

MONETARY POLICY AND THE FINANCIAL CRISIS: METHODOLOGY AND LESSONS

Khakimov Dilshodjon Rakhmonaliyevich

(ORCID - 0000-0002-7546-0146)

Ph.D., Associate Professor, Fergana State University

Annotation: The article discusses issues of integration within the financial market; reforming market regulation institutions and creating mega-regulators; reassessment of central bank functions; modification of monetary policy; speculative bubbles in the stock market; features of the monetary policy of the Central Bank of Uzbekistan; functioning of the transmission mechanism of the monetary policy of Uzbekistan; transition of the Central Bank of Uzbekistan to inflation targeting; integral version of monetary policy.

Keywords: Financial market; asset securitization; financial derivatives; price targeting; inflation targeting; speculative bubbles; transmission mechanism; interest rate; money-credit policy; net profitability of business activity; liquidity; integral version of monetary policy.

Over the past two decades, the development and implementation of monetary policy in developed countries has been largely determined by integration processes within the financial market. The wide spread of derivative financial instruments simultaneously circulating in two or more segments of the financial market led to the reform of market regulation institutions and the creation in a number of countries (Australia, Great Britain, Sweden, Japan) of mega-regulators operating in parallel with central banks. At the same time, intensive securitization of assets took place in the banking sector. A paradoxical situation arose: new loans were secured by securities issued against previously issued loans, which created a risk of depreciation of the collateral. If the borrower refused to increase the collateral, the commercial bank could resort to selling securities, thereby increasing their supply on the market.

With the onset of the pandemic, amid a crisis of lack of liquidity, sales of collateral intensified the fall of the stock market. Banks preferred to refrain from interbank lending and actually hoarded funds. The money multiplication mechanism has stopped. At the same time, it turned out that the central banks of developed countries do not have sufficient and effective tools within the framework of monetary policy to combat the crisis. Monetary authorities were forced to improvise, trying to find adequate instruments for pumping liquidity into the economy. From lenders of last resort, central banks have actually turned into sponsors of the financial sector. This trend has not bypassed the Uzbek financial market.

The pandemic and crisis not only led to a reassessment of the functions of the central bank, but also predetermined changes in the instruments, goals, methods and mechanism of monetary policy. Under the current conditions, it became necessary to reconsider the methodology for its development and implementation.

Modification of monetary policy

In the pre-crisis period, an idea was formed according to which the securitization of assets and the use of financial derivatives provide diversification of risks and thereby represent an element of self-regulation of the market system. Another element of it was the multiplication of money as a result of credit operations. But subsequent events showed that in conditions of a full-scale crisis, both mechanisms of self-regulation of the economy do not work. Moreover, hedging risks using a wide range of derivatives has led to the emergence of systemic risk affecting the entire financial system.

In the context of the crisis and pandemic, the Federal Reserve System, the ECB, the Bank of England, the central banks of Switzerland and Japan actually came out in support of not only the

banking sector, but also the stock market, turning from lenders of last resort into “market makers of last resort” resort). Thus, the leading central banks accepted responsibility for refinancing the economy, for the actions of speculators in the stock market and inflating speculative bubbles. Предпринятые меры носят чрезвычайный характер. During their implementation, it became clear that the necessary instruments for providing liquidity to the banking sector were missing. They had to be created hastily.

While the TSLF enabled the Fed to provide U.S. treasuries as collateral to primary dealers, the PDCF enabled direct lending to primary dealers against a broad range of bonds accepted by the Fed as collateral. Obviously, such activities of the monetary authorities exacerbate such well-known consequences of information asymmetry in the credit market as false choice and moral hazard.

The ECB also undertook large-scale operations from the very beginning of the crisis to increase liquidity in the banking sector, establishing a wide range of securities that it accepted as collateral for loans to commercial banks. It included not only asset-backed bonds, including mortgages, but also shares of certain corporations. All of them must be denominated in euros.

