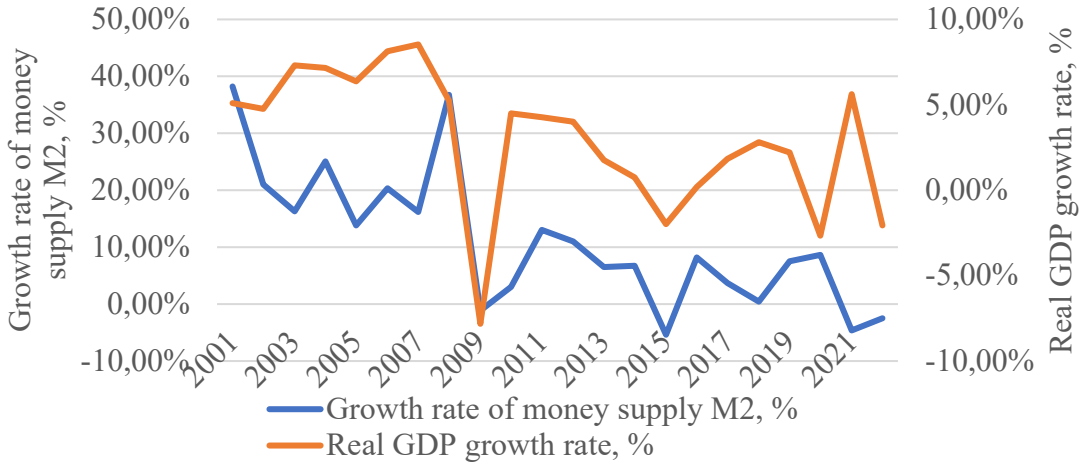

Figure 1.28 - Ratio of growth rates of money supply M2 and real GDP %, 2001-2022[41]

Source: developed by the author

Thus, starting from 2018, the ratio of the monetary base to GDP in 2000 prices and the ratio of money supply M2 to GDP in 2000 prices have similar trends with an increase starting from 2019 to 2020, further decreasing by 2022. The growth rates of the monetary base and M2 money supply in 2000 prices have multidirectional trends, but they are similar from 2020, decreasing by 2021 and starting to increase by 2022.

Figure 1.29 shows the dynamics of the money multiplier, which is the ratio of money supply M2 to the monetary base and shows an upward trend over the study period. Its value increased from 1.68 in 2000 to 3.37 at the beginning of 2023. In general, the figure reflects the growth of possible increase in the money supply due to credit and deposit operations of commercial banks, which is a positive trend, despite the failure in 2018.

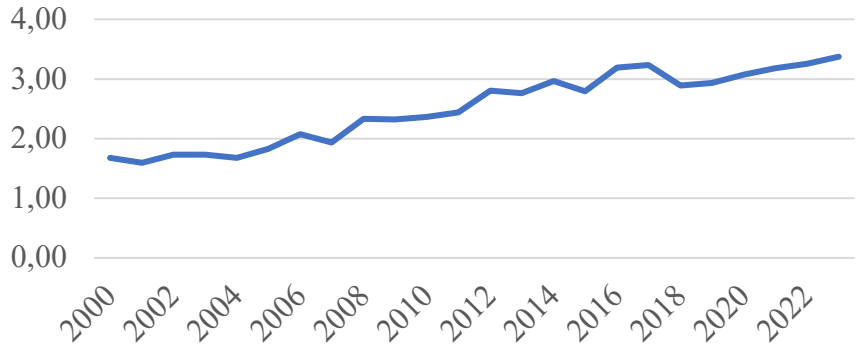

Figure 1.29 - Dynamics of the money multiplier, 2000-2023 [42]

Source: developed by the author

[41] Data source: http://www.cbr.ru/vfs/statistics/ms/mb_bd.xlsx, https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

[42] Data source: http://www.cbr.ru/vfs/statistics/ms/mb_bd.xlsx

Thus, the growth of the money multiplier over 20 years is not sufficient. This indicator characterises the state of the economy, in which many enterprises that could work in our economy do not work. The potential GDP is provided by intermediaries forming imports of consumer goods, intermediate investment goods and financial speculators.

The monetisation ratio also tended to grow steadily over the period 2000-2022 (Figure 1.30). It increased from 0.1 in 2000 to 0.43 in 2022. However, from 2020 onwards there is a decline from 0.47 today to 0.43 or 43 per cent.

At the same time, the value of this coefficient still differs from its values in developed countries. To calculate the monetisation indicator in foreign countries in the period 2010-2018, we take the Broad money indicator as a basis for the money supply indicator (Table 1.1).

Table 1.1 - Dynamics of Broad money/GDP monetisation indicator in foreign countries in the period 2010-2019[43]

Country	Indicator	Year									
		2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
USA	GDP (current US bln. $)	14992,05	15542,58	16197,01	16784,85	17527,16	18224,70	18714,96	19519,35	20580,16	21433,23
	Broad money (% of GDP)	87,64	88,23	88,97	89,61	88,89	89,89	90,33	89,13	92,76	
Brazil	GDP (current US bln. $)	2208,87	2616,20	2465,19	2472,81	2455,99	1802,21	1795,70	2062,83	1885,48	1839,76
	Broad money (% of GDP)	76,83	79,05	78,63	81,91	88,07	93,82	93,09	95,28	98,23	
Norway	GDP (current US bln. $)	428,76	498,28	509,51	522,76	498,41	385,80	368,82	398,39	434,17	403,34
	Broad money (% of GDP)	58,17	57,27	59	61,22	58,51	65,36	65,19	63,99	66,19	
Germany	GDP (current US bln. $)	322,00	344,00	327,15	343,58	352,99	302,67	313,12	332,12	356,88	350,10
	Broad money (% of GDP)	64,26	63,91	56,88	63,21	67,59	60,6	61,25	60,5	61,78	
India	GDP (current US bln. $)	1675,62	1823,05	1827,64	1856,72	2039,13	2103,59	2294,80	2652,75	2713,17	2868,93
	Broad money (% of GDP)	78,84	76,91	78,18	77,9	78,01	74,55	74,11	73,82	76,09	
China	GDP (current US bln. $)	6087,16	7551,50	8532,23	9570,41	10475,68	11061,55	11233,28	12310,41	13894,82	14342,90
	Broad money (% of GDP)	174,53	180,87	186,61	190,87	202,11	207,67	201,41	195,04	197,02	
Japan	GDP (current US bln. $)	5700,10	6157,46	6203,21	5155,72	4850,41	4389,48	4922,54	4866,86	4954,81	5081,77
	Broad money (% of GDP)	228,08	231,43	235,5	237,37	236,51	243,81	247,48	252,92	255,02	
Russia	GDP (current US bln. $)	1524,92	2045,93	2208,30	2292,47	2059,24	1363,48	1276,79	1574,20	1669,58	1699,88
	Broad money (% of GDP)	47,39	47,29	51,2	54,3	61,83	59,45	59,52	58,68	58,64	

Source: developed by the author

[43] Data source: World bank https://data.worldbank.org/indicator/

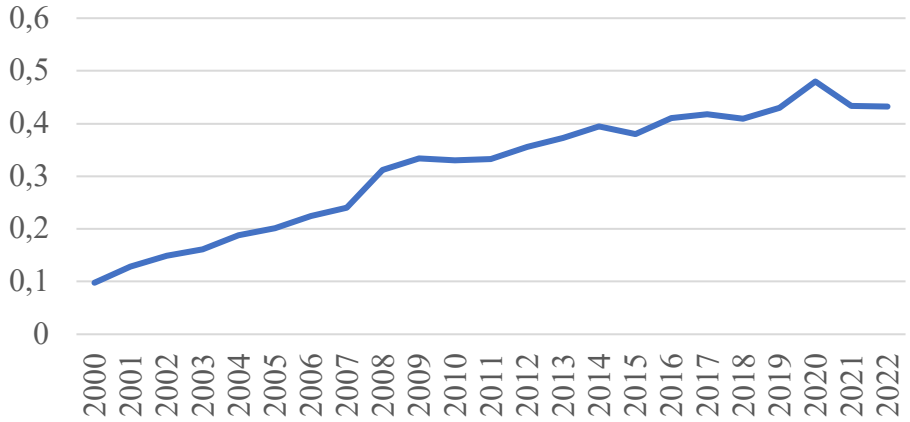

Figure 1.30 - Dynamics of monetisation ratio, %, 2000-2022[44]

Source: developed by the author

This indicator most fully reflects the composition of the money supply in foreign countries, unlike Russia, where the basis for calculating the money supply is aggregate M2.

Thus, based on the data presented in the table, we can conclude that in the United States, Brazil, Norway, China, Japan, from 2010 to 2018 there was an increase in the indicator. The ratio of Broad money to GDP in 2018 was 92.7% in USA, 98.2% in Brazil, 66.2% in Norway, 197% in China, 255% in Japan. In Denmark and India, there was a decline in the presented indicator from 2010 to 2018, but in 2018 it was Denmark-61.7 per cent and India 76.09 per cent.

Considering the broad money/GDP monetisation indicator in Russia, from 2010 to 2018 there was an increase from 47.4% to 58.6%. However, for all the countries presented, this is the lowest indicator in 2018, given that in Russia the basic indicator of money supply is M2, the monetisation ratio is calculated as M2/GDP, which amounted to 43% by 2022.

State budget revenues and expenditures in constant prices had similar trends over the period under study (Figure 1.31). They grew between 2000 and 2005, followed by a significant decline in 2006. Since 2011, they have fairly stabilised. In the period from 2000 to 2007 and from 2018 to 2019, revenues exceeded expenditures, while in the period from 2011 to 2014 and in 2021 they were almost equal. In the other periods, the budget was in deficit. By 2022, there is an excess of state budget expenditures over revenues.

[44] Data source: https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx, http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx, https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

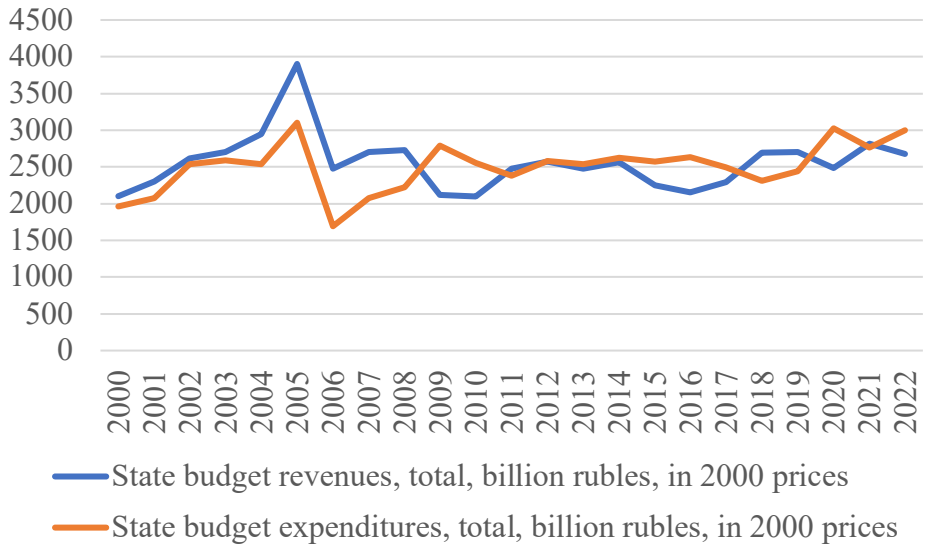

Figure 1.31 - Dynamics of state budget revenues and expenditures, in 2000 prices, billion rubles, 2000-2022. [45]

Source: developed by the author

Figure 1.32 shows the dynamics of Russia's state budget deficit/surplus in constant 2000 prices, confirming the trends highlighted earlier. From 2009 to 2022, the budget surplus was observed in 2011, 2018, 2019 and 2021, in the remaining years the budget was deficit. By 2022, there is the formation of the budget deficit, which amounted to (-317 billion rubles).

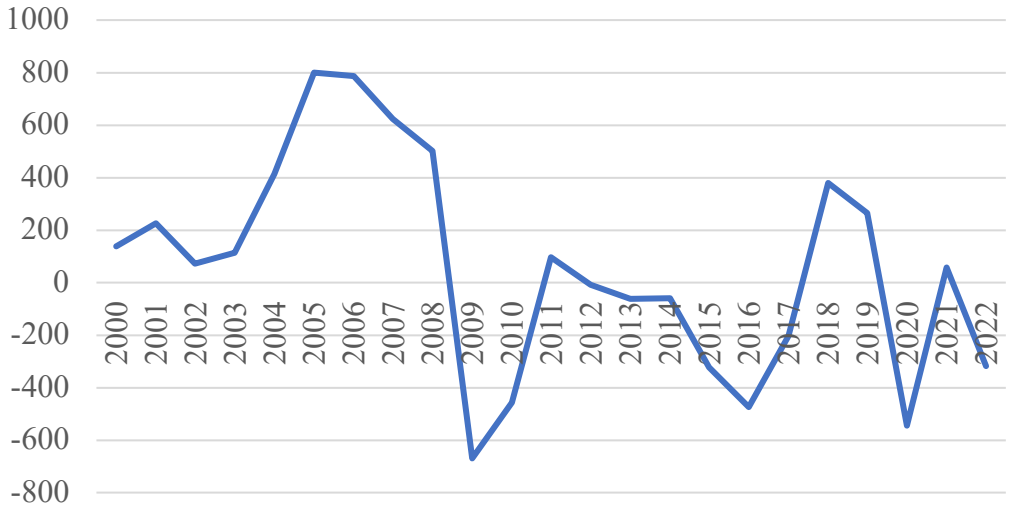

Figure 1.32 - Budget surplus/deficit dynamics, in 2000 prices, billions of rubles, 2000-2022[46]

Source: developed by the author

[45] Data source: https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2023/04/main/fedbud_04.xlsx

[46] Data source: https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2023/04/main/fedbud_04.xlsx

In contrast to the excessive concern of the Russian authorities about a balanced budget, or, ideally, achieving a budget surplus by any possible means, foreign scientists believe that a budget surplus suppresses domestic demand and, as a consequence, hinders economic growth. Governments of developed countries allow budget surplus only in case of excessive demand or in situations of economic overheating, which does not apply to the Russian economy at present. The modern state may well implement economic policy in conditions of budget deficit, which demonstrates the degree of state participation in economic regulation.

In constant prices of 2000, the volume of state domestic debt was growing (Fig. 1.33). In 2022, compared to 2009, its value will increase 3.7 times, totalling Rb 1,587.6bn. It should be noted that the trend of reduction of the RF state domestic debt has been decreasing since 2021 up to the present time.

In constant prices of 2000, the volume of the state external debt in the period from 2011 to 2022 had rather a downward trend (Fig. 1.34). From 2011 to 2022 the decrease was almost 30 per cent. It is important to note an increase in the volume of public external debt in 2020 with a subsequent return to the downward trend.

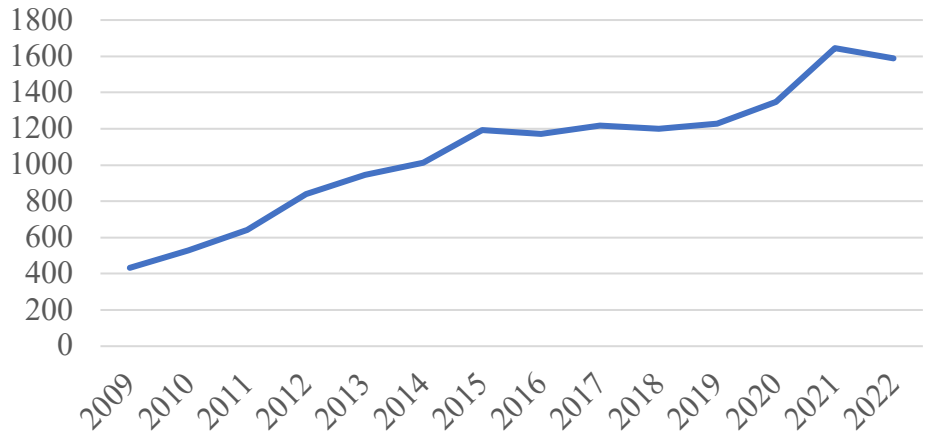

Figure 1.33 - Dynamics of the volume of the state internal debt of the Russian Federation, at the beginning of the year, in prices of 2000, billion rubles, 2009-2022[47]

Source: developed by the author

[47] Data source: https://minfin.gov.ru/common/upload/library/2023/04/main/Obem_gosdolga_s_garantiyami_god_polnostu_na_01_04_2023.xls

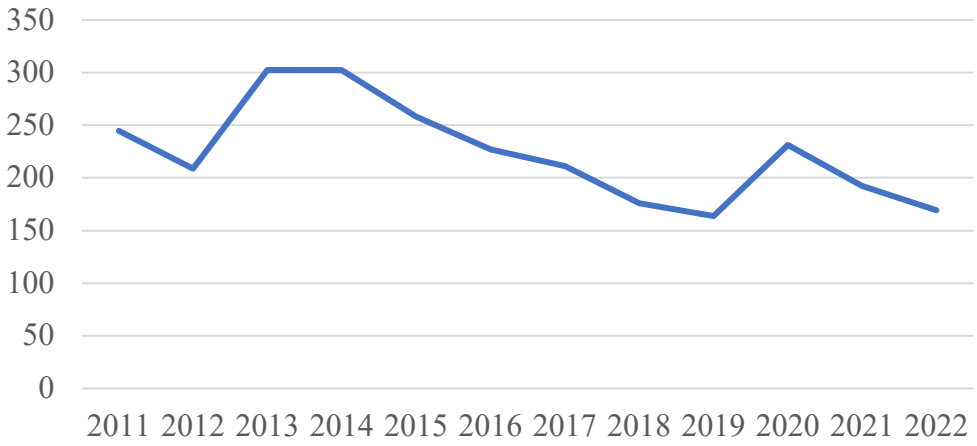

Figure 1.34 - Dynamics of the volume of state external debt of the Russian Federation, at the beginning of the year, in 2000 prices, billion rubles, 2011-2022[48]

Source: developed by the author

Figure 1.35 shows the evolution of the amount of the National Welfare Fund at the beginning of the year in constant 2000 prices. From 2009 to 2014. The trend of decline, followed by growth from 2015 to 2017. followed by a fall in 2018. From 2019 to 2021, the size of the Fund increased significantly and reached a maximum of 1,510.6 billion rubles. in 2000 prices. In 2022, its value declined again, and it continued to decline in 2023 (data are not presented on the chart due to the inability to deflate them due to the lack of data on the GDP deflator for 2023). Thus, the National Welfare Fund, as an additional source of financing of public expenditures, after a growth trend from 2018 to 2021, began to decline. It is possible to assume its expenditure to cover the deficit of the federal budget. Spending of the National Welfare Fund is a positive trend.

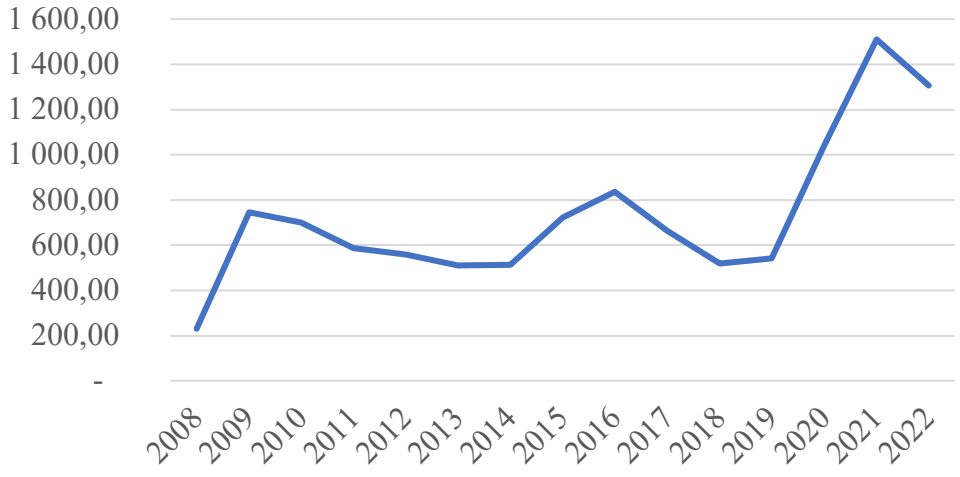

Figure 1.35 - Dynamics of the amount of the National Welfare Fund, in 2000 prices, billion rubles, 2008-2022[49]

Source: developed by the author

[48]Data source: https://minfin.gov.ru/common/upload/library/2023/04/main/vnesh_0104.xlsx
[49] Data source: https://minfin.gov.ru/common/upload/library/2023/04/main/Dannye_na_01.04.2023.xlsx

The growth rate of the amount of the National Welfare Fund (fig. 1.36) has been growing since 2018 until 2020, since 2021 the growth rate has slowed down and reached a negative value. We can conclude that the growth rate of the amount of the National Welfare Fund has slowed down and that it has subsequently decreased, which is a positive development.

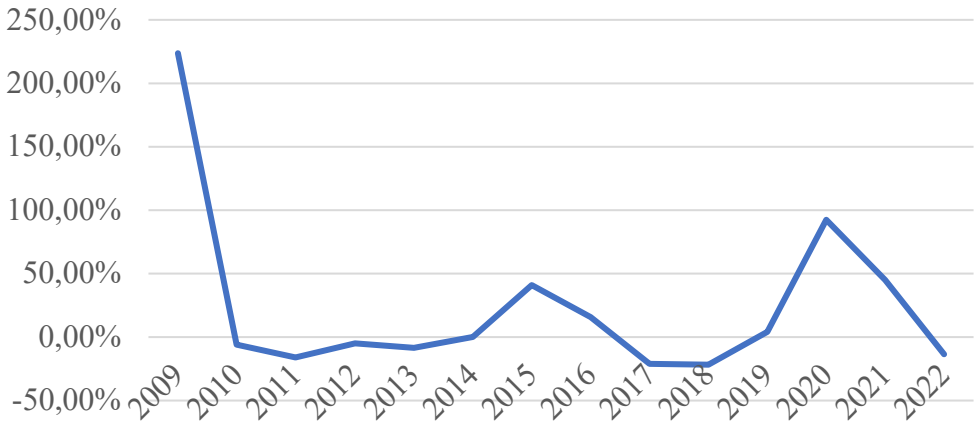

Рисунок 1.36 – Dynamics of the amount of the National Welfare Fund growth rates, in 2000 prices, %, 2009-2022[50]

Source: developed by the author

During the research period, from 2000 to 2022, the exchange rate of the dollar to the ruble showed a tendency to nonlinear growth (fig.1.37). The maximum was fixed in 2021 and amounted to 73.7 rubles per dollar. The minimum was recorded in 2008 - 24.9 rubles per dollar. In general, since 2015 there has been an appreciation of the course, in 2021 even more jump, in 2022. a slight decrease.

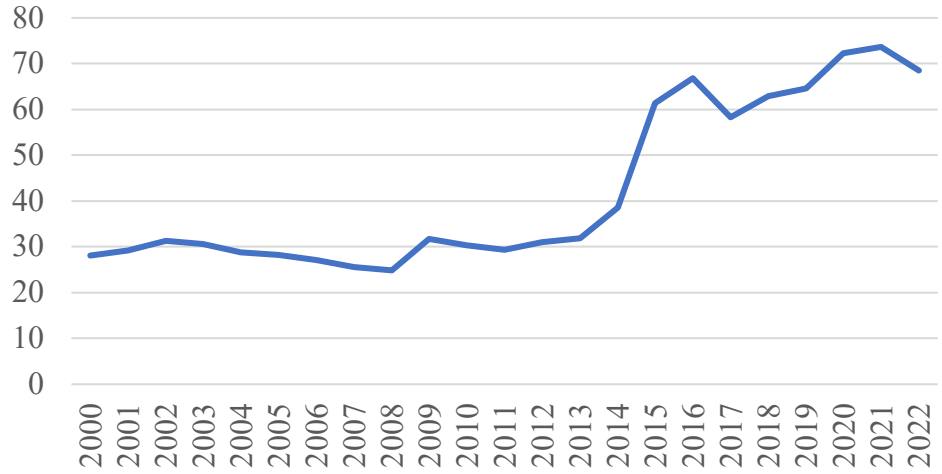

Figure 1.37 - Dynamics of the dollar to ruble, 2000-2022 [51]

Source: developed by the author

Figure 1.38 shows the dynamics of the real effective exchange rate of ruble to dollar and ruble to foreign currencies from 2005 to 2023. You can see that the dynamics of both indicators are very similar.

[50] Data source: https://minfin.gov.ru/common/upload/library/2023/04/main/Dannye_na_01.04.2023.xlsx
[51] Data source : http://www.cbr.ru/currency_base/dynamics/

The real effective exchange rate reached the minimum value in 2015 (-27.7 to the dollar and -16.5 to foreign currencies in general), the maximum - in 2017 (16.3 to the dollar and 15.9 to foreign currencies). In 2022 and 2023. there is a tendency of decline of the real effective exchange rate of the ruble to the dollar and foreign currencies in general.

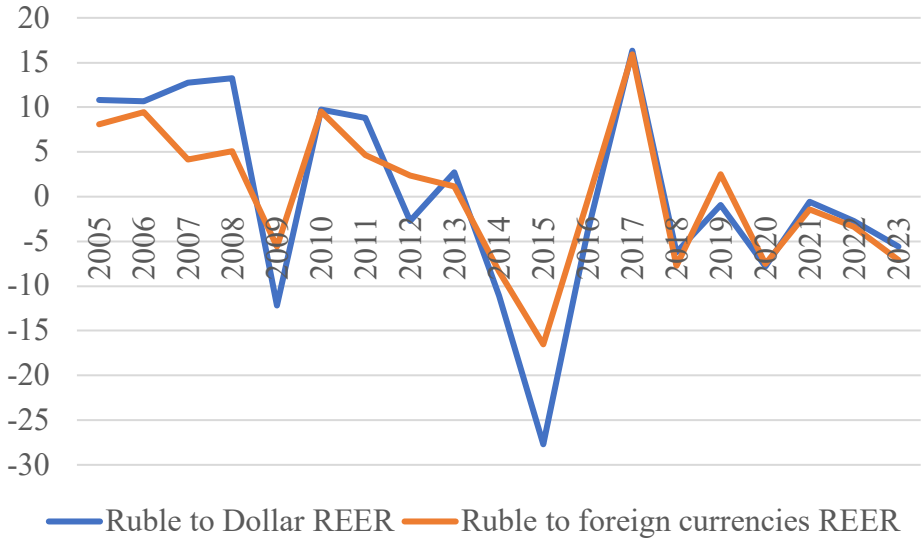

Figure 1.38 - Dynamics of real effective exchange rate of ruble to dollar and foreign currencies, 2005-2022[52]

Source: developed by the author

The transition to a new growth model and world economic structure requires both the complication of economic policy and the increase in the efficiency of public administration.

Based on the conducted research, the following features of the structure of applied monetary instruments of economic policy have been identified:

- after the tendency to reduce the key rate from 2021, its growth is again outlined;

- in some time periods the key rate and required reserves of credit institutions have multidirectional dynamics, i.e. neutralise each other's impact on economic dynamics;

- after the absence of significant dynamics since 2012, from 2018 to 2019 and starting from 2022, there is an increase in liquidity absorption by the Bank of Russia in 2000 prices; in some time periods, instruments of key rate reduction and liquidity absorption growth are applied simultaneously, which may neutralise the impact of the instruments on economic dynamics;

- the growth trend of money supply M2 and monetary base in 2000 prices from 2021 changes its direction, and there is a reduction in money supply M2 and monetary base, while from 2022 their growth rate accelerates;

- after the period of increase, from 2021 the ratio of the monetary base to GDP decreases; the growth rates of the monetary base and real GDP from 2020 have multidirectional dynamics;

[52] Data source: http://www.cbr.ru/currency_base/dynamics/

- the growth trend of the ratio of money supply M2 to GDP is reversed, from 2021 there is a decrease; the growth rates of M2 and real GDP from 2020 have multidirectional dynamics;

- throughout the study period, the money multiplier tends to increase;

- after an increasing trend from 2021, there is a decrease in the monetisation ratio;

- by 2022 the excess of state budget expenditures over revenues;

- from 2021 the volume of state domestic debt and external debt of the Russian Federation in prices of 2000 decreases;

- the amount of the National Welfare Fund in 2000 prices decreases from 2021, its growth rate slows down from 2020;

- from 2000 to 2022, there is a tendency of growth of the dollar/ruble exchange rate and from 2021 a decrease in the real effective exchange rate of the ruble against the dollar and foreign currencies.

First of all, we can see the structure of monetary instruments, which failed to achieve the necessary growth rates of the economy for quite a long period of time. Moreover, since 2021, there is a clear tendency to shrink the M2 money supply and monetary base. The effectiveness of economic policy depends on the institutional framework of economic activity, foreign economic activity, as well as the availability of necessary resources [91]. Often in the Russian practice monetary instruments neutralising the effect of each other are used.

The use of monetary instruments of economic policy in Russia is oriented towards curbing inflation and is subordinated to the "Fischer growth model" with the exception of the "Schumpeterian growth model" based on the innovative economic system. The consequence of such monetary policy was a direct outflow of capital from the Russian economy and the use of the funding method as a safety cushion. This approach affected the dynamics of the economy and failed to improve the quality of the economic structure, which is presented in 1.1.

If the economic policy that fixes economic development within the framework of the currency and interest rate lever is maintained, it will reproduce the old circle of "capital-innovation", which will not allow to create new sources of growth, ensure its new quality and, accordingly, meaningfully accelerate it.

Unjustified economic policy may be the reason for the slowdown of economic growth. It is necessary to influence the structure of the economy - sectors and gross product to determine the necessary rate of economic growth. It is important to redistribute the impact of labour and capital factors between sectors of the economy, avoiding, for example, the dominance of the transactional and commodity sector with an excessive disposal of resources compared to the manufacturing sector with a deficit of labour and capital. It is necessary to take into account the resources that are concentrated in the sectors of the economy that are potentially available for utilisation in order to shape a new growth model.

Monetary instruments of economic policy should be justified and selected in accordance with the assessment of the degree of their influence on the change of proportions between sectors, shares, their growth rates in GDP. It is important to take into account the relationship of monetary instruments with each other, targets with each other, the strength of the influence of instruments distributed by targets and the structure of the economy. At the same time, it is important not just to distribute monetary instruments of economic policy, but taking into account the relationship of targets, policy instruments and growth factors.

When applying monetary instruments of economic policy, it is necessary to understand the reasons for the formed structure of the economy, probable reactions to changes in the application of instruments on the part of economic activities that make up each sector and paradigm. It is necessary to set the structural targets of economic development taking into account the necessary transformation of the economic structure.

Monetary instruments of economic policy should be transformed from the focus on achieving aggregate indicators to differentiation in order to form a long-term basis for economic growth on the basis of improving the economic and technological structure.

In times of recession, not only monetary policy instruments but also fiscal policy instruments are effective. It is necessary to recognise the importance of the budget deficit in counteracting crisis phenomena in the economy, which is in contrast to the thesis about the reduction of government expenditures applied earlier in Russia. In order to form a new growth model in Russia, it is necessary to change the view of economic policy instruments related to the budget as the main instrument of resource allocation in the economy.

1.3 Evolution of views on monetary instruments and targets of economic policy in economic theories

In this paragraph of the paper, we study modern approaches and evolution of views on the implementation of economic growth policy, the use of monetary and fiscal policy instruments to achieve macroeconomic targets. The author identifies the concepts of "monetary policy" and "monetary policy» since the implementation of monetary policy is not possible without the participation of monetary instruments.

Let us investigate the evolution of J. Tinbergen's principle "targets-instruments" in relation to economic growth policy according to the introduced and justified criteria: targets of economic policy; targets of monetary policy and its instruments; targets of fiscal policy and its instruments. Let us justify the application of institutional economic theory in the study and the need to expand the principle of "targets-instruments" of J. Tinbergen.

Let us consider the Keynesian concept of economic policy (30s. XX c. - 50s. XX c.).

The results of the evolution of J. Tinbergen's principle of "targets-instruments" of economic policy of growth, monetary and fiscal policy in the Keynesian theory are presented in Table 1.2.

In the Keynesian concept, active government policy through its impact on aggregate demand is able to ensure economic growth and full employment, since the market economy is not self-regulating and perfect. An effective instrument of monetary policy is the use of interest rate to stimulate business activity. Maintaining low interest rates in the economy was, according to Keynes, the main task of monetary authorities [492]. J. Keynes believed that the central bank should pursue a policy aimed at setting rates below the norm of expected profitability in the real sector of the economy in order to achieve economic growth and increase employment [416, p.204]. In order to achieve stabilisation, it is necessary to apply fiscal instruments, manipulate taxes and public expenditures. It is the growth of public investment that can have a stimulating effect on aggregate demand. As for inflation management, Keynes argued that price growth should not be significantly affected by the stimulation of aggregate demand.

Table 1.2 – Results of research on evolution of Jan Tinbergen's principle "targets-instruments" of economic policy of growth, monetary, and fiscal policies in Keynesian theory

Criterion / School	Economist	Economic policy target	Monetary policy target	Monetary policy instruments	Fiscal policy target	Fiscal policy instruments
Keynesian economics	John Maynard Keynes	High level of human resources employment and providing the highest production growth rates.	Stimulating of aggregate demand, Investment is the basis for effective demand.	Money supply (impact on the rate of interest, the amount of investment, and at full employment on price level). Interest rate (impact on investment only). The rate of interest being the phenomenon of monetary economics is intermediate target of monetary policy.	Execution full employment and production equipment. Compensation of investment costs. Struggling with demand-pull inflation factors.	Basic instruments. Tax and government spending manipulations, public investment. Government expenditure is of the greater significance in regulation of macroeconomic dynamics. Execution of large investment and social programs is important and this includes deficit financing.
Neo-Keynesianism	Roy Harrod	Long-term dynamic equilibrium.	Overcoming the gap between growth rates (sustainable and optimal) affecting the saving rates and investment rates.	Interest rate affects poorly the saving rates, revenue at its minimum and bulk of investment follow interest rate after significant time lag. Impact on the level of savings (savings ratio) and investments. Long-term reduction of interest rate. Bank reserves – the basis.	Countercyclical policy, countercyclical impact.	Growth of government expenditures for full employment support, financing community service (target government expenditures), creation and use of a stabilization fund resources, tax cuts (preferably), budget planning.

Criterion / School	Economist	Economic policy target	Monetary policy target	Monetary policy instruments	Fiscal policy target	Fiscal policy instruments
	Alvin Hansen	Business cycles stabilization.	Regulation of dynamics of investment activity.	Reduction of interest rate. Reduction of obligatory reserves Buying government bond on an open market.	Built-in stabilizers for reducing cyclical amplitude.	Graduated income tax, reduction of tax rates, budgetary control – managed compensation programs, stabilization fun – the point is the regulation of foreign exchange movements.
Neoclassical synthesis	John Hicks, IS-LM model, Paul Samuelson, James Tobin	A set of instruments: optimization of economic development equality on IS-LM markets) combined with rising prosperity.	Achieving of equilibrium level of interest rate J. Tobin: price adjustment of supply of capital, and its market return.	J. R. Hicks: Interest rate in monetary sector - equalizing the money demand with a given money supply in real sector – achieving equilibrium between savings and investments. Demand management and supply of financial assets in addition to traditional instruments are introduced.	Aggregate demand, regulation of rate of return.	Deficit financing of government spending. J. Tobin: change in structure of asset supply by government, change in yield that provide capital formation and restricts demand for assets which are alternatives to investments.
New Keynesian Economics	Joseph Stiglitz, Stanley Fischer, N. Gregory Mankiw, Laurence M. Ball, David H. Romer	Achieving effective economic equilibrium taking into account micro foundations.	Priming of economy by influencing on macroeconomic situation during the period of return of economics to its natural level.	Regulation of interest rates on financial markets.	Temporary economic stimulus.	Regulation of budget expenditures and tax rates taking into consideration time lags.

Criterion / School	Economist	Economic policy target	Monetary policy target	Monetary policy instruments	Fiscal policy target	Fiscal policy instruments
DSGE – Dynamic stochastic general equilibrium	Olivier Blanchard, Rafael Wouters, Michael Woodford, Jordi Gali, Marvin Goodfriend, Lawrence J. Christiano, Frank Smets	Intertemporal general equilibrium taking into consideration dynamic behavior of an economy.	Achieving low rates of price growth.	The nominal interest rate of a central bank, inflation targeting policy.	Economic stimulus during recessions.	Administrating and managing of parameters of a budget, policy of government spending.
Post-Keynesian economics	Philip Arestis, Paul Davidson, Jan Kregel, Marc Lavoie, Hyman Minsky, Dimitri B. Papadimitriou, L. Randall Wray, Geoffrey Harcourt, Pavlina R. Tcherneva, Alfred S. Eichner	Labor market and financial market, maintain the state of economy close to full employment.	Macrofinancial stability mainly due to financial market.	Financial market monitoring. Credit rates. Banks failure control.	Countercyclical economy.	Subsidies. Government expenditures. Infusion of funds.

Source: developed by the author

Representatives of neo-Keynesianism R. Harrod, E. Domar and Alvin H. Hansen "expanded the practical programme of public policy, focusing on more stringent instruments of regulation (fiscal) and on the systematic nature of their use regardless of the phase of the economic cycle" [265, p.192] - notes V.M. Tsvetkov.

According to R. Harrod, financial and monetary policy measures are traditional tools to influence the level of savings and investment [149], with financial policy being the best tool to regulate the savings rate of society. Monetary policy should facilitate or limit the processes of bank lending to economic entities and population, which is achieved by regulating the interest rate and bank reserves. R. Harrod argued that monetary and financial policies are not always able to resolve the conflict of objectives by themselves, in case of insufficiency of monetary and financial expansion to maintain sustainable growth, with price stability and full employment, it should be supplemented by income policy (regulation of wages and prices), as well as indicative planning.

Of particular interest are the aspects of formation and use of the stabilisation fund in the macrodynamic theory of R. Harrod [258, p.143, pp.144-148], which, in his opinion, should complement the traditional measures of state expansion, such as the growth of public expenditures to maintain employment in the main sectors of the economy and long-term reduction of the interest rate to make investment resources cheaper.

Alvin H. Hansen argued that automatic countervailing measures should be used to achieve economic growth. In the recession phase, the main measures should be lowering tax rates, reducing the mandatory reserves of private banks, lowering the rate of interest, buying up government bonds in the open market, increasing the size of loans provided by the Government. Opposite measures should be taken at the stage of recovery, it is necessary to accumulate a surplus of the budget and limit the state expenditures, in a recession it is important to increase the state expenditures even up to the budget deficit. Alvin H. Hansen noted [257, pp.278] that the main purpose of stabilization funds is to regulate the exchange rate of the national currency.

Representatives of the neoclassical synthesis, D. Hicks, P. Samuelson, and J. Tobin, worked on the transformation of Keynesian theory. D. Hicks [403] developed the graphical model IS-LM (Investments - Savings/ Liquidity Preference - Monetary Supply), which was a formalization of the ideas of J.M. Keynes [415] where curve crossing is the aggregate equilibrium in the economy, which is determined by the unique interest rate and output values. However, the disadvantage of this model is its scope of application within the national economies of specific countries.

P. Samuelson [200, pp.108] argued that, depending on the circumstances, both the budgetary methods recommended by Keynes and the monetary methods proposed by Friedman could be used.

A significant study was the work of F. Modigliani [465], in which he assumed that a monetary stimulus would increase the demand of agents for assets, which would cause asset prices to rise, resulting

in an increase in household financial wealth, the amount of resources available for consumption and stimulation of consumption of the agent and as a result will increase the aggregate demand.

In J. Tobin's writings, the influence of money on economic growth occupies a special place. At the same time, by «money» he understood state securities of various terms, which J. Tobin considers as substitutes of money. In the model J. Tobin's growth of money is a factor of economic expansion that increases the assessment of existing capital and stimulates investment activity.

Such goals of the state economic policy as full employment, maximum output and economic growth cannot be rejected for the sake of achieving the goal of reducing the burden of interest payments on public debt, notes J. Tobin. In his opinion, the monetary effect of increasing public debt is more durable than the deficit, by which this effect is generated [238, p.157].

In the 70s, chronic inflation and crises changed the attitude to the Keynesian economic policy, which was the official doctrine of state regulation in Western countries in the form of Keynesian-neoclassical or neoclassical synthesis, which implied the activation of government intervention in the economy or its restriction depending on the state of the economy. The main methods of regulation were monetary.

The representatives of New Keynesianism are J. Stiglitz, S. Fisher, N. Mankew, L. Ball, D. Romer and others. The theoretical prerequisites for the development of New Keynesianism ideas are outlined in the articles by B. Greenwald and J. Stiglitz [396] and A. Blinder [316]. The approach of New Keynesianism coincides with early Keynesianism in the recognition of the importance of stabilisation policy. However, New Keynesians considered the role of monetary instruments as dominant in macroeconomic stabilisation, while Keynes as well as his followers considered fiscal rather than monetary policy as a priority.

Like monetarists, New Keynesians pay attention to the existence of time lags in the implementation of fiscal stabilisation. New Keynesians do not deny the use of fiscal policy for the purpose of temporary economic stimulation. They note the greatest effectiveness of monetary instruments of economic stimulation, which can influence the macroeconomic situation for a certain period, but at the same time, their effectiveness has a time limit [291, 418].

DSGE models of the New Keynesian theory are a development of RBC models and became popular after the publication of F. Smets and R. Wouters [513]. Initially, DSGE models were used to analyse the cyclical dynamics of the economy and determine the effects of monetary policy, which led to their widespread use by central banks in many countries. In recent years, DSGE models have incorporated imperfections in financial markets, analysing financial mechanisms and creating expectations.

Stable prices, rather than achieving full employment or smoothing output fluctuations is the main and only goal of monetary policy. The best instrument for achieving a low rate of price growth is a

properly organised monetary policy. However, the main condition for the effectiveness of monetary policy is the confidence of economic agents in the monetary authorities, for achieving which the actions of the authorities should be consistent, clear and predictable. Monetary policy in DSGE-models, as a rule, is based on the rule of setting the nominal interest rate for the central bank. In this case, the formation of the volume of money supply is endogenous, in order to achieve the target level of interest rate.

The most common of the theoretical rules of monetary policy within DSGE-models is the Taylor rule [519]. According to this rule, the nominal interest rate of the central bank deviates from the level that corresponds to the target inflation rate and the equilibrium real rate in the case when the inflation rate deviates from the target rate and the output gap does not correspond to zero. Thus, in the concept of new synthesis, monetary policy is the main element of macroeconomic regulation [520, p. 27]. The use of fiscal instruments can take place when monetary policy measures are no longer effective, for example, when interest rates reach the zero threshold [508, 522, 303, 305].

Such components of the new synthesis as excessive formalisation and mathematical rigour, a large number of simplifying assumptions in order to comply with the internal logic of the model, namely: the postulate of representative economic agents that are homogeneous and maximise utility, lack of attention to imbalances and imperfections of financial markets are criticised by various economists [342, pp. 2-14; 517, pp. 606-635].

The representatives of post-Keynesianism are F. Arestis, P. Davidson, J. Kregel, M. Lavoie, H. Minsky, D. Papadimitriou, L.R. Ray, J. Harcourt, P. Tcherneva, A. Eichner.

Post-Keynesian methodology is based on the following hypotheses:

- the key role of aggregate demand in the economic system;

- modern economic systems have no internal potential for self-regulation and are subject to fluctuations; active state participation in macroeconomic regulation is assumed.

Of great importance for post-Keynesians was the institution of money, capitalist economy, in their opinion, is primarily a monetary economy [196], where the creation of money is endogenous and is a source of instability.

In post-Keynesianism, balanced growth is only a moment in the cyclical dynamics of the economy, not a goal. H. Minsky [459, p.327-370] spoke about the need for state macroeconomic policy in a modern market system, which in the person of Big Government should regulate the labour market and financial market, as well as maintain the state of the economy close to full employment. In his book he proposed a programme of reform, which included: Big Government (spending, size, taxation); financial reform; market power and employment strategy (employer of last resort) [178, p. 39].

The main provisions of P. Davidson's monetary theory [98, p. 89; 97, p. 405] are:

- "money plays an important role both in the long and short term" [98, c.85];

- as long as financial institutions and banks satisfy the growing demand for money by increasing the money supply, there should not be an excessive growth of interest rates.

Post-Keynesians criticise the neoclassical prescription of inflation targeting for the high real costs of focusing on a single macroeconomic policy objective - the inflation rate. Inflation control in post-Keynesian models does not provide appropriate effects on employment and output. They see the government's task as maintaining full employment or price stability, not the central bank's. Post-Keynesians see financial stability rather than low inflation as the primary role of the central bank.

Following Keynes, post-Keynesians consider fiscal policy to be an effective and the main countercyclical instrument, in contrast to the postulate of the representatives of the new synthesis about its secondary and complementary nature. The works of M. Sawyer and F. Arestis [286, 287, 288, 503] and P. Tcherneva [521, 522, 523] demonstrate the importance of the role of fiscal policy as an important element of macroeconomic stabilisation.

The principle of functional finance, which was formulated by A. Lerner [435] in 1943, is the basis for analysing the post-Keysian budget policy. The budget policy of the state should support aggregate demand and employment on a permanent basis, rather than apply temporary stimulus programmes. This is the main difference between the understanding of stabilisation policy targets of post-Keynesians and neoclassicists. Post-Keynesians consider the importance of "labour demand targeting", direct job creation programmes rather than traditional output gap closure and aggregate demand management. According to the post-Keynesian approach, the main role of macroeconomic policy is to ensure maximum employment, in contrast to the mainstream of "stabilisation at full employment".

Based on the analysis of the evolution of J. Tinbergen's principle of "targets - instruments" of economic policy in relation to monetary instruments in the Keynesian theory, we can conclude about the evolution of views on the basis of economic policy from fiscal measures (fiscal policy) to monetary regulation. Representatives of New Keynesianism and DSGE-models consider monetary policy instruments as the basis of economic policy and the most effective tools.

The standard neo-Keynesian model, in which it is long-term interest rates that determine aggregate demand, production dynamics and inflation in traditional monetary policy is the theoretical basis.

However, at present, the classical Keynesian mechanism carries such risks as increased inflation, public debt, state budget deficit, disruption of foreign trade and balance of payments, destabilisation of the monetary and financial system. In crises with cyclical, structural, systemic characteristics, "the conclusions of the new synthesis," writes V. M. Ostapenko, "should be revised" [177, p.64].

Next, we study the methodological foundations of monetarist theory, the evolution of views of its representatives regarding the development of J. Tinbergen's principle of "targets-instruments" of

economic growth policy, including monetary and fiscal policy. Let us present the results of the evolution of J. Tinbergen's principle of "targets-instruments" of economic growth policy, monetary and fiscal policy in the monetarist theory (Table 1.3).

The main representatives of the monetary concept are M. Friedman and A.J. Schwartz. The role of the monetary component was the main one in the monetary theory, in contrast to J.M. Keynes and early Keynesians, who were led by the components of aggregate demand.

The initial postulates of the monetarist concept of M. Friedman, in relation to the principle of J. Tinbergen "targets-instrument". Tinbergen's "targets-instruments" principle of economic policy, are as follows:

- monetary factors are the main instruments influencing the economy, they best ensure the main goal of regulation - economic stability;

- money supply is the basis for price growth and changes in conjuncture, the main problem of the economy - inflation. Only the reduction of money in circulation is a means of curbing inflation;

- monetarists proceeded from the correlation between the growth rate of money supply (money movement) and the dynamics of gross national product. The basis of the classical work of M. Friedman and A.J. Schwartz [376] was the study of the relationship between the dynamics of monetary variables and national income. M. Friedman showed that the supply of money in the short-term period mainly affects the output, and in the long-term period within decades the growth rates of monetary aggregates affect the price level [381].

According to monetarists, the central bank should control the dynamics and structure of money supply, analyse the demand of economic agents for money and exclude monetary shocks. M. Friedman considered it necessary to apply the monetary rule instead of discretionary monetary policy, according to which the growth of money supply should be approximately at the level of average annual growth rates of real output. The scientist presented the idea of stabilisation possibilities, the basis of which are the rules of monetary policy [377], considered the optimal combination of monetarist and budgetary policy, affecting the volume of money supply while keeping the total amount of expenditures, taxation rate and transfer payments constant in the budget [380].

It is necessary for the money supply to grow constantly at a steady rate that corresponds to the rate of growth of the social product and the expected inflation rate of about 5-6% per year, which will ensure that the demand for money matches the supply. The object of macroeconomic regulation is the volume of money supply, the dynamics of which is related to the dynamics of national income. Stability of the monetary unit and ensuring the price of stability are the goal of economic policy for monetarists.

Monetarists also include the purchase and sale of securities (open market policy), changes in the discount rate, mandatory reserve requirements, etc. in the instruments of economic regulation. They also recommend the use of unexpected impacts.

However, monetarist recommendations are not an ideal way to achieve economic stability. M. Friedman himself [379, p.17-18] spoke about the need for careful application of monetary recommendations because of the lack of knowledge about the relationship between the money supply, production and price.

Table 1.3 - Results of research on evolution of Jan Tinbergen's principle "targets-instruments" of economic growth policy, monetary and fiscal policy in Monetarist theory

Criterion / School	Economists	Economic policy target	Monetary policy target	Monetary policy instruments	Fiscal policy target	Fiscal policy instruments
Classical monetarism	Milton Friedman, Anna Schwartz	Economic stability (equilibrium) without governmental intervention. Stability of unit of account and providing of price stability.	Solution of long-term economic tasks.	Regulation of growth rate of money supply in accordance with GDP growth rate is the main instrument. Security trading (open market policy), changes in discount rate, obligatory reservation.	Impact on issue and employment.	Ways of financing of the budget.
New monetarism	Ricardo Lagos, Robert E. Wright, Samuel Williamson	Sustainable equilibrium and optimal behavior of economic agents.	Solving of imperfection of exchange problem.	Money at the micro level, obligatory reservation (not whole 100%), securities (quantitative benchmarks of assets buyout).	Supporting role in achieving the equilibrium.	A set of instruments that allows to increase optimal interaction of counterparties.

Source: developed by the author

The ideologists of the "new monetarism" were S. Williamson and R. Wright, were the ideologues of "new monetarism"; some ideas belonged to R. Lagos. "New" monetarists talk about the neutrality of money, explaining it by the absence of the influence of money supply growth on economic growth and the influence of employment in the long run exclusively on the growth of the general price level. However, they believe that money is not superneutral. As a result, M. Friedman's rule of constant growth rate of money supply has acquired suboptimality. When a central bank deviates from Friedman's rule, there is an increase in excess money from buyers and counterparty search activity, which leads to an increase in welfare. Also, deviation from the rule can lead to positive effects on output.

In general, speaking about the postulates of "new" monetarists, it should be noted that their main emphasis is on the development of theoretical models that take into account the institution of money and the behaviour of economic agents in monetary transactions, which directly translates into the view of the implementation of monetary policy as a basic tool of economic policy. At present, research on the "new" monetarism is limited to the framework of modelling. At the same time, there has been a shift from the operational objective - interest rate to the objective - money supply.

Another monetarist legacy is the retention of money as an economic variable in monetary analysis. A number of economists consider the important role of money supply in the analysis of central banks. For example, R. Lucas [301] argues that by managing monetary aggregates it is possible to control inflation. Even without a structural or causal role in the monetary policy transmission mechanism or in the inflationary process, monetary variables are present in the analysis. The absence of a fixed objective for the money supply or the value of money in the models used in monetary analysis does not mean that they are excluded from attention.

When applying J. Tinbergen's principle of economic policy "targets-instruments" to the monetarist theory and Russian reality, it should be noted that in Russia inflation is based not only on monetary reasons, but on many factors, including contradictory ones. In addition, the monetarist approach rejects any, except monetary, state regulation. At present, monetary aggregates are only informational indicators, monetary theory cannot be considered as universal. Only taking into account modern realities it is possible to use monetary recommendations in combination with other measures of economic policy. At the same time, M. Friedman's opinion concerning the reduction of money supply as a factor of production decline and decrease in conjuncture, the important role of inflation expectations in the development of inflationary processes, the idea of "healthy money" are definitely of great practical importance.

Let us present the results of the evolution of J. Tinbergen's principle "targets-instruments" of economic growth policy, monetary and fiscal policy in orthodox and unorthodox approaches (Table 1.4).

Representatives of the classical school A. Smith, A. C. Pigou, D. Ricardo, A. Marshall and others assign a subordinate role to the state - non-interference of the state in the market mechanism was the

best economic policy. Modern representatives of the neoclassical school allow limited state regulation of the economy, arguing that the market economy, the basis of which is perfect competition, is internally stable.

S.G. Kapkanshchikov [112, p. 53] defines the following features of the neoclassical approach to understanding the role of the state: they attach importance to the stabilisation of the general price level in the long term; they attribute the presence of many problems to the lack of resources; they base their monetary policy on the state; they consider it necessary to reduce the tax burden, reduce all types of government expenditures; they recommend to constantly reduce the budget deficit. In the neoclassical approach, the rate of interest is a phenomenon of the real economy, which brings savings and investment into a state of equilibrium. The effect of changing money, according to neoclassicists, is the effect on prices.

Thus, the advantages of the methodology of the neoclassical school of economics, which are reflected in the recommendations on the implementation of economic policy, application of its tools to the targets are: the comprehensive nature of the approach; universality of models; quantitative analysis of fundamental economic problems, such as inflation, unemployment, economic growth, allowing, based on numerical parameters, to make political and economic decisions; the establishment of correlation and regression dependencies between the economic and economic indicators However, neoclassical theory "does not set the task of radical changes in the institutional structure of society" [212, p.390].

Representatives of the new classical school R. Lucas, T. Sargent, C. Sims, N. Wallace, R. Barro argued that changes in the money supply and interest rate do not affect the economy, because under the influence of rational expectations, economic agents quickly respond to external shocks, including state shocks, and as a consequence the market comes to equilibrium. R. Lucas [440; 443; 445; 45, p. 362], T. Sargent and N. Wallace [499] in their works demonstrated the failure of the Keynesian approach to macroeconomic policy, which ignored expectations.

Table 1.4 – Results of research on evolution of Jan Tinbergen's principle "targets-instruments" of economic policy of growth, monetary, and fiscal policies of Mainstream and Heterodox schools

Criterion / School	Economists	Economic policy target	Monetary policy target	Monetary policy instruments	Fiscal policy target	Fiscal policy instruments
Neoclassical economics theory	Leon Walras, W. Stanley Jevons, Alfred Marshall, Carl Menger, Arthur Pigou	Development of competition and free enterprise.	Stabilization of general price level over the long term.	Money supply.	Taxation reducing and households' savings encouragement	Tax rate. Government expenditures.
New classical economics	Robert Barro, Robert Lucas, Thomas J. Sargent, Christofer A. Sims, Neil Wallace	Acquisition by markets the maximum efficacy and competitiveness.	Achieving price and macroeconomic stability.	Set of instruments which along with economic shocks positively influence on economics (neutral policy).	Achieving optimal price level, demand and supply equilibrium.	Generally deemed to be ineffective, but on the modern stage budget restrictions is used.
Supply-side economics	Robert Barro, Arthur Laffer, Martin Feldstein, E. E. Evans-Pritchard	People's saving growth and sole proprietorship motivating.	Stimulating the supply of capital, goods, factors of production.	Interest rate, money supply.	Investments' stimulation.	Tax cuts. Budget deficit reduction. Cuts in social expenditures.
Real business-cycle theory	Finn E. Kydland, Edward S. Prescott	Technical innovations and technological development incentives, growth of production possibilities.	Minor role in regulation of actual production.	Interest rate regulation.	Minor role in regulation of actual production.	Tax cuts.
Modern monetary theory (MMT)	Michal Kalecki, Wesley C. Mitchell, Warren Mosler	Full employment encouraging, government debt	Fight against inflation.	Issue of money (open funding). Short interest.	Providing demand for a	Balance of payments control. Taxation.

Criterion / School	Economists	Economic policy target	Monetary policy target	Monetary policy instruments	Fiscal policy target	Fiscal policy instruments
		servicing, and economic growth.			national currency.	
Austrian School	Roger W. Garrison, Ludwig von Mises, Murray N. Rothbard, J. Huerta de Soto, F. A. Hayek	Switch to market economic stabilization, provide the market with the possibility of self-stabilization.	Settlement of "man-made" crises risen through Central Banks fault.	Money supply. Rates that are not lower than equilibrium ones. Reservation	Microeconomic reorganisation of the economy.	Tax cut and reducing of government spending.
Old institutional economics	Thorstein Veblen, John R. Commons, Wesley C. Mitchell, John Kenneth Galbraith, Geoffrey Hodgson	Building the system of institutions for cumulative development of economics.	Not defined clearly.	Customs, habits, traditions, mechanisms of interrelation between an institution and a person, behavior of agents.	Not defined clearly.	Customs, habits, traditions, mechanisms of interrelation between an institution and a person, behavior of agents. Progressive taxation (main instrument).

Criterion / School	Economists	Economic policy target	Monetary policy target	Monetary policy instruments	Fiscal policy target	Fiscal policy instruments
New institutional economics	Ronald Coase, Douglass North, Oliver Williamson, Elinor Ostrom, James M. Buchanan and following Russian scientists: L. I. Abalkin, A. A. Auzan, S. Yu. Glazyev, V. E. Dementyev, B. A. Erznkyan, R. I. Kapelyushnikov, G. B. Kleyner, Ya. I. Kuzminov, D. S. Lvov, V. I. Mayevskiy, A. N. Nesterenko, A. N. Oleynik, V. Polterovich, O. S. Sukharev, V. L. Tambovtsev, A. E. Shastitko	Economic growth on the basis of innovation processes.	Growth of qualitative indicators of economic institutions, entities, and system of rules.	M2. Velocity of money. Financial market control. Interest rates. Open market operations.	Minor role.	Non-discretionary fiscal policy is a built-in stabilizer. Discretionary fiscal policy is a built-in stabilizer is undesirable.

Source: developed by the author

Fiscal countercyclical policy, according to the new classics, is inefficient. In order to prove this inefficiency, they applied R. Barro's hypothesis [296, 300] of "Ricardian equivalence", the essence of which is that economic agents consider taxes and public debt as equal ways to finance the expenditures of the budget deficit and the state.

In their concept of "nasty monetarist arithmetic" T. Sargent and N. Wallace [500] presented additional facts against active fiscal policy in addition to Ricardian equivalence. The result of the new classics' research on the stabilisation possibilities of monetary policy is called "the principle of policy neutrality" [498, 499]. That is, real variables can be influenced only by monetary policy of non-systematic nature and only in the short run. At the same time, there are not enough empirical confirmations of this hypothesis, a number of scientists, for example, F. Mishkin [460] prove that output and employment can be affected by both expected and unexpected changes in the money supply. Interestingly, further macroeconomic studies have shown the preference for a systematic monetary policy of money supply changes, which is based on monetary rules.

Thus, the New Classical School argues that "fine-tuning" the economy with Keynesian methods is inefficient. The cause of cyclical fluctuations are fluctuations in money supply as a consequence of unforeseen changes in monetary policy under imperfect information.

Representatives of the supply theory A. Laffer, R. Barro, M. Evans, M. Feldstein were opponents of state regulation, which reduces efficiency and limits the initiative of economic agents. However, the supply-side theory still had a vision of economic policy implementation. In contrast to Keynesians, adherents of this theory consider it necessary to shift the attention of the state from countercyclical demand management to supply management, as well as to stimulate the supply of capital, goods, factors of production.

The main postulates of the supply-side economic theory regarding the implementation of monetary instruments of economic policy, are:

- stimulation of investments by reducing taxes;
- budgetary recovery;
- one of the negative factors affecting economic growth is inflation, the main causes of which are high tax rates and government financial policy, which leads to rising costs. Price growth is a response of producers to undesirable changes in economic policy and to unstable market conditions.

Consequently, the methodology of neoclassical supply theory aims at applying fiscal, budgetary policy rather than monetary policy.

Due to the rejection of countercyclical regulation, the supply theory was criticised by representatives of various branches of economic thought. Real experience has shown the ambiguity of the recommendations of the supporters of the supply theory. Such principles of the supply theory as tax

cuts, reduction and suspension of certain social programmes were the basis of R. Reagan's policy, while the problem of budget deficit was not solved, the negative effect was quickly corrected.

F. Kydland and E. Prescott [423] revealed a new approach to the study of business cycles. The basis of the RBC-approach is that output always corresponds to the level of full employment, recession is an effective market reaction to changes in a number of exogenous factors that affect the aggregate supply in a perfectly competitive environment, recognising monetary factors as a secondary role.

Modern Monetary Theory (MMT) [543] is represented by the works of W. Mitchell [462] and W. Mosler [469, 470]. At present, this doctrine is directly related to government monetary and fiscal stimulation of full employment, public debt servicing and economic growth.

The authors of modern monetary theory propose to conduct monetary policy in the form of open monetary financing, i.e. money printing in the understanding of mainstream macroeconomists. According to the representatives of modern monetary theory, the state can, with some reservations, finance budget expenditures at the expense of monetary emission in order to achieve full employment and without subsequent inflation.

The main provisions of modern monetary theory in relation to the principle of economic policy of J. Tinbergen "targets-instruments" and monetary instruments are as follows:

- the state ensures full employment by increasing budget expenditures of the government;
- inflation management is ensured through budgetary policy, to withdraw the money supply from the population the state issues bonds and raises taxes;
- interest rate targeting is not an effective policy, the government can make interest rates zero;
- budget deficits and deficit spending can make credit cheaper, lower interest rates, and increase savings, stimulating investment and economic activity. Fiscal deficits can affect inflation in different ways;
- quantitative easing does not lead to credit growth and has no effect on inflation.

In the conditions of a new financial and economic crisis caused by the pandemic and the decline in world oil prices, the number of countries in which the recommendations of modern monetary theory are applied began to grow sharply. However, the applied anti-crisis measures in the world practice have shown their weak effectiveness. "They are not able to restore economic growth at the expense of the printing press and a sharp increase in budget expenditures" [12, p.131]. It was the supporters of interventionist policy that drove the world economy into a liquidity trap, which has become a modern challenge for all economic doctrines, according to Nobel Prize winner P. Krugman [130]. In the short term, perhaps, the recommendations of modern monetary theory will be in demand. But following these recommendations in the long term will lead to economic and financial collapse.

The Austrian direction of economic thought is represented by the works of L. von Mises [154, 155], F. Hayek [401, 256], M. Rothbard [197] and J. Huerta de Soto [247]. Cyclical fluctuations and

hence crises arise from man-made causes. First of all this includes the policy of the monetary authorities, due to which it is possible for interest rates in the economy to deviate from their equilibrium values. The value of interest rates below their natural level leads to an economic boom with subsequent overheating.

As for the prescriptions of the Austrian school, it proposes the elimination of central banks, the introduction of a pure gold standard, free banking with 100 per cent mandatory reserve requirements. It is necessary to reduce taxes and government spending.

Old institutionalism is represented by T. Veblen [53], W. Mitchell [158], J. R. Commons [119], J. Galbraith, G. Hodgson [259].

J. R. Commons studied the development of such institutions as the state, family, corporations, applied legal concepts to the economy. He owns the idea of endogenous money. W. Mitchell supplemented the conclusions of T. Veblen [52, 53], paying special attention to the study of behavioural and psychological factors, as well as acknowledging the importance of the state's influence on the economy in the direction of monetary, financial, credit factors in combination with social and cultural patterns of society. W. Mitchell's endeavours were continued by I. Fisher, R. Stone, R. Frisch and J. Tinbergen and other researchers who apply econometric methods in their works.

J. K. Galbraith [84] was one of the major researchers of the problems of state regulation of the economy from the point of view of institutionalism. However, he did not consider monetary instruments of economic policy.

The research tools of the old institutionalists were customs, traditions, habits, mechanisms of interaction between the institution and the individual, behaviour of agents [53, 259]. They formed the basis for the study of technological change, factors influencing the lag in development, the impact of legal efficiency and property on the economy [119].

The old institutional school was a precursor of macroeconomics, had an indirect influence on the development of the theory of economic policy, contributed to the formation of analytical tools to solve the above problem. The role of old institutionalists in defining the government as an institutional innovator is significant.

New institutionalism is represented by various schools, including neoinstitutional economics, new institutional economic theory. The research is based on R. Coase [337], D. North, O. Williamson [536, 537, 538], E. Ostrom [480], J. Buchanan [49] and a significant number of Russian scientists, such as L.I. Abalkin, A.A. Auzan, V.A. Volkonsky, S.Y. Glazyev, V.G. Grebennikov, V.E. Dementiev, B.H. Yerznkyan [49], R.I. Kapelyushnikov, G.B. Kleiner, Y.I. Kuzminov, D.S. Lvov, V.I. Maevsky [139], A.N. Nesterenko [161], A.N. Oleinik, C. Perez, V.M. Polterovich, O.S. Sukharev, V.L. Tambovtsev, A.E. Shastitko.

Representatives of new institutionalism applied such tools as laws and rules, which are formal institutions, as well as contracts, transactions, information on their basis. New institutionalism is based

on micro-foundations with the addition of institutions. Transaction costs, contractual agency agreements and property rights are at the heart of the research.

D. North [165] indicated that the state promotes economic growth by correcting market failures, it creates the «economic rules of the game» [167, p.8]. French institutionalists had different views on the economic role of the state. F. Perroux [485] proposed a method of public conductivism policy. The task of the state, in his opinion, is to create «poles of growth» and to manage the environment to spread the effect of them.

A.A. Auzan explores alternative strategies for optimizing state regulation [14]. The textbook «Institutional Economics: New Institutional Economic Theory» by A.A. Auzan [15] presents the general methodological and instrumental background of the new institutional economic theory.

S. Y. Glazyev combines «planning with market self-organisation, the use of fiat money with priorities of economic development based on the state banking system and the use of long-term credit as an instrument of regulation of economic development» [75, p.14-15].

V. E. Dementiev investigates the trap of technological borrowing and suggests the conditions for overcoming it for the model of economic development that combines innovation and imitation processes [89]. The scientist studies the theoretical problems of selective and universal industrial policy [91], the directions of increasing the efficiency of the state as a shareholder of Russian companies, points out that "at high risks of economic activity ... the task of economic theory becomes the search for effective measures of state regulation of the economy" and considers, taking into account the risks of such regulation, the compromise - state influence on large structures with their independent mobilisation of "internal adaptive capabilities" [88].

V.E. Dementiev [86, pp. 80-81] notes that an important role in crisis situations in reducing investment risks, in order to realise catching-up development should be played by the state, which acts as a partner of business. It is the combination of universal and selective industrial policy, support for projects that increase the technological and innovative level of the economy that is designed to fulfil this role.

O.S. Sukharev notes that "the choice of economic policy is to find the optimal transmission mechanism that can lead to the achievement of goals in a relatively short time at the lowest cost". He proposes within the framework of institutional theory and economic policy the institutional concept of macro-dysfunctions and monetary range [213]. O.S. Sukharev in the framework of his research comes to three main conclusions: "for each institutional system there is a monetary range", "the emergence of new institutions requires an increase in the money supply or the speed of money circulation...institutions must fulfil the functions assigned to them, and this is impossible to do in the absence of monetary support" [213, p. 406].

A.N. Oleinik studies the institutions of interaction between economic and political power in his doctoral dissertation [173]. V.M. Polterovich reveals the relationship between rational long-term economic policy and the stages of institutional development [185]. Academician D.S. Lvov presented an alternative course of economic policy [137]. V.L. Tambovtsev investigates the impact of ideas on economic policy and in turn on institutions and institutional changes [233]. A.E. Shastitko reveals the barriers for decision makers to build an economic policy aimed at the growth of public welfare with the institutional conditions of sustainable economic development [268].

We can conclude about the divergence of the methodology of the old and new institutionalism. Representatives of the old institutionalism were less interested in the development of recommendations on economic policy, their research was based on microfoundations, which does not create the basis for the theory of economic policy. The new institutionalism realises the solution of applied issues related to decision-making on a number of institutions, provides justifications for their replacements, and adjusts scenario choices in specific conditions at the sectoral and macroeconomic level.

At present, institutional research on economic policy is based on the modern institutional school of economic policy, the founders of which are Jan Tinbergen, Paul Welfens and Dani Rodrik, the main aspects of which are described in 1.4. The Russian school of economics currently has the largest number of works that develop this direction of research. However, the issues of recommendations on the implementation of economic policy are still in the background. They have a general character.

At different stages of economic development various theoretical doctrines became the basis for the realised government policy. The absence of government economic programmes developed on the basis of institutional theory is a gap in its theoretical achievements, which requires strengthening research in this direction and specifying recommendations.

Thus, the paper reveals the evolution of J. Tinbergen's principle "targets-instruments" as applied to economic policy by the introduced and justified criteria: targets (economic growth, inflation rate, unemployment rate) - instruments of economic policy, monetary and budgetary policy. Each scientific school has contributed to the development of the transmission mechanism of economic policy. Keynesian strands of economic analysis and the neoclassical schools, monetarism, supply-side economics, real cycle theory and rational and adaptive expectations theory have been successful relative to the macroeconomic approach. The orthodox theories are based on the impact on aggregate demand and supply, but with complex structural processes, institutional modifications in government regulation of the economy cannot be limited to the impact on demand or supply. In addition, in orthodox models, economic policy is not a significant factor of economic growth at all, most scientists have excluded it from the theory and at best consider it as an exogenous factor of influence.

In the last decade, the crisis of orthodox approaches and economic views has become more and more clearly defined. Most neoclassical models have lost the ability to explain the processes of economic

transformation [19]. There is a rethinking of the established ideas about the relationship between economic policy and economic growth, the expansion of institutional tools of economic policy, the importance of scientific substantiation of institutional and structural solutions that ensure the effectiveness of the application of economic policy instruments of growth is increasing. The implemented economic policy, which is based on the neoclassical doctrine has no power in ensuring economic growth [65] and inhibits innovation dynamics.

The classical theory of economic policy and most theories of economic growth do not explain how the application of economic policy instruments can contribute to technological renewal, changes in the structure of technology and sectoral structure of the economy; what instruments or their combinations should be applied to stimulate economic growth in the new reality. It is relevant to include structural analysis in the theory of economic growth policy.

Of great importance is the precise selection of macroeconomic policy instruments aimed at achieving the necessary GDP dynamics accompanied by structural changes, which should be based on the institutional parameters of growth, theories of structural policy and technological paradigms.

Also, neoclassical theory did not investigate the importance of rules and the sensitivity of various parameters to institutions at different economic levels. When economic policy instruments do not appear frequently in neoclassical models of economic growth, they are considered to be equally valid over the entire time horizon. However, the strength of influence of economic policy instruments may change over time, and the reaction of economic agents to the application of instruments also changes, which results in different effectiveness of the application of the same policy instruments under different circumstances. Prescriptions for the application of monetary instruments cannot be transferred to economic structures under different circumstances without clarification and reservations.

The limitation of neoclassical theory in conducting economic, including monetary policy in an aggregated form according to the type of neoclassical model, as well as earlier studies to the consideration of a single instrument of monetary or budgetary policy in the impact on economic growth, for example, the money supply or key rate, forms the need to take into account the impact of monetary policy instruments in relationship with budgetary policy, distributed across the objects of the structure of the economy.

The institutional direction is limited in the development of research on the formation of the transmission mechanism of economic policy, gives some recipes for regulating market structures, contracts, organisations at the level of microeconomics, but departs from practical recommendations for decision-making at the macro level. With the expansion of scientific research within the framework of institutionalism, institutional impacts on the economy are revealed, but the recommendations for economic policy are very modest, which determines the subject of the dissertation research.

1.4 Theory of economic policy: from J. Tinbergen to modern times

Consider the main provisions of the theory of economic policy, as well as the proposals of Russian scientists on the application of monetary instruments of economic policy to achieve economic growth. Let us consider the theory of economic policy.

Julius von Soden [516, p.16, p.19, p.21], who devoted one of the volumes of his economic essays to the study of the peculiarities of economic policy, is considered to be the founder of the theory of economic policy. We can distinguish several stages in the formation of the theory of economic policy, forming its analytical research apparatus: the approach to the development of economic policy by J. Tinbergen from the position of "targets - instruments"; effective market classification by R. Mandell; "criticism by R. Lucas", reflecting the formation of economic policy from the position of expectation.

The basic theory of economic policy was proposed by J. Tinbergen [526, 527], who showed that the solution of economic policy "depends on the simultaneous, coordinated use of a sufficient number of properly developed instruments" [163, c. 181]. J. Tinbergen defines the criterion for the productivity of economic policy as follows: the state should undertake only feasible obligations, and the targets of economic policy should be ensured by an appropriate set of working tools [526, p. 13] and introduces such concepts as "the goal of economic policy" and "instrumental variables".

The scientist identified three stages of formation of optimal economic policy. The first stage is the selection by government authorities of the ultimate targets of economic policy that will maximise public welfare. These may be the targets of reducing the unemployment rate and inflation rate. After that, targets are set on the basis of the public welfare function. These may be targets such as full employment or zero inflation. The second step is for government agencies to assess whether they have the policy instruments at their disposal to achieve the selected targets. The third step is to select the optimal policy mix by using a model of the economy as a reference to link targets and instruments. Consequently, in economic policy making, the necessary ingredients are the ultimate goal of economic policy, the targets, the government's instruments, and a model of the economy linking the targets and instruments and allowing the optimal scale of policy actions to be determined.

J. Tinbergen considers economic policy targets as unchanging over a long period of time. The targets should be known and measurable, which makes it possible to determine the optimal level of targets. Sustainable level of economic development, price stability, full employment, manageable balance of payments and others can be considered by the state as targets.

A model of the economy that links policy targets and instruments should be able to identify the extent to which the instrument affects the objective. In the model, the objective is the dependent variable, and the instrument is the independent variable (targets are functions of instruments). The number of

equations in the model is equal to the number of targets. As a rule, econometric forecasting methods are used to construct such functions.

Then, from the system of equations, based on the required targets, the necessary values of instruments are determined. The fulfilment of the inequality of J. Tinbergen's inequality is of great importance: the number of linearly independent instruments should be not less than the number of targets to achieve the latter [527, p. 18].

In J. Tinbergen's model of economic policy the coefficients that link economic variables and political actions are defined [526, pp. 164-173]. At the same time, it is suggested that the multipliers, which are calculated in the models, are stable parameters linking policy instruments and targets.

At the same time, changes in politics and economics make these coefficients unreliable, the initial parameters are often incorrect, as they are the result of political manoeuvring, so the subsequent analysis can lead to unexpected results. Also, quantitative indicators and targets are highly dependent on economic instruments and on political decisions. Therefore, when focusing on such targets it is rather difficult to correctly assess the model of economic policy.

The principle of J. Tinbergen's principle "targets-instruments" forms a number of issues [164, p.34-46, 419]. First of all, in practice, the principle of correspondence of the number of instruments to the number of targets does not exclude the achievement of a greater number of targets by a smaller number of instruments and a smaller number of targets by a larger number of instruments. The principle does not take into account the force of influence of tools and changes of this force with time. The mathematical formulation of the principle states the independence of policy instruments and targets, but in reality the application of many instruments occurs simultaneously and they may not be put into effect synchronously. Targets can be exclusive, complementary, i.e. they are interrelated. Instruments can be related to each other, targets can be related to each other, and the relationship can change over time.

It is important to achieve coherence not only between the targets but also between the instruments, and the requirement that the number of instruments should not be less than the number of targets is necessary but not sufficient. The relationship of instruments to each other and to targets is also important.

Robert Mundell presented a different interpretation of economic policy choices. He believed that policy instruments are diversified and under the control of different government agencies such as: central bank, ministry of economy, finance. In Mundell's model, the governing bodies operate in a decentralised manner, i.e. not coordinated. The scientist showed that with the right distribution of economic policy instruments across the management bodies, when making decisions in a decentralised manner, the optimal value of economic policy targets can be achieved. The essence of the concept of effective market classification, which was proposed by R. Mundell, is to attach each goal of economic policy to the instrument and body of state regulation that has the greatest impact on it and has an advantage over other

measures of state influence on this indicator. For this reason, an efficient market-based categorisation is needed, building a series: "target-indicator-instrument-authority to which the target is assigned". An example is the widespread responsibility of Central Banks for the stability of monetary circulation [473, p. 201-216].

In economic reality, the tools at the disposal of management bodies may be less than the targets. In this case, it becomes impossible to achieve the optimal values of all indicators and it is necessary to minimise the losses resulting from the non-optimality of the values of instruments.

The principle of J. Tinbergen "targets-instruments" of economic policy, as well as the principle of "effective classification" postulate that the number of economic policy instruments should not be less than the number of targets. In fact, economic policy instruments have a distributed influence on the economy, which should be taken into account in the formation and implementation of economic policy to improve its effectiveness. The principles of "targets-instruments" and "effective categorisation" tie the instrument to the goal and do not take into account the relationship of instruments among themselves and the strength of the impact on the targets.

The "Lucas critique" deserves special attention [442, pp.6-24], a representative of rational choice theory. Robert Lucas doubted the possibility of using the results of aggregated econometric models when making decisions on economic policy and argued for the unreliability of such a model in case of a sharp change in government policy; he puts the assessment of expectations in the centre of attention. R. Lucas believes that it is impossible to foresee the reactions to political changes based on the past. When economic policy changes, agents change the parameters of decision-making. The scientist believed that only in models that describe fundamental factors, such as technology, preferences, budgetary consumer constraints (those that do not depend on changes in economic policy) it is possible to predict the consequences of policy changes.

As a result of criticism of R. Lucas, more advanced macroeconomic models were created, which included the estimation of the expectations factor. At the same time, the choice of methods for estimating expected values poses a problem.

Walter Eucken [171], a representative of the Freiburg school - the West German school of neoliberalism, considered the task of economic policy to be the maintenance of institutions, restrictions and conditions that set the optimal functioning of the market mechanism. The scientist identified eight principles that define the parameters of an ideal competitive economy, four principles aimed at regulation and being components of state economic policy [171, p.335-416]. He applies the concept of "interdependence of orders" [171, p. 35], under which he understands the interrelation of "economic, state and social orders, considers the "political-currency stabiliser", noting "if it were possible to equip the currency order with a stabiliser of the value of money", there could be "a tendency to establish a state of equilibrium", rather than a process of constant change of inflation and deflation. Regarding the

monetary policy, the scientist writes that "only due to the constant active intervention of monetary and credit policy, accumulation and credit should be brought in line with each other" [171, p.339, p.339].

W. Eucken [172, p.27] presents the bifurcation of the problem - the great antinomy, the dispute about methods. He concludes that for the benefit of effective economic policy it is necessary to combine history and theory, in other words, the big antinomy is a dichotomy (bifurcation) in the system of theory-practice. Thus, the scientist in his research does not pay much attention to the targets and instruments of economic policy.

Paul Welfens defines one of the basic problems of modern economic policy: "Internal inconsistency of the concept, inefficient use of funds, inadequate empowerment, erroneous assessment of costs and results - the main causes of failure in the implementation of economic policy" [54, p.44]. Under the concept of economic policy, he understands the system of targets, strategies, instruments and actors.

O. Blanchard [46, p.557], a representative of neoclassical and Keynesian synthesis in macroeconomic theory points out that the policy should be aimed at preventing prolonged recessions, limiting booms and avoiding inflationary pressures, "but trying to maintain a constant level of unemployment and constant GDP growth, it should be close to fine-tuning". The scholar concludes that in the short run there is an impact of monetary policy on the level of GDP and on its structure. In the medium and long-term time periods, the neutrality of monetary policy is manifested: the money supply does not affect GDP or unemployment; leads to a proportional change in prices, inflation rate.

Regarding fiscal policy O. Blanchard notes that in the short term, as a result of budget deficit, there is an increase in demand and GDP, the change in investment spending is not established; in the medium term, GDP returns to the natural level, the interest rate is higher, investment spending is lower; in the long term, there is a supply of less capital stock with lower investment, there is a lower level of GDP. The scientist notes "to stabilise the economy, the government must create deficits during recessions and surpluses during booms" [46, c. 604].

O. Blanchard wrote a number of works on rethinking macroeconomic policy [281, 310, 314, 315]. He and co-authors note that the crisis showed the great importance of "fiscal space", a large choice of tax instruments, as well as their application [47, p.149]. The scholar notes: "policymakers should realise that there is no alternative between inflation and unemployment in the long run. Stabilisation of inflation should remain one of the main objectives of monetary policy. Ensuring financial sustainability is a key objective in the long run" [47, c. 151-152].

The main task of economic policy O. Blanchard considers the formation of the optimal use of economic policy instruments. Blanchard considers the formation of the optimal use of economic policy instruments, while today's regulators have a larger set of instruments at their disposal than before the crisis.

R. Barro [299] notes that when people understand that central banks can "surprise" them, there is a "bad equilibrium" in society, with excessive inflation there is no reduction in unemployment; he describes a way out of such a situation, which consists in the application of rules regulating behaviour by the central bank, inflation in this case will decrease [295].

R. Barro demonstrated the conclusions that Ricardian equivalence gives for monetary and budgetary policy. For example, the size of the budget deficit will be varied so that it is possible to keep tax rates unchanged. This forms a counter-cyclical fiscal policy: there is an increase in the deficit when the economy is in recession and a decrease when the economy is growing, an increase in inflation as a result of debt financing of the budget leads to an increase in nominal GDP. Monetary policy also becomes countercyclical when inflation expectations are formed rationally and the national bank "adjusts" the key rate to these expectations. Price stability favours investment as well as the whole economy, which forces the monetary authorities to take care of low inflation. If market participants doubt the monetary authorities' orientation towards low inflation, it is better for the monetary authorities to immediately limit themselves to monetary rules affecting the expectations of economic agents. This provision has now become an accepted axiom, which is adhered to by most central banks.

R. Barro is critical of growth stimulation by public expenditures. He considers short-term growth of public expenditures, such as anti-crisis "packages", to be particularly inefficient, as economic agents perceive them as temporary and realise that some growth of expenditures will be replaced by their reduction or increase in taxes. Since the government spending multiplier is usually always less than one, it is difficult to accelerate GDP growth by increasing government spending, but it is easy to increase government debt, which may create preconditions for new crisis phenomena. At the same time, R. Barro recognises the impact of the level of government spending and taxes on long-term economic growth by influencing investment and savings.

M. Allais argues that the system of floating exchange rates combined with the creation of money in the banking system "out of nothing" lead to unjustified exchange rate fluctuations that deprive the world price levels of real meaning [9, p.35].

Within the framework of the study of empirical data regarding the relationship between inflation and economic growth, conducted by M. Allais, the following conclusions are given: "regular inflation is not a necessary condition for economic growth in real terms"; inflation undermines economic growth; from the fact that in the course of conjunctural fluctuations fluctuations of money supply are followed by fluctuations of economic activity, it cannot be concluded that it is possible to infinitely increase employment and production simply by regular increase in money supply and that inflation is a condition for growth [9, p.295].

