

Financial and Banking Services Market

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**UNCONVENTIONAL MEASURES
OF MONETARY POLICY:
EXPERIENCE OF THE FEDERAL
RESERVE SYSTEM OF THE UNITED STATES**

Abstract

The preconditions, causes and peculiarities of the global financial and economic crisis created the basis for the withdrawal of central banks from their traditional limited range of instruments of monetary influence on the economy and the transition to the active use of unconventional monetary policy measures. The Federal Reserve was the first central bank which used the unconventional measures of monetary policy as a key factor in overcoming the recession and bringing the US economy to a sustainable growth path. The traditional instruments of monetary regulation during the period of aggravation of financial crisis on the money markets turned out complete ineffective, that had the destructive consequences for the economy. That is why so important is the analysis of the reasons for this ineffectiveness and the necessity of use of unconventional instruments. The practical mechanism of using such unconventional instruments of the Fed includes such as large-scale asset purchases and FOMC's forward guidance about intentions. And it is hard to underestimate the role of these tools in the withdrawal of the American economy from the state of recession. Also important are innovative credit policy programs that have been used by the Federal Reserve during the period of growing crisis, in terms of increasing the effective-

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ness of its impact on the financial stabilization of the banking system, providing markets with liquidity and stimulating domestic demand. The use of unconventional monetary policy instruments aims to achieve a wide range of strategic goals that include not only price stability but also economic growth and low unemployment. Thus, based on the powerful influence of the Fed's monetary policy on the dynamics of the main economic parameters, it is expedient to apply a dual mandate in formulating the strategic goals of the central bank.

Key words:

Federal Reserve, monetary policy, interest rate, unconventional measures, financial crisis, quantitative easing, lending, economic growth, financial stability, dual mandate.

JEL: E44; E50; E52; E58; G21.

Introduction

An important aspect of the regulatory influence of the central bank on the economy is the well-timed response to any development of the crisis on the financial markets in order to minimize the risks of a banking system collapse and the creeping of the economy into a long-term recession. In addition, it is important not only to maintain macroeconomic and financial stability, but also, as the experience of the global financial and economic crisis has shown, to ensure the recovery of the appropriate amount of credit investments into the real economy sector, which is determined by the important role of the central bank in the process of implementing a stimulating monetary policy.

In this context, it must be noted that the financial crisis has greatly changed the nature of the functioning of the world banking system. Previously, central banks used mainly one tool – short-term interest rates, and the main goal was only to ensure price stability, and it was believed that all other tasks were achieved automatically. However, the large-scale crisis in the banking sector and the economies of developed countries has ended with these ideas. The latest realities of world economic development in the post-crisis period have radically changed the approaches to understanding the role of central banks in ensuring financial stability and monetary stimulation of the real sector of the economy.

Indeed, the activation by the central banks of the developed countries of all possibilities of influence of monetary regulation on the dynamics of economic processes during the period of crisis has enabled to create the effective measures of macroeconomic policy both at the level of central banks and governments. Particularly significant was the departure from the traditional limited range of instruments of monetary influence on the economy and the active use of the measures of unconventional monetary policy as a key factor in overcoming the recession and the bringing of the economy on the path of sustainable growth. Therefore, the study of positive experience and taking into account possible contradictions and negative points in the practice of implementing such a policy in developed countries should become a subject of particular attention both in the course of scientific research and on the part of the government and the banking sector in Ukraine. This is due to the insufficient level of development of the institutional framework for using monetary instruments to overcome negative effects and processes in the domestic economy.

The high level of openness of the Ukrainian economy and its significant integration into the world economy determine the vulnerability of the national market to external risks, and hence its dependence on factors of global influence, which include the main trends of the development of the world economy and monetary policy of the central banks of developed countries. The key role in this policy is played, of course, by the US Federal Reserve, whose regulatory influence of monetary measures is not confined exclusively to the national market, but is global in scope, considering both the scale of the US economy and the status of the dollar as a world currency. Therefore, it is not surprising that the monetary policy of the Fed defines, in essence, the main trends in the development of the entire world economy.

The study of monetary policy in the period of crisis in the financial markets is devoted to a significant number of publications of leading scientists, among which can be noted works by such authors as B. S. Bernanke, J. Yellen, D. E. Lindcey, F. S. Mishkin, C. Rosa, J. B. Taylor, M. Friedman et al. However, an important aspect of this issue is the study of the experience of the leading central banks of the world regarding the possibility and necessity of expanding their mandate and use of the newest, non-traditional tools of monetary influence on the economy, as well as an analysis of possible ways of using this experience in domestic conditions complicated by the negative factors of low institutional development of the financial market and the insufficient level of central bank independence from political decisions. Therefore, the purpose of this study is to determine the peculiarities of the use of unconventional tools for the implementation of the monetary policy of the US Federal Reserve in the period of the global financial crisis and in the post-crisis period, assessment of changes in the Federal Reserve's application of its mandate in connection with monetary regulation of the economy, as well as an analysis of its impact on the US financial market and on the global economic development trend.

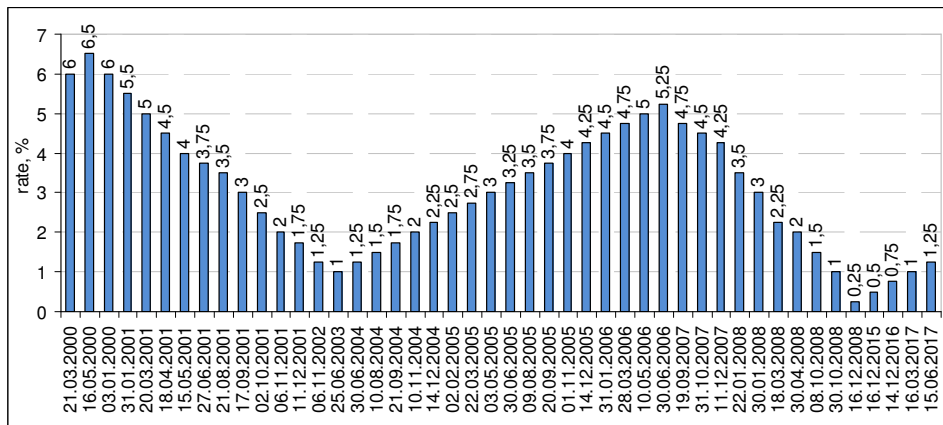
1. The Fed's monetary policy on the eve of the crisis

The formation of the latest approaches to monetary policy dates back to the turn of XX and XXI century, when in the United States, after the collapse of the dotcoms in 2000, as well as the terrorist attacks in 2001, as a result of the turmoil in the financial markets, there was a serious threat of decline in business activity, the emergence of a long-term recession in the economy and the rise in unemployment.