At the beginning of the pandemic, the Bank of England did not carry out extraordinary operations to increase liquidity, but limited itself to supporting interest rates in the interbank market; it began to actively conduct repo operations, accepting a wide range of bonds, including mortgages, as collateral.

The situation on the global derivatives market is also difficult. Its real volumes, primarily due to the “repackaging” of financial instruments, during the crisis contributed to the formation of systemic risk and macroeconomic instability. This market is still not regulated by anyone in the world. At the same time, the cost indicators of execution of derivatives transactions should not be confused with the nominal volume of all mutual obligations existing in a given market.

Thus, central banks, firstly, created additional instruments for providing liquidity to the financial sector; secondly, they began to accept mortgage bonds as collateral in the absence of their real market value. By accepting the bonds of collapsed markets as collateral, central banks assumed the valuation risks of these securities, effectively subsidizing the financial sector. Such activity is fraught with the threat of an inflationary explosion in the global economy and significantly increases the instability of the global financial system.

Issues of monetary policy methodology in leading countries

The situation in the field of global finance is largely determined by the peculiarities of the monetary policy of leading countries. Thus, one of the most pressing problems in the theory of monetary policy is the reaction of monetary authorities to rising prices of financial assets. A steady increase in stock exchange (and over-the-counter) quotes leads to the formation of a speculative bubble in the stock market or real estate market. Its collapse may have poorly predictable macroeconomic consequences, in particular lead to a chain of bankruptcies of financial institutions.

Between 1997 and 2022, the global economy experienced several speculative bubbles in financial markets. But to date, practical methods for their prevention or localization have not been developed. Moreover, the question of the possible strategy of the monetary authorities to prevent the emergence of such bubbles has not been resolved even at the theoretical level. In the economic literature, two approaches to this problem have been formed.

According to the first approach, monetary authorities should not target the prices of financial assets and use the interest rate to reduce activity in the stock market. In particular, B. Bernanke and M. Gertler note that “within the framework of inflation targeting, an answer can be given to how central banks should respond to the dynamics of prices of financial assets; changes in the prices of these assets should affect monetary policy only to the extent that they affect the central bank's inflation forecast” [1]. A similar opinion is shared by U. Buiter, who believes that the prevention of speculative activity should be ensured not by monetary policy measures, but by regulation of the

stock market [2]. This position is disputed by supporters of the second approach. Thus, N. Roubini considers the main arguments of opponents of targeting prices of financial assets untenable. He notes that one cannot justify refusing to counteract speculative bubbles on the basis that there is significant uncertainty associated with their occurrence [3]. According to this logic, monetary authorities can use monetary policy instruments to reduce activity in the stock market.

In economic analysis, it is traditionally assumed that the dynamics of prices of financial assets are determined by the rational expectations of business entities regarding the net present value of future income on financial assets. Accordingly, the emergence of speculative bubbles is caused by incorrect assessments of their risks by investors and insufficient consideration of fundamental market conditions. Obviously, this approach does not take into account the psychology of market players, their belief in the opportunity to exit the game before others, locking in profits. Therefore, speculative bubbles are not the result of erroneous risk assessments, but an inevitable attribute of the stock exchange game, the mechanism of which is discussed in detail in the book by the founder of the hedge fund Traxis Partners (former top manager of Morgan Stanley) Barton Biggs [4].

At the same time, in practice, difficulties may arise in identifying upward trends in the stock market. They are not only speculative, but also reflect the fundamental factors in the dynamics of corporate value, including the consequences of technological shifts. At the same time, the dynamics of prices of financial assets may be under pressure from excess liquidity in the global economy. Then the rise in asset prices will occur for the same reasons as the rise in consumer prices. In this regard, Charles Goodhart proposed calculating the inflation index taking into account stock quotes [5].