P. Krugman, using the example of the liquidity trap in Japan, considers three options of measures: structural reforms, fiscal stimulation, unconventional monetary policy [129, p.191]. Regarding monetary

policy P. Krugman notes that despite his conclusions about its ineffectiveness, all his experiments with monetary policy "imply only temporary changes in the money supply" [129, p.192], "an irreversible increase in the money supply ... would be effective because it would raise the expectation of inflation" [129, p.193], as a result the real interest rate will fall. Overcoming the depression requires, according to the scientist, the exclusion of restrictive policies in the monetary and budgetary field [270].

For economic policy, the issues of sources of economic growth, factors inhibiting growth are the main subject area. Neither the rule of J. Tinbergen, nor R. Mundell's "efficient market classification", "Lucas' critique", the studies of W. Eucken, P. Welfens, O. Blanchard, R. Barro, M. Allais and P. Krugman do not provide an opportunity to obtain an adequate model of the relationship between the targets of economic development and economic policy instruments. The presence of structural and technological factors, as well as development targets are not taken into account in the design of economic growth policy. As a result, the relationship of targets with each other and policy instruments with each other, as well as with development goals, are simplified. An important property of economic policy becomes the possibility of harmonizing and matching its instruments to the targets and structure of the economy. There is no theory of economic policy that would allow us to separate the effects of all policy instruments in order to determine an assessment of their impact on macroeconomic targets and the structure of the economy.

Let us consider modern models of economic policy - models of economic growth.

The Hicks-Hansen model [403] (IS-LM) demonstrates general macroeconomic equilibrium by combinations of equilibrium patterns in two markets: in the goods market ((investment-savings) IS curve and in the money market ((liquidity preference = (L) money demand, M money,) LM curve. On the IS curve, each point is a commodity market equilibrium, which is defined by the ratio of GDP (Y) to the interest rate (i). On the IS curve the modelling of the interest rate dependence of the volume of investment is implemented. On the LM curve all points are equilibrium on the money market and modelling of interest rate dependence on national income is implemented.

The Hicks-Hansen model logically, systematically and deterministically presents the relationship between money supply, interest rate, demand for money, price level, demand for goods. This model became an outstanding model of macroeconomics, representing the three markets in the economy.

The Mundell-Fleming model is traditionally used to assess the effectiveness of monetary policy in an open economy. In fact, this model "represents an extended version of the neoclassical IS-LM synthesis model for an open economy" [80, p.10]. The model has the following assumptions: a small open economy, where the domestic interest rate coincides with the world interest rate and perfect mobility of capital between countries. The conclusion obtained from the model is as follows: under a floating exchange rate regime, national monetary policy effectively affects real national income, unlike foreign trade policy or fiscal policy. Monetary policy at a fixed exchange rate is ineffective; fiscal and

foreign trade policies influence the level of income. The exchange rate is at the heart of the impact of monetary policy on the economy. Since the interest rate is not determined domestically, it is impossible to influence it.

The disadvantages of the model are the lack of consideration of different exchange rate regimes, as they are not limited only to those given in the model, as well as ignoring specific institutions that find at floating exchange rate the effectiveness of policy types [213, p.390].

The Tinbergen-Theil model has changed the analysis of optimal exchange rate policy. At the intra-country level, the benefits and costs of monetary policy regimes under the national welfare objective became determinants in the choice of exchange rate policy. Changes in economic variables came to be seen as the economy's response to shocks of a fundamental nature. The nature, sources of economic shocks, and economic policy targets determine whether the exchange rate is fixed or floating.

M. Obstfeld and K. Rogoff [477, 479] present a stochastic general equilibrium model including two countries and inflexible prices. Consumer welfare is the criterion determining the optimality of monetary policy. The currency in which prices are set determines the outcome of the model. Prices can be set in the producer's currency or in the consumers' currency.

The Redux model describes how, as economies produce different goods, the nominal exchange rate and terms of foreign trade will respond to shocks to money supply, government spending and labour productivity. The model makes it possible to investigate the effects of monetary and fiscal policy on the exchange rate.

The disadvantage of the presented model is the complexity of testing elements such as consumer preferences, nature and sources of nominal rigidities. Some parameters in the models are not subject to change when changing economic policy regimes. The study of the sources of shocks, changes in the structure of the economy constitute the value of this theory. However, this theory does not provide the possibility to estimate the equilibrium level of the exchange rate and recommendations on exchange rate policy.

Thus, the presented models of economic growth, which take into account the instruments of economic policy, study the interrelations between individual indicators of the market, monetary and fiscal policy, and set separate macro-targets. Most of the models are based on the consideration of monetary policy, the impact of the exchange rate or on it.

It is necessary to create models of economic growth policy based on spreading the influence of instruments on objects, directions of development, giving the result of impact on target parameters.

It is the change in the structure of the economy that should become the driving factor of economic dynamics. The problem is that little attention is paid to the factors related to the movement of resources between sectors of the economy, despite the fact that it is the basic resources that influence the sectoral proportions in the economy and are decisive for the rate of dynamics of sectors and activities and their

contribution to the rate of economic growth. The harmonization and selection of monetary instruments of economic policy according to the targets and structure of the economy is important.

Let us consider the discussion on the formation and implementation of economic policy, the application of its monetary instruments in Russia.

Modern Russian economists and scientists are actively engaged in research in the field of economic policy, application of its tools, including monetary instruments to achieve the targets.

A number of works by A. Kudrin investigate certain aspects of economic policy formation. In the article by A. Kudrin and E. Gurvich [132] points out the need to reduce state intervention in the economy in order to strengthen market mechanisms [132, p.16]. A. Kudrin, E. Goryunov and P.Trunin point to the absence of a positive relationship between the growth of the monetary base and monetization [133, p.11], criticize the proposals for the application of the policy of "quantitative easing" in Russia and consider it necessary to take into account the inflationary risk of moving the emitted funds to the markets of consumer goods and the foreign exchange market [133, p.14]. At the same time, the authors do not take into account investments as a source of output expansion, which can have the character of "targeted issuance", which is one of the key factors of growth of the Russian economy so far. Also, institutional transformations preventing capital outflow should complement the mechanism of "targeted emission".

A. Kudrin and I. Sokolov [131] consider it necessary to "optimize unproductive expenditures", to reduce expenditures on national issues, defence, while increasing spending on infrastructure, education, health care.

O.M. Zamulin notes that the recession in Russia is caused by supply factors rather than demand, points out the ineffectiveness and inexpediency of monetary policy easing, departure from inflation targeting, budget stimulation [108, p.183-184], considers "institutional reforms, public investment in human capital ... and infrastructure" to be optimal [108, p.184-184].

In general, the approach of A. Kudrin et al. is represented by the idea of a "minimalist state", "denying the latter the choice of any significant structural or technological priorities in the development of the country" [235, p.343]. The above position is more in line not with the targets of economic growth, but with the targets of financial stability, especially given the underinvestment of the Russian economy.

E. L. Goryunov, S.M. Drobyshevsky, V.A. Mau and P.V. Trunin [81] name a number of factors that contributed to the decline in the effectiveness of monetary policy in modern conditions: disinflation of global nature, the effective boundary of nominal rates, the decline in the neutral real rate, the change in the slope of the Phillips curve - its reduction. Scientists believe that in Russia it is necessary to apply traditional methods of monetary policy in combination with measures of macroprudential policy and measures of structural nature that contribute to strengthening the exchange rate of the national currency.

A team of authors of the study [96], conducted by representatives of the Institute of Economic Policy named after E.T. Gaidar and the Russian Academy of National Economy and Public

Administration (RANEPA), believe that it is necessary in the implementation of monetary policy to distinguish between short-term inflation shocks, which pass independently and do not require the central bank's intervention, and shocks with a long-term nature, which require the central bank to adjust monetary policy measures.

Another group of authors considers it necessary to focus active economic policy on investment activity and modernization of the economy in order to ensure long-term economic growth.

S.Y. Glazyev adheres to the position of "active state" based on the theory of technological paradigms [61, 62, 63, 66, 70, 73, 74] and speaks about the need for an active state policy of economic growth for the transition to the sixth technological paradigm. The academician considers the key target of economic development to be "the parameter of accumulation growth" [72, p. 69] with increasing its norm up to one third of GDP and "concentration of investments in breakthrough areas of the new technological mode" [67, p. 127]. In order to ensure expanded reproduction, it is necessary to increase the level of monetization, strengthen the banking system and credit, increase the role of the central bank as a lender of last resort.

The scientist notes that targeting should be coupled with other objectives of macroeconomic policy, including the growth of production, employment, investment, "priority should be given to the growth of production and investment within the established limits on inflation and the ruble exchange rate" [67, p.128], - writes S.Y. Glazyev. By expanding credit, monetary policy provides an increase in economic potential and creates conditions for economic growth [69, p.96]. It is necessary to create "targeted mechanisms of crediting the economy for the tasks of economic growth" [72, p. 74].

"Growth Strategy", which is proposed by the Stolypin Club, shares the proposals and recommendations of S.Y. Glazyev. B. Titov and A. Shirov name the following measures of economic growth policy: increasing public investment and abandoning the excessively conservative "budget rule"; reducing real interest rates; developing a multichannel financial system and expanding the mechanism of project financing to stimulate growth in strategically important sectors and others [237, p. 30-32].

A. O. Baranov [40] studies the problems of harmonizing the targets of economic policy in Russia and achieving a compromise between them in the short term and between short-term and long-term goals of socio-economic system development. He proposes to carry out modelling of short-term and long-term consequences of the application of monetary and fiscal policy instruments "using a set of dynamic macro- and inter-sectoral models" [40, c. 31-32].

In a collective monograph with the participation of D.E. Sorokin [206], considering the financial mechanisms that ensure economic growth, the authors note that the Bank of Russia in some situations already applies targeted lending, but "it seems illogical to first set a high key rate and then subsidise it for individual borrowers" [206, p. 175], suggest measures in the field of taxation and allow a return to a

managed exchange rate, taking into account the limitation of the range of its fluctuations through currency interventions [206, p. 176].

According to O. S. Sukharev, the main task of economic policy should be the formation of the structure, under which it is necessary to create new incentives, as well as financial institutions and instruments [232, p. 176]. The scientist argues that the formation of an economic structure that can ensure acceptable inflation and economic growth dynamics requires the targeting of nominal GDP, sectoral spillover of resources, factor components of economic growth - gross consumption, investment, non-resource exports.

According to O. S. Sukharev, the basis for remonetisation of the economy should be a new "monetary rule", which is based on the real opportunities for the formation of crediting channels and the distribution of money supply between sectors of the economy, as well as by type of activity [219, p. 96].

The scientist proposes the definition of the coefficient of elasticity of economic policy to quantitatively assess the quality of applied instruments of economic policy, its effectiveness [228, p. 57-58]. Another method of measuring the effectiveness of economic policy instruments, in his opinion, is autoregressive analysis of the impulse effect of the instrument on the state of the economic system. This method is not flawed, but it can be used in economic research on institutional factors of influence on the economy.

O.S. Sukharev's research on the interaction of inflation, growth and monetary policy is of particular interest. He notes that the belief of modern economists about the importance of a significant reduction in inflation in order to organise economic growth - "is not just a misunderstanding of the nature of inflation, but also a misunderstanding of the factor basis of economic growth, which can be supported not at all by reducing inflation, but on the contrary, accompanied by some of its increase" [219, p.92].

A.G. Aganbegyan considers necessary the transition to a deficit budget aimed at socio-economic development with the necessary financial control [4, p.149-150]; he suggests solving the problems of maintaining economic growth and employment by implementing "monetary and industrial policy" [5, p.6-7], facilitating and cheapening access to long money for enterprises of priority industries and sectors of the economy.

G.G. Fetisov defines the following among the directions of monetary and budgetary policy: budgetary support of high-tech sectors of the economy and innovation-active enterprises, tax incentives, subsidising interest rates on loans, expansion of targeted lending, lending systems for high-tech exports [254, p.22-24].

O. L. Rogova presented a significant number of publications on the problems of functional activity of the monetary system in the development of the Russian economy. She notes that "money and credit...contain a huge internal potential of economic growth" [194, p.2]. O.L. Rogova [194] back in 2001 noted that the effectiveness of monetary policy, the achievement of economic policy objectives -

economic growth, employment, stable price dynamics - are determined by the activity of financial institutions and transactional efficiency of money turnover and credit operations. She notes that a balanced monetary policy implies a transition from fighting inflation and applying mainly restrictive methods to a system of inflation regulation and focus on structural transformation of the economy in Russia. Priority should be given not to the quantitative characteristics of changes in the money supply, but to the formation of a mechanism of monetary emission, ensuring a balance between the demand and supply of money [194].

V.M. Polterovich and V.V. Popov consider the maintenance of a low and stable real exchange rate as one of the important conditions for the modernisation of the Russian economy [184, p.195].

V.M. Gilmundinov [60, p.258] points out the poor consistency of the inflation targeting policy of the Bank of Russia with the goals of accelerated modernisation of the Russian economy and proposes a "hybrid monetary policy", combining the inflation targeting policy and limited expansion of the money supply to finance development institutions, which are focused on stimulating investment activity [60, p.259].

S.A. Andryushin [11] notes that the interest rate policy of the Bank of Russia under the inflation targeting regime is aimed solely at disinflation instead of creating conditions for stimulating aggregate demand. Also, despite the fact that the Bank of Russia notes a high correlation between the key rate, short-term money market interest rates and rates on banks' operations with non-financial sector organisations [159, p.6], a number of experts [13, p.11] point to the incomplete susceptibility of aggregate demand to the interest rate policy of the Bank of Russia due to the insufficient transfer of money market interest rates to the rates on loans and deposits of households and non-financial organisations in ruble and foreign currency equivalents.

S.A. Andryushin notes that in the economy "the money multiplier has stopped working" [11, p.12-13]. At present, the main regulator of credit activity in the economy "becomes not so much interest rates and real deposits ... as the equity capital of commercial banks and reserves of central banks to buy balance sheet gaps on "virtual deposits" of commercial banks, as well as international and national standards of underwriting" [11, p.13]. The scientist assumes that in the near future the dynamics of money supply in circulation, which is in direct correlation with the volume of central banks' reserve money issue, will depend on the size of commercial banks' equity capital. Credit channels of central banks and commercial banks, in his opinion, should become the main sources of money both in the national and international economy.

As for the anti-inflationary policy, S.A. Andryushin, I.L. Kirilyuk, A.A. Rubinstein [10, p.19-20] suggest that in the conditions of macroeconomic instability of the Russian economy, in order to "anchor" inflationary expectations, the Bank of Russia should change the current monetary policy regime and switch to the price level targeting regime.

M.V. Ershov notes that today economic growth is hampered by low demand, and even low inflation does not help, which "does not increase demand and does not stimulate economic activity" [102]. M.V. Ershov and A.G. Aganbegyan [2] propose to provide additional investment in fixed capital at the expense of investment, mainly repayable credit. This also applies to budget expenditures, which are now irrecoverable. They propose to stimulate investment lending through refinancing of banks under the pledge of securities, which are secured by the portfolio of their loans provided for investment. It is possible, as the ECB does, for the regulator to purchase such securities from commercial banks. Scholars consider the problem of budget deficit and note that the problem arises only when there is a surplus in stagnation. In many countries, budget deficit for a long time is a mechanism that stimulates economic growth.

The Reagan Imperial Circle study by J. Soros [205] comes to mind, where he describes how two variables - budget deficit and capital inflows - affected the US economy in 1982. "The economy strengthened as the stimulus of the budget deficit overcame the braking effect of the trade deficit," writes J. Soros. At the same time, there was a rise in the dollar as capital inflows exceeded the trade deficit.

A.G. Aganbegyan and M.V. Ershov assign great importance to the mechanisms of targeted emission, which "will make it possible to implement monetisation with the lowest inflation" [2]. Earlier, Academician S. Y. Glazyev emphasised the possibility and necessity of implementing monetary and industrial policy, which is based on the target emission of the central bank [70, 71, 77].

M.V. Ershov, A.K. Moiseev, E.Y. Sokolova [104] emphasise that the liquidity surplus in the Russian banking system, which has been increasing for several years, demonstrates that resources do not flow into the real economy, but are accumulated in the banking sector. At the same time, the central bank increases the volume of cash absorption through the placement of coupon bonds and deposit auctions [104, p.28]. A smooth strengthening of the ruble exchange rate is of great importance, which will increase the welfare of citizens, lead to the growth of domestic demand, including the fact that price growth will be slower.

B. I. Maevsky, S. Y. Malkov, A. A. Rubinstein [140] in the framework of the study of monetary instruments of economic policy offer the construction of the meso-economic model of the switching mode of reproduction (PRV-4), which takes into account inflation as an endogenous phenomenon, offer a new approach to explaining the non-neutrality of money in the short and long term. The main theoretical result of the study is the demonstration that the widespread belief about the neutrality of money in the long run is only a special case of the economic reaction to monetary emission [140, p.2].

B.I. Maevsky, S. Y. Malkov, A.A. Rubinstein and E.V. Krasilnikova [141] proposed an algorithm for calculating the coefficient of cash flow distribution (q coefficient), useful for making decisions that mitigate inflationary expectations from emission shocks and increase the probability of economic growth acceleration. The conclusion is made that in Russia the result of intensification of emission can be the

acceleration of growth against the background of low inflation if it is accompanied by measures to reduce the tax burden, primarily in the corporate sector; stimulation of high-tech exports; intensification of investment in state assets; increase in R&D expenditures; increase in the monetisation ratio.

K.A. Khubiev and I.M. Tenyakov [261] note that the state does not have sufficient resources, initiating breakthrough development, which is the deepest contradiction of economic policy. Scientists, considering the problem of economic policy harmonisation against the background of global challenges [264], propose to apply the regulation of budget surplus and balance of payments surplus in the implementation of stimulating budgetary policy, to strengthen the national currency in the implementation of stimulating monetary policy. It is noted that the socio-economic quality of the system is a basic condition for the effectiveness of harmonised economic policy [260]. Scientists note that the transition to a new growth model, which is based on domestic demand and the reproductive contour of the Russian economy requires an active state policy aimed at economic growth. It is important to eliminate the financial and intermediary sector, to increase the contribution of the real sector to GDP growth, which should be based on technological progress, digital technologies and highly skilled labour force.

K.A. Khubiev and I.M. Tenyakov [262] also consider the issues of creating internal sources of development in Russia against the background of geopolitical challenges of extreme importance. The scientists refer to the resources including the quality of the state, economic policy. In order to develop a national economic model, it is proposed to supplement the reproductive economic policy with fiscal and monetary policy. The function of reproductive policy should be the harmonisation of fiscal and monetary policy with a single goal setting. An important task is to coordinate the objectives of the use of national resources and state budget funds, which are allocated for the implementation of national projects. It is pointed out the importance of supporting the reproductive policy by stimulating monetary policy.

M.V. Ershov [106] proposes a set of tools based on internal factors: the necessary amount of "long money", stable ruble exchange rate, a significant amount of liquidity in the economy, available resources at low interest rates, strong domestic demand. The scientist considers it necessary to work out instruments for the development of internal sources of financing, including the use of special instruments to provide banks with the necessary liquidity. M.V. Ershov [103] notes that on the part of the Central Bank of the Russian Federation purchases of OFZ should become an important element that will contribute to the saturation of long resources in the economy and lower interest rates for the real economy. It is necessary to actively use currency, budgetary and monetary mechanisms in order to develop a new development model.

Thus, we can define three modern approaches of Russian scientists to economic policy. The first approach, based on macroeconomic and sectoral analysis of dynamics, emphasises the shortage and the need to intensify investment. These studies are interesting, but do not provide specific recommendations

transforming the former growth model. The second approach puts the maintenance of aggregate demand, individual activities and industries at the core, but it lacks the possibility of investigating the basis of the problems of slowing growth before the "covid" crisis, the systemic, multifactor aspects of economic growth are outside the field of study, the goals of economic policy are not questioned, and there are no proposals for their correction. The third approach considers institutional changes, but the main factors and conditions of economic growth are not investigated. Emphasis is placed on the borrowing of technologies and institutions in order to accelerate technological development, which is insufficiently justified. We can conclude that the research proposals for the Russian economy in the period 2020-2023 are truncated, adjusting them to the original targets, without changing and transforming them. It is the "structural resource" that should become the basis for accelerating economic growth.

Special attention should be paid to the studies concerning the inflation targeting policy. K. Yudaeva [271] and F.S. Kartaev [113] are in favour of inflation targeting policy. F.S. Kartaev points out that most of the studies on the stimulation of long-term economic growth show positive consequences of the transition to the inflation targeting policy [113, p.65] and notes that only excessively high inflation is harmful.

A significant part of scientists express a critical attitude to the inflation targeting policy of the Bank of Russia. The criticism concerns the transition to restrictive monetary policy and strict inflation targets associated with inflation targeting, which deform the foundations of economic growth and lead to the inhibition of the formation of an innovative model of development. S.Y. Glazyev [64], G.G. Fetisov [254], V.M. Polterovich [186] have devoted their research to these issues.

Also, a number of scientists point to the structural features of the Russian economy that limit the effectiveness of the inflation targeting policy with regard to achieving the goal of reducing inflation [64, pp. 36-37; 254, pp. 12-16].

S.M. Drobyshevsky, P.V. Trunin, E.V. Sinelnikova-Muryleva, N.V. Makeeva, A.M. Grebenkina [95] study the value of the real short-term neutral interest rate in Russia since the transition to the inflation targeting regime and conclude that in Russia in the period 2016-2020 the short-term real neutral interest rate was declining, and monetary policy was neutral.

Thus, the approaches that are at the heart of the economic policy theory of J. Tinbergen, R. Mundell, R. Lucas, as well as the studies of W. Eucken, P. Welfens, O. Blanchard, R. Barro, M. Allais and P. Krugman set the classical targets of economic policy implementation, such as: achieving maximum public welfare, full employment and low inflation, sustainable balance of payments and equilibrium. However, they do not provide an opportunity to obtain an adequate model of the relationship between the targets of economic development and economic policy instruments. The presence of structural and technological factors as well as development targets are not taken into account in the design of economic growth policy. An important property of economic policy becomes the

possibility of harmonisation and selection of its instruments according to the targets and structure of the economy. There is no economic policy theory that would allow to separate the impact of all policy instruments in order to determine the assessment of their impact on macroeconomic targets and the structure of the economy.

In the presented models of economic growth, taking into account the instruments of economic policy Hicks-Hansen, Mundell-Fleming, Tinbergen-Theil, Obstfeld-Rogoff, the interrelations between individual indicators of the market, monetary and fiscal policy are studied, separate macro-targets are set. Most of the models are based on the consideration of monetary policy, the impact of the exchange rate or on it. It is necessary to create models of economic growth policy, based on the distribution of the influence of instruments on the objects, directions of development, giving the result of the impact on the target parameters.

Modern Russian economists and scientists who conduct research in the theory of economic policy, the use of its tools, including monetary instruments to achieve the targets are mostly institutionalists and offer such targets of economic policy as: increasing public welfare, modernisation and development of the economy; long-term socio-economic development; stimulating the development of priority industries and growth of investment activity. Thus, targets are set that have a close relationship with industrial, structural and social policy, goals of a global nature. As for the instruments recommended to achieve the above targets of economic policy and to solve monetary problems, Russian scientists, in addition to the coordinated application of a set of monetary and fiscal instruments, pay great attention to the development of the institutional environment, institutional transformations, institutional tools, development of a strategic planning system, structural formulation of the problem of planning and implementation of monetary policy.

Modern economic policy proceeds from the theoretical basis created in previous years. Based on standard approaches, the goal of economic development, represented by measurable aggregate indicators, is formulated and instruments are selected from the arsenal of available ones. The economic policy formed and implemented in Russia does not take into account structural, institutional and technological changes. In the studies of Russian scientists on economic policy there is no unified institutional approach to the economic growth policy itself, the interaction of its instruments within the framework of monetary and budgetary policy is not taken into account.

In the formation of economic growth policy, it is relevant to determine the goal of the growth rate of the economy as a whole or the quality of structural, technological and institutional changes that will allow the economy to grow in the long run, as well as to include the analysis of structures in the theory of economic growth policy. Economic growth policy can be aimed both at the creation of new activities and sectors and at increasing the efficiency of existing sectors, formation of such structures as labour, capital, etc.

When setting the goal of scientific and technological development, maintenance or development of certain sectors of the economy, industries, types of activities, it is of great importance to understand the impact of certain monetary and fiscal policy instruments on the economic structure and the set targets. The structural aspects of economic growth policy in terms of the heterogeneity of the monetary and fiscal policy instruments used and the different sensitivity of the targets to them presents a new challenge. It is important to match monetary instruments of economic policy to the elements of the economy that are more sensitive to them. Changing economic conditions require changing approaches to the application of monetary instruments of economic growth policy, with a focus on structural allocation to targets and the structure of the economy. It is important to clarify how monetary instruments of economic policy are distributed beyond its restriction to aggregate demand and supply aggregates, taking into account structural factors, accumulative, cumulative effects.

Thus, in the implementation of economic growth policy and the application of its monetary instruments, it is necessary to exclude the conflict of instruments, conflict of targets, to take into account the changing reality with the inclusion of full information about economic objects. It is important to take into account the structure of the economy, growth factors, instruments and targets of economic policy.

It is necessary to take economic policy beyond stereotypes, in addition to institutional modifications of the economy to introduce the need to influence the movement of resources between sectors, leading to structural transformations with a focus on technological renewal of the Russian economy.

When applying monetary instruments of economic policy, it is necessary not just to allocate and attract financial resources as sources of growth, but to understand how these resources will be distributed and what impact they will have on the formation of the growth model, what will happen to other resources. It is problematic to create a new growth model solely by attracting available resources without a targeted transformation of the economic structure. An inefficient structure of the economy that is unable to solve the problem of economic growth and maintain it for a certain period of time absorbs monetary instruments of economic policy and prevents the formation of a new growth model.

In addition to macroeconomic growth policy in Russia, it is necessary to form a policy at the micro level with the involvement of recommendations on economic psychology and agent-based models. However, this is already an independent task.

Thus, Chapter 1 revealed the peculiarities of economic dynamics of the Russian economy for 2000-2022: weak positive GDP growth, lagging economic growth, gradual reduction of unemployment, unstable inflation rate. The dynamics of real GDP and real GDP growth rate is the opposite of inflation and unemployment, however, starting from 2020 inflation increases, having lost the connection with other macroeconomic targets. Balancing the growth rate of the economy with the inflation rate and unemployment rate is of great importance in shaping the new growth model. It is assumed that real GDP

and its growth rate are out of the influence of such growth factors as investment in fixed capital and its growth rate, average annual oil price and its growth rate. The insufficient GDP growth rate can be associated with the weak growth rate of the monetary base and money supply M2.

Structural parameters of the existing Russian model of economic growth on the aggregate supply side are characterised by the dominance in the Russian economy for many years of the transactional and raw materials or raw materials sector, while the manufacturing sector is non-dominant. However, in recent years it is possible to speak about an outlined structural shift in the economy by sectors, but this is not the structural shift that is desirable for the Russian economy. There is a structural shift that further reduces the contribution of the manufacturing sector to the economy and increases the contribution of the raw materials sector. There are no structural shifts in terms of aggregated equivalents of paradigms. The formed structure of technological paradigms has not changed for many years and demonstrates the prevalence of 1-3 aggregated equivalents of paradigms, followed by the 4th paradigm and the compressed 5th paradigm. The Russian economy is clearly experiencing technological stagnation.

In the Russian economy, the formation of economic growth was influenced by structural shifts. The absence of structural shifts for our country is a transition to stagnation. The need for a new growth model in Russia has been discussed for several decades, but such a model has not yet been formed. To achieve a new model of economic growth in the Russian economy, structural changes are necessary, as the existing structure is a brake on economic growth. The new growth model should be based on a change in the quality of GDP dynamics, which requires a structural shift of resources between sectors and paradigms. The development of the manufacturing sector of the economy and high technologies can solve the task of accelerating economic growth in Russia. Their contribution to the growth rate should be gradually increased, which can be realised through both investment in fixed capital and technological renewal.

Since the classical models of economic growth do not take into account the structural and institutional parameters of economic dynamics, the distribution of activities and sectors of the economy, GDP elements by their contribution to the growth rate, the problem of reasonable growth management arises. In order to change the structure of the economy with technological renewal, it is necessary to increase resources and institutional adjustments, which should ensure the flow of resources for the formation of growth to those elements of the economic system that can make the greatest contribution to economic dynamics. It is necessary to apply monetary instruments of economic policy, which will contribute to the formation of a new model of economic growth. Unjustified economic policy may be one of the reasons why the highest growth rate of the economy is not achieved.

The structure of monetary instruments used in Russia has not allowed to achieve the necessary rates of economic growth in the period 2000-2022. Moreover, since 2021 there is a clear tendency to shrink the M2 money supply and monetary base. The effectiveness of economic policy depends on the

institutional framework of economic activity, foreign economic activity, as well as the availability of necessary resources [91]. Often in the Russian practice monetary instruments are used, neutralising the effect of each other.

When applying monetary instruments of economic policy, it is necessary to understand the reasons for the formed structure of the economy, the likely reactions to changes in the application of instruments on the part of economic activities that make up each sector and paradigm. It is necessary to set the structural targets of economic development taking into account the necessary transformation of the economic structure.

Monetary instruments of economic policy should be transformed from the orientation on achieving aggregate indicators to differentiation in order to form a long-term basis for economic growth on the basis of improving the economic and technological structure.

Monetary instruments of economic growth policy should be justified and selected in accordance with the assessment of the degree of their influence on the change of proportions between sectors, technological paradigms, shares, their growth rates in GDP. It is important to take into account the relationship of monetary instruments with each other, targets with each other, the strength of the influence of instruments distributed by targets and the structure of the economy. At the same time, it is important not just to distribute monetary instruments of economic policy, but taking into account the relationship of targets, policy instruments and growth factors.

Keynesian strands of economic analysis and the neoclassical schools, monetarism, supply-side economics, real cycle theory and rational and adaptive expectations theory have been successful relative to the macroeconomic approach. The orthodox theories imply an impact on aggregate demand and supply. However, in the case of unfolding structural processes with complex institutional modifications and growth of information potential of the economy, macroeconomic management of the economic system cannot be limited to influence on demand or supply.

The limitation of the neoclassical theory in conducting economic, including monetary policy in an aggregated form according to the type of neoclassical model, as well as earlier studies by considering one instrument of monetary or budgetary policy in the impact on economic growth, for example, money supply or key rate, forms the need to take into account the impact of monetary policy instruments in relationship with budgetary policy, distributed across the objects of the structure of the economy. In neoclassical models of economic growth, if policy instruments do not appear frequently, they are considered to be equally effective over the entire time horizon.

The classical theory of economic policy and most theories of economic growth do not explain how the application of economic policy instruments can contribute to technological innovation, change in the structure of technology and sectoral structure of the economy; what instruments or their combination should be applied to stimulate economic growth in the new reality.

The institutional direction is limited in the development of research on the formation of the transmission mechanism of economic policy, gives some recipes for regulating market structures, contracts, organisations at the level of microeconomics, but departs from practical recommendations for decision-making at the macro level [24]. With the expansion of scientific research within the framework of institutionalism, institutional impacts on the economy are revealed, but the recommendations for economic policy are very modest. It becomes important to accurately select macroeconomic policy instruments aimed at achieving the necessary GDP dynamics accompanied by structural changes, which should be based on the institutional parameters of growth, theories of structural policy and technological paradigms.

The approaches that are the basis of the theory of economic policy of J. Tinbergen, R. Mundell, R. Lucas, as well as the studies of W. Eucken, P. Welfens, O. Blanchard, R. Barro, M. Allais and P. Krugman set the classical targets of economic policy implementation, however, they do not provide an opportunity to obtain an adequate model of the relationship between the targets of economic development and the instruments of economic policy. The presence of structural and technological factors, as well as development targets are not taken into account in the development of economic growth policy. An important property of economic policy becomes the possibility of harmonisation and selection of its instruments according to the targets and structure of the economy. The author is not aware of such a theory of economic policy that would allow the impact of all policy instruments to be separated in order to determine an assessment of their impact on macroeconomic targets and the structure of the economy.

In the presented models of economic growth, taking into account the economic policy instruments Hicks-Hansen, Mundell-Fleming, Tinbergen-Theil, Obstfeld-Rogoff, the interrelations between individual indicators of the market, monetary and fiscal policy are investigated, and separate macroeconomic targets are set. Most of the models are based on the consideration of monetary policy, the impact of the exchange rate or on it. It is necessary to create models of economic growth policy, based on the spread of the influence of instruments on objects, directions of development, giving the result of the impact on the target parameters.

Modern Russian economists and scientists conducting research in the theory of economic policy, application of its instruments, including monetary instruments to achieve the targets proceed from the theoretical basis created in previous years. Based on standard approaches, the goal of economic development, represented by measurable aggregate indicators, is formulated and instruments are selected from the arsenal of available ones. The economic policy formed and implemented in Russia does not take into account structural, institutional and technological changes. In the studies of Russian scientists on economic policy there is no unified institutional approach to the economic growth policy itself, the

interaction of its instruments within the framework of monetary and budgetary policy is not taken into account.

In the formation of economic growth policy, it is relevant to determine the goal of the growth rate of the economy as a whole or the quality of structural, technological and institutional changes that will allow the economy to grow in the long run, as well as to include the analysis of structures in the theory of economic growth policy.

When setting the goal of scientific and technological development, maintenance or development of certain sectors of the economy, industries, types of activities, it is of great importance to understand the impact of certain monetary and fiscal policy instruments on the economic structure and the set targets. The structural aspects of economic growth policy in terms of the heterogeneity of the monetary and fiscal policy instruments used and the different sensitivity of the targets to them presents a new challenge. It is important to match monetary instruments of economic policy to the elements of the economy that are more sensitive to them. Changing economic conditions require changing approaches to the application of monetary instruments of economic growth policy, with a focus on structural allocation to targets and the structure of the economy. It is important to clarify how monetary instruments of economic policy are distributed beyond its restriction to aggregate demand and supply aggregates, taking into account structural factors, accumulative, cumulative effects.

Thus, in the implementation of economic growth policy and the application of its monetary instruments, it is necessary to exclude the conflict of instruments, conflict of targets, to take into account the changing reality with the inclusion of full information about economic objects. It is important to take into account the structure of the economy, growth factors, instruments and targets of economic policy.

It is necessary to take economic policy beyond stereotypes, in addition to institutional modifications of the economy to introduce the need to influence the movement of resources between sectors, leading to structural transformations with a focus on the technological renewal of the Russian economy.

2 Methodology for the development of economic policy for growth: distribution of monetary instruments according to the economic targets and structure

2.1 Interdependence of types of state economic policies for growth: institutional levels

In the context of the changing geopolitical situation and sanctions pressure, the Russian economy has faced various challenges. The access to the markets of services, goods, logistics, transport, "payment infrastructure of unfriendly countries" has been limited [176, p. 1]. Russia has to follow the path of structural transformation of the economic system, which should be supported by internal resources for the formation of economic and technological independence. The importance of creating the necessary macroeconomic, institutional and legal conditions for the formation of internal sources of growth is great. There is a need for institutional transformations.

Since the research methodology is based on the provisions of institutional theory, we note that under institutions we understand formal institutions - rules, laws, transactions that are implemented on their basis, transmitted information [218, p.907], "a rule or a set of rules that have an external mechanism of coercion of individuals to fulfil" [15, p.32].

Economic growth is related to institutions, which in institutional theory are its driving force. On the one hand, institutions are factors that shape the behaviour of economic actors, on the other hand, they are objects that people influence and transform.

The state forms economic, legal and social institutions, contributes to solving the problems of economic growth and improving the living standards of the population. The institutional basis of economic transformation is the formation of such economic institutions as market, firm, property rights, which further affects the main factors of growth: labour, capital, land, institutional factors (physical capital (funds), human capital, R&D and innovation, investment, technology, terms of trade, distribution coalitions, education, health care, inequality and the current structure of the economy, interdependence of countries) [214, c.7-9]. At the same time, economic policy is a fundamental determinant of growth, including being an institutional factor of growth, setting incentives for agents' capabilities and innovation.

The fundamental issue in this paper is the development of recommendations on the formation of economic policy for growth, which was relegated to the background in the fundamental schools of institutionalism. Both the old institutional school and the new institutionalism did not make a significant contribution to the creation of the transmission mechanism of economic policy, which could take away the leading positions from the neoclassical schools. As J. Tinbergen noted, the fundamental problem of economic science is the choice of the structure of institutions. In this case, both the structure of

institutions affects the distribution of resources with a restrictive influence on the models, and the structure of resource distribution itself will change the structure and efficiency of rules.

Growth management represents economic policy measures that change the dynamics of GDP structure from the aggregate demand side - by expenditures and from the aggregate supply side by types of economic activities, economic sectors and paradigms and form institutional factors for these changes. At the same time, the change in economic proportions can itself be a rule for economic growth.

Interdependence is an important property of economic growth policy, all its types depend on each other, represent a kind of symbiosis. Moreover, based on W. Eucken's interdependence of orders, the interdependence of economic and state order cannot be ignored in the development of economic growth policy, i.e., with regard to this study, the interdependence of a set of macroeconomic targets and a set of economic policy instruments.

In Russia, overcoming the systemic limitations of economic growth requires the formation of a system of interrelated measures of state economic policy, with their linkage to specific instruments and targets, which corresponds to the theory of economic policy of J. Tinbergen. The contradictory nature of economic regulation institutions can lead to significant dysfunctions in the economy, reduce the welfare of the population and its quality of life.

Based on the theoretical analysis of various definitions of the content of the concept of "institution" and a number of categories that make up the toolkit of institutionalism, we propose the concept of state economic growth policy as a fundamental institution and, at the same time, an institutional factor of growth, represented by institutional levels characterised by interdependence and setting incentives to the capabilities of agents and to ensure economic growth.

Under the institutional level of public policy, we understand an element of the institutional structure of economic policy, which includes an ordered set of interrelated and interacting institutions (subjects, formal and informal norms, incentives, restrictions, instruments) that affect the achievement of macroeconomic targets.

Since there is a set of objectives in the managed system, and this set is subject to hierarchy, some targets may be contradictory or unrelated to each other, it is important to take this into account when formulating economic growth policy. It is necessary to take into account the relationship of instruments of economic policy of growth with the targets and totality of instruments of institutional levels of policy in influencing macroeconomic targets, which levels of economic policy influence the same targets, which should be taken into account in its formation, because the instruments of different levels can influence both unidirectionally and be contradictory in achieving the targets, which follows from the interdependence of types of economic policy.

The institutional levels of economic policy are presented as follows: monetary and fiscal policy as the basic level of economic policy, macroprudential policy and microprudential regulation, industrial policy, anti-monopoly policy, social policy, including human capital development policy.

The theoretical basis of the proposed model-scheme of interdependence of types of state economic policy in influencing economic growth (macroeconomic targets) is the classical principle of economic policy of J. Tinbergen "targets-instruments". The methodology of Keynesian and monetarist theories, orthodox and unorthodox (heterodox) approaches of economic theory, as well as the theory of economic policy became the basis for determining the macroeconomic targets of economic growth policy.

Thus, stability of the monetary unit and ensuring price stability were the goal of economic policy of classical monetarism, stimulation of full employment - post-Keynesianism, high level of employment along with economic growth - J.M. Keynes and modern monetary theory. Representatives of neoclassical synthesis proclaimed the goal of economic policy to be the optimisation of economic development and welfare improvement. The main goal of economic policy in the institutional theory is to create a system of institutions for cumulative development of the economy, in the evolutionary-institutional approach - to support enterprises of the real sector of the economy on the basis of innovation.

J. Tinbergen, whose basic theory of economic policy, although it contains some elements of Keynesianism, but still has its differences, considers the main goal of macroeconomic policy to be maximisation of public welfare.

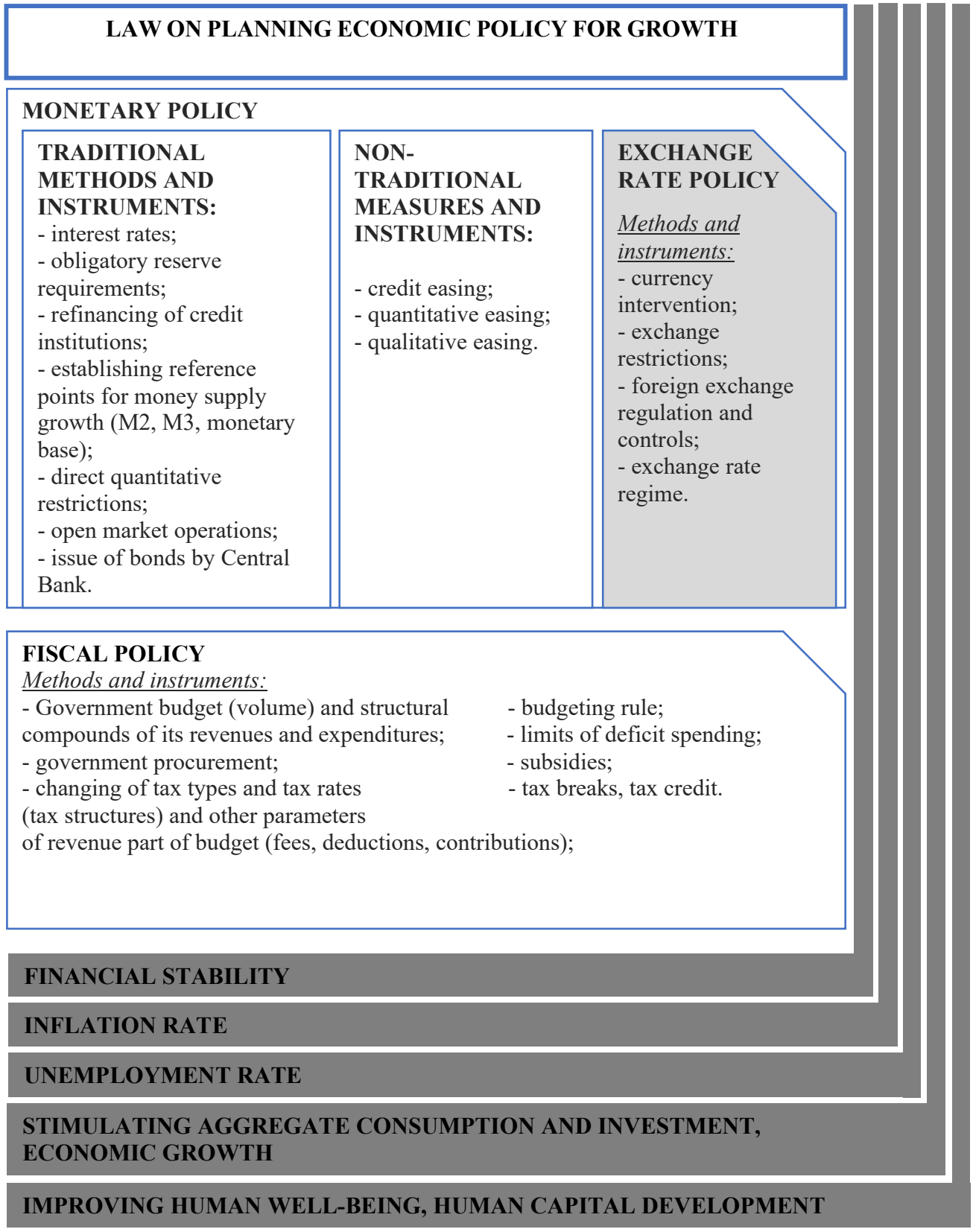

Figure 2.1 - Model-scheme of interdependence of types of state economic policy in influencing economic growth (macroeconomic targets) (Sheet 1 of 3)

Source: developed by the author

KEEPING FINANCIAL SECTOR STABILITY POLICY

MACROPRUDENTIAL POLICY
Methods and instruments:
- administrative approaches aimed at lending;
- instruments that influence capital or reserves;
- sectoral instruments;
- instruments that regulate liquidity and foreign exchange risk;
- instruments that control risks of structural character;
- measures that influence directly on consumers of financial services.

MICROPRUDENTIAL REGULATION
Methods and instruments:
- instruments of regulation of financial institutions (economic regulations; restrictions for entities during registration or licensing process; requirements and recommendations to credit institutions in the sphere of regulation the quality of credit portfolio and credit risk management, market and other risks, anti-money laundering measures to avoid money, obtained from illicit activities, and to avoid terrorism financing);
- instruments of financial institutions supervision – complex analysis of credit institutions basing their reports and other official sources of information (structural analysis of a balance sheet, profit and loss statement, capital adequacy analysis, analysis of liquidity risk, analysis of credit risk, and market risk);
- financial recovery of institutions.

FINANCIAL MARKET DEVELOPMENT POLICY
Instruments:
- support and development of stores of value, loans, investments, risk management.

FINANCIAL STABILITY

INFLATION RATE

UNEMPLOYMENT RATE

STIMULATING AGGREGATE CONSUMPTION AND INVESTMENT, ECONOMIC GROWTH

IMPROVING HUMAN WELL-BEING, HUMAN CAPITAL DEVELOPMENT

Figure 2.1 (Sheet 2 of 3)

INDUSTRIAL POLICY
Methods:
- protectionism;
- export stimulation;
- supporting of industries and regions with soft loans and subsidies;
- government procurement;
- partial regulation of prices and tariffs;
- government stimulation and public financing of R&D;
- special programs.

Structural policy

Innovation policy

Investment policy

ANTITRUST POLICY
Methods and instruments:
- monitoring and evaluation;
- capital accumulation;
- competition law etc.

SOCIAL POLICY,
HUMAN CAPITAL DEVELOPMENT POLICY
Methods and instruments:
- social programs;
- social requirements and standards (minimum wage, consumer basket, living wage, maximum pension, allowance, bursaries);
- government guarantees;
- building effective employment service;
- transfer payment of population;
- indexation of fixed incomes;
- improving education system, improvement of quality and accessibility of healthcare, modernization of the housing and communal services;
- investments in human capital (education, healthcare).

FINANCIAL STABILITY

INFLATION RATE

UNEMPLOYMENT RATE

STIMULATING AGGREGATE CONSUMPTION AND INVESTMENT, ECONOMIC GROWTH

IMPROVING HUMAN WELL-BEING, HUMAN CAPITAL DEVELOPMENT

Figure 2.1 (Sheet 3 of 3)

For this purpose, he considers it necessary to define the targets, namely full employment and zero inflation, as well as to identify the instruments with which it is possible to achieve the desired targets.

Adhering to the institutional approach, which includes the broadest scope of growth economic policy targets, let us define the following economic policy targets: maintaining price stability, i.e., sustained low inflation; maintaining low unemployment; promoting economic growth; ensuring financial stability; and promoting welfare and human capital development.

Different institutional levels of economic policy have a different impact on the achievement of these macroeconomic targets. Let us present a model-scheme of interdependence of types of state economic policy in influencing economic growth (macroeconomic targets), Figure 2.1.

The basic institutional levels of economic policy are monetary and fiscal policy, which together have a significant impact on the economy and social development. At the same time, fiscal policy is a broader concept than fiscal policy. The policy of the Bank of Russia on maintaining the stability of the financial sector as an institutional level of economic policy includes macroprudential policy and microprudential regulation, which are closely interrelated with monetary policy and have a mutual impact on the effectiveness in achieving the goals. The policy of financial market development is the basis for the formation of conditions for increasing investment activity and economic development. Also such institutional levels of economic policy as industrial, anti-monopoly, social policy and human capital development policy have a significant impact on the achievement of macroeconomic and social goals.

At present, the priorities of influence on the economic structure, the correlation between sectors and paradigms are the basis for the implementation of monetary, budgetary and fiscal policy of the state.

The difficulty of achieving coherence of monetary and fiscal policies is primarily due to the fact that they are implemented by different institutions independent of each other. Fiscal policy is implemented by the Ministry of Finance or the Treasury. Monetary policy is implemented by the Bank of Russia. Monetary policy and fiscal policy, being the basic institutional levels of economic policy, cannot be effectively implemented without mutual coordination.

The Bank of Russia defines monetary policy as part of the state economic policy aimed at improving the welfare of Russian citizens.

In the Monetary Policy Guidelines for 2023 - 2025 (ONEGDCP), the main task for the coming years is to create conditions for successful transformation of the economy. The Bank of Russia in the implementation of monetary policy "will contribute to the creation of such conditions by ensuring price stability" [174 p.3]. "The strategy of inflation targeting... is still the best choice for monetary policy" [174, p.3]. The ONEGDCP states that the Bank of Russia conducts monetary policy in accordance with its main function - to protect and ensure the stability of the ruble, enshrined in the Constitution of the Russian Federation. This function is realised through maintaining price stability, in accordance with the Federal Law of 10.07.2002 №86-FZ "On the Central Bank of the Russian Federation (Bank of Russia),

which "is a necessary condition for the transformation and development of the economy, including for the formation of conditions for balanced and sustainable economic growth" [174, p.6]. It is noted that in the implementation of monetary policy the Bank of Russia will contribute by ensuring price stability, which will allow companies and households to realise financial and investment planning, increase the availability of debt and equity financing, protect incomes and savings of citizens from depreciation. "Low and stable inflation is an important condition for maintaining the purchasing power of the ruble and domestic demand" [174, p.8].

At the same time, the document states that "monetary policy alone cannot compensate for the decline in the economy's potential" [174, p.8], as it is determined by other factors. "To solve the problem of expanding the productive capacity of the economy, measures of structural, budgetary policy, as well as institutional changes are necessary" [174, p.8].

In the theory and practice of monetary regulation it is accepted that in the long run monetary policy affects the price level and does not affect employment and economic growth.

The inflation targeting policy, which has been implemented by the Central Bank in recent years, is focused on fighting inflation and is not consistent with the goal of accelerated modernisation of the Russian economy. In addition, such a model of monetary policy raises the question, to what extent, given the current constraints of socio-economic development, does it actually allow to effectively reduce inflation? Since the policy of "expensive money" leads to the strengthening of the problem of technological backwardness of Russian producers, it may have the opposite effect.

Inflation targeting policy has its advantages, but its effectiveness can be achieved only in case of high investment activity, while in the current conditions it leads only to weakening of investment dynamics. An important condition for the transition to inflation targeting "should be the availability of sufficient financial resources of the state and, most importantly, its readiness to use them for direct subsidies of interest rates for the purchase of products of domestic fund-creating industries and imports of modern technologies ... targeted preferential lending and provision of state guarantees for the purposes of modernisation of production" [60, p.258].

Currently, exclusively reducing inflation cannot be a priority and the goal of monetary policy, which should be a basic tool for the formation of favourable conditions for the development of both subjects, sectors and the economy as a whole. The main objective of monetary policy as the basic level of economic policy, we consider economic growth. Monetary policy, encouraging investment in the economy with strengthening the role of credit, is the basis of economic growth. The implementation of monetary policy does not take into account its structural content, the structure of the applied methods of impact on the economy. Based on the Federal Law "On the Central Bank of the Russian Federation", Articles 3 and 34.1, the maintenance of price stability is ensured "including for the formation of conditions for balanced and sustainable economic growth", however, there is no deciphering of the

content of such growth, indicators and correspondence with price dynamics in regulatory documents. Economic growth is associated exclusively with the reduction of inflation. The basic document on monetary policy speaks about structural reorganisation of the Russian economy, but it does not suggest how to adequately take into account structural changes, how to link them with the instruments of monetary policy in interrelation with the instruments of other types of policy. It is important to understand the structural interdependence of monetary policy instruments and the economy. The Bank of Russia notes that "despite significant changes in economic conditions, the basic principles of monetary policy remain unchanged" [174, p.9], that price stability should be a condition for the transformation of the economy. At the same time, it is not taken into account that it is the transformation of the economy that is the source of violation of price stability.

However, on the basis of Okun's Law, which shows the impact of GDP growth on unemployment, Phillips curve, which shows the impact of unemployment on inflation and aggregate demand function, which represents the impact of inflation and money supply growth rate on GDP growth, it is possible to declare a close relationship between the achievement of such targets of economic policy as unemployment, inflation and economic growth. Taking into account the stabilising nature of measures of weighted monetary policy, it should be noted that it contributes simultaneously to the maintenance of financial and macroeconomic stability.

Thus, monetary policy as an institutional level of economic policy can contribute to the achievement of the following main targets of economic policy in aggregate: maintaining price stability, i.e. stable low inflation; maintaining low unemployment; promoting economic growth; ensuring financial stability; promoting welfare and human capital development.

In the process of optimal policymaking, in addition to defining the ultimate policy targets, it is important to identify the instruments available with which to achieve the desired objectives. The set of instruments at each institutional level depends on the characteristics of the institutional environment.

Monetary policy methods and instruments can be divided into two groups: traditional methods and instruments and non-traditional methods and instruments. Thus, the traditional ones include mandatory reserve requirements, the central bank interest rate, refinancing of credit institutions, currency interventions, setting targets for money supply growth (regulation of the volume of money in circulation (as a rule, money supply or monetary base) by means of emission management), open market operations, etc. Three groups are included in unconventional monetary policy methods and instruments: credit easing, quantitative easing and qualitative easing.

A separate institutional level is the exchange rate policy, the methods and instruments of which are currency interventions, currency restrictions, currency regulation and control, and the exchange rate regime.

Exchange rate policy instruments can influence the following macroeconomic targets: inflation rate, unemployment rate, economic growth and welfare and human capital development. The Monetary Policy Guidelines for 2023 - 2025 (ONEGDCP) states that "the Bank of Russia adheres to the floating exchange rate regime" [174, p.10]. The Bank of Russia does not conduct operations with foreign currency to influence the dynamics of the exchange rate. The result of the floating exchange rate, as the Bank of Russia notes, "is a higher efficiency of monetary policy in ensuring low and stable inflation" [174, p.11]. In February-March 2022, restrictions on free cross-border capital flows were introduced in order to reduce financial stability risks. Later the measures were relaxed, while the ruble exchange rate remained floating. Direct restrictions on the free movement of capital over a long period of time can have a negative impact, reducing the growth potential of the economy.

Fiscal policy as a basic institutional level of economic policy can contribute to the achievement in the aggregate of such basic targets of economic policy as: maintaining price stability, i.e. stable low inflation; maintaining low unemployment; economic growth; improvement of welfare and development of human capital.

Methods and tools of fiscal policy are: the government budget (volume) and structural components of its revenues and expenditures; public procurement; changes in the types and rates of taxes (tax structure) and other parameters of the revenue part of the budget (fees, deductions, contributions); budget rule; budget deficit ceiling; government subsidies; tax exemptions, tax credit.

The Monetary Policy Guidelines for 2023 - 2025 (ONEGDCP) states that "fiscal policy has a significant impact on the conditions for the implementation of monetary policy: liquidity of the banking sector, aggregate demand, the structure of the economy and the dynamics of prices of goods and services" [174, p. 24]. It is noted that the nature of influence depends on "approaches to budgeting, the structure of budget expenditures, their effectiveness and distribution over time" [174, p.25].

The budget rule is one of the main components of the budget strategy of the Russian Federation and smoothes the impact of changes in the external economic environment on domestic conditions, on the dynamics of the ruble exchange rate, demand in the economy, which forms favourable conditions for the implementation of monetary policy, reduces price and exchange rate volatility. The Bank of Russia notes that the budget rule ensures a balanced budget policy, which is one of the conditions for ensuring price stability. The budget rule creates macroeconomic stability, "reduces fluctuations in the real effective exchange rate due to changes in the commodity market ... is designed to prevent the formation of excessive public debt" [174, p.25]. Due to the events of 2022 in Russia a number of provisions of the budget rule have been suspended. At present, new principles of the budget rule are being developed in accordance with the changed conditions.

The role of budget and tax policy in the formation of financial resources of the state in order to implement expenditures to ensure sustainable development is important. Public expenditures are

practically the only state direct economic instrument in solving the tasks of economic and social sphere, they can become a factor of structural changes in the economy. The priority task within the framework of fiscal policy is to determine the optimal size of public expenditures.

In developed countries, the state budget deficit and government borrowing through the issue of government securities as a source of its repayment are elements that stimulate economic growth, which corresponds to the teachings of J. Keynes. In developing countries, the IMF experts believe that some budget deficits may be justified if they are associated with the desire to increase certain items of expenditure, thanks to which the economy receives a strong production impetus for years to come and accelerated economic growth is ensured. In the Russian economy in favourable periods the main task of economic policy should be to diversify production at the expense of additional budget revenues, rather than accumulating them in sovereign funds.

We recall J. Tobin's statement that "the statement that ... budget deficit is inadmissible still needs to be proved" [238, p. 200].

Budgetary emission in the leading countries of the world is the main source of financial resources. Domestic economists define the budgetary channel of money issue along with the credit channel as contributing to economic growth in Russia. A.S. Neshitoi points out that budgetary emission "allows to provide financing of economic development priorities through budgetary channels, and then along the chain to form demand and stimulate growth in related and other industries" [162, p.3]. A.I. Milyukov and S.A. Penkin believe that "the issued financial liabilities of the Bank of Russia should be directed to the purchase of government securities, which requires the expansion of the programme of internal borrowings of the Ministry of Finance of the Russian Federation" [157, p.50]. V.E. Manevich notes that "forming quite a normal deficit, financed by the emission resource, it would be possible to increase budget expenditures by another 10-15%" [146, p.3].

The budgetary channel of money supply at the expense of money issue in Russia is limited by Article 22 of the Federal Law No. 86-FZ of 10.07.2002. "On the Central Bank of the Russian Federation (Bank of Russia)", which says that the Bank of Russia has no right to buy government securities at their initial placement. At the same time, "except for those cases when it is provided for by the federal law on the federal budget".

Some scientists believe that the activation of the budget channel at the expense of domestic or emission resources can have negative consequences for the Russian economy. A.M. Proskurin [192] notes that the growth of domestic public debt will lead to increased tension in the money market and strengthening of inflationary potential. L.N. Krasavina points out that the intensification of the debt policy of the Russian state will only lead to the preservation of a significant rate of inflation [125, p.24]. At the same time, V.E. Manevich believes that "the budget deficit that does not exceed the normal increase in the amount of money in circulation ... does not cause inflation" [147, p.112]. Such deficit

stimulates the expansion of aggregate demand and leads to economic growth. Experts of the Institute of Economics of the Russian Academy of Sciences under the leadership of V.K. Senchagov come to the conclusion about the neutrality of the impact of reducing the deficit or forming a surplus of the state budget on the inflation rate in the Russian economy [201, p.3]. According to this group of experts, the reduction of the deficit and budget expenditures leads to a slowdown in economic growth, but not to a reduction in inflation.

It is important to take into account that the nature and features of the impact of budget expenditures on inflation and the economy are influenced by their structure, performance, distribution in time.

In recent years, the main budgetary instrument of structural policy has been subsidies to sectors of the national economy. Since the existing system of subsidies is designed to solve the problems of individual industries and is poorly oriented towards the development of promising industries, a low-efficiency structure of the economy is formed and the task of structural modernisation is not solved.

The convergence of competitiveness of the Russian economy is ensured primarily by fiscal rather than incentive measures, which leads to suppression of investment activity. Due to the high fiscal burden on the energy sector in Russia, energy prices are periodically comparable to those in the US, while opportunities to enter the external market and the domestic market itself are much weaker, resulting in a decrease in investment incentives. In this case, stimulating fiscal policy measures in the manufacturing and non-resource sectors could become the basis for stimulating innovation activity.

The system of differentiated taxation of commercial banks should also be applied, which implies adjustment of the profit tax rate of banks depending on their relationship with the real sector and on the terms of lending.

Tax incentives, privileges and preferences should be applied to commodity producers, primarily in the innovation sector. Fiscal policy should be focused on equalisation and development of both individual entities of the real and banking sectors, as well as regions and industries through the provision of targeted budget credits and tax credits.

Tax policy measures can influence price dynamics. As the Bank of Russia notes, "...changes in indirect taxes, as a rule, lead to a one-time adjustment of prices and do not require a reaction from the monetary policy" [174, p.25].

Thus, long-term priorities and strategy of economic development and structural policy, methods and instruments of fiscal policy as an institutional level of economic policy influence the choice of methods and instruments of monetary policy necessary to achieve specific macroeconomic targets. The Bank of Russia notes the "synergetic effect" [174, p.26] of inflation targeting with simultaneous application of the budget rule and implementation of monetary policy.

Industrial policy is another institutional level of economic policy. It can contribute to the achievement, in aggregate, of the main targets of economic growth policies, such as: economic growth; maintaining low unemployment; improving welfare and developing human capital.

The methods and instruments of industrial policy include: protectionism, aimed at protecting domestic producers from competition from foreign producers in their home country; export promotion; support of key industries and regions that are recognised by the state as the most promising, with the help of preferential loans and subsidies; and the use of state order to expand the production of socially important goods and services; partial regulation of tariffs and prices; incentives and state financing of R&D; special programmes.

With regard to industrial policy, the measures of the Government of the Russian Federation, which are aimed at overcoming structural problems while creating incentives and mechanisms for economic development, are of great importance. Overcoming raw material orientation, dependence on imports, and diversification of the economy are of great importance for the development of the economy.

Anti-monopoly policy as an institutional level of economic policy can contribute to the achievement of such basic targets of economic policy as: maintaining price stability, i.e. stable low inflation; maintaining low unemployment; economic growth. Methods and tools of antimonopoly policy are: monitoring and evaluation; capital concentration and demonopolisation.

Measures to reduce the degree of monopolisation of markets for goods and services play a major role in achieving the targets of economic policy as well as monetary policy. The impact of unfavourable factors on the price level is less in a more competitive market. Reducing monopolisation in the sectors of the economy will increase the flexibility of prices and commodity supply, which will lead to their better response to changes in consumer activity, including under the influence of the key rate.

The antimonopoly policy guidelines should include: optimisation of the pricing policy to ensure access to banking services for real sector enterprises, protection from the negative impact of foreign competition, etc. The dynamics of prices and tariffs for services of natural monopolies are important factors of inflation, so they should be strictly regulated by the state, which will be a strong tool to counteract inflation.

Social policy and human capital development policy as an institutional level of economic growth policy can contribute to the achievement of the main targets of economic policy such as: economic growth; maintenance of low unemployment; improvement of welfare and human capital development.

The methods and instruments of social policy are: social programmes; social norms and standards (minimum wage, consumer basket, subsistence minimum, maximum pension, allowances, scholarships); state guarantees; creation of an effective employment system (encouragement of territorial and professional mobility of the labour force, use of non-standard types of employment, control over normal working conditions, etc.); transfer payments of the population; indexation of fixed incomes;

improvement of education, improvement of the quality and accessibility of medical care, modernisation of the housing and utilities sector; investments in human capital (education, health care).

Social policy of the state plays an important role in the formation of institutional conditions for building up and realising the economic potential of society. From an economic point of view, social policy is similar to "investment in human capital", as through the provision of social services in the field of health care, education and culture, as well as through the redistribution of income, the state influences the socio-economic factors of labour productivity growth and stimulates the participation of different segments of the population in economic development. The focus of social policy on more efficient use of labour resources leads to the formation of conditions for achieving a high level of well-being in society.

Maximisation of public welfare is the supreme goal of the state social policy, the implementation of which is associated with the macroeconomic policy of economic growth and full employment. Also, one of the ultimate targets of social policy implementation is to achieve a positive economic effect.

Within the framework of social policy, overcoming the high differentiation of wealth and income in society should create conditions for the formation of social stability, savings, balanced development, which will expand the possibilities of the central bank in influencing prices through effective demand. Households with an average income level, as a rule, react sensitively to changes in prices and interest rates, adjust the level of savings and consumption.

Socially oriented wage and income regulation policy and employment policy are of great importance. The growth of household incomes leads to an increase in consumer demand for goods.

The new paradigm includes financial stability as an additional macroeconomic objective.

The important questions now are whether financial stability is an explicit goal of monetary policy, and how active the central bank should be in pursuing financial stability targets. R.W. Ferguson [363] and B.S. Bernanke [306] argue that an actively pursued financial stability objective may interfere with other monetary policy objectives, as well as lead to the problem of moral hazard and instability in other economic variables. Bernanke notes that monetary policy is far from an ideal strategy for dealing with financial threats.

Moreover, monetary policy that is pursued to contain financial risks may have unintended consequences and divert attention from the short-term targets of price stability and full employment.

On the other hand, a number of scholars believe that active monetary policy is needed to contain financial risks. A significant contribution to the discussion was made by the Bank for International Settlements. Thus, J. Carauna [326] believes that macroprudential policy is not enough to ensure the desired level of financial stability. In his opinion, monetary policy should play a more active role in ensuring financial stability. Monetary and macroprudential policies can effectively complement each other to contain financial anomalies. C. Borio and P. Lowe [317] support proactive monetary policy

because financial instability can occur even when prices are stable and output is close to potential. R.M. Billi and A. Vredin [308] argue that financial stability should be an explicit objective of monetary policy by applying a simple model of monetary policy and financial stability and explain that there are robust links between monetary policy and financial stability.

Another approach is how to change the inflation targeting regime to add a financial stability objective. S. Roger [491, p.236] recommends applying monetary policy that takes into account macro-financial interactions. He believes that monetary policy should focus on asset prices if the analytical framework of the central bank does not reflect the development of the financial sector.

In implementing the policy to maintain the stability of the financial sector, the Bank of Russia adheres to the principle of separating its targets from those of monetary policy. Within the framework of the Monetary Policy Guidelines for 2023 - 2025 the Bank of Russia applies the key rate and communication to influence demand and prices as the main instruments of monetary policy [174, p.4], then the maintenance of financial sector stability is achieved through the application of macroprudential policy instruments, microprudential regulation, supervision, financial recovery measures.

An important condition for the effective transmission of monetary policy is the stability of the financial sector, which affects the transformation of savings into investment.

The interdependence of macroprudential policy, microprudential regulation and monetary policy should be taken into account in the implementation of economic growth policies.

Macroprudential and monetary policies aim at achieving different basic targets, which may be contradictory. The objective of macroprudential policy is to promote financial stability, the main objective of monetary policy at present is to maintain price stability. Consequently, each policy can influence the objective of another policy and make it more effective or less effective.

Macroprudential policy measures can influence the conditions under which monetary policy is implemented, such as interest rates or credit dynamics. Macroprudential policy takes into account the impact of monetary policy on macroeconomic variables, as macroprudential policy decisions are linked to cyclical fluctuations in both the economy and financial markets.

A number of studies confirm that when monetary and macroprudential policies work in harmony and in the same direction, macroprudential policy becomes more effective in containing credit growth. When considering different measures of macroprudential policy and applying the Taylor gap as a measure of monetary policy, scholars find that restrictive monetary policy leads to a stronger impact of macroprudential tightening on credit growth, and monetary policy helps to reduce the transmission lag of macroprudential policy [387].

There is some contradiction in the document of the Bank of Russia regarding the interaction of monetary and macroprudential policies. It is noted that "when making decisions both in the field of macroprudential policy to limit systemic risks and in the field of monetary policy, the Bank of Russia

takes into account their influence... does not assume coordination of directionality between these types of policy, maintaining independence in their implementation" [174, p.22].

As a rule, changes in the field of microprudential regulation affect the structural and long-term aspects of financial institutions, for this reason, decisions on them do not depend on decisions in the field of monetary policy, which are focused on the medium term. In contrast to macroprudential regulation, changes in microprudential regulation do not usually depend on the phase of the financial and economic cycle and are introduced on a permanent basis. Consequently, as a rule, they do not significantly affect the conditions of monetary policy implementation.

Monetary policy conditions may be influenced by financial rehabilitation measures within the framework of ensuring stable functioning of the financial sector. The provision of funds to credit organisations during the implementation of financial rehabilitation measures leads to changes in the structural balance of the banking sector's liquidity. This circumstance is taken into account by the Bank of Russia when determining the limits on liquidity provision and liquidity absorption operations, levelling the possible impact of these measures on monetary conditions and the operational procedure of monetary policy.

In cases where the probability of a systemic crisis increases, the Bank of Russia may use the key rate to maintain the stability of the financial sector and stabilise the situation on financial markets. Also, when using the key rate for these purposes, the Bank of Russia contributes to the stabilisation of inflation and exchange rate expectations, which ensures price stability.

Thus, macroprudential policy and microprudential regulation as institutional levels of economic policy can contribute to the achievement, in aggregate, of the main targets of economic growth policy such as: maintaining price stability, that is, stable low inflation; ensuring financial stability; and economic growth.

Macroprudential policy methods and instruments include administrative measures aimed at restricting credit (limits); instruments affecting capital or reserves; sectoral instruments (restrictions on transactions with specific sectors); instruments regulating liquidity and currency risk; instruments affecting structural risks (e.g. capital and liquidity requirements for systemically important institutions); and measures directly affecting consumers of financial services.

The methods and instruments of microprudential regulation are: instruments of regulation of financial institutions (economic norms, restrictions for entities in the form of state licensing and registration, requirements and recommendations to credit institutions in the field of regulation of credit portfolio quality and credit risk management, market and other risks, anti-money laundering and countering the financing of terrorism); instruments of supervision over financial institutions (comprehensive analysis of credit institutions based on statements and other sources of official

information (structural analysis of balance sheet, income statement, analysis of capital adequacy, liquidity risk, credit and market risk)); financial rehabilitation of financial institutions.

The financial market development policy implemented by the Bank of Russia and the Government of the Russian Federation is designed to increase the availability of financing for economic entities and create conditions for economic development and growth of investment activity in the country. Macroeconomic, legal and institutional conditions will be created within the framework of this policy in order to transfer savings into investments and create long-term domestic savings. The financial market transmits a signal to the economy from the key rate. The strength and speed of the reflection of key rate changes on economic indicators depend on the volume and liquidity of the financial market.

In the Guidelines for the development of the financial market of the Russian Federation for 2023 and the period of 2024 and 2025, ensuring financial stability is one of the five directions. It is noted that the policy measures for the development of the financial market can form favourable conditions for the growth of citizens' welfare [176, p.2], it is necessary to ensure financial stability [176, p.2]. "The development of the financial market will contribute to the modernisation of the economy", "economic development" [176, p.4], contributes to economic growth, "creating new jobs" [176, p.6], "forms prerequisites for increasing the welfare of citizens" [176, c.7].

The policy for the development of the financial market of the Russian Federation includes measures to support and develop the economy and the financial market. The financial market itself applies saving, borrowing, investment and risk management instruments.

The interdependence of macroeconomic policy and financial market development policy plays a major role. Macroeconomic policy, with financial and price stability at its core, is a significant factor in financial market development. Systemic financial stability necessary for the functioning of both the financial market and the economy is ensured by the measures of macroprudential policy and microprudential regulation of the Bank of Russia.

Also, the interdependence can be traced in the implementation of the budget policy with the policy of financial market development. The stability of the financial market is influenced by the management of external and internal public debt.

The result of the study of interdependence of types of economic growth policy in achieving economic targets are the following conclusions:

- the goal of economic growth in the aggregate is influenced by instruments of all institutional levels of economic growth policy: monetary, exchange rate, fiscal, policy to maintain the stability of the financial sector (macroprudential policy, microprudential regulation), financial market development policy, industrial, antimonopoly, social policy, human capital development policy;

- the inflation target is influenced by instruments of the following institutional levels of economic growth policy: monetary, exchange rate, fiscal, financial sector stability policy (macroprudential policy,

microprudential regulation), financial market development policy, industrial, antimonopoly, social policy, human capital development policy;

- the goal of unemployment rate is influenced by instruments of the following institutional levels of economic growth policy: monetary, exchange rate, fiscal, financial market development policy, industrial, antimonopoly, social policy, human capital development policy;

- the goal of welfare improvement and human capital development is affected by the instruments of the following institutional levels of economic growth policy: monetary, exchange rate, fiscal, financial market development policy, industrial, social policy and human capital development policy;

- the objective of financial stability in the aggregate is influenced by the instruments of the following institutional levels of economic growth policy: monetary, exchange rate, fiscal, financial sector stability policy (macroprudential policy, microprudential regulation), financial market development policy.

Thus, the complex coordination of methods and tools of institutional levels of economic policy as a fundamental institution and, at the same time, an institutional factor of growth, taking into account the interdependence of its types with a clear system of goal setting, while maintaining the concentration and focus of regulatory measures should contribute to a more effective achievement of the ultimate targets of economic growth.

2.2 Law on planning economic policy for growth

The basis for understanding the institutional environment of growth in the paper is its definition by O. Williamson. Institutions that determine which of the institutional alternatives are feasible constitute the institutional environment in which economic agents make decisions, take actions, form institutional agreements, follow them or violate them [535, p.21-49]. The textbook edited by A.A. Auzan defines the institutional environment as a set of "fundamental social, political, legal and economic rules" that define "the framework of human behaviour" [15, p.45].

Economic growth is determined by the quality and level of development of the institutional environment of growth. Under the institutional environment of growth, we understand social, political, legal and economic rules that define the framework of human behaviour, ensuring economic growth.

Based on the division of the institutional environment into three layers (supra-constitutional, constitutional, economic institutions) proposed by D.North, the Law on planning economic policy for growth can be attributed to economic institutions. The Law should become a basic institution that forms the rules of behaviour and interaction of economic actors, determining the conditions of social reproduction in order to effectively distribute economic resources and achieve economic growth.

After the adoption of the Federal Law № 172-FZ "On strategic planning in the Russian Federation" dated 28 June 2014, the system of strategic planning was provided with the main normative-legal acts and scientific and methodological recommendations. The Law should not be of a framework and nominal nature, as it is present in the existing version, but of an instrumental nature and should become an effective organisational and legal instrument of economic growth in the Russian Federation.

In order to regulate a clear sequence of application of methods and tools of institutional levels of economic policy, taking into account the interdependence of its types for a more effective impact on economic growth and achievement of macroeconomic targets, we propose to develop the Law on planning economic policy for growth on the basis of Federal Law № 172-FZ "On strategic planning in the Russian Federation" dated 28 June 2014.

Figure 2.2 presents the scheme of the Law on planning of economic growth policy as a basic economic institution.

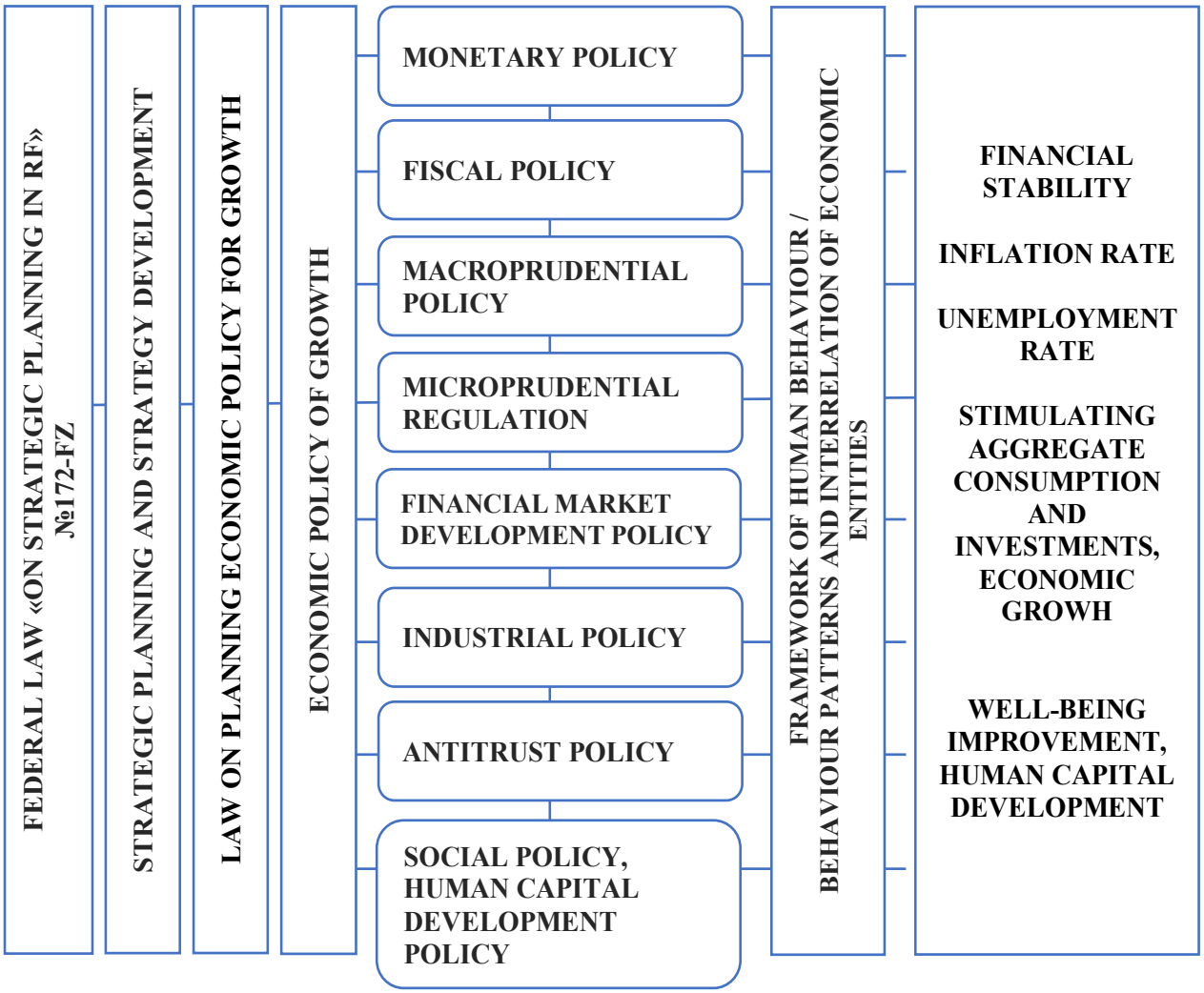

Figure 2.2 - Schematic diagram of the Law on planning economic policy for growth as a basic economic institution

Source: developed by the author

The Law should establish the legal framework for planning economic growth policy in the Russian Federation, to take into account the interdependence of types of economic policy, economic policy and macroeconomic targets, economic growth. It is necessary to coordinate the methods and instruments of monetary, fiscal and fiscal policy in achieving the targets, as well as with macroprudential policy, microprudential regulation and financial market development policy. It is also important to harmonise the methods and instruments of these types of policies in achieving macroeconomic targets with industrial, anti-monopoly and social policies. The basis for planning and coordination of monetary policy, macroprudential policy, microprudential regulation and financial market development policy should be established separately. The interrelation of the main directions of economic policy with social policy and human capital development policy should be given special attention in the Law on planning economic policy for growth.

The Law should establish the legal basis for the coordination of public administration, the powers of federal public authorities, public authorities of the constituent entities of the Russian Federation, and local self-government bodies, as well as the procedure for their interaction with scientific, public and other organisations in the planning and development of economic growth policy.

The Law on planning economic policy for growth should regulate the relations arising between the participants of economic policy planning in the process of goal setting, forecasting, planning, programming of economic growth in Russia, as well as monitoring and control over the implementation of economic growth policy planning documents. All components of economic growth policy planning, including at institutional levels, are ultimately aimed at changing the framework of human behaviour, rules of behaviour and interaction of economic actors, which further leads to the achievement of macroeconomic targets, the achievement of economic growth.

The goal setting should define the directions, targets and priorities of the economic growth policy, as well as each institutional level of economic policy, taking into account the provision of national security of the Russian Federation. The task of strategic goal setting is currently addressed by Presidential Decree № 400 of 02.07.2021 "On the national security strategy of the Russian Federation", Presidential Decree № 208 of 13.05.2017 "On the economic security strategy of the Russian Federation for the period until 2030", Presidential Decree № 204 of 7 May 2018 "On the national goals and strategic targets of the development of the Russian Federation for the period until 2024".

The goal of economic growth policy is understood as the state of the economy defined by participants of economic policy planning as a benchmark of their activities and characterised by quantitative and qualitative indicators of economic growth. The goal of economic growth policy and macroeconomic targets in general should correspond to a number of characteristics: orientation for a certain time interval; measurability and specificity; consistency of the targets of institutional levels of economic growth policy taking into account the interdependence of its types, consistency. The result of

economic growth policy is the achieved actual state of the economy, which is characterised by quantitative and qualitative growth indicators.

Forecasting within the framework of economic growth policy should consist in the development of scientifically substantiated ideas about the risks of its implementation and threats to the national security of the Russian Federation, about the directions, indicators of results both as a whole, and the subjects of the Russian Federation, municipal organisations. Currently, the set of forecasts in Russia is represented by the following types: strategic forecast of the Russian Federation, forecast of scientific and technological development of the Russian Federation, forecast of socio-economic development of the Russian Federation for the medium term and for the long term, budget forecast of the Russian Federation for the long term. Forecasts as a vector reference point and substantive basis of the state economic growth policy being implemented in Russia is one of the reasons for its insufficient efficiency. At the same time, the Federal Law "On strategic planning in the Russian Federation" states that forecasts are exclusively scenario-based, and their purpose is to substantiate the options for the development of the global and Russian economy depending on changes in external conditions and macroeconomic policy in the country.

Planning means the development and implementation of the main activities of the Government of the Russian Federation, plans of federal executive bodies, other plans for the implementation of economic growth policy and ensuring national security of the Russian Federation, the focus of which is the achievement of macroeconomic targets and priorities of economic growth policy. In planning the economic growth policy, it is necessary to apply the technology of strategic and indicative planning.

The indicators laid down in the strategic plan of socio-economic development of the country, rather than the indicators of forecasts should be the goal of the state economic growth policy in Russia. The instrumental and organisational basis for the development and implementation of strategies, programmes of socio-economic development of Russia and the federal budget should be strategic planning rather than forecasting, which is currently the case in Russia.

It is of great importance in strategic planning to formulate a goal only after analysing the external environment and internal environment (opportunities) of economic growth policy, when strategic targets and plans are an objective continuation of existing opportunities and threats and actually available resources. Strategic planning is a kind of tool to eliminate managerial and organisational chaos, a tool to achieve concentration of actions and efforts in the implementation of economic growth policy.

Based on the application of strategic planning, a new quality of public administration should be achieved, the basis of which is horizontal integration and effective interaction of public administration bodies. In the future, there should be a transition to the model of "united government", which corresponds to the risks of development of the Russian economy and global challenges, leaving behind the model of "service management".

The Law on planning economic policy for growth should harmonise the processes of strategic and indicative planning of economic policy at the macro- and micro-level, prevent their confrontation, multidirectionality and conflict, and have a single vector.

In the process of programming economic growth, the development and implementation of state and municipal programmes are carried out, which are aimed at achieving macroeconomic targets, priorities of economic growth policy and ensuring national security of the Russian Federation.

The «National projects» cover the medium-term planning horizon. The Law "On strategic planning in the Russian Federation" provides for their integration into the mechanisms of strategic planning, allowing to produce a synergetic effect on long-term intervals. This effect on long-term intervals can be achieved through "cross-cutting long-term goal setting", appropriate concentration of actors and resources to achieve economic growth and macroeconomic targets.