In order to avoid these threats and stimulate economic growth, the Federal Reserve introduced a number of measures within the framework of the traditional monetary policy, the main among which was the consistent reduction of the discount rate. In June 2003, federal funds target rate for the first time reached the lowest level for the last half-century – 1% (Figure 1).

Figure 1

FOMC's target federal funds rate



Source: Board of Governors of the Federal Reserve System: <https://www.federalreserve.gov/monetarypolicy/openmarket.htm/>

As a result, the supply of money increased significantly, and an excess of liquidity appeared on the financial market. The purpose of such measures of the Federal Reserve was to revive economic activity through the use of cheap credit resources by businesses and households, which would have to show a stimulating effect on production and sales.

That was the logic of the conventional monetary policy at that time – low interest rates as a guarantee of economic growth. However, the further development of events essentially overturned traditional ideas about the ability of the central bank to achieve the desired results with the help of conventional instruments.

The active use of the interest rate as the main tool of the monetary policy of the Fed did not achieve the expected goals. Commercial banks and other institutions of the financial market, using low interest rates and having the opportunity to invest freely in the real sector, instead, turned their credit policies in the opposite direction. They began to actively issue mortgages, secured with real estate, the prices of which had the highest growth trends. Such lending activity of banks was also heated by the speculative attitude of market participants, when the acquisition of real estate was carried out with the view of its further resale. At the same time, the requirements of banks to potential borrowers were significantly underestimated; solvency of clients was not analyzed, and widely used the practice of lending housing without a down payment and without supporting documents on income of borrowers.

In other words, loans were massively given to borrowers with a dubious financial condition, which did not allow waiting for timely repayment of funds. At the beginning of 2001, the share of such loans in the structure of mortgage loans of banks amounted to about 8%, and in 2005 – already 20%. Minimization of risks for such loans was carried out through the issuance of derivative securities – mortgage bonds, which, due to unjustified high ratings of leading rating agencies, were considered to be reliable and were bought by many investment and pension funds and commercial banks around the world. In this way, the risk of mortgage lending in the United States was extended to the rest of the world, which determined the global nature of the future crisis, turning it from a purely mortgage crisis to the global financial crisis.

However, in the perception of the Federal Reserve, the true causes of the crisis were not monetary policy, which was considered by the Fed leadership as adequate to the weak macroeconomic conditions of that period. The Fed's reason for the crisis was the structural vulnerability of the financial system. In particular, then-chairman of the Federal Reserve B. Bernanke noted the lack of direct ties between soft monetary policy in the years preceding the crisis and the rise in real estate prices (Bernanke, 2011). Moreover, it was argued that rather the inflow of international capital and its ineffective use served as the cause of macroeconomic and financial instability. In fact, subsequently designated by the US government, the Federal Commission to investigate the causes of the finan-

cial crisis in the United States put a significant share of responsibility on the Federal Reserve for allowing shoddy mortgage lending (The Financial Crisis Inquiry Commission, 2011; Chan, 2011).

The weaknesses in the Fed's regulation allowed the excessive activity of American banks in the mortgage lending market, which eventually led to overheating of the market and the growth of inflationary processes. In order to avoid this, the Federal Reserve has begun a process of gradually raising interest rates. In 2006, a year which preceded the beginning of the crisis, this process reached its peak – the Fed's federal funds target rate was increased to 5.25% (Figure 1).

However, this only led to deterioration in the situation, causing an increase in interest rates on loans and resulting in excessive payments to borrowers. Monthly interest payments on loans grew by about a third, which led to an increase in default rates. In addition, the overheating of the mortgage market due to excess supply has led to a decline in real estate prices, which also led to massive non-payment of loans. This, in turn, led to a sharp aggravation in the financial condition of banks and the depreciation of their assets, as well as to the decline in ratings of securities issued by them and the value of these securities.

The depreciation of the assets of a significant amount of market participants who have invested in collateralized mortgage obligations has led to a sharp increase in demand for liquidity, and hence to an increase in interest rates on the money market. Mortgage-backed securities were ceased to buy, as a result of which the banks incurred multibillion losses, that is, the real world financial crisis began. It caused stock indexes to fall, deflation, collapse in raw and commodity markets, the recession in the global economy, the bankruptcy of leading world banks, and an increase in uncertainty about the security and reliability of global financial assets. Thus, traditional approaches to the implementation of monetary policy by the Federal Reserve through the application of interest rates as the main instrument of influence on the economy turned out to be not only ineffective, but also led to results that are opposite to the expectations.

2. Challenges for the Federal Reserve's monetary policy during the financial crisis

At the beginning of the mortgage crisis, the Federal Reserve acted first with traditional methods of monetary policy. First of all, the federal funds target rate was lowered: first to 4.5% (in October 2007), and later to 2.25% (in March 2008). This was done to prevent a collapse on American stock exchanges. The situation in this period continued to deteriorate, so the Fed continued to consistently lower its interest rate in order to create the appropriate monetary conditions for the economy to withdraw from the recession. Already in December 2008, the

interest rate was reduced to 0.25%. Such a reduction in rates was the most radical in the history of the United States. It should be noted that at this level the Federal Reserve kept the rate for the next seven years (Figure 1).