Countering speculative bubbles is, of course, of great importance for ensuring macroeconomic stability. However, using the interest rate for these purposes would mean separating its dynamics from profitability in the real sector of the economy. A decrease in the money supply in the event of speculative trends in the stock market would also have negative consequences for him. Therefore, the main measures to counter speculative bubbles should, in our opinion, be carried out by stock market regulators.

At the same time, the negative consequences of speculative bubbles in the stock market for the banking sector are obvious. The depreciation of securities accepted as collateral provokes a crisis. The sale of collateral if the borrower fails to fulfill its obligations increases supply in the stock market. In the situation under consideration, the risks of a systemic crisis are extremely high. This is why this problem requires a strategic solution. Here it is important to clearly distinguish between the banking sector and the stock market. Banks should establish reserve requirements for stocks and bonds accepted as collateral. It is necessary to introduce a ban on commercial banks accepting structured financial instruments as collateral, as well as instruments issued during the securitization of assets.

The financial crisis forced us to pay attention to an important feature of market processes - their nonlinearity, the absence of constants and laws of similarity in time series of economic indicators. As financial market studies have shown, the statistical distribution of returns on financial assets is not Gaussian (normal), but is a Pareto-Livy distribution with infinite dispersion. This means there is a high likelihood of significant and unpredictable fluctuations in market variables that could undermine financial stability.

This circumstance predetermines the need to interpret macroeconomic equilibrium not simply as the interdependence of sectors and markets, but as a balance of economic processes. From this point of view, disequilibrium is generated by different dynamics of specific elements of the system. Therefore, the state of an economic system can be considered balanced when a certain ratio of its elements is ensured, counteracting the emergence of turbulence. In this understanding, a manifestation of disequilibrium, in particular, is the multidirectional dynamics of the value of money in the domestic and foreign economies, that is, the combination of inflation with an increase in the

exchange rate. Then the interest rate rises within the country, and it becomes more profitable for corporations to borrow abroad. In addition, this manifestation of disequilibrium disrupts the process of transforming income into savings, and the latter into investment.

Features of the monetary policy of the Central Bank of Uzbekistan

In recent years, the monetary policy of the Central Bank of Uzbekistan as a whole has been characterized by a lack of consistency and clarity of methodological approaches. This was expressed in a vague definition of the main objectives of the interest rate policy, the undeveloped methodology for assessing the demand for money and conceptual approaches to the formation of money supply, ineffective management of gold and foreign exchange reserves, the absence of systemic measures to form an international financial center on Uzbek territory, insufficient coordination of monetary policy with the state of financial market and banking sector. In particular, when developing the main directions of monetary policy, the Central Bank does not determine its objects and features of the transmission mechanism.

It is important to take into account that the reaction of specific objects of monetary policy to the actions of monetary authorities is not the same with different combinations of macroeconomic factors and with changing dynamics of external economic conditions. Therefore, the choice of a specific object of monetary policy as a priority should be made on the basis of an analysis of the entire complex of macroeconomic conditions. In world practice, the goals of monetary policy traditionally include ensuring the main indicators of macroeconomic stability - economic growth, employment, price stability, high financial market conditions. In this regard, it is necessary to distinguish the goals of monetary policy from the target indicators of its implementation. The latter include: monetary aggregates; the size of interest rate fluctuations; inflation rates; exchange rate support level.

For the effective functioning of the transmission mechanism of monetary policy in the Uzbek economy, it is necessary to identify its channels, which should be based on econometric analysis of a wide range of indicators. For example, the use of an interest rate depending on the characteristics of a particular country's economy can affect different economic indicators. Its growth can lead to an increase in inventory due to an increase in the cost of consumer credit. Obviously, a similar situation is real for an economy with a developed credit system. But a change in the interest rate may also affect the volume of lending to the real sector and, in addition, lead to a decrease in the money multiplier with a corresponding change in the dynamics of monetary aggregates. Therefore, the determination of specific channels of the transmission mechanism should be based on a study of the characteristics of the Uzbek economy.