The Federal Law "On strategic planning in the Russian Federation" establishes that the budget forecast of the Russian Federation for the long-term period is one of the strategic planning documents and its development should be based on the provisions of the Budget Code of the Russian Federation. In accordance with Article 28 of Federal Law № 172-FZ state programmes are developed by federal executive authorities to achieve the priorities and targets of socio-economic development; they are approved in accordance with the Budget Code of the Russian Federation by the Government of the Russian Federation. At present, state programmes are the only document that has an identical definition in the legal acts regulating the documentary content of strategic and budgetary planning.

It is important to establish the link between budget and strategic planning documents, since Federal Law № 172-FZ does not have clear boundaries at the normative level, within which budget planning is carried out by strategic planning documents. There are also no normative requirements to the indicators that are used in the formation of strategic and budget planning documents and should be comparable and identical. In this regard, it is necessary at the legislative level to define comparable and mandatory indicators in strategic and budgetary planning documents; to legislate that strategic and budgetary planning documents should complement each other or derive from each other, as well as to establish deadlines for the development and approval of strategic and budgetary planning documents.

Monitoring and control within the framework of the Law on planning economic policy for growth includes a comprehensive assessment of the progress and outcomes of the implementation of the established economic policy planning documents, as well as the interaction of the planning subjects on compliance with the principles of planning of economic growth policy, the implementation of their powers in the field of economic growth policy and ensuring the national security of the Russian Federation.

At present, the issue of defining a special state body, which will be entrusted with reforming the economy and ensuring economic growth, is relevant. This state body should be engaged in the

development of economic growth policy, organisation of its planning, provision of strategies and programmes for different periods. Based on the Government Decree on the Ministry of Economic Development of the Russian Federation [190], the Ministry of Economic Development of the Russian Federation is entrusted with the authority to coordinate and provide methodological support for the development and adjustment of strategic planning documents, as well as monitoring and control over their implementation. The Central Bank is responsible for the implementation of monetary policy. At the same time, the Ministry of Economic Development of the Russian Federation is not responsible for the development of macroeconomic directions and priorities.

Academicians A.G. Aganbegyan [3] and V.M. Polterovich [183] justify the need to create a coordinating body, the purpose of which will be to ensure growth and reform the economy.

In a number of countries, for example: China, Germany, India, there is a special body - "State Committee on Sustainable Development", which is responsible for the development of draft programmes.

It is necessary to create a single centre in Russia, which will be vested with the functions and powers to develop programmes of strategic content and determine the factors of growth, their provision, as well as macroeconomic parameters and mechanisms for their practical implementation. This body, guided by the development paradigm, should: determine both the growth strategy and economic policy, which in turn supports growth; within the framework of economic policy and sectoral nature of growth, develop macro parameters of economic growth; distribute resources between the centre and regions, different sectors, paradigms, as well as detail the distribution of budgetary resources.

The Law on planning economic policy for growth as a basic economic institution should be instrumental in nature, being an effective organisational and legal instrument. It should contain the strategic targets of economic growth policy and its main directions, include the following institutional parameters that define the framework of human behaviour, rules of behaviour and interaction of economic actors:

- institutional levels of economic growth policy and the main directions of their strategies;
- procedures for developing and harmonising strategic targets of economic growth policy, their structure, which should include both macroeconomic targets and sectoral targets;
- the combination of targets of economic growth policy and responsibility for achieving these targets;
- the instruments applied at each institutional level of economic growth policy;
- the combination of instruments applied at each institutional level of economic growth policy with the targets of economic growth policy and among themselves;

- the authority that is responsible for the work of the relevant executive authorities and economic actors in the process of strategic planning of economic growth policy and coordinates their activities; the targets, functions, responsibilities and rights, and the mechanism of functioning of this authority;

- stages of formation and implementation of strategic medium-term plans of economic policy as a link between long-term and annual plans of economic growth policy;

- measures to ensure the implementation of the Law.

The formation of the Law on planning economic policy for growth is an optimisation task, i.e. the Law should optimise the application of tools by individual institutional levels of economic growth policy in achieving macroeconomic objectives.

Based on the algorithm of strategic management defined in the Law "On strategic planning in the Russian Federation", it is possible to identify four institutional levels, which should be the focus of the Law on planning economic policy for growth. The first institutional level is the strategic level, which includes strategic planning documents and Presidential Decrees defining strategic parameters of economic growth. This level should establish the interaction of the backbone strategic planning documents, Presidential Decree № 474 of 21.07.2020 "On the national goals of development of the Russian Federation for the period until 2030", Presidential Decree № 204 of 07.05.2018 (as amended on 21.07.2020) "On the national goals and strategic objectives of development of the Russian Federation for the period until 2024" with the documents regulating economic growth policy and its institutional levels, including monetary and fiscal policy. It is necessary to bring the actual development trajectory as close as possible to the target benchmarks.

The second institutional level, to which the Law should be oriented, should be represented by forecasts of economic development, which have a scenario character. Forecasts should be the substantiating materials for the Law on planning economic policy for growth. It is necessary to organically link the forecasts with economic growth policy programmes.

The third institutional level - state programmes and plans, which are the basis for the implementation of strategic objectives through institutional changes, measures, budget and private financing, and bank lending. Programmes in various formats, including the format of federal target programmes, should become the drivers of the economic growth policy and the necessary transformations.

The fourth institutional level, to which the Law on planning economic policy for growth as a basic economic institution should be oriented, should be represented directly by the subjects of the economy, who are the object of state economic policy, as well as active subjects of economic policy planning, as they implement their strategies and plans. The framework of human behaviour, rules of conduct and interaction of economic subjects are the most important level on which the proposed Law should be oriented.

Of great importance in the development of the Law on planning economic policy for growth is to ensure meaningful interconnection and conjugation of the strategic planning and economic policy planning documents being developed. It is necessary to ensure meaningful interfacing of such strategic planning documents as forecasts, plans and programmes. In forecasts on economic growth policy, it is advisable to present possible scenarios of development of forecasted objects, while in the strategy it is necessary to build a target scenario based on the target benchmarks and objectives of economic policy and possible instruments of institutional levels.

Only in the framework of a systematic, centralised organisation can the activity of economic policy planning structures become successful, and it is necessary to have a well-functioning vertical interaction between levels of government and horizontal cooperation with public organisations, institutions and enterprises.

Acceleration of implementation of strategic planning tools in the process of economic policy implementation is of particular importance. The incorporation of long-term monetary and fiscal policy into the process of strategic planning is one of the priority tasks in the direction of readjusting the established practice of strategic planning in the Russian Federation and implementation of Federal Law 172 - FZ "On Strategic Planning in the Russian Federation" in full. Monetary and budgetary strategies should be a real tool, the reflection of the results of which should be manifested in the variants of the socio-economic forecast. Determination of financial resources that can be directed to achieve the targets of socio-economic development and economic growth should be the goal of the monetary policy strategy and budget strategy. It is necessary to strengthen the programme approach to budget planning, which increases the efficiency of the implemented expenditures, as it is with such an approach that the direction of budgetary funds has strictly defined targets. Deep and clear elaboration of targets and indicators, as well as financial and resource support is of great importance in the process of developing the monetary policy strategy and budget strategy. It is necessary to strengthen coordination of monetary, fiscal and exchange rate policies, monitoring and forecasting of monetary indicators and key parameters of exchange rate policy, synchronisation of joint research between the Ministry of Finance, the Bank of Russia and the Ministry of Economic Development of the Russian Federation on the main issues of economic growth policy, as well as their economic models.

It is of great importance not only to harmonise the relevant parameters (targets and instruments) of the policy in the short-term period and the benchmarks developed within the framework of strategic planning, but also to correct long-term forecasts and strategic documents taking into account the actual conditions of economic dynamics. It is necessary to increase the degree of interconnection between the parameters of state socio-economic planning and planning of individual policy areas and monetary planning, to ensure a clear relationship between policy areas, including monetary policy, and long-term forecasts and strategy of socio-economic development.

2.3 Monetary theory of growth policy: basic principles and methodology

As part of the development of the theory of economic growth policy, the study developed an institutional monetary theory of growth policy, which combines a systemic, dialectical, evolutionary and interdisciplinary approach to the study of monetary instruments, their allocation to the targets and structure of the economy in order to achieve economic growth. Institutional monetary theory of growth policy is presented by a number of basic provisions, has its own methodology.

The main provisions of the developed institutional monetary theory of growth policy are presented in Table 2.1.

Table 2.1 - Main provisions of the institutional monetary theory of growth policy

Provision	Provision's matter
On the institutional content of the monetary theory of growth policy	Rules, institutions, the structure of institutions affecting the institutional parameters of growth, rules of interaction between the subjects of the economy are taken into account.
On the institutional levels of growth monetary policy	The demand for money is considered from the perspective of institutional levels of monetary growth policy and the spread of money supply across the economy. Three interrelated institutional levels of monetary growth policy are presented: basic institutions; institutional mechanism; institutional infrastructure.
On structural growth monetary policy	Institutional monetary theory of growth policy takes into account the impact of a set of instruments distributed by the objects of the structure of the economy (sectors and aggregate equivalents of paradigms) in contrast to the limitations of neoclassical theory in conducting monetary policy in an aggregated form according to the type of neoclassical model, as well as previous studies by considering a single instrument in the impact on economic growth. Structural distribution of monetary instruments of economic growth policy by targets and structure of the economy.
On the structural distribution of the power of the influence of money supply components on economic growth	The impact of money supply on economic growth is distributed. Different components of the money supply make different contributions to its dynamics, and also have different effects on the GDP growth rate, inflation rate and the integral effect of economic growth policy.
On the modification of the Mundell-Fleming model	The inclusion of the macroeconomic target "inflation rate" in the basic Mundell-Fleming model modifies and optimises it to the modern growth monetary policy and Russian reality.
On the extended principle of J. Tinbergen	Expanding the range of applied instruments, based on the original condition of J. Tinbergen's "targets-instruments" principle, makes it possible to select appropriate instruments for each case to influence changes in the macroeconomic situation and the structure of the economy.
On institutional corrections to growth monetary policy	The development of the necessary sectors and paradigms requires not only monetisation, but also institutional adjustments to target monetisation to these very structural elements for their further

Provision	Provision's matter
	development, which follows from the institutional monetary theory of growth policy.

Source: developed by the author

In the formation and implementation of economic growth policy, first of all, the state of monetary institutions and economic structures; the need for money and the rules of behaviors and interaction of economic actors should be taken into account [24]. The methodology of institutional monetary theory of growth policy developed by the author as part of the development of the theory of economic growth policy contributes to the solution of this problem.

Unlike the traditional ones, this methodology is based on the integral or total application of methods, both known and proposed by the author, which allow us to distribute monetary policy instruments in conjunction with fiscal policy instruments by the targets and structure of the economy, effectively using the available institutions and resources to achieve economic growth. The methodology of the institutional monetary theory of growth policy within the framework of the theory of economic growth policy includes a set of methods and models (Fig. 2.3).

The developed methodology of the institutional monetary theory of growth policy includes such theoretical components as the model-scheme of interdependence of types of state economic policy in influencing economic growth; schematic diagram of the Law on planning economic policy for growth as a basic economic institution; the model-scheme of managing the movement of monetary resources through economic growth policy within the framework of the institutional approach; institutional model of monetary growth policy; a model of money circulation between the subjects of the economy, regulated by the central bank, which determines the economic boundaries of monetary growth policy; the model is a scheme of impact of institutional levels of economic growth policy interacting with monetary policy instruments on the monetary and capital components.

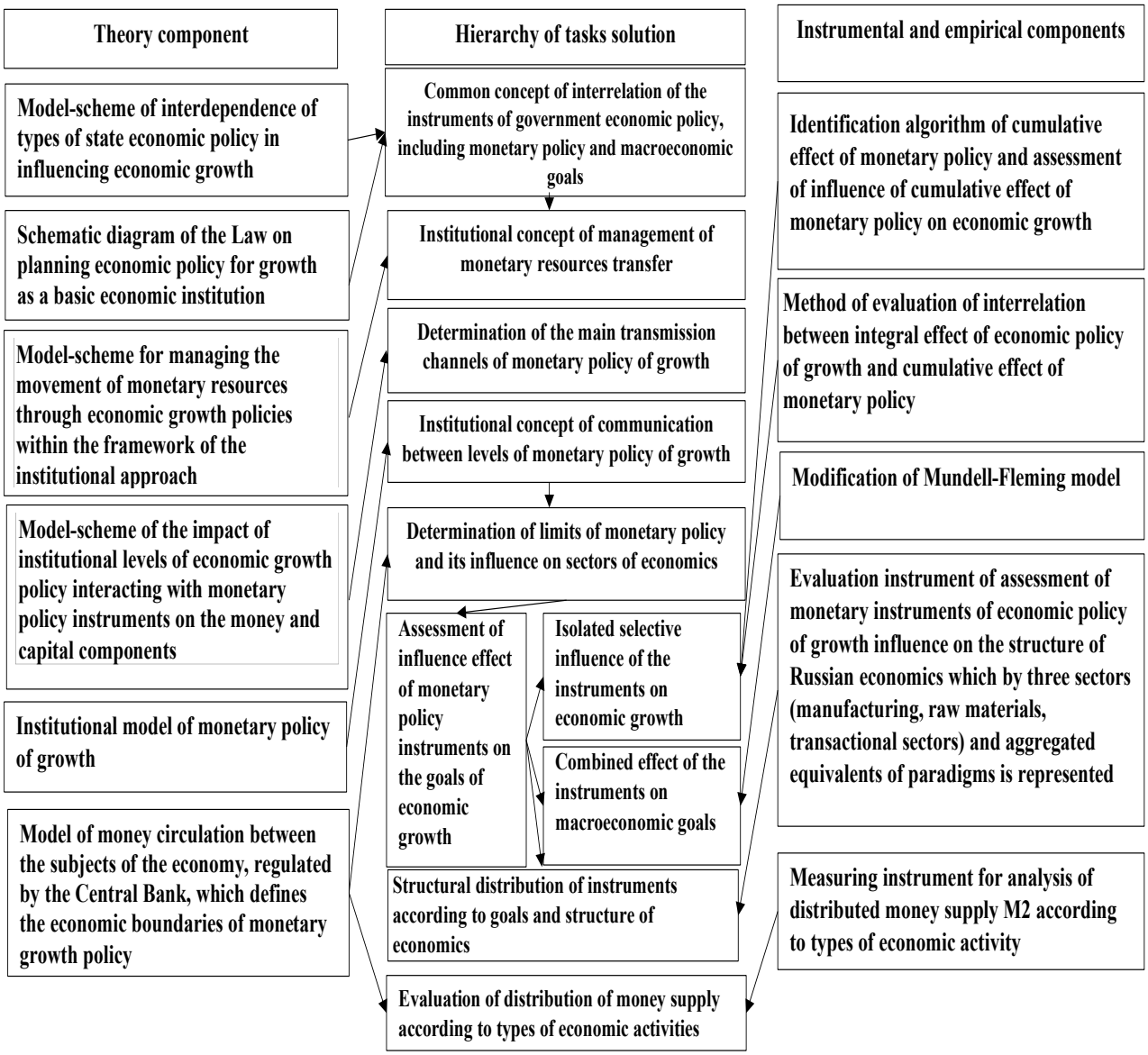

Figure 2.3 - Conceptual diagram of the developed methodology in relation to the hierarchy of tasks to be solved

Source: developed by the author

The developed model-scheme of managing the movement of monetary resources through economic growth policy within the framework of the institutional approach allows us to study the process of management by the Central Bank and the Ministry of Finance within the framework of economic growth policy as a source of institutional change, as well as stabilisation and adaptation of the economic system to changing conditions.

In Figure 2.4 in the model-scheme at the heart of governance are two institutions - the Central Bank and the Ministry of Finance, which manage the movement of monetary resources within the framework of economic growth policy. Economic growth policy in turn is the source of institutional change and the basis of decision rules as a result of adaptation to changing economic conditions [24].

Decision-making rules either directly or through the change of the property regime as a rule determining the conditions of access to resources lead to institutional adjustments or institutional constraints. It should be clarified that institutional constraints can be an element of institutional adjustment; in the study they are singled out separately for the greatest clarity and depth of presentation. After making a decision on institutional adjustments or restrictions, the necessary instruments of monetary and fiscal policy are selected, which, when applied, affect the behavioural patterns and reactions of agents (the framework of human behaviour). Further, the behavioural patterns and reactions of agents can affect the distribution of money directly or through loans [24]. Both options will lead to changes in the costs of owning and disposing of money, for example, when the key rate changes. Further, the coordination effect and the distributional effect of economic growth policy may arise.

The coordination effect of economic growth policy in managing the movement of monetary resources consists of three components. The first is the achievement of macroeconomic targets; the second is the effect of impact on the banking system and the foreign exchange market [20], for example, such as the reduction of speculative capital and the formation of the material basis for growth; the third is the effect of coordination of the social system, manifested in the service of settlements, payments, the implementation of economic functions through the provision of money. The distribution effect of economic growth policy in managing the movement of monetary resources consists in changing the structural parameters of the economic system, creating long-term conditions for economic growth. After the emergence of the coordination effect or the distribution effect, or both, there is stabilisation and adaptation of the economic system to changing conditions.

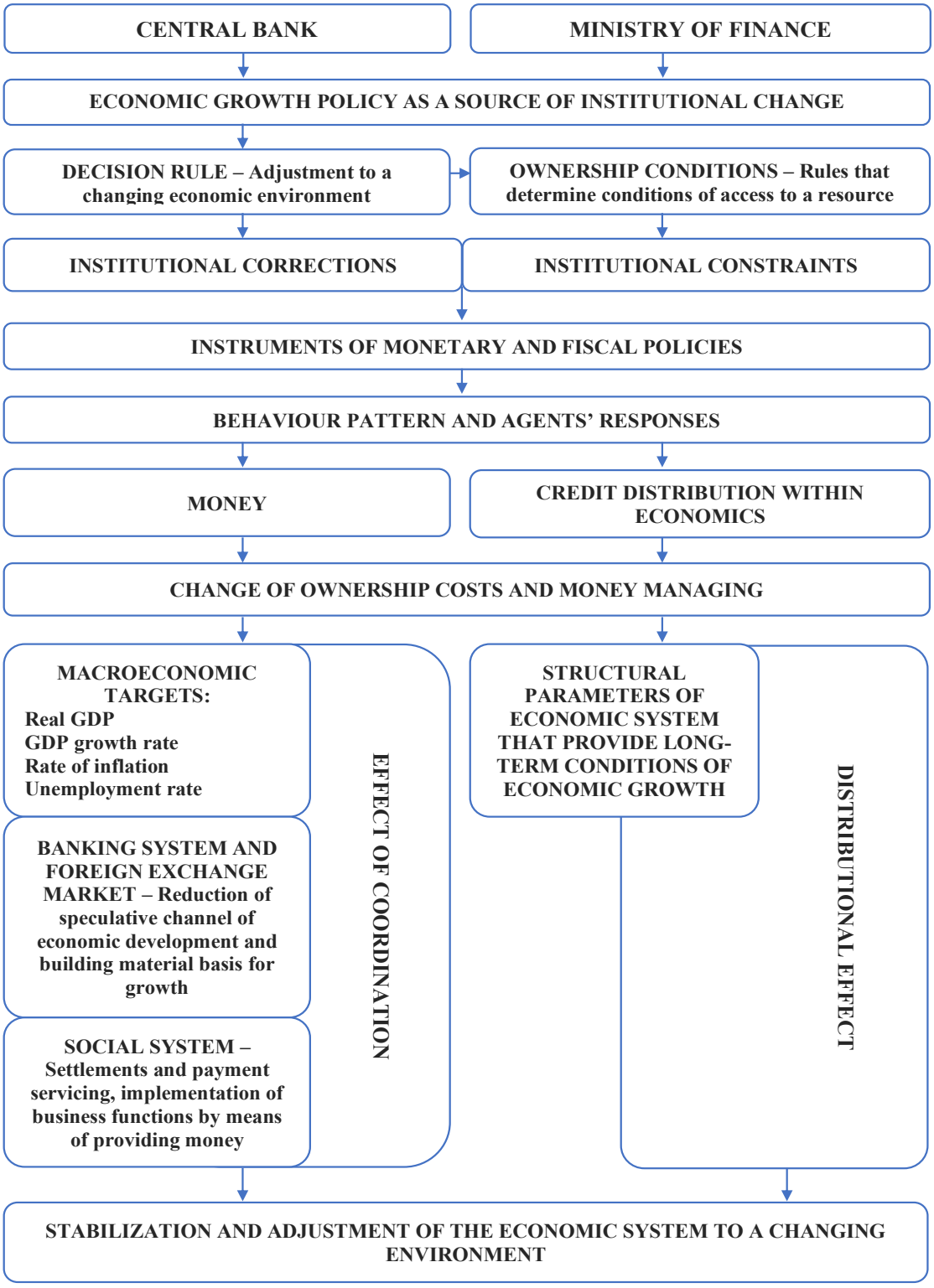

Figure 2.4 - Model-scheme for managing the movement of monetary resources through economic growth policies: an institutional approach

Source: developed by the author

Further, we will present the developed institutional model of monetary growth policy, which allows us to study its internal content, its institutional levels, their interrelations for achieving economic growth.

Within the framework of the institutional monetary theory of growth policy it seems necessary to supplement the conceptual apparatus of institutional theory with the concept of "institutional level of monetary growth policy", which is understood as an element of the institutional structure of monetary policy, including an ordered set of interrelated and interacting institutions (subjects, formal and informal norms, incentives, restrictions and instruments) that affect the achievement of economic growth and other macroeconomic targets.

The institutional model of monetary growth policy is a set of institutional levels that ensure, in conjunction with fiscal policy, the achievement of economic growth. When determining the institutional levels of monetary growth policy, it is necessary to take into account their sufficiency, integrity and interaction with each other.

The institutional model of monetary growth policy is represented by three institutional levels: basic institutions, institutional mechanism and institutional infrastructure of monetary growth policy. The institutional model of monetary growth policy is presented in Figure 2.5.

The first institutional level of monetary growth policy is basic institutions. Money is the main basic institution of monetary growth policy. The demand for money is considered from the perspective of the institutional levels of monetary growth policy and the spread of money supply through the economy [22].

Quantitative theory is the most authoritative and oldest hypothesis about the influence of money on economic processes. Later, J.M. Keynes created a macroeconomic model that combined the monetary and real sectors on a synergetic basis, where the main instrument of unification was the rate of interest. The interrelationship of economic variables proposed by Keynes, which is today the basis of the transmission mechanism of traditional monetary policy, is based on the recognition of the special role of money in the economy.

Money as a special economic institution is studied in the works of Y.V. Bazulin [39], V.E. Gavrilova [58], A.Y. Gribov [82], I.R. Koschegulova [123, 124], V.E. Krolivetskaya, O.S. Sukharev. A.A. Porokhovsky [188] reveals the phenomenon of money.

Figure 2.5 - Institutional model of monetary growth policy (Sheet 1 of 4)

Source: developed by the author

INSTITUTIONAL INFRASTRUCTURE OF MONETARY GROWTH POLICY

ACCOUNTING AND REPORTING

Institutions of accounting infrastructure:	**Bank accounting and reporting:**		
- Central depository; - Depositories; - Specialized depositories; - Registrars.	Reporting of credit institutions	Consolidated financial statements prepared in accordance with International Financial Reporting Standards, with an audit report of an independent auditor	Annual financial statement of the Bank of Russia

INSTITUTIONAL INFRASTRUCTURE OF MONETARY GROWTH POLICY

INFORMATION INFRASTRUCTURE

1. Information technology infrastructure:
IT institutions:
- IT companies;
- Payment systems;
- Clearing institutions;
- Foreign exchange.

Computer appliance and technologies for gathering storage, processing, and transfer of information:

Financial technologies:
- RegTech;
- SupTech;
- Big Data и Smart Data;
- Mobile technologies;
- Artificial intelligence, robotics and machine learning;
- Biometrics;
- Distributed ledger technology;
- Publicly available application programing interface (Open API).

Financial infrastructure:
- Remote identification platforms;
- Faster payment service;
- Marketplace for financial services and products;
- Platform for registration of business deals;
- Advanced payment system of the Bank of Russia;
- National system of payment cards;
- Transfer system of financial information;
- End-to-end Client ID;
- Platform for cloud services;
- Platform based on distributed ledger technology.

2. Information and communications infrastructure:
- Information and communications system of the Central Bank;
- Information processing of the Central Bank;
- Integrated management system of telecommunications and information resources (IMS TIR) of the Bank of Russia.

3. Information and analytics infrastructure:
Information and analytics institutions:
- Credit rating agencies;
- Consulting firms;
- Credit bureaus;
- Statistical agencies;
- Viewpoints of financial experts and analysts;
- Accounting network;
- Assessment companies.

Information and analytics tools:
- Information centers, subsystems;
- Data banks and knowledge base;
- Forecasts and analytic data of the Central Bank, Ministry of Finance, Ministry of Economic Development;
- Communication systems;
- Management centers.

4. Critical information infrastructure:
- Information system of credit and finance sphere;
- Information and telecommunications networks of credit and finance sphere;
- Automated control systems of technological processes of credit and finance sphere.

5. Information security and cyber resilience infrastructure for:
- Computational infrastructure;
- Application software, application layers;
- Data processing technologies, level of technologies;
- Financial technologies.

Figure 2.5 (Sheet 2 of 4)

INSTITUTIONAL INFRASTRUCTURE OF MONETARY GROWTH POLICY

RESEARCH AND INNOVATION INFRASTRUCTURE

CENTRES FOR RESEARCH AND INNOVATION INFRASTRUCTURE

Centers of technologies transfer; Centers for intellectual property management; Research and education centers; Innovation consulting centers; Innovation and technological centers; Innovation activities centers, including "Skolkovo"; Scientific centers.

DEPARTMENTS AND OFFICES OF RESEARCH AND INNOVATION INFRASTRUCTURE

Department of innovation development; Postgraduate and magistrate departments; Departments for research activity; Departments for cooperative relations with industry.

INSTITUTES AND SCIENTIFIC SCHOOLS

Research institutes; Innovation technologies institutes; Innovative institutes; Scientific schools.

RESEARCH AND PRODUCTION FACILITIES

Laboratories; Techno parks in the sphere of high technologies; Business incubators; Special economic zones of introducing technical researches; Collective use centers; Technology transfer center.

STRATEGIC INFRASTRUCTURE

- National programs and strategies of economic development;
- Forecast of economics development;
- Government planning that provide implementation of strategic tasks;
- Strategies and plans of economic entities.

Figure 2.5 (Sheet 3 of 4)

INSTITUTIONAL INFRASTRUCTURE OF MONETARY GROWTH POLICY

HUMAN RESOURCES AND EDUCATION INFRASTRUCNURE

Management human resources and educational infrastructure	**Financial social work and financial literacy**
- Bank of Russia University as the structural division of the central administrative office of the Bank of Russia; - Training of specialists, managers, analysts, experts (In institutions of higher education); - Professional development; - Master classes; - Coaching (trainings).	- Educational programs for schools and institutions of higher education; - Educational events and web conferencing; - Vocational retraining and professional development of facilitators, teachers, lecturers in federal and regional training centers; - Information materials of the Central Banks; - Fincult.info.

REGULATORY AND LEGAL INFRASTRUCTURE

- Constitution of the Russian Federation
- №86-FZ on 10.07.2002 “On Central Bank of the Russian Federation (Bank of Russia)”
- №395-1-FZ on 02.12.1990 «On banks and banks activity»
- **Economic growth policy planning Law**
- Monetary policy guidelines for 2023 – 2025/ 2024-2026
- №3894-U on 11.12.2015 “On refinancing rate of Bank of Russia and key rate of Bank of Russia”
- №6387-U on 30.03.2023 “On mandator reserve requirements”
- №5930-U on 15.09.2021 “On ways and conditions of secured credit institutions refinancing”
- №753-P on 11.01.2021 “On compulsory reserves of credit institutions”
- and others.

Figure 2.5 (Sheet 4 of 4)

O.S. Sukharev states that money is "a key tool for organising interrelationships in the national economy" [229, p.141]. They, as well as monetary policy, influence the formation of economic structure. Of great importance is the regulation of mechanisms for the flow of money at the right speed from one sector of the economy to another.

The types of money, its issue [21,22], the structure of money supply and the dispersion of money supply across sectors of the economy are at the heart of achieving macroeconomic targets in the institutional monetary theory of growth policy. Money as the basic institution of monetary growth policy includes: cash (banknotes and coins); non-cash money (transferable deposits (balances of funds of organisations and individuals on settlement, current and other demand accounts, including accounts for

settlements using plastic cards, opened with the Central Bank and other credit organisations), other deposits (balances of funds of organisations and individuals with the Central Bank and other credit organisations on time deposit accounts and other funds attracted for the term)); digital money (settlement instrument for legal entities and businesses).

Currently, the issue under discussion is the creation of digital currencies - Central Bank obligations, which are denominated in national currency, have a digital representation and are capable of being a means of measuring and preserving value (accumulation), payment and used directly by legal entities and individuals. The impact of CBDC on the banking sector and monetary policy directly depends on the demand for the new instrument by legal entities and individuals.

The impact of digital money on the transmission mechanism of monetary policy is assessed in different ways. According to the report of the Bank for International Settlements [328], the consequences of the issuance of digital currency by a central bank for the implementation of monetary policy, as well as its impact on transmission mechanisms depend on the extent to which the system design provides for wide access to digital currency, whether there is interest income on digital currency.

T.Mancini-Griffoli and M.S. Martinez [446] in their study point out that the introduction of central bank digital currency, most likely with the right design will not have a significant impact on the mechanisms of the main channels of monetary transmission, such as the interest rate channel, credit channel, bank lending channel, exchange rate channel. Although, due to changes in the balance sheets of economic agents due to CBDC custody, possible reduction in demand for cash, bank deposits and other assets, adjustment of operational procedures may be necessary. If interest income will be paid on CBDC, its issuance may have the greatest impact on the interest rate channel of monetary transmission. Monetary authorities can influence the behaviour of economic agents by changing the appropriate rate. Also, the role of the bank lending channel may be strengthened with the growth of the share of bank financing at the expense of non-deposit resources. It can be assumed that the CBDC issue will not affect the performance of the credit channel, as well as the exchange rate channel, as the introduction of CBDC interest will insignificantly affect the relative attractiveness of foreign and domestic assets and the prices of market assets. Moreover, there may be a negative impact of CBDC issue on the efficiency of traditional monetary transmission mechanisms. With less involvement of banks as intermediaries in making payments, the demand for reserves may decrease significantly, which will lead to weakening of the central bank's control over interest rates in the interbank lending market, hence in the economy.

The issuance of digital cash and the opening of digital accounts by central banks have implications and significance. The emergence of digital cash may allow new monetary policy instruments to be applied, including possible significant reductions in interest rates.

Digital accounts may become a tool for implementing subsidising stimulus interventions, which may consist of gratuitous payments to households and organisations, subsidies, compensatory payments,

indexation and so on. When implementing subsidising stimulus interventions for all economic agents, digital cash can be a tool to increase aggregate demand.

Digital cash accounts have significant advantages in making the financial system more attractive and secure. Settlement by citizens and organisations directly in central bank money reduces the concentration of liquidity and credit risk. Moreover, as a risk-free alternative to bank deposits, moving from bank deposits to digital money reduces the need for escrow.

Expansion of the monetary base at the expense of CBDC can increase the efficiency of instruments of influence on interest rates in the economy. At the same time, the conduct of monetary policy with an increase in the balance sheet of the central bank will become more complicated due to the increase in the volume and number of operations and their maturity. Changes in the capital market and debt market may be accompanied by an increase in the volume of assets on the central bank's balance sheet. Reduction in the size and changes in the structure of banks' liabilities may result from a decrease in the size of deposits due to the growth of CBDC, which will lead to a decrease in the cost of funding and compression of both assets and lending.

The absence of interest, according to E.V. Sinelnikova-Muryleva [203, p.154], should not have a significant impact on the banking sector, as well as the ways of implementation and effectiveness of monetary policy, since CBDC, in fact, will become a new component of the monetary base.

Other forms of digital assets, such as those similar to cryptocurrency, could also be a variant of digital money. Under the guidance of the UK central bank, researchers at University College London have developed a system of their own digital currency, similar to bitcoin-RSCoin. The system is based on distributed ledger technology, but RSCoin, unlike bitcoin, is centralised in the system of the Central Bank, which acts as a regulator. This payment system uses cryptography to create digital money that cannot be counterfeited, and transaction verification is done on a blockchain where the movements of the digital currency are recorded. The system allows unlimited issuance of digital tokens.

At the same time, in early 2019, the CEO of the Bank for International Settlements, A. Carstens, [327] in a speech, stated that there is no need for CBDC issuance at this time. He believes that, as a step into the unknown, it could lead to fundamental changes in financial stability and the monetary system. He noted that the effect of introducing CBDC is to transform the banking system from a two-tier to a one-tier system, which has historically shown to be unsustainable. Moreover, the effect of introducing CBDC could be to make it more difficult to exchange money and for the banking system to operate during "bank raids" and financial crises. The introduction of a central bank digital currency could also pose challenges for monetary policy by affecting the aggregate demand for money and the relative preferences of digital currency and cash.

In the work of M.K. Brunnermeier, D. Niepelt [321] demonstrated the absence of negative impact on financial stability of the SBDC on the basis of general equilibrium model. The authors assume that

in case of outflow of depositors' deposits from the banking system, commercial banks can replace the loss of funding at the expense of the central bank. That is, the amount of funding will not change, but sources of funding will be redistributed.

The Central Bank of Canada [358] in its report mentions such a possible threat to the CBDC issue as the reduction of central bank revenues from the senorage, "it is equal to the value of cash in circulation multiplied by the current interest rate, less the cost of producing and distributing banknotes" [203, p.156]. Thus, the value of the senorage decreases when the volume of cash in circulation decreases.

It is also possible to highlight problems of a technical nature that relate to the issuance of CBDCs, such as legislative restrictions, which are related to the right to issue digital money by the central bank, legitimacy as a legal tender of CBDCs. Formally, until the legislation is amended, the central bank cannot issue its own digital currencies. It is also necessary to legislate the types of agents who can access CBDC, to solve the issues of interest payment and taxation. It is necessary for monetary authorities of different countries to coordinate their work in the field of CBDC legal regulation, as differences in legal acts may lead to the inflow or outflow of resources during periods of financial instability.

An important issue in CBDC issuance is the mitigation of security risks. This initially requires the issuance of a small volume of CBDC with parallel circulation of fiat money to test the various characteristics of CBDC and its security.

Thus, CBDC have a good potential as a new effective tool in the hands of monetary authorities to influence the real economy through the interest rate and banking channels of monetary transmission.

As S.Y. Glazyev notes, "the new monetary and financial architecture should also cover settlements in digital currency instruments using blockchain methodology... in the future, it is possible to issue a global settlement currency in digital form, linked to a basket of national currencies of coalition members, gold prices and major exchange commodities" [76, p.12].

The basic institutions of monetary growth policy are central banks, development banks and commercial banks. S.A. Andryushin [11, p.13] notes that credit channels of both central banks and commercial banks should become the main sources of money in the economy.

Central banks are the monetary policy authority, which has discretionary powers in the implementation of monetary and exchange rate policies [31]. Its competence also includes macroprudential policy, microprudential regulation and financial market development policy.

Development banks can become the basic institution of monetary policy of growth, if we go beyond foreign economic activity and create a network of development banks, the purpose of which will be to promote economic growth in parallel with the financial support of the state. The idea of creating a system of development banks for refinancing the real sector is adhered to by V.V. Ivanter, M.N. Uzyakov, M.Y. Ksenofontov [110, p.12].

Commercial banks are the backbone of the entire economic system. They create links between the capital of the population, sectors of the economy and the government, form the flow of money between economic entities and sectors [367, 368].

The importance of stabilising the banking system, increasing the capacity of the Russian banking system and credit within the framework of economic policy was noted by S.Y. Glazyev [70, pp. 48-51; 67, p.128]. The institutional efficiency of the credit-banking and financial system in the economic policy, the possibilities of development of the banking sector, financial institutions as determining the future rate of economic growth, the need to force the banking system to work in the real sector of the economy were considered by O.S. Sukharev [228, p.56; 219, p.89]. V.M. Gilmundinov [60, p.258-259] also notes the importance of creating additional incentives for commercial banks to increase investment lending. O.L. Rogova calls banks an important institution of the economy, which determines its development.

The author agrees with the opinion of O.L. Rogova [194, 195] that the success of monetary policy largely depends on the activity of the banking system, the banking sector should become a conductor of monetary policy; it is important to form such conditions of banking activity, under which credit institutions will be interested in promoting economic growth [367,368]. The institution of banks, transactional efficiency of money circulation, credit operations ensure the achievement of macroeconomic targets, economic growth [20, 26, 368]. The reference point of bank capital cannot be exclusively the financial sector of the economy, because, firstly, ensuring the efficiency of banks' assets is the rate of return on capital invested in specific objects; secondly, financial markets are speculative and do not create real values, therefore, there is no material basis of capital and there is a stimulation of inflation in the economy. It can also be stated with certainty that the existence of a strong banking system is impossible without industry and various sectors of the economy, which create high added value when using long-term bank credit.

The role of economic actors on whom the impact of monetary policy is directed is noted by many scholars. Transactional sector, non-transactional sector, households are the economic subjects of monetary growth policy.

V.V. Ivanter points to the need for the flow of financial resources that solve the problem of investing priority sectors of the economy [109, p.6-7]. O. S. Sukharev [227, p.168; 228, p.54] notes that the quality of economic policy, the application of its tools is determined by the adaptability of agents of economic activity and their perception of structural crises, inefficient management, changes in institutional ties; changes in the basic motivations and preference functions for different groups of agents; great importance is given to the sectoral spillover of resources. A.G. Aganbegyan [5, p.6-7] proposes the implementation of "monetary-industrial policy", which means the interrelation of monetary approaches with industrial priorities, the consequence of which will be easier and cheaper access of priority sectors of the economy and industries to long money. O.L. Rogova [194] notes the dependence

of the content of monetary policy and instruments of its implementation on the reaction of microsubjects of monetary and financial relations.

The basic institution of monetary growth policy is the framework of human behaviour, the rules of behaviour and interaction of both policy subjects and economic subjects, which determine both the institutional mechanism of monetary growth policy and the adaptability of economic subjects to economic policy. The choice and motivation of policy subjects and economic actors play a major role in the institutional model of monetary growth policy. Rationality, adherence to their interests are the basis for the actions of subjects (according to O. Williamson).

V.E. Dementiev calls "confidence in the future" a factor of economic development [92]. M.V. Ershov introduces the concept of "positive psychological environment" [105] as a factor of economic growth. Indeed, uncertainty reduces the activity of business and people, hence inhibits economic growth. And it is through the consistent use of financial resources that even "positive psychological moods and expectations" can be achieved.

O.I. Lozina, V.N. Rogozhnikova, L.A. Tutov [136] point out that the model of a creative person in the economy can be applied as an instrument of socio-economic policy.

O.S. Sukharev [222, pp.91-93; 219, p.96] defines "structural formulation of the problem of planning and implementation of monetary policy", which means the formation of crediting channels and distribution of money supply between sectors of the economy and by types of activity, taking into account the interrelation of financial and various commodity markets.

Let us present a model of money circulation between the subjects of the economy regulated by the Central Bank, which defines the economic boundaries of monetary growth policy (Fig. 2.6).

The Central Bank is the most important participant of the financial system and in fact stands at its foundations [23, 31]. Within the framework of monetary policy of growth, the Central Bank redistributes the money supply between institutions, subjects of the economy, influences the circulation of money, being a source of liquidity, as well as absorbing it if necessary [19]. The Central Bank through the instruments of monetary policy in conjunction with the instruments of macroprudential policy and microprudential regulation redistributes funds between the financial market and commercial banks [21, 22]. Two circulations of money between the subjects of the economy arise, which are interconnected, affect the liquidity of the same subjects of the economy (transactional sector, non-transactional sector and households) and are regulated by the Central Bank. It is the continuous, sufficient circulation of money of the financial market and commercial banks, which promptly redistributes the money supply between the subjects of the economy, regulated by the Central Bank, that determines the economic boundaries of monetary policy for growth. Violation of redistribution of money supply between the subjects of the economy causes inflation and violation of economic equilibrium.

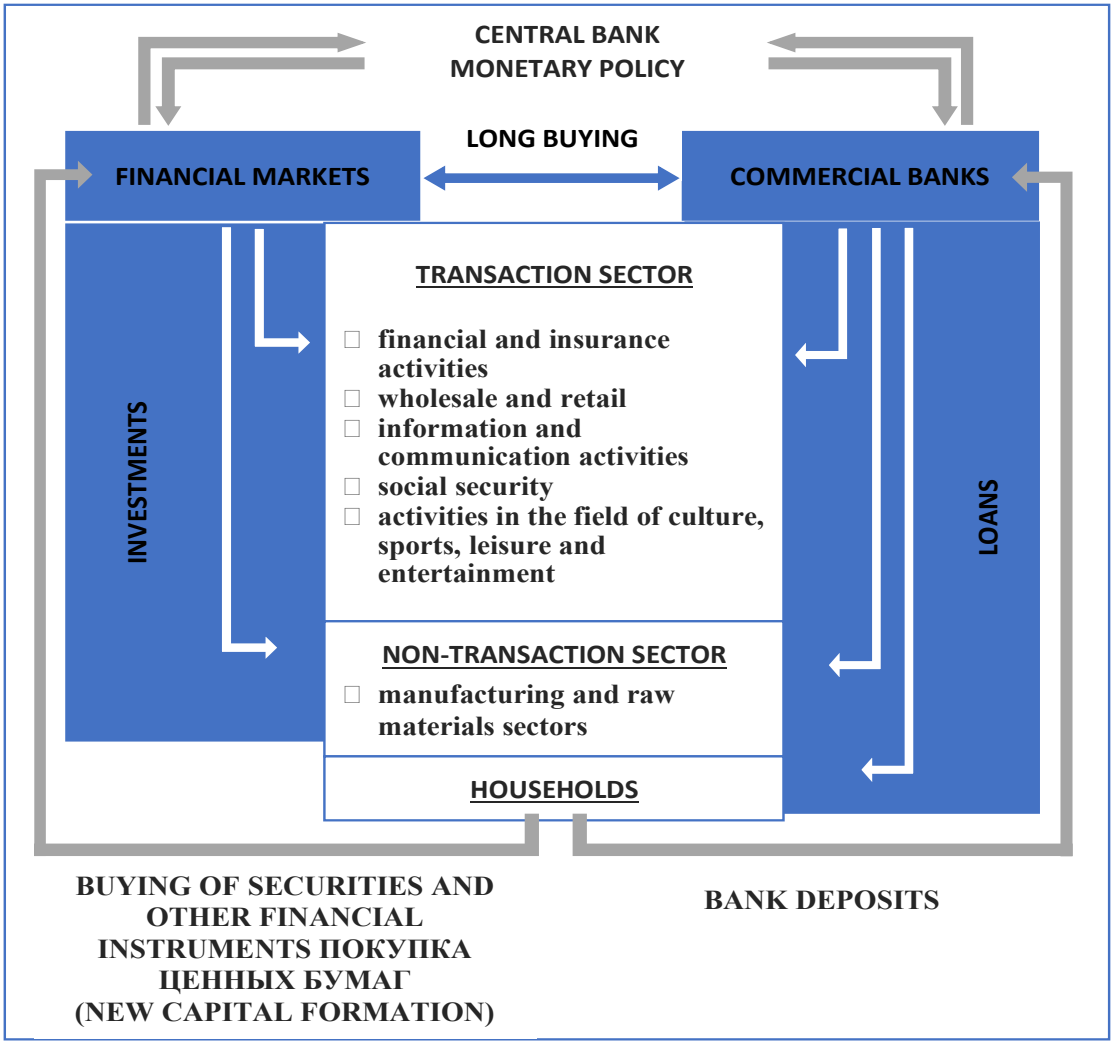

Figure 2.6 - The model of money circulation between the subjects of the economy, regulated by the Central Bank, which defines the economic boundaries of monetary growth policy

Source: developed by the author

At the same time, the indicators of development of economic entities, transactional and non-transactional sector and households show their indicator properties, which allow us to assess the effectiveness of the implementation of monetary growth policy.

It is important to take into account that, on the one hand, lending to households stimulates the growth of aggregate demand and economic growth in the short run. Moreover, according to the theory of permanent income, borrowing contributes to the smoothing of income fluctuations, and if these funds are used to improve housing conditions, education, investments in securities, as a rule, there is a positive long-term effect on economic growth. On the other hand, household debts in the long run lead to a reduction in production and consumption, increased unemployment and even greater decline in consumption, as well as to the likelihood of a crisis in the banking system [27].

At present, it is of great importance for the population to invest their cash income in the economy through the purchase of securities and other financial instruments. It is necessary to form various stimulating instruments that allow to involve savings of the population as investment resources in the economic turnover. The Bank of Russia makes a certain contribution to the formation of savings behaviour of the population [20]. Monetary policy, aimed at transferring the necessary impulses to the subjects of the economy, stimulates the optimal proportions of income-savings, savings-investments. A full-fledged infrastructure of monetary growth policy contributes to the activation of investment activity of the population.

Based on the presented model of money circulation between the subjects of the economy regulated by the Central Bank, which determines the economic boundaries of monetary growth policy, we will propose the concept of "structural monetary policy of growth", which is a type of monetary policy based on the theory of structural growth policy [216], with the aim of achieving a structural effect[53] through the application of a set of tools that affect the macroeconomic structure, the ratio of elements and their dynamics, optimisation of resource allocation, as well as the distribution of resources and credit.

Economic growth policy, including monetary policy instruments should influence the sectoral orientation of investment and credit in the transactional and non-transactional sectors, as well as in household lending. At the same time, it is necessary to eliminate the bias in favour of financial investments. It is not the growth rate of the economy per se that is of great importance, but the quality of the economy, the structural relations formed by the macroeconomic growth policy.

It can be concluded that only a full set of basic institutions of monetary policy working for the economy: money, the Central Bank, development banks, commercial banks, economic subjects and human behaviour framework, rules of behaviour and interaction of economic subjects can ensure the achievement of economic growth.

Based on the fact that the institutional monetary theory of growth policy developed in the framework of this study is based on the extended principle of J. Tinbergen's "targets-instruments", an important place is occupied by its institutional mechanism, which includes instruments, methods and measures, as well as the targets of monetary growth policy.

The instruments, methods and measures of monetary policy of growth will be presented in several levels:

1) traditional methods and instruments of monetary policy of growth: the central bank interest rate, refinancing of credit institutions, mandatory reserve requirements, setting benchmarks for money supply

[53] A change in economic structure that enables economic growth.

growth (monetary aggregates M2, M3 and monetary base), open market operations, direct quantitative restrictions, issuance of central bank bonds.

The traditional methods and instruments of monetary growth policy are closely related to the instruments of exchange rate policy, which are closely interrelated with the instruments of monetary policy: currency interventions, currency restrictions, currency regulation and control, exchange rate regime.

2) unconventional measures and instruments of monetary policy for growth:

- credit easing: lengthening credit maturities, lowering interest rates, lending on an uncollateralised basis; expanding the types of collateral backing central bank loans;

- quantitative easing: increasing the monetary base through direct purchases of government bonds by the central bank;

- qualitative easing: extending the maturity of securities held in the central bank's portfolio; large-scale purchases of non-government securities that increase the money supply in the economy while changing the composition of the central bank's assets;

3) structural monetary policy instruments that determine the contribution of the monetary policy instrument to the structure of the economy: targeted issuance, targeted loans, special refinancing instruments;

4) management of inflation expectations of economic agents: transactional and non-transactional sectors, households.

Traditional methods and instruments of monetary policy include, first of all, refinancing of credit organisations and interest rate changes.

The following economic schools considered the level of interest rate as the main instrument of monetary or monetary policy: J.M. Keynes (considered the interest rate as a phenomenon of the monetary economy as an intermediate goal of monetary policy); neo-Keynesians: R. Harrod (long-term reduction of the interest rate) and A.H. Hansen (reduction of the rate of interest); neoclassical synthesis of J.R. Hicks (interest rate in both monetary and real sectors); New Keynesianism (interest rate regulation in financial markets); DSGE - dynamic stochastic general equilibrium model (nominal central bank interest rate); Monetarism (change in discount rate); Neoclassical supply theory (interest rate as an instrument); real business cycle theory (interest rate regulation); post-Keynesianism (interest rate regulation tool); modern monetary theory (MMT) (short-term interest rate); new Austrian school (rates not below equilibrium rates); new institutionalism (monetary policy tool). Thus, practically all economic doctrines in one way or another include the central bank interest rate in the monetary policy toolkit.

However, the workability of the central bank interest rate as an instrument of monetary policy is increasingly questioned [19, 28, 37, 453]. A number of experts and scientists [13, p.11] point to the incomplete susceptibility of aggregate demand to the interest rate policy of the Bank of Russia, which is

associated with the insufficient transfer of money market interest rates to credit and deposit rates of households and non-financial sector organisations in the real economy in ruble and foreign currency equivalents.

More and more often it is said about the need to reduce the central bank interest rate to the level that corresponds to the profitability of the real sector of the economy [67, p.128], to implement a flexible monetary policy with a vector of interest rates from half a per cent for long-term loans for priority investment projects [72, p.74], or it is proposed to reduce real interest rates to 3-4% in the short term and 2% in the medium term [237, p.30-32]. However, all these measures to apply the interest rate instrument are more auxiliary than the main ones.

The monetary policy of growth is implemented when it is necessary to simultaneously ensure the structural modernisation of the economy and increase the living standards of the population [23], therefore, it should balance interest rates in such a way that a compromise between consumption and investment is ensured.

The change in mandatory reserve requirements as a necessary instrument of monetary policy was considered in neo-Keynesianism (R. Harrod considered them the basis of monetary policy, A.H. Hansen considered their necessary application in monetary policy), in monetarism and new monetarism, the new Austrian school. At present, mandatory reserves play an insufficient role as an instrument of monetary policy of growth, which requires a review of the potential of their application [280].

The use of monetary aggregates and monetary base as monetary policy instruments include J.M. Keynes (money supply growth affects the level of interest rate and investment, and at full employment also the price level); monetarists (regulating the growth rate of money supply in accordance with the GDP growth rate and is the main instrument of monetary policy); neoclassical economic theory; neoclassical supply theory; modern monetary theory (money issue); new Austrian school; new institutionalism (regulation of monetary aggregates as well as the velocity of money circulation).

Of the traditional methods and tools of monetary growth policy, the money supply and monetary base are becoming increasingly important. Many economists and scientists note the need to increase monetisation in order to ensure expanded reproduction in Russia, the chronic under-monetisation of the Russian economy [67, p.128]. V.I. Maevsky, S.Y. Malkov, A.A. Rubinstein and E.V. Krasilnikova [141, p.128] come to the conclusion that in Russia the result of intensification of the emission will be the acceleration of growth against the background of low inflation if it is accompanied by an increase in the monetisation ratio.

Open market operations as an instrument of monetary policy are proposed by such economic schools as: neo-Keynesianism (A.H. Hansen - open market purchase of government bonds); neoclassical synthesis (demand and supply management of financial assets); new monetarism (quantitative

benchmarks of asset redemption); and financial market control is also proposed as an instrument of monetary policy - post-Keynesianism and new institutionalism.

A relevant issue is the application of exchange rate policy instruments in the implementation of monetary policy within the framework of economic growth policy. For example, the Mundell-Fleming model considers the effectiveness of monetary and fiscal policy under different exchange rate policies. Foreign trade policy is also included in the model.

Russian scientists actively investigate the issues of the relationship between the exchange rate and economic growth. V.V. Ivanter [57, p.8-9] notes the need to ensure the stability of the exchange rate at an undervalued level in order to create conditions for the transition to investment growth. O.L. Rogova [194] notes that the dominant basis of the monetary policy toolkit is to ensure the stability of the national currency and its functional activity. V.M. Polterovich and V.V. Popov [184, p.195] point to the maintenance of a low and stable real exchange rate as one of the necessary conditions for the activation of modernisation of the Russian economy. The importance of a gradual strengthening of the ruble exchange rate, which will increase the profitability of the secondary and tertiary sectors, is noted by M.V. Ershov, A.K. Moiseev and E.Yu. Sokolova [104], gradual stable strengthening of the ruble and its convergence with the purchasing power parity will form guidelines for investors and make low profitability more acceptable; the appreciation of the ruble will increase the welfare of citizens, lead to the growth of domestic demand.

Thus, the combined, interrelated application of traditional methods and instruments of monetary policy and exchange rate policy instruments by the central bank increases the effectiveness of monetary instruments of growth policy.

In recent years, scholars have been actively discussing the possibility of adding unconventional measures and instruments of monetary policy to the usual toolkit of central banks. The problem is that they should be coordinated with other measures and built into the growth monetary policy framework. In order to maintain macroeconomic stability, central banks have used unconventional monetary policy measures such as government and private bond purchases, large foreign exchange interventions and direct central bank lending to the private sector.

Three groups of unconventional monetary policy measures and instruments are included in the institutional mechanism of monetary growth policy: credit easing, quantitative easing, and qualitative easing.

The decision to include unconventional measures and instruments in monetary policy depends on the peculiarities of socio-economic development of the country and on the objectives of a particular central bank and assumes that the application of unconventional measures and instruments will not be on a permanent basis, but under specific circumstances.

Structural instruments of monetary policy determine the contribution of the monetary policy instrument of growth to the structure of the economy. They include targeted emission, targeted loans, special refinancing instruments.

About structural instruments of monetary policy O. Blanchard [46, p.557] wrote that macroeconomic policy should be close to fine-tuning, in the short term monetary policy affects the level of GDP and its structure. O. Blanchard [47, pp. 151-153] and his colleagues consider it appropriate to apply the discount rate mainly to aggregate indicators of business activity and inflation to solve specific problems of production structure, financing or asset pricing.

"Money should be created as an instrument of economic development, as target money" [72, p.74], - writes S.Y. Glazyev, it is necessary to form "target mechanisms of lending to the economy for the tasks of economic growth" [72, p.74]. The academician also notes that the more effective the system of targeted lending is, the faster "non-inflationary expansion of credit emission and higher level of monetisation" [69, p.96].

M.V. Ershov and A.G. Aganbegyan [2] propose to provide additional investment in fixed capital at the expense of investment, mainly repayable credit; to stimulate investment lending through refinancing of banks under the pledge of securities secured by the portfolio of their loans provided for investment. They believe that in Russia the targeted emission and its direction to priority areas of the economy with maximum multiplicative effect for economic growth will allow monetisation with the lowest inflation. At the same time, a number of scientists point to the need to ensure institutional and technological conditions for the introduction of the mechanism of targeted emission [235, p.354].

Management of inflation expectations of economic agents, namely transactional and non-transactional sectors and households is another tool of monetary growth policy, which comes from its basic institution - the framework of human behaviour, the rules of behaviour and interaction of policy subjects and economic agents. The rationality of agents, limited or perfect, taken into account in most economic theories, leads to the need to manage inflation expectations of economic agents in order to achieve macroeconomic objectives.

The process of setting and modifying monetary policy objectives within the framework of the implementation of economic growth policy is of great importance, as incorrect setting of the objective or its inadequacy and inconsistency with the ongoing processes is a significant factor in the emergence of dysfunctions.

S.Y. Glazyev notes that monetary policy should be adjusted to the goals of development and expansion of opportunities for lending to the real sector [70, p.48-51]. True targeting should be coupled with such targets of macroeconomic policy as production growth, employment, investment. The priority should be the growth of production and investment with restrictions on inflation and the ruble exchange rate [67, p.128]. The chosen priorities of economic development should form the impetus for the growth

of business activity and demand. O.S. Sukharev argues that monetary policy should counteract the reduction of employment and instability of production, overcome the gap of G. McMillan [219, p.95], suggests targeting the volume of real money in the economy M2/R, or nominal/real GDP of the country [223].

Earlier, in 2.1, within the framework of the developed methodology, the model-scheme of interdependence of types of state economic policy in influencing economic growth is presented, in which the main macroeconomic targets of economic, including monetary policy, are defined. The basic goal of monetary policy is to achieve economic growth. Among others, the macroeconomic targets affected by monetary policy include inflation rate, unemployment rate, financial stability; improvement of welfare and human capital development. Growth monetary policy can contribute to the achievement of all these economic policy targets.

The central bank should create an impetus for economic growth and have a focus on domestic economic objectives. When forming the targets of monetary growth policy, it is necessary to take into account the state of monetary institutions, economic structures, the need for money, the rules of behaviour and interaction of economic subjects. Today, money flows have an institutional reference point - the fuel and energy sector. At the same time, high-tech enterprises and the defence sector need money. An important task of monetary growth policy is to change the direction of money flows.

Monetary policy should ensure the rate of economic growth and at the same time the rate of inflation corresponding to the rate of economic development. At the same time, structural economic modification should be achieved through credit allocation with the exclusion of the structural basis of inflation. Monetary policy should, together with exchange rate policy, ensure the stability of the exchange rate of the national currency in order to exclude currency crises.

Taking into account the institutional approach, the monetary policy of growth should create "monetary equality" of various basic social institutions and ensure the formation of the incentive of "legal" efficiency of economic activity [229, c.145].

Thus, the institutional mechanism of monetary growth policy should ensure the mutually coordinated work of traditional methods and tools, non-traditional measures and tools of monetary policy, exchange rate policy tools, structural tools of monetary policy, management of inflation expectations of economic entities in achieving economic growth and macroeconomic targets.

When conducting monetary policy of growth, the choice of transmission mechanism, which includes the channels of its impact on economic growth and macroeconomic targets, comes to the forefront.

As part of the transmission mechanism, the Bank of Russia identifies the following key channels: interest rate, balance sheet, narrow credit, welfare, currency, expectations and non-monetary factors [174].

Changes in the Russian economy, due to the sanctions pressure led to changes in the work of the transmission mechanism channels. Thus, the interest rate channel was influenced by specific factors, the credit and balance sheet channels were constrained by increased uncertainty, the welfare channel did not work, the currency channel lost its high importance, the expectations channel lost its efficiency. Earlier, scientists proposed new channels of transmission mechanism, the emergence of which was a consequence of the reduced performance of the credit and interest rate channels. Thus, a new banking channel of monetary transmission is the deposit channel [353]. The information channel is also gaining importance, the study of which is receiving more and more attention due to the high role of effective management of economic agents' expectations for the implementation of optimal monetary growth policy [348, 355, 372, 375, 390, 397, 420, 420, 456, 464, 468, 481, 525].

When implementing unconventional monetary policy measures, five main channels can be identified: the interest rate channel, which is the main channel for the traditional monetary policy as well; the monetarist channel [457], which also takes place in the traditional monetary policy; the expectations channel, the banking sector channel [368], and the real estate market channel.

Within the framework of the methodology of institutional monetary theory of growth policy developed in the study, a model-scheme of the impact of institutional levels of economic growth policy interacting with monetary policy instruments on the monetary component (money saturation of the economy) and the capital component (capital saturation of the economy) is proposed (Figure 2.7)

The monetary component is influenced by traditional and non-traditional monetary policy methods, measures and instruments, structural instruments, as well as exchange rate and fiscal policy instruments. The capital component is also influenced by monetary policy instruments through its impact on financial markets, including stock markets through investment and on commercial banks, and on the types and terms of credit. This impact in conjunction with other institutional levels of economic growth policy (macroprudential policy, micro prudential regulation, financial market development policy, fiscal, industrial, anti-monopoly, social policy) influences the saturation of the economy with capital and the structure of the economy. Thus, the formation of the monetary component of the economy is primary in relation to the formation of the capital component.

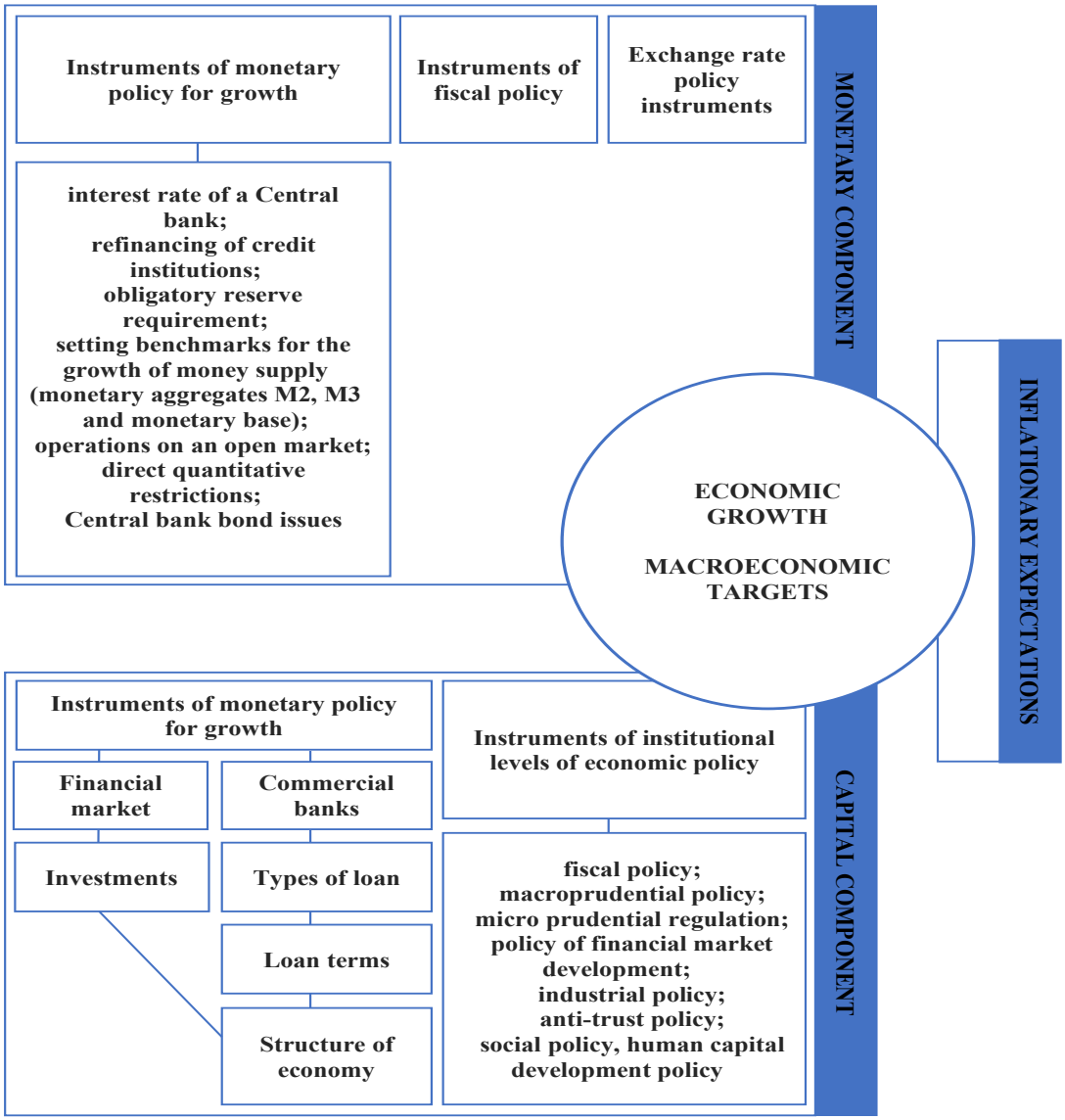

Figure 2.7 - Model-scheme of the impact of institutional levels of economic growth policy interacting with monetary policy instruments on the monetary component (money saturation of the economy) and the capital component (capital saturation of the economy)

Source: developed by the author

The monetary and capital components of economic growth policy, including monetary policy, as well as inflation expectations, formed as a result of the implementation of economic growth policy, have an impact on the achievement of economic growth and macroeconomic targets. Thus, it is possible to define three transmission channels of monetary policy: monetary channel, capital channel, inflation expectations channel, which the Bank of Russia needs to focus on at present.

The institutional infrastructure of monetary growth policy ensures the implementation of monetary policy and contributes to its effectiveness.

Within the framework of the developed institutional monetary theory of growth policy and the institutional model of monetary growth policy we introduce the concept of "infrastructure of monetary

growth policy", which is an institutional level[54] of monetary policy that provides accounting, information, scientific-innovative, personnel and educational, regulatory and legal services of monetary policy and creates conditions for the effective application of its tools and achievement of macroeconomic targets.

The institutional infrastructure of monetary growth policy includes accounting and reporting, information, scientific and innovative, strategic, human resources and educational, and regulatory and legal infrastructure.

Accounting and reporting as an element of the institutional infrastructure of monetary growth policy includes accounting infrastructure institutions and banking accounting and reporting. The accounting infrastructure institutions include the central depository, depositories, specialised depositories and registrars. In general, the accounting infrastructure institutions represent the accounting system of the securities market, which includes a set of accounting institutions, organisations licensed by a professional securities market participant to carry out depository activities (depositories) and register keeping activities (registrars). The main function of these organisations is to record and store securities, as well as to confirm the rights to securities and assist in exercising the rights secured by securities.

Bank accounting and reporting include reports of credit organisations; consolidated financial statements prepared in accordance with International Financial Reporting Standards with an independent auditor's opinion; annual financial statements of the Bank of Russia. Banking accounting and reporting play a significant role in the implementation of macroprudential policy and microprudential regulation that form financial stability and ensure effective implementation of monetary policy.

Information infrastructure as an element of the institutional infrastructure of the monetary policy of growth includes information-technological, information-analytical, information and communication infrastructure, critical information infrastructure and information security and cyber resilience infrastructure.

The information-technological infrastructure includes information-technological institutions (IT companies; payment systems; clearing organisations; currency exchange); hardware and software and technologies to ensure the collection, storage, processing and transmission of information [367]: financial technologies and financial infrastructure.

Information-analytical infrastructure includes information-analytical institutions and information-analytical means. To information-analytical institutions we include credit rating agencies, consulting companies, credit history bureaus, statistical agencies, opinions of financial experts and analysts, audit companies, appraisal companies. Information and analytical means include information centres,

[54] The institutional model of monetary policy is represented by three institutional levels: basic institutions, institutional mechanism and institutional infrastructure.

subsystems; data and knowledge banks; forecasts and analytical data of the Central Bank, the Ministry of Finance, the Ministry of Economic Development; communication systems; management centres.

Rating agencies process primary statistical information and transform it into ratings or analyses. These analytical products are then used by monetary policy participants. Consulting companies can conduct analytical studies of price growth dynamics, make forecasts of the economic situation, and conduct planned audits, which can influence the efficiency of monetary policy implementation. Information from credit history bureaus can reduce the risks of loan default, overdue debts, and determine interest rates for specific borrowers.

The information and communication infrastructure includes the central bank's information and communication system; the central bank's information processing system; and the Bank of Russia's Integrated Telecommunication and Information Resources Management System (ITRS).

Central bank communication means that the central bank publishes information on policy strategy, targets, monetary policy implementation, and assessments of current and expected economic conditions. As a result, uncertainty and information asymmetry are reduced, the predictability of monetary policy is increased, inflation inertia is reduced, flexibility in responding to shocks to the economy is increased, the public accountability of the central bank is increased, the reputation of the central bank is improved and confidence in its policy is increased. Communication is now considered by central banks as a separate instrument of monetary policy. It is considered necessary for central banks to apply communications within the inflation targeting regime in order to ensure transparency of their actions and increase public confidence. The Bank of Russia designates communications along with the key rate as the main instruments of monetary policy [174, p.9]. In modern conditions during changes in the economic situation the importance of central bank communication increases.

Critical information infrastructure consists of the following elements: information systems of the credit and financial sphere; information and telecommunication networks of the credit and financial sphere; automated systems for managing technological processes of the credit and financial sphere.

The elements of critical information infrastructure of the institutional infrastructure of monetary growth policy in the study are defined in accordance with the Federal Law № 187-FZ "On the security of critical information infrastructure of the Russian Federation" dated 26 July 2017. The Law defines critical information infrastructure as "critical information infrastructure objects, as well as telecommunication networks used to organise the interaction of such objects" [251]. Accordingly, the objects of critical information infrastructure are "information systems, information and telecommunications networks, automated control systems of critical information infrastructure subjects" [251].

Information security and cyber resilience infrastructure is divided into the following areas: computing infrastructure; application software, application level; data processing technology, data processing technology level; financial technologies.

The Bank of Russia's activities in the area of information security and cyber resilience apply to credit institutions engaged in banking operations and financial institutions in accordance with Article 76.1 of Federal Law № 86-FZ dated 10.07.2002 "On the Central bank of the Russian Federation (Bank of Russia)", as well as subjects of the national payment system for money transfers. The object of regulation is innovative financial technologies.

The information security and cyber resilience infrastructure of the computing infrastructure is formed through the application of a set of state standards that are developed in subcommittee № 1 of Technical Committee № 122 "Standards for financial (banking) operations". The main document of the information security infrastructure and cyber resilience of the computing infrastructure is the Standard of the Bank of Russia STO BR BFBO-1.5-2023 dated 8 February 2023.

The infrastructure of information security and cyber resilience of application software, application level is formed by controlling the absence of vulnerabilities in software, as well as those related to programming deficiencies.

Infrastructure of information security and cyber resilience of data processing technology, the level of data processing technology is formed by ensuring the authenticity and integrity of processed information. For this purpose, means of cryptography, electronic signature are used; the principle of "double control" is implemented; multi-factor authentication of clients is used; mechanisms for obtaining additional confirmation of financial transactions by clients are used.

The infrastructure of information security and cyber resilience of financial technologies is formed through legal regulation on operational reliability and information security; testing of innovative products and services, financial technologies within the regulatory platform of the Bank of Russia, taking into account the analysis of cyber risk, information security risk, formation of threat models arising from their application.

Thus, the totality of all components of the information infrastructure of the monetary growth policy plays a very significant role in the effectiveness of its implementation.

The strategic infrastructure of the monetary growth policy includes national programmes and strategies of economic development; economic development forecasts; state plans ensuring the implementation of strategic objectives; strategies and plans of economic entities.

The scientific-innovation infrastructure of monetary growth policy includes:

- science and innovation infrastructure centres: technology transfer centres; intellectual property management centres; science and education centres; innovation consulting centres; innovation and technology centres; innovation activity centres, including Skolkovo; research centres;

- departments and directorates of scientific-innovation infrastructure: departments of innovative development; departments of master's and postgraduate studies; departments of research activities; departments of interaction with industry;

- institutes and scientific schools: research institutes; institutes of innovative technologies; innovation institutes; scientific schools;

- research and production complexes: laboratories; technoparks in the sphere of high technologies; business incubators; special economic zones of technology innovative type; centres of collective use; technology transfer centres.

Scientific and innovative infrastructure of monetary growth policy is a lever for improving economic growth policy in the field of application of monetary instruments, their distribution by targets and structure of the economy.

The human resources and educational infrastructure of monetary growth policy is divided into managerial human resources and educational infrastructure and financial education and financial literacy.

The managerial personnel and educational infrastructure include: the University of the Bank of Russia as a structural unit of the Bank of Russia's central administration; training of specialists, management personnel, analysts, experts (on the basis of higher education institutions); advanced training; master classes; coaching (training).

Financial education and financial literacy include educational programmes for schools and universities; educational events and online seminars; professional retraining and advanced training of methodologists, teachers and lecturers on the basis of federal and regional methodological centres; information materials of the central bank; the Bank of Russia's Financial Culture website.

A special place in the managerial human resources and educational infrastructure is occupied by the training of students, future economists and financiers, including internships in the GU of the Bank of Russia.

It is important to note that a well-developed managerial human resources and educational infrastructure contributes to improving the efficiency of the development and implementation of monetary growth policy, as well as the assessment of its effectiveness and the efficiency of its interaction with other types of economic growth policy. Financial education and financial literacy contribute to the development of the financial market, stability and sustainability of the banking system, reduction of banking risks, as a consequence of smooth operation of the monetary policy transmission mechanism.

The basic institution of monetary growth policy in the presented institutional model is the framework of human behaviour, rules of behaviour and interaction of policy subjects and economic entities, and financial literacy is a significant factor that influences and shapes these frameworks and rules of behaviour. The most important factors that shape the need to improve financial literacy of the

population are: economic crises, in which it is necessary to rationally use financial resources while reducing the cost of savings; increasing complexity of financial services offered in the market; inconsistency of financial knowledge of the population with the dynamically changing financial market. All these factors complicate the implementation and reduce the effectiveness of monetary growth policy.

Insufficient level of financial literacy may result in deterioration of households' welfare, their financial potential, reduction of the resource base of financial organisations, inhibition of financial market development and investment processes, deterioration of the country's socio-economic situation, and inhibition of economic growth.

Regulatory and legal infrastructure as an element of the institutional infrastructure of monetary policy of growth represents the main legislative and regulatory legal acts governing and regulating the formation and implementation of monetary policy. The regulatory and legal infrastructure primarily includes: Constitution of the Russian Federation; № 86-FZ of 10.07.2002 "On the Central bank of the Russian Federation (Bank of Russia), № 395-1-FZ of 02.12.1990 "On banks and banking activities", "Monetary policy guidelines for 2023- 2025", № 3894-U of 11.12.2015 "On the refinancing rate of the Bank of Russia and the key rate of the Bank of Russia", № 6433-U dated 01.06.2023 "On mandatory reserve requirements", № 5930-U dated 15.09.2021 "On the form and terms of secured refinancing of credit institutions", № 753-P dated 11.01.2021 "On mandatory reserves of credit institutions".

An important place in the regulatory and legal infrastructure of monetary policy of growth should be taken by the Law on planning economic policy for growth, which takes into account the interdependence of types of economic policy and optimises the use of instruments within the institutional levels of economic policy in achieving macroeconomic targets (adherence to J. Tinbergen's "targets-instruments" principle), including monetary and fiscal policy.

Only the coordinated work of all levels and elements of the institutional infrastructure of monetary policy, ensuring the interconnection between them can ensure the development and implementation of monetary growth policy at the level of its basic institutions and institutional mechanism.

Thus, Chapter 2 develops the institutional monetary theory of growth policy, which develops the theory of economic growth policy. The main provisions and methodology of the institutional monetary theory of growth policy are outlined. Unlike the traditional ones, this methodology is based on the integral application of methods, both known and proposed by the author, which allow linking monetary instruments of economic growth policy with macroeconomic targets and the structure of the economy, effectively using the available institutions and resources for the implementation of monetary growth policy. We have developed a model-scheme of interdependence of types of state economic policy in the impact on economic growth; a scheme of the action of the Law on planning economic policy for growth as a basic economic institution; a model-scheme of managing the movement of monetary resources through economic growth policy within the framework of the institutional approach; a model-scheme

of the impact of institutional levels of economic growth policy interacting with monetary policy instruments on the monetary and capital components; institutional model of monetary growth policy; a model of the circulation of money between the subjects of the economy, regulated by the central bank, determining the economic boundaries of monetary growth policy.

Institutional monetary theory of growth policy combines a systemic, dialectical, evolutionary and interdisciplinary approach to the study of monetary instruments, their allocation to the targets and structure of the economy in order to achieve economic growth. The main provisions of the theory are presented: on the institutional content of the monetary theory of growth policy, on the institutional levels of monetary growth policy, on structural monetary growth policy, on the structural distribution of the strength of the influence of the components of the money supply on economic growth, on the modification of the Mundell-Fleming model, on the extended principle of J. Tinbergen, on institutional adjustments of monetary growth policy.

Within the framework of the developed institutional monetary theory of growth policy, the author introduced the following conceptual apparatus:

- "institutional level of monetary growth policy" is an element of the institutional structure of monetary policy, including an ordered set of interrelated and interacting institutions (subjects, formal and informal norms, incentives, restrictions and instruments) that affect the achievement of macroeconomic targets;

- "growth monetary policy infrastructure" is an institutional level[55] of monetary policy that provides accounting, information, scientific-innovation, personnel and educational, regulatory and legal services of monetary policy and creates conditions for the effective application of its instruments and achievement of macroeconomic targets;

- "structural monetary growth policy" is a type of monetary policy, based on the theory of structural growth policy [216], with the aim of achieving a structural effect[56] through the application of a set of instruments affecting the macroeconomic structure, the ratio of elements and their dynamics, optimisation of resource allocation, contribution to economic growth and the structure of targets.

[55] The institutional model of monetary policy is represented by three institutional levels: basic institutions, institutional mechanism and institutional infrastructure.

[56] A change in economic structure that enables economic growth.

3 Structural monetary policy for growth

3.1 Cumulative effect of monetary policy and assessment of its impact on economic growth[57]

Within the framework of the institutional monetary theory of growth policy it is important to take into account that the sensitivity of the economic system to changes in monetary policy instruments can both increase and decrease, up to the cessation of the reaction. Moreover, the intensity of the impact of monetary policy instruments undergoes changes over time and depends on the state in which economic objects are in [28, 280, 453]. When monetary policy loses its power, an effect similar to the Keynesian liquidity trap appears, when the interest rate is so low that agents become unreceptive to monetary policy and its stimulating effect is lost. The reason for the accumulation effect is the exhaustion of the strength of the impact of monetary policy instruments for various reasons, their aggregation, and not a change in the interest rate.

It is likely that different requirements for the number and strength of monetary policy instruments applied will depend on different levels of monetisation of the economy, different absorptive capacities of accepting money supply that is distributed among economic activities and sectors. Over time, the monetary policy implemented has an accumulation effect of its impact. When the accumulation effect weakens monetary policy and makes the agents of the economy unresponsive to it, it is a negative accumulation effect. When the accumulation effect leads to hypersensitivity, it is recorded as positive. Consequently, when insensitivity to the monetary policy instruments, the negative accumulation effect of monetary policy is formed, and when sensitivity is strengthened, it is positive.

In the study, the accumulative effect of monetary policy is understood by the author as "a state when the target parameter of economic policy becomes less or not at all sensitive to monetary policy measures (negative effect), or acquires a higher sensitivity (positive effect) over time" [68 p. 8].

The negative accumulative effect of monetary policy consists in restraining the parameters of economic dynamics, because when implementing monetary policy measures, the target macroeconomic parameters lose sensitivity to them. The result of the positive accumulative effect is a relatively fast achievement of the targets due to their high sensitivity to the monetary policy instruments that are applied.

We will conduct theoretical substantiation and empirically demonstrate the accumulative effect of monetary policy in the Russian economy, develop and propose a way to measure the accumulative

[57] In preparing this section of the thesis, the following publication was used, which was co-authored by the author and reflects the main results, provisions and conclusions of the study: Glazyev S.Y., Sukharev O.S., Afanasyeva O.N. Monetary policy of Russia: negative accumulative effect within the neoclassical model and its overcoming // Microeconomics. - 2022. - №2. - C. 5-38. (2 /0.7)

effect of monetary policy, quantify it and take it into account in the study of applied monetary policy instruments.

The assessment of the cumulative effect of monetary policy in the long run provides an opportunity to determine the extent to which monetary policy can influence economic development, as well as to choose monetary policy instruments in accordance with the negative or positive effect, including influencing the increase in the strength of their impact. At present, the existing stereotypes in the field of monetary theory proceed from the equivalence of instruments and do not commensurate the strength of their application in the previous and current intervals of economic development with the justification of the assessment of their future application. This constitutes a significant and still unsolvable problem of exhausting the impact of monetary policy or, on the contrary, of increasing this impact on economic dynamics, so that the effects on inflation, investment, economic growth, financial market and other areas become poorly predictable, despite the significant array of various studies on monetary policy and related topics.

The development of a method for assessing the accumulative effect of monetary policy, its theoretical description will allow to plan better at the instrumental level the future application of monetary policy to solve the problem of economic growth. The object of the study - the Russian economy - was chosen not by chance, first of all, because of the author's country affiliation, and also because over a period of more than 20 years, the Russian economic dynamics is characterised by both stages of rapid growth and stagnation. This peculiarity requires a detailed consideration of the probable loss of influence of monetary policy as its fundamental instrument in the implementation of the growth policy.

Monetary policy has a set of instruments that allow influencing price dynamics and economic growth. As basic instruments of monetary policy we can consider the change in the key rate, which induces the change in deposit rates, as well as the change in the money supply. And the consequence of interest rate growth is a reduction in money supply, while a decrease in interest rate leads to an expansion of monetisation. That is, these two instruments of monetary policy are interrelated.

The object of the study is the Russian economy in the period 2000-2020. An important point is that on the basis of empirical data on the Russian economy it is possible to confirm the decrease in inflation with simultaneous growth of money supply in the time interval under study. Thus, for the period under study the equation of inflation dependence on money supply is as follows $p = 69{,}1 - 7{,}27 \cdot \log(M2)$ $(R^2 = 0{,}72, R^2_{adj} = 0{,}7)$[58]. The high value of the coefficient of determination of the statistically significant model indicates the inverse dependence of inflation on the size of money supply.

[58]Source: calculated by the author on the basis of data https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074 http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx. Model statistics: F-criterion=48,14 (p=0,000001), D-W=1,51 (D-W$_{l}$крит=1,2; D-W$_{u}$крит=1,41), White test: n*R^2=0,36 (p=0,8334).

In the period 2000-2020 there was an increase in the level of monetisation, with a steady decline in inflation, except for its increase in the years of crisis, namely: 2009, 2015-2016, 2020. Since the growth rate of the economy in Russia over the time interval under study decreased, we can conclude that the economic dynamics decreased when the level of monetisation increased. Naturally, it was not the increase in monetisation that led to a decrease in the growth rate. On the example of the Russian economy, we can demonstrate a synchronous change, when in the process of implementing the policy of expanding the money supply there was a curtailment of economic growth. At the same time, the maintenance of interest rates at a relatively high level probably had a significant impact on this result. The interest rate in the period under study decreased on average, but at the same time it remained at a relatively high level (5.5-7 per cent), during the periods of crisis dynamics the regulator significantly increased the interest rate up to 17 per cent. The result of the interest rate reduction was an increase in the level of monetisation and growth of money supply M2. The equation of money supply dependence on the interest rate is as follows $M2 = 6835{,}8 - 233{,}7 \cdot i$ $(R^2 = 0{,}68, R^2_{adj} = 0{,}66)$ and represents the inverse relationship between the money supply and the interest rate[59].