In addition, in order to improve the situation in the banking system, direct injections of funds were made through various traditional monetary policy instruments: through repo auctions, the discount window, credit auctions, and currency swaps. However, the lowering of interest rates on which banks received loans and mitigating the Fed's monetary policy did not bring the expected results. For example, the intention of the Federal Reserve to financially support the bank J.P. Morgan Chase & Co, with buying for \$ 236 billion of investment bank Bear Stearns, has caused a sharp drop in exchange quotations of both banks.

Therefore, despite the Federal Reserve's injection of large inflows into the financial sector, the situation did not improve, and the money markets did not react to such massive intervention. The rates of interbank lending due to the crisis of confidence remained higher than the monetary authorities would like. Nevertheless, at the height of the financial crisis in 2008, the emphasis of the Fed's monetary policy was still on lending to banks – the amount of lending to depository institutions rose sharply, while the portfolio of U.S. Treasury securities reduced almost twice.

During this period, the United States experienced a period of sharp decline in the level of domestic investment, the amount of savings, the reduction of consumer spending due to aggravation of the problem of unemployment and low rates of income. In this regard, the Fed begins to realize that only the lowest interest rate is clearly not enough to counter the financial crisis. Indeed, due to traditional lending mechanisms, the Fed could not provide the economy with significant liquidity so that, to apart from low interest rates, the banking system could still provide a broad supply of money for the real sector of the economy.

So the old recipe for implementing monetary policy has stopped working properly. They did not allow the Federal Reserve to maintain financial stability and solvency of the banking system, price stability and the normal functioning of financial markets. This meant the need to find the newest approaches to monetary regulation that would have had a more effective impact on the state of the economy and would help to overcome the financial crisis more quickly.

3. Non-traditional approaches to the Federal Reserve's monetary policy

In order to mitigate the impact of the crisis on the financial system and the economy, the Federal Reserve has lowered the discount rate, despite the risks of accelerating inflation. However, in conditions of close to zero rates, when there is a so-called liquidity trap, this tool of monetary policy can no longer exert an effective influence on financial markets and the course of economic processes. This meant that the Fed had to look for new non-traditional approaches that would bring monetary policy to a new level that is more suitable for effective anti-crisis regulation.

One of the main among such unconventional approaches was the Fed's quantitative easing measures (QE) or, according to the Fed's terminology, large-scale asset purchases (LSAP). They provided three programs for the massive purchase of treasury securities, mortgage backed securities, collateralized by mortgage loans, and obligations of mortgage agencies. The mechanism for implementing these programs is that the Fed redeems mortgage securities or government bonds in amount, which are announced in advance in order to reduce their profitability, and thus reduce interest rates on business securities.

By raising demand for government bonds, the Fed thus reduces their yield by forcing investors to look for alternative investment options, including stocks and corporate bonds, which promotes stock market growth and stimulates business activity in the real sector. On the other hand, the purchase of mortgage securities by the Federal Reserve contributes to lower mortgage rates for consumers, and, consequently, the restoration of the real estate market.

In the process of implementing programs of quantitative easing, the purchase of assets is carried out by the central bank through the creation of new money, which, in turn, increases the balance of the Federal Reserve. And this leads to an increase in the money supply in the economy. The main strategic goal of the application of this monetary policy tool was to overcome the consequences of the financial crisis and expand the resources of commercial banks by increasing the money supply. And this should help boost the lending of the real sector and move to sustainable economic growth and lower unemployment.

Thus, within the first stage of quantitative easing (QE1) during 2009, the Fed has purchased mortgage-backed securities worth 1.4 trillion dollars and treasury bonds of 300 billion dollars. This program was aimed at rescuing large corporations, banks and private companies by redemption of their depreciated debts. In addition, it was intended to stimulate mortgage lending and revitalize the real estate market. In August 2010, the Fed decided to maintain the achieved amount of liquidity at the same level by reinvesting the main payments on agen-

cies bonds and mortgage securities in US Treasury bonds. By the time the program QE1 was completed, the value of government bonds and bonds of federal agencies on the Fed's balance sheet grew by 4 times, which contributed to a decrease in the general level of interest rates on the money market, but did not provide a powerful impetus for economic growth.

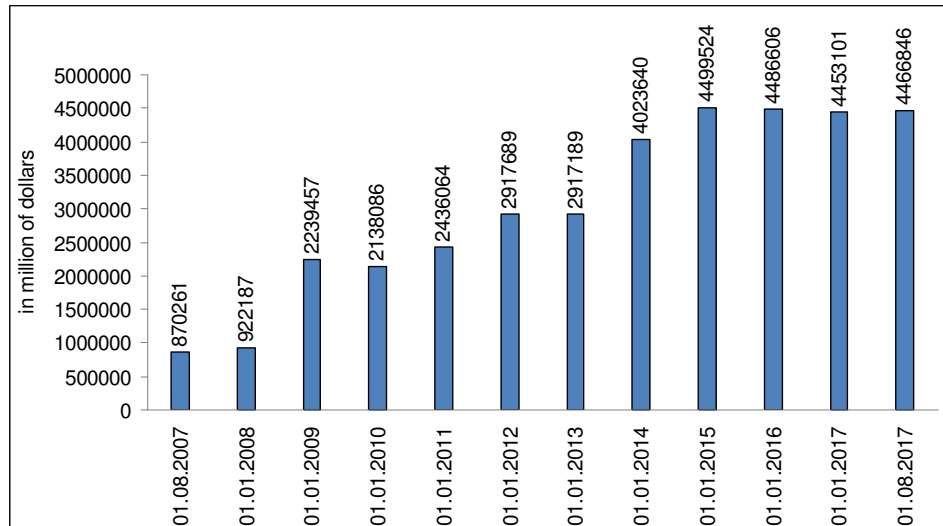
Faced with the very slow recovery in production and employment, the Fed announced in November 2010 further expansion of its balance sheet by acquiring an additional portion of long-term US Treasury bonds. During the second stage of quantitative easing (QE2), an additional 0.6 trillion dollars of injections into the economy were provided, that is, about 75 billion dollars monthly. This program lasted from November 2010 to June 2011. In addition, QE2 provided reinvestment for another 300 billion dollars of the first stage of the program. The main goal of this phase of quantitative easing was to stimulate the American economy, which recovered from the recession at too slow pace.