The Central Bank of Uzbekistan intends to basically complete the transition to an inflation targeting regime by 2024, which assumes the priority of the goal of reducing it. Inflation targeting is usually understood as a type of monetary policy in which the central bank publicly announces a quantitative indicator of acceptable inflation and undertakes to ensure that prices rise within the established range. The main mechanism for achieving this goal is the impact on the inflationary expectations of business entities. But at the same time, a short-term interest rate is used as a monetary policy instrument.

Thus, the desire of the central bank to exert a psychological influence on business entities and encourage them to calculate investment projects taking into account the subsequent reduction in inflation is based on regulating the "price" of money. In other words, inflation targeting is not based on objective interdependencies between macroeconomic indicators. Its basis is the stability of interconnected and balanced processes that have developed in the economic system in the previous period. Accordingly, the possibility of changing them is not taken into account by central banks that have announced a transition to inflation targeting.

Note that countries using inflation targeting (Austria, Great Britain, Canada, Sweden) achieved the same results in reducing price growth in the 1990s as were achieved by countries that did not rely on this version of monetary policy (USA, eurozone countries, Japan). Inflation targeting is not used in any of the countries with undiversified exports. This is most likely due to the low degree of predictability of the macroeconomic situation in them, as well as significant fluctuations in the conditions of world commodity markets.

The transition of the Central Bank of Uzbekistan to inflation targeting may significantly increase the risks of macroeconomic instability. With this option of monetary policy, a freely floating exchange rate regime is used to weaken the impact of external shocks on it. But refusal to support the exchange rate in a certain range will lead to significant fluctuations in the sum in relation to other currencies and will provoke sharp inflows and outflows of speculative foreign capital. Under these conditions, the exchange rate of the soum will be additionally affected. Thus, the task set by the Central Bank to complete the transition to the inflation targeting regime cannot be considered necessary and justified.

The Central Bank declared the task of turning the interest rate into the main instrument of monetary policy. It is expected to ensure a gradual narrowing of the range of interest rates on the own operations of the Central Bank of Uzbekistan and a reduction in the volatility of money market rates. However, the Central Bank did not formulate the task of structuring interest policy based on the regulation of short-, medium- and long-term interest rates.

We believe that the activation of the Central Bank's interest rate policy, the strengthening of the impact of its credit policy on the real economy, as well as on the formation of the money supply, should consist of ensuring the structuring of interest rates and the implementation of measures to regulate them. The Central Bank should widely use global experience in conducting interest rate policy, in particular the system of regulating interest rates at different times for: main refinancing operations; long-term refinancing operations; fine-tuning operations; operations related to structural transformations (structural operations); concessional lending operations (marginal lending facility).

A prerequisite for ensuring a balance between the supply and demand of money is the availability of a reasonable methodology for assessing the demand for it. In the 1990s, when assessing it in the Uzbek economy, a systemic mistake was made in that the demand for money was determined on the basis of GDP dynamics. Accordingly, when this indicator fell, a policy of compressing the money supply was implemented, which led to an increase in the interest rate and a significant budget deficit as a result of the inability of enterprises to pay taxes in cash during the total barterization of the economy. But it should be taken into account that it was during this period that the volume of intermediary transactions increased, the stock market developed, as well as the land and real estate markets. In such conditions, the fall in GDP was accompanied by an increase in the volume of transactions in the economy. Therefore, the demand for money did not fall, but, on the contrary, increased.

An assessment of the current demand for money based on the turnover of the payment system, which is adequate to the volume of transactions in the economy, can, in our opinion, correctly reflect the needs of business entities for money. The use of a rational methodology for assessing the demand for money based on the dynamics of the volume of transactions (payment turnover) will allow us to conduct an effective and reasonable monetary policy and avoid the mistakes of the 1990s.