Also an important ratio is determined by the object of study - the Russian economy. The GDP growth rate was supported by the growth rate of money supply M2. The model of this dependence has the following form $g = -0{,}49 + 31{,}1 \cdot \frac{\Delta M2}{M2}$ $(R^2 = 0{,}62, R^2_{adj} = 0{,}6)$[60]. Over a twenty-year period of time, the decrease in the interest rate was accompanied by a decrease in the inflation rate. The dependence of inflation on the interest rate is as follows $p = -15{,}7 + 10{,}8 \cdot \log(i)$ $(R^2 = 0{,}83, R^2_{adj} = 0{,}82)$[61]. At the same time, the growth rate decreased. The growth of the interest rate correlates with the growth of the inflation rate. This means that in case of inflation acceleration or in case of expectation of its acceleration the interest rate was normatively raised, not always reasonably enough. Then the interest rate was slowly lowered, and inflation was lowered. It is important to note that the relationship "high interest rate - low inflation, low interest rate - high inflation" was not observed for twenty years. The result is an indirect confirmation of the fact that the interest rate as an instrument of monetary policy aimed at counteracting inflation in Russia is hardly appropriate.

The emergence of the cumulative effect of monetary policy occurs for the instruments that characterise it and manifests itself in the negative effect in the reduction of the degree of impact of the

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[59]Source: calculated by the author on the basis of data http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx https://cbr.ru/hd_base/keyrate/?UniDbQuery.Posted=True&UniDbQuery.From=17.09.2013&UniDbQuery.To=30.07.2021 https://cbr.ru/statistics/idkp_br/refinancing_rates1/. Model statistics: F-criterion =39,9 (p=0,000005), D-W=0,24 (D-W_{l}крит=1,2; D-W_{u}крит=1,41), White test: n*R^2=0,33 (p=0,848).

[60] Source: calculated by the author on the basis of data http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls. Model statistics: F-criterion=29,32 (p=0,000038), D-W=1,78 (D-W_{l}крит=1,2; D-W_{u}крит=1,41), White test: n*R^2=1,27 (p=0,5296).

[61] Source: calculated by the author on the basis of data https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm, https://fedstat.ru/indicator/31074. Model statistics: F-criterion =94,12 (p=<0,0000001), D-W=1,66 (D-W_{l}крит=1,2; D-W_{u}крит=1,41), White test: n*R^2=0,75 (p=0,6861).

instrument on the target parameters over the period of time under study. In other words, it consists in a gradual decrease in the sensitivity of the target parameter to the change of the instrument up to zero. A change of the instrument by some value has a consequence of a lower reaction of the target parameter in comparison with the previous time periods, i.e. a smaller change or its absence. This allows us to assess the accumulative effect of monetary policy using the sensitivity theory by estimating the sensitivity coefficients of each target to changes in the corresponding instrument.

Let us consider two basic instruments of monetary policy - interest rate and money supply and two macroeconomic targets - economic growth and inflation. This combination allows us to calculate four sensitivity coefficients, two for each objective. These are changes in the rate of economic growth and inflation with changes in the interest rate and money supply.

It is possible to assess the integral effect of the influence of changes in monetary policy instruments on the targets of economic policy through the ratio of economic growth rate to inflation. The negative effect will appear when the rate of economic growth is negative, i.e. when recession occurs. This is an extremely negative characteristic of monetary and other types of state policy, because their main goal is to prevent a crisis, i.e. negative economic growth. The formation of a crisis means a low sensitivity of the objectives in the previous period to the implemented policy.

Of course, considering low sensitivity in isolation of monetary policy as the main way of influencing economic dynamics, neglecting other types of policy, is not quite fair. However, the available statistical data reflect the totality of the impact of government measures on the economy, which are implemented simultaneously. For this reason, it is difficult to separate the types of policies in the current study.

In order to assess the cumulative effect, it is of interest to determine the closeness of the relationship between the integral effect and the sensitivity coefficients of each target to each monetary policy instrument. The assessment of the cumulative effect itself is possible on the basis of changes in sensitivity coefficients for each monetary policy instrument in relation to macroeconomic targets, even though these instruments may be linked. The result of this proposal, according to the author, is to extend the boundaries of Tinbergen's economic policy principle of "targets-instruments". It is shown that it is possible to achieve more than one goal with a single instrument, i.e. it is possible to achieve more targets with fewer instruments.

The research algorithm consists of several stages.

The first stage is the estimation of the integral effect, based on the targets of economic growth policy. The integral effect is calculated as $k=g/p$ and is defined as the ratio of growth rate (g) and inflation rate (p).

The second stage is to calculate sensitivity coefficients to such monetary policy instruments as interest rate and money supply of two basic macroeconomic targets- growth rate and inflation. We will

analyse the dynamics of changes in sensitivity coefficients and draw a conclusion about the sensitivity of macroeconomic targets to monetary policy instruments.

The third stage - analyse the sensitivity coefficients in pairs, make a conclusion about the implemented monetary policy, the presence or absence of negative or positive accumulative effect.

Let us present the notations introduced for the implementation of the presented algorithm [68, p.10]:

g-temp of GDP growth, %

i-key interest rate, %,

p-inflation rate, %,

M2-money supply (aggregate), billion rubles.

The sensitivity coefficients of the economic growth rate can be presented as follows:

to the key interest rate (K_{gi}): $K_{gi} = \frac{\Delta g}{\Delta i}$;

to the money supply by the aggregate M2 (K_{gM2}): $K_{gM2} = \frac{\Delta g}{\Delta M2}$. (3.1)

Inflation sensitivity coefficients can be summarised as follows:

to the key interest rate (K_{pi}): $K_{pi} = \frac{\Delta p}{\Delta i}$;

to the money supply by the aggregate M2 (K_{pm2}). $K_{pm2} = \frac{\Delta p}{\Delta M2}$. (3.2)

Sensitivity coefficients show how much the target macroeconomic indicator will change per unit change in the monetary policy instrument that affects it. Policy implementation involves the use of a number of instruments. At the same time, the effects of policy instruments can be reinforced or weakened by each other. It is of interest nowadays to determine the way of dividing the instruments by the strength of influence, which is currently missing.

When interpreting sensitivity coefficients, it is the magnitude, not the sign, that matters, showing the different directions of change in monetary policy instruments. The magnitude is a reflection of the decisions taken within the framework of the implemented policy, hence we take the denominator of the expressions (sensitivity coefficients) modulo the denominator.

The sensitivity coefficient for economic growth with a minus sign means that there is no sensitivity, no achievement of the target. In the case when the growth rate of the economy is declining, and monetary policy was initially aimed at stimulating economic growth, we can conclude that the target parameter is insensitive to the monetary policy instruments, or this sensitivity is reduced. In the above situation, we can conclude about the negative accumulative effect on the macroeconomic target and monetary policy instrument. The sensitivity coefficient for economic growth with a plus sign means an increase in the growth rate, while with a value of zero it demonstrates the preservation of the growth rate. These characteristics can be considered as the presence of sensitivity, as well as a positive cumulative effect of the implemented monetary policy. An increase or decrease in the sensitivity of the

macroeconomic target to the policy instruments in the studied period of time is of great importance. If there is no sensitivity and the sensitivity coefficient for economic growth is negative or decreases steadily, we can conclude that the accumulative effect is negative or increases if sensitivity is maintained.

If the sensitivity coefficient for the macroeconomic target inflation rate is negative, we conclude that inflation is decreasing and this is a positive economic result. For the target inflation rate with a negative coefficient of sensitivity is present. If there is an increase in inflation under the influence of monetary policy instruments, which are aimed at reducing it, the corresponding sensitivity coefficient will be positive, so we conclude that there is no sensitivity. In the study of the mentioned sensitivity when the negative value of the coefficient grows, we conclude that the positive accumulative effect increases. In the case of the economic growth objective, on the contrary, it will mean the growth of insensitivity and negative accumulative effect.

Thus, when the change in the instrument is taken modulo the sign of the coefficient, it is possible to determine whether the sensitivity is increasing or decreasing and whether the policy has a negative or positive cumulative effect. If the cumulative effect is negative, the sensitivity decreases and if it is positive, the sensitivity increases. As a result, it becomes possible to estimate the result of the impact on the targets of each monetary policy instrument on average over the period under consideration.

Using formulas (3.1) - (3.2) it is possible to obtain an estimate of four sensitivity coefficients, two for each macroeconomic objective, according to the number of monetary policy instruments (money supply and interest rate). Thus, the estimation of the cumulative effect occurs for specific target and instrument and may have a divergence across instruments. Since monetary policy instruments are aimed at positive changes in the macroeconomic objective, and the objective - growth rate changes in a negative direction, decreases, a clear negative effect of monetary policy is confirmed. There is a loss of power of the monetary policy in achieving the macroeconomic objective. Since it becomes impossible to achieve the goal through the impact of the previous instruments, in such a case there is a need to radically change the policy. If the second macroeconomic objective is achievable, it is necessary to determine the weights of success in achieving one objective and fiasco in the other.

There may be a situation where the sensitivity of the instrument to a change in the macroeconomic target may become too large (infinite), a problem that can occur in the denominator if the instrument does not change. A change in the target in this case may be caused by other policy instruments or other factors. It is also possible that the policy instrument may have an inertial effect, changing the target after the instrument has been applied. In order to avoid infinitely large sensitivity and the presence of zero in the denominator when there is no change in the instrument, it is possible to study a sufficiently long period of time that a change in the instrument does occur. In this case, it is possible to circumvent the implausible scenario in which infinite sensitivity appears.

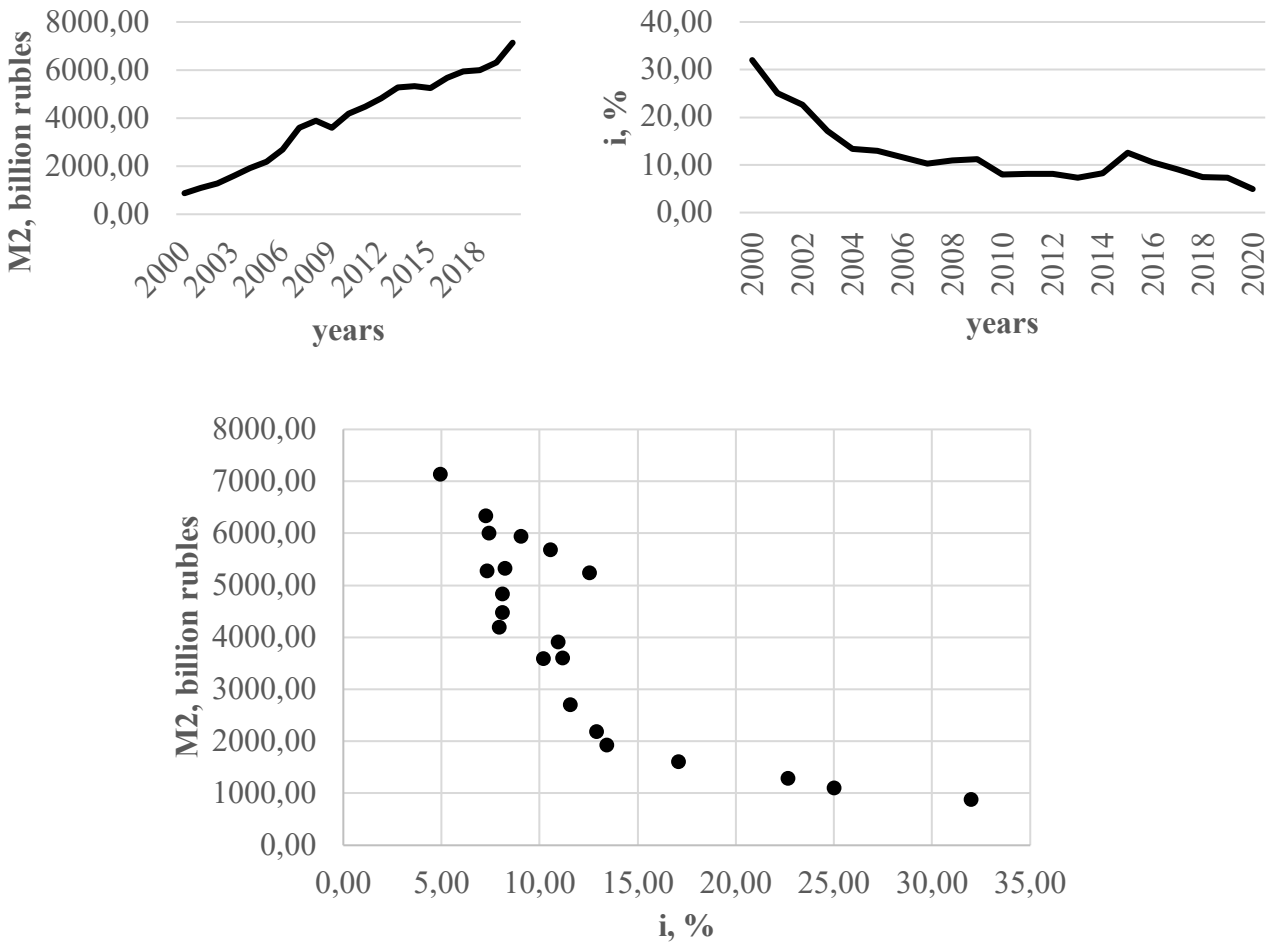

Figure 3.1 - Money supply M2, billions of roubles (in 2000 prices) and key interest rate in Russia, %, 2000-2020 (in 2000 prices) [62]

Source: built by the author

It is possible for mathematical uncertainty to arise when there is no change in both the target and the instrument. However, this situation can be characterised as neutral sensitivity. At the same time, it should be recognised that if the tool does not change, there may be other tools and factors that combine to leave the target unchanged. In order to exclude such situations, it is necessary to investigate those time intervals in which there is a change in both the target and the instrument, since the research interest is the change in sensitivity over a long period of time compared to the original indicator, rather than a short episode in which there was no change in the target or instrument.

The Russian economy until 2008 showed economic growth with increasing monetisation. In the following years, there was a decline in the economic growth rate, stagnation and recession were unfolding, there was some growth of money supply, and the interest rate remained relatively high with a general downward trend (see Fig. 3.1).

[62] Source: calculated by the author on the basis of data https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074 http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx

Figure 3.1 shows that the periods of interest rate growth correspond to the periods when there was a reduction in money supply M2 (in 2000 prices), for example, in 2009 and in 2015, as well as the presence of an undoubted inverse relationship between these indicators.

Thus, it is possible to identify the negative accumulative effect of monetary policy and state that it did not provide the necessary economic growth during the period under study.

Integral effect of monetary policy aimed at stimulating economic growth in Russia in 2000-2020 allows us to conclude that throughout the period under consideration the rate of economic growth expressed in per cent was below the inflation rate (Fig. 3.2).

Figure 3.2 - Integral effect of the dynamics of the Russian economy (ratio of growth rate, it% to inflation rate, %), 2000-2020 [63] [68, c.13]

Source: built by the author

Based on Figure 3.2, Table 3.1 is drawn up, which presents the periods of growth and decline of the integral effect.

Table 3.1 - Periods of growth and decrease of the integral effect k= g/p [68, p.13]

Time period, years	Characteristic k= g/p
2000-2007	Growth
2008-2009	Decline
2010-2012	Growth
2013-2015	Decline
2016-2018	Growth
2019-2020	Decline

Source: compiled by the author based on Figure 3.2

Over the period 2000-2020, the Russian economy has three periods of growth of the integral effect and three periods of decline, which demonstrates an oscillating process.

[63] Source: calculated by the author on the basis of data https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074 https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls

An important property of the integral effect (k=g/p) is that before the recession it was decreasing, during the recession it had a negative value due to the negative growth rate of the economy. At the same time, based on Fig. 3.1, monotonic dynamics of money supply M2 and interest rate is observed.

Integral effect is characterised by the ratio of macroeconomic target positions - economic growth and inflation, reflects their changes in the aggregate in the correlated dynamics. Monetary policy in this period can be maintained by its basic indicators without visible changes.

Further, in order to solve the task of identifying the presence or absence of accumulative effect of monetary policy in Russia for the period under study, we calculated sensitivity coefficients of macroeconomic targets to changes in the value of monetary policy instruments. Interest rate and money supply M2 were the instruments. Let us determine the zones of no sensitivity or its presence, as well as the limits of its growth or decline.

The obtained result is presented in the form of graphs, which reflect the dynamics of sensitivity coefficients for the Russian economy in the interval 2001-2020. Figures 3.3-3.6 show the dynamics of sensitivity coefficients of macro policy targets (growth rate and inflation) to changes in money supply M2, billion rubles and key interest rate i, %[64].

Figure 3.3 - Dynamics of sensitivity coefficient of GDP growth rate to changes in money supply M2 (billion rubles) [65] [68, p.32]

Source: built by the author

[64] Source: calculated by the author on the basis of data https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074

[65] Source: calculated by the author on the basis of data https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074

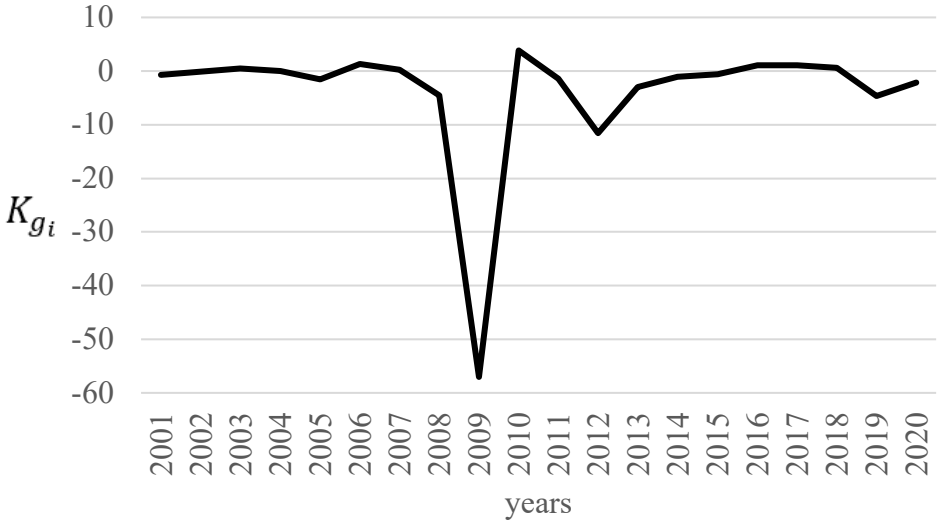

Figure 3.4 - Dynamics of the coefficient of sensitivity of GDP growth rate to changes in the key rate [66] [68, p.33]

Source: built by the author

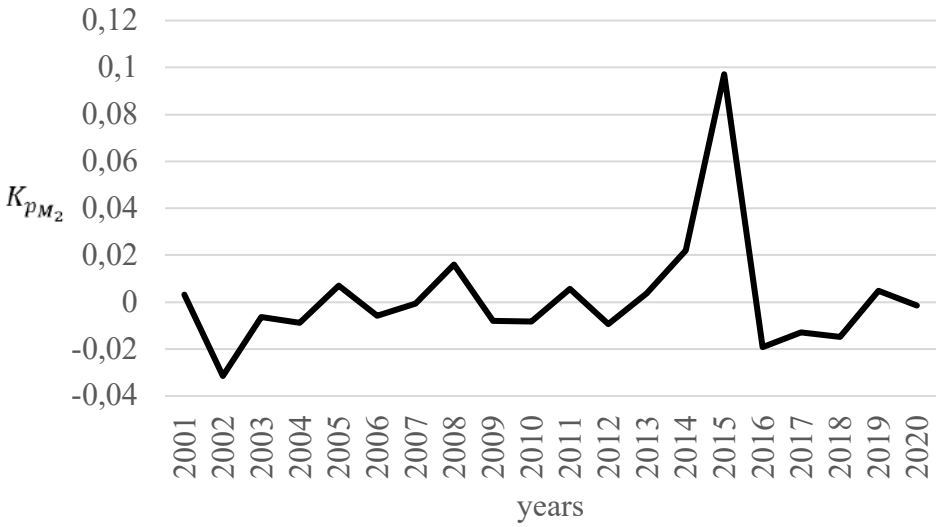

Figure 3.5 - Dynamics of the coefficient of sensitivity of the inflation rate to changes in the money supply M2 (billion rubles) [67] [68, p.33]

Source: built by the author

[66] Source: calculated by the author on the basis of data https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074

[67] Source: calculated by the author on the basis of data https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074

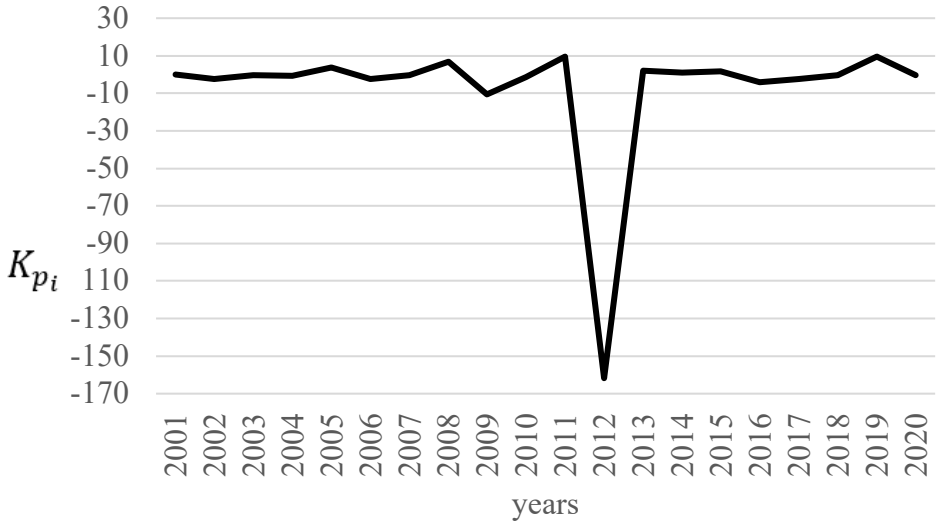

Figure 3.6 - Dynamics of the coefficient of sensitivity of the inflation rate to changes in the key rate [68] [68, p.33]

Source: built by the author

As can be seen from Figure 3.3, the macroeconomic target growth rate in two parts of the period under study shows decreasing sensitivity to changes in money supply M2. Negative values of the sensitivity coefficient recorded in the period 2004-2009 indicate the presence of negative accumulative effect of monetary policy. By 2009 there was an increase in the negative accumulative effect. In 2011-2015 and 2019-2020 there was a decrease in sensitivity, the coefficient was negative, we can record the absence of sensitivity. In other words, we can conclude that there was a negative accumulative effect of monetary policy during a significant part of the time period under study. The sensitivity increased and the accumulative effect of monetary policy was positive only in several intervals: 2001-2003, 2010, 2016-2018 (in eight out of twenty points).

Based on Figure 3.4, thirteen out of twenty points show a negative sensitivity of the economic growth rate to the interest rate (key rate): 2001-2002, 2004-2005, 2008-2009, 2011-2015, 2019-2020. The sensitivity of the growth rate of the economy to the interest rate is positive at only seven points out of twenty: 2003, 2006-2007, 2010, 2016-2018. Thus, we can conclude that for the instrument key rate and targets - growth rate, the negative accumulative effect of monetary policy prevails over the positive one (the coefficient for growth rate is positive and tends to increase, hence, sensitivity is present). If the coefficient is less than zero, the growth rate decreases or there is a recession as in 2009 and 2015, hence,

[68] Source: calculated by the author on the basis of data https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074

the monetary policy instrument does not provide another outcome, does not allow achieving the target function (maintaining a positive growth rate or increasing it).

It is important to note that the signs of sensitivity coefficients of the target "economic growth rate" for the instruments "money supply M2" and "interest rate" coincide almost everywhere, except for the period 2001-2002 and 2007.

Thus, we can conclude that for the purpose of economic growth the accumulative effect of monetary policy was negative, which is confirmed by negative values of sensitivity coefficients over a long period of time. The monetary policy did not ensure the maintenance of sustainable growth rate of the economy, and also did not restrain the decline in the growth rate.

The dynamics of the sensitivity coefficient of the inflation rate as a target of monetary policy to changes in the money supply M2 and interest rate is presented in Figures 3.5- 3.6. In this case, a negative sensitivity coefficient means the presence of sensitivity and demonstrates a reduction in inflation. In periods when the sensitivity coefficient takes values greater than zero, there is no sensitivity, in other words, despite the application of monetary policy instruments, there is an increase in inflation.

Based on Figures 3.5-3.6, we can conclude that there is a positive accumulative effect of monetary policy in terms of its impact on the inflation target, as opposed to its impact on the economic growth target. Twelve points out of twenty of the sensitivity coefficients of the inflation target for the M2 money supply and similarly for the interest rate have a negative value. The sensitivity coefficient on money supply M2 has no stable dynamics of growth or decrease over a long period of time. Abrupt changes towards positive values confirm the instability of both the implementation and the impact of anti-inflationary measures of monetary policy. Figs. 3.3 and 3.5 show the deterioration of sensitivity of macroeconomic targets economic growth and inflation rate to the monetary policy instrument "money supply M2" in the interval 2003-2009. Thus, there was a synchronisation of the negative accumulative effect of monetary policy. But in 2016-2018 the sensitivity of both macroeconomic targets of economic growth and inflation rate to the monetary policy instrument "money supply M2" increased. Consequently, in 2016-2018 there was clearly a positive accumulative effect of monetary policy on both macroeconomic targets.

In 2019, the situation has essentially already changed and on the eve of the 2020 crisis both macroeconomic targets became insensitive to the monetary policy instrument money supply M2. Before the 2020 crisis occurred, a negative accumulation effect was manifested.

The sensitivity of both macroeconomic targets and economic growth and inflation rate was equally positive to the interest rate in the following periods: 2006-2007, 2010, 2016-2018, hence there was a positive accumulative effect of monetary policy on interest rate. In other years, there is no synchronisation of sensitivity (Fig. 3.4, 3.6).

Consequently, over the entire twenty-year period of the study only in the period of 2016-2018 it is possible to conclude that there is a positive cumulative effect of monetary policy in terms of the impact on both macroeconomic targets (economic growth rate, inflation rate) of the two basic instruments of monetary policy (money supply M2 and interest rate).

Thus, within the framework of monetary policy implementation it was not possible to achieve macroeconomic targets - economic growth rate with simultaneous reduction of inflation. At the same time, it should be noted that there is a fairly significant positive cumulative effect of monetary policy, expressed in the impact on the goal of reducing inflation.

However, only during three years (2016-2018) out of the whole twenty-year interval under consideration, there was a positive cumulative effect of the monetary policy in terms of economic growth and inflation reduction.

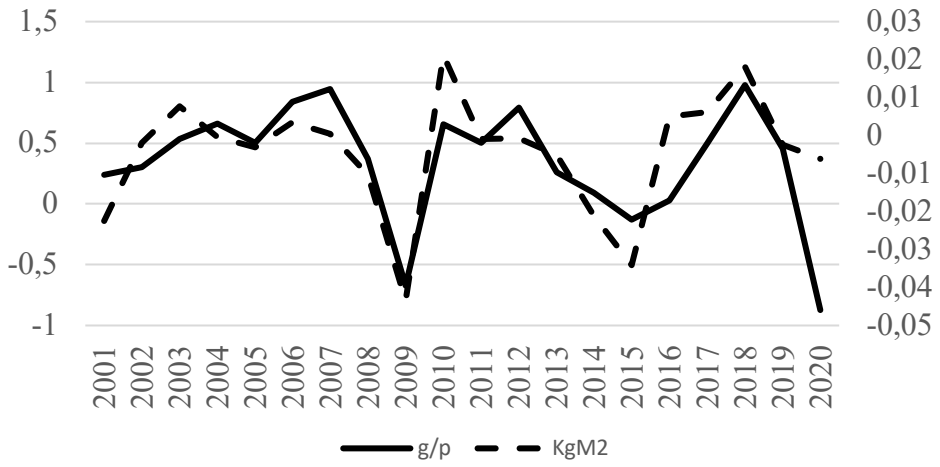

Figure 3.7- Joint dynamics of integral effect and sensitivity coefficient of growth rate to money supply M2, Russia, 2001-2020 [69]

Source: built by the author

[69] Source: calculated by the author on the basis of data
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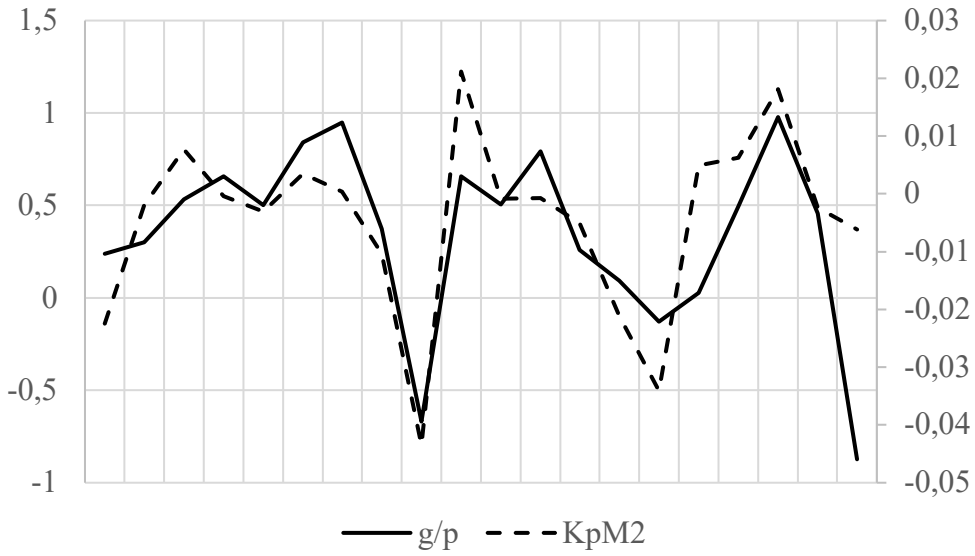

Figure 3.8 - Joint dynamics of the integral effect and the coefficient of sensitivity of inflation rate to money supply M2, Russia, 2001-2020 [70]

Source: built by the author

Integral effect, expressed by the ratio of economic growth rate to inflation rate (g/p), was investigated by considering the joint dynamics of the integral effect and the coefficients of sensitivity of economic growth rate to money supply M2 in Figure 3.7 and inflation rate to money supply M2 in Figure 3.8. Figure 3.7 shows that the growth of the integral effect occurs in periods of increasing sensitivity of the growth rate, i.e. in the presence of a positive integral effect. Consequently, there is an outstripping change in the economic growth rate compared to the change in the inflation rate. In the time interval under study, the improvement of the integral effect, which is manifested in outrunning the change in the growth rate compared to the change in the inflation rate, was provided by the positive accumulative effect of monetary policy. Figure 3.8 shows an increase in the integral effect g/p corresponding to the growth of the negative coefficient of sensitivity of the inflation rate to the money supply M2. This allows us to conclude that the change in the growth rate of the economy prevails over the change in the inflation rate.

Since the study did not reveal a close relationship between the sensitivity of the economic growth rate and inflation rate to the interest rate instrument and the integral effect, we do not present graphs on them. As the key rate decreased, the value of the integral effect g/p increased, which is demonstrated in Figure 3.9. The dependence of the integral effect on the value of money supply M2 was not unambiguous. Up to some point with the increase in money supply M2 there was an increase in the

[70] Source: calculated by the author on the basis of data
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integral effect, but with the subsequent increase in money supply M2 there was a decrease in the integral effect, which is shown in Figure 3.10.

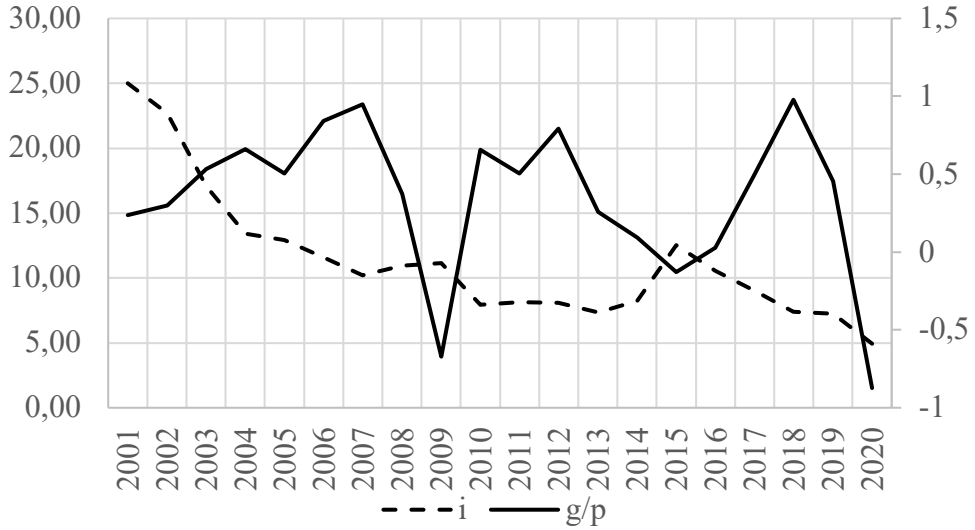

Figure 3.9 - Joint dynamics of the integral effect (g/p) and key interest rate, %, Russia, 2001-2020 [71]

Source: built by the author

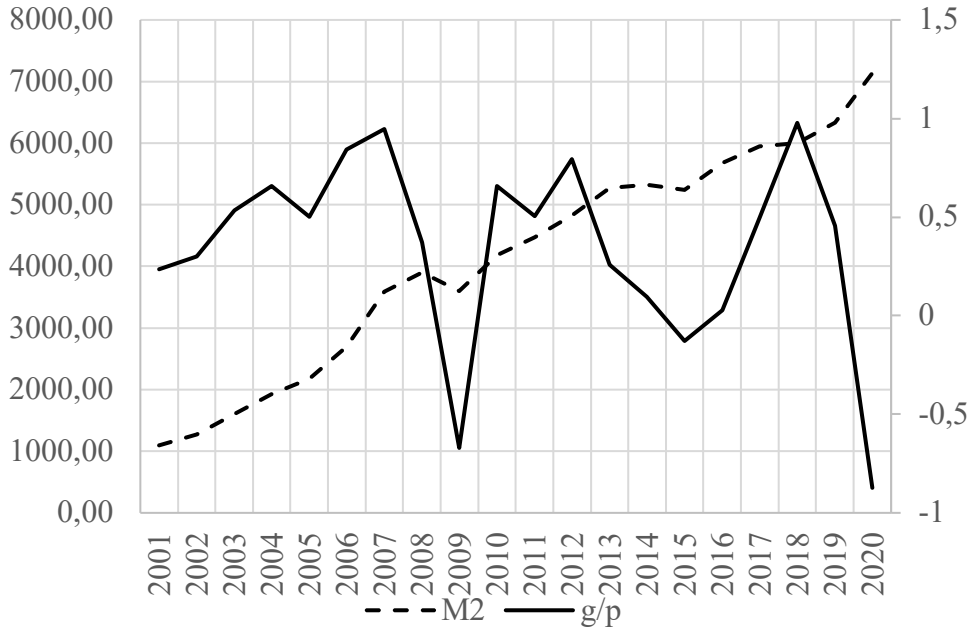

Figure 3.10 - Joint dynamics of the integral effect (g/p) and money supply M2, billion rubles (in 2000 prices), Russia, 2001-2020 [72]

Source: built by the author

[71] Source: calculated by the author on the basis of data
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[72] Source: calculated by the author on the basis of data
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It can be concluded that the change in the growth rate of the economy outpaced the change in the inflation rate only up to a certain value of money supply growth M2. The decrease in the integral effect starts after the value of money supply M2 reaches the size of about 4 trillion rubles. This means that at such moments changes in growth rates stop outpacing changes in the inflation rate.

Due to the fact that the dependence of sensitivity coefficients on the size of money supply M2 is not close and pronounced, the equations of this dependence are not given in the paper. Nevertheless, it can be noted that on average the sensitivity coefficient of the economic growth rate to the money supply M2 increases when the key rate decreases.

Next, let us identify the zones of negative (N) and positive (P) accumulative effect of monetary policy conducted in Russia for the period 2001-2020. On one coordinate grid we will present empirical estimated indicators of sensitivity coefficients in pairs. For this purpose, four graphs were constructed, presented together in Figure 3.1.11. These graphs reflect pairwise relationships between the coefficients «K_{gi}/K_{gM2}», «K_{pi}/K_{pM2}», «K_{gi}/K_{pi}», «K_{gM2}/K_{pM2}». The first two reflect the sensitivity of the same target (economic growth and inflation) to different monetary policy instruments (interest rate and money supply), while the second two reflect the sensitivity of different targets to the same instrument.

Figure 3.11 (a-d) presents the listed pairwise changes in the coefficients of sensitivity of targets to instruments and identifies the zones of negative (N) and positive (P) accumulative effect of Russia's monetary policy. [73]

[73] Source: calculated by the author on the basis of data
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http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx
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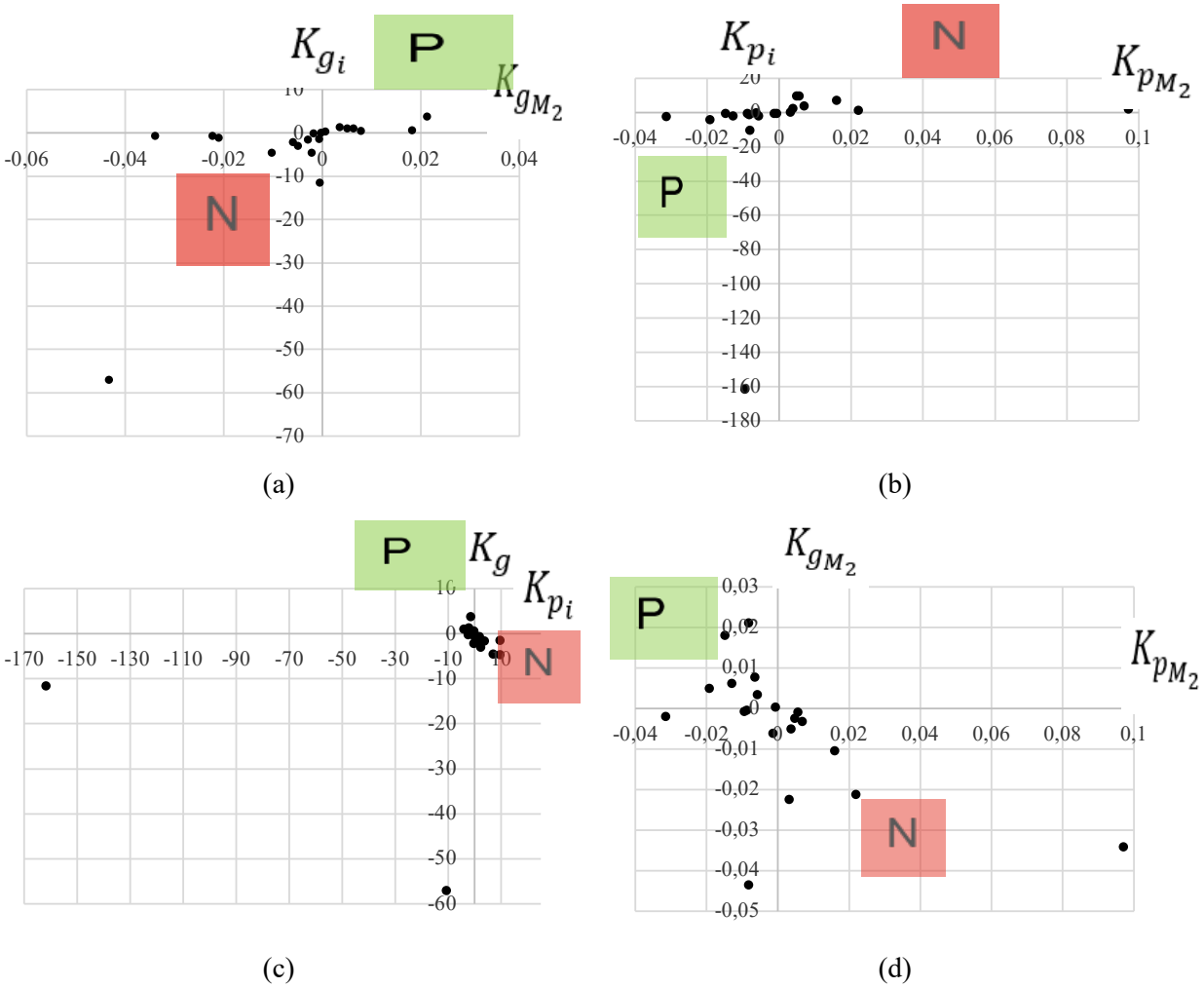

Figure 3.11 - Relationships between sensitivity coefficients of growth and inflation rate to interest rate and money supply M2, 2001-2020 [68, c.34-35]

Source: built by the author

Thus, Figure 3.11 shows the zones of negative and positive accumulative effect of monetary policy. The presence of the largest number of points in a certain zone characterises the prevalence of this effect. Thus, it is possible to compare the strength of influence of monetary policy instruments on the growth rate target and on the inflation rate target. Zones of positive and negative accumulative effect are allocated for two macroeconomic targets and two monetary policy instruments, respectively. It is important to note that the accumulative effect can be negative for one target and positive for the other target. The same result is possible for the instruments. This can be seen in the quadrants that are not labelled with letters.

The conclusion about the negative accumulative effect of monetary policy on such basic instruments as interest rate and money supply M2 in the period 2001-2020 in Russia is fully confirmed by the assessment of the zone of positive and negative accumulative effect in Fig. 3.11. This means not only the absence of growth in the sensitivity of targets to monetary policy instruments, but also its

decrease, in a significant number of points it was negative. Monetary policy targets were not achieved. Some predominance of positive effect over negative effect, based on the zones of negative and positive effect, is present exclusively for the inflation rate target.

It can be concluded that over the twenty-year time interval the accumulative effect of monetary policy has formed, which has a negative character, which is manifested in the lack of sensitivity of basic macroeconomic targets to the instruments of monetary policy. It can be assumed that a new model of economic growth cannot be formed solely through one type of policy, monetary policy. It is necessary to coordinated change of all types of state policy, their instruments, including fiscal policy, macroprudential policy, microprudential regulation, structural and sectoral policy, modifications of institutional nature.

Thus, the paper constructs an algorithm for identifying the accumulation effect of monetary policy (negative, positive, inertial, neutral), as well as assessing the impact of the accumulation effect [68] [74] of monetary policy on economic growth, which allows us to justify the selective application of its instruments in connection with the targets of economic policy, to make decisions on their joint application. It is proposed to apply sensitivity coefficients for each goal from the corresponding instrument, which show the change in the target parameter per unit change in the influencing instrument of monetary policy.

The method of assessing the relationship between the integral effect of economic policy and the accumulative effect of monetary policy to identify the effectiveness of the application of monetary policy instruments in achieving macroeconomic targets was proposed, which allowed us to reveal the picture of weakening of the impact of monetary policy on the growth of the Russian economy and determine that it ensured the containment of inflation out of connection with growth, formed different accumulative effects on individual objectives due to different sensitivity to the instruments.

3.2 Structural analysis of the money supply in the Russian economy[75]

Structural analysis of the basic parameter of monetary policy - money supply, its absorption by different economic uses allows us to plan the application of monetary policy at the instrumental level in order to achieve economic growth [221]. Since the basic parameter of monetary policy in Russia is the monetary aggregate M2, let us analyse its structural dynamics.

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[74] A state in which the target parameter of economic policy becomes less or not at all sensitive to monetary policy measures (negative effect) or acquires a higher sensitivity (positive effect) over time.

[75] In preparing this section of the dissertation the following publication was used, which was co-authored by the author and reflects the main results, provisions and conclusions of the study: Glazyev S.Y., Sukharev O.S., Afanasyeva O.N. Monetary policy of Russia: negative accumulative effect within the neoclassical model and its overcoming// Microeconomics. - 2022. - №2. - C. 5-38. (2 /0.7)

Within the framework of the study, we have analysed the changes in the structure of money supply M2, assessed the closeness of the relationship between the targets of macroeconomic policy (economic growth and inflation rate) and individual components of money supply M2.

For this purpose, we introduce the following notations [68, p.10]:

M0- cash in circulation;

m1- transferable deposits of the population;

m2 - transferable deposits of non-financial and financial (except credit) organisations;

m3- other deposits of households;

m4- other deposits of non-financial and financial (except credit) organisations;

M2- money supply (aggregate).

Then the value of aggregate M2 can be represented in structural decomposition as follows:

$$M2 = M0 + m1 + m2 + m3 + m4. \quad (3.3)$$

By differentiating expression (3.3) by time and then transforming it, the following structural formula for the growth rate of money supply M2 can be obtained:

$$gM2 = gM0 \cdot CM0 + gm1 \cdot Cm1 + gm2 \cdot Cm2 + gm3 \cdot Cm3 + gm4 \cdot Cm4, \quad (3.4)$$

where $gM2, gM0, gm1, gm2, gm3, gm4$ - growth rates of monetary aggregate M2 and its components, respectively;

$CM0, Cm1, Cm2, Cm3, Cm4 -$ share of the component in monetary aggregate M2.

In addition, we introduce a notation for the contribution of components to the money supply growth rate M2 ($vm_i = gm_i \cdot Cm_i$):

$vM0, vm1, vm2, vm3, vm4 -$ contribution of the component to the growth rate of monetary aggregate M2.

In official statistics, structural elements (components) of monetary aggregate M2 have been presented since 2011. For this reason, the interval of structural analysis of money supply M2 is narrowed from 2011 or 2012 to 2020.

Based on the formula (3.3), let us present in Figure 3.12 the change in the structure of money supply M2 over the period from 2011 to 2020 in terms of components.

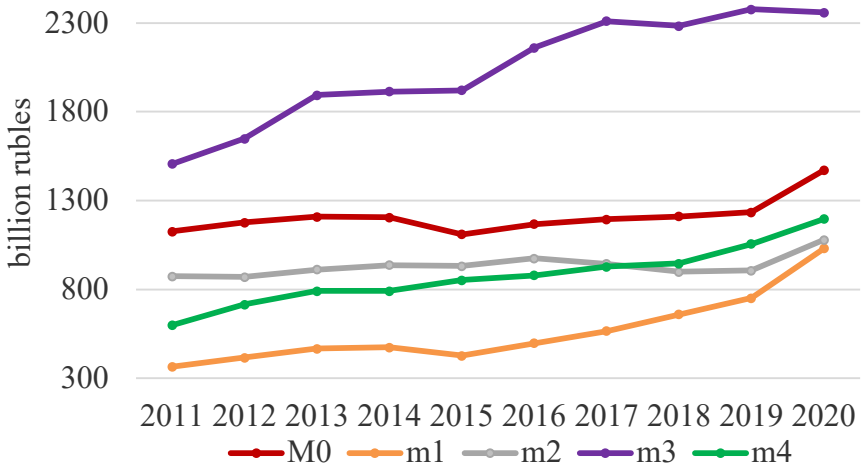

Figure 3.12 - Dynamics of the money supply component M2, billion rubles, in 2000 prices, for the period 2011-2020[76] [68, c.14]

Source: built by the author

The largest growth is demonstrated by the following components: m1 (transferable deposits of population), m3 (other deposits of households), m4 (other deposits of financial and non-financial organisations). M0 (cash) and m2 (transferable deposits of non-financial and financial organisations (except credit)) show a smaller increase.

The share of cash (M0) and transferable deposits of non-financial and financial (except credit) organisations (m2) decreased in the time interval under consideration in 2011-2020. There was an increase in the shares of components m1, m3, m4 in the time interval under study.

At the same time, the growth rate of money supply M2 in 2014 and in 2015 tended to decrease, becoming negative, also in 2017-2018.

Based on the formula (3.4), Figure 3.13 shows the contribution of components to the growth rate of money supply M2, where the greatest impact of component m3 (other deposits of households) on the dynamics of money supply M2 is demonstrated.

[76]Source: based on data https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx

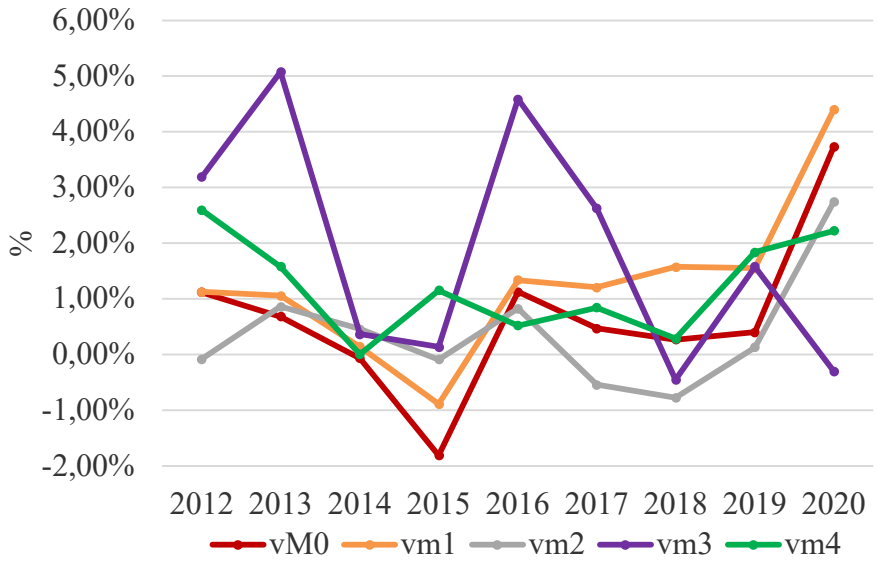

Figure 3.13 - Dynamics of the contribution of M2 components to the money supply growth rate in Russia, %, 2012-2020.[77] [68, c.14]

Source: built by the author

Starting from 2018, the main contribution to the dynamics of money supply M2 is made by component m1 (transferable deposits of the population) (Chart 3.13). In 2019, the most significant contribution to the growth rate of money supply M2 belongs to the component m4 (other deposits of financial and non-financial (except credit) organisations), and in 2020 M0 (cash in circulation) takes the second place. In 2020, the m3 component has an inhibiting effect on the growth of money supply M2, a similar effect of this component was present in 2018. The most significant contribution to the growth rate of money supply M2 in 2020 was made by component m1 (transferable deposits of the population).

Thus, the result of the structural analysis of the dynamics of money supply M2 in 2012-2020 in the Russian economy was the identification of the leading components that are determinants of the overall growth of money supply. The weakest impact was shown by two components: M0 (cash) and m2 (transferable deposits of non-financial and financial (except credit) organisations). At the same time, in 2020 there was a significant increase in the contribution of these components to the dynamics of money supply M2 compared to the previous period. The reason for this phenomenon was the efforts during the "covid" crisis to stimulate the economy.

The analysis of the dynamics of the structural components of monetary aggregate M2 allows us to conclude that the monetary policy pursued during the period under study was inconsistent. The growth of money supply was very restrained, its increase occurred in 2013, 2016, 2019-2020, and its reduction in 2014-2015, 2017-2018. Consequently, despite the increase in money supply M2, the monetary policy in Russia can be considered restrained, with a lack of focus on a commensurate and systematic increase in monetisation of the economy.

[77] Source: calculated by the author on the basis of data https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx

As the interest rate increased, the growth rate of the money supply component M2 decreased.

Figures 3.14-3.18 show the growth rate of Russia's GDP, M2 components and inflation rate in 2012-2020. [78]

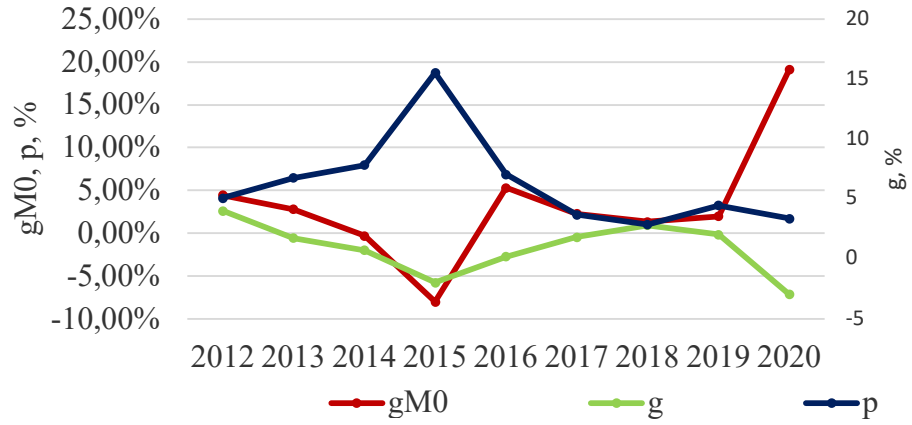

Figure 3.14 - Dynamics of GDP growth rate, M0 and inflation rate in Russia, 2012-2020, % [221, p.19]

Source: built by the author

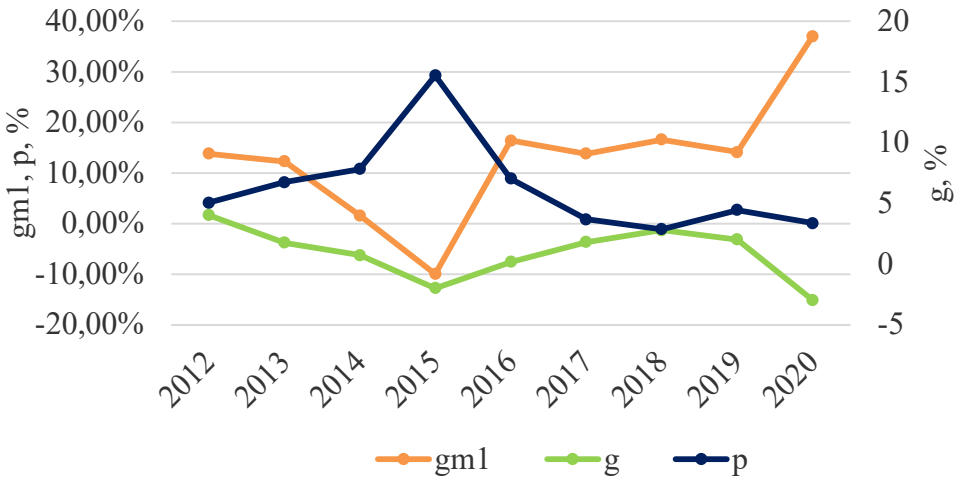

Figure 3.15 - Dynamics of GDP growth rate, m1 and inflation rate in Russia, 2012-2020, % [221, p.19]

Source: built by the author

[78] Source Figs. 3.14-3.18: calculated by the author on the basis of data https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm , https://fedstat.ru/indicator/31074

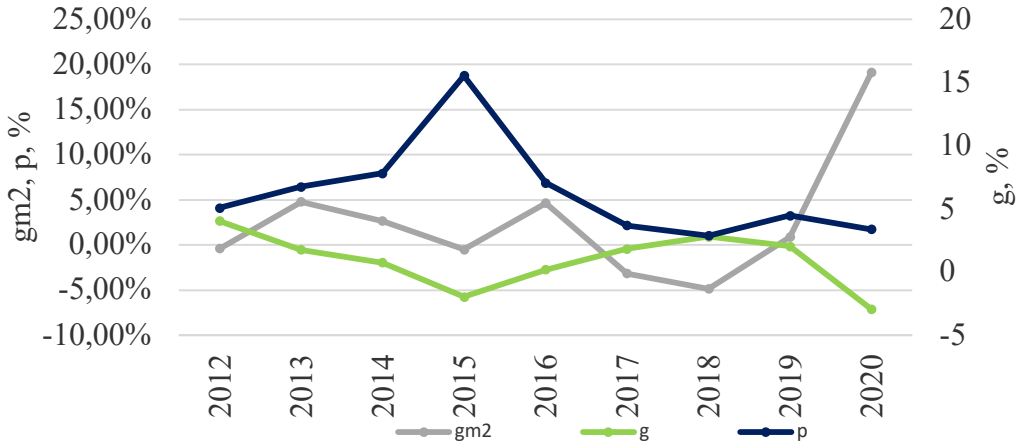

Figure 3.16 - Dynamics of GDP growth rate, m2 and inflation rate in Russia, 2012-2020, % [221, p.20]

Source: built by the author

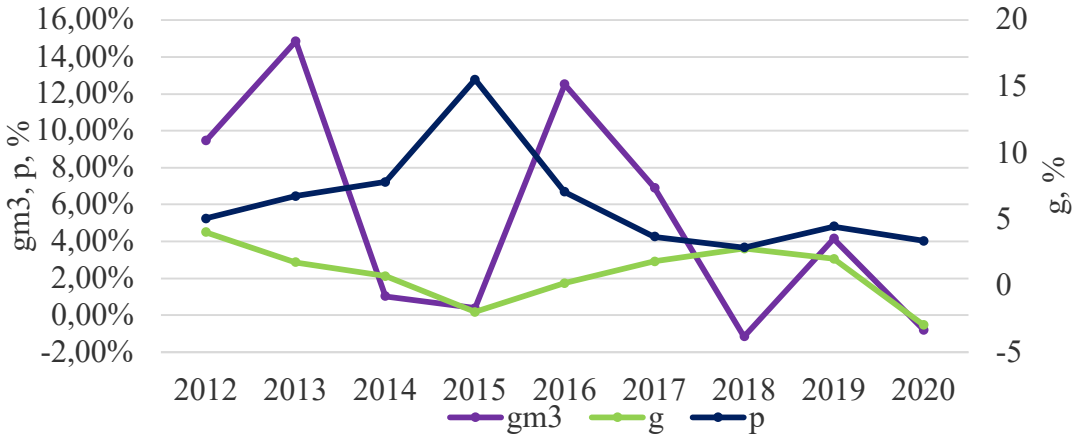

Figure 3.17 - Dynamics of GDP growth rate, m3 and inflation rate in Russia, 2012-2020, % [221, p.20]

Source: built by the author

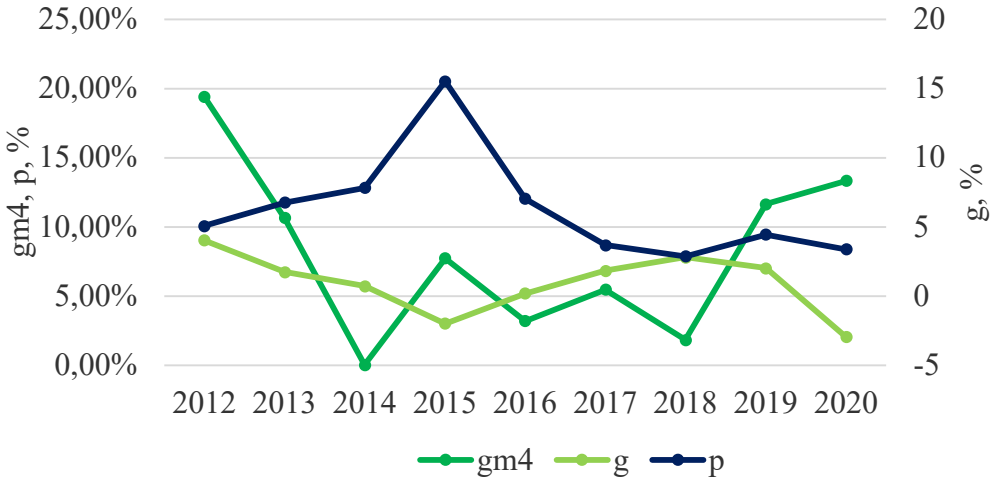

Figure 3.18 - Dynamics of GDP growth rate, m4 and inflation rate in Russia, 2012-2020, % [221, p.21].

Source: built by the author

Based on the results presented in Figures 3.14-3.18, we can conclude that there is a synchronous decrease in the growth rate of the economy with a decrease in the growth rate of most components of money supply M2, as well as an increase in the growth rate of the Russian economy with an increase in the growth rate of components of money supply M2. The graphs are similar, which indicates the equivalence and identity of changes in the GDP growth rate and M2 money supply components. It is important to note that when the growth rate of GDP and M2 money supply components decreases, the inflation rate increases, and when the growth rate of GDP and M2 money supply components increases, the inflation rate decreases.

It is of interest to determine the relationship between the growth rate of the key rate and the M2 money supply, which is not a strong but inverse relationship. When the monetary policy applies a significant increase in the interest rate, it is of great importance to determine the impact of this change on the components of money supply M2. Thus, the sensitivity of M2 money supply components to the key rate as a monetary policy instrument is determined. In the future, it allows us to determine the impact of the dynamics of M2 money supply components on economic development.

Let us carry out a correlation analysis of the dynamics of the key rate and indicators of the money supply component M2, reduced to 2000 prices. We use the previously introduced notations. As before, due to the fact that the Bank of Russia[79] provides statistical data on components of money supply M2 since 2011, we study the data for the period from 2011 to 2020. Adjustment to the annual period was made by calculating arithmetic mean values of M2 money supply components. Further, we calculated correlation coefficients, which are presented in Annexes A-B. [80]

Annex A presents the result representing the most significant closeness of the relationship between the key rate and the first two components of money supply M2 (M0 - cash in circulation and m1 - transferable deposits of the population). At the same time, the relationship is inverse, hence with the increase in the key rate there is a decrease in cash in circulation and transferable deposits of the population.

In addition to the relationship of monetary policy instruments (key rate), it is important to have an understanding of the close relationship between the money supply component M2 and macroeconomic targets. As before, economic growth rate, expressed through GDP growth rate, and inflation rate serve as targets. Annex B presents the correlation analysis of the above parameters, from which we can conclude that the growth of the components m2 and m4 (transferable deposits and other deposits of non-financial and financial (except credit) organisations) is inversely related to the GDP growth rate, i.e. their growth leads to a decrease in the GDP growth rate. The tightness of the relationship

[79] Source: https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx
[80] Source: Tables 1-3 calculated by the author on the basis of the data https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx

with the inflation rate is not high, the reverse is present when increasing the components M0 and m1 (cash in circulation and transferable deposits of the population), i.e. the increase in the components is accompanied by a decrease in the inflation rate.

Consequently, in the time interval under study, an increase in some components of money supply M2 could lead to a slowdown in economic growth, while an increase in other components could lead to a decrease in inflation. For example, the closeness of the correlation confirms that with the increase of the m1 component there was a decrease in the inflation rate, and with the increase of the m4 component there was a decrease in the economic growth rate.

Of great importance is the internal mechanism of the impact of components of money supply M2 on the growth rate of the economy (on economic dynamics) and on the price level. However, the solution of the above problem requires a separate formulation, and we only outline it here.

It can be assumed that the closeness of the relationship between the GDP growth rate and the M2 money supply components (m2 and m4 - transferable and other deposits of non-financial and financial (except credit) organisations) is a consequence of the general trend in the dynamics of time series of these indicators. When examining the relationship between the inflation rate and the rate of money supply component M2 - m1 (transferable deposits of the population), a statistically significant relationship between the inflation rate and m1 is observed, which allows us to conclude that there is a causal nature of the identified relationship.

Consequently, on the basis of the conducted analysis it is possible to identify the closeness of the relationship between the structure of money supply M2 and macroeconomic targets - economic growth rate and inflation rate, to determine the components with the largest contribution to the GDP growth rate, to study the impact of the key rate as the main instrument of monetary policy on the components of money supply M2 within the framework of its structural analysis. The conclusions obtained as a result of the study can be used for the purpose of institutional correction of the monetary policy, which has as a benchmark the stimulation of economic growth simultaneously with the inflation rate corresponding to the established goal. Also, the results of the analysis can be used for the purpose of adjusting the targeting policy in the case of such structural dynamics of money supply M2, which does not ensure either the achievement of the inflation target or the growth rate.

The impact of a set of monetary policy instruments on the components of money supply M2 as its basic parameter is important. Since individual components of money supply M2 have different effects on the growth rate of the economy and inflation rate, the distributional effect of the impact of instruments on the components will have a significant impact on the result.

Let us present a theoretical scheme for assessing the impact of monetary and fiscal policy instruments on the structure of money supply M2 and the structure of money supply M2 on the indicators

of economic growth, inflation rate and the integral effect of economic growth policy in Russia (Fig. 3.19).

As relevant instruments affecting the parameters of monetary policy and its implementation (application) were used [68, p.38]: 1) the amount of the National Welfare Fund, billion rubles (x_{i1}); 2) monetary base (broad definition), billion rubles (x_{i2}); 3) state budget expenditures, total, billion rubles (x_{i3}); 4) state budget deficit/surplus, billion rubles (x_{i4}); 5) the amount of the state internal debt of Russia, billion rubles (x_{i5}); 6) the amount of the state external debt of Russia, billion rubles (x_{i6}); 7) required reserves (balances of mandatory reserve accounts deposited by credit institutions), billion rubles (x_{i7}) ; 8) key rate, % (x_{i8}); 9) absorption of liquidity (deposits of credit institutions with the Bank of Russia + bonds of the Bank of Russia with credit institutions), billion rubles (x_{i9}); 10) USD/RUB exchange rate, RUB per USD 1 (x_{i10}).

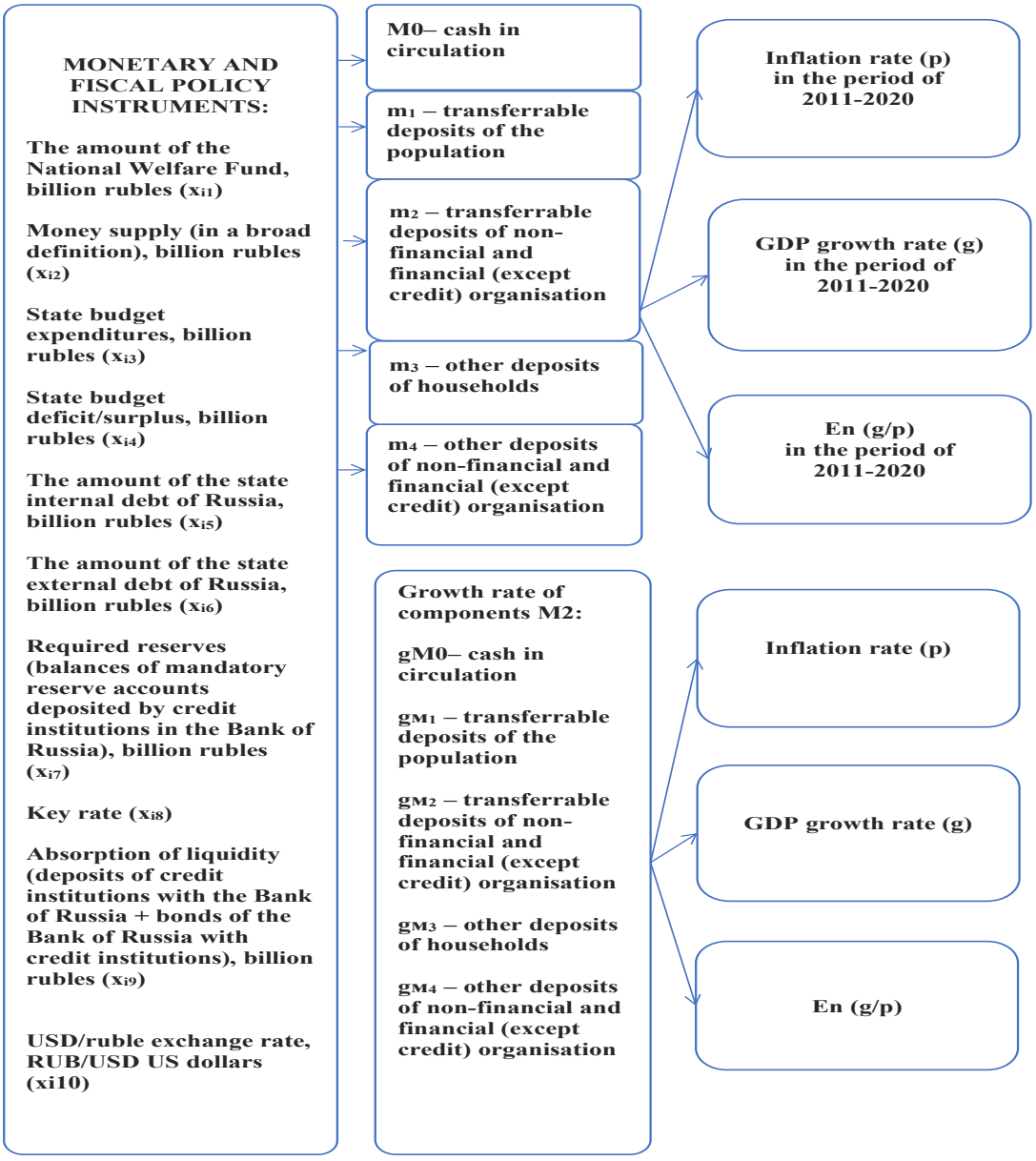

Figure 3.19 - Theoretical scheme for assessing the impact of monetary and fiscal policy instruments on the structure of money supply M2 and the structure of money supply M2 on the indicators of economic growth, inflation rate and integral effect of economic growth policy in Russia

Source: developed by the author

Table 3.2 - Institutional matrix of distribution of the influence of monetary and fiscal policy instruments on the components of money supply M2 and the component on GDP growth and inflation in Russia in the period 2011-2020 [81] [68, c.36-38]

M2 components	M0	m1	m2	m3	m4
	Cash in circulation	Transferrable deposits of the population	Transferrable deposits of non-financial and financial (except credit) organisation	Other deposits of households	Other deposits of non-financial and financial (except credit) organisation
Composition of the component	Banknotes and coins in circulation.	Surplus balance of individuals (residents of the Russian Federation) on on-demand accounts (including bank cards transactions accounts) that in the banking system of the Russian Federation in rubles are opened, and accrued interests.	Surplus balance of non-financial and financial (except credit ones) institutions (residents of the Russian Federation) on settlement accounts, current accounts that in the banking system of the Russian Federation in rubles are opened, and accrued interests.	Surplus balance of individuals on fixed deposits in rubles involved by banking system of the Russian Federation, and accrued interests.	Surplus balance of non-financial and financial (except credit ones) institutions on fixed deposits in rubles involved by banking system of the Russian Federation, and accrued interests.
Estimation of standard measures of monetary and fiscal policy impact on components in the period	R squared 0,96 Adjusted R squared 0,96 $M0 = 154{,}9 + 0{,}06 \cdot xi_1 +$	R squared 0,96 Adjusted R squared 0,96 $m_1 = -277{,}9 + 0{,}18 \cdot xi_1 + 0{,}3 \cdot xi_2 - 0{,}11 \cdot xi_3 + 0{,}32 \cdot xi_5 - 6{,}9 \cdot xi_8 - 17{,}9 \cdot xi_{10}$ [83] xi_4, xi_6, xi_7, xi_9 are excluded	R squared 0,82 Adjusted R squared 0,81 $m_2 = 637{,}7 + 0{,}08 \cdot xi_1 + 0{,}12 \cdot xi_2 + 0{,}12 \cdot xi_3$	R squared 0,92 Adjusted R squared 0,91 $m_3 = 494 - 0{,}46 \cdot xi_1 + 0{,}35 \cdot xi_2 + 0{,}53 \cdot xi_5 + 0{,}002 \cdot xi_6 + 3{,}32 \cdot xi_7 - 36{,}7 \cdot xi_8$ [85] $xi_3, xi_4, xi_9, xi_{10}$ are excluded	R squared 0,92 Adjusted R squared 0,92 $m_4 = -32{,}4 + 0{,}2 \cdot xi_2 - 0{,}12 \cdot xi_3 + 0{,}35 \cdot xi_5 + 0{,}0005 \cdot xi_6$

[81] This period is due to available statistics on M2 components. The time period for analysis is shorter than for the whole M2 aggregate. Therefore, the impact of the aggregate on growth and inflation may diverge from the overall impact of the set of components, because the time periods are different.
Source of statistical data: Statistical Bulletin of the Bank of Russia No. 10 (341) 2021, p. 282.

[83] R^2=0,97, R^2adj=0,96, F- test =540 (p<0,00001), White test n*R^2=58,6 (p=0,0004), Durbin–Watson statistic d=0,94 (d_l =1,301, d_u=1,732)

[85] R^2=0,92, R^2adj=0,91, F- test =207 (p<0,00001), White test n*R^2=100,3 (p<0,00001), Durbin–Watson statistic d=0,5 (d_l =1,301, d_u=1,732)

M2 components	M0	m1	m2	m3	m4
of 2011 - 2020	$+0{,}58 \cdot xi_2 + 0{,}17 \cdot xi_3 + 0{,}2 \cdot xi_4$- $-0{,}0005 \cdot xi_6 +$ $+0{,}77 \cdot xi_7 - 4{,}31 \cdot xi_8$ $-0{,}6 \cdot xi_9$ $+20{,}9 \cdot xi_{10}$[82] xi_5 is excluded		$+0{,}0003 \cdot xi_6 -$ $-10 \cdot xi_8 - 0{,}27 \cdot xi_9$[84] xi_4, xi_5, xi_7, xi_{10} are excluded		$+1{,}38 \cdot xi_7$ $-19{,}9 \cdot xi_{10}$[86] xi_1, xi_4, xi_8, xi_9 are excluded
Assessment of money supply M2 components impact on GDP growth rate (g) in the period of 2011-2020			R squared 0,71 Adjusted R squared 0,68 $g = 31{,}9 - 0{,}033 \cdot m2$[87]		
Assessment of components growth rate of money supply M2 impact on GDP growth		R squared 0,76 Adjusted R squared 0,62 $g = -0{,}1 + 9{,}59 \cdot gm1 - 31{,}7 \cdot gm2 + 11{,}9 \cdot gm3$[88]			

[82] R^2=0,97, R^2adj=0,96, F-test=354,5 (p<0,00001), White test n*R^2=77,4 (p=0,02), Durbin–Watson statistic d=1,42 (d_l =1,301, d_u=1,732)
[84] R^2=0,83, R^2adj=0,82, F- test =91,3 (p<0,00001), White test n*R^2=30,4 (p=0,3), Durbin–Watson statistic d=1,2 (d_l =1,301, d_u=1,732)
[86] R^2=0,93, R^2adj=0,92, F- test =242,8 (p<0,00001), White test n*R^2=35,4 (p=0,13), Durbin–Watson statistic d=0,6 (d_l =1,301, d_u=1,732)
[87] R^2=0,72, R^2adj=0,68, F- test =20,3 (p=0,002), White test n*R^2=0,56 (p=0,77), Durbin–Watson statistic d=1,66 (d_l =0,6, d_u=1).
[88] R^2=0,77, R^2adj=0,63, F- test =5,45 (p=0,05), White test n*R^2=1,95 (p=0,58), Durbin–Watson statistic d=1,18 (d_l =0,279, d_u=2,433).

M2 components	M0	m1	m2	m3	m4
rate (g) in the period of 2011-2020					
Estimation of money supply M2 components impact on inflation rate (p) in the period of 2011-2020	R squared 0,87 Adjusted R squared 0,77 $p = 48{,}5 - 0{,}06 \cdot M0$ $+0{,}04 \cdot m2 -$ $-0{,}022 \cdot m3 +$ $+0{,}05 \cdot m4$[89]		R squared 0,87 Adjusted R squared 0,77 $p = 48{,}5 - 0{,}06 \cdot M0$ $+0{,}04 \cdot m2 - 0{,}022 \cdot m3$ $+0{,}05 \cdot m4$[90]		
Assessment of components growth rate of money supply M2 impact on inflation rate (p) in the period of 2011-2020		R squared 0,88 Adjusted R squared 0,84 $p = 10{,}15 - 36{,}8 * gm1$ $+34{,}2 * gm2$[91]			
Assessment of money supply M2 components impact on En			R squared 0,86 Adjusted R squared 0,83 $E_n = 7{,}76 - 0{,}009 * m2$ $+0{,}0006 * m3$[92]		

[89] R^2=0,88, R^2adj=0,78, F- test =8,6 (p=0,02), White test n*R^2=3,4 (p=0,49), Durbin–Watson statistic d=1,86 (d_l =0,13, d_u=2,69).
[90] R^2=0,88, R^2adj=0,78, F- test =8,6 (p=0,02), White test n*R^2=3,4 (p=0,49), Durbin–Watson statistic d=1,86 (d_l =0,13, d_u=2,69).
[91] R^2=0,88, R^2adj=0,84, F- test =23,4(p=0,001), White test n*R^2=6,5 (p=0,26), Durbin–Watson statistic d=2,34 (d_l =0,408, d_u=1,389).
[92] R^2=0,87, R^2adj=0,83, F- test =23 (p=0,0008), White test n*R^2=3,7 (p=0,6), Durbin–Watson statistic d=2,25 (d_l =0,34, d_u=1,733).

M2 components	M0	m1	m2	m3	m4
(g/p) in the period of 2011-2020					
Assessment of components growth rate of money supply M2 impact on En (g/p) in the period of 2011-2020	R squared 0,89 Adjusted R squared 0,85 $E_n = 0{,}35 + +4{,}79 * gM0 - -10{,}7 * gm2$[93]		R squared 0,89 Adjusted R squared 0,85 $E_n = 0{,}35 + +4{,}79 * gM0 - -10{,}7 * gm2$[94]		

Source: developed by the author

[93] R^2=0,89, R^2adj=0,86, F- test =24,9 (p=0,001), White test n*R^2=1,8 (p=0,88), Durbin–Watson statistic d=1,23 (d_l =0,408, d_u=1,389).
[94] The same

The analysis of the impact of monetary policy instruments on the components of money supply M2, as well as the components on economic growth and inflation rate in the Russian Federation in the period from 2011 to 2020 allowed us to propose an institutional matrix of influence distribution (Table 3.2). The developed and formed matrix makes it possible to solve the problem of determining how the influence of the M2 money supply on the elements of the economy is distributed. In the institutional matrix, the best regression models that link the components of the M2 money supply and important monetary and fiscal policy instruments are selected and presented and show the impact of the M2 money supply components on the GDP growth rate and inflation rate. Table 3.3 presents the impact of monetary and fiscal policy instruments on selected components of the M2 money supply. The impact is characterised as an increase or decrease in each component of M2 money supply due to the application of a combination of policy instruments.

Table 3.3 - Influence of monetary and fiscal policy instruments on components of money supply M2 in Russia, 2011-2020. [68, p.19] (by models and in the designations according to Table 3.2)

Components of money supply M2	Characterisation - increase or decrease	Instruments in place to ensure this characteristic
M0	Increase	xi1, xi2, xi3, xi4, xi7, xi10
	Decrease	xi6, xi8, xi9
m1	Increase	xi1, xi2, xi5
	Decrease	xi3, xi9, xi10
m2	Increase	xi1, xi2, xi3, xi6
	Decrease	xi8, xi9
m3	Increase	xi2, xi5, xi6, xi7
	Decrease	xi1, xi8
m4	Increase	xi2, xi5, xi6, xi7
	Decrease	xi3, xi10

Source: compiled by the author

Thus, Table 3.3 clearly presents the distribution of the influence of monetary and fiscal policy instruments by components of money supply M2 on the basis of regression models from the institutional matrix (Table 3.4) for the period 2011-2020. The difference in the influence of the following instruments was determined: x_{i1}, x_{i2}, x_{i3}, x_{i4}, x_{i5}, x_{i6}, x_{i7}, x_{i8}, x_{i9} x_{i10} according to the previously introduced notations.

Based on the institutional matrix, it can be concluded that the different impact of monetary and fiscal policy instruments on the components of money supply M2, as well as the different impact of structural components of M2 on the GDP growth rate and inflation rate. Thus, the presented institutional regression matrix (Table 3.2) confirms the inhibition of the growth rate of the economy when the m2 component increases, as well as its growth rate. The growth rate of components m1 and m3 stimulate

growth over the studied time interval. Of interest is the result of weakly negative relationship between the growth rate of money supply M2 and GDP growth rate in Russia in the interval 2011-2020, while their positive relationship in the interval of twenty years from 2000 to 2020. Consequently, there was an inhibition of economic growth by the dynamics of money supply M2, which was a consequence of the policy measures implemented by the monetary authorities during this time interval. Regarding the inflation rate, in the period 2011-2020, the components M0 and m3 had an inhibitory effect, while the components m2 and m4 stimulated the growth of inflation. The growth rate of m1 restrained inflation, while the growth rate of m2 accelerated it. The integral effect of En was influenced upwards by m3 and growth rate M0, downwards by m2 and growth rate m2.

The result of this analysis is the identification of a diverse, structural distribution of the strength of the influence of policy instruments and the M2 money supply component, which determines the need for both the correction of monetary policy measures in Russia and the study of the sensitivity of policy targets to the instruments and the determination of changes in this sensitivity. It is important to determine the causes of the negative accumulation effect, which appears at different values of money supply M2 and does not disappear with its increase. As a result, it is possible to change the content of the monetary policy of its objects and the formation of new reactions to the monetary policy. In this case, the Bank of Russia plays a significant role in ensuring insensitivity of macroeconomic targets to changes in monetary policy instruments.

Thus, in the dynamics of money supply M2, household deposits were of the greatest importance; the change in the growth rate of the components of money supply M2 was similar to the change in the growth rate of GDP and at the same time was inverse to the change in inflation, which increased when the growth rate of the components decreased and decreased when it increased.

As part of the study of the impact of money supply as an instrument of monetary policy on macroeconomic targets, we will conduct a study of the relationship between broad money supply and GDP growth rate.

The Bank of Russia defines broad money as M2, other foreign currency deposits and debt securities[95]. Foreign currency deposits" means "balances on time deposit accounts and other funds attracted for the term in foreign currency, as well as all accrued interest on deposit operations in foreign currency of residents of the Russian Federation (organisations and individuals)".

Quarterly data for the period from Q1 2000 to Q3 2021 were used to investigate the relationship between broad money supply and GDP growth rate. The use of quarterly data is determined by the frequency of GDP calculation. Due to the fact that broad money supply is a momentary indicator, data

[95] Data of the Bank of Russia https://www.cbr.ru/statistics/macro_itm/dkfs/monetary_agg/

as of the beginning of each quarter[96] were used in accordance with the principle of data publication by the Bank of Russia.

The broad money indicator is adjusted to 2000 prices using the GDP deflator developed by Rosstat [97].

GDP growth rate is calculated as the index of physical volume of GDP minus 100[98] .

Figure 3.20 shows the dynamics of broad money in 2000 prices and monetary aggregate M2[99], similarly adjusted to 2000 prices. It can be seen that the dynamics of these two indicators are similar.