The third phase of quantitative easing (QE3) began in September 2012 and lasted until the end of October 2014. Within this phase of the program the Fed purchased securities worth 1.14 trillion dollars. First, the Fed bought collateralized mortgage obligation worth 40 billion dollars per month and U.S. Treasury bonds of 45 billion dollars per month. At the same time, it was announced that the Fed will reinvest money received from interest rate payments on existing mortgage bonds to purchase new long-term mortgage-backed securities (MBS).

During 2014, the Fed gradually reduced the amount of purchases, finally shutting them off on October 29, 2014. The statement of the Federal Open Market Committee (FOMC) noted that economic activity is expanding at a moderate pace, labor market conditions improved somewhat further, with solid job gains and a lower unemployment rate, household spending is rising moderately and business fixed investment is advancing, inflation has continued to run below the Committee's longer-run objective (FOMC, 2014). The Committee also believed that the economy had a sufficient dynamics for further progress towards maximum employment and price stability. In line with this assessment, the Fed decided to conclude its asset purchase program QE3, which means completing the quantitative easing policy.

The result of the implementation of the quantitative easing policy was a significant increase in the balance of the Federal Reserve. If at the beginning of the expansion of the subprime mortgage crisis in the U.S., the total assets of the Fed amounted to 870 billion dollars, then over several years of active purchase of securities, this value exceeded several trillions of dollars and today is 4.47 trillion dollars, that is, the total value of the assets of the Federal Reserve increased by more than 5 times (Figure 2).

Figure 2

Total Assets of the Federal Reserve

Source: Board of Governors of the Federal Reserve System: https://www.federalreserve.gov/monetarypolicy/bst_recenttrends_accessible.htm/

The consequent of the interventions was a significant increase in the role of the Fed in the financial system and economy compared with the pre-crisis period. For today, the Fed's balance is almost 24% of the country's GDP, reflecting the wide potential of the central bank to influence all sectors of the market. In fact, during the years of fighting the crisis and stimulating economic growth in 2008–2013, the Fed has created and launched an additional 3 trillion dollars.

It should be noted that these unconventional measures of the Fed's monetary policy combined in a certain way not only quantitative but also qualitative aspects. Quantitative aspects meant purchasing large amounts of asset-backed securities and provided significant increase of the balance sheet of the Federal Reserve. At the same time, the maintenance of the federal funds rate at 0-0.25% percent target range aimed at stimulating of increasing of demand and economic growth.

The qualitative aspect meant a change in the asset structure of the Fed balance sheet. If at the beginning of the crisis, the Federal Reserve kept mostly low-risk and low-yield government bonds in its assets (U. S. Treasury Securities),

then the structure of the investment of the balance sheet was radically changed by increasing the share of various financial instruments in it, in particular collateralized mortgage obligations and other private financial market instruments. For example, mortgage-backed securities (MBS) issued by government-sponsored enterprises Fannie Mae and Freddie Mac were used to support a stagnant real estate market and overall stimulate economic activity in the country.

Such realization of the Federal Reserve's monetary policy was aimed at giving a certain direction to changing market conditions and stimulating business activity in the country. In particular, this policy has led to a decrease in the profitability of treasury and mortgage securities, increasing the economic expediency of investors to change the structure of their investments in favor of assets such as corporate bonds and stocks, that is, in essence, stimulate investment of capital into the real economy. By linking their hopes on economic recovery with the Federal Reserve's efforts on quantitative easing, investors increased their investments in the stocks as a more risky but more profitable ones, while reducing the level of capital investments into more reliable instruments, such as treasury bonds commonly used during periods of greatest uncertainty in the markets.

It is important that as a result of the policy of quantitative easing, the Federal Reserve succeeded in achieving one of the important intermediate goals, namely to reduce the overall price of credit resources, and not only those instruments that participated in the realization of large-scale asset purchases. As a result, since the beginning of 2009, there have been trends in improving lending conditions for businesses and households, not least due to lower interest payments on loans.

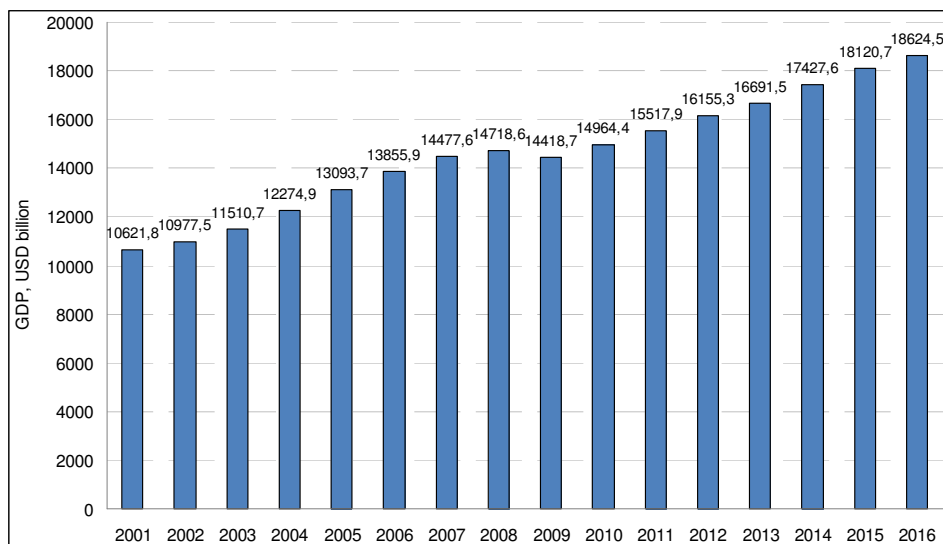
In addition, quantitative easing measures contributed to increasing the liquidity of the banking system, improving the mortgage market, and the emergence of a downward trend in long-term lending rates. After all, reducing the burden of interest rate payments for major groups of borrowers contributed to reducing the share of non-performing loans in credit portfolios of the commercial banks.