The accumulation of significant international reserves by the Central Bank and the prospects for their subsequent growth in the event of high conditions on the world energy market create the opportunity to form an international financial center in Uzbekistan as a tool for increasing the efficiency of investing these reserves through Uzbek financial institutions, bypassing foreign intermediaries. In this regard, the following measures should be implemented: the development of large banking holding companies (with the active participation of the state) and the restructuring of

most commercial banks into other forms of activity, including the establishment of credit cooperation; formation of a large stock exchange with a single depository; development of the national gold market (platinum and diamonds) with quotations in soums; adoption of transparent legislation in the field of regulation of the financial market (stock, banking, insurance and pension savings); introduction of lending practices to foreign countries, including CIS members. Effective management of international reserves must ensure both their safety and high profitability. In this case, first of all, it is necessary to minimize investment risks. In conditions of instability of the interbank lending market, the Central Bank took a number of measures to create new tools to increase liquidity in the economy. But it would be a big mistake to allow investment and management companies into the central bank's refinancing system. This would lead to uncontrollability of the liquidity formation process and create a risk of over-lending to the financial sector.

Integral version of monetary policy

Monetary policy can be defined as the activities of an authorized government structure to ensure the implementation of the functions of money. This approach allows us to connect the functions of money with the objects of monetary policy (see figure).