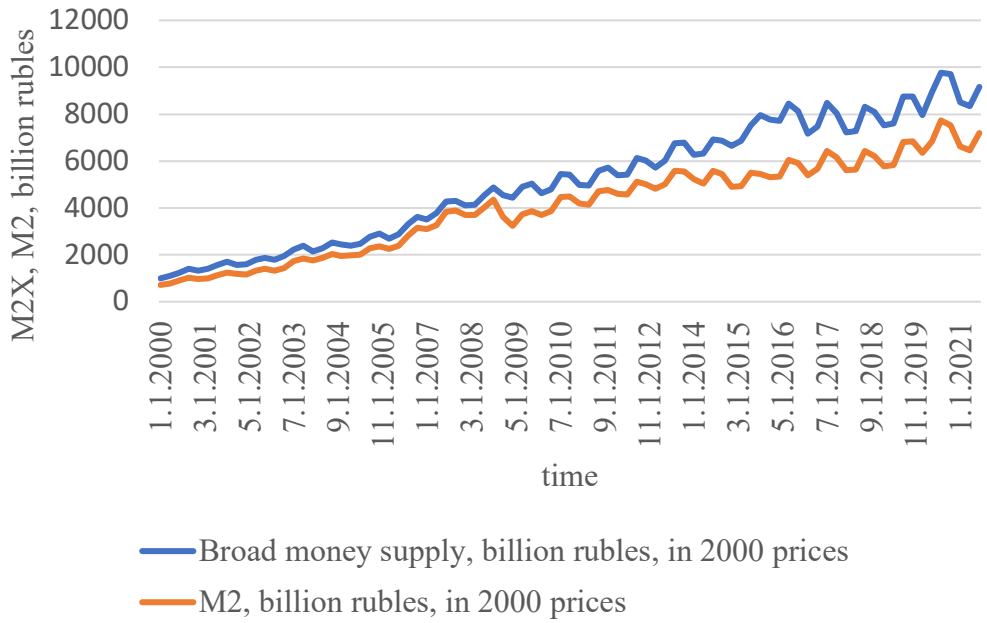

Figure 3.20 - Broad money supply and monetary aggregate M2, 2000-2021

Source: built by the author

Figure 3.21 presents time series of broad money supply in 2000 prices and GDP growth rate[100]. In general, opposite trends are observed in the dynamics of these indicators.

For a more precise assessment of the existence of a relationship between broad money supply and GDP growth rate, a correlation field was plotted (see Fig. 3.22) and the correlation coefficient was calculated, which was -0.57 and statistically significant at a high level of significance. This allows us to say that there is a moderate inverse relationship between the GDP growth rate and the value of broad money reduced to 2000 prices.

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[96] Data of the Bank of Russia, https://cbr.ru/vfs/statistics/credit_statistics/broadmoney_sa.xlsx, https://cbr.ru/Content/Document/File/128613/monetary_agg.xlsx

[97] Rosstat data, https://rosstat.gov.ru/storage/mediabank/VVP_kvartal_s_1995.xls

[98] Ibid.

[99] Data of the Bank of Russia, https://cbr.ru/Content/Document/File/128613/monetary_agg.xlsx, https://cbr.ru/vfs/statistics/credit_statistics/M2-M2_SA.xlsx

[100] Source: https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls https://cbr.ru/Content/Document/File/128613/monetary_agg.xlsx, https://cbr.ru/vfs/statistics/credit_statistics/M2-M2_SA.xlsx

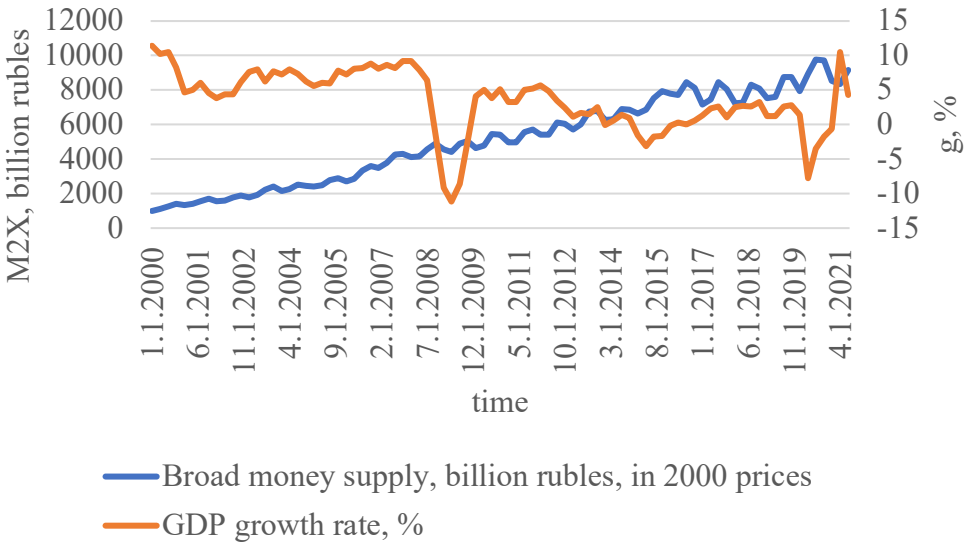

Figure 3.21 - Dynamics of broad money supply and GDP growth rate, 2000-2021

Source: built by the author

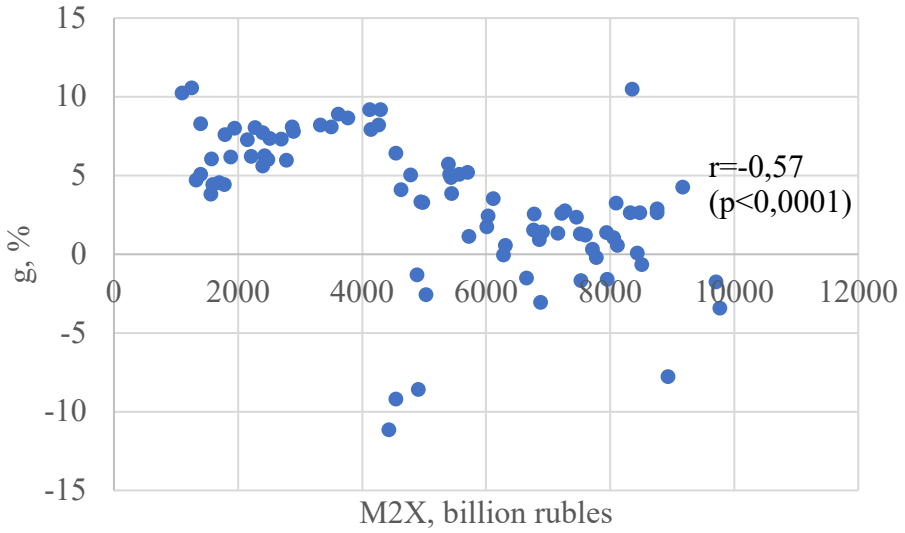

Figure 3.22 - Correlation of GDP growth rate and broad money supply M2X

Source: built by the author

Since GDP growth rate and broad money supply are statistically significantly correlated, a paired linear regression equation was estimated:

$$g = 8{,}6 - 0{,}000999 \cdot M2X,^{101}$$

where g- GDP growth rate, %,

M2X - broad money supply in 2000 prices, rub. bln.

[101] R^2=0,32, R^2adj=0,31, F-statistic =40 (p<0,00001), DW=0,5 (DW_l=1,62, DW_u=1,67), White test n* R^2=2,25 (p=0,33).

All model coefficients are statistically significant according to Student's criterion, the model is significant according to Fisher's criterion. According to the results of White's test, there is no heteroscedasticity of residuals. The value of Durbin-Watson statistic indicates the presence of autocorrelation of residuals, due to which the estimates of standard errors are calculated in the form of Newey-West.

The variation of broad money supply in prices of 2000 explains 32% of the variation of GDP growth rate, as evidenced by the value of the coefficient of determination. If the broad money supply increases by 1 billion rubles, the GDP growth rate decreases by 0.000999%. In other words, for the GDP growth rate to decrease by 1%, it is necessary to increase the broad money supply by Rb 1001bn on average, and vice versa, for the GDP growth rate to increase by 1%, it is necessary to decrease the broad money supply by Rb 1001bn on average (in 2000 prices).

Thus, it can be concluded that the value of broad money supply in 2000 prices has a moderate inverse effect on the GDP growth rate, which makes it possible to assume a negative impact of foreign currency deposits and debt securities on the GDP growth rate.

Thus, as a result of the conducted analysis, we have revealed a diverse, structural distribution of the strength of the influence of policy instruments on the components of money supply M2 and the component of money supply M2 on macroeconomic targets, which determines the necessity of both the correction of monetary policy measures in Russia and the study of the sensitivity of policy targets to instruments and the determination of changes in this sensitivity.

3.3 Structural distribution of monetary policy instruments by economic development targets[102]

In this paragraph, in the development of the principle of "targets-instruments" in relation to monetary policy, we will attempt to select instruments of monetary growth policy and investigate the possibility of distribution of their influence on such macroeconomic targets as economic growth rate, real GDP, inflation rate and unemployment rate. Based on the application of J. Tinbergen's theory of economic policy, monetary theory and structural analysis, we will construct a set of econometric equations that reflect the impact of monetary policy on GDP, inflation, unemployment [221, p.5].

For this purpose, the main instruments of monetary growth policy were identified, and the task was set to assess the impact of individual instruments and their aggregates on the main targets of macroeconomic development [32, 35, 36, 37].

[102] In preparing this section of the dissertation the following publication, made by the author in co-authorship, which reflects the main results, provisions and conclusions of the study, was used: Sukharev O.S., Afanasyeva O.N. Distribution of monetary policy instruments by development goals// Society and Economy. - 2022. - №6. - C. 5-28. (1.2/0.6).

Let us present a theoretical scheme of the structural distribution of monetary policy instruments by the targets of economic development in Russia: an extension of the principle of "targets-instruments" J. Tinbergen (Figure 3.23).

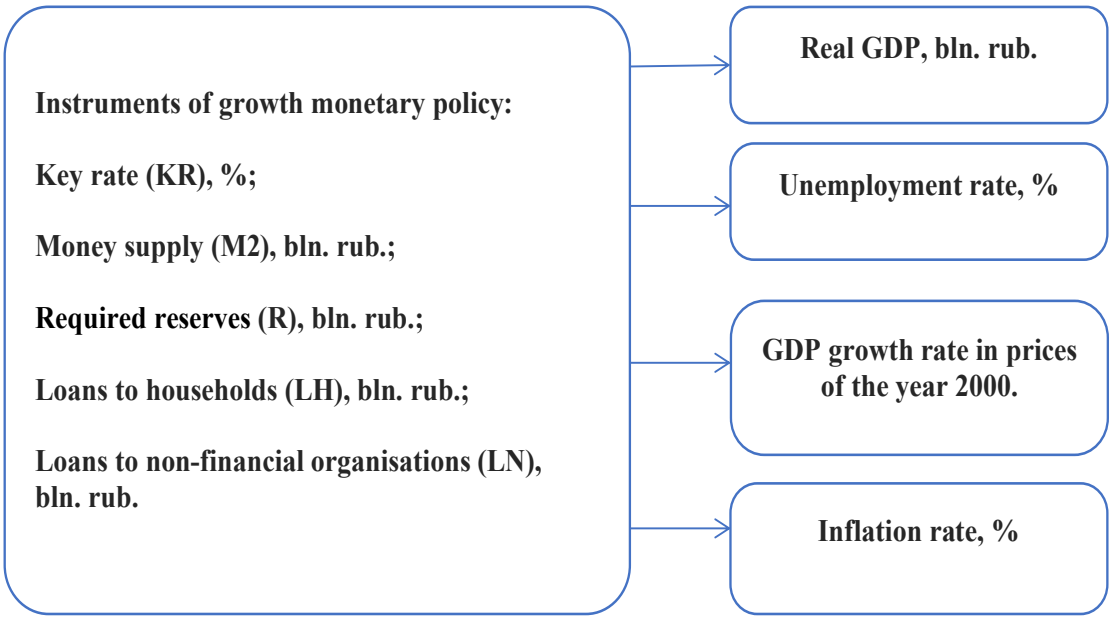

Figure 3.23 - Theoretical scheme of structural distribution of monetary policy instruments by economic development targets in Russia: extension of the "targets-instruments" principle by J. Tinbergen

Source: developed by the author

The instruments of monetary growth policy specifically include loans to households and loans to non-financial organisations, as they are the conduits of monetary growth policy in the economy.

Econometric analysis was implemented by means of EViews version 10 software tool specialised for working with time series data. In order to obtain the most informative models in the context of the study, the following actions were implemented. Under the assumption of linearity of the influence of monetary policy instruments on the targets of economic development, correlation analysis was first performed, including calculation, significance testing and interpretation of Pearson linear correlation coefficients. Then, based on the correlation analysis, the paired and multiple linear regression models were estimated using the least squares method (LSM). For each model, the significance of the equation as a whole was assessed using Fisher's criterion F-test and the significance of each coefficient was assessed using Student's criterion, test. The Durbin-Watson test for autocorrelation of the residuals of the Durbin-Watson model and White's test for heteroscedasticity of the residuals were used to test whether the Gauss-Markov conditions were fulfilled. Preliminary correlation analysis, in addition to the selection of monetary policy instruments significantly affecting macroeconomic targets, also serves the purpose of identifying the most correlated instruments, the simultaneous inclusion of which in the model is impossible to avoid the effect of multicollinearity.

This sequence of actions is used to assess the links between the indicators under study (macroeconomic policy targets and monetary policy instruments), as well as to quantify the impact of the set of instruments under study on each objective separately. The development of this approach makes it possible to take into account the mutual influence of both instruments and targets on each other.

The assessment of macroeconomic models of the influence of monetary policy instruments on the targets was carried out on the basis of annual data for 2000-2020. We considered four macroeconomic targets: real GDP growth (in 2000 prices), GDP growth rate, inflation rate, and unemployment rate.

During modelling, the data on the value of nominal GDP[103] provided by Rosstat were adjusted to 2000 prices by applying the GDP deflator[104]. Then we calculated the growth rate of real GDP (in 2000 prices) using the following formula:

$$g = \left(\frac{GDP_t}{GDP_{t-1}} \cdot 100\%\right) - 100,$$

where g - GDP growth rate,

GDP_t – real GDP in 2000 prices in year t,

GDP_t – real GDP in 2000 prices in year t-1.

Rosstat develops an indicator of consumer price index for goods and services[105], which is most often used as an estimate of the inflation rate, calculated according to the formula:

$$\mathrm{p} = \mathrm{CPI} - 100,$$

where p - inflation rate,

CPI – consumer price index for goods and services.

The indicator calculated by Rosstat according to the methodology of the International Labour Organisation[106] was used as an indicator of the unemployment rate.

Due to the fact that some of the indicators required for modelling in the initial sources of information are presented with a frequency of less than a year, it was necessary to aggregate them. The choice of aggregation method depended on the nature of a particular statistical indicator.

Thus, interval quarterly data on such indicators as the amount of loans to non-financial organisations in billion rubles[107], and loans to households in billion rubles[108]. For example, interval quarterly data on such indicators as the value of loans to non-financial organisations in billion roubles

[103] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VVP_God_s_1995.xls
[104] Ibid.
[105]Data source: Rosstat https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm, https://fedstat.ru/indicator/31074
[106] Data source: Rosstat https://www.fedstat.ru/indicator/43062
[107] Data source: Economic Data Bank FRED https://fred.stlouisfed.org/series/QRUCAMXDCA
[108] Data source: Economic Data Bank FRED https://fred.stlouisfed.org/series/QRUHAMXDCU

and loans to households in billion rubles were aggregated by summation in accordance with the World Bank methodology[109] to obtain the annual value.

The values of money supply M2 (in billion rubles) [110], key rate (%)[111], as well as the balances of mandatory reserve accounts deposited by credit institutions with the Bank of Russia for attracted funds (in billion rubles) [112] are moment indicators, which allows us to use the values as of the beginning of each year.

For the purpose of comparability with real GDP, the price indicators are adjusted to 2000 prices by applying the annual GDP deflator[113]. This is a chain indicator of the growth rate of GDP in the current year compared to the previous year in constant prices. For adjustment to the base year 2000, first the product of chain indices for the corresponding period, representing the base deflator, was calculated. Next, the deflator was converted from per cent into coefficients to deflate the required indicators.

To build multiple regression models, first of all, the correlation coefficients between macroeconomic targets and monetary policy instruments were estimated (see Annexes V-E). The figures show a significant correlation of almost all monetary policy instruments with macroeconomic targets.

Figure 3.24 presents the correlations of monetary policy instruments with each other, from which we can conclude that they are significantly correlated.

The absence of correlation with monetary policy instruments is observed only for required reserves, which makes it possible to include their value with all instruments in the linear regression model.

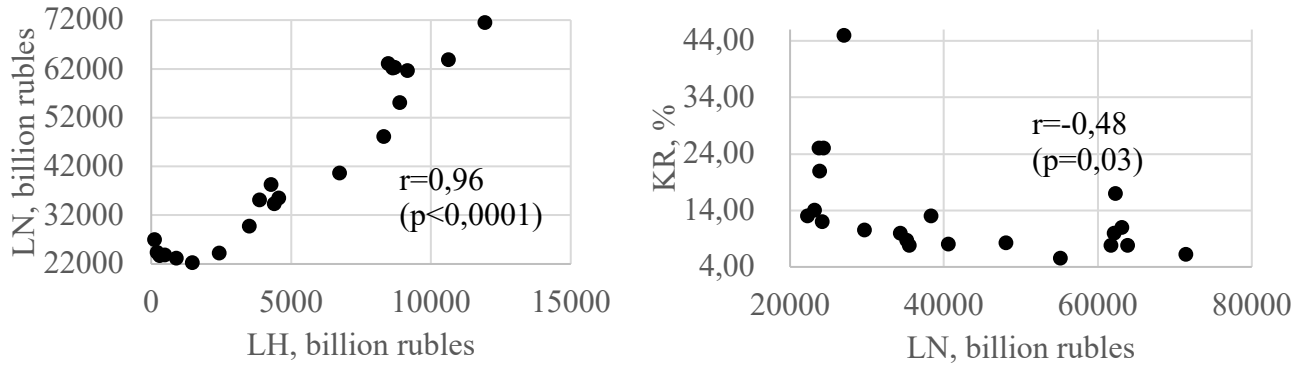

Figure 3.24- Correlation between macroeconomic policy instruments in Russia (Sheet 1 of 2)

Source: built by the author

[109] Official website of the World Bank https://worldbank.org/
[110] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/ms_m21.xlsx
[111] Data source: Bank of Russia https://cbr.ru/hd_base/KeyRate/ и http://www.cbr.ru/statistics/idkp_br/refinancing_rates1/#highlight=ставка%7Срефинансирования%7Сставки%7Сставке
[112] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[113] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995.xls

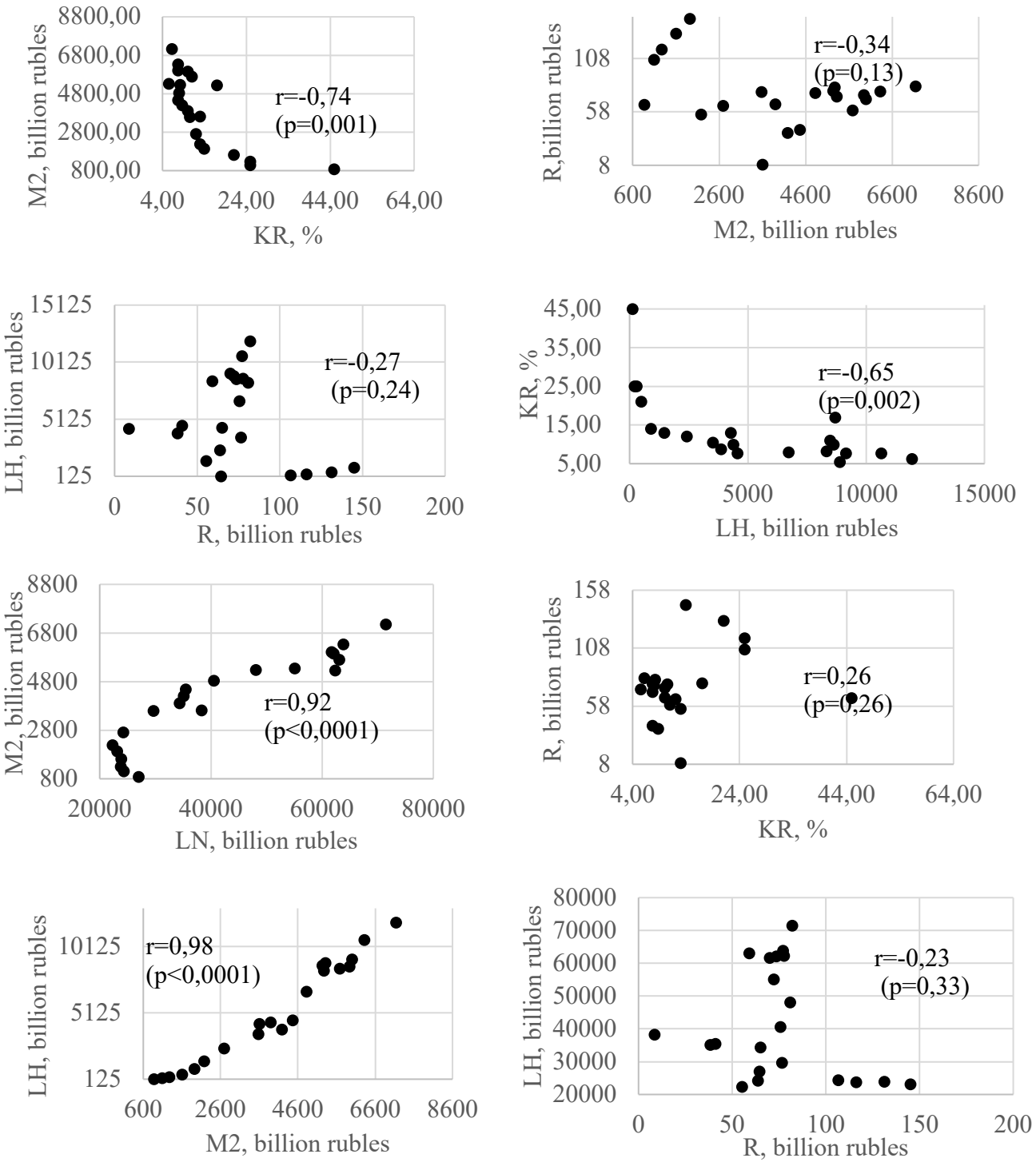

Figure 3.24- Correlation between macroeconomic policy instruments in Russia (Sheet 2 of 2)

The closest relationship is observed for the following instruments: "loans to households - M2 money supply", "loans to households - loans to non-financial organisations", "loans to non-financial organisations - M2 money supply". Therefore, it is impossible to include M2 money supply and both types of loans in the model at the same time, as this would result in multicollinearity of the model. This would lead to standard errors of the coefficients and distort both the results of the significance tests and

the signs of the parameters. For this reason, three models were estimated for each macroeconomic target. The set of models is presented below [221, p.10-11].

$$GDP = 11076 + 0{,}46 \cdot LH - 79{,}98 \cdot KR - 8{,}1 \cdot \mathrm{P},^{114} \quad (3.4)$$
$$GDP = 6790{,}3 + 1{,}26 \cdot \mathrm{M2},^{115} \quad (3.5)$$
$$GDP = 6637{,}4 + 0{,}12 \cdot LN,^{116} \quad (3.6)$$
$$g = 6{,}33 - 0{,}0006 \cdot LH,^{117} \quad (3.7)$$
$$g = 9{,}7 - 0{,}0002 \cdot LH,^{118} \quad (3.8)$$
$$g = 7{,}05 - 0{,}0009 \cdot \mathrm{M2},^{119} \quad (3.9)$$
$$\mathrm{p} = 11{,}6 + 0{,}28 \cdot KR - 0{,}0013 \cdot \mathrm{M2},^{120} \quad (3.10)$$
$$\mathrm{p} = 21{,}7 + 0{,}001 \cdot LH,^{121} \quad (3.11)$$
$$\mathrm{p} = 18{,}5 - 0{,}0002 \cdot LH,^{122} \quad (3.12)$$
$$U = 6{,}7 - 0{,}002 \cdot LH + 0{,}08 \cdot KR,^{123} \quad (3.13)$$
$$U = 9{,}5 - 6{,}82 \cdot 10^{-5} \cdot LN,^{124} \quad (3.14)$$
$$U = 9{,}5 - 0{,}007 \cdot \mathrm{M2},^{125} \quad (3.15)$$

where GDP - gross domestic product,

g - growth rate of gross domestic product,

p - inflation rate,

U - unemployment rate,

LH - loans to households,

LN - loans to non-financial organisations,

KR - key rate,

M2 - money supply,

R - required reserves of credit organisations on attracted funds.

All model data are statistically significant according to Fisher's criterion, and their parameters are statistically significant according to Student's criterion. The presence of heteroscedasticity was found in model (3.5), autocorrelation of residuals was determined in models (3.4-3.6), (3.11-3.12), (3.14-3.15), but traditional methods of their elimination did not yield results. Heteroscedasticity and autocorrelation of the residuals of the model estimated by the least squares method lead to bias in the estimates of the standard errors of the coefficients when there is no bias in the coefficient estimates per se. As a result, errors occur when testing the significance of the coefficients (the value of the coefficient estimate is

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[114] R^2=0,96, R^2adj=0,95, F-statistic=134 (p<0,00001), DW=1,46 (DW_l=1,03, DW_u=1,67), White test n*R^2=9,8 (p=0,4).
[115] R^2=0,95, R^2adj=0,95, F-statistic=392,8 (p<0,00001), DW=0,8 (DW_l=1,22, DW_u=1,42), White test n*R^2=8 (p=0,02).
[116] R^2=0,73, R^2adj=0,72, F-statistic =52,6 (p<0,00001), DW=0,36 (DW_l=1,22, DW_u=1,42), White test n*R^2=2,9 (p=0,24).
[117] R^2=0,25, R^2adj=0,2, F-statistic =6,2 (p=0,02), DW=1,68 (DW_l=1,22, DW_u=1,42), White test n*R^2=2,4 (p=0,3).
[118] R^2=0,68, R^2adj=0,58, F-statistic =9,9 (p=0,005), DW=1,78 (DW_l=1,22, DW_u=1,42), White test n*R^2=2,9 (p=0,23).
[119] R^2=0,16, R^2adj=0,12, F-statistic=3,6 (p=0,07), DW=1,64 (DW_l=1,22, DW_u=1,42), White test n*R^2=2,1 (p=0,35).
[120] R^2=0,78, R^2adj=0,75, F-statistic=31,8 (p=0,000001), DW=1,8 (DW_l=1,13, DW_u=1,54), White test n*R^2=8,4 (p=0,13).
[121] R^2=0,55, R^2adj=0,54, F-statistic =24 (p=0,000098), DW=1,15 (DW_l=1,22, DW_u=1,42), White test n*R^2=0,09 (p=0,95).
[122] R^2=0,41, R^2adj=0,38, F-statistic=13 (p=0,001857), DW=0,93 (DW_l=1,22, DW_u=1,42), White test n*R^2=0,08 (p=0,96).
[123] R^2=0,85, R^2adj=0,84, F-statistic=53 (p<0,00001), DW=1,5 (DW_l=1,22, DW_u=1,42), White test n*R^2=0,74 (p=0,98).
[124] R^2=0,55, R^2adj=0,53, F-statistic=23,9 (p=0,000103), DW=0,87 (DW_l=1,22, DW_u=1,42), White test n*R^2=1,15 (p=0,6).
[125] R^2=0,77, R^2adj=0,76, F-statistic=62,9 (p<0,00001), DW=1,13 (DW_l=1,22, DW_u=1,42), White test n*R^2=3,4 (p=0,2).

divided by the value of the standard error estimate when calculating the t-criterion). Therefore, in the process of model estimation we applied corrections in the form of Newey-West, which take into account the presence of both heteroskedasticity and autocorrelation, correcting the bias of the coefficient standard error estimates. For this reason, the results of model estimation are robust and the models themselves can be used to assess the impact of monetary policy instruments on macroeconomic targets.

Within the framework of the presented models, a set of monetary policy instruments is determined by constructing a set of equations, the values of which can be changed to achieve several macroeconomic targets.

On the basis of the models obtained for Russia we will analyse the monetary policy in 2000-2020. It is confirmed that monetary policy instruments influence 4 macroeconomic targets, namely: the amount of real GDP, GDP growth rate, inflation rate and unemployment rate. All 4 macroeconomic targets are influenced by the following instruments: loans to non-financial organisations, loans to households, M2 money supply. The key rate affects the three macroeconomic targets under study. Obligatory reserves of credit organisations affect only real GDP. GDP growth rate is affected by three instruments: loans to non-financial organisations, loans to households, money supply M2. Five monetary policy instruments affect real GDP: loans to non-financial organisations, loans to households, key rate, required reserves of credit institutions and money supply M2. Inflation rate is influenced by four instruments: loans to non-financial organisations, loans to households, money supply M2 and key rate. The unemployment rate is affected by four instruments: loans to non-financial organisations, loans to households, money supply M2 and the key rate.

The impact of monetary policy instruments on the inflation rate has the following character: reduction of the key rate, growth of loans to non-financial organisations, households and money supply M2 will lead to a decrease in the inflation rate.

The results of the research based on the presented models for Russia (3.4-3.15) are summarised in Table 3.4.

All presented models (3.4-3.15) have different values of coefficients of determination. The coefficient of determination shows how much of the variation in the macroeconomic target is explained by the variation in the monetary policy instruments included in the model. Thus, models with higher coefficient of determination have potentially higher forecasting ability.

Table 3.4 - Impact of monetary policy instruments on development targets*[126] [221, c.25]

Instruments	Targets			
	Real GDP	GDP growth rate	Inflation rate	Unemployment rate
Loans to households	(+)	(–)	(–)	(–)
Loans to non-financial organisations	(+)	(–)	(–)	(–)
Key rate	(–)	insignificant	(+)	(+)
Money supply M2	(+)	(–)	(–)	(–)
Required reserves	(–)	insignificant	insignificant	insignificant

* (+) means that with the growth of the instrument the value of the target indicator increases, (-) - decreases, n/a means no statistically significant impact
Source: developed by the author

The obtained models can be divided by the values of the coefficient of determination as follows:

1) more than 0.65 - for GDP (3.4-3.6), dependence of GDP growth rate on loans to non-financial organisations (3.8), dependence of inflation rate on money supply M2 and key rate (3.10), dependence of inflation rate on loans to households and key rate (3.13); dependence of unemployment rate on money supply M2 (3.15);

2) below 0.65 - for other models (3.7, 3.9, 3.11-3.12, 3.14).

Conclusions are formulated for the models of the first group, with high value of determination coefficients. However, all the constructed models are statistically significant and fulfil the other quality criteria of econometric models. Consequently, these models also allow us to draw conclusions about the impact of monetary policy instruments on macroeconomic targets.

Based on the study and the results presented in Table 3.6, we can conclude about the different impact of monetary policy on macroeconomic targets [19,32,35,36]. The most influential instruments on the achievement of macroeconomic targets are such instruments as: loans to non-financial organisations, loans to households, M2 money supply. These monetary policy instruments affect three macroeconomic targets: real GDP, inflation rate, unemployment rate. An increase in the indicators of these instruments leads to an increase in real GDP and a decrease in the inflation rate and unemployment rate. A decrease in the key rate results in an impact on real GDP, inflation rate, and unemployment rate. However, an increase in credit, money supply M2 leads to a decrease in GDP growth rate. Hence, the impact of monetary policy instruments on GDP growth rate is opposite. The result of this study is the conclusion that in order to influence the targets of real GDP growth, inflation and unemployment rate reduction it is necessary to increase the amount of loans to non-financial organisations, households,

[126] Source: compiled by the author based on the results of modelling and analysis

money supply M2 and reduce the key rate. At the same time, to influence the GDP growth rate it is necessary to use other instruments.

As a result of the study, we can conclude that the monetary policy of growth, conducted in Russia by general methods, leads to the result when the achievement of the development goal, the other goal - growth rate is not achieved. Consequently, the achievement of one goal inhibits the achievement of another macroeconomic goal. Therefore, the separation of monetary policy instruments of growth, identification of the strength of their influence on macroeconomic targets over a certain time interval, diversification and detailing of monetary policy is important. The presented approach reveals the structural content of monetary policy, expands the application of the principle of "targets-instruments" J. Tinbergen and demonstrates that using a combination of monetary policy instruments in Russia it is possible to achieve three macroeconomic targets - real GDP, inflation rate and unemployment rate.

3.4 Modification of the Mundell-Fleming model for a new growth model

Let us investigate the interrelationships of monetary and exchange rate policy instruments in achieving macroeconomic targets: economic growth rate, inflation rate, real effective exchange rate of the ruble against the dollar and foreign currencies.

Before we present the theoretical scheme of the study in Figure 3.25.

To investigate the interrelationships of monetary and fiscal policy instruments, as well as their influence on macroeconomic policy targets, we calculated pairwise and partial correlation coefficients. The study was carried out using annual data from 2000 to 2021.

The following monetary policy instruments were considered: key rate, %[127]; money supply M2, bln. rub.[128]; monetary base in broad definition, bln.rub. [129]; required reserves, bln.rub. (balances on the accounts of required reserves deposited by credit institutions with the Bank of Russia for attracted funds)[130]; liquidity absorption, bln.rub. (deposits of credit institutions with the Bank of Russia + bonds of the Bank of Russia with credit institutions) [131].

[127] Data source: https://cbr.ru/hd_base/KeyRate/ и http://www.cbr.ru/statistics/idkp_br/refinancing_rates1/#highlight=ставка%7Срефинансирования%7Сставки%7Сставке
[128] Data source: http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx
[129] Data source: http://www.cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[130] Data source: https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[131] Data source: https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx

As well as the following budget policy instruments: state budget revenues, bln. rub.[132]; state budget expenditures, bln. rub.[133]; state budget deficit/surplus, bln. rub.[134]; ratio of state budget deficit/surplus to GDP, %[135].

In addition, three macroeconomic policy targets are considered: economic growth rate (GDP growth rate), %[136]; inflation rate (consumer price index - 100) [137] %; real effective exchange rate of the ruble against the dollar and foreign currencies (from 2005 to 2021)[138].

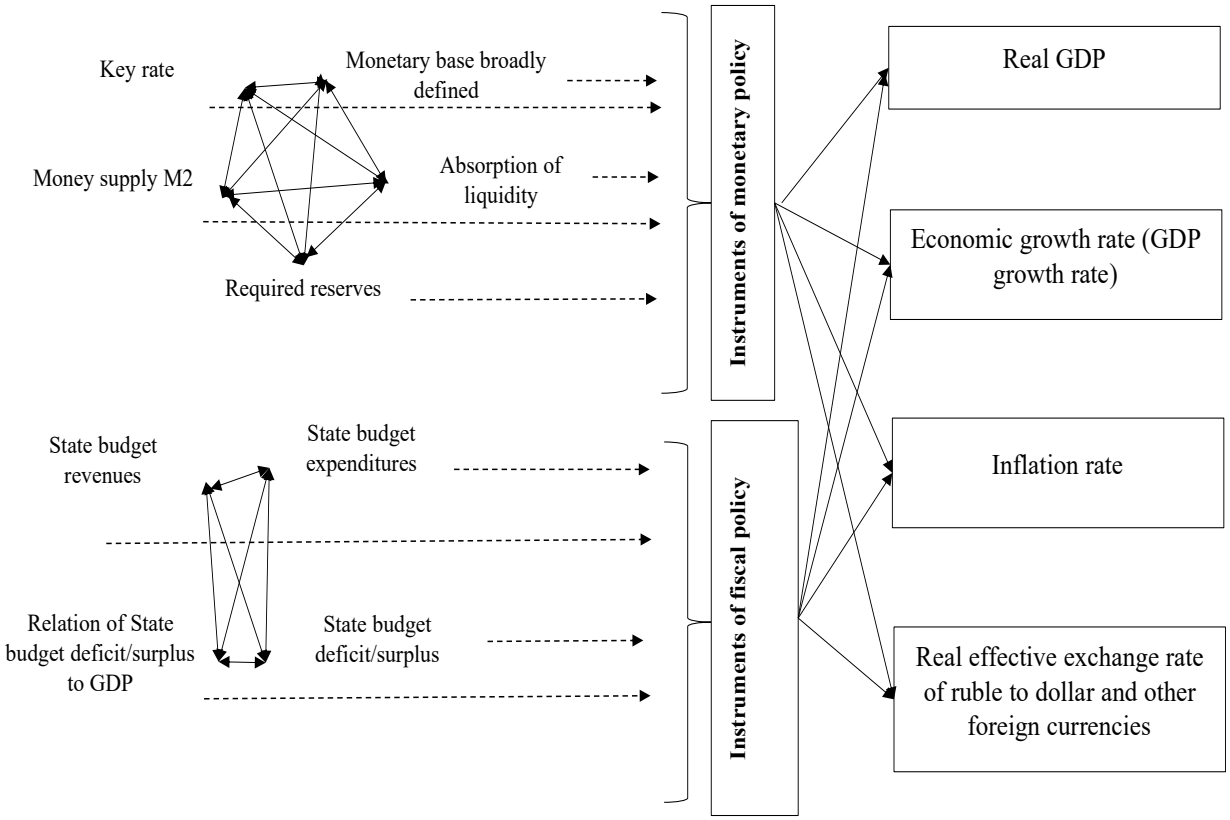

Figure 3.25 - Theoretical scheme of interrelationship of monetary and fiscal policy instruments in achieving macroeconomic targets: economic growth rate, inflation rate, real effective exchange rate of the ruble against the dollar and foreign currencies

Source: developed by the author

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[132] Data source: https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2022/08/main/fedbud_year.xlsx

[133] Data source: https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2022/08/main/fedbud_year.xlsx

[134] Data source: https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2022/08/main/fedbud_year.xlsx

[135] Calculated by the author from: https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2022/08/main/fedbud_year.xlsx и https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995.xls

[136] Calculated by the author from: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995.xls

[137] Data source: https://gks.ru/bgd/regl/b04_17/IssWWW.exe/Stg/d010/i010080r.htm, https://fedstat.ru/indicator/31074

[138] Data source: https://www.fedstat.ru/indicator/42134

Note that the exchange rate is considered both as a target and as an instrument of monetary policy. All monetary indicators were adjusted to 2000 prices using the GDP deflator[139].

Annex ZH presents the pairwise correlation coefficients of monetary and fiscal policy instruments.

Revenues and expenditures of the state consolidated budget are naturally correlated with its deficit/surplus, both in monetary terms and as a percentage of GDP, also correlated with each other. Real effective exchange rates to the dollar and foreign currencies are also obviously correlated. These correlations do not seem necessary to consider due to their obviousness.

A statistically significant direct relationship is observed between the following indicators: government budget expenditures and monetary base, government budget expenditures and money supply M2, money supply and monetary base, liquidity absorption and monetary base, liquidity absorption and money supply, real effective ruble-dollar exchange rate and government budget deficit/ surplus (in rubles and as a percentage of GDP).

There are also a number of statistically significant inverse correlations: government budget deficit/surplus, both in monetary terms and as a percentage of GDP, with money supply and monetary base, monetary base and money supply - with required reserves, real effective exchange rate of the ruble against the dollar and foreign currencies - with monetary base and money supply.

However, the estimated correlation coefficients were calculated on the basis of time series data, therefore, the value of correlation coefficients may be due to the presence of general trends rather than causal links. To exclude such an effect, the private correlation coefficients were estimated with fixed values of linear and parabolic trends (Annex I).

When excluding the influence of trends on correlations, the assessment of a number of interrelations of instruments has changed. Thus, budget revenues are statistically significantly related to the key rate, while expenditures do not have statistically significant relationships with other instruments. Also, inverse relationship with the key rate is observed for the indicators of budget deficit/surplus and monetary base. There is a direct relationship between monetary base indicators and liquidity absorption.

Similarly, pairwise and partial correlation coefficients of instruments with macroeconomic policy targets were calculated (Annex K). Before the removal of the influence of trends, the economic growth rate was linked directly to the state budget deficit/surplus and the real effective exchange rate of the ruble (against the dollar and foreign currencies) and inversely to budget expenditures, monetary base and money supply. After elimination of the influence of trends, the links with budget expenditures, deficit/surplus and exchange rate remained, and the links with monetary base and money supply became insignificant.

[139] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995.xls

The inflation rate without removing the influence of trends is directly correlated with the key rate and has an inverse relationship with the monetary base, money supply and liquidity absorption. After removing the influence of trends, only the direct correlation with the key rate remains and the inverse correlation with the ruble exchange rate (to the dollar and foreign currency) has appeared.

According to the estimates of pairwise correlation coefficients, the real effective ruble-dollar exchange rate has a direct relationship with the state budget deficit/surplus (both in rubles and as a percentage of GDP) and an inverse relationship with the monetary base and money supply. The real effective exchange rate of the ruble against foreign currencies has an inverse relationship with the money supply and monetary base. After removing the influence of trends, it turns out that none of the monetary policy instruments has a statistically significant impact on the real effective exchange rate of the ruble against the dollar and foreign currencies.

Annex L presents a matrix of pairwise correlations of macroeconomic policy targets. Real GDP is statistically significantly inversely correlated with GDP growth rate and inflation rate. In other words, real GDP growth is accompanied by a slowdown in its growth rate and a decline in the inflation rate. The GDP growth rate has a direct relationship with the real effective ruble-dollar and foreign currency exchange rates. However, such dependencies may be a consequence of general macroeconomic trends. To eliminate them, the matrix of private correlation coefficients was estimated; correlation coefficients were calculated at fixed values of linear and quadratic trends. The results are presented in Annex M.

As can be seen from Annex M, inflation is not correlated with real GDP, nor with its growth rate, as their relationship was a consequence of general trends. Real GDP is related to the GDP growth rate not by an inverse but by a direct relationship, i.e. the growth of real GDP is accompanied by an increase in its growth rate rather than a decrease. An inverse relationship appeared between inflation and the real effective exchange rate of the ruble, both against the dollar and foreign currencies.

The only unchanged relationship between the targets was the correlation between real GDP and the effective exchange rate (to the dollar and foreign currencies), but the estimate of the closeness of the relationship slightly decreased.

When considering the consequences of the application of various instruments of state economic policy, under different exchange rate policy regimes, one of the most successful models for assessing the impact of monetary and fiscal policy on the economy is considered to be the Mundell-Fleming model. This model is designed for small open economies and has been the starting point for a number of studies of the effects of monetary and fiscal policy in open economies and price rigidities. The basic version of the model studies a small open economy with perfect mobility of both goods and capital. Simultaneously with the existence of a small open economy, there are other countries treated as a single country - the rest of the world. In the base country - the home country and in the country abroad - the correspondent country, price levels are fixed. For this reason, this model represents the class of rigid-price models.

The basic Mundell-Fleming model implies that, under a floating exchange rate, stimulative fiscal policy has no effect on aggregate output and leads to an appreciation of the real exchange rate. The reason for these phenomena is the upward pressure on the domestic interest rate of this policy. Capital tends to the country from abroad, there is a growth of the exchange rate, the displacement of net exports leads to a fall in net exports [114, p.14].

The consequences of protectionist foreign trade policy at floating exchange rate policy are similar to the budget policy. There is an increase in net exports due to the restriction of imports, real exchange rate growth, income does not change.

The result of stimulating monetary policy is a fall in the real exchange rate and growth of aggregate output. The cause of these phenomena is the downward pressure on the interest rate as a result of an increase in the supply of money, which results in the outflow of capital abroad, a fall in the exchange rate, growth of net exports and income [114, p.14].

The model proposed by Mundell and Fleming (R.A. Mundell, 1963 [472], 2001 [474], J.M. Fleming, 1962 [371]) has many modifications and extensions, presented in the works of both foreign (H.-S. Huh, 1999 [407]; M. Obstfeld, 2001 [478]; M. Schroder and R. Dornau, 2002 [504]; N. G. Mankiw, 2019 [449]; K-H. Wang et al, 2019 [534], Y. Hsing, 2021 [406]), as well as domestic (Y. K. Zaitsev [107], F.S. Kartaev., 2009 [114], etc.) authors.

Thus, for example, F. S. Kartaev, in addition to the basic Mundell-Fleming model, in his study [114, p.14-23] considers its modifications, which appear when a number of assumptions of the basic model are rejected or changed: a model with imperfect capital mobility (in addition to the market of goods and services, money market, the market of national currency is included); model with a modified consumption function (consumption is assumed to depend on both disposable income, real interest rate and real cash reserves); model with a modified money demand function (assumption about the possibility of dependence of money demand on the exchange rate is included).

Within the framework of the author's research, we will propose a modification of the Mundell-Fleming model by including the inflation rate in the basic model of macroeconomic target and apply this modification to Russia. Let us present a theoretical scheme of estimation of the modified Mundell-Fleming model as applied to Russia for the period 2000-2021 (Figure 3.26).

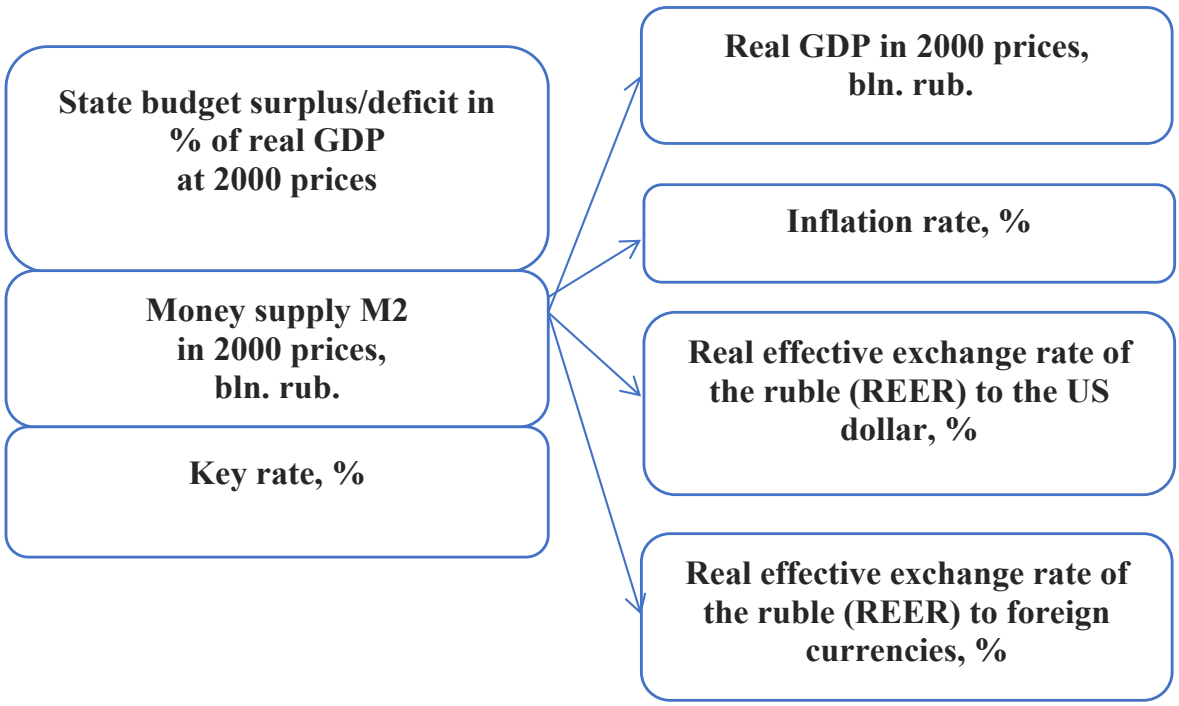

Figure 3.26 - Theoretical scheme of estimation of the modified Mundell-Fleming model for Russia for the period 2000-2021

Source: developed by the author

The modification of the model is based on the model of Y. Hsing, 2021 [406], which is an extension of N. G. Mankiw, 2019 [449]. Applying the extended Mundell-Fleming model, the above study uses a simultaneous equation model to estimate real GDP and real effective exchange rate, and includes real stock price as a proxy for financial well-being to test whether the predictions of the Mundell-Fleming model are applicable to Mexico.

We propose a modification of the model, following the model of Y. Hsing, 2021 [406], which is an extension of N. G. Mankiw, 2010 [449], in the following form[140]:

$$Y = f(Y, T, G, i, \varepsilon)$$

$$\frac{M}{P} = g(i, Y, \varepsilon)$$

$$P = h(Y - Y^*, \varepsilon)$$

where Y - real GDP;

T - government tax revenues;

G - government expenditure.

[140] In [406], the model also includes the stock market, excluded from consideration due to the research objective - to study the impact of government regulation alone on the target macroeconomic characteristics. Also, the model included mandatory reserves as an instrument of monetary policy.

i - interest rate;

ε - real exchange rate;

M - money supply;

P - price level (inflation);

Y^*- potential real GDP.

Assuming that real GDP is a constant in the short run, we can solve all three equations for the exogenous variables Y, ε и P, by finding equilibria in the form:

$$\bar{Y} = \bar{Y}(G - T, M, i),$$
$$\bar{\varepsilon} = \bar{\varepsilon}(G - T, M, i),$$
$$\bar{P} = \bar{P}(G - T, M, i).$$

This modification of the model was used for econometric estimation. The exponential GARCH (EGARCH) method (Nelson & Cao, 1992 [476]) was used to estimate the regression parameters, which has the advantage of relaxing the constraints on the estimated parameters. The results of model estimation are presented in Table 3.5. Nonlinear model is estimated for real GDP (logarithm of real GDP is used as a dependent variable), linear models are estimated for inflation rate and exchange rate.

All models are statistically significant and have a sufficiently high value of the coefficient of determination, which indicates a good explanatory power of the models.

The parameters of the equations are statistically significant. Budget deficit/surplus, representing in the model the difference between government revenues and expenditures, has a direct effect on the logarithm of real GDP and an inverse effect on the inflation rate. The higher the budget surplus, the higher GDP and lower inflation. The growth of budget deficit reduces GDP and increases inflation. At the same time, budget deficit/surplus has no significant impact on the real effective exchange rate.

The supply of money in the economy, or money supply M2, has a direct effect on the logarithm of real GDP, and an inverse effect on the exchange rate and inflation rate. In other words, an increase in the money supply M2 leads to an increase in the logarithm of real GDP and a decrease in the real effective exchange rate and inflation rate.

The key rate has an inverse effect on the logarithm of real GDP and the real effective exchange rate, and a direct effect on the inflation rate. Decrease in the key rate leads to an increase in the logarithm of real GDP and real exchange rate and reduces inflation.

Table 3.5 - Results of estimation of regression models for real GDP, exchange rate and inflation in Russia for the period 2000-2021

Variable	Log (real GDP)	Inflation rate	Exchange rate	
			REER to US dollar	REER to foreign currencies
Budget surplus /Budget deficit as a % of real GDP	**0,005854***** (<0,00001)	**-0,065727*** (0,0530)	0,580347 (0,4506)	-0,081737 (0,2113)
M2	**$8{,}86*10^{-5}$***** (<0,00001)	**-0,000819***** (<0,00001)	**-0,008265***** (0,0013)	**-0,004264***** (<0,00001)
Key rate	**-0,010623***** (<0,00001)	**0,540906***** (<0,00001)	**-4,020160**** (0,0331)	**-1,193790***** (<0,00001)
Constant	**9,159238***** (<0,00001)	**6,121726***** (<0,00001)	**75,83463***** (0,0056)	**32,85628***** (<0,00001)
R^2	0,956921	0,781879	0,412514	0,232952
Adjusted R^2	0,949741	0,745526	0,276940	0,055941
Durbin-Watson test statistics	0,516226	1,659668	1,997940	2,271488
Sample	2000-2021 гг,	2000-2021 гг,	2005-2021 гг,	2005-2021 гг,
Estimation method	EGARCH	EGARCH	EGARCH	EGARCH

** - the parameter is significant at the level of 5%, *** - at the level of 1%. Significant parameters are marked in bold. Significance levels are given in brackets.
Source: calculated by the author

The models presented in Table 3.5 can be written as formulae as follows:

$$\log(Y) = 9{,}2 + 0{,}006 \cdot (G - T) + 8{,}9 \cdot 10^{-5} \cdot M - 0{,}01 \cdot i,$$

or after the conversion:

$$Y = e^{9{,}2+0{,}006\cdot(G-T)+8{,}9\cdot10^{-5}\cdot M-0{,}01\cdot i},$$

$$P = 6{,}12 - 0{,}07 \cdot (G - T) - 0{,}0008 \cdot M + 0{,}54 \cdot i,$$

$$\varepsilon_1 = 75{,}8 + 0{,}58 \cdot (G - T) - 0{,}008 \cdot M - 4{,}02 \cdot i,$$

$$\varepsilon_2 = 32{,}86 - 0{,}008 \cdot (G - T) - 0{,}004 \cdot M - 1{,}19 \cdot i,$$

where Y - GDP in 2000 prices, billion rubles;

P - inflation rate, %

ε_1 - real effective exchange rate of ruble to dollar, %;

ε_2 - real effective exchange rate of ruble to foreign currencies, %;

(G-T) - state budget deficit/surplus in % of GDP, in 2000 prices;

M - money supply M2 in 2000 prices;

i - key rate.

Table 3.6 provides a visual description of the impact of fiscal and monetary expansionary instruments according to the basic Mundell-Fleming model.

Table 3.6 - Results of the impact of fiscal and monetary expansionary instruments under the basic Mundell-Fleming model in a floating exchange rate framework

Economic policy instruments in the framework of expansion	Interest rate	Real exchange rate	GDP
State budget surplus (↓)	↑	↑	No impact
Supply of money in the economy Money supply (↑)	↓	↓	↑

Source: developed by the author

Since in our study, initially in the assessment of the accumulative effect of monetary policy on economic growth, in the structural analysis of money supply, structural distribution of monetary policy instruments by economic development targets, money supply M2 and the key rate, which are interrelated, are taken as the basic instruments of monetary policy, in the modified Mundell-Fleming model we will also present these instruments as instruments of stimulating monetary policy (Table 3.7).

Table 3.7 - Results of the impact of fiscal and monetary expansion instruments according to the modified Mundell-Fleming model under a floating exchange rate in Russia in 2000-2021

Economic policy instruments in the framework of expansion	Real effective exchange rate	Real GDP	Inflation rate
Budget surplus (% of real GDP) (↓)/ Budget deficit (% of real GDP) (↑)	No impact	↓	↑
Supply of money in the economy Money supply M2 (↑)	↓	↑	↓
Key rate (↓)	↑	↑	↓

Source: built by the author

To illustrate the results, we present the dynamics of budget surplus/deficit as a % of GDP in Russia in 2000-2021.

Annex N shows the budget surplus to GDP in Russia in the periods 2000-2008, 2011-2012, 2017-2019, starting from 2021. The remaining periods show budget deficit to GDP.

To illustrate the results obtained in the modified Mundell-Fleming model, we present the figures, which show the dynamics of such indicators as: state budget deficit/surplus, money supply M2, inflation rate and key rate in Russia, 2000-2021. (Annex P); state budget deficit/surplus, money supply M2, key rate and real effective ruble exchange rate in Russia, 2000-2021 (Annex R); inflation rate and real effective ruble exchange rate in Russia, 2000-2021 (Annex S).

Based on the proposed modification of the Mundell-Fleming model (taking into account the simultaneous impact of two instruments of monetary expansion - money supply M2 and the key rate, as well as the inclusion of an additional macroeconomic target inflation rate) and its application to Russia in 2000-2021, the following conclusions can be drawn:

1. The following results are found to be consistent with the basic Mandell-Fleming model:

- fiscal expansion (decrease in budget surplus as a % of real GDP/ increase in budget deficit as a % of real GDP) leads to a decrease in real GDP and does not affect the real exchange rate - there is inconsistency with the basic Mundell-Fleming model for both targets of fiscal expansion;

- monetary expansion yields different results depending on the monetary policy instrument used:

- when M2 money supply is increased, there is a decline in the real exchange rate and an increase in real GDP, which is fully consistent with the basic Mundell-Fleming model;

- when the key rate is reduced, real GDP increases, as in the basic model, but the real exchange rate increases, which is not consistent with the basic Mundell-Fleming model.

2. In the proposed modification of the Mundell-Fleming model, the macroeconomic target inflation rate is added because of the interest in achieving three macroeconomic targets under the impact of fiscal and monetary expansion under floating exchange rate, namely real GDP, real exchange rate and inflation rate. The instruments have the following effects on the macroeconomic objective inflation rate: when the budget surplus is reduced as a % of real GDP, the inflation rate increases; when M2 increases, the inflation rate decreases; when the key rate is reduced, the inflation rate decreases.

3. When applying the instruments of budgetary and monetary expansion, different impact on the target indicators of inflation rate and real exchange rate in Russia is achieved:

- with reduction of budget surplus as a % of real GDP and growth of budget deficit as a % of real GDP there is an increase in the inflation rate, there is no impact on the real exchange rate;

- in case of monetary expansion (growth of money supply M2) there is a decrease in the inflation rate with simultaneous decrease in the real exchange rate;

- when the key rate is reduced for the purpose of monetary expansion, the inflation rate decreases while the real exchange rate increases.

4. The modified Mundell-Fleming model in Russia confirms the conclusions of the basic model proposed by Mundell-Fleming exclusively within the framework of the action of such an instrument of monetary policy as monetary expansion by increasing the supply of money in the economy (money supply M2). When applying the same tool, the inflation rate is reduced. Fiscal expansion in Russia does not work in relation to the positive impact on real GDP and on the inflation rate (the targets are not achieved), the real exchange rate is not affected.

5. In the modified Mundell-Fleming model with respect to Russia, the reduction of the key rate leads to an increase in real GDP, a decrease in inflation, at the same time to an increase in the real exchange rate. Thus, based on the presented model we can conclude that it is the use of the key rate as an instrument of monetary expansion and exchange rate policy that allows achieving three macroeconomic targets in the Russian economy: real GDP, real exchange rate and inflation rate.

It is important to note that in the basic Mundell-Fleming model, the interest rate is the instrument affected by the application of fiscal and monetary expansionary instruments, and only afterwards, due to capital inflows or outflows, is the exchange rate and further income changed (Table 3.8).

Let us check the work of this rule of the basic Mundell-Fleming model on the example of Russia in 2000-2021, adding one more instrument of fiscal expansion, especially relevant at present - state budget expenditures.

Table 3.8 - Impact of fiscal and monetary expansionary instruments on the interest rate according to the basic Mundell-Fleming model

Economic policy instruments in the framework of expansion	Key rate
State budget surplus (↓)	↑
Supply of money in the economy Money supply (↑)	↓

Source: developed by the author

Let us present a theoretical scheme of the impact on the key rate of fiscal and monetary expansion instruments in Russia in 2000-2021 and the key rate on the money supply M2 (Figure 3.27).

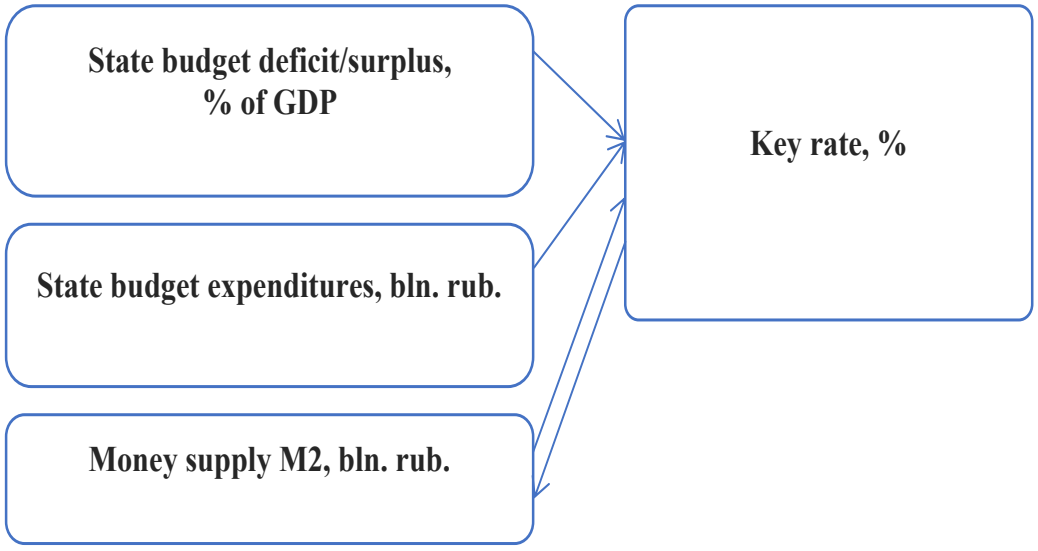

Figure 3.27 - Theoretical scheme of the impact on the key rate of fiscal and monetary expansion instruments in Russia in 2000-2021 and the key rate on the money supply M2

Source: developed by the author

Pairwise linear regression models were estimated to assess the impact of fiscal and monetary expansion instruments on the key rate. To eliminate the influence of autocorrelation effect, standard errors were estimated in the Newey-West form. The effects of three instruments were estimated:

government budget deficit/surplus (as a percentage of GDP), government budget expenditure and M2 money supply. The estimation results of the regression models are presented in Table 3.9.

According to the estimation results, only M2 money supply has a statistically significant impact on the key rate, while the government deficit/surplus as a percentage of GDP and government budget expenditures have no impact on the key rate in Russia.

The 65% variation in the key rate is explained by the variation in the M2 money supply, which indicates a fairly close relationship between these indicators of monetary expansion and monetary policy. At the same time, the relationship is inverse: when the money supply M2 increases by 1 billion rubles, the key rate decreases by 0.003%.

The equation of the relationship between money supply M2 and the key rate is as follows:

$$i = 22{,}6 - 0{,}003 \cdot M2.$$

Therefore, we can conclude that there is no impact of fiscal expansion on the key rate in Russia. The obtained conclusion is not consistent with the basic Mundell-Fleming model. The inverse relationship between money supply M2 and the key rate fully confirms the relationship according to the basic Mundell-Fleming model, which resulted in the impact of M2 on real GDP and the real exchange rate.

Table 3.9 - Impact on the key rate of monetary and fiscal expansion instruments in Russia in 2000-2021

Indicators	Economic policy instruments in the framework of expansion		
	State budget deficit/surplus in % of GDP	State budget expenditure	Money supply M2
Regression coefficient	0,442706 (0,1099)	-0,008212 (0,2371)	**-0,002706** (0,0013)
Constant	11,52372 (<0,0001)	32,29880 (0,0849)	22,61175 (<0,0001)
R^2	0,059350	0,169066	0,66722
Adjusted R^2	0,012318	0,127520	0,650590
F-statistics	0,274597 (0,109851)	4,069312 (0,057291)	40,10133 (0,000004)
Durbin-Watson test statistics	0,238129	0,475674	0,371177
White test	2,298881 (0,3168)	5,210774 (0,0739)	8,839481 (0,0120)
Sample	2000-2021гг.	2000-2021гг.	2000-2021гг.

Significance levels (p) are presented in parentheses. Statistically significant parameters are shown in bold.
Source: calculated by the author

The inverse equation - the impact of the key rate on money supply M2 in Russia - was estimated in a similar way (Table 3.10). Its statistical characteristics are similar, only the coefficient estimates differ.

Table 3.10 - Influence of the key rate on M2 money supply in Russia in 2000-2021

Variable	Money supply M2
Key rate	**-246,59** (<0,00001)
Constant	6889,46 (<0,00001)
R^2	0,667
Adjusted R^2	0,651
F-statistics	40,10 (0,000004)
Durbin-Watson test statistics	0,257
White test	0,74 (0,69)
Samlpe	2000-2021 гг.

Significant parameters are shown in bold. Significance levels are given in brackets.
Source: calculated by the author

The equation of dependence of money supply M2 on the key rate is as follows:

$$M2 = 6889{,}5 - 246{,}6 \cdot i.$$

The 65% variation in the money supply M2 is explained by the variation in the key rate, which indicates a fairly close relationship between these monetary policy indicators. At the same time, the relationship is inverse: when the key rate is reduced by 1%, the money supply M2 increases by 246 billion rubles.

Consequently, we can conclude about the mutual influence of money supply M2 and the key rate in Russia.

A group of scientists investigate the suitability of models for forecasting the exchange rate on the long-term and short-term horizons [7], offer projection in the global economic collapse of Russia's actions [6]. In the framework of the conducted research, it is of interest which of the two monetary policy instruments (key rate and money supply M2) has the greatest impact on the effective exchange rate of the ruble to the dollar and whether this indicator is affected by the inflation rate; consideration of the relationship between the implemented monetary and exchange rate policy in Russia.

Let us present a theoretical scheme of the impact of the key rate, money supply M2, inflation rate in Russia in 2005-2021 and inflation rate on the real effective exchange rate of the ruble to the dollar (REER) (Figure 3.28).

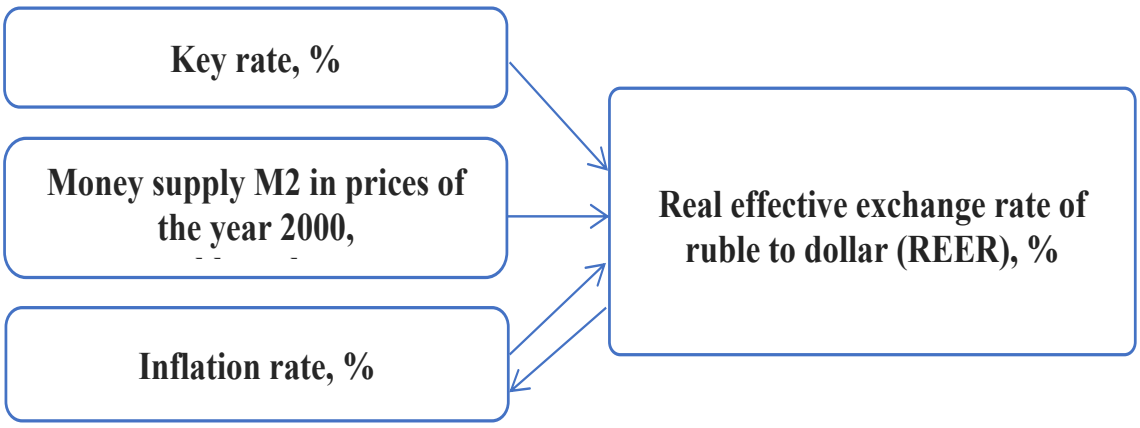

Figure 3.28 - Theoretical scheme of the effect on the real effective exchange rate of the ruble against the dollar (REER) key rate, money supply M2, inflation rate in Russia in 2005-2021 and inflation rate on the real effective exchange rate of the ruble to the dollar (REER)

Source: developed by the author

Figure 3.29 shows the dynamics of money supply M2 in 2000 prices, inflation rate and real effective exchange rate in Russia. Their dynamics shows opposite trends, which illustrates the multidirectional influence on macroeconomic targets.

Further, the influence of the key rate, money supply and inflation rate on the real effective ruble-dollar exchange rate was assessed (Table 3.11). Of the three models, only the model of dependence of the effective exchange rate on money supply M2 was statistically significant.

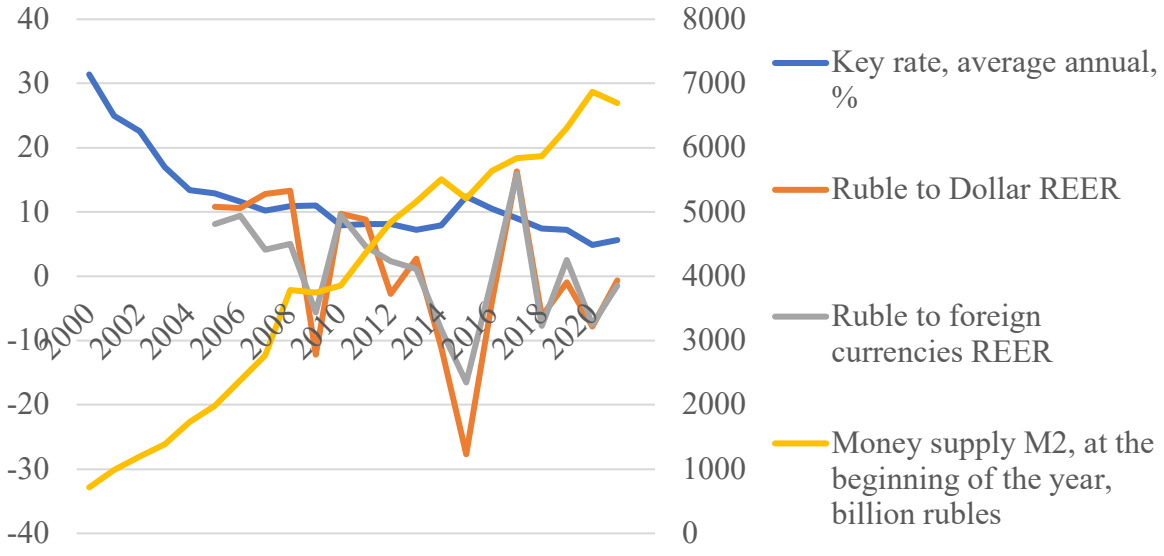

Figure 3.29 - Dynamics of money supply M2 (in 2000 prices, billion rubles), inflation rate, %, 2000-2021, and real effective exchange rate of the ruble against the dollar and foreign currencies, %, 2005-2021

Source: built by the author

The 15.4 per cent variation in the effective exchange rate is explained by the variation in the M2 money supply, i.e. the impact of the M2 instrument is weak.

Table 3.11 - Influence of monetary policy instruments and inflation rate in Russia on the ruble-dollar REER

Indicators	Key rate	Money supply M	Inflation rate
Regression coefficient	0,263 (0,87)	**-0,00358** (0,002)	-0,379 (0,75)
Constant	-1,67 (0,893)	17,72 (0,0004)	3,73 (0,63)
R^2	0,0028	0,21	0,015
Adjusted R^2	-0,063	0,154	-0,05
F-statistics	0,041 (0,841)	3,91 (0,07)	0,23 (0,64)
Durbin-Watson test statistics	1,60	2,03	1,47
White test	4,84 (0,09)	1,81 (0,4)	12,57 (0,002)
Sample	2005-2021гг.	2005-2021гг.	2005-2021гг.

Significance levels (p) are presented in parentheses. Statistically significant parameters are shown in bold.
Source: calculated by the author

The equation of dependence of the real effective exchange rate on money supply M2 is as follows:

$$REER\_USD = 17{,}72 - 0{,}004 \cdot M2.$$

Table 3.12 presents the results of estimation of the model of inflation rate dependence on the real effective exchange rate in Russia. The model is statistically insignificant, i.e. the relationship between these indicators is not confirmed.

Table 3.12 - Influence of REER ruble to dollar on inflation in Russia

Variable	Inflation rate
REER ruble to dollar	-0,04 (0,74)
Constant	8,01 (<0,00001)
R^2	0,015
Adjusted R^2	0,05
F-statistics	0,23 (0,64)
Durbin-Watson test statistics	0,978
White test	4,98 (0,08)
Sample	2005-2021гг

Significant parameters are shown in bold. Significance levels are given in brackets
Source: calculated by the author

Consequently, we can conclude that money supply M2 is a monetary policy instrument that has an insignificant inverse effect on the real exchange rate of the ruble, i.e. the real exchange rate decreases with the growth of money supply M2. It is important to note the absence of the influence of inflation on the real exchange rate in Russia.

Thus, this chapter has obtained the following results.

1. An algorithm for identifying the accumulation effect of monetary policy (negative, positive, inertial, neutral), as well as for assessing the influence of the accumulation effect [68, 208][141] of monetary policy on economic growth, which allows us to justify the selective application of its instruments in connection with the targets of economic policy, to make decisions on their joint application. It is proposed to apply sensitivity coefficients for each target from the corresponding instrument, which show the change in the target parameter per unit change in the influencing monetary policy instrument.

2. The method of assessing the relationship between the integral effect of economic growth policy and the accumulative effect of monetary policy to identify the effectiveness of the application of monetary policy instruments in achieving macroeconomic targets was proposed, which allowed to reveal the picture of weakening of the impact of monetary policy on the growth of the Russian economy and to determine that it ensured the containment of inflation out of connection with growth, formed different accumulative effects on individual targets due to different sensitivity to the instruments.

3. A set of econometric models for Russia for 2000-2020, allowing to assess the relationship between the target macroeconomic indicators (real GDP, GDP growth rate, inflation rate and unemployment rate) and monetary instruments of economic growth policy, to measure the impact on each of the macroeconomic target indicators of a set of monetary instruments of economic policy. The possibility of achieving several macroeconomic targets using combinations of the available set of monetary instruments of economic growth policy when changing the values of these instruments is shown.

4. The structural analysis of money supply M2 was carried out, which allowed us to determine which monetary instruments of economic policy affect the components of M2 and to identify the components of M2, which, when increased, inhibit growth and reduce inflation, as well as to determine the closeness of the relationship between the interest rate and the changing components of money supply M2. The institutional matrix of the influence of monetary instruments of economic growth policy on the components of money supply M2 and the components themselves on GDP growth and inflation in Russia

[141] A state in which the economic policy target becomes less or not at all sensitive to monetary policy measures (negative effect), or becomes more sensitive (positive effect) over time.

for the period 2012-2020 was constructed, which allows solving the problem of distributed influence of money supply on the elements of the economy. It is revealed that the different influence of monetary instruments of economic policy on the components of money supply M2 leads to inconsistent influence of M2 components on GDP growth rate and inflation. It was found that the decrease in the components of money supply M0 (cash in circulation) and m3 (other deposits of households) was accompanied by the growth of inflation, and their increase - by the decrease in inflation. It was revealed that the greatest contribution to the dynamics of money supply M2 was made by household deposits. It was found that the reasons for the slowdown in economic growth were not related to monetisation, the rate of increase in money supply was insufficient. On the basis of empirical, regression and structural analysis it was substantiated that in Russia the policy of interest rate increase was not the cause of inflation reduction, at the same time it slowed down economic growth and created a potential basis for inflation formation.

5. On the basis of econometric modelling the insignificant inverse effect of broad money supply M2X on the GDP growth rate in Russia for the period 2000-2021 was revealed, which makes it possible to assume a negative impact or absence of positive impact of foreign currency deposits and deposit and savings certificates on the GDP growth rate.

6. It has been proved that the basic Mundell-Fleming model as applied to Russia partially describes the impact of fiscal and monetary expansion instruments on macroeconomic targets at a floating exchange rate. It is revealed that there is no agreement with the Mundell-Fleming model in the impact of fiscal expansion on real GDP and real exchange rate, in the impact of monetary expansion, the results of the application of the tool money supply M2 are in full agreement with the Mundell-Fleming model, the results of the key rate application are not consistent with the impact on the real exchange rate.

7. A modification of the Mundell-Fleming model, including an additional macroeconomic objective - inflation rate, is proposed, which allows to optimise the model to the Russian reality, to study the simultaneous achievement of three macroeconomic targets. It is revealed that at budgetary expansion in Russia there is an increase in the inflation rate, at monetary expansion by increasing M2 or reducing the key rate - a decrease in inflation.

8. Based on the application of the modified Mundell-Fleming model, it is concluded that the application of different instruments of fiscal and monetary expansion achieves different impact on inflation and real exchange rate targets: the growth of the budget deficit as a % of real GDP leads to an increase in inflation, while there is no impact on the real exchange rate; in case of monetary expansion (growth of money supply M2) there is a decrease in the inflation rate with simultaneous decrease in the real exchange rate; in case of reduction of the key rate for the purpose of monetary expansion there is a decrease in the inflation rate with growth of the real exchange rate.

9. Application of the modified Mundell-Fleming model for Russia confirms the conclusions of the basic model proposed by Mundell-Fleming exclusively within the framework of the action of such a

monetary policy instrument as monetary expansion by increasing the supply of money in the economy (money supply M2). When applying the same instrument, the inflation rate is reduced. Fiscal expansion in Russia does not work in the direction of a positive impact on real GDP and inflation (the targets are not achieved), and there is no impact on the real exchange rate.

10. In the modified Mundell-Fleming model for Russia, the reduction of the key rate leads to an increase in real GDP, a decrease in inflation, and at the same time to an increase in the real exchange rate. Thus, based on the results obtained on the basis of the presented model, we can conclude that it is the use of the key rate as an instrument of monetary expansion and policy that allows achieving three macroeconomic targets in the Russian economy: real GDP, real exchange rate and inflation rate.

11. Based on econometric modelling, the Mandell-Fleming hypothesis about the intermediary role of the key rate in transferring the impulse of fiscal and monetary expansion to real GDP was tested. It is revealed that the channel of the impact of fiscal expansion on the key rate does not work in Russia, as a result of which there is no impact on real GDP and real exchange rate in Russia in accordance with the basic Mundell-Fleming model; the inverse relationship of money supply M2 and the key rate fully confirms the relationship according to the basic Mundell-Fleming model, resulting in the impact of M2 on real GDP and real exchange rate.

12. The impact of the key rate, money supply M2 and inflation rate in Russia on the real effective ruble-dollar exchange rate is estimated on the basis of econometric modelling. The conclusion about the absence of influence of the key rate and inflation rate on the real effective ruble-dollar exchange rate and about the reverse insignificant influence of money supply M2 on it was obtained.

4 Application of the development of the monetary theory of growth policy to the analysis of the structure of the Russian economy

4.1 Shifts in the distribution of the money supply across the structure of the Russian economy

In modern Russian economy credits and investments are considered as one of the main levers of economic growth. In order to form an investment model of economic growth in Russia, it is necessary to find additional sources of investment, to form conditions and incentives for the intensification of loans and investments [26, 27]. In continuation of the study of the "investment tunnel" [211] O.S. Sukharev, we will consider for the period 2000-2020 the distribution of money supply M2 on loans to non-financial organisations, loans to households and investment in fixed capital, as well as determine the dependence of the formation of investment in fixed capital on loans to non-financial organisations and loans to households in Russia. As a result of the study, we will determine the distribution of money supply by the structure of the Russian economy. Meeting the needs of different sectors of the economy in resources based on institutional changes is an important task in the formation of the investment model of economic growth.

Let us present a theoretical scheme of the distribution of money supply M2 as a monetary factor of growth by loans to non-financial organisations, loans to households, investment in fixed capital in the Russian economy for the period 2000-2020 and loans to investment in fixed capital (Figure 4.1).

To study the distribution of money supply M2, data on the value of loans to households and non-financial organisations, as well as investment in fixed capital for the period from 2000 to 2020 were used. For comparability, the data were harmonised to a single frequency. Since the information on the value of investment in fixed capital is provided by Rosstat only for a year, the rest of the data were also summarised by annual frequency.

Data on money supply (M2), bln. rubles [142] are provided by the Bank of Russia on a monthly basis and are momentary; therefore, the data were taken at the beginning of each year. Data on the amount of loans to households, bln. rubles[143], and loans to non-financial organisations, bln. rubles[144] are quarterly. In accordance with the World Bank methodology[145], they were aggregated by summarising to obtain the value of the indicator for the year.

[142] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/ms_m21.xlsx
[143] Data source: Economic data bank FRED https://fred.stlouisfed.org/series/QRUHAMXDCU
[144] Data source: Economic data bank FRED https://fred.stlouisfed.org/series/QRUCAMXDCA
[145] Official website of the World Bank https://worldbank.org/

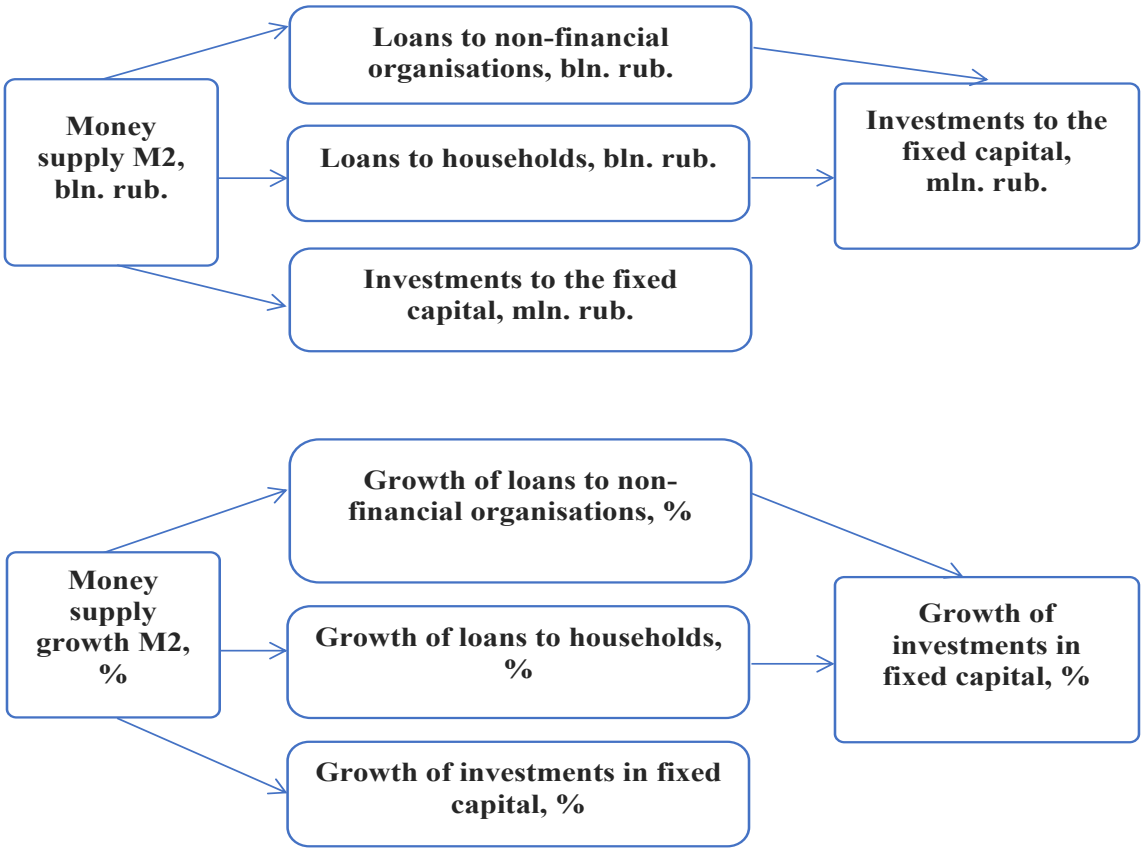

Figure 4.1 - Theoretical scheme of distribution of money supply M2 as a monetary factor of growth for loans to non-financial organisations, loans to households, investment in fixed capital in the Russian economy for the period 2000-2020 and loans to investment in fixed capital

Source: developed by the author

Data on the value of investments in fixed capital, in actual prices, million rubles[146], are taken in annual terms.

To ensure comparability, as well as to eliminate the influence of inflation on the processes under study, all data were adjusted to 2000 prices. For this purpose, the annual GDP deflator was used[147] . The annual GDP deflator is chain, i.e. it shows the growth compared to the previous year. In order to realise the adjustment to 2000 prices, the base deflator was first calculated. In accordance with the properties of statistical indices, the basis index is calculated as the product of chain indices for the corresponding period. To deflate the studied indicators, the deflator was converted from per cent into coefficients.

Annexes T, U, F present the dynamics of the studied indicators for the period 2000-2020, reduced to 2000 prices. The dynamics of money supply is presented in Figure 1.8 in Chapter 1. As

[146] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/Inv(1).xls
[147] Data source: https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995.xls

can be seen, money supply M2 grows almost linearly, while other indicators also show a pronounced upward trend, but with less pronounced linearity.

The presence of similar tendencies to growth of the indicators suggests the existence of correlation between them. Table 4.1 presents the correlation coefficients between the studied indicators. All coefficients are statistically significant according to the t-criterion. All indicators are most closely correlated with money supply M2. The closest correlation is observed between credits to households and money supply M2 (correlation coefficient is 0.98). Also, credits to households are closely correlated with credits to non-financial organisations (0.96). Loans to non-financial organisations are also strongly correlated with M2 money supply (0.93). Investments in fixed capital are most strongly correlated with M2 money supply (0.92), somewhat weaker with loans to households (0.86), and somewhat weaker with loans to non-financial organisations (0.74).