It should be emphasized that the results of the application of such unconventional approaches to the implementation of monetary policy were fully justified the expectations of the Fed, reflecting a moderate growth of GDP after the decline in 2009 (Figure 3).

As can be seen from the diagram, in 2009, for the first time in a long history, there was a decline in GDP due to the effects of the financial crisis, but in subsequent years the growth rate was restored completely. It was at the end of 2008 that the Federal Reserve reduced the federal funds target rate to 0.25%, and in the beginning of 2009 when the first phase of quantitative easing had begun (QE1). Thus, the GDP of the country began to grow steadily as a result of the application of measures for large-scale asset purchases, that is to say, an increase in amount and change in the structure of the Fed's balance.

Figure 3

United States Gross Domestic Product



Source: Bureau of Economic Analysis: <https://www.bea.gov/national/index.htm#gdp>.

In the future, the Federal Reserve plans to restore the size and composition of its balance to a more normal configuration as a long-term task. In conditions of liquidity surplus, as an anti-inflationary tool on the money market, the Fed will use a number of mechanisms that do not change the total amount of Fed liabilities, but bound excess liquidity of the commercial banks. In particular, it deals with reverse repurchase agreements (reverse repo) and deposit programs, which will ensure the replacement of bank reserves with the liabilities of the Fed. In addition, in 2008, the Federal Reserve was granted the right to pay interest on required reserves held by commercial banks in the Federal Reserve Banks. The Fed, through a change in the rate on bank reserves, will be able to exercise a downward or upward pressure on the entire range of short-term interest rates, which in turn will also be reflected in long-term interest rates.

In addition to the large-scale asset purchases, other important approaches in the process of implementing unconventional monetary policy has become constant «informing the public of intentions» in the field of monetary policy, that is «Forward guidance» (Federal Reserve System: Purposes and Functions, 2016). In addition to setting the target rate for federal funds, the Federal Open Market Committee influences the functioning of financial markets through informing the

public about its intentions regarding future monetary policy directions. For example, when in the period of decline in production in early 2009, the Federal Open Market Committee saw the promotion of economic growth as the main priority of monetary policy, the announcement to the public proclaimed the Federal Reserve's intention to maintain the federal funds target rate «exceptionally low» for «an extended period».

The purpose of this statement was to force financial market participants to adjust their expectations in such a way that they provided for a longer period of reduction of short-term interest rates than previously expected, which in turn would exacerbate the pressure on long-term interest rates in order to provide more support for recovery of the economy. The fact is that long-term interest rates that have a strong influence on housing demand, capital investment and asset prices depend on current and expected levels of short-term interest rates, such as the federal funds rate.

Therefore, providing clear signals about further changes in the target rate for federal funds can directly affect current interest rates on mortgages, car loans, corporate bonds, state and municipal bonds, that is, they affect the dynamics of economic activity. Therefore, such «informing the public of intentions» is very important for the formation of stable long-term expectations of economic agents regarding the future course of the monetary policy of the Federal Reserve.

4. The newest mechanisms of the Fed's credit policy

It should be noted that positive changes in the American economy were achieved not only through the programs of quantitative easing of the Federal Reserve. The Fed also provided money to the economy through a variety of credit programs. It is about improving existing credit instruments that were at the disposal of the Federal Reserve, as well as on the fundamental change in the technologies used by the main tools of the monetary policy of the Fed, which resulted in the application of its innovative credit mechanisms.

Among the existing lending instruments, the main tool is to use the discount window, which traditionally provided the short-term overnight loans to eligible commercial banks. However, taking into account those problems that accompanied the functioning of the financial market with the beginning of the subprime mortgage crisis in 2007, the Federal Reserve revised its position and allowed banks to obtain liquidity for up to 30 days, and in 2008 this period was increased to 90 days. During this period, the weekly amount of lending to commercial banks within the discount window reached up to 30 billion dollars. In addition, due to the further expansion of the mortgage crisis, the Federal Reserve had to significantly

expand the list of securities that banks could make as collateral for loans received through the mechanism of the discount window. At the same time, it should be noted that depository institutions are not very willing to apply for assistance to the Fed through this mechanism, considering the very fact of such an appeal as a bad signal for market participants about the financial stability of a bank that applies to such loans.

Among the newest Fed's lending mechanisms, the following can be noted: providing funds to commercial banks on an auction basis, issuing loans to primary dealers in the form of the discount window, direct loans to borrowers and investors in order to reduce interest rates on loans, as well as promoting business and households in obtaining the necessary funds in order to stimulate economic growth.

Under these circumstances, even allowing moderate inflation and lowering the dollar's exchange rate, the main goal of the Fed was to promote the growth of GDP and the gaining of the competitive advantages of American producers in foreign markets, which would improve balance of payments. Therefore, during the financial crisis, the Federal Reserve launched several special credit programs aimed at stabilizing the financial sector, stimulating the lending activity of commercial banks and other financial market participants, as well as revitalizing business activity and increasing domestic demand (Table 1).