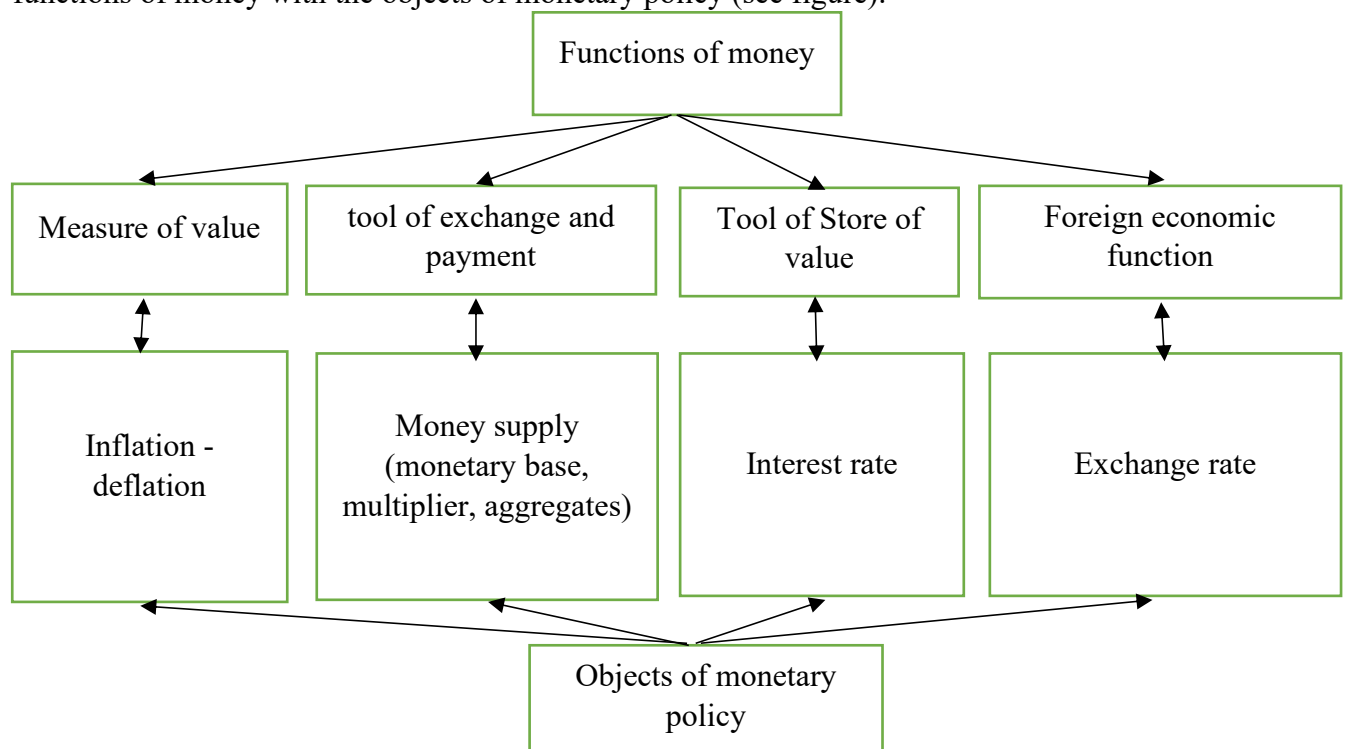


Fig. Relationships between the functions of money and the objects of monetary

The functions of money are not abstract concepts, as is usually assumed, but can have a statistical interpretation. Thus, as a measure of value, money interacts with price dynamics. An excess of the money supply over the commodity supply leads to inflation, and the opposite situation leads to deflation. Accordingly, inflation and deflation are two consequences of the process of mutual coordination of the money and commodity masses.

For the purposes of our analysis, we combine the functions of money as a medium of exchange and a means of payment, since these functions are closely interrelated. The first ensures the sale of goods and services on the market, the second ensures the receipt and repayment of loans. As a result of credit transactions, monetary aggregates are formed that are used to support transactions for the

purchase and sale of goods and services. By the foreign economic function of money, we understand its ability to ensure the conduct of international economic transactions.

The essence of comparing the functions of money and the objects of monetary policy, in our opinion, is the ability to identify the inconsistency of both the first and the second. In particular, the impact of monetary policy on the stability of money as a measure of value by increasing the interest rate actually means an increase in the value of depreciating funds. However, an increase in the interest rate can indeed lead to an increase in household bank deposits and thereby reduce demand pressure in the consumer market. In this regard, an important problem of inflation targeting should be noted: manipulating the short-term interest rate to stabilize money as a measure of value violates the mechanism of accumulation of money and its transformation into capital.

A certain paradox lies in the fact that the dynamics of the value ("price") of money in relation to goods is determined by inflation, and the "price" of money in relation to money capital is the interest rate.

The choice of the exchange rate as an indicator of monetary policy leads to multidirectional values of money (currency) in the domestic and foreign economies. The increase in this imbalance threatens macroeconomic stability.

Violation of correspondence between economic indicators occurs under the influence of certain information. It influences the intensity of processes that form economic variables. Consequently, information processes influence the behavior of economic entities. Therefore, the potential difference "behind" each of the indicators can become critical and lead to turbulence.

The main monetary indicators corresponding to the objects of monetary policy are nonlinearly related to each other. This means that it is impossible to influence all indicators with a sufficient degree of predictability by influencing only one of them. In the general case, the choice of one of the indicators for conducting monetary policy naturally leads to fragmentation of the policy as a whole.

Ensuring the integrity of monetary policy involves introducing significant changes to the methodology of its development and implementation. It is advisable to transition from the formation of monetary policy according to the scheme "goals - quantitative targets - channels of the transmission mechanism - methods - tools" to the scheme "object - goal - indicator - channels of the transmission mechanism - tools". Moreover, indicators directly related to the functions of money should be selected as objects of monetary policy. This approach makes it possible to take into account the interrelationships of the objects of monetary policy during its implementation.

The set of variables that determine a specific monetary indicator partially coincides with the set of variables that influence other indicators. This allows us to isolate the invariant (unchangeable) component of such sets.

In our opinion, at present it is important to overcome the current orientation of monetary policy towards the financial market and ensure its connection with the state of the real sector of the economy. Therefore, as an invariant basis for the variables that determine the four objects of monetary policy, we should choose those that influence the dynamics of profitability of companies in the real sector. It is necessary to take into account that its profitability is related to the bank interest rate through the indicator of net profitability of entrepreneurial activity (NPEA). This indicator is determined by the difference between profitability in the real sector and interest rates on attracted loans. If business activity is carried out without attracting bank loans, NPEA coincides with profitability.