Table 4.1 - Correlation matrix of Money supply (M2), Investment in fixed capital (I), Loans to households (LH) and Loans to non-financial organisations (LN)*

	(I)	(LH)	(LN)	**M2**
Investment in fixed capital (I)	1			
Loans to households (LH)	**0,860951** (<0,0001)	1		
Loans to non-financial organisations (LN)	**0,738558** (<0,0001)	**0,963177** (<0,0001)	1	
Money supply (M2)	**0,919541** (<0,0001)	**0,983089** (<0,0001)	**0,931588** (<0,0001)	1

*The p values are given in parentheses. Statistically significant coefficients are in bold.
Source: calculated by the author

Due to the large value of pairwise correlation coefficients, to determine the directions of distribution of money supply M2, three models of pairwise linear regression were estimated, where the dependent variables are credits to households and non-financial organisations, as well as investments in fixed capital, and the independent variable is money supply M2.

The equation of dependence of credits to households on the value of money supply M2 can be written as follows:

$$\mathrm{LH} = -2282{,}8 + 1{,}94 \cdot \mathrm{M2},$$[148]

where LH - loans to households,

M2 - money supply.

The equation is statistically significant, all its parameters are also significant. Heteroskedasticity is absent, autocorrelation of residuals is present, so the standard errors were calculated in the form of Newey -West. Loans to households statistically significantly depend on the

[148] R^2=0,97, R^2adj=0,96, F-statistic =547,5 (p<0,00001), DW=0,59 (DW_l=1,22, DW_u=1,42), White test n*R^2=0,72 (p=0,7).

value of money supply M2. More than 96% of the variation in household loans is explained by the variation in the M2 money supply.

The pairwise linear regression equation of loans to non-financial organisations on the money supply M2 can be written as follows:

$$LN = 10273{,}7 + 8{,}13 \cdot M2,$$[149]

where LN - loans to non-financial organisations,

M2 - money supply.

The equation is statistically significant, all its parameters are also significant. Heteroskedasticity is absent, autocorrelation of residuals is present, so the standard errors were calculated in the form of Newey-West. 86% of the variation of loans to non-financial organisations is explained by the variation of money supply M2.

The pairwise linear regression equation of investment in fixed capital on the value of money supply M2 can be written as follows:

$$I = 1209063 + 238{,}1 \cdot M2,$$[150]

where I - investment in fixed capital,

M2 - money supply.

The equation is statistically significant, all its parameters are also significant. Heteroscedasticity is absent, autocorrelation of residuals is present, due to which the standard errors were calculated in the form of Newey-West. The variation of investment in fixed capital by 84% is explained by the variation of money supply M2.

Table 4.2 presents the results of estimation of three paired linear regression models with dependent variables household loans, loans to non-financial organisations, investments in fixed capital, independent variable - money supply M2, which allow us to determine the directions of distribution of money supply M2 in Russia in 2000-2020.

Thus, we can conclude that the M2 money supply is distributed to the Russian economy through all three structural components of the Russian economy: loans to households, loans to non-financial organisations and investments in fixed capital. The greatest variation explained by the variation of the M2 money supply is 96% for household loans. Consequently, the largest distribution of money supply in Russia is in household loans and slightly less in loans to non-financial organisations and investments in fixed capital. At the same time, in all three cases the relationship is positive, i.e. with the growth of M2 there is an increase in other presented indicators.

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[149] R^2=0,87, R^2adj=0,86, F-statistic=124,8 (p<0,00001), DW=0,35 (DW_l=1,22, DW_u=1,42), White test n*R^2=0,18 (p=0,9).

[150] R^2=0,85, R^2adj=0,84, F-statistic=104 (p<0,00001), DW=0,31 (DW_l=1,22, DW_u=1,42), White test n*R^2=2,7 (p=0,26).

Table 4.2 - Results of estimation of paired linear regression models with dependent variables loans to households, loans to non-financial organisations, investment in fixed capital, independent variable - money supply M2 in Russia in 2000-2020

Monetary policy instrument	Structure of the Russian economy		
	Loans to households bln. rub.	Loans to non-financial organisations bln. rub.	Investments in fixed capital mln. rub.
Distribution of money supply M2 bln. rub. Characteristic increase or decrease	Increase	Increase	Increase
Variance explained by M2 %	96%	86%	84%

Source: developed by the author

Further, the impact of the size of loans on the size of investment in fixed capital was investigated on the assumption that investment in fixed capital is partially formed at the expense of loans.

A multiple linear regression model of fixed capital investment on the size of loans to households and non-financial organisations was constructed and estimated. However, there is multicollinearity in this model due to the high correlation between the independent variables (according to Table 4.1, the correlation coefficient between the two types of loans is 0.96 and statistically significant). The negative effect is not corrected by introducing corrections to standard errors, which is reflected in the sign of the coefficient for the variable "loans to non-financial organisations". Contrary to expectations related to the economic essence of the process under study and the sign of the paired correlation coefficient between loans to non-financial organisations and investments in fixed capital equal to 0.74 (Table 4.1), the sign of the model coefficient is negative. This indicates that it is impossible to include both indicators of loans in the model at the same time; therefore, two paired linear regression models were estimated. To eliminate the effect of multicollinearity, two paired regressions were estimated.

The equation of dependence of investment in fixed capital on loans to households can be written as follows:

$$I = 1539805 + 113{,}1 \cdot LH,^{151}$$

where I - investment in fixed capital,

LH - loans to households.

The equation is statistically significant, all its parameters are also significant. Heteroscedasticity is absent, autocorrelation of residuals is present, so the standard errors were calculated in the form of

[151] R^2=0,74, R^2adj=0,73, F-statistic=54,4 (p<0,00001), DW=0,28 (DW_l=1,22, DW_u=1,42), White test n*R^2=3,5 (p=0,18).

Newey-West. Variation of investment in fixed capital by 73% is explained by the variation of loans to households.

The equation of dependence of investments in fixed capital on loans to non-financial organisations can be written as follows:

$$I = 1213664 + 21{,}9 \cdot LN,$$[152]

where I - investments in fixed capital,

LN - loans to non-financial organisations.

The equation is statistically significant, all its parameters are also significant. The model contains heteroskedasticity and autocorrelation of residuals, so the standard errors were calculated in the form of Newey-West. The variation of investment in fixed capital by 52% is explained by the variation of loans to non-financial organisations.

Table 4.3 presents the results of estimation of paired linear regression models with the dependent variable investment in fixed capital and independent variables - loans to households, loans to non-financial organisations in Russia in 2000-2020.

When comparing the models, it can be stated that the model of dependence of investment in fixed capital on loans to households is better by the criteria of the value of the coefficient of determination and homoscedasticity of residuals.

Thus, from the study we can conclude that the value of loans to households depends more on the value of money supply M2 than on loans to non-financial organisations and investment in fixed capital. Nevertheless, loans to non-financial organisations and investment in fixed capital also statistically significantly depend on the value of money supply M2.

Table 4.3 - Results of estimation of paired linear regression models with the dependent variable investment in fixed capital and independent variables - household loans, loans to non-financial organisations in Russia in 2000-2020

Type of loans	Investments in fixed capital mln. rub Characteristic increase or decrease	Variation explained by loans to households/loans to non-financial organisations
Loans to households bln. rub.	Increase	73%
Loans to non-financial organisations bln. rub.	Increase	52%

Source: developed by the author

[152] R^2=0,55, R^2adj=0,52, F-statistic=22,8 (p=0,0007), DW=0,27 (DW_l=1,22, DW_u=1,42), White test n*R^2=5,8 (p=0,06).

Investment in fixed capital in Russia depends more on loans to households than on loans to non-financial organisations.

However, as can be seen in Annexes T, U, F, and Figure 1.8 in Chapter 1, there is a general trend in the dynamics of the indicators under study, and the high correlation between them can be explained by both causal links and be false due to the presence of a general trend. To identify the relationship not caused by a general trend, we built models similar to those considered earlier, but not on the initial values of indicators, but on their increments. Models on increments allow us to determine the presence of dependencies between indicators, with the elimination of the general trend.

The equations of the models of dependence of the growth of loans of the two types under study, as well as investment in fixed capital on the growth of money supply M2 can be written as follows:

$$\Delta LH = 65{,}7 + 1{,}7 \cdot \Delta \mathrm{M2},^{153}$$

$$\Delta LN = 1389{,}8 + 2{,}7 \cdot \Delta \mathrm{M2},^{154}$$

$$\Delta I = -73824{,}5 + 495{,}6 \cdot \Delta \mathrm{M2},^{155}$$

где ΔLH – прирост кредитов домохозяйствам,

$\Delta \mathrm{M2}$ – прирост денежной массы M2,

ΔLN – прирост кредитов нефинансовым организациям,

$\Delta \mathrm{I}$ – прирост инвестиций в основной капитал.

Table 4.4 presents the results of estimation of equations of dependence of growth of loans to households, non-financial organisations and investment in fixed capital on growth of money supply M2 in Russia in 2000-2020.

The first and the third equation are statistically significant, there is no heteroskedasticity of residuals and autocorrelation of residuals in the third equation (in the first equation the value falls into the zone of uncertainty, which does not allow us to make an unambiguous conclusion). 35% of the variation in the growth of household loans and 63% of the variation in the growth of investment in fixed capital are explained by the growth of money supply M2.

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[153] R^2=0,35, R^2adj=0,33, F-statistic =10,5 (p=0,005), DW=1,33 (DW_l=1,2, DW_u=1,41), White test n*R^2=1,18 (p=0,56).
[154] R^2=0,04, R^2adj=-0,02, F-statistic =0,6 (p=0,43), DW=0,96 (DW_l=1,2, DW_u=1,41), White test n*R^2=6,2 (p=0,04).
[155] R^2=0,63, R^2adj=0,6, F-statistic =30,03 (p=0,05), DW=1,7 (DW_l=1,2, DW_u=1,41), White test n*R^2=0,77 (p=0,68).

Table 4.4 - Results of estimation of equations of dependence of growth of loans to households, non-financial organisations and investments in fixed capital on growth of money supply M2 in Russia in 2000-2020

Monetary policy instrument	Structure of the Russian economy		
	Increase in loans to households	Increase in loans to non-financial organisations	Increase in fixed capital investment
Distribution of money supply - Increase in M2 Characteristic increase or decrease	Increase	Not statistically significant	Increase
Variation explained by M2, %	35%		63%

Source: developed by the author

At the same time, the growth of money supply M2 has no statistically significant impact on the growth of loans to non-financial organisations, which allows us to conclude that the results obtained earlier are a consequence of the general trend towards simultaneous growth of these indicators.

The equations of the models of dependence of the growth of investment in fixed capital on the growth of both types of loans can be written as:

$$\Delta I = 18456{,}1 + 98{,}8 \cdot \Delta LH,^{156}$$

$$\Delta I = 84526{,}4 - 3{,}47 \cdot \Delta LN,^{157}$$

where ΔI - growth of investments in fixed capital,

ΔLH - growth of loans to households,

ΔLN - growth of loans to non-financial organisations.

Table 4.5 presents the results of estimation of equations of dependence of growth of investments in fixed capital on credit growth in Russia in 2000-2020.

Table 4.5 - Results of estimation of equations of dependence of growth of investments in fixed capital on credit growth in Russia in 2000-2020

Type of loans	Increase in investment in fixed assets Characteristic increase or decrease	Variation explained by increases in loans to households/increases in loans to non-financial organisations
Increase in loans to households	Increase	19%
Increase in loans to non-financial organisations	Not statistically significant	

Source: developed by the author

[156] R^2=0,19, R^2adj=0,15, F-statistic=4,39 (p=0,05), DW=1,4 (DW_l=1,2, DW_u=1,41), White test n*R^2=0,057 (p=0,97).
[157] R^2=0,01, R^2adj=-0,01, F-statistic=0,11 (p=0,73), DW=1,39 (DW_l=1,21, DW_u=1,41), White test n*R^2=3,9 (p=0,15).

The model of dependence of the growth of investments in fixed capital on the growth of loans to non-financial organisations is statistically insignificant.

The growth of investment in fixed capital depends significantly on the growth of loans to households, heteroscedasticity of residuals is absent, it is impossible to determine unambiguously the presence or absence of autocorrelation of residuals, but the value of the Durbin-Watson statistic is close to the right edge of the uncertainty zone. 19% of the variation in the growth of loans to households is determined by the variation in the growth of investment in fixed capital.

Thus, loans to non-financial organisations turned out to be statistically insignificantly related to both investment in fixed capital and money supply, and the dependencies identified earlier are associated with the presence of common trends.

Therefore, we can conclude that the main direction of distribution of money supply M2 as a monetary factor of growth and an instrument of monetary policy of growth is associated with loans to households and investment in fixed capital, and investment in fixed capital can also be formed at the expense of loans to households.

Thus, in the Russian economy there is a shift in the distribution of money supply M2 towards loans to households, loans to non-financial organisations are not an instrument of distribution of money supply M2.

4.2 Distribution of money supply by structure: financial and non-financial assets

Since in the economy investments are distributed unevenly between sectors and types of activities (financial and non-financial), which further determines their contribution to both the dynamics of sectors and economic growth, the distribution of money supply M2 as a basic instrument of monetary policy is of great importance, based on the structure of investments within their sectoral subdivision by types [210]: financial and non-financial investments. Earlier, O.S. Sukharev in his study assessed the impact of investments in the transactional and non-transactional sectors on the rate of economic growth and investments in financial assets on the change in GDP in order to further include in the analysis of the impact of investment on economic growth [209]. In continuation of his study, let us consider the impact of economic policy measures, namely monetary policy on the structure of investment.

We will apply structural analysis and econometric modelling, which allows us to study the distribution of money supply M2 by types of investment and identify structural proportions or disproportions in the development of the Russian economy. We will also estimate the elasticity of each type of investment by money supply M2.

Let us present a theoretical scheme of M2 money supply distribution as a basic monetary factor of growth and an instrument of monetary policy of growth into financial and non-financial assets in the Russian economy for the period 2000-2020 (Figure 4.2).

The study of money supply maintenance by M2 of investments in financial and non-financial assets was carried out for the period from 2000 to 2020 using annual data on the amount of investments in non-financial assets, bln. rub.[158], and the amount of financial investments, bln. rub.[159]. Data on the value of money supply (M2), bln. rub.[160], are provided by the Bank of Russia on a monthly basis and are momentary; therefore, they were taken at the beginning of each year.

According to the Rosstat methodology, the indicator of financial investments includes organisations' investments in government and municipal securities, securities of other organisations, including debt securities (bonds, promissory notes), contributions to the charter capitals of other organisations (including subsidiaries and dependent business entities), loans granted to other organisations, deposits in credit organisations, receivables acquired on the basis of assignment of the right of claim, and so on[161]. Investments in non-financial assets include investments in fixed assets and investments in non-produced non-financial assets[162].

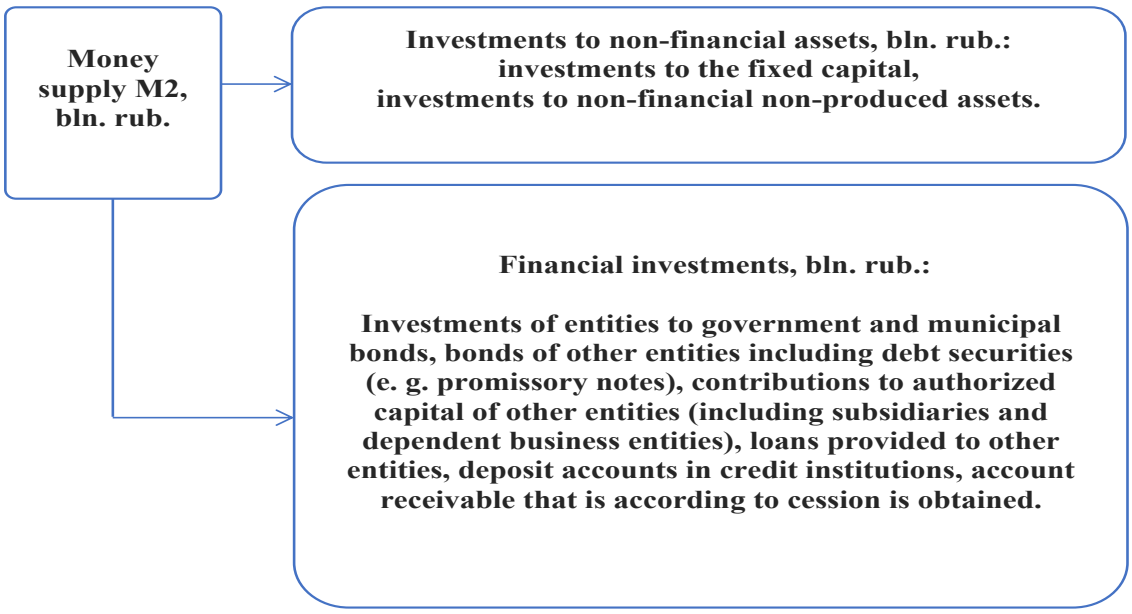

Figure 4.2 - Theoretical scheme of distribution of money supply M2 as a basic monetary factor of growth and an instrument of monetary policy of growth into financial and non-financial assets in the Russian economy for the period 2000-2020

Source: developed by the author

[158] Data source: Rosstat https://showdata.gks.ru/report/274096/
[159] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/fin_vl1.xlsx, https://rosstat.gov.ru/folder/210/document/12993
[160] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/ms_m21.xlsx
[161] See methodological explanations in "Investments in Russia", 2021 https://rosstat.gov.ru/storage/mediabank/Invest_2021.pdf, p.150.
[162] Ibid., p.141.

To ensure comparability, as well as to eliminate the influence of inflation on the studied processes, all data were harmonised to 2000 prices. For this purpose, the annual GDP deflator[163] was used. The annual GDP deflator is chained, i.e. it shows growth compared to the previous year. In order to realise the adjustment to the prices of 2000, the base deflator was first calculated: in accordance with the properties of statistical indices, the base index is calculated as the product of chain indices for the corresponding period. To deflate the indicators under study, the deflator was converted from per cent to coefficients.

The study of the relationship between money supply M2 and the two types of investment was started with the construction of scatter diagrams (Figures 4.3 and 4.4). Figure 4.3 visualises the relationship between investment in non-financial assets and money supply M2 in 2000 prices. There is a rather close non-linear relationship between the indicators (estimation by means of the logarithmic function, represented in the figure by the dashed line, estimates the accuracy of the fit, expressed in the value of the coefficient of determination equal to 0.92). In other words, there is a fairly close non-linear relationship between investment in non-financial assets and money supply M2.

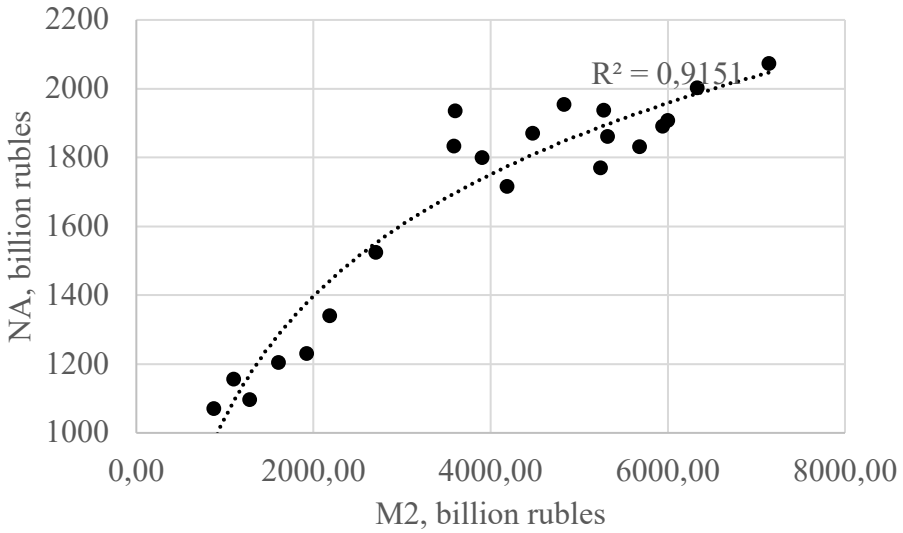

Figure 4.3 - Relationship between investment in non-financial assets (NA), bln. rub., and money supply (M2), bln. rub., in Russia in 2000-2020, in 2000 prices

Source: built by the author

[163] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995.xls

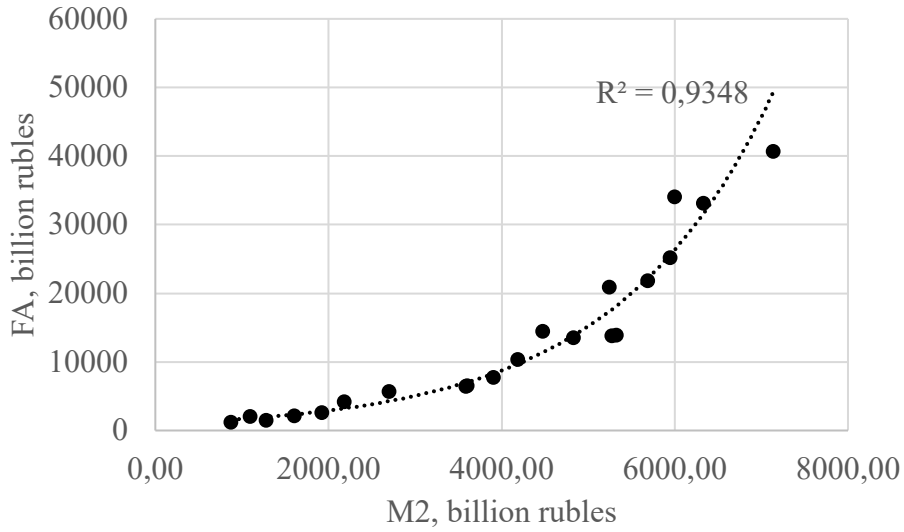

Figure 4.4 - Relationship between financial investments (FI), bln. rub., and money supply (M2), bln. rub., in Russia in 2000-2020, in 2000 prices

Source: constructed by the author

Similarly, in Figure 4.4 one can see a rather close non-linear relationship between financial investments and money supply M2 expressed in 2000 prices. This relationship is also non-linear and when approximated by an exponential function allows us to obtain a coefficient of determination equal to 0.93.

Thus, the graphical analysis of the relationship between money supply M2 and both types of investment allows us to conclude that there is a non-linear relationship, which determines the need to estimate non-linear paired regression models.

To estimate the non-linear models using the least squares method, we linearise them using a logarithmic transformation (natural logarithm is used).

The dependence of investment in non-financial assets on money supply was estimated in the form:

$$\mathrm{NA} = e^{4,6} \cdot \mathrm{M2}^{0,34},$$

or in linearised form:

$$\log(\mathrm{NA}) = 4,6 + 0,34 \cdot \log(M2),^{164}$$

where NA - investments in non-financial assets, in 2000 prices, bln. rub.,

M2 - money supply of M2, in 2000 prices, bln. rub.

The model is statistically significant by Fisher's criterion, all parameters are significant by Student's criterion. Heteroscedasticity is absent. Autocorrelation of residuals is present, so the

[164] R^2=0,93, R^2adj=0,92, F-statistic=236,8 (p<0,00001), DW=1,07 (DW_l=1,22, DW_u=1,42), White test n*R^2=3,3 (p=0,2).

estimates of standard errors are calculated in the Newey-West form. The adjusted coefficient of determination is 0.92, which indicates a high quality of approximation.

Since the model of dependence of investments in non-financial assets on money supply M2 is estimated in the form of a step function, the regression coefficient is interpreted as the elasticity of investments on money supply. In other words, if money supply increases by 1%, investments in non-financial assets will increase by 0.34%.

Similarly, the model of dependence of financial investments on money supply M2 was estimated. The use of the steppe form of the model allowed to ensure comparability of the results.

The dependence of financial investments on money supply was estimated as:

$$\mathrm{FI} = e^{-4,3} \cdot \mathrm{M2}^{1,64},$$

or in linearised form:

$$\log(\mathrm{FI}) = -4,3 + 1,64 \cdot \log(M2),^{165}$$

where FI - financial investments, in 2000 prices, bln. rub.,
M2 - money supply of M2, in 2000 prices, bln. rub.

The model is statistically significant by Fisher's criterion, all parameters are significant by Student's criterion. Heteroscedasticity is absent. Autocorrelation of residuals is present, so the estimates of standard errors are calculated in the Newey-West form. The adjusted coefficient of determination is 0.94, which indicates a high quality of approximation.

The coefficient of the model can be interpreted as follows: if money supply increases by 1%, financial investments will increase by 1.64%.

Thus, the model of degree dependence of financial investments on money supply M2 has a higher coefficient of determination than the similar model for investments in non-financial assets, i.e. financial investments are more closely related to money supply M2. In addition, the response of financial investments to a one per cent change in money supply M2 is higher (1.64%) than investments in non-financial assets (0.34%). In other words, the increase in money supply M2 entails the growth of financial investments exceeding the growth of money supply, while the growth of investments in non-financial assets lags behind the growth of money supply.

Based on the above, we can conclude that there is a structural disproportion in the distribution of money supply M2. The result is the revealed superiority of money supply distribution in investments in financial investments compared to non-financial assets. Consequently, solely increasing the money supply M2 to direct it to investments will not give a proper result in the formation of a new model of economic growth. Only short-term growth is possible without structural

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[165] R^2=0,94, R^2adj=0,94, F-statistic=289,3 (p<0,00001), DW=0,69 (DW_l=1,22, DW_u=1,42), White test n*R^2=2,3 (p=0,3).

changes, which are currently needed above all. As a result of further increase of investments in financial investments at the expense of M2 money supply, the speculative component of the Russian economy will increase, which creates dysfunctions in the investment process, in which objects with higher profitability and weak contribution to the development of the economy will receive preferential resources. It is necessary to change the M2 money supply distribution flows based on the goal of forming a new model of economic growth.

4.3 The influence of monetary policy for growth on the sectoral structure of the economy[166]

In modern economic conditions, the problems of sectoral dynamics of the Russian economy come to the fore. The qualitative basis of economic growth in Russia cannot be changed under the current structure of the economy, insufficient level of monetisation, weak spillover of resources to the manufacturing sectors of the economy. Economic growth on the basis of manufacturing sectors is not yet formed, while the raw materials and transactional growth have exhausted themselves [217]. The selection and application of adequate instruments of budgetary and monetary policy that affect the dynamics of the Russian economy in the structural and sectoral aspect, as a consequence of economic growth is one of the central issues today.

Let us present an algorithm for studying the impact of monetary growth policy on the sectoral structure of the economy in Russia:

1) determine the share of spent money by economic activity in the M2 money supply in Russia from 2017 to 2020, which will demonstrate the spending of money in M2;

2) we will calculate the proposed indicator of the ratio of spent money to gross value added by types of economic activities in Russia from 2017 to 2020, which makes it possible to assess the efficiency of money spending for each type of economic activity;

3) empirically present the relationship between the share of spent funds in M2 and the ratio of spent funds to GVA in Russia from 2017 to 2020, which can demonstrate the relationship between the growth of the share of spent funds in M2 by types of economic activities and the efficiency of money spending expressed by their ratio to GVA;

[166] In preparing this section of the thesis the following publications were used, made by the author in co-authorship, which reflect the main results, provisions and conclusions of the study: Sukharev O.S., Afanasyeva O.N. Distribution of the influence of monetary and fiscal policy instruments by technological patterns and sectors of the economy // Finance: Theory and Practice. - 2023. (1.0 /0.5)

4) conduct empirical analysis and build regression models of the impact of money supply M2 as a basic instrument of monetary growth policy on output by economic sectors (manufacturing, transactional and raw materials) in Russia from 2011 to 2021;

5) conduct empirical analysis and build regression models of the impact of the key rate as a basic instrument of monetary growth policy on the use of money by sectors of the economy in Russia from 2017 to 2020;

6) build regression models of the impact of fiscal and monetary policy instruments on the sectoral structure of the Russian economy (transactional, manufacturing and raw materials sectors) in 2011-2022; build an institutional matrix of the impact of economic growth policy instruments on the sectoral dynamics of the Russian economy in 2011-2022 in order to improve its efficiency depending on the current and necessary state [220].

Since this study is based on the principle of J. Tinbergen's "targets-instruments" of economic policy, as well as structural and institutional characteristics of economic system, first of all, we study the money supply M2 as the basic monetary instrument of economic growth policy, which affects the sectoral structure of the economy. This study intends to answer the absorption of money supply M2 by different economic activities and sectors of the economy in Russia.

The data of the indicator "directed cash from 2017" by types of economic activities[167] were used for the analysis. The indicator represents the total amount of cash spent by organisations for the year in thousands of rubles. The data are presented from 2017 due to the introduction of a new classifier of types of economic activities OKVED2.

Data on money supply M2[168] is also used. The indicator is given as of the first day of each month in billions of rubles. To ensure comparability and make calculations, it was converted into thousands of rubles and the average value for each year was calculated using the simple arithmetic mean formula (the sum of values for the year divided by twelve).

Table 4.9 presents the shares of spent cash by type of activity in the M2 money supply, in per cent, calculated using the formula:

$$d_{it} = \frac{s_{it}}{M2_t} \cdot 100\%$$

where d_i – share of spent money of the i type of economic activity in the year t;

s_{it} – the amount of spent money of the i type of economic activity in the year t;

$M2_t$ – M2 money supply in a year t.

[167] Data source: EMISS, Federal State Statistics Service https://fedstat.ru/indicator/59795?id=59795#
[168] Data source: Bank of Russia http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx

As can be seen from Table 4.6, the sums of the shares of directed money by type of activity in the M2 money supply are not 100 per cent. This is due to the fact that the money supply is spread not only by types of economic activities, but also directed to households. It should also be noted that this indicator reflects the use of money of organisations and represents the total amount of spent money. A part of cash remains unspent.

Based on Table 4.6, we can conclude that the largest share of directed (spent) cash by type of economic activity in the M2 money supply in 2017-2020 is in wholesale and retail trade (17.39%) and in manufacturing (14.27%).

In order to assess the efficiency of money spending by each type of economic activity, the ratio of spent money to gross value added[169], expressed in per cent, was calculated:

$$o_{it} = \frac{s_{it}}{\text{GVA}_{it}} \cdot 100\%$$

где o_{it} – ratio of spent money of the i type of economic activity to GVA in the year t;

s_{it} – the amount of spent money of the i type of economic activity in the year t;

GVA_{it} – gross value added of the i type of economic activity in the year t.

Table 4.6 -Fraction of directed (spent) money by types of economic activity in the M2 money supply, %, 2017-2020

Economic activities	2017	2018	2019	2020
Agriculture, forestry, hunting, fishing and fish farming	0,89	1,08	1,05	1,04
Mining	5,83	5,36	4,93	4,50
Manufacturing	5,34	5,76	14,62	14,27
Providing with electrical energy, gas, steam; air conditioning	3,89	3,63	3,43	2,88
Water supply; sewage, waste collection and disposal, pollution elimination activities	0,19	0,17	0,26	0,25
Construction	1,09	0,92	1,69	1,62
Wholesale and retail; repair of motor vehicles and motorcycles	3,25	2,56	17,91	17,39
Handling and storage	3,76	3,35	4,48	3,80
Hotels and public catering activities	0,08	0,14	0,15	0,17
Information and communication activities	2,19	1,18	1,57	1,98
Financial and insurance activities	2,17	3,49	3,23	9,46
Real estate operations	1,22	1,01	1,07	1,33
Professional, research and technical activities	3,35	20,44	7,02	2,64
Administrative activities and related additional services	0,25	0,47	0,72	1,14
Public administration and military security; social security	0,00	0,00	0,02	0,02
Education	0,01	0,02	0,04	0,04
Healthcare and social services	0,22	0,14	0,13	0,14
Activities in the field of culture, sports, leisure and entertainment	0,03	0,06	0,12	0,10
Other types of activities	0,04	0,03	0,09	0,08
Type of activities shares	*33,81*	*49,80*	*62,52*	*62,84*

Source: calculated by the author

[169] Data source: https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011.xls

In fact, it represents the macroeconomic analogue of the Cash to sales ratio used to assess the efficiency of cash use by organisations. The results of calculations are presented in Table 4.7.

Based on Table 4.7, the highest ratio of spent cash to gross value added in 2017-2020 in Russia is in financial and insurance activities (104.82%), wholesale and retail trade (76.45%), and manufacturing industries (53.14%).

Table 4.7 - Ratio of cash spent to gross value added, %, 2017-2020

Economic activities	**2017**	**2018**	**2019**	**2020**
Agriculture, forestry, hunting, fishing and fish farming	10,65	13,26	12,75	12,97
Mining	25,25	18,73	18,42	26,29
Manufacturing	18,47	18,78	48,54	53,14
Providing with electrical energy, gas, steam; air conditioning	63,27	64,07	63,19	59,93
Water supply; sewage, waste collection and disposal, pollution elimination activities	16,98	15,91	24,95	25,50
Construction	8,56	7,71	14,96	16,46
Wholesale and retail; repair of motor vehicles and motorcycles	10,87	8,87	66,32	76,45
Handling and storage	25,24	23,63	31,36	33,11
Hotels and public catering activities	4,32	7,23	7,63	12,53
Information and communication activities	39,97	22,16	28,36	37,46
Financial and insurance activities	23,46	37,51	35,81	104,82
Real estate operations	5,78	4,97	5,23	7,16
Professional, research and technical activities	35,22	231,42	75,09	30,35
Administrative activities and related additional services	4,92	10,35	15,80	29,90
Public administration and military security; social security	0,05	0,09	0,36	0,59
Education	0,04	0,14	0,27	0,29
Healthcare and social services	3,28	2,02	1,85	2,22
Activities in the field of culture, sports, leisure and entertainment	0,48	0,82	1,70	1,47
Other types of activities	1,83	1,29	4,15	4,55

Source: calculated by the author

Figure 4.5 shows the relationship between the share of spent funds in M2 and the ratio of spent funds to GVA.

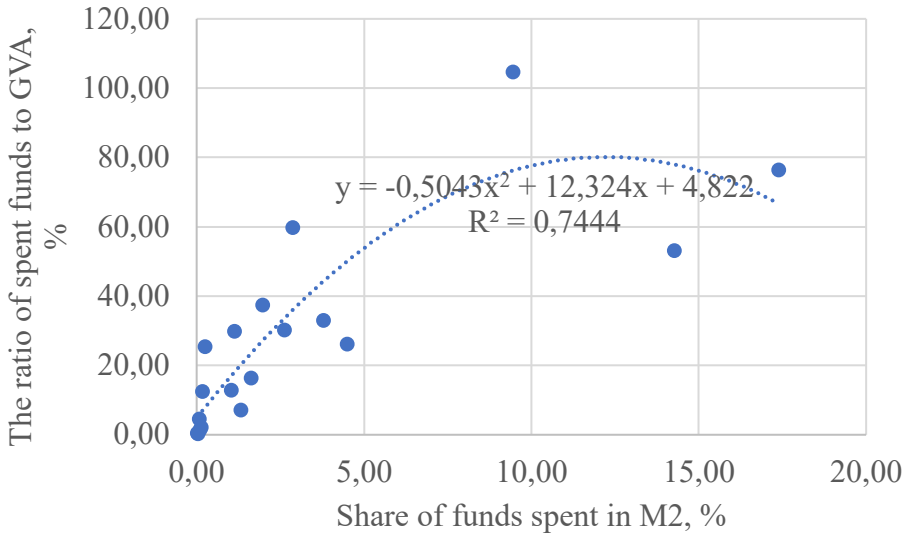

Figure 4.5 - Relationship between the share of spent funds in M2 and the ratio of spent funds to GVA

Source: built by the author

As can be seen in Figure 4.5, the relationship between these indicators is direct, but non-linear and represents a parabola. As the share of spent funds in M2 by type of economic activity grows, the efficiency of money spending, expressed by their ratio to GVA, increases. However, after reaching 80.11%, the efficiency of the growth of the share of spent funds in M2 starts to decrease.

Calculation of the maximum point is carried out by the formula:

$$max = 4{,}822 - \frac{12{,}324^2}{2 \cdot (-0{,}5043)} = 80{,}11448.$$

Thus, the law of diminishing returns applies increasing the share of spent funds by type of economic activity in M2 increases the efficiency of money spending in terms of its ratio to output (GVA), only up to the level of 80%.

Next, let us empirically analyse the impact of money supply M2 as the basic monetary instrument of economic growth policy on output by sectors of the economy.

To test the assumption about the different impact of money supply M2 on output in different sectors of the economy, two sectors were considered [222]:

1) manufacturing sector (manufacturing industries, construction);

2) transactional and raw materials sector (other types of economic activity).

As an indicator of output by sectors, gross value added (GVA, bln.rub.[170]) by types of economic activity was used, grouped accordingly to obtain indicators by sectors. GVA is taken in quarterly terms, therefore the money supply indicator M2, bln. rub[171] is also used at the beginning of

[170] GVA by type of economic activity, quarters https://rosstat.gov.ru/storage/mediabank/IoJG6OPM/ВДС%20кварталы%20ОКВЭД2007%20(с%202003%20г.).xlsx
[171] Money supply M2 http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx

each quarter. Data for 2011-2021 are taken to ensure comparability due to the introduction of OKVED2 in 2011.

A model in logarithmic form was estimated, the theoretical form of which is:

$$\log(GVA) = \alpha_0 + \alpha_1 \log(M2) + \varepsilon,$$

where GVA - output (gross value added) of the economic sector;

M2 - money supply;

α_0, α_1 – model coefficients;

ε – random component of the model.

The purpose of the study was to determine the elasticity of output of each sector by money supply, i.e. to identify the impact of money supply M2 on output. Since the money supply indicator M2 is not calculated in terms of types of economic activity, a single money supply indicator was used, therefore the models for both sectors of the economy were combined into a system and a system of empirical equations of the form was estimated:

$$\log(GVA_1) = a_0 + a_1 \log(M2),$$
$$\log(GVA_2) = b_0 + b_1 \log(M2),$$

where GVA_1 – output of the transactional - raw materials sector,

GVA_2 – manufacturing sector output,

$M2$ – money supply,

a_0 – free term of the model of dependence of GVA of the transactional - raw materials sector on M2,

a_1 – coefficient of elasticity of GVA of the transactional - raw materials sector by M2,

b_0 – free term of the model of dependence of GVA of the manufacturing sector on M2,

b_1– coefficient of elasticity of manufacturing sector GVA by M2.

Figures 4.6 and 4.7 show the scatter diagrams of GVA from M2 for the transactional - raw materials and manufacturing sectors, respectively, in current prices in Russia. The presence of non-linear dependence is visually evident, which is closer for the transactional - raw materials sector.

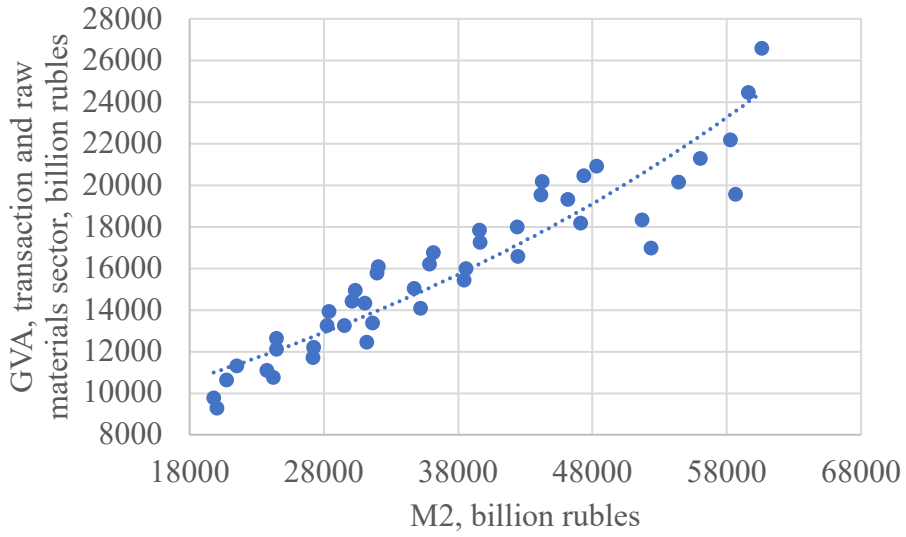

Figure 4.6 - Scatter diagram of GVA of the transactional – raw materials sector from money supply M2 in Russia in 2011-2021

Source: built by the author

Since the relationship between the two equations is only due to the presence of a common regressor, the system of equations is estimated using the ordinary least squares method. The models are obtained in the following form:

$$\log(GVA_1) = 1{,}9 + 0{,}738\log(M2),_{172}$$
$$(0{,}38)\ (0{,}036)$$

$$\log(GVA_2) = 0{,}49 + 0{,}741\log(M2).{}_{173}$$
$$(0{,}98)\ (0{,}093)$$

[172] R^2=0,9; R^2_{adj}=0,9, F=419,8 (p<0,0001); DW=1,56. The values of the standard errors of the coefficient estimates are given in parentheses.

[173] R^2=0,6; R^2_{adj}=0,59, F=62,1 (p<0,0001); DW=2,29. The values of the standard errors of the coefficient estimates are given in parentheses.

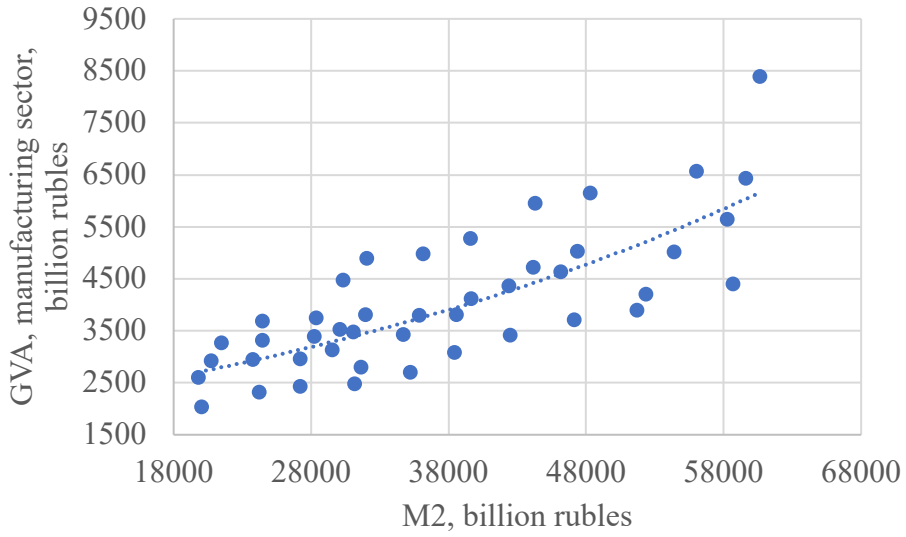

Figure 4.7 - Scatter diagram of manufacturing sector GVA from M2 money supply in Russia in 2011-2021

Source: built by the author

Both equations of the system are statistically significant by Fisher's criterion, all coefficients, except for the free term of the second equation, are also statistically significant by Student's criterion. The coefficient of determination of the first equation is 0.9 and the second equation is 0.6. The obtained coefficients of elasticity of GVA by M2 make it possible to conclude that if M2 increases by 1 per cent, the output of the transactional - raw materials sector will increase by 0.738 per cent times, while that of the manufacturing sector will increase by 0.741 per cent. Thus, the elasticity of output in both sectors of the economy is less than 1, and slightly higher in the manufacturing sector.

However, this estimation is made in current prices. In order to eliminate the influence of inflation and to assess the elasticity of output by money supply in constant prices, GVA of the sectors and money supply were adjusted to 2000 prices using data on the GDP deflator [174] (its choice as an indicator of inflation is due to the fact that GVA, like GDP, is traditionally adjusted to constant prices using the GDP deflator rather than the consumer price index or the producer price index; money supply was deflated using the same deflator to ensure comparability of the obtained data).

Figures 4.8 and 4.9 present the diagrams of GVA dispersion of the transactional - raw materials and manufacturing sector from money supply, respectively, in 2000 prices. It is visually evident that the relationship between GVA and money supply became weaker when adjusted to unified prices, but there is no reason to exclude its presence and weakly non-linear character.

[174] GDP deflator https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls

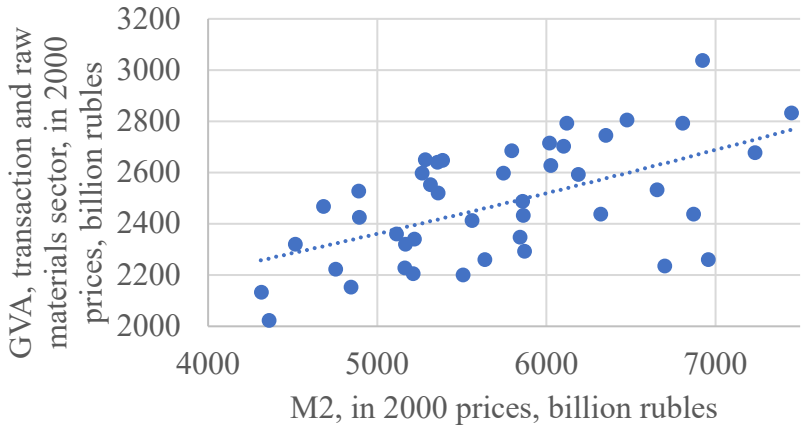

Figure 4.8 - Scatter diagram of GVA of the transactional – raw materials sector from money supply M2 in Russia in 2011-2021, in 2000 prices

Source: compiled by the author

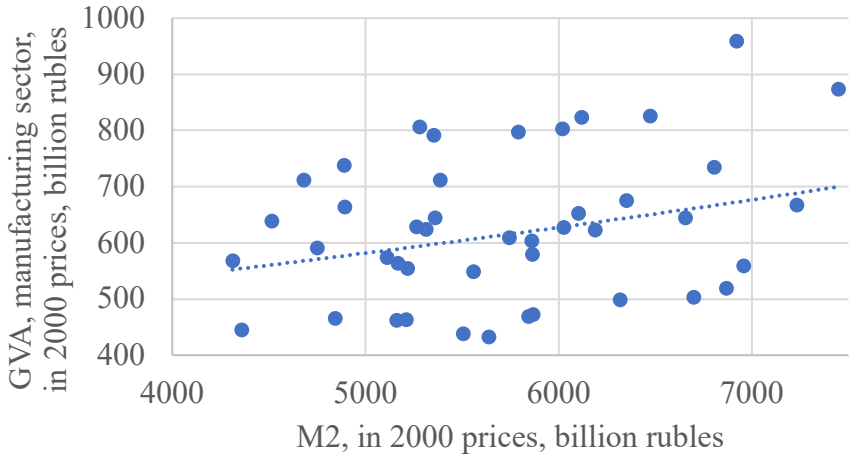

Figure 4.9 - Scatter diagram of GVA of manufacturing sector from money supply M2 in Russia in 2011-2021, in 2000 prices

Source: built by the author

Therefore, a system of equations in a similar structure was evaluated and the following result was obtained:

$$\log(GVA_1) = 4{,}52 + 0{,}38\log(M2),_{175}$$
$$(0{,}72)\ (0{,}08)$$

[175] R^2=0,33; R^2_{adj}=0,31, F=20,8 (p<0,0001); DW=1,8. The values of the standard errors of the coefficient estimates are given in parentheses.

$$\log(GVA_2) = 2{,}78 + 0{,}42\log(M2).$$
$$(1{,}91)\ (0{,}22)$$ [176]

Both equations are statistically significant according to Fisher's criterion (the second one at the significance level of 10%), all coefficients except the free term of the second equation are statistically significant according to Student's criterion. Despite the fact that the relationship, as visually determined on the basis of scatter diagrams, is rather weak, especially for the manufacturing sector, the statistical significance of the relationships allows us to analyse the elasticity coefficients. A 1% increase in money supply M2 in constant prices leads to a 0.38% increase in the GVA of the transactional - raw materials sector, and a 0.42% increase in the manufacturing sector. Thus, although the relationship between output of the manufacturing sector and money supply M2 is weaker, it has a higher elasticity, which allows us to speak about more efficient use of money in the manufacturing sector of the economy.

Next, we study the impact of the key rate as a basic monetary instrument of economic growth policy on the use (expenditure) of funds by sectors of the economy.

We modelled the impact of the key rate on the amount of money used in different sectors of the economy. For this purpose, as before, the division of sectors into manufacturing and transactional – raw materials sectors was applied. The amount of cash utilised is estimated using the indicator "directed cash from 2017" by economic activity[177]. The indicator represents the total amount of cash spent by organisations in thousands of rubles. Since this indicator is presented only in annual terms, it was converted into quarterly form assuming the uniformity of cash utilisation during the year. Due to discrete changes in the key rate[178] and the interval nature of the indicator of used cash, the average value of the key rate for the quarter was taken for modelling.

According to the Johansen test for time series cointegration, there is at least one cointegration relationship in the studied time series (trace statistic is 11.5). In this regard, in order to find dependencies between the studied indicators, we can use the model estimated using the dynamic ordinary least squares (DOLS) method. The essence of the DOLS method is to find a cointegration (long-run) relationship taking into account the dynamic adjustment of the model. In addition, DOLS allows to obtain estimates with good properties on small samples. This method has been successfully applied to the study of money demand [518, 202, 191, 94]. Since our case shows the presence of cointegration relations and the sample is small, the use of this method of model estimation seems to

[176] R^2=0,08; R^2_{adj}=0,07, F=3,6 (p=0,06); DW=2,33. The values of the standard errors of the coefficient estimates are given in parentheses.
[177] Data source: EMISS, Federal State Statistics Service https://fedstat.ru/indicator/59795?id=59795#
[178] Data source: Bank of Russia, key rate dynamics https://cbr.ru/hd_base/KeyRate/

be justified and gives a better result compared to the estimation using the ordinary least squares method.

Using the dynamic least squares method, the theoretical form equation was estimated:

$$s_j = \alpha_0 + \alpha_1 \cdot i + \varepsilon,$$

where s_j – cash used in the j sector of the economy (j=1,2);

α_0, α_1 – model coefficients,

ε – random component.

First, the models for both sectors of the economy were estimated in current prices. A model was obtained for the transactional – raw materials sector:

$$s_1 = 11973{,}8 - 937{,}9 \cdot i._{179}$$
$$(864{,}03)\ (107{,}3)$$

Used (spent) cash in the transactional – raw materials sector has an inverse statistically significant dependence on the interest rate. When the interest rate decreases by 1%, the amount of used cash grows on average by 937.9 billion rubles.

The model was obtained for the manufacturing sector:

$$s_2 = 4736{,}9 - 461{,}7 \cdot i._{180}$$
$$(479{,}3)\ (59{,}5)$$

Used (spent) cash in the manufacturing sector also has an inverse statistically significant dependence on the interest rate. When the interest rate decreases by 1%, the amount of cash used increases by 461.7 bln. rub. on average.

Similar patterns were estimated in constant 2000 prices. In order to ensure comparability with other results, the approximation was made using the GDP deflator[181].

A model was derived for the transactional – raw materials sector:

$$s_1 = 1504{,}7 - 110{,}7 \cdot i._{182}$$
$$(101{,}1)\ (12{,}6)$$

Used (spent) cash in constant 2000 prices in the transactional – raw materials sector also has an inverse statistically significant dependence on the interest rate. If the interest rate decreases by 1%, the amount of used cash grows by an average of 110.7 bln. rub. in 2000 prices.

A model was derived for the manufacturing sector:

$$s_2 = 610{,}3 - 58{,}3 \cdot i._{183}$$
$$(63{,}1)\ (7{,}8)$$

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[179] The standard errors of the coefficients are given in parentheses R^2=0,88, R^2_{adj}=0,84, S.E. of regression = 561, F=42.
[180] The standard errors of the coefficients are given in parentheses. R^2=0,83, R^2_{adj}=0,77, S.E. of regression = 338,5, F=17,9.
[181] GDP deflator https://rosstat.gov.ru/storage/mediabank/vkFOBqDq/ВВП%20годы%20(с%201995%20г.).xls
[182] The standard errors of the coefficients are given in parentheses. R^2=0,88, R^2_{adj}=0,84, S.E. of regression = 65,9, F=43,5.
[183] The standard errors of the coefficients are given in parentheses. R^2=0,82, R^2_{adj}=0,76, S.E. of regression = 44,3, F=16,4.

Used (spent) cash in constant 2000 prices in the manufacturing sector also has an inverse statistically significant dependence on the interest rate. When the interest rate decreases by 1%, the amount of used cash grows by an average of 58.3 bln.rub. in 2000 prices.

Thus, we can conclude that the cash used (spent) in both sectors of the economy statistically significantly depend on the key rate: the lower the interest rate, the higher the amount of cash used. At the same time, both in absolute terms and in terms of explained variation, the transactional – raw materials sector is more dependent on the key rate in terms of utilised cash than the manufacturing sector.

The next step is to consider the impact of monetary and fiscal policy instruments on the sectoral structure of the economy, the sectors whose dynamics ensures economic growth. We can distinguish the following sectors, which together make up the total value added: transactional, manufacturing and raw materials. In the study we will proceed from the fact that gross domestic product measured by gross value added includes gross value added of the three sectors distinguished by types of activities.

The economic system is considered in a general form, consisting of three sectors: raw materials, manufacturing and transactional. The division into sectors is made using the classifier of types of economic activities OKVED 2 as follows[184]:

1) raw materials sector: agriculture, forestry, hunting, fishing and fish farming, mining, provision of electricity, gas and steam; air conditioning, water supply; water disposal, organisation of waste collection and disposal, pollution elimination activities (Y1);

2) manufacturing sector: manufacturing, construction (Y2);

3) transactional sector: other types of economic activities (Y3).

The development of the sectors is estimated on the basis of gross value-added data[185]. Quarterly data from the first quarter of 2011 to the first quarter of 2022 are used. All absolute figures expressed in monetary terms are adjusted to 2000 prices using the GDP deflator[186].

We studied the impact of the following set of monetary instruments of economic growth policy on the development of sectors of the Russian economy: 1) the amount of the National Welfare Fund, billion rubles (xi1)[187]; 2) money supply M2, billion rubles (xi2)[188]; 3) state budget expenditures, billion rubles (xi3)[189]; 4) state budget deficit/surplus, billion rubles (xi4)[190]; 5) the amount of the state

[184] The division into sectors is made according to [217].
[185] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VDS_kvartal_OKVED2_s%202011.xls
[186] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995.xls
[187] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/09/main/Dannye_na_01.09.2022.xlsx
[188] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx
[189] Ibid.
[190] Ibid.

internal debt of Russia, billion rubles (xi5)[191]; 6) the amount of the state external debt of Russia, billion rubles (xi6) [192]; 7) required reserves (balances of mandatory reserve accounts deposited by credit institutions), billion rubles. (xi7)[193]; 8) key rate, % (xi8)[194]; 9) absorption of liquidity (deposits of credit institutions with the Bank of Russia + bonds of the Bank of Russia with credit institutions), billion rubles (xi9)[195]; 10) state budget revenues, billion rubles (xi10) [196].

Annex X shows the dynamics of the GVA growth rate of the manufacturing, raw materials and transaction sectors compared to the dynamics of the GDP growth rate[197]. The GDP growth rate is an approximate average of the growth rates of the sectors of the economy.

Due to the fact that the economy was divided into three sectors, it is reasonable to study the structure of GDP. Annex C presents the dynamics of GVA shares of each of the three sectors of the economy in GDP. As can be seen, the largest share is accounted for by the transactional sector, which includes the largest number of economic activities. The share of the manufacturing sector slightly exceeds the share of the raw materials sector. Note that since due to methodological differences in the calculation of indicators the sum of GVA by types of economic activities does not constitute the value of GDP, the sum of shares is not equal to one hundred per cent but varies around 90 per cent. In general, as can be seen in the figure in Annex C, the structure of the Russian economy remained quite stable over the ten years under study.

Annex H presents the dynamics of economic sectors' contributions to the economic growth rate. Contributions to GDP growth rate are calculated as the product of the GVA growth rate of the corresponding sector by its share in GDP [217]. The shares of the raw materials and manufacturing sectors of the economy are almost equal, while the share of the transactional sector exceeds them on average over the period under study. However, it underwent the largest fall in 2020 due to the pandemic-induced crisis, and further sharp growth is due to the low base effect.

Correlation analysis was used to further analyse the impact of monetary and fiscal policy instruments on the sectoral structure of the economy. The results are presented in Annex SH.

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[191] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/09/main/Obem_gosdolga_s_garantiyami_god_polnostu_na_01_09_2022.xls

[192] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/09/main/Obem_gos.vnesh.dolga.xlsx

[193] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx

[194] Data source: Bank of Russia https://cbr.ru/hd_base/KeyRate/

[195] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx

[196] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/08/main/fedbud_month.xlsx

[197] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VVP_kvartal_s%201995.xls

As target macroeconomic indicators in the context of sectors of the economy, the sectors' contributions to the GDP growth rate, shares of sectors' GVA in GDP, GDP growth rates of the sectors and GVA of the sectors of the economy were considered.

As can be seen from the table in Annex SH and the table in Annex SHCH clearly summarising the results of the correlation analysis, macroeconomic policy instruments do not influence the sectors' contributions to the GDP growth rate. Also, macroeconomic policy instruments have almost no effect on the GVA growth rate of the sectors of the economy. The exception is a weak inverse, statistically significant at a rather low-level influence of the key rate on the growth rate of the transactional sector.

The main influence of macroeconomic policy instruments is noted on the shares of sectors in GDP and GVA of sectors. Therefore, regression analysis was used to study this influence in more depth.

To investigate the impact of monetary instruments of economic policy on the sectoral structure of the Russian economy, linear regression models were constructed using ordinary Least Squares (LS). Since autocorrelation and multicollinearity were detected in a number of model specifications, standard errors were calculated in the Newey-West form. The choice of model specifications is based on t and F-criteria, coefficient of determination and information criteria values. All models are tested for heteroscedasticity of residuals using White's test and autocorrelation of residuals using the Durbin-Watson criterion.

The model specification based on the results of correlation analysis was first estimated, i.e. instruments that are statistically significantly correlated with the target indicator were included in the model. However, due to the fact that monetary instruments of economic policy are rather closely correlated with each other, their inclusion in the model at the same time often leads to the multicollinearity effect, which does not allow us to correctly analyse the impact of instruments on the targets. In order to eliminate multicollinearity, the specialisation of the model was changed by eliminating collinear variables.

First, the impact of monetary instruments of economic policy on the shares of GVA of sectors in GDP was modelled.

The model for assessing the impact of macroeconomic policy instruments on the share of manufacturing sector GVA in GDP can be presented as follows:

$$dY_1 = 0{,}18 - 0{,}0004 \cdot x_{i8} - 3{,}2 \cdot 10^{-6} \cdot x_{i9} + 9{,}7 \cdot 10^{-7} \cdot x_{i2} + 1{,}7 \cdot 10^{-6} \cdot x_{i1} - 1{,}4 \cdot 10^{-6} \cdot x_{i6} - 1{,}5 \cdot 10^{-6} \cdot x_{i5}$$[198],

where dY_1 – the share of the manufacturing sector in GDP;

x_{i8} – key rate;

x_{i9} – absorption of liquidity;

[198] R^2=0,73, R^2adj=0,69, F=17,3 (p<0,01), White test n*R^2=22,9 (p=0,69), Durbin-Watson statistic d=0,9 (d_l =1,34, d_u=1,75).

x_{i2} – money supply M2;

x_{i1} – the amount of the National Welfare Fund;

x_{i6} – external debt;

x_{i5} – internal debt.

The model is statistically significant according to the F-criterion; however, due to the effect of multicollinearity, the coefficients are not significant for all instruments. To eliminate the negative effect of multicollinearity, the model specification was modified by removing the instruments that are most significantly correlated with each other.

The model, the coefficients at all instruments are statistically significant, can be represented as follows:

$$dY_1 = 0{,}18 - 0{,}0004 \cdot x_{i8} + 8{,}6 \cdot 10^{-7} \cdot x_{i2} - 1{,}2 \cdot 10^{-6} \cdot x_{i6}{}^{199},$$

where dY_1 – the share of the manufacturing sector in GDP;

x_{i8} – key rate;

x_{i2} – money supply M2;

x_{i6} – external debt.

Reduction of the key rate and external debt, growth of money supply M2 lead to an increase in the share of the manufacturing sector in GDP. The joint variation of the key rate, money supply and external debt explains 66.4% of the variation in the share of manufacturing sector GVA.

The model of the impact of macroeconomic policy instruments on the share of GVA of the raw materials sector in GDP can be presented as follows:

$$dY_2 = 0{,}15 + 0{,}0005 \cdot x_{i8} + 7{,}9 \cdot 10^{-6} \cdot x_{i9} - 7{,}9 \cdot 10^{-5} \cdot x_{i7} - 2{,}1 \cdot 10^{-7} \cdot x_{i6}{}^{200},$$

where dY_2 – the share of the raw materials sector in GDP;

x_{i8} – key rate;

x_{i9} – absorption of liquidity;

x_{i7} – required reserves;

x_{i6} – external debt.

As in the previous case, the initial specification of the model includes factors that are significantly correlated with the share of the raw materials sector according to the results of correlation analysis. However, in this case there is also a negative effect of multicollinearity, which is expressed, despite the estimation of standard errors in the Newey-West form, in the insignificance of coefficients for two instruments of macroeconomic policy. In order to eliminate multicollinearity,

[199] R^2=0,69, R^2adj=0,66, F=30,0 (p<0,01), White test n*R^2=12,5 (p=0,19), Durbin-Watson statistic d=0,75 (d_l =1,42, d_u=1,67).
[200] R^2=0,41, R^2adj=0,36, F=7,1 (p<0,01), White test n*R^2=22,4 (p=0,07), Durbin-Watson statistic d=1,4 (d_l =1,38, d_u=1,72).

some variables were excluded from the model and the specification was estimated in the form presented as:

$$dY_2 = 0{,}14 + 0{,}0007 \cdot x_{i8} + 1{,}0 \cdot 10^{-5} \cdot x_{i9}{}^{201},$$

where dY_2 – the share of the raw materials sector in GDP;

x_{i8} – key rate;

x_{i9} – absorption of liquidity.

In the above model, all coefficients are statistically significant. As a result, the model estimates the impact of the key rate and liquidity absorption on the share of the raw materials sector. When the key rate decreases and liquidity absorption decreases at the same time, the share of the raw materials sector in GDP decreases. Their joint variation explains 30 per cent of the variation in the share of the raw materials sector.

The model of the impact of monetary instruments of economic policy on the share of GVA of the transactional sector in GDP can be presented as follows:

$$dY_3 = 0{,}56 - 6{,}4 \cdot 10^{-7} \cdot x_{i2} - 4{,}4 \cdot 10^{-7} \cdot x_{i1} + 5{,}1 \cdot 10^{-5} \cdot x_{i7} + 9{,}8 \cdot 10^{-6} \cdot x_{i5}{}^{202},$$

where dY_3 – the share of the transactional sector in GDP;

x_{i2} – money supply M2;

x_{i1} – the amount of the National Welfare Fund;

x_{i7} – required reserves;

x_{i5} – internal debt.

Despite the fact that all instruments included in the model are significantly correlated with the share of GVA of the transactional sector in GDP, their mutual correlations lead to a negative impact of the effect of multicollinearity. Therefore, in order to obtain the specification of the model with statistically significant influence of instruments on the share of GVA of the transactional sector in GDP, collinear variables were excluded and the specification was obtained as follows:

$$dY_3 = 0{,}56 + 3{,}4 \cdot 10^{-6} \cdot x_{i2} - 7{,}5 \cdot 10^{-6} \cdot x_{i9}{}^{203},$$

where dY_3 – share of the transactional sector in GDP;

x_{i2} – money supply M2;

x_{i9} – absorption of liquidity.

It presents the impact of two macroeconomic policy instruments on the share of GVA of the transactional sector in GDP: money supply M2 and liquidity absorption. Despite the fact that separately liquidity absorption does not have a statistically significant impact on the share of the

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[201] R^2=0,33, R^2adj=0,30, F=10,5 (p<0,01), White test n*R^2=23,2 (p=0,0003), Durbin-Watson statistic d=1,1 (d_l =1,46, d_u=1,63).
[202] R^2=0,35, R^2adj=0,29, F=5,4 (p<0,01), White test n*R^2=13,8 (p=0,46), Durbin-Watson statistic d=1,1 (d_l =1,38, d_u=1,72).
[203] R^2=0,33, R^2adj=0,29, F=10,2 (p<0,01), White test n*R^2=3,1 (p=0,68), Durbin-Watson statistic d=1,1 (d_l =1,46, d_u=1,63).

transactional sector in GDP, in combination with money supply M2 it increases the share of explained variation. Growth of money supply M2 and reduction of liquidity absorption leads to an increase in the share of the transactional sector in GDP. The joint variation of these instruments explains 29.4% of the variation in the share of the transactional sector.

Thus, we can conclude that the most significant impact of monetary instruments of economic policy has on the manufacturing sector, while the raw materials and transactional sectors depend on them to a lesser extent.

Next, the impact of monetary instruments of economic policy on the output of each sector, i.e. on the size of GVA, was investigated.

The model of the impact of all macroeconomic policy instruments on the GVA of the manufacturing sector can be presented as follows:

$$Y_1 = 630{,}8 + 0{,}01 \cdot x_{i9} - 0{,}02 \cdot x_{i1} - 3{,}9 \cdot x_{i8} - 0{,}008 \cdot x_{i2} + 0{,}4 \cdot x_{i7} - 0{,}009 \cdot x_{i6} + 0{,}1 \cdot x_{i5}$$[204],

where Y_1 – GVA of the manufacturing sector;

x_{i9} – absorption of liquidity;

x_{i1} – the amount of the National Welfare Fund;

x_{i8} – key rate;

x_{i2} – money supply M2;

x_{i7} – required reserves;

x_{i6} – external debt;

x_{i5} – internal debt.

The negative impact of the multicollinearity effect is also evident here, which led to the necessity to exclude collinear variables. Since the purpose of the study is to examine the impact of instruments on macroeconomic targets, namely on the sectoral structure of the Russian economy, in order to investigate the impact of a larger number of instruments, it was decided to estimate two modified specifications with a different set of factors.

The first one includes the impact on the GVA of the manufacturing sector of the amount of the National Welfare Fund, key rate, required reserves, external and internal debt. The combined variation of these factors explains 88.4 per cent of the variation in manufacturing sector GVA. At the same time, an increase in the required reserves and internal debt increases the GVA of the manufacturing sector. A decrease in the key rate, reduction in the amount of the National Welfare Fundand external debt also increases the GVA of the manufacturing sector in 2000 prices. The model can be summarised as follows:

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[204] R^2=0,9, R^2adj=0,88, F=48,4 (p<0,01), White test n*R^2=41,3 (p=0,21), Durbin-Watson statistic d=1,4 (d_l =1,34, d_u=1,75).

$$Y_1 = 617{,}1 - 0{,}02 \cdot x_{i1} - 3{,}6 \cdot x_{i8} + 0{,}4 \cdot x_{i7} - 0{,}009 \cdot x_{i6} + 0{,}1 \cdot x_{i5}^{205},$$

where Y_1 – GVA of the manufacturing sector;

x_{i1} – the amount of the National Welfare Fund;

x_{i8} – key rate;

x_{i7} – required reserves;

x_{i6} – external debt;

x_{i5} – internal debt.

The second one estimates the impact of M2 money supply and external debt on the GVA of the manufacturing sector. The latter is included in the specification to increase the explanatory power of the model. An increase in M2 money supply raises manufacturing sector GVA, while external debt decreases it. Their joint variation explains 75 per cent of the variation in manufacturing sector GVA. The model can be summarised as follows:

$$Y_1 = 564{,}5 + 0{,}02 \cdot x_{i2} - 0{,}01 \cdot x_{i6}^{206},$$

where Y_1 – GVA of the manufacturing sector;

x_{i2} – money supply M2;

x_{i6} – external debt.

The initial specification of the model for estimating the impact of macroeconomic policy instruments on raw materials sector GVA can be summarised as follows:

$$Y_2 = 494{,}7 + 0{,}03 \cdot x_{i9} - 0{,}03 \cdot x_{i1} + 0{,}003 \cdot x_{i2} - 0{,}005 \cdot x_{i6} + 0{,}07 \cdot x_{i5}^{207},$$

where Y_2 – raw materials sector GVA;

x_{i9} – absorption of liquidity;

x_{i1} – the amount of the National Welfare Fund;

x_{i2} – money supply M2;

x_{i6} – external debt;

x_{i5} – internal debt.

However, multicollinearity leads to insignificance of the coefficient at money supply M2, which leads to the need to change the specification.

The model, from the specification of which money supply M2 is excluded, can be represented as follows:

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[205] R^2=0,9, R^2adj=0,88, F=68,0 (p<0,01), White test n*R^2=34,8 (p=0,02), Durbin-Watson statistic d=1,2 (d_l =1,38, d_u=1,72).

[206] R^2=0,76, R^2adj=0,75, F=67,3 (p<0,01), White test n*R^2=7,2 (p=0,2), Durbin-Watson statistic d=0,7 (d_l =1,46, d_u=1,63).

[207] R^2=0,85, R^2adj=0,84, F=47,1 (p<0,01), White test n*R^2=31,2 (p=0,05), Durbin-Watson statistic d=1,5 (d_l =1,34, d_u=1,75).

$$Y_2 = 498{,}4 + 0{,}03 \cdot x_{i9} - 0{,}03 \cdot x_{i1} - 0{,}004 \cdot x_{i6} + 0{,}07 \cdot x_{i5}$$[208],

where Y_2 – raw materials sector GVA;

x_{i9} – absorption of liquidity;

x_{i1} – the amount of the National Welfare Fund;

x_{i6} – external debt;

x_{i5} – internal debt.

An increase in the absorption of liquidity and internal debt raises the GVA of the raw material sector, while a reduction in the National Welfare Fund and external debt has the same effect. The combined variation of these instruments explains 84 per cent of the variation in raw material sector GVA.

The model of dependence of raw material sector GVA on M2 money supply and external debt can be represented as follows:

$$Y_2 = 510 + 0{,}01 \cdot x_{i2} - 0{,}008 \cdot x_{i6}$$[209],

where Y_2 – raw materials sector GVA;

x_{i2} – money supply M2;

x_{i6} – external debt.

As in the case of the manufacturing sector, external debt is added due to low collinearity with M2 money supply to increase the explanatory power of the model. An increase in M2 money supply increases and external debt decreases the GVA of the raw material sector of the economy. The joint variation in money supply and external debt explains 65.2 per cent of the variation in the GVA of the raw material sector.

The model for assessing the impact of monetary instruments of economic policy on the GVA of the transactional sector can be presented as follows:

$$Y_3 = 1872{,}5 + 0{,}06 \cdot x_{i9} - 0{,}01 \cdot x_{i1} - 8{,}2 \cdot x_{i8} - 0{,}03 \cdot x_{i2} + 1{,}2 \cdot x_{i7} - 0{,}008 \cdot x_{i6} + 0{,}36 \cdot x_{i5}$$[210],

where Y_3 – GVA of the transactional sector;

x_{i9} – absorption of liquidity;

x_{i1} – the amount of the National Welfare Fund;

x_{i8} – key rate;

x_{i2} – money supply M2;

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[208] R^2=0,86, R^2adj=0,84, F=47,2 (p<0,01), White test n*R^2=15,0 (p=0,38), Durbin-Watson statistic d=1,5 (d_l =1,38, d_u=1,72).

[209] R^2=0,66, R^2adj=0,65, F=42,1 (p<0,01), White test n*R^2=29,2 (p<0,01), Durbin-Watson statistic d=0,8 (d_l =1,46, d_u=1,63).

[210] R^2=0,84, R^2adj=0,81, F=28 (p<0,01), White test n*R^2=37,9 (p=0,34), Durbin-Watson statistic d=1,1 (d_l =1,34, d_u=1,75).

x_{i7} – required reserves;

x_{i6} – external debt;

x_{i5} – internal debt.

This model, which includes all instruments significantly correlated with the GVA of the transactional sector, also has multicollinear factors. The modified specifications are presented below.

The model including such macroeconomic policy instruments as National Welfare Fund, key rate and internal debt can be represented as follows:

$$Y_3 = 1763{,}4 - 0{,}11 \cdot x_{i1} - 8{,}4 \cdot x_{i8} + 0{,}34 \cdot x_{i5}{}^{211},$$

where Y_3 – GVA of the transactional sector;

x_{i1} – the amount of the National Welfare Fund;

x_{i8} – key rate;

x_{i5} – internal debt.

Reduction in the volume of the National Welfare Fund, reduction of the key rate and growth of internal debt increase the GVA of the transactional sector. The joint variation of these instruments explains 79.8% of the variation in the GVA of the transactional sector.

The model estimating the impact of M2 money supply on the GVA of the transactional sector can be presented as follows:

$$Y_3 = 1565{,}4 + 0{,}08 \cdot x_{i2}{}^{212},$$

where Y_3 – GVA of the transactional sector;

x_{i2} – money supply M2.

There are no other regressors in the model, as all other instruments turned out to be insignificant when included in the model. The growth of money supply M2 increases the GVA of the transactional sector, and its variation explains 57.9% of the variation in GVA.

Thus, monetary instruments of economic growth policy have an impact on gross value added in the manufacturing, raw materials and transactional sectors of the economy.

Monetary instruments of economic policy have the greatest impact on the GVA of the manufacturing sector: joint variations of the macroeconomic policy instruments under study explain from 88.4% to 75% of the variation in the GVA of the manufacturing sector. GVA of the manufacturing sector increases with the reduction of the NWF and key rate, external debt and increase in the required reserves and internal debt. Also, GVA of the manufacturing sector increases as a result of increase in money supply M2 and reduction of external debt. Consequently, only absorption of

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[211] R^2=0,81, R^2adj=0,80, F=59,1 (p<0,01), White test n*R^2=14,8 (p=0,1), Durbin-Watson statistic d=1,1 (d_l =1,42, d_u=1,67).

[212] R^2=0,59, R^2adj=0,58, F=61,5 (p<0,01), White test n*R^2=6,1 (p=0,05), Durbin-Watson statistic d=0,8 (d_l =1,5, d_u=1,58).

liquidity has no impact on GVA of the manufacturing sector among the studied instruments of economic policy.

Growth policy instruments have a significant impact on raw material sector GVA: the joint variations of the macroeconomic policy instruments under study explain between 84% and 65.2% of the variation in raw material sector GVA. Raw material sector GVA increases with the increase in absorption of liquidity and internal debt, and with the reduction of NWF and external debt. Also, the GVA of the raw material sector increases while M2 money supply increases and external debt decreases. Therefore, the following instruments do not affect the GVA of raw material sector: required reserves and key rate.

Monetary instruments of economic growth policy have a significant impact on the GVA of the transactional sector: joint variations of the macroeconomic policy instruments under study explain from 79.8% to 57.9% of the variation in the GVA of the transactional sector. GVA of the transactional sector increases with the reduction of the NWF and the reduction of the key rate, and with the increase in internal debt. Also, GVA of the transactional sector increases with the growth of money supply M2. Therefore, GVA of the transactional sector is not affected by the following instruments: external debt, required reserves and absorption of liquidity.

When investigating the impact of macroeconomic policy instruments on the share of sectors in GDP, the conclusion about the greatest impact on the share of the manufacturing sector in GDP was obtained. The joint variation of the macroeconomic policy instruments under study explains 66.4% of the variation in the share of the manufacturing sector in GDP. When the key rate and external debt are reduced and the money supply M2 increases, the share of the manufacturing sector in GDP increases. The change in the share of the manufacturing sector in GDP is not affected by the following macroeconomic policy instruments: the NWF, internal debt, required reserves, absorption of liquidity.

Less significant result was obtained on the impact of monetary instruments of economic policy on the share of raw material sector in GDP and on the share of transactional sector in GDP. The joint variation of macroeconomic policy instruments explains 30% of variation in the share of raw material sector in GDP, 29.4% of variation in the share of transactional sector in GDP.

The share of raw material sector in GDP increases when the key rate and absorption of liquidity increase, i.e. when liquidity in the economy is squeezed.

The share of the transactional sector in GDP increases when money supply M2 increases and absorption of liquidity decreases, i.e. when liquidity expands.

Regarding the work of monetary and fiscal policy instruments, we can conclude that the greatest impact on sectoral dynamics is exerted by money supply M2: its growth increases the share

of the manufacturing sector in GDP, the share of the transactional sector in GDP, GVA of the manufacturing sector, GVA of the raw material sector, GVA of the transactional sector - all indicators, except for the share of the raw material sector in GDP.

Table 4.8 – Institutional matrix of monetary instruments of economic growth policy impact on the development of sectors of the Russian economy in the period of 2011-2022

Sectoral structure	Instruments of economic (monetary and fiscal) policy of growth						
	National Welfare Fund xi1	Money supply M2 xi2	Internal debt xi5	External debt xi6	Required reserves xi7	Key rate xi8	Absorption of liquidity xi9
Share of manufacturing sector in GDP dY_1		$dY_1 = 0{,}18 - 0{,}0004 \cdot x_{i8} + 8{,}6 \cdot 10^{-7} \cdot x_{i2} \; 1{,}2 \cdot 10^{-6} \cdot {x_{i6}}^{213}$		$dY_1 = 0{,}18 - 0{,}0004 \cdot x_{i8} + 8{,}6 \cdot 10^{-7} \cdot x_{i2} - 1{,}2 \cdot 10^{-6} \cdot {x_{i6}}^{214}$		$dY_1 = 0{,}18 - 0{,}0004 \cdot x_{i8} + 8{,}6 \cdot 10^{-7} \cdot x_{i2} - 1{,}2 \cdot 10^{-6} \cdot {x_{i6}}^{215}$	
Share of raw materials sector in GDP dY_2						$dY_2 = 0{,}14 + 0{,}0007 \cdot x_{i8} + 1{,}0 \cdot 10^{-5} \cdot {x_{i9}}^{216}$	$dY_2 = 0{,}14 + 0{,}0007 \cdot x_{i8} + 1{,}0 \cdot 10^{-5} \cdot {x_{i9}}^{217}$
Share of transaction sector in GDP dY_3		$dY_3 = 0{,}56 + 3{,}4 \cdot 10^{-6} \cdot x_{i2} \; -7{,}5 \cdot 10^{-6} \cdot {x_{i9}}^{218}$					$dY_3 = 0{,}56 + 3{,}4 \cdot 10^{-6} \cdot x_{i2} \; -7{,}5 \cdot 10^{-6} \cdot {x_{i9}}^{219}$

[213] R^2=0,69, R^2adj=0,66, F=30,0 (p<0,01), White test n*R^2=12,5 (p=0,19), Durbin–Watson statistic d=0,75 (d_l =1,42, d_u=1,67).
[214] R^2=0,69, R^2adj=0,66, F=30,0 (p<0,01), White test n*R^2=12,5 (p=0,19), Durbin–Watson statistic d=0,75 (d_l =1,42, d_u=1,67).
[215] R^2=0,69, R^2adj=0,66, F=30,0 (p<0,01), White test n*R^2=12,5 (p=0,19), Durbin–Watson statistic d=0,75 (d_l =1,42, d_u=1,67).
[216] R^2=0,33, R^2adj=0,30, F=10,5 (p<0,01), White test n*R^2=23,2 (p=0,0003), Durbin–Watson statistic d=1,1 (d_l =1,46, d_u=1,63).
[217] R^2=0,33, R^2adj=0,30, F=10,5 (p<0,01), White test n*R^2=23,2 (p=0,0003), Durbin–Watson statistic d=1,1 (d_l =1,46, d_u=1,63).
[218] R^2=0,33, R^2adj=0,29, F=10,2 (p<0,01), White test n*R^2=3,1 (p=0,68), Durbin–Watson statistic d=1,1 (d_l =1,46, d_u=1,63).
[219] R^2=0,33, R^2adj=0,29, F=10,2 (p<0,01), White test n*R^2=3,1 (p=0,68), Durbin–Watson statistic d=1,1 (d_l =1,46, d_u=1,63).