Table 1

Federal Reserve Credit Programs during the Financial Crisis

| The name of the program | Loans recipients | The purpose of the program | The term of the program | Lending period | Total amount of loans granted |
|---|--|---|----------------------------|-----------------------------|-------------------------------|
| Term Auction Facility (TAF) | Commercial banks | Providing liquidity to commercial banks on the bail of highly rated securities | December 2007 – April 2010 | first 28 days, then 84 days | \$ 3.8 trillion |
| Term Securities Lending Facility (TSLF) | Major commercial banks and brokers-dealers (market makers) | Granting high-liquid securities of the Fed (government bonds) in exchange for less liquid securities (MBS, municipal and corporate bonds, etc.) | March 2008 – February 2010 | 1 month | \$ 2 trillion |

| The name of the program | Loans recipients | The purpose of the program | The term of the program | Lending period | Total amount of loans granted |
|--|---|---|--------------------------------|--------------------|-------------------------------|
| Primary Dealer Credit Facility (PDCF) | Major commercial banks and brokers-dealers (market makers) | Providing loans backed by a wide range of low-liquid securities (which had an investment rating) | March 2008 – February 2010 | overnight | \$ 9 trillion |
| Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) | Commercial banks, brokers-dealers and branches of foreign banks | Support of money-market mutual fund Granting loans to commercial banks on asset-backed commercial paper (ABCP) purchased from funds | September 2008 – February 2010 | from 1 to 270 days | \$ 217 billion |
| Commercial Paper Funding Facility (CPFF) | A specially created subsidiary company of the Fed – CPFF LLC | Support for the market of short-term commercial obligations (bills). CPFF LLC buys bills from their issuers | October 2008 – February 2010 | 3 months | \$ 738 billion |
| Term Asset-Backed Securities Loan Facility (TALF) | Commercial banks, trusts, financial and commercial companies, government agencies | Stimulating lending to US consumers and small businesses. The loans were issued on bail of newly issued securities (ABS), collateralized by car loans, student loans, credit cards and business loans | October 2008 – February 2010 | up to 5 years | \$ 71 billion |

Sources: Board of Governors of the Federal Reserve System: www.federalreserve.gov; Zakharov, P. V. Monetary-Credit Policy of the Federal Reserve System of the USA during the Modern Period (2007–2013). The Problems of National Strategy. – 2013. №6. p. 197; Felkerson J. A Detailed Look at the Fed's Bailout by Funding Facility and Recipient. Working Paper: Levy Economics Inst. 2011. December. № 698. 35 p.

Since December 2007, the Federal Reserve has begun the Term Auction Facility program (TAF), which provided loans to commercial banks for up to 28 days through auctions that were held regularly every two weeks. At these auctions, the Fed offered the participants a fixed amount of liquidity received by those borrowers who offered the highest interest on the loan, but the average interest rate on this loan program was lower than the Fed's target federal funds rate. In addition, due to the anonymity of participation in the Term Auction Facility, the problem of reputational losses that accompanied the appeal of commercial banks to the discount window of the Federal Reserve could be solved.

The next most advanced credit program offered by the Fed was the Term Securities Lending Facility (TSLF), which began working in March 2008. Its essence was lending, on a regular basis, once a week, although not money funds, but United States Treasury securities (US Treasuries). At the same time, the list of securities accepted by the Fed as collateral was expanded. These included mortgage-backed securities of Fannie Mae and Freddie Mac, as well as commercial mortgage-backed securities with a rating not lower than AAA, that is, they are not the most highly liquid bonds traded on the market with a significant discount. The feature of this program was that it provided for the exchange of one bond to another, and thus allowed liquidity to be obtained in all markets, and not only in the money markets. At the same time, the negative aspect of this program was that the Fed provided government bonds to primary dealers and instead took less liquid securities, and consequently the quality of the Fed's balance sheet has worsened significantly.

Another program, the Primary Dealer Credit Facility (PDCF), launched in early March 2008, aimed at extending the range of borrowers who would have access to Fed's credit resources. The expediency of introducing this program was due to the fact that not every primary dealer in the US is a commercial bank, and therefore «non-bank» primary dealers did not have access to Fed loans on a collateral basis for various low-liquid securities. Within the Primary Dealer Credit Facility the Fed significantly expanded the possibility of access to the modified discount window, allowing new entrants there, and also supplemented the list of securities serving as collateral.

Fed also implemented such program as Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) started in September 2008 with the deepening of the financial crisis after the bankruptcy of Lehman Brothers. The purpose of this program was to assist the mutual funds of the money market, which as investment institutions play a very important role in the US financial market and faced with a lack of liquidity at a time when many investors began to withdraw their assets. This program provided loans to commercial banks for the purchase of commercial asset-backed securities from money market mutual funds.

The next step in the same direction was the launch in October 2008 the program of Commercial Paper Funding Facility (CPFF). Under this program, the Fed financed the purchase of blue chips, unsecured and asset-backed securities by primary dealers. By stimulating the demand for such securities, the Fed sought to maintain liquidity in the short-term financial markets and increase the availability of credit resources for various categories of borrowers who could use these securities as collateral in obtaining loans.

In March 2009, the Fed launched Term Asset-Backed Securities Loan Facility (TALF). Its goal was to stimulate, first of all, consumer lending to households and respond the small business' needs of loans. In order to implement this program, the Federal Reserve Bank of New York supplied a loan for the issue of asset-backed securities. The assets for these securities were student loans, car loans, credit cards and loans guaranteed by the Small Business Administration. The ultimate goal of the program was to stimulate an increase in consumer spending to boost economic growth.

It should be noted that in addition to general credit programs designed for a wide range of financial market participants, the Federal Reserve, during the financial crisis, had offered several targeted credit lines designed to support some large, system-building credit institutions that are called in the United States «too big to fail». The largest recipients of such assistance from the Fed were the investment bank Bear Stearns and the insurance company AIG.

An analysis of the Fed's programs to overcome the financial crisis allows us to conclude about such their features, as diversity, which is determined by the correction of the measures applied to the current situation, as well as the target orientation of the programs, due to the institutional specifics of the US financial market. Thus, the feature of the Fed's unconventional monetary policy is that, unlike many other central banks, the purpose of the Fed policy was to increase the liquidity of both banks and non-bank financial organizations: primary dealers (Term Securities Lending Facility, Primary Dealer Credit Facility); money market mutual fund (Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility); federal mortgage agencies (Purchase of Agency Debt and Agency MBS), which determined by that huge role played by non-bank financial institutions in the US economy.