NPEA determines the supply of entrepreneurial activities. The ratio of NPEA and the bank deposit rate connects the real and monetary sectors of the economy. An increase in the difference between profitability and the interest rate increases the use of loans and leads to an increase in the money multiplier. Conversely, a fall in NPEA causes a decline in business activity.

The profitability of the real sector and the interest rate on loans are determined by a partially

coinciding set of variables. But the first ultimately depends on the technological level of the economy, its ability to produce competitive products, and the second - on the volume of money supply, as well as the institutional foundations of the economic system, in particular its ability to ensure repayment of borrowed funds.

With mathematical formalization, we can denote the function of monetary policy as $F(x^1, x^2, x^3, x^4, x^5)$, where: x^1 — NPEA; x^2 — interest rate; x^3 — money supply; x^4 — inflation; x^5 — exchange rate. In turn, each of the objects of monetary policy is determined by a set of variables from y^x to y^n . Moreover, some of these variables are common to each of the monetary policy objects, and some are specific. That's why:

$$F(x^1, x^2, x^3, x^4, x^5) = F[x^1(y^1 \dots y^n) x^2(y^1 \dots y^n) x^3(y^1 \dots y^n) x^4(y^1 \dots y^n) x^5(y^1 \dots y^n)]. \quad (1)$$

This dependence can also be formalized using set theory. Let NPEA belong to some set A_s with dimension s , which is a set of the space E : $A_s \subset E$. Then $A_s \subset A_m \subset A_k \subset A_i \subset A_p \subset A_n$, (2) where: A_s is a set of NPEA variables; A_t is the set of interest rate variables; A_k is the set of money supply variables; A_i is the set of inflation variables; A_p is the set of exchange rate variables; A_n is a set of monetary policy variables.

When developing and implementing monetary policy, one should take into account a more precise interpretation of the efficiency of markets and the rational behavior of economic entities. In the traditional sense, markets are considered efficient if they take into account all incoming information in prices. In our opinion, this approach ignores the fact that the increasing complexity of information processes constantly creates new risks. Accordingly, financial markets operate under the constant threat of the emergence and implementation of new risks. Therefore, these markets are characterized by a high probability of strong and unforeseen fluctuations in the market situation, and risks cannot be measured by the dispersion of the probability distribution, since there are no statistics on their manifestation. In particular, this kind of risk was created by the securitization of banking assets and collateral transactions with structured financial instruments.

Business entities tend to take into account in their activities only those risks that they have encountered previously. Therefore, they do not behave rationally in relation to new risks. Thus, the risk of a systemic crisis as a result of the widespread use of hedging instruments was not correctly assessed. In this case, the risk is not destroyed, but moves between market participants along the trajectory of a boomerang. Overcoming the global financial crisis requires monetary authorities to implement new methodological approaches to monetary policy and improve its tools, methods and mechanisms. Moreover, it is important to draw clear conclusions from the theoretical and practical mistakes made in the pre-crisis period. We must not allow excessive intertwining of the banking sector and the stock market, widespread use of financial instruments as bank collateral, and also reduce the ability of central banks to control the formation of liquidity.

Taking effective measures to prevent future global financial crises will require active international cooperation, as large-scale as the holding of the Bretton Woods and Jamaican international conferences. This will allow us to solve a number of problems that until recently have not received due attention. For example, control over the formation of international liquidity as a result of the multiplication of reserve currencies should be ensured. This will most likely necessitate the elimination of offshore banking zones (a number of developed countries, in particular Germany and France, have already made such proposals). Their activities not only weaken control over international liquidity, but are, in fact, unfair competition in the field of taxation. It is also necessary to unify the requirements for the quality of bank collateral and prevent the use of securities issued during the securitization of issued loans to secure new loan obligations.

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