Sectoral structure	Instruments of economic (monetary and fiscal) policy of growth						
	National Welfare Fund xi1	Money supply M2 xi2	Internal debt xi5	External debt xi6	Required reserves xi7	Key rate xi8	Absorption of liquidity xi9
GVA of manufacturing sector Y_1	$Y_1 = 617{,}1 - 0{,}02 \cdot x_{i1} - 3{,}6 \cdot x_{i8} + 0{,}4 \cdot x_{i7} - 0{,}009 \cdot x_{i6} + 0{,}1 \cdot x_{i5}$[220]	$Y_1 = 564{,}5 + 0{,}02 \cdot x_{i2} - 0{,}01 \cdot x_{i6}$[221]	$Y_1 = 617{,}1 - 0{,}02 \cdot x_{i1} - 3{,}6 \cdot x_{i8} + 0{,}4 \cdot x_{i7} - 0{,}009 \cdot x_{i6} + 0{,}1 \cdot x_{i5}$[222]	$Y_1 = 564{,}5 + 0{,}02 \cdot x_{i2} - 0{,}01 \cdot x_{i6}$[223] $Y_1 = 617{,}1 - 0{,}02 \cdot x_{i1} - 3{,}6 \cdot x_{i8} + 0{,}4 \cdot x_{i7} - 0{,}009 \cdot x_{i6} + 0{,}1 \cdot x_{i5}$[224]	$Y_1 = 617{,}1 - 0{,}02 \cdot x_{i1} - 3{,}6 \cdot x_{i8} + 0{,}4 \cdot x_{i7} - 0{,}009 \cdot x_{i6} + 0{,}1 \cdot x_{i5}$[225]	$Y_1 = 617{,}1 - 0{,}02 \cdot x_{i1} - 3{,}6 \cdot x_{i8} + 0{,}4 \cdot x_{i7} - 0{,}009 \cdot x_{i6} + 0{,}1 \cdot x_{i5}$[226]	
GVA of raw materials sector Y_2	$Y_2 = 498{,}4 + 0{,}03 \cdot x_{i9} - 0{,}03 \cdot x_{i1} - 0{,}004 \cdot x_{i6} + 0{,}07 \cdot x_{i5}$[227],	$Y_2 = 510 + 0{,}01 \cdot x_{i2} - 0{,}008 \cdot x_{i6}$[228]	$Y_2 = 498{,}4 + 0{,}03 \cdot x_{i9} - 0{,}03 \cdot x_{i1} - 0{,}004 \cdot x_{i6} + 0{,}07 \cdot x_{i5}$[229],	$Y_2 = 498{,}4 + 0{,}03 \cdot x_{i9} - 0{,}03 \cdot x_{i1} - 0{,}004 \cdot x_{i6} + 0{,}07 \cdot x_{i5}$[230], $Y_2 = 510 + 0{,}01 \cdot x_{i2} - 0{,}008 \cdot x_{i6}$[231]			$Y_2 = 498{,}4 + 0{,}03 \cdot x_{i9} - 0{,}03 \cdot x_{i1} - 0{,}004 \cdot x_{i6} + 0{,}07 \cdot x_{i5}$[232],

[220] R^2=0,9, R^2adj=0,88, F=68,0 (p<0,01), White test n*R^2=34,8 (p=0,02), Durbin–Watson statistic d=1,2 (d_l =1,38, d_u=1,72).
[221] R^2=0,76, R^2adj=0,75, F=67,3 (p<0,01), White test n*R^2=7,2 (p=0,2), Durbin–Watson statistic d=0,7 (d_l =1,46, d_u=1,63).
[222] R^2=0,9, R^2adj=0,88, F=68,0 (p<0,01), White test n*R^2=34,8 (p=0,02), Durbin–Watson statistic d=1,2 (d_l =1,38, d_u=1,72).
[223] R^2=0,76, R^2adj=0,75, F=67,3 (p<0,01), White test n*R^2=7,2 (p=0,2), Durbin–Watson statistic d=0,7 (d_l =1,46, d_u=1,63).
[224] R^2=0,9, R^2adj=0,88, F=68,0 (p<0,01), White test n*R^2=34,8 (p=0,02), Durbin–Watson statistic d=1,2 (d_l =1,38, d_u=1,72).
[225] R^2=0,9, R^2adj=0,88, F=68,0 (p<0,01), White test n*R^2=34,8 (p=0,02), Durbin–Watson statistic d=1,2 (d_l =1,38, d_u=1,72).
[226] R^2=0,9, R^2adj=0,88, F=68,0 (p<0,01), White test n*R^2=34,8 (p=0,02), Durbin–Watson statistic d=1,2 (d_l =1,38, d_u=1,72).
[227] R^2=0,86, R^2adj=0,84, F=47,2 (p<0,01), White test n*R^2=15,0 (p=0,38), Durbin–Watson statistic d=1,5 (d_l =1,38, d_u=1,72).
[228] R^2=0,66, R^2adj=0,65, F=42,1 (p<0,01), White test n*R^2=29,2 (p<0,01), Durbin–Watson statistic d=0,8 (d_l =1,46, d_u=1,63).
[229] R^2=0,86, R^2adj=0,84, F=47,2 (p<0,01), White test n*R^2=15,0 (p=0,38), Durbin–Watson statistic d=1,5 (d_l =1,38, d_u=1,72).
[230] R^2=0,86, R^2adj=0,84, F=47,2 (p<0,01), White test n*R^2=15,0 (p=0,38), Durbin–Watson statistic d=1,5 (d_l =1,38, d_u=1,72).
[231] R^2=0,66, R^2adj=0,65, F=42,1 (p<0,01), White test n*R^2=29,2 (p<0,01), Durbin–Watson statistic d=0,8 (d_l =1,46, d_u=1,63).
[232] R^2=0,86, R^2adj=0,84, F=47,2 (p<0,01), White test n*R^2=15,0 (p=0,38), Durbin–Watson statistic d=1,5 (d_l =1,38, d_u=1,72).

Sectoral structure	Instruments of economic (monetary and fiscal) policy of growth						
	National Welfare Fund xi1	Money supply M2 xi2	Internal debt xi5	External debt xi6	Required reserves xi7	Key rate xi8	Absorption of liquidity xi9
GVA of transaction sector Y_3	$Y_3 = 1763{,}4 - 0{,}11 \cdot x_{i1} - 8{,}4 \cdot x_{i8} + 0{,}34 \cdot x_{i5}$[233]	$Y_3 = 1565{,}4 + 0{,}08 \cdot x_{i2}$[234]	$Y_3 = 1763{,}4 - 0{,}11 \cdot x_{i1} - 8{,}4 \cdot x_{i8} + 0{,}34 \cdot x_{i5}$[235]			$Y_3 = 1763{,}4 - 0{,}11 \cdot x_{i1} - 8{,}4 \cdot x_{i8} + 0{,}34 \cdot x_{i5}$[236]	

* The relevant instruments that impact on parameters of monetary policy of growth and its realization (application) are the amount of the National Welfare Fund, billion rubles (xi1)[237]; money supply M2, billion rubles[238] (xi2); state budget expenditures, billion rubles[239] (xi3); state budget deficit/surplus, billion rubles (xi4)[240]; the amount of the state internal debt of Russia, billion rubles (xi5)[241]; the amount of the state external debt of Russia, billion rubles (xi6)[242]; required reserves (balances of mandatory reserve accounts deposited by credit institutions), billion rubles (xi7)[243]; key rate, % (xi8)[244]; absorption of liquidity (deposits of credit institutions with the Bank of Russia + bonds of the Bank of Russia with credit institutions), billion rubles (xi9)[245]; state budget revenues, billion rubles.[246] (xi10).

Source: developed by the author

[233] R^2=0,81, R^2adj=0,80, F=59,1 (p<0,01), White test n*R^2=14,8 (p=0,1), Durbin–Watson statistic d=1,1 (d_l =1,42, d_u=1,67).
[234] R^2=0,59, R^2adj=0,58, F=61,5 (p<0,01), White test n*R^2=6,1 (p=0,05), Durbin–Watson statistic d=0,8 (d_l =1,5, d_u=1,58).
[235] R^2=0,81, R^2adj=0,80, F=59,1 (p<0,01), White test n*R^2=14,8 (p=0,1), Durbin–Watson statistic d=1,1 (d_l =1,42, d_u=1,67).
[236] R^2=0,81, R^2adj=0,80, F=59,1 (p<0,01), White test n*R^2=14,8 (p=0,1), Durbin–Watson statistic d=1,1 (d_l =1,42, d_u=1,67).
[237] Data source: Ministry of Finance of Russia https://minfin.gov.ru/common/upload/library/2022/09/main/Dannye_na_01.09.2022.xlsx
[238] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx
[239] The same source
[240] The same source
[241] Data source: Ministry of Finance of Russia https://minfin.gov.ru/common/upload/library/2022/09/main/Obem_gosdolga_s_garantiyami_god_polnostu_na_01_09_2022.xls
[242] Data source: Ministry of Finance of Russia https://minfin.gov.ru/common/upload/library/2022/09/main/Obem_gos.vnesh.dolga.xlsx
[243] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[244] Data source: Bank of Russia https://cbr.ru/hd_base/KeyRate/
[245] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[246] Data source: Ministry of Finance of Russia https://minfin.gov.ru/common/upload/library/2022/08/main/fedbud_month.xlsx

Table 4.9 – Institutional matrix of presence and direction of monetary instruments of economic growth policy impact on the development of sectors dynamics of the Russian economy in the period of 2011-2022 [220]

Sectoral structure	Instruments of economic (monetary and budgetary) policy of growth						
	National Welfare Fund xi1	Money supply M2 xi2	Internal debt xi5	External debt xi6	Required reserves xi7	Key rate xi8	Absorption of liquidity xi9
Share of manufacturing sector in GDP dY_1	NI	+	NI	–	NI	–	NI
Share of raw materials sector in GDP dY_2	NI	NI	NI	NI	NI	+	+
Share of transaction sector in dY_3	NI	+	NI	NI	NI	NI	–
GVA of manufacturing sector Y_1	–	+	+	–	+	–	NI
GVA of raw materials sector Y_2	–	+	+	–	NI	NI	+
GVA of transaction sector Y_3	–	+	+	NI	NI	–	NI

NI – no impact; + direct impact, – feedback impact
Source: developed by the author

The key rate has a different impact on sectoral dynamics: when the key rate decreases, the share of the manufacturing sector in GDP, GVA of the manufacturing sector and GVA of the transactional sector increases; when the key rate increases, the share of the raw material sector in GDP increases.

When the NWF is reduced (presumably, when it is spent), there is an increase in GVA of all three sectors: manufacturing, raw material sector and transactional sector.

The growth of internal debt leads to an increase in GVA of all three sectors: manufacturing, raw material sector and transactional sector.

Reduction of external debt increases the share of the manufacturing sector in GDP, GVA of all three sectors: manufacturing, raw material and transactional.

Reduction of absorption of liquidity (saturation of liquidity in the economy) leads to an increase in the share of the transactional sector in GDP and a decrease in the share of the raw material sector in GDP and GVA of the raw material sector.

Thus, the shares of sectors in the national economy are mainly influenced by the key rate, money supply M2 and absorption of liquidity. GVA of the sectors of the economy depends more significantly on monetary policy instruments than their share in GDP. The main influence is exerted by the money supply M2, the key rate, the amount of external debt and internal debt, and the size of the National Welfare Fund. At the same time, such fiscal policy instruments as revenues and expenditures, state budget deficit and surplus do not affect production in individual sectors of the economy.

Tables 4.8-4.9 present the institutional matrix of the impact of monetary instruments of economic growth policy on the sectoral dynamics of the Russian economy in 2011-2022.

Thus, in accordance with the algorithm presented at the beginning of the paragraph, let us outline the conclusions obtained for each point.

1. The largest share of directed (spent) money by types of economic activities in the M2 money supply in 2017-2020 is in wholesale and retail trade (17.39%), in manufacturing industries (14.27%).

2. The highest ratio of spent money to gross value added in 2017-2020 in Russia is in financial and insurance activities (104.82%), wholesale and retail trade (76.45%), manufacturing industries (53.14%). This proposed indicator demonstrates the efficiency of spending money.

3. An empirical analysis of the relationship between the share of spent funds in M2 and the ratio of spent funds to GVA in Russia from 2017 to 2020 has been carried out, based on which it was found that the law of diminishing returns applies: increasing the share of spent funds by type of economic activity in M2 increases the efficiency of spending money in terms of its ratio to output (GVA), only up to the level of 80%.

4. The empirical analysis and regression models of the influence of money supply M2 as a basic instrument of monetary policy on output by sectors of the economy (manufacturing, transactional

and raw material sectors) in Russia from 2011 to 2021. The result was obtained that the growth of money supply M2 in constant prices by 1% leads to an increase in the GVA of the transactional - raw material sector by 0.38%, and the manufacturing sector - by 0.42%. Thus, although the relationship between output of the manufacturing sector and money supply M2 is weaker, it has a higher elasticity, which allows us to talk about more efficient use of money in the manufacturing sector of the economy.

5. The empirical analysis and regression models of the impact of the key rate as a basic instrument of monetary policy of growth on the use of cash by sectors of the economy in Russia from 2017 to 2020 were built. The result was obtained that the used (spent) funds in both sectors of the economy statistically significantly depend on the key rate: the lower the interest rate, the higher the amount of used funds. At the same time, both in absolute terms and in terms of explained variation, the transactional - raw material sector is more dependent on the key rate in terms of cash used than the manufacturing sector.

6. Regression models of the impact of fiscal and monetary policy instruments on the sectoral structure of the Russian economy (transactional, manufacturing and raw material sectors) in 2011-2022. The result was obtained about the most significant impact of instruments on the manufacturing sector of the economy, and less on the raw material and transactional sectors.

7. The institutional matrix of influence of monetary instruments of economic growth policy on the sectoral dynamics of the Russian economy in 2011-2022 was built in order to increase its efficiency depending on the current and required state. The institutional matrix allows choosing appropriate combinations of macroeconomic policy instruments, which are optimal under the existing sectoral structure of the Russian economy.

4.4 The influence of monetary policy for growth on technological structures [247]

The notion that economic development is a change of technological paradigms, which occurs in phases of the Kondratiev long wave and provides long-wave dynamics of development, was introduced and substantiated by the Russian school of economics in 1980-1990 [78, 138]. Technological paradigms are presented as aggregated reproductive technological contours, which are formed by related industries that create a certain set of products and services [138]. These contours include the process from resource extraction to consumption of final goods and are closed. Because of the change from one technology to another and technological evolution, technological paradigms emerge. The theory of technological

[247] In preparing this section of the thesis the following publications were used, made by the author in co-authorship, which reflect the main results, provisions and conclusions of the study: Sukharev O.S., Afanasyeva O.N. Distribution of the impact of monetary and fiscal policy instruments by technological modes and economic sectors// Finance: theory and practice. - 2023. (1.0/0.5)

paradigms describes technological evolution in retrospect, presents technologies as institutions and forms an amalgamation of both technological and institutional change processes, which distinguishes it from other approaches. This theory makes it possible to describe long-term evolutionary processes of the national and world economy by introducing the concept of the world economic paradigm [77].

The task of studying the impact of a wide range of monetary and fiscal policy instruments on the structure of the economy, identified not only by sectors, but also by basic industries or otherwise types of activities attributed to technological paradigms, based on the theory of economic policy of J. Tinbergen seems to be very promising. The study makes it possible to formulate economic growth policy taking into account the long-term vision of economic development problems on the basis of the taxonomy of the equivalents of paradigms adopted in the theory of technological paradigms. It becomes possible to assess the success of the implemented macroeconomic policy from the point of view of paradigms, taking into account its instrumentalisation.

According to [224], the Russian economy currently has and operates simultaneously four technological paradigms, from the third to the emerging sixth.

O.S. Sukharev and E.N. Voronchikhina previously proposed an approach to solving the problem of assessing the impact of macroeconomic policy instruments on the paradigms identified by science [224]. Using the method of pair correlations, the scientists determined the impact of the following macroeconomic policy instruments on the gross value added (GVA) of the paradigms: the ratio of M3 to GDP, inflation, the interest rate on deposits, the interest rate on short-term and medium-term loans, M3 in 2011 prices, the average nominal exchange rate of the dollar, the average nominal exchange rate of the euro, the average price of Urals oil, the key rate of the Central Bank of the Russian Federation. Also, in the above study multiple regressions of GVA of technological paradigms on a number of factors, namely: the level of monetisation, risk, the key rate of the Central Bank of the Russian Federation, the average nominal exchange rate of the dollar, the average annual price of Urals oil, inflation.

The novelty of this dissertation research lies in the application of the institutional monetary theory of growth policy to the theory of technological paradigms, superimposition of theories, and solving the problem of assessing the aggregate impact of monetary instruments of economic policy on each of the paradigms identified by science. The result is a set of monetary instruments of economic policy that promote the development or vice versa inhibit the development of each of the paradigms for the period 2011-2021. This allows, first, to determine the dispersed strength of the impact of monetary instruments of economic policy, and second, to propose possible adjustments to the monetary and fiscal policy in order to achieve changes in each technological paradigm.

The paper calculates the equivalents of the paradigms, a certain aggregate imitation tied to the basic industries attributed to the paradigms by S.Y. Glazyev [138]. The methodological approach to their allocation and fit into the macroeconomic analysis according to O.S. Sukharev [225] was used.

Quantitative assessment of the size of technological paradigms is carried out according to the proposed O.S. Sukharev and E.N. Voronchikhina [224] methodology for the breakdown and measurement of paradigms by the amount of gross value added by the relevant types of economic activity[248] for the third, fourth and fifth paradigms, and by the size of domestic expenditures on research and development in priority areas of activity - for the sixth paradigm[249].

In this paper we have conducted a study of the impact of the following monetary instruments of economic policy on the development of aggregate equivalents of the paradigms:

- monetary policy instruments: 1) the amount of National Welfare Fund, billion rubles (xi1)[250]; 2) money supply M2, billion rubles (xi2)[251]; 3) the amount of the state internal debt of Russia, billion rubles (xi5) [252]; 4) the amount of the state external debt of Russia, billion rubles (xi6) [253]; 5) required reserves (balances of mandatory reserve accounts deposited by credit institutions), billion rubles (xi7) [254]; 6) key rate, % (xi8) [255]; 7) absorption of liquidity (deposits of credit institutions with the Bank of Russia + bonds of the Bank of Russia with credit institutions), billion rubles (xi9)[256].

- fiscal policy instruments: 1) state budget revenues, billion rubles (xi10) [257]; 2) state budget expenditures, billion rubles[258](xi3); 3) state budget deficit/surplus, billion rubles (xi4) [259].

Due to the fact that Rosstat provides data on GVA in the context of detailed types of economic activities with an annual periodicity starting from 2011, the research is conducted for this time period with an annual periodicity of data. Data on the value of domestic expenditures on research and development are available from 2015, therefore the study on the aggregated equivalent of the sixth paradigm is limited to the period 2015-2021. All figures are adjusted to 2000 prices using the GDP deflator to ensure comparability of results[260].

Figure 1.19 in Chapter 1 presents the dynamics of GVA of aggregated equivalents of the paradigms.

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[248] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011.xls
[249] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/nauka-5.xlsx
[250] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/09/main/Dannye_na_01.09.2022.xlsx
[251] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/ms_m22.xlsx
[252] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/09/main/Obem_gosdolga_s_garantiyami_god_polnostu_na_01_09_2022.xls
[253] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/09/main/Obem_gos.vnesh.dolga.xlsx
[254] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[255] Data source: Bank of Russia https://cbr.ru/hd_base/KeyRate/
[256] Data source: Bank of Russia https://cbr.ru/vfs/statistics/ms/mb_bd.xlsx
[257] Data source: Ministry of Finance of the Russian Federation https://minfin.gov.ru/common/upload/library/2022/10/main/fedbud.xlsx
[258] Ibid.
[259] Ibid.
[260] Data source: Rosstat https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011.xls

In terms of GVA value, the aggregate equivalent of the first-third paradigms has the greatest development, followed by the fourth, fifth and the sixth paradigm with the lowest values. At the same time, during the period under study there is a slight increase in the aggregate equivalent of the first-third and fifth paradigms and a decrease in the fourth and sixth paradigms.

Figure 1.18 shows the dynamics of growth rates of GVA of aggregated equivalents of paradigms. It also does not allow us to draw conclusions about the presence of an unambiguous trend. In 2020, compared to 2019, the values for the aggregate equivalents of the first-third, fourth and sixth paradigms decreased and slightly increased for the fifth paradigm. In 2021, values for the first-third and fourth paradigms increased and values for the fifth and sixth paradigms decreased.

The table in Annex E1 shows the correlation of GVA between the aggregate equivalents of the paradigms. The first-third, fourth and fifth paradigms do not correlate with each other. There is a negative correlation between the sixth paradigm with the first-third and fourth paradigms. This indicates the opposite tendencies - the growth of the sixth paradigm is accompanied by a decline in the first-third and fourth paradigms, and vice versa.

However, the correlation of growth rates demonstrates a different trend: inverse relationship of growth rates of aggregate equivalents of the first-third and fifth paradigms, and direct relationship of the fifth and sixth paradigms (Annex Y).

Annex Ya presents the correlation coefficients of monetary instruments of economic policy with the GVA of aggregated equivalents of technological paradigms. Money supply M2, required reserves, and internal debt have a significant direct correlation with the equivalents of the first-third paradigms, while external debt has an inverse correlation. State budget revenues and the amount of the National Welfare Fund correlate with the fourth paradigm, the relationship is direct. The absorption of liquidity, state budget expenditures, the amount of the National Welfare Fund, money supply M2, required reserves and internal debt (the relationship is direct), and external debt (the relationship is inverse) are significantly correlated with the fifth paradigm. Of all monetary instruments of economic policy only budget revenues and internal debt correlate with the sixth paradigm equivalent, the relationship is inverse.

Annex Ya1 presents the correlation of the growth rates of GVA of aggregated equivalents of the paradigms with monetary instruments of economic policy. As can be seen, none of the instruments significantly affects the change in GVA of the equivalents of the first-third and sixth paradigms. Budget revenues and the amount of the National Welfare Fund are significantly related to the growth rate of the fourth structure, the relationship is direct. The amount of the National Welfare Fund and internal debt are related to the growth rate of the fifth structure, the relationship is inverse.

Regression analysis was used to quantify the impact of monetary instruments of economic policy on GVA of aggregate equivalents of paradigms and growth rates of GVA of aggregate equivalents of

paradigms. The choice of model specification was made taking into account the results of correlation analysis (Tables 4.14 and 4.15), based on the Fisher, Student, Akaike and Schwartz criteria. Taking into account potential autocorrelation and heteroskedasticity of the residuals of the models, the standard errors were estimated in Newey-West form. Multicollinearity was eliminated by removing collinear factors from the model specification. All models presented below are statistically significant by Fisher's criterion (F-criterion).

The model of dependence of GVA of the aggregate equivalent of the 1-3 paradigms on monetary instruments of economic policy can be represented as follows:

$$U_3 = 6000{,}5 - 0{,}0009 \cdot x_{i2} + 2{,}12 \cdot x_{i7} - 0{,}07 \cdot x_{i6} + 0{,}97 \cdot x_{i5}$$ [261]

where U_3 – GVA of the aggregated equivalent of 1-3 paradigms;

x_{i2} – money supply M2;

x_{i7} – required reserves;

x_{i6} – external debt;

x_{i5} – internal debt.

In a model of this specification that includes all influencing instruments, there is clearly multicollinearity that is not eliminated by removing only one instrument:

$$U_3 = 5173{,}7 + 0{,}06 \cdot x_{i2} + 1{,}01 \cdot x_{i7} + 0{,}99 \cdot x_{i5}$$ [262]

where U_3 – GVA of the aggregated equivalent of 1-3 paradigms;

x_{i2} – money supply M2;

x_{i7} – required reserves;

x_{i5} – internal debt.

In this regard, further the influence of each factor is estimated separately.

The model of dependence of GVA of the aggregate equivalent of the 1-3 paradigms on the money supply M2 can be represented as follows:

$$U_3 = 4659 + 0{,}34 \cdot x_{i2}$$ [263]

where U_3 – GVA of the aggregated equivalent of 1-3 paradigms;

x_{i2} – money supply M2.

The variation of money supply M2 explains 54.4% of the variation in GVA of the aggregated equivalent of the 1-3 paradigms. If the money supply increases by 1bln. rub., the GVA of the aggregated equivalent of the 1-3 paradigms will increase by 0.34 bln. rub. on average.

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[261] R^2=0,73, R^2adj=0,54, F=3,98 (p=0,07), White test n*R^2=9,2 (p=0,06), Durbin-Watson d=1,33 (d_l =0,444, d_u=2,283).

[262] R^2=0,7, R^2adj=0,57, F=5,453 (p=0,03), White test n*R^2=10,2 (p=0,33), Durbin-Watson statistic d=1,4 (d_l =0,595, d_u=1,928).

[263] R^2=0,54, R^2adj=0,49, F=10,7 (p=0,009), White test n*R^2=7,4 (p=0,02), Durbin-Watson statistic d=2,1 (d_l =0,927, d_u=1,324).

The model of dependence of GVA of the aggregate equivalent of the 1-3 paradigms on the required reserves can be represented as follows:

$$U_3 = 5405{,}5 + 17{,}9 \cdot x_{i7}$$ [264]

where U_3 – GVA of the aggregated equivalent of 1-3 paradigms;

x_{i7} – required reserves.

The variation of the required reserves explains 30% of the variation in the GVA of the aggregated equivalent of the 1-3 paradigms. If the required reserves increase by 1 bln. rub., the GVA of the aggregated equivalent of the 1-3 paradigms will increase by 17.9 bln. rub. on average.

The model of dependence of GVA of the aggregate equivalent of the 1-3 paradigms on external debt can be represented as follows:

$$U_3 = 8034{,}8 - 0{,}19 \cdot x_{i6}$$ [265]

where U_3 – GVA of the aggregated equivalent of 1-3 paradigms;

x_{i6} – external debt.

The variation of external debt explains 33.4% of the variation in GVA of the aggregated equivalent of the 1-3 paradigms. When external debt increases by 1bln. rub., the GVA of the aggregated equivalent of the 1-3 paradigms decreases by 0.18 bln. rub.

The model of dependence of the GVA of the aggregate equivalent of the 1-3 paradigms on the internal debt, the variation of which determines almost 70% of the variation of the GVA of the 1-3 paradigms, can be represented as follows:

$$U_3 = 5382{,}7 + 1{,}15 \cdot x_{i5}$$ [266]

where U_3 – GVA of aggregated equivalent of the 1-3 paradigms;

x_{i5} – internal debt.

When the internal debt increases by 1 bln. rub. GVA of the aggregated equivalent of the 1-3 paradigms increases on average by 1.15 bln. rub.

The model of dependence of GVA of aggregated equivalent of the fourth paradigm on macroeconomic policy instruments significantly correlated with it can be represented as follows:

$$U_4 = 4217{,}1 + 0{,}26 \cdot x_{i10} + 0{,}11 \cdot x_{i1}$$ [267]

where U_4 – GVA of the aggregated equivalent of the fourth paradigm;

x_{i10} – state budget revenues;

x_{i1} – the amount of National Welfare Fund.

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[264] R^2=0,29, R^2adj=0,22, F=3,78 (p=0,08), White test n*R^2=0,9 (p=0,6), Durbin-Watson d=0,89 (d_l =0,927, d_u=1,324).
[265] R^2=0,33, R^2adj=0,26, F=4,5 (p=0,06), White test n*R^2=0,8 (p=0,7), Durbin-Watson statistic d=0,95 (d_l =0,927, d_u=1,324).
[266] R^2=0,7, R^2adj=0,66, F=20,5 (p=0,001), White test n*R^2=0,94 (p=0,6), Durbin-Watson statistic d=1,29 (d_l =0,927, d_u=1,324).
[267] R^2=0,72, R^2adj=0,65, F=10,5 (p=0,005), White test n*R^2=6,05 (p=0,3), Durbin-Watson statistic d=1,47 (d_l =0,658, d_u=1,604).

Since the correlation of instruments is low, multicollinearity is absent, the signs correspond to pair correlation coefficients. The joint variation of state budget revenues and the amount of National Welfare Fund explains 72.4% of variation in GVA of the aggregated equivalent of the fourth paradigm. When budget revenues increase by 1 bln. rub., GVA of aggregated equivalent of the fourth paradigm increases by 0.26 bln.rub., and when the amount of National Welfare Fund increases by 1 bln.rub., GVA of the fourth paradigm increases by 0.11bln. rub. on average.

The model of dependence of the growth rate of GVA of the aggregated equivalent of the fourth paradigm on the state budget revenues and the amount of National Welfare Fund can be presented as follows:

$$dU_4 = -16{,}2 + 0{,}006 \cdot x_{i10} + 0{,}002 \cdot x_{i1}$$ [268]

where dU_4 – growth rate of GVA of the aggregated equivalent of the fourth paradigm;

x_{i10} – state budget revenues;

x_{i1} – the amount of National Welfare Fund.

Their joint variation explains 70% of the variation in the growth rate of GVA of the aggregated equivalent of the fourth paradigm. When budget revenues increase by 1bln. rub., the growth rate of GVA of the aggregated equivalent of the fourth paradigm increases on average by 0.006%, and when the amount of National Welfare Fund increases by 1bln. rub. - by 0.002 per cent.

The initial model of dependence of GVA of the aggregated equivalent of the fifth paradigm on macroeconomic policy instruments can be represented as follows:

$$U_5 = 120{,}6 + 0{,}18 \cdot x_{i9} + 0{,}13 \cdot x_{i3} - 0{,}09 \cdot x_{i1} + 0{,}12 \cdot x_{i2} + 0{,}43 \cdot x_{i7} + 0{,}02 \cdot x_{i6} + 0{,}17 \cdot x_{i5}$$ [269]

where U_5 – GVA of the aggregate equivalent of the fifth paradigm;

x_{i9} – absorption of liquidity;

x_{i3} – state budget expenditures;

x_{i1} – the amount of National Welfare Fund;

x_{i2} – money supply M2;

x_{i7} – required reserves;

x_{i6} – external debt;

x_{i5} – internal debt.

Due to the fact that two coefficients of the model are not statistically significant, despite the significant correlation of this instrument with the GVA of the aggregated equivalent of the fifth paradigm, we can conclude that the model is negatively affected by the correlation of macroeconomic

[268] R^2=0,7, R^2adj=0,62, F=8,5 (p=0,01), White test n*R^2=9,6 (p=0,09), Durbin-Watson statistic d=2,46 (d_l =0,658, d_u=1,604).

[269] R^2=0,99, R^2adj=0,96, F=39,8 (p=0,006), White test n*R^2=9,8 (p=0,2), Durbin-Watson statistic d=3,16 (d_l =0,203, d_u=3,005).

policy instruments among themselves. Therefore, the specification of the model was changed by removing one instrument from it, namely required reserves.

The model can be represented as follows:

$$U_5 = 110 + 0{,}18 \cdot x_{i9} + 0{,}15 \cdot x_{i3} - 0{,}11 \cdot x_{i1} + 0{,}11 \cdot x_{i2} + 0{,}02 \cdot x_{i6} + 0{,}20 \cdot x_{i5}$$ [270]

where U_5 – GVA of the aggregate equivalent of the fifth paradigm;

x_{i9} – absorption of liquidity;

x_{i3} – state budget expenditures;

x_{i1} – the amount of National Welfare Fund;

x_{i2} – money supply M2;

x_{i6} – external debt;

x_{i5} – internal debt.

All coefficients of this model are statistically significant. The joint variation of absorption of liquidity, state budget expenditures, the amount of National Welfare Fund, money supply M2, external debt, internal debt explains 99% of the variation in the GVA of the aggregated fifth-paradigm equivalent. However, the signs of the coefficients for the variables " the amount of National Welfare Fund " and "external debt" do not correspond to the results of the correlation analysis. In this regard, further changes in model specifications were required, presented below.

The model of dependence of GVA of the aggregated equivalent of the fifth paradigm on absorption of liquidity, government budget expenditures and internal debt can be represented as follows:

$$U_5 = 466{,}4 + 0{,}4 \cdot x_{i9} + 0{,}21 \cdot x_{i3} + 0{,}28 \cdot x_{i5}$$ [271]

where U_5 – GVA of the aggregate equivalent of the fifth paradigm;

x_{i9} – absorption of liquidity;

x_{i3} – state budget expenditures;

x_{i5} – internal debt.

Their joint variation explains 87.8% of the variations of the GVA of the aggregated equivalent of the fifth paradigm. If the absorption of liquidity, state budget expenditures and internal debt increase by 1bln. rub., GVA of the aggregated equivalent of the fifth paradigm will increase by 0.4, 0.22 and 0.28 bln. rub. respectively.

The model of the effect on GVA of the aggregated equivalent of the fifth paradigm of money supply M2, the variation of which explains 96% of the variation in GVA of the aggregated equivalent of the fifth paradigm, can be represented as follows:

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[270] R^2=0,99, R^2adj=0,97, F=59,8 (p=0,0007), White test n*R^2=9,79 (p=0,13), Durbin-Watson statistic d=3,01 (d_l =0,203, d_u=3,005).

[271] R^2=0,87, R^2adj=0,83, F=16,8 (p=0,001), White test n*R^2=9,7 (p=0,4), Durbin-Watson statistic d=1,55 (d_l =0,595, d_u=1,928).

$$U_5 = 466{,}5 + 0{,}17 \cdot x_{i2}$$[272]

where U_5 – GVA of the aggregate equivalent of the fifth paradigm;

x_{i2} – money supply M2.

If the money supply increases by 1 bln. rub., the GVA of aggregated of the fifth paradigm equivalent will increase by 0.17 bln. rub.

The model of dependence of GVA of the aggregated equivalent of the fifth paradigm on the amount of National Welfare Fund can be represented as follows:

$$U_5 = 1246{,}4 + 0{,}24 \cdot x_{i1}$$[273]

where U_5 – GVA of the aggregate equivalent of the fifth paradigm;

x_{i1} – the amount of National Welfare Fund.

Its variation explains the variation of GVA of the aggregated equivalent of the fifth paradigm by 31.8%. If the the amount of National Welfare Fund is increased by 1 bln. rub., the GVA of the aggregated equivalent of the fifth paradigm will increase by an average of 0.24 bln. rub.

The model of dependence of the GVA of the aggregate fifth paradigm equivalent on external debt can be represented as follows:

$$U_5 = 1880{,}8 - 0{,}06 \cdot x_{i6}$$[274]

где U_5 – GVA of the aggregate equivalent of the fifth paradigm;

x_{i6} – external debt.

The model of the dependence of GVA of the aggregate fifth paradigm equivalent on required reserves can be represented as follows:

$$U_5 = 920{,}2 + 7{,}29 \cdot x_{i7}$$[275]

где U_5 – GVA of the aggregate equivalent of the fifth paradigm;

x_{i7} – required reserves.

The model of dependence of the growth rate of GVA of the aggregate equivalent of the fifth paradigm on the amount of National Welfare Fund and internal debt correlated with it can be presented as follows:

$$dU_5 = 8{,}08 - 0{,}002 \cdot x_{i1} - 0{,}009 \cdot x_{i5}$$[276]

где dU_5 – growth rate of GVA of the aggregated equivalent of the fifth paradigm;

x_{i1} – the amount of National Welfare Fund;

x_{i5} – internal debt.

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[272] R^2=0,96, R^2adj=0,96, F=23,5 (p<0,0001), White test n*R^2=2,85 (p=0,24), Durbin-Watson statistic d=1,26 (d_l =0,927, d_u=1,324).
[273] R^2=0,32, R^2adj=0,24, F=4,2 (p=0,07), White test n*R^2=0,6 (p=0,74), Durbin-Watson statistic d=1,73 (d_l =0,927, d_u=1,324).
[274] R^2=0,27, R^2adj=0,19, F=3,38 (p=0,099), White test n*R^2=0,57 (p=0,75), Durbin-Watson statistic d=0,89 (d_l =0,927, d_u=1,324).
[275] R^2=0,37, R^2adj=0,3, F=5,3 (p=0,04), White test n*R^2=1,87 (p=0,39), Durbin-Watson statistic d=0,9 (d_l =0,927, d_u=1,324).
[276] R^2=0,31, R^2adj=0,23, F=3,67 (p=0,09), White test n*R^2=2,9 (p=0,24), Durbin-Watson statistic d=1,84 (d_l =0,927, d_u=1,324).

However, the characteristics of the model cannot be recognised as successful, as the model and the coefficients on the variables are statistically insignificant. This determines the necessity to estimate separate equations estimating the impact on the GVA growth rate of the aggregated fifth paradigm equivalent of each of the instruments. The results are presented next.

The model of dependence of the growth rate of GVA of the aggregated equivalent of the fifth paradigm on the amount of National Welfare Fund can be represented as follows:

$$dU_5 = 8{,}08 - 0{,}007 \cdot x_{i1}$$ [277]

где dU_5 – growth rate of GVA of the aggregated equivalent of the fifth paradigm;

x_{i1} – the amount of National Welfare Fund.

Its variation explains 31.4% of the variation in the GVA growth rate. If the National Welfare Fund is increased by 1 bln. rub., the growth rate of GVA of the aggregate equivalent of the fifth paradigm will decrease by 0.007% on average.

The model of the impact on the GVA growth rate of the aggregate fifth paradigm equivalent of internal debt can be represented as follows:

$$dU_5 = 15{,}16 - 0{,}01 \cdot x_{i5}$$ [278]

где dU_5 – growth rate of GVA of the aggregated equivalent of the fifth paradigm;

x_{i5} – internal debt.

The variation in the value of internal debt explains 35.7% of the variation in the GVA growth rate. When internal debt increases by 1 bln. rub., the growth rate of GVA of the aggregate equivalent of the fifth paradigm decreases on average by 0.01%.

[277] R^2=0,31, R^2adj=0,23, F=3,67 (p=0,09), White test n*R^2=2,9 (p=0,24), Durbin-Watson statistic d=1,84 (d_l =0,927, d_u=1,324).
[278] R^2=0,36, R^2adj=0,28, F=4,44 (p=0,07), White test n*R^2=1,6 (p=0,45), Durbin-Watson statistic d=1,69 (d_l =0,927, d_u=1,324).

Table 4.10 – Institutional matrix of monetary instruments of economic growth policy impact on GVA of aggregated equivalents of technological paradigms and their growth rate of the Russian economy in the period of 2011-2021

Aggregated equivalents of paradigms	Instruments of economic (monetary and fiscal) policy									
	National Welfare Fund (**xi1**)	Money supplyM2 (**xi2**)	Budget expenditures (**xi3**)	Budget deficit/surplus (**xi4**)	Internal debt (**xi5**)	External debt (**xi6**)	Required reserves (**xi7**)	Key rate (**xi8**)	Absorption of liquidity (**xi9**)	Budget revenues (**xi10**)
GVA 1-3 paradigms (**U3**)	–	$U_3 = 4659 + 0{,}34 \cdot x_{i2}$[279]	–	–	$U_3 = 5382{,}7 + 1{,}15 \cdot x_{i5}$[280]	$U_3 = 8034{,}8 - 0{,}19 \cdot x_{i6}$[281]	$U_3 = 5405{,}5 + 17{,}9 \cdot x_{i7}$[282]	–	–	–
GVA 4th paradigm (**U4**)	$U_4 = 4217{,}1 + 0{,}26 \cdot x_{i10} + 0{,}11 \cdot x_{i1}$[283]	–	–	–	–	–	–	–	–	$U_4 = 4217{,}1 + 0{,}26 \cdot x_{i10} + 0{,}11 \cdot x_{i1}$[284]

[279] R^2=0,54, R^2adj=0,49, F=10,7 (p=0,009), White test n*R^2=7,4 (p=0,02), Durbin–Watson statistic d=2,1 (d_l =0,927, d_u=1,324).
[280] R^2=0,7, R^2adj=0,66, F=20,5 (p=0,001), White test n*R^2=0,94 (p=0,6), Durbin–Watson statistic d=1,29 (d_l =0,927, d_u=1,324).
[281] R^2=0,33, R^2adj=0,26, F=4,5 (p=0,06), White test n*R^2=0,8 (p=0,7), Durbin–Watson statistic d=0,95 (d_l =0,927, d_u=1,324).
[282] R^2=0,29, R^2adj=0,22, F=3,78 (p=0,08), White test n*R^2=0,9 (p=0,6), Durbin–Watson statistic d=0,89 (d_l =0,927, d_u=1,324).
[283] R^2=0,72, R^2adj=0,65, F=10,5 (p=0,005), White test n*R^2=6,05 (p=0,3), Durbin–Watson statistic d=1,47 (d_l =0,658, d_u=1,604).
[284] R^2=0,72, R^2adj=0,65, F=10,5 (p=0,005), White test n*R^2=6,05 (p=0,3), Durbin–Watson statistic d=1,47 (d_l =0,658, d_u=1,604).

Aggregated equivalents of paradigms	Instruments of economic (monetary and fiscal) policy									
	National Welfare Fund (**xi1**)	Money supplyM2 (**xi2**)	Budget expenditures (**xi3**)	Budget deficit/surplus (**xi4**)	Internal debt (**xi5**)	External debt (**xi6**)	Required reserves (**xi7**)	Key rate (**xi8**)	Absorption of liquidity (**xi9**)	Budget revenues (**xi10**)
GVA 5th paradigm **(U_5)**	$U_5 = 1246{,}4 + 0{,}24 \cdot x_{i1}$ [285]	$U_5 = 466{,}5 + 0{,}17 \cdot x_{i2}$ [286]	$U_5 = 466{,}4 + 0{,}4 \cdot x_{i9} + 0{,}21 \cdot x_{i3} + 0{,}28 \cdot x_{i5}$ [287]	–	$U_5 = 466{,}4 + 0{,}4 \cdot x_{i9} + 0{,}21 \cdot x_{i3} + 0{,}28 \cdot x_{i5}$ [288]	$U_5 = 1880{,}8 - 0{,}06 \cdot x_{i6}$ [289]	$U_5 = 920{,}2 + 7{,}29 \cdot x_{i7}$ [290]	–	$U_5 = 466{,}4 + 0{,}4 \cdot x_{i9} + 0{,}21 \cdot x_{i3} + 0{,}28 \cdot x_{i5}$ [291]	–
GVA 6th paradigm **(U_6)**	–	–	–	–	$U_6 = 100{,}5 - 0{,}008 \cdot x_{i10} - 0{,}01 \cdot x_{i5}$ [292]	–	–	–	–	$U_6 = 100{,}5 - 0{,}008 \cdot x_{i10} - 0{,}01 \cdot x_{i5}$ [293]
GVA growth rate of 1-3 paradi	–	–	–	–	–	–	–	–	–	–

[285] R^2=0,32, R^2adj=0,24, F=4,2 (p=0,07), White test n*R^2=0,6 (p=0,74), Durbin–Watson statistic d=1,73 (d_l =0,927, d_u=1,324).
[286] R^2=0,96, R^2adj=0,96, F=23,5 (p<0,0001), White test n*R^2=2,85 (p=0,24), Durbin–Watson statistic d=1,26 (d_l =0,927, d_u=1,324).
[287] R^2=0,87, R^2adj=0,83, F=16,8 (p=0,001), White test n*R^2=9,7 (p=0,4), Durbin–Watson statistic d=1,55 (d_l =0,595, d_u=1,928).
[288] R^2=0,87, R^2adj=0,83, F=16,8 (p=0,001), White test n*R^2=9,7 (p=0,4), Durbin–Watson statistic d=1,55 (d_l =0,595, d_u=1,928).
[289] R^2=0,27, R^2adj=0,19, F=3,38 (p=0,099), White test n*R^2=0,57 (p=0,75), Durbin–Watson statistic d=0,89 (d_l =0,927, d_u=1,324).
[290] R^2=0,37, R^2adj=0,3, F=5,3 (p=0,04), White test n*R^2=1,87 (p=0,39), Durbin–Watson statistic d=0,9 (d_l =0,927, d_u=1,324).
[291] R^2=0,87, R^2adj=0,83, F=16,8 (p=0,001), White test n*R^2=9,7 (p=0,4), Durbin–Watson statistic d=1,55 (d_l =0,595, d_u=1,928).
[292] R^2=0,79, R^2adj=0,68, F=7,6 (p=0,04), White test n*R^2=6,99 (p=0,22), Durbin–Watson statistic d=2,45 (d_l =0,658, d_u=1,604).
[293] R^2=0,79, R^2adj=0,68, F=7,6 (p=0,04), White test n*R^2=6,99 (p=0,22), Durbin–Watson statistic d=2,45 (d_l =0,658, d_u=1,604).

Aggregated equivalents of paradigms	Instruments of economic (monetary and fiscal) policy									
	National Welfare Fund (**xi1**)	Money supplyM2 (**xi2**)	Budget expenditures (**xi3**)	Budget deficit/surplus (**xi4**)	Internal debt (**xi5**)	External debt (**xi6**)	Required reserves (**xi7**)	Key rate (**xi8**)	Absorption of liquidity (**xi9**)	Budget revenues (**xi10**)
gms **(dU_3)**										
GVA growth rate of the 4th paradigm **(dU_4)**	$dU_4 = -16{,}2 + 0{,}006 \cdot x_{i10} + 0{,}002 \cdot x_{i1}$[294]	–	–	–	–	–	–	–	–	$dU_4 = -16{,}2 + 0{,}006 \cdot x_{i10} + 0{,}002 \cdot x_{i1}$[295]
GVA growth rate of the 5th paradigm **(dU_5)**	$dU_5 = 8{,}08 - 0{,}007 \cdot x_{i1}$[296]	–	–	–	$dU_5 = 15{,}16 - 0{,}01 \cdot x_{i5}$[297]	–	–	–	–	–
GVA growth rate of the	–	–	–	–	–	–	–	–	–	–

[294] R^2=0,7, R^2adj=0,62, F=8,5 (p=0,01), White test n*R^2=9,6 (p=0,09), Durbin–Watson statistic d=2,46 (d_l =0,658, d_u=1,604).
[295] R^2=0,7, R^2adj=0,62, F=8,5 (p=0,01), White test n*R^2=9,6 (p=0,09), Durbin–Watson statistic d=2,46 (d_l =0,658, d_u=1,604).
[296] R^2=0,31, R^2adj=0,23, F=3,67 (p=0,09), White test n*R^2=2,9 (p=0,24), Durbin–Watson statistic d=1,84 (d_l =0,927, d_u=1,324).
[297] R^2=0,36, R^2adj=0,28, F=4,44 (p=0,07), White test n*R^2=1,6 (p=0,45), Durbin–Watson statistic d=1,69 (d_l =0,927, d_u=1,324).

Aggregated equivalents of paradigms	Instruments of economic (monetary and fiscal) policy									
	National Welfare Fund (**xi1**)	Money supplyM2 (**xi2**)	Budget expenditures (**xi3**)	Budget deficit/surplus (**xi4**)	Internal debt (**xi5**)	External debt (**xi6**)	Required reserves (**xi7**)	Key rate (**xi8**)	Absorption of liquidity (**xi9**)	Budget revenues (**xi10**)
6th paradigm **(dU_6)**										

– impact is statistically insignificant. Source: developed by the author

Table 4.11 – Institutional matrix of presence and direction of monetary instruments of economic growth policy impact on GVA of aggregated equivalents of technological paradigms and their growth rate of the Russian economy in the period of 2011-2021 [220]

Aggregated equivalents of paradigms	Instruments of economic (monetary and fiscal) policy									
	National Welfare Fund (**xi1**)	Money supply M2 (**xi2**)	Budget expenditures (**xi3**)	Budget deficit/surplus (**xi4**)	Internal debt (**xi5**)	External debt (**xi6**)	Required reserves (**xi7**)	Key rate (**xi8**)	Absorption of liquidity (**xi9**)	Budget revenues (**xi10**)
GVA 1-3 paradigms **(U_3)**	NI	+	NI	NI	+	–	+	NI	NI	NI
GVA 4th paradigm **(U_4)**	+	NI	NI	NI	NI	NI	NI	NI	NI	+
GVA 5th paradigm **(U_5)**	+	+	+	NI	+	–	+	NI	+	NI
GVA 6th paradigm **(U_6)**	NI	NI	NI	NI	–	NI	NI	NI	NI	–
GVA growth rate of 1-3 paradigms **(dU_3)**	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
GVA growth rate of the 4th paradigm **(dU_4)**	+	NI	NI	NI	NI	NI	NI	NI	NI	+
GVA growth rate of the 5th paradigm **(dU_5)**	–	NI	NI	NI	–	NI	NI	NI	NI	NI

Aggregated equivalents of paradigms	Instruments of economic (monetary and fiscal) policy									
	National Welfare Fund (**xi1**)	Money supply M2 (**xi2**)	Budget expenditures (**xi3**)	Budget deficit/surplus (**xi4**)	Internal debt (**xi5**)	External debt (**xi6**)	Required reserves (**xi7**)	Key rate (**xi8**)	Absorption of liquidity (**xi9**)	Budget revenues (**xi10**)
GVA 6th paradigm growth rate **(dU_6)**	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI

NI – no impact; + direct impact, – feedback impact
Source: developed by the author

The model of the impact on GVA of the aggregate sixth paradigm equivalent of government budget revenues and internal debt can be presented as follows:

$$U_6 = 100{,}5 - 0{,}008 \cdot x_{i10} - 0{,}01 \cdot x_{i5}$$[298]

где U_6 – GVA of the aggregate equivalent of the sixth paradigm;

x_{i10} – state budget revenues;

x_{i5} – internal debt.

Their joint variation explains 79% of the variation in the GVA of the aggregated sixth paradigm equivalent. If state budget revenues increase by 1bln. rub., the GVA of the aggregate sixth paradigm equivalent decreases by 0.008 bln. rub. When internal debt increases by 1 bln. rub., the GVA of the aggregate equivalent of the sixth paradigm decreases by 0.01 bln. rub.

The results of the study of the impact of macroeconomic policy instruments on the GVA of aggregate equivalents of paradigms and their growth rates are summarised in Tables 4.4.16 and 4.4.17. Table 4.4.16 shows the institutional matrix of the impact of monetary instruments of economic policy on the GVA of aggregate equivalents of paradigms and their growth rates for the Russian economy in 2011-2021.

Thus, the conducted research allows us to draw the following conclusions. Macroeconomic policy instruments in aggregate influence both the value of GVA of aggregated equivalents of paradigms and their growth rates. However, the direction and strength of the influence are different. The size of the national welfare fund and the size of internal debt influence the largest number of targets - 4 out of 8. The key rate and the state budget deficit/surplus do not affect any of the target indicators (GVA of aggregate equivalents of patterns or their growth rates).

Macroeconomic policy instruments in the aggregate affect both the value of GVA of aggregated equivalents of patterns and their growth rates. However, the direction and strength of the influence are different. The amount of National Welfare Fund and the size of internal debt influence the largest number of targets - 4 out of 8. The key rate and the state budget deficit/surplus do not affect any of the target indicators (GVA of aggregated equivalents of the paradigms or their growth rates).

Thus, monetary instruments of economic growth policy in Russia in the period 2011-2021 had an impact on the structure of aggregate equivalents of paradigms, on the GVA of aggregate equivalents of paradigms and the growth rate of GVA of aggregate equivalents of paradigms. The following conclusions can be drawn:

1. Macroeconomic policy instruments have the greatest impact on the GVA of the aggregate equivalent of the 5th paradigm: joint variations of the studied macroeconomic policy instruments explain 95.9% and 82.6% of the variation of the GVA of the 5th paradigm. The GVA of the aggregate equivalent

[298] R^2=0,79, R^2adj=0,68, F=7,6 (p=0,04), White test n*R^2=6,99 (p=0,22), Durbin-Watson statistic d=2,45 (d_l =0,658, d_u=1,604).

of the 5 paradigm increases with the growth of M2 money supply, as well as with the simultaneous growth of state budget expenditures, internal debt and absorption of liquidity.

Macroeconomic policy instruments have a meaningful effect on:

- GVA of aggregate equivalent of 1-3 paradigms: joint variation in the macroeconomic policy instruments under study explains 66.1 per cent of the variation in GVA of 1-3 paradigms. GVA of the aggregate equivalent of 1-3 paradigms increases with the growth of internal debt;

- GVA of the aggregate equivalent of the 4th paradigm: joint variations of the studied macroeconomic policy instruments explain 65.4% of the variation of GVA of the 4th paradigm. GVA of the aggregate equivalent of the 4th paradigm increases with a simultaneous increase in the revenues of the state budget and the amount of the National Wealth Fund;

- GVA of the aggregated equivalent of the 6th pardigm: joint variations of the studied macroeconomic policy instruments explain 68.7% of the variation of GVA of the 6th paradigm. GVA of the aggregate equivalent of the 6th paradigm increases with simultaneous reduction of state budget revenues and internal debt;

- growth rate of GVA of aggregate equivalent of the 4th paradigm: joint variations of the macroeconomic policy instruments under study explain 62.3% of variation in the growth rate of GVA of the 4th paradigm. The growth rate of GVA of the aggregate equivalent of the 4th paradigm increases with a simultaneous increase in the state budget revenues and the amount of the National Wealth Fund.

2. Increase in money supply M2, state budget expenditures and reduction of external debt have only a direct effect by increasing the GVA of some aggregate equivalents of paradigms. Other monetary instruments, while increasing GVA or GVA growth rate of some aggregate equivalents of paradigms, decrease GVA or GVA growth rate of others. These include the amount of the National Welfare Fund, the amount of the state internal debt and state budget revenues. Required reserves and absorption of liquidity have a negative effect, i.e. an increase in their volumes leads to an increase in the GVA of some aggregate equivalents of paradigms, which is the opposite of the expected phenomenon in the application of these instruments.

3. Considering the impact of a set of monetary instruments on individual aggregate equivalents of paradigms, the following conclusions can be drawn:

-the greatest number of instruments affect the GVA of the aggregate equivalent of the 5th paradigm and the GVA of the aggregate equivalent of the 1-3 paradigms. GVA of the aggregate equivalent of the 5th paradigm increases with the growth of the amount of the National Welfare Fund, M2 money supply, state budget expenditures, internal debt, required reserves and absorption of liquidity and with the reduction of external debt. GVA of the aggregate equivalent of the 1-3 paradigms increases with an increase in money supply M2, internal debt, required reserves and with a reduction in external debt. It is

important to note that the effects of the amount of the National Welfare Fund, required reserves and absorption of liquidity have probably secondary effects;

- a smaller number of instruments affect the GVA of the aggregate equivalent of the 4th paradigm, the growth rate of the GVA of the aggregate equivalent of the 4th paradigm, the growth rate of the GVA of the aggregate equivalent of the 5th paradigm, and the GVA of the aggregate equivalent of the 6th paradigm. Thus, for example, the GVA of aggregate equivalent of the 4th paradigm and the growth rate of GVA of aggregate equivalent of the 4th paradigm increase with the increase in the amount of the National Welfare Fund and state budget revenues; the growth rate of GVA of aggregate equivalent of the 5th paradigm increases with the decrease in the amount of the National Welfare Fund and internal debt; the GVA of aggregate equivalent of the 6th paradigm increases with the decrease in internal debt and state budget revenues.

4.5 Overcoming macroeconomic growth problems in Russia: institutional adjustments to monetary policy

In recent years in Russia, the quality of the economy and the structural relations formed by the macroeconomic growth policy have become of great importance, rather than just increasing the growth rate of the economy. The boundaries of monetary policy, its instruments and targets are expanding, the interrelation with fiscal policy and other types of economic policy is strengthening.

An important aspect of the institutional monetary theory of growth policy is institutional adjustments of monetary policy in overcoming macroeconomic problems of growth in Russia.

Institutional changes include adjustments and dysfunctions of institutions, moreover, different types of institutions have their own set of qualitative and quantitative characteristics that determine their functions and dysfunctions. Before applying institutional corrections, it is necessary to determine what state of the economic system is a deviation from the functional norm and the reasons for its occurrence. If the parameters of an institution deteriorate or if an institution is not functioning well, a dysfunction can be identified. It is important to understand not only the impact of institutions on economic events and indicators, but also the impact of changes in institutions on the behaviour of actors and on the efficiency of the economy as a whole.

The main sources of institutional change can be economic growth, the state and legislation, economic agents, technology and engineering. Under institutional correction O.S. Sukharev understands "...modification of a rule or its replacement by an updated rule" [230, p.285]. Also, "under the correction of institutions are understood purposeful changes in the rules, carried out in various ways by the subject of management" [215, p.37]. As a result, institutional correction has an impact on the dynamics of the parameter of the economic system. We can distinguish the following varieties of institutional correction:

inhibiting development; creating a delay in time in development; activating development. The result of institutional correction can also be an increase in the dysfunction of the economic system.

Based on the accumulation effect of monetary policy presented in this study and the assessment of its impact on economic growth, we can conclude that when the accumulation effect weakens monetary policy, making agents unresponsive to it and a negative accumulation effect occurs, there is a need for institutional corrections. Monetary policy has tools to influence price dynamics and economic growth. The basic tools are changes in the key rate and changes in the money supply (for Russia the monetary aggregate M2).

Based on the calculation of sensitivity coefficients of the macroeconomic policy objective - growth rate to such monetary policy instruments as interest rate and money supply M2 in Russia proposed in the study, it was concluded that for the objective of economic growth the accumulative effect of monetary policy was negative, which is confirmed by the negative values of sensitivity coefficients over a long period of time. Monetary policy did not ensure the maintenance of a sustainable growth rate of the economy and did not restrain the decline in the growth rate.

The accumulative effect of monetary policy in terms of influence on the inflation target is positive in most periods, but in some time intervals there was a deterioration in the sensitivity of the inflation target to the M2 money supply instrument.

Over 20 years in Russia only in 2016-2018 there was a positive accumulative effect of monetary policy (two instruments - interest rate and money supply M2) on both macroeconomic targets (economic growth rate, inflation rate). When implementing the monetary policy, it was not possible to simultaneously achieve the macroeconomic targets of economic growth rate and inflation reduction. However, there was a significant positive cumulative effect of monetary policy, expressed in the impact on the goal of inflation reduction.

Based on the above, we can conclude that the monetary policy formed a negative accumulative effect that does not contribute to growth and works to reduce the growth dynamics. Under these conditions, it is necessary to correctly designate the targets of economic, including monetary policy, to influence the structural parameters of the economic system to ensure optimal proportions of economic development in the implementation of institutional adjustments.

It can also be concluded that the interest rate as a monetary policy instrument aimed at curbing inflation in Russia is inappropriate.

Let us present a model of institutional adjustments of monetary policy in overcoming macroeconomic growth problems in Russia, including the types of necessary institutional adjustments.

The general orientation of institutional adjustments of monetary policy can be reduced to the achievement of the main macroeconomic targets (GDP growth, inflation reduction, unemployment reduction) or (GDP growth, inflation reduction, strengthening of the national currency exchange rate).

Institutional adjustments can be considered as a method or management tool among monetary instruments of influence on the achievement of macroeconomic targets. Institutional adjustments can be applied as a method of management at different levels of the economy under different circumstances, selected accordingly to the state of the economy and macroeconomic targets. The peculiarity of institutional adjustments is "giving institutions greater coercive power, expanding the scope of their regulatory action and/or increasing their efficiency" [215, p.39].

Since the instruments of monetary and fiscal policy are rules and are institutional in themselves, their adjustments change the possibilities of the policy itself. It is important to take into account what changes the planned institutional adjustments will lead to.

Institutional adjustments of monetary policy should be coordinated with institutional adjustments of other types of economic policy of the state with a clear system of target setting, contribute to more effective achievement of macroeconomic targets.

It is important to develop and adopt a legal framework that adjusts the targeting of monetary policy for economic growth and development of the country. The basis for institutional adjustments in the application of monetary instruments of economic policy should be the Law on planning economic policy for growth. This Law should determine the complex coordination of methods and instruments of institutional levels of the state economic policy with a clear system of targets while observing the concentration and focus of regulatory measures and should contribute to a more effective achievement of the ultimate targets of economic development.

In the framework of institutional monetary theory, which combines systemic, dialectical, evolutionary and interdisciplinary approach to the study of monetary policy, the institutional model of monetary policy has been developed, which allows to determine its institutional levels, instruments, macroeconomic targets, and their interrelationships. Based on the developed model, possible and necessary institutional adjustments of monetary policy can be presented.

The institutional model of monetary policy is represented by the following levels: basic institutions of monetary policy; institutional mechanism of monetary policy; institutional infrastructure of monetary policy.

In the basic institutions, institutional adjustments should first of all affect the interaction between money as a basic institution and the economic actors targeted by monetary policy. Money through monetary policy should directly influence the economic structure, flow with the necessary speed from one sector to another. It is important to take into account not the money supply as a whole, but its structure, the spread of the money supply across sectors and paradigms.

It is necessary to adjust the work of such a basic institution of monetary policy as the system of commercial banks. The work of commercial banks should contribute to economic growth. There should be formed the channels of crediting, contributing to the distribution of money supply between the sectors

of the economy, providing structural modification of the economy, formation of the necessary set rate of economic growth at a certain rate of inflation. Facilitation of production activity should be in the banks' priorities, which will solve the problem of formation of reproductive link between the sectors of the economy.

Expansion of the supply of money and credit with simultaneous stimulation of aggregate demand will form such growth dynamics, which will make it possible to renew the stock base of the economy and structurally adjust the national economy.

In the institutional mechanism of monetary policy of growth, first of all, it is necessary to adjust the targets of monetary policy. Monetary policy should fulfil a multifaceted task: to promote economic growth, reduce inflation, and increase employment.

Indicators of development of such institutions as transactional and non-transactional sectors, technological paradigms, households through their indicative properties allow assessing the effectiveness of the state monetary policy, the need for institutional adjustments and the effectiveness of institutional adjustments by smoothing or eliminating dysfunctions. An important institutional correction should be the application of structural monetary policy, the basis of which is the theory of structural growth policy, the goal - the achievement of structural effect, the basis - a set of instruments affecting the macroeconomic structure, the ratio of elements and their dynamics, the optimisation of resource allocation, the contribution to economic growth and the structure of targets.

At present, money flows are institutionally oriented towards servicing import infrastructure and the fuel and energy sector, while high-tech firms and defence sector enterprises need money.

There is a need for sectoral orientation of investments and loans in the transactional and non-transactional sectors and technological stages. It is important to correct the bias in the economy in favour of financial investments.

One of the necessary institutional corrections is the structural application of money supply M2 as an instrument of monetary policy. At the same time, it is necessary to take into account the impact of macroeconomic policy instruments on the components of money supply M2 and the component of money supply on macroeconomic targets. Thus:

1. On the basis of the study of money supply in 2012-2020 in the Russian economy in the application of correlation analysis, it was determined that the most significant closeness of the relationship between the key rate is present with the components of money supply M2: M0 - cash in circulation and m1 - transferable deposits of the population. The relationship is inverse, i.e. with the increase in the key rate there is a decrease in cash in circulation and transferable deposits of the population.

Based on the correlation analysis for 2012-2020 in the Russian economy it was determined that the most significant closeness of the relationship with the GDP growth rate is present in the component

of money supply M2: m2 - transferable deposits of non-financial and financial (except credit) organisations and m4 - other deposits of non-financial and financial (except credit) organisations. The relationship is inverse, i.e. with the growth of the above components there is a decrease in the GDP growth rate.

The components of money supply M2: M0 - cash in circulation and m1 - transferable deposits of the population are closely related to the inflation rate. The relationship is inverse, i.e. inflation decreases with the increase of the components.

The obtained results can be used for the purpose of institutional adjustments of the conducted monetary policy, the benchmark of which is to stimulate economic growth simultaneously with the inflation rate corresponding to the established goal.

In addition, the result can be applied to adjust the targeting policy in the presence of structural dynamics of money supply M2, which does not ensure either the achievement of the target inflation rate or growth rate.

2. By building regression models the influence of structural components of money supply M2 on GDP growth rate and inflation rate was revealed. The slowdown in the growth rate of the economy in 2011-2020 was accompanied by an increase in the m2 component, as well as its growth rate. The growth rate of components gm1 (transferable deposits of the population) and gm3 (other deposits of households) stimulate growth over the specified time interval. Since there was a weakly negative relationship between the growth rate of money supply M2 and the GDP growth rate in Russia in 2011-2020 and positive in the 20-year interval from 2000 to 2020, we can conclude that the growth of the economy is inhibited by the dynamics of money supply M2 due to monetary policy in this time interval.

Table 4.12 - Institutional adjustments in the application of M2 money supply components to achieve macroeconomic targets in Russia

Components/growth rate money supply M2 component:	Macroeconomic target – GDP growth rate	Macroeconomic target – inflation rate	En (g/p)
M0 – cash in circulation	NI	↑	NI
Growth rate gM0	NI	NI	↑
m1 – transferable deposits of the population	NI	NI	NI
Growth rate gm1	↑	↑	NI
m2 – transferable deposits of non-financial and financial (except credit) organisation	↓	↓	↓
Growth rate gm2	↓	↓	↓
m3 – other deposits of household	NI	↑	↑

Components/growth rate money supply M2 component:	Macroeconomic target – GDP growth rate	Macroeconomic target – inflation rate	En (g/p)
Growth rate gm3	↑	NI	NI
m4 – other deposits of non-financial and financial (except credit) organisation	NI	↓	NI
Growth rate gm4	NI	NI	NI

NI – no impact; ↑ - increase, ↓ - decrease
Source: developed by the author

Components M0 (cash in circulation) and m3 (other deposits of households) had a braking effect on inflation in 2011-2020, while components m2 (transferable deposits of non-financial and financial (except credit) organisations) and m4 (other deposits of non-financial and financial (except credit) organisations) stimulated inflation growth. The growth rate of gm1 (transferable deposits of population) restrained inflation, while the growth rate of gm2 (transferable deposits of non-financial and financial (except credit) organisations accelerated inflation.

The integral effect was influenced by m3 and growth rate gM0 in the upward direction, m2 and growth rate gm2 in the downward direction.

Thus, when applying the monetary instrument of economic policy, money supply M2 in Russia to achieve the macroeconomic targets of economic growth, curb inflation and correct the integral effect, institutional adjustments are possible and necessary, presented in Table 4.12.

It can be concluded that the following institutional adjustments in the formation and distribution/redistribution of the money supply structure by components are necessary:

1. To achieve the macroeconomic goal of GDP growth rate it is necessary to: increase the growth rate gm1, growth rate gm3 and reduce m2 and growth rate gm2.

2. To achieve the macroeconomic objective inflation rate (inflation containment) it is necessary to increase M0, growth rate gm1 and m3 and reduce m2, growth rate gm2 and m4.

3. To increase the integral effect, it is necessary to increase the growth rate gM0 and m3 and reduce m2 and growth rate gm2.

Earlier in Chapter 3, the regression models were used to determine which monetary and fiscal policy instruments have an impact on individual components of money supply M2. Institutional adjustments in the application of monetary and fiscal policy instruments in Russia in order to adjust the components of money supply M2 in Russia are presented in Table 4.13.

Table 4.13 - Institutional adjustments in the application of monetary and fiscal policy instruments in Russia to correct the M2 component of money supply in Russia

Components of money supply M2	M0- cash in circulation	m1- transferable deposits of population	m2- transferable deposits of non-financial and financial (except credit) organisation	m3- other deposits of households	m4- other deposits of non-financial and financial (except credit) organisation
Directionality possible correction components	↑	NI	↓	↑	↓
Target impact components	Inflation rate	NI	GDP growth rate Inflation rate Integral effect	Inflation rate Integral effect	Inflation rate
Instruments of monetary policy and fiscal policy:					
The amount of the National Welfare Fund	↑	NI	↓	↓	NI
Monetary base (broadly defined)	↑	NI	↓	↑	↓
State budget expenditures	↑	NI	↓	NI	↑
State budget deficit/surplus	↑	NI	NI	NI	NI
The amount of the state internal debt of Russia	NI	NI	NI	↑	↓
The amount of the state external debt of Russia	↓	NI	↓	↑	↓
Required reserves (balances of mandatory reserve accounts deposited by credit institutions)	↑	NI	NI	↑	↓
Key rate	↓	NI	↑	↓	NI
Absorption of liquidity (deposits of credit institutions with the Bank of Russia + bonds of the Bank of	↓	NI	↑	NI	NI

Components of money supply M2	M0- cash in circulation	m1- transferable deposits of population	m2- transferable deposits of non-financial and financial (except credit) organisation	m3- other deposits of households	m4- other deposits of non-financial and financial (except credit) organisation
Russia with credit institutions)					
Exchange rate of ruble to dollar, RUR/USD.	↑	NI	NI	NI	↑

NI – no impact; ↑ - increase, ↓ - decrease.
Source: developed by the author

Consequently, an increase in cash and other deposits of households and simultaneous reduction of transferable and other deposits of non-financial and financial (except credit) organisations will lead to the achievement of macroeconomic targets. At the same time, the multifaceted and multidirectional impact of monetary and fiscal policy instruments on individual components of money supply M2 is clearly presented. Consequently, it is necessary to select the components of money supply for institutional correction and further, in accordance with the developed Table 4.13. to apply a set of proposed instruments to increase or reduce it.

As for the broad money supply M2X, based on the conducted research for 2000-2021 in Russia, the conclusion about moderate inverse effect of broad money supply on GDP growth rate was obtained, which indicates the negative impact of deposits in foreign currency and debt securities on GDP growth rate. Thus, the reduction of deposits in foreign currency and debt securities will only benefit the Russian economy.

Based on the regression models previously built in Chapter 3 and the identified dependencies of four macroeconomic targets, such as: GDP growth rate, real GDP, inflation rate, unemployment rate on monetary instruments of economic growth policy - key rate, money supply M2, required reserves of credit institutions on borrowed funds, loans to households and loans to non-financial organisations, institutional adjustments are proposed to achieve the above targets. Based on the results obtained, we can conclude that monetary instruments of economic policy make it possible to influence all 4 macroeconomic targets. However, for each goal there is a different set of instruments. Institutional adjustments of application of monetary policy instruments to achieve a set of macroeconomic targets in Russia are presented in Table 4.14.

Thus, we can conclude that in Russia to achieve such macroeconomic targets as increasing real GDP, reducing inflation and unemployment, it is necessary to increase the amount of loans to households and non-financial organisations, money supply M2 and reduce the key rate.

To influence the GDP growth rate it is necessary to apply other instruments, probably the presented set of monetary policy instruments is insufficient to achieve this goal.

Table 4.14 - Institutional adjustments in the use of monetary policy instruments to achieve a set of macroeconomic targets in Russia: real GDP, GDP growth rate, inflation rate and unemployment rate

	Target macroeconomic indicators			
	Real GDP	GDP growth rate	Inflation rate	Unemployment rate
Directionality of possible adjustments to the target indicator	↑	↑	↓	↓
Instruments of monetary policy:				
Key rate	↓	NI	↓	↓
Money supply M2	↑	↓	↑	↑
Required reserves of credit institutions	↓	NI	NI	NI
Loans to households	↑	↓	↑	↑
Loans to non-financial organisations	↑	↓	↑	↑

NI – no impact; ↑ - increase, ↓ - decrease
Source: developed by the author

If the target of development - real GDP - is achieved, the other target - increasing the GDP growth rate - is not achieved in this case.

Based on the modified in Chapter 3 Mundell-Fleming model in the framework of floating exchange rate and applied to Russia in 2000-2021, the following institutional adjustments can be proposed regarding the instruments of monetary and budgetary expansion to achieve such macroeconomic targets as strengthening the real effective exchange rate, increasing real GDP, and curbing inflation:

- budgetary expansion does not give the result of real GDP growth, does not affect the real exchange rate and leads to inflation growth, so such an instrument as budget surplus/deficit in Russia should be used with caution;

- increase in money supply M2 as an expansionary tool leads to real exchange rate depreciation, real GDP growth and inflation containment, so this tool is appropriate to be used for the purpose of real GDP growth and inflation containment. For the purpose of the real effective exchange rate it is appropriate to increase the M2 money supply only in case of the need to reduce the real exchange rate in case of its excessive strengthening;

- reduction of the key rate as an expansionary tool leads to growth of real GDP, real effective ruble exchange rate and inflation reduction. Thus, by reducing the key rate it is possible to achieve three macroeconomic targets.

In Chapter 4 of this study, the conclusion about the distribution of money supply M2 in Russia in 2000-2020 in household loans and investment in fixed capital was obtained, and investment in fixed capital can also be formed at the expense of household loans. Thus, there is a shift in the distribution of M2 money supply towards household loans. Loans to non-financial organisations do not work as an instrument of money supply distribution in Russia. Institutional adjustments are needed to develop loans to non-financial organisations, to strengthen their absorption of M2 money supply and subsequent transmission of money supply to the economy, since the development of economic entities to a greater extent is carried out at the expense of their own funds (for example, in the manufacturing sector).

In Chapter 4 of this study we obtained the result about the structural disproportion of M2 money supply distribution in Russia in 2000-2020, the superiority of its distribution in investments in financial investments compared to non-financial assets. Consequently, the increase in the M2 money supply cannot give the formation of a new model of economic growth. Only short-term growth is possible, without structural changes, which are currently needed above all. As a result of further increase of investments in financial investments at the expense of M2 money supply, the speculative component of the Russian economy will increase, which creates dysfunctions in the investment process, in which objects with higher profitability and weak contribution to the development of the economy will receive preferential resources. It is necessary to change the M2 money supply distribution flows based on the goal of forming a new model of economic growth.

To ensure not only the growth rate of the economy, but also the quality of future growth, institutional correction of the structure of the economy and the institutions that regulate it is important. Economic policy measures should be aimed at renewal of technologies and funds, since inefficient amortisation policy, lack of capital renewal and insufficient level of investment in technologies and fixed capital are the reasons for growth retardation. The question of finding the sources of economic growth, the factors that inhibit economic growth is a special subject area for macroeconomic policy. It is the structure of the economy that is the source of growth rate. Increasing the contribution to the growth rate of high technology and manufacturing sectors, their development can help to achieve the goal of accelerating economic growth in Russia. It is necessary to develop investments in technological renewal and fixed capital. At the same time, structural policy measures are needed to ensure the development of manufacturing sectors, saturation of their resources, which will contribute to the formation of a new growth model. It is necessary to apply institutional corrections of macroeconomic policy, "fixing the development within the framework of the existing currency and interest leverage" [226, p.39], not allowing to create new sources of growth, its quality.

In Chapter 4 we obtained the result about the more efficient use of money (the impact of money supply M2 on output) in the manufacturing sector of the economy compared to the transactional - raw material sector in Russia based on the data for 2011-2021. We also concluded that the transactional - raw material sector is more dependent on the key rate in terms of funds used than the manufacturing sector in Russia based on the data for 2017-2020. These conclusions should be taken into account when implementing economic growth policies.

Based on the regression models of the impact of monetary instruments of economic policy on the sectoral structure of the Russian economy (transactional, manufacturing and raw material sectors) in 2011-2022 built in Chapter 4, the author has developed institutional adjustments to improve the efficiency of the sectoral structure in Russia depending on the current and required state (Table 4.15).

Thus, in order to change the sectoral structure of the Russian economy it is necessary first of all to determine the necessary direction of institutional correction, to choose the share of which sector or GVA of which sector should be increased and then to select the tools to achieve this correction from the table.

The sectoral structure of the Russian economy can be corrected through the following application of monetary instruments of economic policy:

- the share in GDP of the manufacturing sector can be increased by increasing the M2 money supply and reducing external debt and the key rate;

- the share in GDP of the raw material sector can be increased by increasing the key rate and absorption of liquidity;

-the share in GDP of the transactional sector can be increased by increasing M2 money supply and reducing absorption of liquidity;

- GVA of the manufacturing sector can be increased by growth of M2 money supply, internal debt, required reserves of credit organisations and reduction of the amount of the National Welfare Fund, external debt and key rate;

- GVA of the raw material sector can be increased by growth of money supply M2, internal debt and absorption of liquidity and reduction of the amount of the National Welfare Fund and external debt;

- GVA of the transactional sector can be increased by growth of money supply M2, internal debt and reduction of the amount of the National Welfare Fund and key rate.

Table 4.15 - Institutional adjustments in the application of monetary instruments of economic policy to influence the sectoral structure of the Russian economy

Sectors of economy	Share in GDP			GVA		
	Manufacturing sector dY_1	Raw material sector dY_2	Transaction sector dY_3	Manufacturing sector Y_1	Raw material sector Y_2	Transaction sector Y_3
Direction of possible correction of the sectoral structure of the economy	↑	↑	↑	↑	↑	↑
Instruments of monetary policy and fiscal policy:						
National Welfare Fund	NI	NI	NI	↓	↓	↓
Money supply M2	↑	NI	↑	↑	↑	↑
Internal debt	NI	NI	NI	↑	↑	↑
External debt	↓	NI	NI	↓	↓	NI
Required reserves	NI	NI	NI	↑	NI	NI
Key rate	↓	↑	NI	↓	NI	↓
Absorption of liquidity	NI	↑	↓	NI	↑	NI

NI – no impact; ↑ - increase, ↓ - decrease
Source: developed by the author

Table 4.16 - Institutional adjustments in the use of monetary instruments of economic policy to influence the development of technological paradigms and their structure in Russia

Aggregated equivalents of paradigms	GVA of paradigms				GVA of paradigms growth rate			
	1-3 paradigms (U_3)	4th paradigm (U_4)	5th paradigm (U_5)	6th paradigm (U_6)	1-3 paradigms (dU_3)	4th paradigm (dU_4)	5th paradigm (dU_5)	6th paradigm (dU_6)
Directionality of possible correction of technological paradigms	↑	↑	↑	↑	↑	↑	↑	↑
Instruments of monetary policy and fiscal policy:								
National Welfare Fund	NI	↑	↑	NI	NI	↑	↓	NI
Money supply M2	↑	NI	↑	NI	NI	NI	NI	NI
Budget expenditures	NI	NI	↑	NI	NI	NI	NI	NI
Budget deficit/surplus	NI	NI	NI	NI	NI	NI	NI	NI
Internal debt	↑	NI	↑	↓	NI	NI	↓	NI
External debt	↓	NI	↓	NI	NI	NI	NI	NI
Required reserves of credit institutions	↑	NI	↑	NI	NI	NI	NI	NI
Key rate	NI	NI	NI	NI	NI	NI	NI	NI
Absorption of liquidity	NI	NI	↑	NI	NI	NI	NI	NI
Budget revenues	NI	↑	NI	↓	NI	↑	NI	NI

NI – no impact; ↑ - increase, ↓ - decrease
Source: developed by the author

The following monetary instruments have the greatest impact on the sectoral structure of the economy: reduction of the amount of the National Welfare Fund and external debt; increase in money supply M2, internal debt. The key rate to increase the manufacturing sector and GVA of the transactional sector should be reduced, and to increase the share of raw material sector in GDP - increased.

In case of institutional corrections of the pace and quality of development of manufacturing sectors, it is necessary to move resources from other sectors, applying monetary instruments of economic policy in accordance with the recommendations presented above.

Based on the regression models of the impact of monetary instruments of economic policy on the aggregate equivalents of paradigms in 2011-2022 in Russia, the author has developed institutional adjustments for the development of the necessary technological paradigms and the formation of their structure (Table 4.16).

Thus, in order to influence the development of technological paradigms and their structure in Russia, first of all, it is necessary to determine the direction of institutional correction, choose the GVA of the aggregate equivalent of the paradigm or the growth rate of the GVA of the aggregate equivalent of the paradigm, which should be increased, and then select the tools to achieve this correction from the developed Table 4.16.

The correction of the development of technological paradigms, the structure of technological paradigms can be achieved through the following application of monetary instruments of economic policy:

-GVA of the aggregated equivalent of the 1st-3rd paradigms can be increased due to the growth of money supply M2, internal debt and required reserves of credit institutions, and reduction of external debt;

- GVA of the aggregated equivalent of the 4th paradigm can be increased due to the growth of the amount of the National Welfare Fund and state budget revenues;

- GVA of aggregate equivalent of paradigm 5 can be increased due to the growth of the amount of the National Welfare Fund, money supply M2, state budget expenditures, internal debt, required reserves of credit institutions, absorption of liquidity and reduction of external debt;

- GVA of the aggregate equivalent of the 6th paradigm can be increased by reducing internal debt and budget revenues;

- the growth rate of GVA of the aggregated equivalent of the 4th paradigm can be increased due to the growth of the amount of the National Welfare Fund and budget revenues;

- the growth rate of GVA of the aggregate equivalent of the 5th paradigm can be increased due to the reduction of the amount of the National Welfare Fund and internal debt;

- growth rate of GVA of aggregate equivalent of the 6th paradigm - it is necessary to select instruments not included in the proposed list or to develop new monetary instruments of economic policy.

From the above, we can conclude that the key rate has no impact on the development of technological patterns, the M2 money supply affects only the GVA of the aggregate equivalent of paradigms 1-3 and the GVA of the aggregate equivalent of paradigm 5. Such instruments as: changes the amount of the National Welfare Fund, internal and external debt, budget revenues and expenditures are of the greatest importance for the purpose of institutional adjustments. Consequently, we can note the significance of fiscal policy activation for the development of the Russian economy, which was not, in fact, included in the formation of a new model of economic growth. The possibilities and role of the budget as one of the main instruments of resource allocation in the economy should be revised in order to stimulate a new growth model.

In order to improve the effectiveness of institutional adjustments, it is necessary to create a new institution - the infrastructure of monetary policy, which will represent the institutional level of monetary policy that provides accounting, information, scientific-innovative, personnel and educational, regulatory and legal services of monetary policy and creates conditions for the effective application of its instruments and achievement of macroeconomic targets.

The logic of monetary policy should be based on the postulates of modern science and correspond to reality. Stimulation of innovation and investment activity in the basic components of the new technological paradigm can lead to an increase in the aggregate productivity of factors of production.

In general, it is possible to define the following directions of institutional adjustments of monetary policy to overcome macroeconomic problems of growth in Russia. Mitigation and implementation of stimulative monetary policy that increases the availability of credit and includes the following measures.

1. Setting by the Bank of Russia of a key rate not exceeding the inflation rate accumulated in annual terms, as well as not exceeding the average profitability in the manufacturing sector.

2. Increasing the level of monetisation of the economy with the volume of money issue linked to the real needs of the economy. The possibility of additional money issue by the Bank of Russia for the purpose of refinancing banks against the pledge of credit claims to industrial and agricultural enterprises.

3. Application of special refinancing instruments within the framework of targeted lending for investments in the real sector of the economy, primarily in the agro-industrial complex and enterprises with a full production cycle and into priority sectors and paradigms.

4. Preferential lending by banks with state participation in the capital of industry and population.

5. Funds to support the economy should be channelled to innovative high-tech production enterprises with the aim of increasing their output of high-tech products and concentrated in the areas

that most develop the economy, as well as in sectors with the greatest effect on job creation (cosmonautics, aircraft construction, military-industrial complex, basic industrial sectors - first of all, processing).

Institutional monetary corrections should be accompanied by currency regulation measures aimed at maintaining the ruble exchange rate that is favourable for the growth of both the real sector of the economy and consumer demand. Also, currency regulation should be aimed at limiting the export of capital abroad and the movement of speculative capital.

Thus, the following results have been obtained in the presented chapter.

1. A set of models has been built, which establish the directions of spreading the M2 money supply in the Russian economy for the period 2000-2020:

- channels of M2 money supply distribution within the credit and investment tunnel in Russia for the period 2000-2020 were determined: credits to households, credits to non-financial organisations and investments in fixed capital. The influence of the amount of credits to households and credits to non-financial organisations on the amount of investment in fixed capital has been determined. It is proved that the main direction of distribution of money supply M2 is associated with household loans and investments in fixed capital, including as investments in fixed capital can be formed at the expense of loans to households;

- the servicing by money supply M2 of investments in financial and non-financial assets for the period 2000-2020 was determined. The result was obtained that financial investments are more closely related to the money supply M2, the reaction of financial investments to a one per cent change in the money supply is higher than investments in non-financial assets. It was found that the increase in money supply M2 entails the growth of financial investments exceeding the growth of money supply M2, while the growth of investments in non-financial assets lags behind the growth of money supply M2.

2. Empirically demonstrated the spread of money supply M2 by types of economic activities for the period 2017-2020 in the Russian economy:

- the calculation of the indicator of the share of directed money (use of organisations' money) by types of activity in the M2 money supply is proposed. It was found that the largest share of directed money by type of activity in the M2 money supply from 2017 to 2020 belongs to wholesale and retail trade, as well as manufacturing industries. It is established that the sum of shares by type of activity is constantly growing, hence the use of organisations' money in the M2 money supply is growing, which is a positive trend in the Russian economy. The indicator of the efficiency of the use of cash for each type of economic activity, representing the ratio of used cash to gross value added, expressed in per cent, is proposed. The maximum values of this indicator are in financial and insurance activities, wholesale and retail trade, provision of electric power, gas and steam, air conditioning, manufacturing industries;

- the relationship between the share of used funds in M2 and the ratio of used funds to gross value added has been established: as the share of used funds in M2 by type of economic activity grows, the efficiency of cash utilisation, expressed by their ratio to GVA, increases. It is revealed that after reaching 80.11%, the return on the growth of the share of used funds in M2 starts to decrease. The law of diminishing returns is confirmed: increasing the share of used funds by this type of economic activity in M2 increases the efficiency of cash in terms of their ratio to output (GVA), only up to the level of 80%.