The innovative credit mechanisms offered by the Federal Reserve during the financial crisis have allowed the restoration of the functioning of the main segments of the financial market – interbank lending, the commercial paper market and the market of asset-backed securities. And in addition, these mechanisms contributed to the optimization of bank lending to businesses and households. As the conditions for the functioning of the financial market improved, the Fed made a decision to gradually turn off these mechanisms, as well as to reduce the conditions for the lending through the discount window to the pre-crisis level. At the same time, the Fed's governance emphasized that the closure of emergency lending programs and the return to pre-crisis conditions for obtaining loans through a «discount win-

dow» were the answer to improving the conditions on financial markets, rather than mitigating the monetary policy of the central bank itself.

Therefore, the Fed had to actively play the role of the lender of last resort for those banks and non-bank financial institutions that had problems with liquidity, as the market for interbank loans stopped functioning normally due to the dominance of panic in it and the distrust between depository institutions during the period of crisis aggravation.

As a result, a significant part of the assets of the Federal Reserve were loans to financial market participants, primarily banks. In this way, the financial stability of the banking system was properly supported through the «clearing» of bank balances from toxic assets, which was carried out by providing liquidity and redemption of impaired securities. These measures allowed to avoid massive bankruptcy of banking institutions under the burden of depreciated assets.

Thus, special credit mechanisms have allowed to provide the financial stability of the banking system and to stimulate the increase of lending to the real sector of the economy, which, along with large-scale asset purchases (quantitative easing) led to a significant magnification of the Fed's balance. In turn, this had the consequences for the growth of the monetary base, and through the action of the money multiplier – increase of the money supply. So the active use of unconventional instruments by the Federal Reserve determined the expansionist orientation of monetary policy, which resulted in overcoming the recession in the economy and the growth of employment rate (Table 2).

Table 2

**Impact of Fed's monetary policy on the dynamics
of key economic parameters (Billions of Dollars)**

| | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|-------------------------------------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| Total Assets of the Federal Reserve | 870,261 | 922,187 | 2239,457 | 2138,086 | 2436,064 | 2917,689 | 2917,189 | 4023,640 | 4499,524 | 4486,606 | 4453,101 |
| Monetary Base | 847,094 | 854,997 | 1737,552 | 2018,733 | 2065,987 | 2659,028 | 2760,975 | 3749,522 | 4037,162 | 3795,997 | 3609,636 |
| M2 Money Stock | 7061,8 | 7466,7 | 8240,9 | 8429,3 | 8816,6 | 9730,7 | 10476,4 | 11071,2 | 11731 | 12452,8 | 13260,6 |
| GDP | 13855,9 | 14477,6 | 14718,6 | 14418,7 | 14964,4 | 15517,9 | 16155,3 | 16691,5 | 17427,6 | 18120,7 | 18624,5 |
| Unemployment Rate, % | 4,6 | 4,8 | 7,9 | 9,9 | 9,2 | 8,3 | 7,9 | 6,6 | 5,6 | 4,9 | 4,8 |
| Inflation Rate, % | 3,2 | 2,8 | 3,3 | -0,4 | 1,6 | 3,2 | 2,1 | 1,5 | 1,6 | 0,1 | 1,3 |

Source: Federal Reserve Bank of St. Louis: <https://fred.stlouisfed.org/>

As we see in the table, the growth of the balance of the Federal Reserve in the last period was unprecedented. However, at the same time, it gave impetus to stimulate economic activity in the country and reduce unemployment despite the fact that the level of inflation remained extremely low. This can be considered a very successful implementation of the strategic objectives of monetary regulation. After all, the results of such measures Fed are not limited only to an increase in monetary resources in the economy, but also determined by the actual salvation of the banking system of the country from the inevitable collapse, which would manifest itself in the massive bankruptcy of banks. Providing financial institutions with money funds in the order of redemption of impaired securities allowed to clear their balances from impaired assets and became the main factor in ensuring their financial stability.

5. Changes in the priorities of the Fed's monetary policy

The Fed's actions to overcome the effects of the financial crisis through the use of unconventional instruments of monetary policy have led to the evolution of approaches to the primary goals of the central bank. According to the Federal Reserve Act the Board of Governors of the Federal Reserve System and the Federal Open Market Committee shall maintain long run growth of the monetary and credit aggregates commensurate with the economy's long run potential to increase production, so as to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates.

Specific numerical parameters of these goals are determined directly by the Fed. Thus, members of the Federal Open Market Committee submit their proposals in the form of «Summary of Economic Projections» on economic activity and unemployment rate four times a year. For example, in 2016, committee members rated an acceptable long-term unemployment rate from 4.7 to 5.8%, with an average rating of about 4.8%. In 2017, the unemployment rate forecast was lowered by the Federal Reserve to 4.2 to 4.3%. As for the level of inflation, then its target indicator, which is determined by the consumer price index (Personal consumption expenditures price index – PCE) the Fed in 2017 estimates in the range from 1.6 to 1.7%.

In the perception of the Federal Open Market Committee (FOMC), the double mandate is interpreted as a responsibility to bring actual unemployment and inflation closer to a long-term balanced unemployment rate. This means the level of unemployment, in which the economy can function without pressure to shift the price level to either side. Therefore, the Fed's monetary policy is not limited to the strategic objective of inflation targeting, but also has to affect long-term

balanced rate of unemployment, a unique situation that is not inherent in the practice of monetary regulation of central banks of other developed countries.

As a result, the Federal Reserve, due to the existence of such a comprehensive mandate, is forced to take an active stance on maximizing the use of regulatory mechanisms for monetary policy. After all, if the central banks of other developed countries usually set a rather narrow target for limiting inflation in the country, the Federal Reserve has a much more difficult task of stimulating economic growth and maintaining a high level of employment.

The duality of the mandate aims to maximize the effectiveness of the Fed's monetary policy. In the opinion of the US legislature, the concentration of the central bank solely on price stability can contribute to frequent and deep recessions of economic activity and employment, which, in turn, will aggravate the long-term inflation.