3. Empirically demonstrated the influence of money supply M2 on output by sectors of the economy: manufacturing and transactional - raw material sectors; determined the elasticity of output of each sector by money supply M2. Based on the estimation of the system of equations using the least squares method, conclusions are obtained:

- at current prices, if M2 increases by 1%, the output of the transactional- raw material sector will increase by 0.73%, and that of the manufacturing sector by 0.74%. The elasticity of output in both sectors of the economy is less than 1 and of the two is slightly higher in the manufacturing sector;

- in constant prices of 2000 the relationship for GVA of the transactional - raw material sector and the manufacturing sector with M2 is rather weak, but the elasticity coefficients show that an increase in M2 at constant prices by 1 per cent leads to an increase in GVA of the transactional - raw material sector by 0.38 per cent and of the manufacturing sector by 0.42 per cent. In the manufacturing sector there is a more efficient use of cash.

4. Empirically demonstrated the influence of the key rate as a basic monetary instrument of economic growth policy on the use of funds by sectors of the economy. On the basis of econometric modelling and application of the DOLS model, the result of statistically significant dependence of the used funds in the transactional - raw materials and manufacturing sector on the key rate was obtained. It is proved that the lower the interest rate, the higher the amount of utilised funds. Both in absolute terms and in terms of explained variation, the transactional - raw material sector is more dependent on the key rate in terms of cash utilised than the manufacturing sector.

5. We have built a set of econometric models for Russia for 2011-2022, which allow us to assess the relationship between the sectoral structure of the Russian economy and monetary instruments of economic policy, to measure the impact on the structure of the economy (raw material sector, manufacturing and transactional sector) of a set of monetary and fiscal policy instruments. The result was obtained about the most significant impact of instruments on the manufacturing sector of the economy, and less on the raw material and transactional sectors.

The institutional matrix of influence of monetary instruments of economic growth policy on the sectoral dynamics of the Russian economy in 2011-2022 is proposed in order to increase its efficiency depending on the current and necessary state. The institutional matrix allows choosing appropriate

combinations of economic policy instruments, which are optimal under the existing sectoral structure of the Russian economy.

6. A set of econometric models is constructed for Russia for 2011-2021, which allows us to assess the relationship between monetary instruments of economic growth policy and the structure of aggregate equivalents of paradigms, to measure the impact on the structure of aggregate equivalents of paradigms (GVA of paradigms 1-3, GVA of paradigm 4, GVA of paradigm 5, GVA of paradigm 6, growth rates of each aggregate equivalent of paradigms) of a set of monetary and fiscal policy instruments. The result on the most significant impact of the instruments on the GVA of aggregate equivalent of the 5th paradigm, as well as on the significant impact of GVA of aggregate equivalent of the 1st-3rd paradigms, GVA of aggregate equivalent of the 4th paradigm, GVA of aggregate equivalent of the 6th paradigm, growth rate of GVA of aggregate equivalent of the 4th paradigm.

The instruments (increase in money supply M2, state budget expenditures and reduction of external debt) that increase the GVA of aggregate equivalents of individual aggregate equivalents of paradigms are identified.

The institutional matrix of influence of monetary instruments of economic growth policy on the GVA of aggregated equivalents of paradigms and their growth rates for the Russian economy in 2011-2021 is proposed in order to increase the efficiency of policy implementation in the development of technological paradigms, formation of the structure of technological paradigms. The institutional matrix allows us to choose appropriate combinations of macroeconomic policy instruments, which are the most optimal for the existing structure of technological paradigms.

7. Institutional adjustments of monetary policy to overcome macroeconomic growth problems in Russia are proposed: basic institutions, institutional mechanism of monetary growth policy in conjunction with fiscal policy tools.

Conclusion

In modern realities, the development and implementation of economic policy for growth and the use of its monetary instruments in an aggregated form according to the neoclassical model have limitations. The development of theoretical and methodological principles of economic policy for growth from the point of view of the distribution of monetary instruments according to the targets and structure of the economy becomes important.

The completed dissertation research allowed us to obtain three groups of results on the development of the theory of economic policy for growth: theoretical, methodological and applied ones.

1. The features of the economic dynamics of the Russian economy in 2000-2022 have been identified: weak positive GDP growth, lagging economic growth rates, a gradual reduction in unemployment, unstable inflation levels. The dynamics of real GDP and the growth rate of real GDP are the opposite of inflation and unemployment, however, starting from 2020, inflation has been increasing, having lost connection with other macroeconomic targets. The structural parameters of the current Russian model of economic growth from the side of aggregate supply are characterized by the dominance of the transaction -raw materials or raw materials sector, and the manufacturing sector is non-dominant in the Russian economy for many years. In recent years, there has been a structural shift in the economy by sector, but this is not the structural shift that is desirable for the Russian economy. There is a structural shift, further reducing the contribution of the manufacturing sector to the economy and increasing the contribution of raw materials. In terms of aggregated equivalents of structures, no structural changes have yet been outlined. The formed structure of technological structures has not changed for many years and demonstrates the predominance of aggregate equivalent of the 1-3 aggregated paradigms, followed by the 4th paradigm and the compressed 5th paradigm. Currently, the Russian economy is experiencing obvious technological stagnation.

The need to develop and form a new model of economic growth in Russia has been discussed for several decades, but such a model has never been formed. To achieve a new model of economic growth in the Russian economy structural changes are necessary since the existing structure is a brake on economic growth. The new growth model should be based on a change in the quality of GDP dynamics, which requires structural movement of resources between sectors and paradigms.

2. The structure of the monetary instruments of economic policy used in Russia did not allow to achieve the required economic growth rates in 2000-2022. Moreover, since 2021 there has been a clear trend towards a contraction of the M2 money supply and the monetary base. Monetary instruments are often used that neutralize each other’s effects in Russian practice. Monetary instruments of economic growth policy must be justified and selected in accordance with an assessment of the degree of their influence on changes in the proportions between sectors, technological paradigms, shares and rates of

their growth in GDP. It is important to take into account the connection of monetary instruments, targets with each other, and the strength of the influence of instruments distributed according to the targets and structure of the economy. At the same time, it is important not just to distribute monetary instruments of economic policy, but to take into account the connection and mutual influence of targets, policy instruments and growth factors.

3. The limitations of neoclassical theory in carrying out economic and monetary policy in an aggregate form according to the type of neoclassical model, as well as previously conducted studies considering one instrument of monetary or budget policy influencing economic growth, for example, the money supply or the key rate, creates the need to take into account the influence of monetary policy instruments in conjunction with fiscal policy, distributed across objects of the economic structure. Given the infrequent appearance of economic policy instruments in neoclassical models of economic growth, they are considered to operate equally over time.

The classical theory of economic policy and most of the theories of economic growth do not explain how the use of economic policy instruments can contribute to technological renewal, changes in the structure of technologies and the sectoral structure of the economy; what instruments or combinations thereof need to be used to stimulate economic growth in the new reality.

The institutional direction is limited in the development of research on the formation of the transmission mechanism of economic policy; it provides individual recommendations for regulating market structures, contracts, and organisations at the microeconomic level, but avoids giving practical recommendations for decision-making at the macro level. Increasing research within the framework of institutionalism is revealing institutional impacts on the economy, but recommendations for economic policy are very modest. The precise selection of macroeconomic policy instruments is very important, aimed at achieving the necessary GDP dynamics, accompanied by structural changes, which should be based on institutional parameters of growth, the theory of structural policy and technological structures.

4. The approaches that underlie the theory of economic policy by J. Tinbergen, R. Mundell, R. Lucas, as well as the research of V. Euken, P. Welfens, O. Blanchard, R. Barro, M. Allais and P. Krugman put classical targets for the implementation of economic policy, however, they do not provide the opportunity to obtain an adequate model of the relationship between the targets of economic development and economic policy instruments. There is no theory of economic policy that would allow us to separate the impact of the totality of all policy instruments to determine an assessment of their impact on macroeconomic targets and the structure of the economy.

In the presented models of economic growth considering the economic policy instruments of Hicks-Hansen, Mundell-Fleming, Tinbergen-Theil, Obstfeld-Rogoff, the relationships between individual indicators of the market, monetary and fiscal policy are examined, and individual macro-targets are set. It is necessary to create models of economic growth policy based on the influence of

instruments across objects and areas of development, the use of which makes it possible to influence the main target parameters.

Modern Russian economists and scientists conducting research as part of the theory of economic policy, the use of its instruments, including monetary ones, to achieve targets, proceed from the theoretical basis created in previous years. Based on standard approaches, the goal of economic development is formulated, represented by measurable aggregate indicators, and instruments are selected from the list of available ones. Economic policy developed and implemented in Russia does not take into account structural, institutional and technological changes.

The study of the structural aspects of economic policy for growth from the point of view of the heterogeneity of the applied instruments of monetary and fiscal policy and the different sensitivity of their targets forms a new task. It is important to select monetary instruments of economic policy to elements of the economy that are more sensitive to them. It is important to clarify how monetary instruments of economic policy are distributed, going beyond its limitation to aggregate demand and supply, taking into account structural factors, accumulative, and cumulative effects.

When implementing an economic policy for growth and applying its monetary instruments, it is necessary to consider the structure of the economy, growth factors, instruments and targets of the economic policy.

5. An institutional monetary theory of policy for growth has been developed which confirms the need to expand the “targets-instruments” principle of J. Tinbergen’s theory of economic policy and allows to explain the differentiated impact of monetary instruments of economic policy on growth taking into account sectoral dynamics. The result of the study is the expansion of the institutional-evolutionary interpretation of economic policy for growth. The provisions of the institutional monetary theory of policy for growth are determined: on the institutional content of the monetary theory of policy for growth; on institutional levels of monetary policy for growth; on structural monetary policy for growth; on the structural distribution of the influence of the components of the money supply on economic growth; on the modification of the Mundell-Fleming model; on the expanded principle of “targets-instruments” of the theory of economic policy of J. Tinbergen; on institutional adjustments to monetary policy for growth. The evolution of J. Tinbergen's principle of “targets-instruments” in relation to economic policy according to introduced and justified criteria is revealed: targets (economic growth, inflation rate, unemployment rate) are instruments of economic policy, monetary and budget policy. Within the framework of the developed institutional monetary theory of policy for growth, the author introduced the conceptual apparatus: “institutional level of monetary policy for growth”, “infrastructure of monetary policy for growth”, “structural monetary policy for growth”.

6. A methodology has been developed for the development of economic policy for growth through the distribution of monetary instruments according to the targets and structure of the economy.

A model diagram of the interdependence of types of state economic policies in terms of their influence on economic growth has been developed; the scheme of operation of the proposed and justified law on planning economic policy for growth as a basic economic institution; model-scheme for managing the movement of monetary resources through economic policy for growth within the framework of the institutional approach; model diagram of the impact of institutional levels of economic policy for growth, interacting with monetary policy instruments, on the monetary component and the capital component; institutional model of monetary policy for growth; a model of the circulation of money between economic entities, regulated by the central bank defining the economic boundaries of monetary policy for growth; algorithm for identifying the accumulation effect of monetary policy and assessing the impact of the accumulation effect of monetary policy on economic growth; a method for assessing the relationship between the integral effect of economic policy and the cumulative effect of monetary policy; modification of the Mundell-Fleming model; a measuring apparatus for analyzing the distribution of the M2 money supply by type of economic activity; instrumental-model apparatus for assessing the impact of monetary instruments of economic policy for growth on the structure of the Russian economy, represented by three sectors (manufacturing, raw materials, transaction) and aggregated equivalents of paradigms.

7. An algorithm has been developed for identifying the accumulation effect of monetary policy (negative, positive, inertial, neutral), as well as assessing its impact on economic growth, allowing selective application of its instruments in connection with the targets of economic policy, and making decisions on their joint application. It is proposed to apply sensitivity coefficients for each target from the corresponding instrument, which show the change in the target parameter per unit change in the influencing monetary policy instrument.

8. A method is proposed for assessing the relationship between the integral effect of economic growth policy and the cumulative effect of monetary policy to identify the effectiveness of the use of monetary policy instruments in achieving macroeconomic targets. A picture of the weakening influence of monetary policy on the growth of the Russian economy has been revealed and it has been proved that it ensured the containment of inflation independent of growth and formed various cumulative effects for individual targets due to different sensitivity to the instruments.

9. Based on the constructed set of econometric models for Russia for 2000-2020 the links between target macroeconomic indicators (real GDP, GDP growth rate, inflation rate and unemployment rate) and monetary instruments of economic growth policy were assessed. The impact on each of the macroeconomic target indicators of a set of monetary instruments of economic policy was measured. In contrast to the well-known concept of economic policy, the possibility of distributing influence and selecting a set of monetary instruments to achieve a set of target indicators has been demonstrated considering their mutual influence on each other (both instruments and targets), which confirms the need

to expand the principle of J. Tinbergen “targets- instruments” and reveals the structural content of monetary growth policy. Combinations of a set of monetary instruments for economic growth policy are proposed to simultaneously achieve several macroeconomic targets, taking into account changes in the instruments themselves.

10. A structural analysis of the M2 money supply was carried out, which made it possible to reveal what monetary instruments of economic policy influence the components of M2 and identify the components of M2, which, when increased, slow down growth and reduce inflation, as well as determine the close relationship of the interest rate with the changing components of the M2 money supply. This made it possible to solve the problem of distributing the influence of the M2 money supply on the GDP growth rate, the inflation rate and the integral effect of economic policy. This analysis confirmed that the reasons for the economic slowdown were not related to monetization. The increase rate of the money supply was insufficient for economic growth. An institutional matrix of the influence of monetary instruments of economic growth policy on the components of the M2 money supply, as well as the components themselves on GDP growth and inflation in Russia for the period 2012-2020, has been constructed.

11. Based on empirical, regression and structural analysis, it was established that the policy of increasing interest rates was not the reason for reducing inflation in Russia, but at the same time it slowed down economic growth and created a potential basis for the inflation development. Based on econometric modeling, an insignificant inverse effect of the broad money supply M2X on the GDP growth rate in Russia for the period 2000-2021 was revealed which proves the absence of a positive impact of the M2 money supply due to the inclusion of deposits in foreign currency and certificates of deposits and savings, and their low role for the Russian economy.

12. It was revealed that, according to the Mundell-Fleming model applied to the study of the Russian economy in 2000-2021, there is no influence of budget expansion on the growth of real GDP. When exposed to monetary expansion, the results of the influence of the M2 money supply are fully consistent with the main idea of the Mundell -Fleming model. It has been proven that the basic Mundell-Fleming model in relation to Russia describes the impact of fiscal and monetary expansion instruments on macroeconomic targets under a floating exchange rate.

The Mundell-Fleming model for the new growth model was modified by including an additional equation for the third target parameter - inflation, which allowed the Russian economy for the period of 2000-2021 to identify an increase in inflation when implementing budget expansion, and a decrease in inflation with an increase in monetization and a decrease in the key rate. Based on the proposed modification of the model, it was revealed that the use of different fiscal and monetary policy instruments has different effects on the target indicators of the inflation level and the real exchange rate, and changing

the key rate makes it possible to achieve three macroeconomic targets in the Russian economy (real GDP, inflation rate, real exchange rate).

13. Within the framework of the institutional monetary theory of policy for growth developed by the author, an instrumental-model apparatus for assessing the influence of macroeconomic policy instruments on the structure of the Russian economy, represented by three sectors (manufacturing, raw materials, transaction) and aggregated equivalents of structures is proposed. The work calculates the equivalents of structures, a certain aggregate imitation, tied to the basic industries classified by academician S. Yu. Glazyev [138] as structures. A methodological approach was applied to their identification and "inclusion" in macroeconomic analysis according to O. S. Sukharev [225]. The following results were obtained: in 2017-2020 the effect of the law of diminishing returns has been revealed; increasing the share of funds used by type of economic activity in M2 increases the efficiency of using funds, but only up to 80%; further monetization of the Russian economy would contribute to the development of the manufacturing sector in comparison to the transaction and raw materials sector; a statistically significant dependence of the funds used in the transaction, raw materials and manufacturing sector on the key rate was established; the transaction and raw materials sector is more dependent on the key rate in terms of funds used than the manufacturing sector; a result was obtained about the most significant impact of the instruments of economic policy for growth on the manufacturing sector of the economy, and to a lesser extent on the raw materials and transaction sectors; a result was obtained on the most significant impact of instruments on the GVA of aggregated equivalents of the 5th paradigm, as well as on the significant impact of GVA of aggregate equivalent of the 1-3rd paradigms, GVA of aggregate equivalent of the 4th paradigm, GVA of aggregate equivalent of the 6th paradigm, and the growth rate of GVA of aggregate equivalent of the 4th paradigm. Instruments have been identified (increase of the M2 money supply, state budget expenditures and reducing external debt) that increase the GVA of individual aggregated equivalents of the paradigms.

14. An institutional matrix of the influence of monetary instruments of economic policy for growth on the sectoral dynamics of the Russian economy in 2011-2022 has been developed in order to increase its effectiveness depending on the current and required state. The institutional matrix allows to select appropriate combinations of monetary instruments of economic policy that are optimal and adequate given the current sectoral structure of the Russian economy.

An institutional matrix of the influence of monetary instruments of economic policy for growth on the GVA of aggregated equivalents of paradigms and their growth rates for the Russian economy in 2011-2021 has been developed to increase the efficiency of policy implementation in the development of technological paradigms, the formation of the structure of technological paradigms. The institutional matrix allows to select appropriate combinations of monetary instruments of economic policy, which are the most optimal given the existing structure of technological paradigms.

15. Institutional adjustments to the use of monetary instruments of economic policy in overcoming macroeconomic problems of growth in Russia are proposed.

In the basic institutions of the institutional model of monetary policy for growth, institutional corrections should affect the interaction of money as a basic institution and economic entities at which monetary policy is directed. Money through monetary policy should directly influence the economic structure and flow at the required speed from one sector to another. It is important to consider not only the money supply as a whole, but its structure, the spread of the money supply across sectors and structures.

In the institutional mechanism of monetary growth policy, it is first necessary to adjust the targets of monetary policy. Monetary policy must perform a complex task: promote economic growth, reduce inflation, and increase employment. An important institutional correction should be the use of a structural monetary policy for growth, the basis of which is the theory of structural policy for growth, the goal is to achieve a structural effect, the basis is a set of instruments affecting the macroeconomic structure, the relationship of elements and their dynamics, optimization of resource allocation, contribution to economic growth and structure of targets. It is necessary to form a sectoral focus of investments and loans in transactional and non-transactional sectors, technological paradigms, and correct the bias towards financial investments.

One of the necessary institutional adjustments is the structural application of the M2 money supply as a monetary instrument of economic growth policy. It is necessary to consider the impact of macroeconomic policy instruments on the components of the M2 money supply and the components of the money supply on macroeconomic targets. Based on table 4.12. “Institutional adjustments in the use of components of the M2 money supply to achieve macroeconomic targets in Russia”, it is necessary to select components of the M2 money supply for institutional correction and further, in accordance with Table 4.13. “Institutional adjustments to the use of monetary and fiscal policy instruments in Russia in order to correct the components of the M2 money supply in Russia” apply a set of proposed instruments to increase or reduce components of the money supply.

Based on table 4.14. “Institutional adjustments in the use of monetary policy instruments to achieve a set of macroeconomic targets in Russia such as: real GDP, GDP growth rate, inflation rate and unemployment rate” combinations of instruments are proposed for the purpose of institutional adjustments to achieve target indicators. As a result of institutional adjustments, the set of these monetary policy instruments makes it possible to influence all four macroeconomic targets, however, each goal has its own set of instruments.

Based on the Mundell-Fleming model modified by the author within the framework of a floating exchange rate and applied to Russia in 2000-2021 institutional adjustments to the use of monetary and

fiscal expansion instruments have been proposed to achieve macroeconomic targets - strengthening the real effective exchange rate, increasing real GDP, containing inflation:

- the instrument of fiscal expansion, budget surplus/deficit in Russia, must be used with caution, since in the absence of an impact on the growth of real GDP, it does not affect the real exchange rate and leads to increased inflation;

- an expansion tool, an increase in the M2 money supply, is appropriate to use to influence the growth of real GDP and curb inflation, since its use leads to a decrease in the real exchange rate, growth of real GDP and curbing inflation in Russia. However, in order to influence the goal of the real effective exchange rate, it is appropriate to increase the M2 money supply only if it is necessary to reduce the real exchange rate if it strengthens excessively;

- the expansion tool “decrease in the key rate” leads to an increase in real GDP, the real effective exchange rate of the ruble and a decrease in inflation, therefore, using it, it is possible to achieve three macroeconomic targets.

There is a need for institutional corrections aimed at developing loans to non-financial organisations strengthening their absorption of the M2 money supply and subsequent transmission of the money supply into the economy, since the development of economic entities is largely carried out at their own expense (for example, in the manufacturing sector). It has been revealed that increasing the M2 money supply cannot lead to the new model of economic growth, therefore it is necessary to change the flows of distribution of the M2 money supply, based on the goal of the development of a new model of economic growth.

Based on table 4.15. “Institutional adjustments in the use of monetary instruments of economic policy in order to influence the sectoral structure of the Russian economy” institutional adjustments are proposed on the use of macro policy instruments in order to increase the efficiency of the sectoral structure depending on the current and necessary state. It was revealed that the largest number of institutional corrections affecting the sectoral structure of the economy can be implemented by such instruments of monetary and fiscal policy as: reduction of the National Welfare Fund and external debt; increase in the M2 money supply and domestic debt. The key rate to increase the manufacturing sector and GVA of the transaction sector should be reduced, and to increase the share of the raw materials sector in GDP, it should be increased. Considering the institutional adjustment of the pace and quality of development of the manufacturing sectors, it is necessary to move resources from other sectors adhering to the use of monetary and fiscal policy instruments in accordance with the recommendations presented above.

Based on table 4.16. “Institutional corrections in the use of monetary instruments of economic policy in order to influence the development of technological structures in Russia” institutional corrections are proposed on the use of instruments to develop the necessary technological structures.

The result was obtained that the key rate does not affect the development of technological structures, the money supply M2 affects exclusively the GVA of aggregate equivalent of the 1-3 paradigms and the GVA of aggregate equivalent of the 5th paradigm. The most important instruments for the purpose of institutional corrections are changes in the national welfare fund, internal and external debt, budget revenues and expenditures. The importance of intensifying fiscal policy for the development of the Russian economy which was in fact not included in the development of a new model of economic growth is increasing. The capabilities and role of the budget as one of the main instruments for allocating resources in the economy should be reconsidered to form a new growth model in Russia.

To increase the efficiency of institutional corrections, it is proposed to create a new institution - the monetary policy infrastructure which should represent the institutional level of monetary policy, providing accounting, information, research and innovation, personnel and educational, and regulatory services for monetary policy and create conditions for the effective application of instruments and achieve macroeconomic targets.

Institutional monetary adjustments should be accompanied by currency regulation measures aimed at maintaining a ruble exchange rate that is favorable both for the growth of the real sector of the economy and for consumer demand. Also, currency regulation should be aimed at limiting the export of capital abroad and the movement of speculative capital.

Thus, the theoretical provisions developed in the dissertation on the theory of economic growth policy make it possible to explain, analyze and regulate the distribution of monetary instruments according to the targets and structure of the economy to achieve economic growth, confirm the need to expand the “targets-instruments” principle of J. Tinbergen’s theory of economic policy. The obtained theoretical and methodological results became the basis for practical recommendations for the selection of specific monetary policy instruments in conjunction with fiscal policy to achieve various macroeconomic targets, including objects of the economic structure, and institutional corrections in the use of monetary instruments of economic policy to overcome macroeconomic problems of growth in Russia.

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Annex A

Correlation coefficients of the key rate and the component of the M2 money supply[299]

Components of the money supply M2	Correlation coefficient with the key rate*
Cash in circulation (monetary aggregate M0)	**-0,771358**
	(0,0090)
Transferable deposits of the population – m1	**-0,651963**
	(0,0411)
Transferable deposits of non-financial and financial (except credit) organisation– m2	-0,263180
	(0,4625)
Other deposits of households – m3	-0,239580
	(0,5050)
Other deposits of non-financial and financial (except credit) organisation– m4	-0,386564
	(0,2698)

* - values of significance levels are presented in brackets, significant correlation coefficients are shown in bold font

Source: calculated by the author

[299] Sukharev O., Afanasyeva O. Distribution of monetary policy instruments by development targets. // Society and Economy. 2022. №6. С. 23.

Annex B

Correlation coefficients of the GDP growth rate and the inflation rate with the components of the M2 money supply[300]

Components of the money supply M2	Correlation coefficient with GDP growth rate*	Correlation coefficient with inflation rate*
Cash in circulation (monetary aggregate M0)	-0,503860	**-0,564835**
	(0,1376)	(0,0889)
Transferable deposits of the population – m1	-0,508360	**-0,561264**
	(0,1335)	(0,0914)
Transferable deposits of non-financial and financial (except credit) organisation– m2	**-0,846860**	-0,158821
	(0,0020)	(0,6612)
Other deposits of households – m3	-0,458037	-0,487622
	(0,1831)	(0,1528)
Other deposits of non-financial and financial (except credit) organisations– m4	**-0,632969**	-0,424130
	(0,0495)	(0,2219)

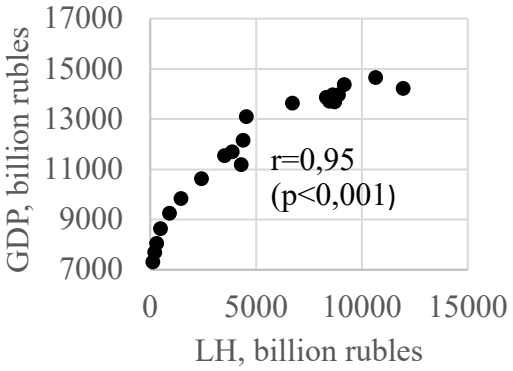
* - values of significance levels are presented in brackets; significant correlation coefficients are in bold.

Source: calculated by the author

[300] Sukharev O., Afanasyeva O. Distribution of monetary policy instruments by development targets. // Society and Economy. 2022. №6. С.24.

Annex V

Correlation of GDP, billion rubles, in 2000 prices with macroeconomic policy instruments in Russia



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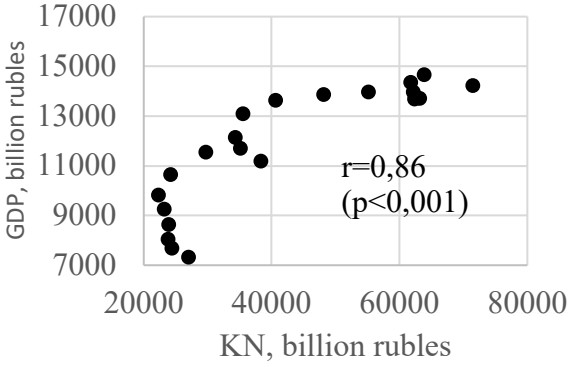

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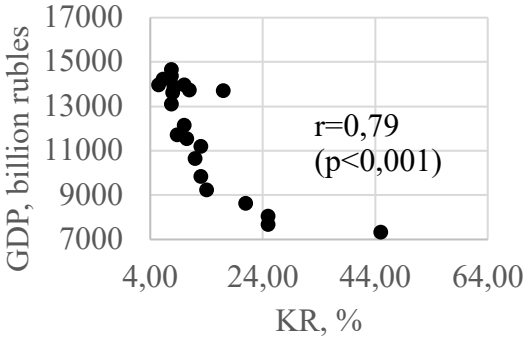

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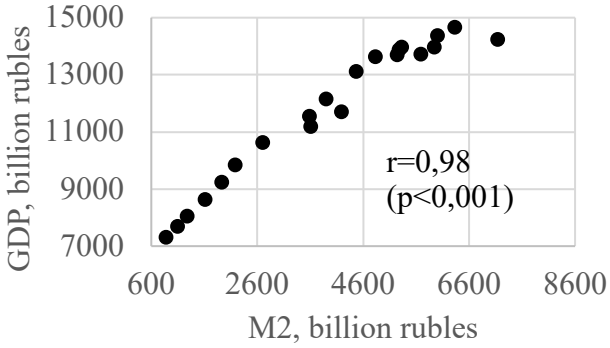

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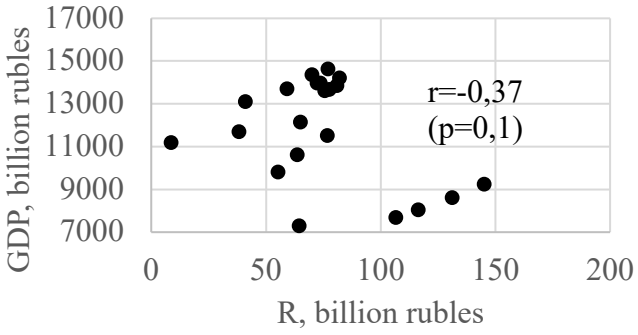
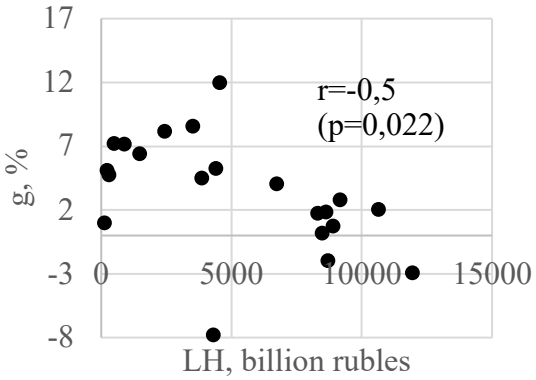


(e)

Source: built by the author

Annex G

Correlation of the GDP growth rate, % with macroeconomic policy instruments in Russia



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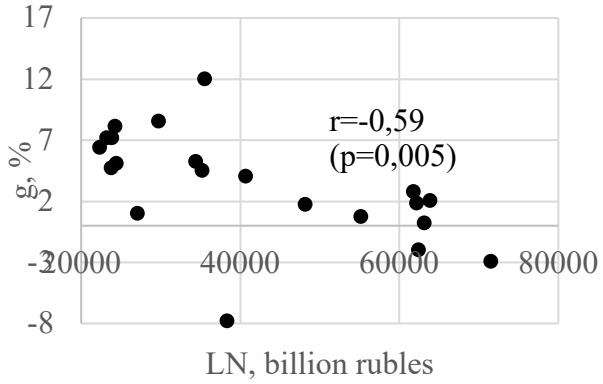

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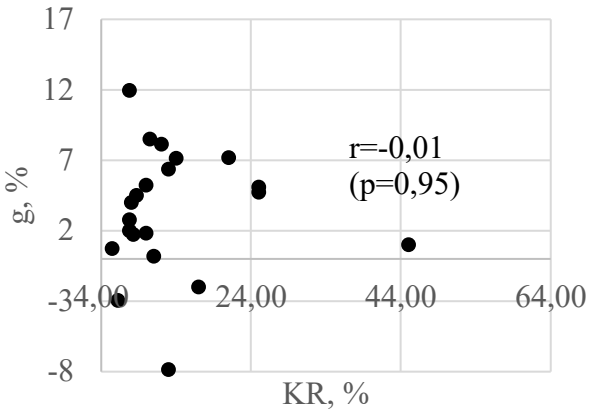

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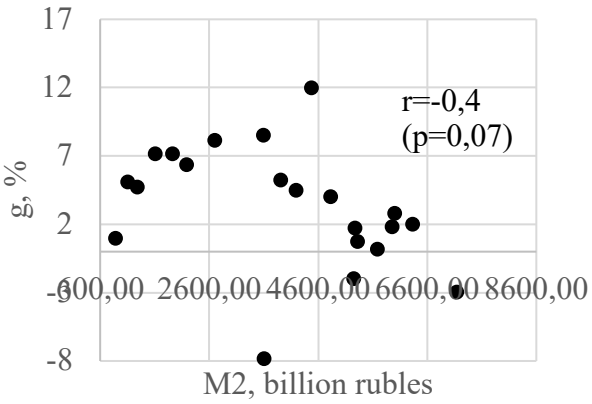

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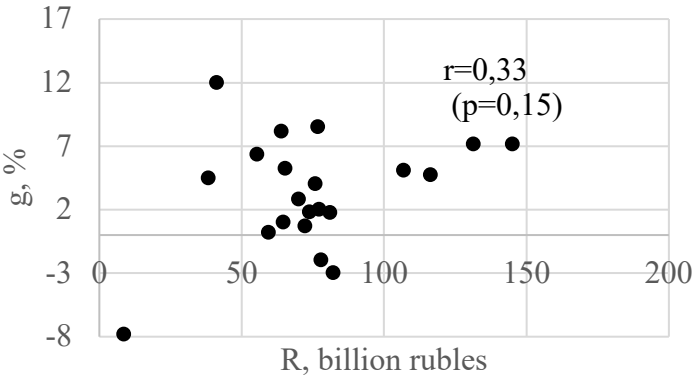

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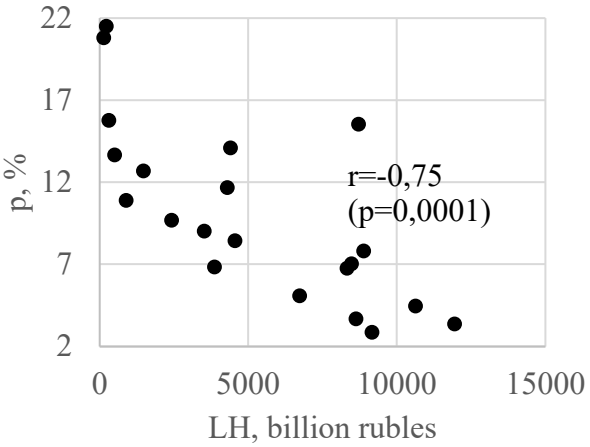
Source: built by the author

Annex D

Correlation of inflation rate, %, with macroeconomic policy instruments in Russia



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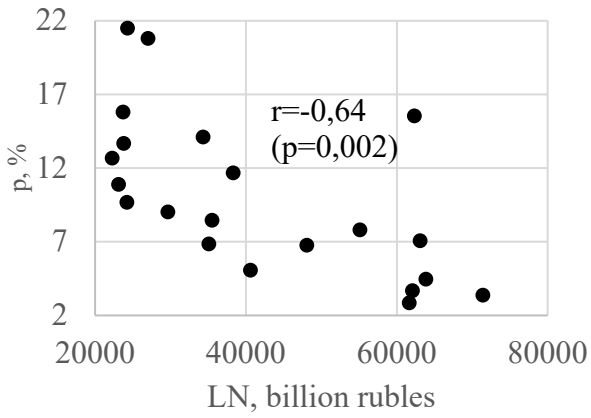

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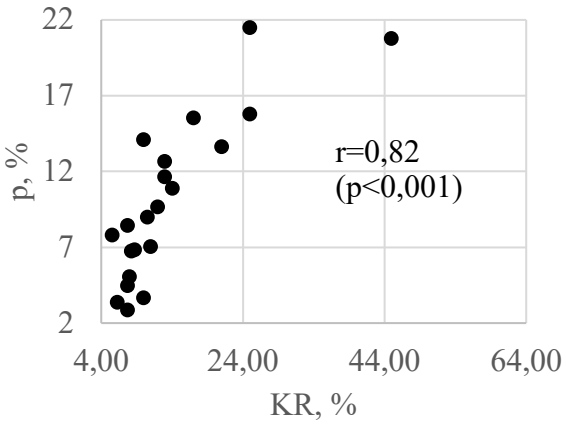

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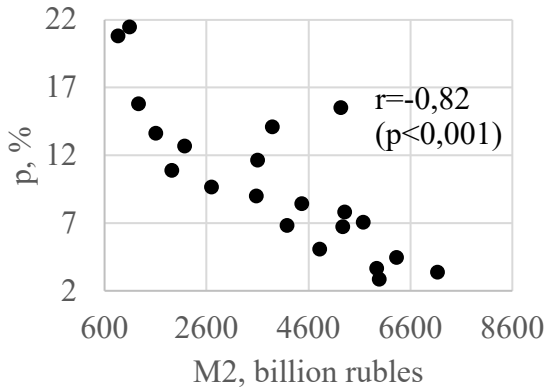

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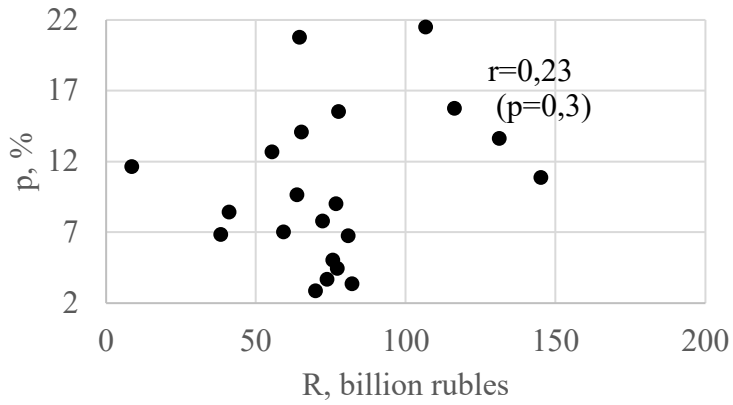
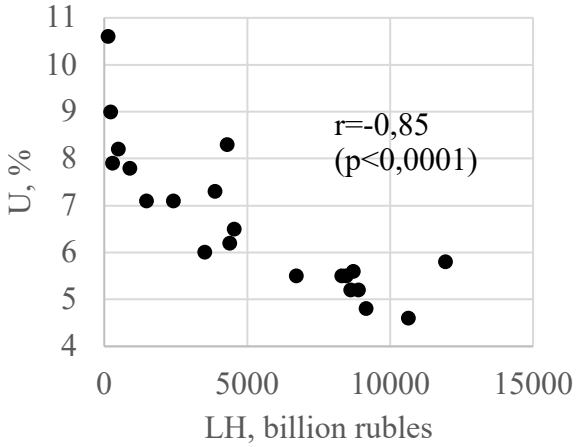


(e)

Source: built by the author

Annex E

Correlation of unemployment rate, %, with macroeconomic policy instruments in Russia



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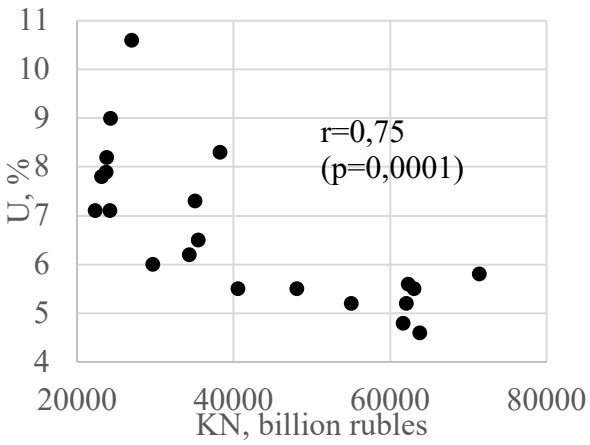

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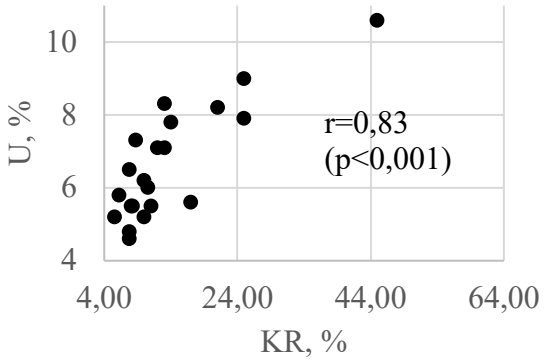

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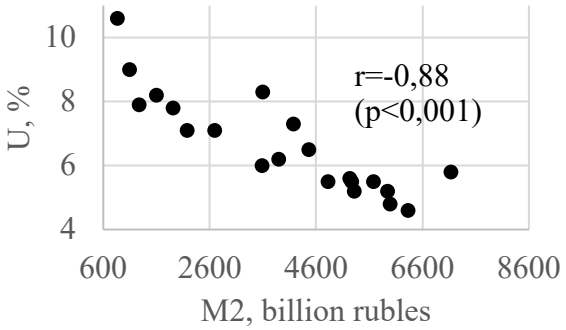

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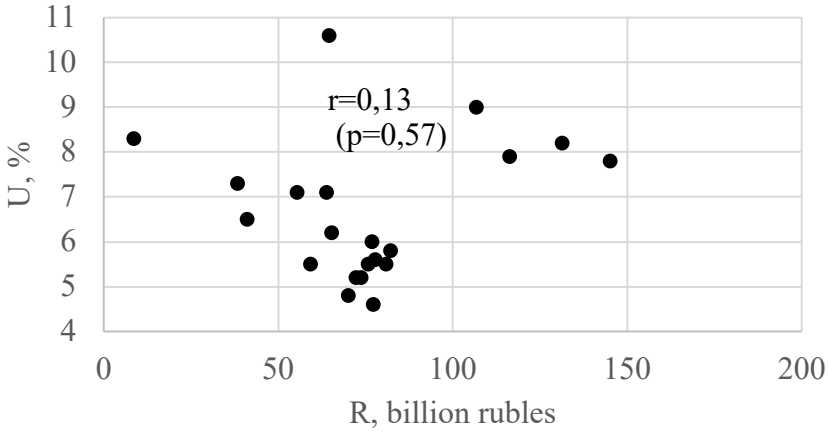


(e)

Source: built by the author

Annex ZH

Matrix of pair correlations of monetary and fiscal policy instruments, 2000-2021 (REER 2005-2021)

Instruments	State budget revenues	State budget expenditures	State budget deficit/surplus	Deficit/surplusiin % of GDP	Monetary base	Money supply M2	Required reserves	Absorption of liquidity	Key rate	REER ruble to dollar	REER ruble to foreign currencies
State budget revenues	1,00										
State budget expenditures	0,355	1,00									
	(0,1047)	-----									
State budget deficit/surplus	**0,660*** **	**-0,468** **	1,00								
	(0,0008)	(0,0281)	-----								
Deficit/surplus in % of GDP	**0,671*** **	**-0,443** **	**0,991*** **	1,00							
	(0,0006)	(0,0388)	(<0,00001)	-----							
Monetary base	-0,063	**0,396***	**-0,377***	**-0,441** **	1,00						
	(0,7822)	(0,0681)	(0,0834)	(0,0397)	-----						
Money supply M2	-0,127	**0,405***	**-0,446** **	**-0,500** **	**0,97*** **	1,00					
	(0,5720)	(0,0612)	(0,0373)	(0,0178)	(<0,00001)	-----					
Required reserves	0,256	-0,055	0,286	0,323	**-0,380***	-0,319	1,00				
	(0,2499)	(0,8089)	(0,1967)	(0,1425)	(0,0809)	(0,1478)	-----				
Absorption of liquidity	0,017	0,241	-0,177	-0,235	**0,737*** **	**0,717*** **	-0,184	1,00			
	(0,9399)	(0,2808)	(0,4301)	(0,2922)	(0,0001)	(0,0002)	(0,4127)	-----			
Key rate	-0,152	**-0,411***	0,186	0,244	**-0,903*** **	**-0,817*** **	0,311	**-0,592** **	1,00		
	(0,4981)	(0,0573)	(0,4065)	(0,2746)	(<0,00001)	(<0,00001)	(0,1592)	(0,0037)	-----		
REER ruble to dollar	0,294697	-0,357386	**0,526** **	**0,5285** **	**-0,471***	**-0,4546***	-0,050546	-0,170522	0,052484	1,000000	
	(0,2509)	(0,1590)	(0,0301)	(0,0292)	(0,0564)	(0,0668)	(0,8472)	(0,5129)	(0,8414)	-----	
REER ruble to foreign currencies	0,177324	-0,298427	0,377559	0,388875	**-0,4938** **	**-0,4279***	-0,129943	-0,237817	0,120862	**0,9345*** **	1,000000
	(0,4960)	(0,2446)	(0,1352)	(0,1229)	(0,044)	(0,0866)	(0,6191)	(0,3580)	(0,6440)	(<0,00001)	-----

* - coefficient is significant on the level of 10%, ** - on 5%, *** - on 1%. Significance level values in brackets are given.
Statistically significant coefficients are in bold. Source: calculated by the author

Annex I

Matrix of partial correlations of monetary and fiscal policy instruments (with a fixed value of linear and quadratic trends), 2000-2021 (REER 2005-2021)

Instruments	State budget revenues	State budget expenditures	State budget deficit/surplus	Deficit/surplus in % of GDP	Monetary base	Money supply M2	Required reserves	Absorption of liquidity	Key rate	REER ruble to dollar	REER ruble to foreign currencies
State budget revenues	1,00										
State budget expenditures	**0,429****	1,00									
	(0,0593)	-----									
State budget deficit/surplus	**0,688*****	-0,361	1,00								
	(0,0008)	(0,1184)	-----								
Deficit/surplus in % of GDP	**0,715*****	-0,315	**0,992*****	1,00							
	(0,0004)	(0,1759)	(<0,00001)	-----							
Monetary base	0,151	0,028	0,133	0,093	1,00						
	(0,5263)	(0,9067)	(0,5762)	(0,6951)	-----						
Money supply M2	-0,357	-0,019	-0,353	-0,367	0,351	1,00					
	(0,1228)	(0,9363)	(0,1271)	(0,1116)	(0,1289)	-----					
Required reserves	0,248	0,07	0,200	0,218	-0,104	-0,135	1,00				
	(0,2913)	(0,7697)	(0,3974)	(0,3568)	(0,6637)	(0,5691)	-----				
Absorption of liquidity	0,109	-0,118	0,207	0,168	**0,582*****	-0,088	-0,106	1,00			
	(0,6471)	(0,6212)	(0,3809)	(0,4780)	(0,0070)	(0,7124)	(0,6556)	-----			
Key rate	**-0,598*****	-0,226	**-0,436***	**-0,445****	**-0,44***	0,288	-0,282	-0,277	1,00		
	(0,0054)	(0,3380)	(0,0547)	(0,0495)	(0,0525)	(0,2178)	(0,2283)	(0,2371)	-----		
REER ruble to dollar	0,021453	-0,304910	0,300147	0,287904	-0,069120	0,083586	0,145072	0,125805	-0,414578	1,00	
	(0,9395)	(0,2691)	(0,2771)	(0,2981)	(0,8066)	(0,7671)	(0,606)	(0,6551)	(0,1244)	-----	
REER ruble to foreign currencies	-0,053598	-0,219128	0,155147	0,156331	-0,289463	-0,043693	0,039667	0,008740	-0,256831	**0,9222*****	1,00
	(0,8495)	(0,4327)	(0,5809)	(0,5780)	(0,2954)	(0,8771)	(0,8884)	(0,9753)	(0,3555)	(<0,00001)	-----

* - coefficient is significant on the level of 10%, ** - on 5%, *** - on 1%. Significance level values in brackets are given.

Statistically significant coefficients are in bold. Source: calculated by the author

Annex K

Pairwise and partial (with a fixed influence of linear and quadratic trend) correlation coefficients of macroeconomic targets and instruments of monetary and fiscal policy, 2000-2021

(REER 2005-2021)

Instruments	Economic growth rate		Inflation rate		REER ruble to dollar		REER ruble to foreign currencies	
	pairwise	partial	pairwise	partial	pairwise	partial	pairwise	partial
State budget revenues	0,300	0,298	-0,062	-0,257	0,295	0,021	0,1773	-0,05
	(0,174)	(0,202)	(0,783)	(0,274)	(0,25)	(0,939)	(0,496)	(0,85)
State budget expenditures	**-0,516****	**-0,394***	-0,328	0,003	-0,357	-0,305	-0,298	-0,219
	(0,014)	(0,085)	(0,136)	(0,989)	(0,159)	(0,269)	(0,245)	(0,433)
State budget deficit/ surplus	**0,699*****	**0,625*****	0,205	-0,268	**0,526****	0,300	0,378	0,15
	(<0,000)	(0,003)	(0,361)	(0,253)	(0,03)	(0,277)	(0,135)	(0,58)
Budget deficit/ surplus in % of GDP	**0,703*****	**0,610*****	0,261	-0,261	**0,529****	0,288	0,389	0,156
	(<0,0001)	(0,004)	(0,241)	(0,266)	(0,029)	(0,298)	(0,122)	(0,578)
Monetary base	**-0,504****	0,032	**-0,819*****	0,030	**-0,47***	-0,069	**-0,49****	-0,29
	(0,017)	(0,894)	(<0,001)	(0,901)	(0,056)	(0,81)	(0,044)	(0,295)
Money supply M2	**-0,532****	-0,197	**-0,798*****	0,257	**-0,455***	0,084	**-0,428***	-0,044
	(0,011)	(0,405)	(<0,0001)	(0,273)	(0,067)	(0,767)	(0,087)	(0,88)
Required reserves	0,284	0,139	0,221	-0,213	-0,05	0,145	-0,13	0,04
	(0,200)	(0,558)	(0,324)	(0,368)	(0,85)	(0,61)	(0,62)	(0,89)
Absorption of liquidity	-0,205	0,288	**-0,65*****	-0,249	-0,17	0,126	-0,238	0,009
	(0,361)	(0,219)	(0,001)	(0,290)	(0,512)	(0,655)	(0,36)	(0,98)
Key rate	0,349	-0,300	**0,884*****	**0,614*****	0,052	-0,41	0,12	-0,26
	(0,112)	(0,199)	(<0,001)	(0,004)	(0,841)	(0,124)	(0,644)	(0,36)
REER ruble to dollar	**0,7*****	**0,62****	-0,122	**-0,59****	–	–	–	–
	(0,002)	(0,014)	(0,63)	(0,019)	–	–	–	–
REER ruble to foreign currencies	**0,578****	**0,478***	-0,148	**-0,576****	–	–	–	–
	(0,015)	(0,07)	(0,569)	(0,024)				

* - the coefficient is significant at 10% level, ** - at 5%, *** - at 1% level. Significance levels are given in brackets. Statistically significant coefficients are marked in bold.

Source: calculated by the author

Annex L

Pairwise correlation matrix of macroeconomic policy targets, 2000-2021 (REER 2005-2021)

	Real GDP	Real GDP growth rate	Exchange rate		Inflation rate
			REER ruble to dollar	REER ruble to foreign currencies	
Real GDP	1	–	–	–	–
Real GDP growth rate	**-0,434522**** (0,0433)	1	–	–	–
REER ruble to dollar	-0,409592 (0,1025)	**0,700370**** (0,0017)	1		–
REER ruble to foreign currencies	-0,406806 (0,1051)	**0,578384**** (0,0150)	**0,934465***** (<0,00001)	1	
Inflation rate	**-0,819893***** (<0,00001)	0,267971 (0,2279)	-0,122453 (0,6396)	-0,148696 (0,5690)	1

* - the coefficient is significant at the level of 10%, ** - 5%, *** - 1%. Significant correlation coefficients are marked in bold type

Source: calculated by the author

Annex M

Matrix of partial correlation coefficients of macroeconomic policy targets (with a fixed value of linear and quadratic trends), 2000-2021 (REER 2005-2021)

	Real GDP	Real GDP growth rate	Exchange rate		Inflation rate
			REER ruble to dollar	REER ruble to foreign currencies	
Real GDP	1	–	–		–
Real GDP growth rate	**0,564511*** (0,0095)	1	–		–
REER ruble to dollar	0,256215 (0,3567)	**0,617685** (0,0141)	1		–
REER ruble to foreign currencies	0,052391 (0,8529)	**0,478274*** (0,0713)	**0,922239*** (<0,00001)		
Inflation rate	0,064766 (0,7862)	-0,350920 (0,2279)	**-0,592559** (0,0199)	**-0,576070** (0,0246)	1

* - the coefficient is significant at the level of 10%, ** - 5%, *** - 1%. Significant correlation coefficients are marked in bold type

Source: calculated by the author

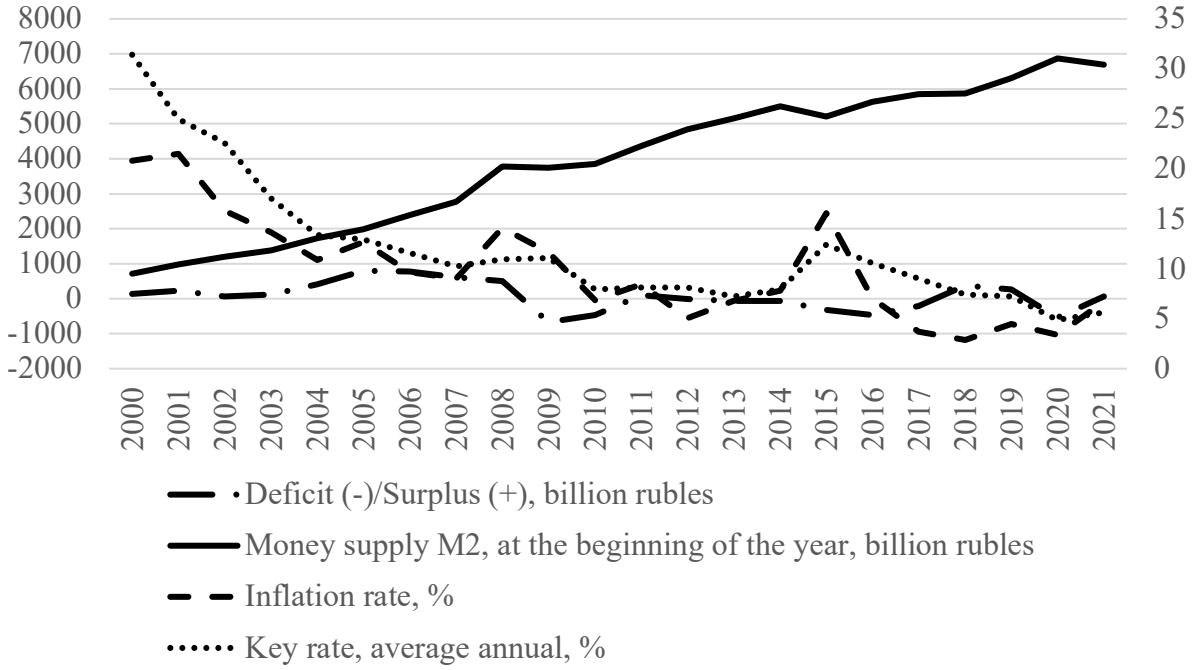
Annex N

Dynamics of budget surplus/deficit, % of GDP in Russia in 2000-2021

Source: constructed by the author on the basis of data https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2023/04/main/fedbud_04.xlsx

Annex P

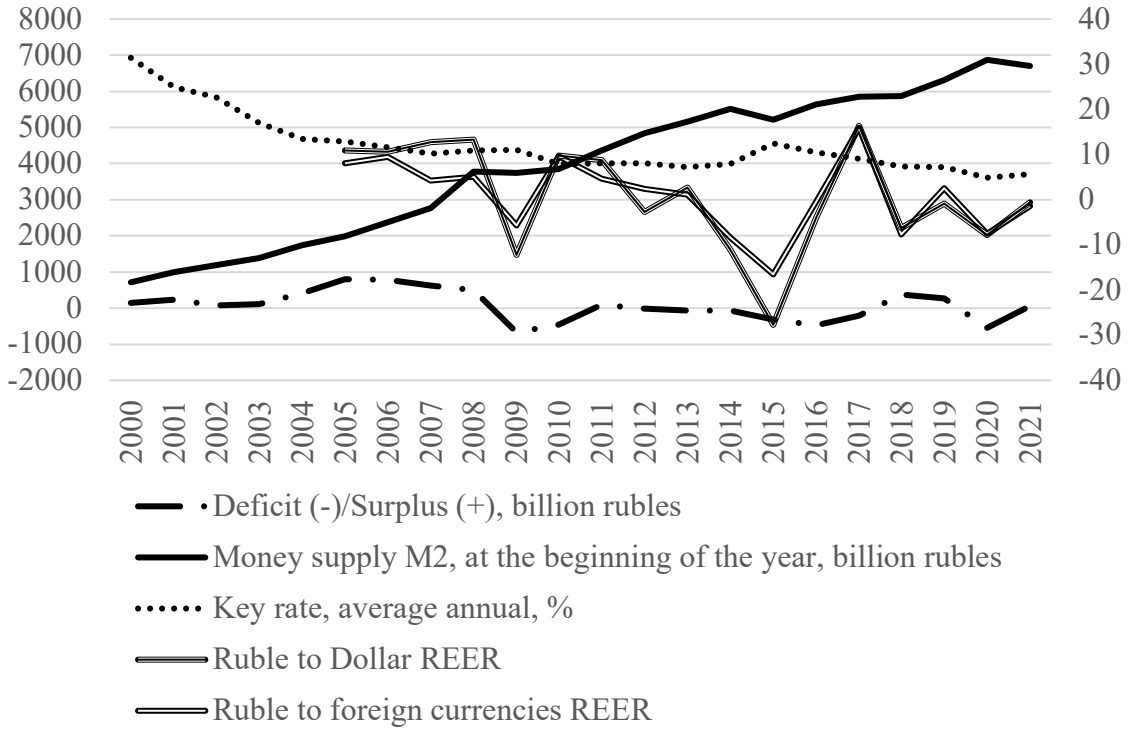
Dynamics of the state budget deficit/surplus, M2 money supply, inflation rate and key rate in Russia, 2000-2021



Source: constructed by the author on the basis of data https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2023/04/main/fedbud_04.xlsx, http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx, https://cbr.ru/hd_base/KeyRate/ и http://www.cbr.ru/statistics/idkp_br/refinancing_rates1/#highlight=ставка%7Срефинансирования%7Сставки%7Сставке, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx

Annex R

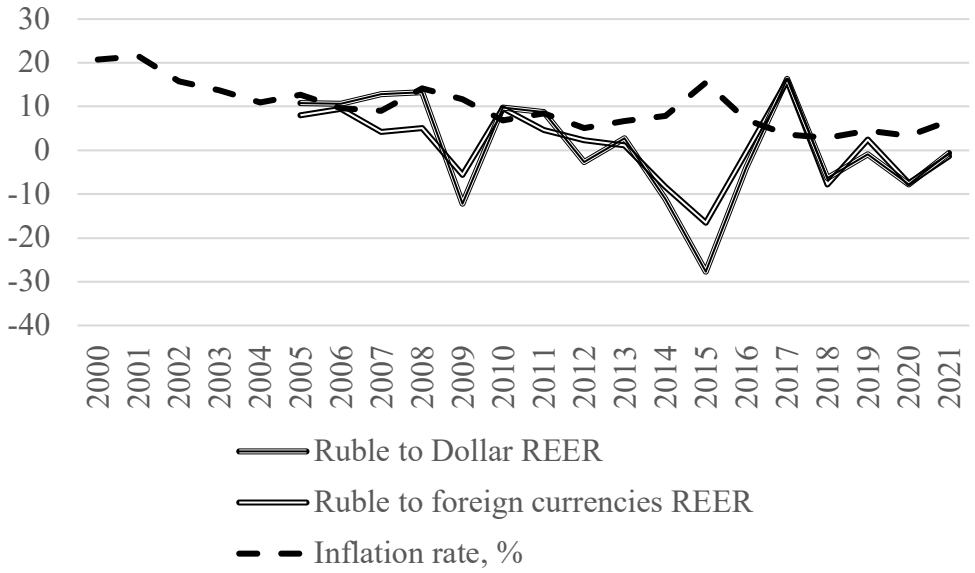
Dynamics of the state budget deficit/surplus, M2 money supply, key rate and real effective exchange rate of the ruble in Russia, 2000-2021



Source: constructed by the author on the basis of data https://www.fedstat.ru/indicator/42134, https://gks.ru/bgd/regl/b04_51/IssWWW.exe/Stg/d010/i010070r.htm, https://gks.ru/bgd/regl/b06_51/IssWWW.exe/Stg/02-01.htm, https://minfin.gov.ru/common/upload/library/2023/04/main/fedbud_04.xlsx http://www.cbr.ru/vfs/statistics/ms/ms_m21.xlsx, https://cbr.ru/hd_base/KeyRate/ и http://www.cbr.ru/statistics/idkp_br/refinancing_rates1/#highlight=ставка%7Срефинансирования%7Сставки%7Сставке

Annex S

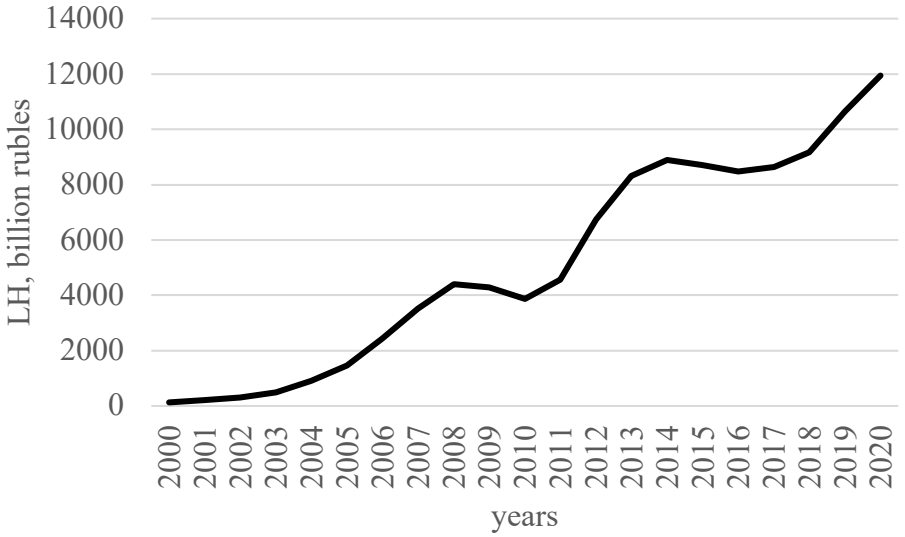
Dynamics of the inflation rate and the real effective exchange rate of the ruble in Russia, 2000-2021



Source: constructed by the author on the basis of data https://www.fedstat.ru/indicator/42134, https://rosstat.gov.ru/storage/mediabank/Ipc_mes-5.xlsx

Annex T

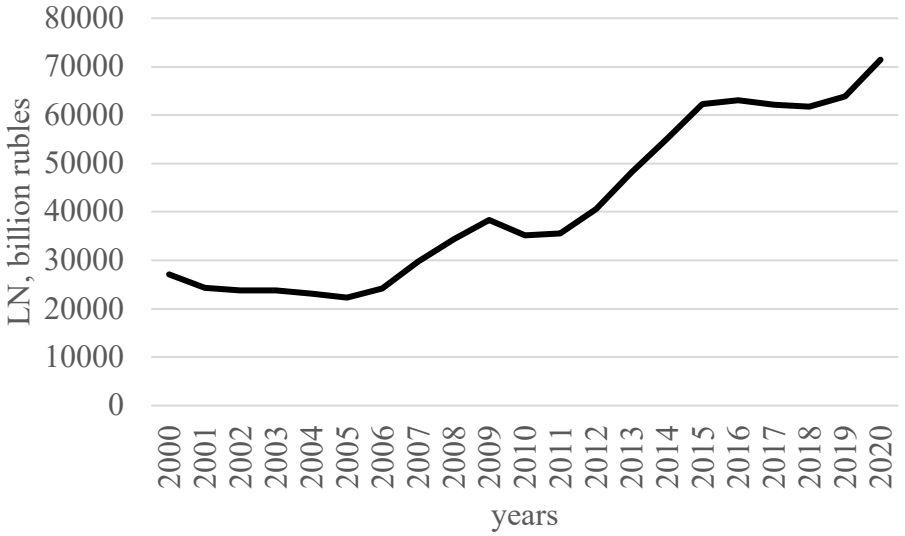
Dynamics of loans to households in Russia, 2000-2020, billion rubles, in prices of 2000



Source: constructed by the author on the basis of data https://fred.stlouisfed.org/series/QRUHAMXDCU

Annex U

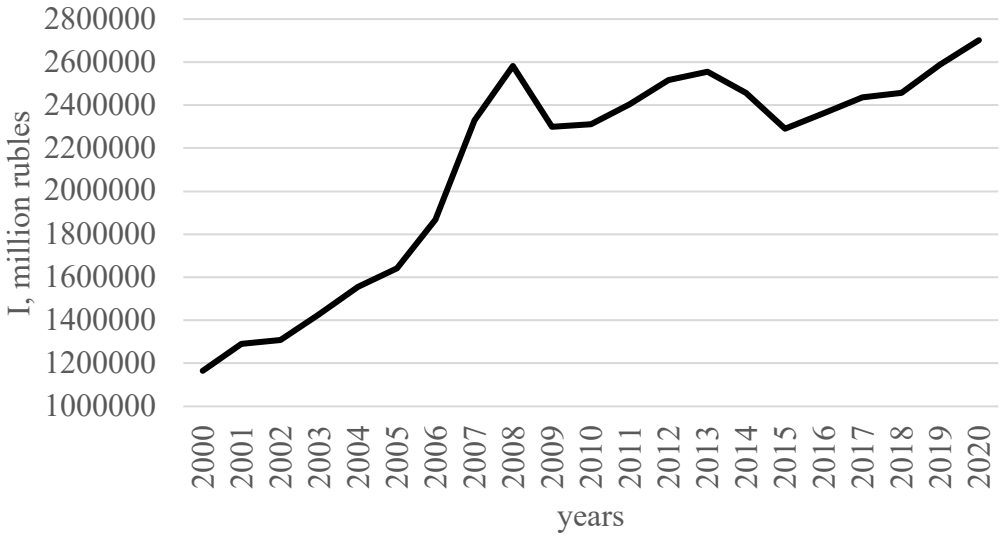
Dynamics of loans to non-financial organisations in Russia, 2000-2020, billion rubles, in prices of 2000



Source: constructed by the author on the basis of data https://fred.stlouisfed.org/series/QRUCAMXDCA

Annex F

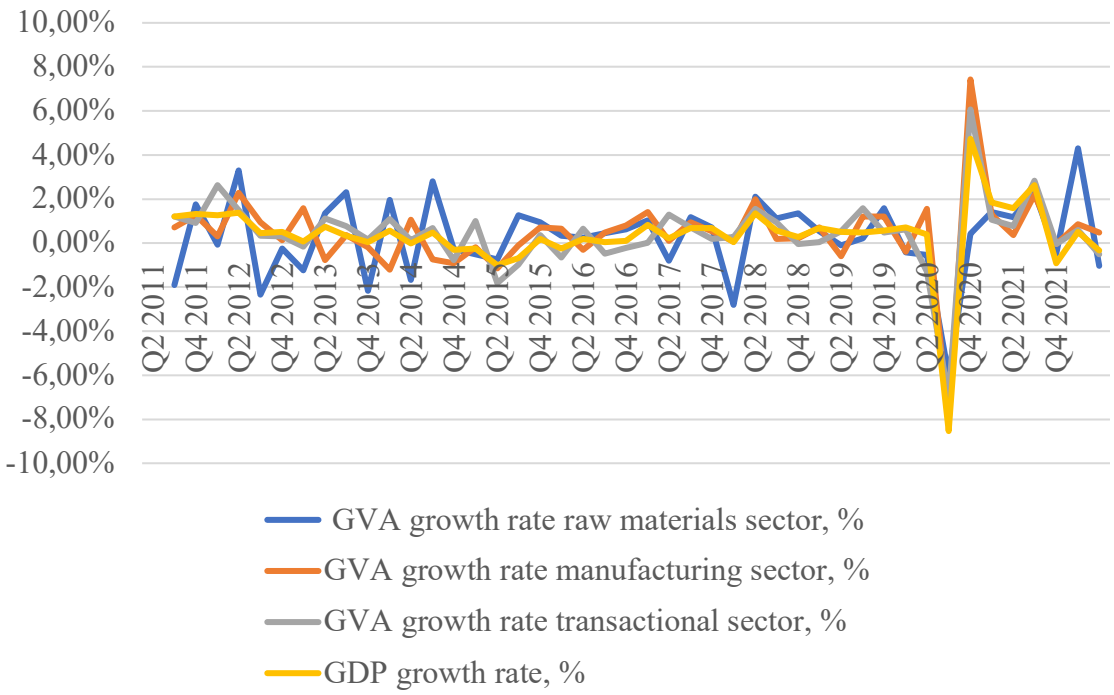
Dynamics of investment in fixed capital in Russia, 2000-2020, million rubles, in prices of 2000



Source: constructed by the author on the basis of data https://rosstat.gov.ru/storage/mediabank/Invest.xls

Annex X

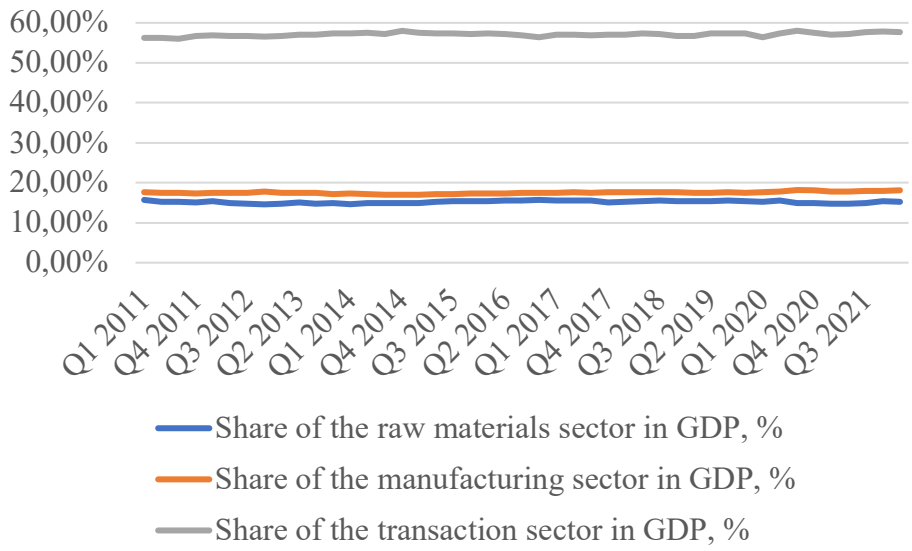
Dynamics of GDP and GVA growth rates by economic sectors in Russia, %, 2011-2021



Source: constructed by the author on the basis of data https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls, https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

Annex C

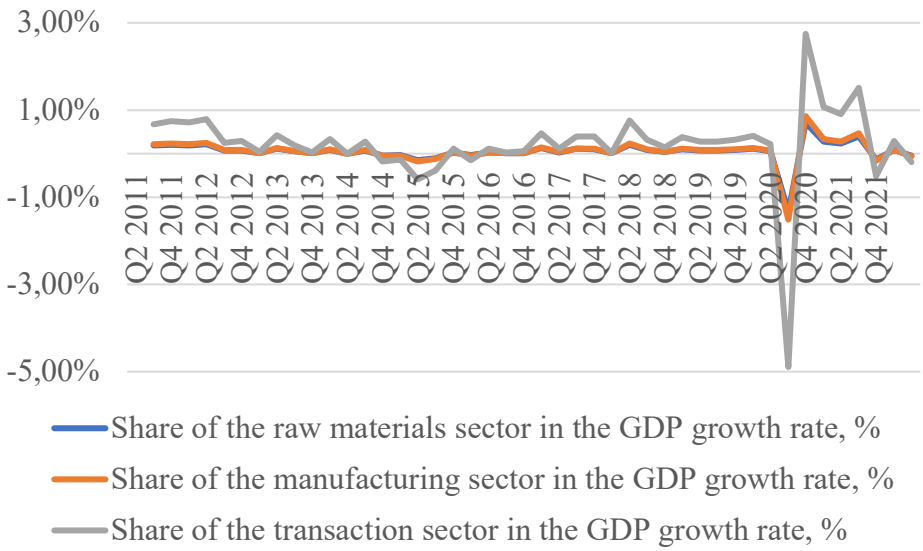
Dynamics of sector shares in GDP in Russia, %, 2011-2021



Source: constructed by the author on the basis of data
https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls,
https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

Annex H

Dynamics of GVA contributions of economic sectors to the GDP growth rate in Russia, %, 2011-2021



Source: constructed by the author on the basis of data
https://rosstat.gov.ru/storage/mediabank/VDS_god_OKVED2_s2011-2022.xls,
https://rosstat.gov.ru/storage/mediabank/VVP_god_s_1995-2022.xls

Annex SH

Correlation coefficients of indicators of the sectoral structure of the Russian economy with monetary instruments of economic policy for the period 2011-2022

Indicators of the development of economic sector	Economy sector	Instruments of economic (monetary and fiscal) policy									
		Absorption of liquidity	National Welfare Fund	Key rate	M2	Required reserves	External debt	Internal debt	State budget revenues	State budget expenditures	State budget deficit/ surplus
Contributions to GDP growth rate	Manufacturing	-0,093550 (0,5458)	-0,051903 (0,7379)	-0,18328 (0,2337)	0,020153 (0,8967)	0,048254 (0,7558)	-0,086527 (0,5765)	0,036343 (0,8148)	0,079915 (0,6061)	0,076085 (0,6235)	0,00742 (0,9619)
	Raw materials	-0,098160 (0,5261)	-0,070591 (0,6489)	-0,171989 (0,2643)	0,006215 (0,9681)	0,040140 (0,7959)	-0,081338 (0,5997)	0,026409 (0,8649)	0,080576 (0,6031)	0,074398 (0,6313)	0,01645 (0,9156)
	Transaction	-0,093904 (0,5443)	-0,055740 (0,7193)	-0,184401 (0,2308)	0,017702 (0,9092)	0,047241 (0,7607)	-0,085889 (0,5793)	0,034090 (0,8261)	0,080446 (0,6037)	0,075834 (0,6247)	0,01040 (0,9466)
Shares in GDP	Manufacturing	**0,4391***** (0,0025)	**0,6724***** (<0,0001)	**-0,57***** (0,0001)	**0,61***** (<0,0001)	0,231490 (0,1260)	**-0,682***** (<0,0001)	**0,60***** (<0,001)	0,072910 (0,6341)	0,074720 (0,6257)	-0,014 (0,9272)
	Raw materials	**0,331**** (0,0263)	-0,069453 (0,6503)	**0,3118**** (0,0371)	0,056835 (0,7108)	**-0,452***** (0,0018)	**-0,28903*** (0,0541)	0,037281 (0,8079)	-0,087 (0,5718)	-0,0685 (0,6548)	-0,063 (0,6804)
	Transaction	0,044559 (0,7713)	**0,448***** (0,0020)	-0,06814 (0,6565)	**0,5202***** (0,0002)	**0,372697**** (0,0117)	-0,057558 (0,7072)	**0,582***** (<0,001)	0,147184 (0,3346)	0,172856 (0,2562)	-0,11515 (0,4513)
GVA growth rate of a sector	Manufacturing	-0,070035 (0,6515)	0,026938 (0,8622)	-0,129 (0,4037)	0,106469 (0,4915)	0,029293 (0,8503)	-0,185481 (0,2280)	0,103487 (0,5038)	0,065601 (0,6722)	0,084179 (0,5869)	-0,0779 (0,6151)
	Raw materials	-0,083614 (0,5895)	-0,036517 (0,8140)	-0,0023 (0,9878)	0,015865 (0,9186)	0,072044 (0,6421)	-0,017779 (0,9088)	0,130209 (0,3995)	0,054896 (0,7234)	0,040186 (0,7956)	0,05182 (0,7383)
	Transaction	-0,096271 (0,5342)	-0,039352 (0,7998)	**-0,2618*** (0,0860)	0,018151 (0,9069)	0,084695 (0,5846)	-0,065013 (0,6750)	0,018211 (0,9066)	0,098567 (0,5244)	0,084600 (0,5851)	0,0449 (0,7722)

Indicators of the development of economic sector	Economy sector	Instruments of economic (monetary and fiscal) policy									
		Absorption of liquidity	National Welfare Fund	Key rate	M2	Required reserves	External debt	Internal debt	State budget revenues	State budget expenditures	State budget deficit/ surplus
GVA of a sector	Manufacturing	**0,542*** (0,0001)	**0,628*** (<0,0001)	**-0,50*** (0,0005)	**0,792*** (<0,0001)	**0,4456*** (0,0022)	-0,648*** (<0,0001)	**0,845*** (<0,001)	0,137083 (0,3692)	0,087409 (0,5680)	0,1831 (0,2286)
	Raw materials	**0,6332*** (<0,0001)	**0,431*** (0,0032)	-0,2138 (0,1584)	**0,722*** (<0,0001)	0,218068 (0,1501)	**-0,63*** (0,0000)	**0,776*** (<0,001)	0,095638 (0,5320)	0,043197 (0,7781)	0,1979 (0,1925)
	Transaction	**0,463*** (0,0013)	**0,54*** (0,0001)	**-0,37*** (0,0119)	**0,77*** (<0,0001)	**0,488*** (0,0007)	**-0,49*** (0,0006)	**0,843*** (<0,001)	0,157485 (0,3015)	0,103799 (0,4974)	0,19701 (0,1946)

* - coefficient is significant on the level of 10%, ** - on 5%, *** - on 1%. 10%, ** - 5%, *** - 1%. Source: calculated by the author

Annex CHSH

Results of correlation analysis of the impact of monetary instruments of economic policy on the sectoral structure of the Russian economy for the period 2011-2022

Indicators of the development of economic sector	Sector of economy	Instruments of economic (monetary and fiscal) policy									
		Absorption of liquidity	National Welfare Fund	Key rate	M2	Required reserves	External debt	Internal debt	Budget revenues	State budget expenditures	Budget deficit/surplus
Contributions to GDP growth rate	Manufacturing	ins	ins	ins	ins	ins	ins	ins	ins	ins	ins
	Raw materials	ins	ins	ins	ins	ins	ins	ins	ins	ins	ins
	Transaction	ins	ins	ins	ins	ins	ins	ins	ins	ins	ins
Shares in GDP	Manufacturing	+	+	-	+	ins	-	+	ins	ins	ins
	Raw materials	+	ins	+	ins	-	-	ins	ins	ins	ins
	Transaction	ins	+	ins	+	+	н/з	+	ins	ins	ins
GVA growth rate of a sector	Manufacturing	ins	ins	ins	ins	ins	ins	ins	ins	ins	ins
	Raw materials	ins	ins	ins	ins	ins	ins	ins	ins	ins	ins
	Transaction	ins	ins	-	ins	ins	ins	ins	ins	ins	ins
GVA of a sector	Manufacturing	+	+	-	+	+	-	+	ins	ins	ins
	Raw materials	+	+	ins	+	ins	-	+	ins	ins	ins
	Transaction	+	+	-	+	+	-	+	ins	ins	ins

+ - increasing the tool increases the target, - increasing the tool decreases the target, n/a - the tool insignificantly affects the target. Source: developed by the author

Annex E1

Correlation of GVA of aggregated equivalents of structures

	1-3 paradigms	4th paradigm	5th paradigm	6th paradigm
1-3 paradigms	1			

4th paradigm	0,222	1		
	(-0,511)	-----		
5th paradigm	0,731	0,254	1	
	(-0,011)	(0,452)	-----	
6th paradigm	**-0,691***	**-0,834****	-0,293	1
	(0,086)	**(0,020)**	(0,524)	-----

statistically significant coefficients are marked in bold. * - the coefficient is significant at the level of 10%, ** - 5%, *** - 1%

Source: calculated by the author

Annex Y

Correlation of growth rates of GVA of aggregated equivalents of structures

	1-3 paradigms	4th paradigm	5th paradigm	6th paradigm
1-3 paradigms	1			

4th paradigm	0,547	1		
	(0,102)	-----		
5th paradigm	**-0,580***	-0,393	1	
	(0,079)	(0,261)	-----	
6th paradigm	-0,644	-0,650	**0,844****	1
	(0,168)	(0,162)	**(0,035)**	-----

statistically significant coefficients are marked in bold. * - the coefficient is significant at the level of 10%, ** - 5%, *** - 1%

Source: calculated by the author

Annex Ya

Correlation of GVA of aggregated equivalents of structures and monetary instruments of economic policy

Instrument	1-3 paradigms	4 paradigm	5 paradigm	6 paradigm
Absorption of liquidity	0,390	-0,083	**0,525***	-0,232
	(0,236)	(0,808)	**(0,097)**	(0,617)
Budget revenues	0,327	**0,758*****	0,346	**-0,819****
	(0,327)	**(0,007)**	(0,297)	**(0,024)**
Budget expenditures	0,066	0,334	**0,623****	-0,062
	(0,847)	(0,316)	**(0,041)**	(0,895)
Budget deficit/surplus	0,196	0,328	-0,182	-0,579
	(0,563)	(0,324)	(0,593)	(0,174)
National Welfare Fund	0,378	**0,604****	**0,564***	-0,612
	(0,252)	**(0,049)**	**(0,071)**	(0,144)
Key rate	-0,102	-0,466	-0,517	0,419
	(0,765)	(0,149)	(0,103)	(0,349)
Money supply M2	**0,738****	0,215	**0,981*****	-0,296
	(0,010)	(0,525)	**(<0,001)**	(0,520)
Required reserves	**0,544***	0,482	**0,610****	-0,493
	(0,084)	(0,134)	**(0,046)**	(0,261)
External debt	**-0,578***	-0,188	**-0,522***	0,448
	(0,062)	(0,580)	**(0,099)**	(0,314)
Internal debt	**0,834*****	0,467	**0,833*****	**-0,806****
	(0,001)	(0,147)	**(0,001)**	**(0,029)**

statistically significant coefficients are marked in bold. * - the coefficient is significant at the level of 10%, ** - 5%, *** - 1%

Source: calculated by the author

Annex Ya 1

Correlation of GVA growth rates of aggregated equivalents of structures and monetary instruments of economic policy

Instrument	1-3 paradigms	4th paradigm	5th paradigm	6th paradigm
Absorption of liquidity	-0,346	0,064	0,178	0,024
	(0,327)	(0,861)	(0,624)	(0,964)
Budget revenues	0,331	**0,763*** **	-0,082	-0,612
	(0,350)	**(0,010)**	(0,822)	(0,197)
Budget expenditures	-0,433	0,113	0,000	-0,019
	(0,211)	(0,755)	(0,999)	(0,972)
Budget deficit/surplus	0,546	0,502	-0,062	-0,427
	(0,103)	(0,140)	(0,865)	(0,399)
National Welfare Fund	0,138	**0,574***	**-0,561***	-0,560
	(0,704)	**(0,083)**	**(0,092)**	(0,248)
Key rate	0,229	-0,471	-0,362	0,310
	(0,525)	(0,169)	(0,304)	(0,549)
Money supply M2	-0,393	0,246	-0,014	-0,116
	(0,262)	(0,493)	(0,970)	(0,826)
Required reserves	0,304	0,362	-0,034	-0,384
	(0,394)	(0,304)	(0,926)	(0,453)
External debt	0,011	-0,473	0,101	0,220
	(0,976)	(0,167)	(0,781)	(0,676)
Internal debt	0,138	0,519	**-0,597***	-0,715
	(0,705)	(0,124)	**(0,068)**	(0,110)

statistically significant coefficients are marked in bold. * - the coefficient is significant at the level of 10%, ** - 5%, *** - 1%

Source: calculated by the author