In this regard, the Federal Open Market Committee gives a clear understanding to market participants that Fed is ready to take real practical steps to further mitigate monetary policy if the US economy continues to grow at a slow pace and inflationary risks will be insignificant. The Federal Reserve believes that in order to further improve the financial conditions the Federal Reserve may begin to provide more specific benchmarks in terms of which the Fed intends to maintain at its current level the base rate and amount of securities on its balance sheet. In other words, it is about restarting the purchase of securities, such as US Treasury obligations.

In times of aggravation of the financial crisis, the determining of the target priorities of the Federal Reserve's monetary policy was particularly important. It was declared that it would be inappropriate to raise the basic interest rate from the current 0-0.25% until the unemployment rate remains above 6.5%. And inflation between one and two years ahead is projected to be no more than a half percentage point above the Committee's 2 percent longer-run goal. In other words, we can see that the labor market is chosen as the priority objective of monetary regulation, which is now acquired exclusively from soft forms, and all the efforts of the regulator are aimed at reducing unemployment. Essentially, it is about the Federal Reserve's commitment to provide a soft monetary policy until the unemployment rate falls to 6.5%. Thus, the Fed has made the unemployment rate one of the key targets for monetary policy, which is definitely unprecedented step not only for the US but also for the central banks of other countries.

Of course, the fact that, despite the measures taken for quantitative easing and innovative lending mechanisms, the US economy has begun to show significant dynamism only from 2013, raises the question to what extent the stimulating policy of the Fed contributed to this and whether this growth should not be attributed to account for more substantial reasons such as deferred demand and structural upgrades. However, such considerations do not mean that the unconventional monetary policy of the Fed was superfluous, since it has created a very

favorable foundation for the revival of the economy. And when the US economy, after long expectations, began to show a fairly dynamic pace of development, the perseverance and consistency of the Fed in pursuing an expansionist monetary policy seems to be justified.

The correctness of the selected target priorities of the Fed's monetary policy has been confirmed by the results of its impact on the economy. First, it is preventing the collapse of the banking system and the stabilization of financial markets, reducing systemic risks and restoring pre-crisis indicators of the financial sector. Secondly, it is a prevention of the threat of full-scale deflation, which would have catastrophic consequences for the American economy, comparable to the Great Depression. Thirdly, it is a relatively quick overcoming of the recession in the real sector by reducing interest rates, boosting bank lending and stimulating domestic demand, which was due to the creation of favorable conditions for the production growth in all sectors of the American economy.

It should be noted that the Federal Reserve's ability to carry out these tasks is backed up by reliable institutional principles that ensure the central bank's independence from political pressure. The independence of the Federal Reserve includes: operational independence, that is, the independent choice of monetary policy instruments to achieve legally established goals; the impossibility of Congress to dismiss Fed's leaders from their posts only because of the government's disagreement with their views on monetary policy; self-determination of the budget and Fed's staff; the establishment of fixed, sufficiently long and overlapping periods of tenures of the members of the Board of Governors of the Federal Reserve System. At the same time, operational independence is aimed at isolating monetary policy from the impact of short-term political goals, making it impossible for the central bank to be used in the financing of the budget deficit. It also allows long-term solutions to be taken bearing in mind that targets for inflation and unemployment rate must always be carried out, and not only in a particular short period.

Conclusions

Thus, the experience of the global financial and economic crisis and the post-crisis recovery of the international economy showed that the efforts of the central banks of the leading countries of the world, primarily the US Federal Reserve, in maintaining price stability, were clearly not enough to overcome the effects of crisis and create the conditions for sustainable production growth. Practice has shown that the choice of the main strategic objective of the monetary policy to ensure low inflation does not help to solve more important tasks of ensuring production growth and reducing unemployment. Under these circum-

stances, there are vital needs to review the tasks of central banks, which are already much more focused on stimulating the economy performance.

Under conditions where deflation is becoming a much more serious threat than inflation and interest rates are close to zero, central banks are simply forced to use a wider range of unconventional monetary policy instruments and methods, as well as extend their activities to new circles of participants and new sectors of the financial market. It is not just about traditional instruments such as lowering interest rates on deposit and credit operations, but also on the use of the newest tools from the monetary policy arsenal of central banks. These include: large-scale purchases of state and corporate securities, extension of the list of collateralized assets, long-term lending operations aimed at revitalizing the market conditions in the real sector, stimulating investment activity and increasing of demand for risky assets.

The use of such instruments, first of all, by the US Federal Reserve, and later by other central banks of the leading countries of the world, reflects, in essence, the formation of fundamentally new approaches to de facto expansion of the traditional mandate to ensure price stability. This involves a substantial revision of the monetary policy objectives and the inclusion in their composition of stimulating economic growth and reducing unemployment, that is, in essence, the transition to a dual mandate of central banks.

Therefore, the main requirement for effective monetary policy in the post-crisis period is to ensure not only price stability, but financial resilience of the banking sector, as well as active promotion of economic growth. Only on such bases can an effective influence of monetary regulation on the economy be ensured, which is determined by adequate actions of the central bank aimed at maintenance the financial stability of the banking system of the country and sustainable development of the real sector of the economy.

References

1. Bernanke, B. S. (2010). Causes of the Recent Financial and Economic Crisis: Testimony Before the Financial Crisis Inquiry Commission, Washington, D.C., September 02. Retrieved from: <https://www.federalreserve.gov/newsevents/testimony/bernanke20100902a.htm>.
2. Bernanke, B. S. (2011). Global Imbalances: Links to Economic and Financial Stability: Speech At the Banque de France Financial Stability Review Launch Event, Paris, France, February 18. Retrieved from: <https://www.federalreserve.gov/newsevents/speech/bernanke20110218a.htm>.
3. Bernanke, B. S. (2010). Monetary Policy and the Housing Bubble: Speech At the Annual Meeting of the American Economic Association, Atlanta, Georgia,

- January 3. Retrieved from: <https://www.federalreserve.gov/newsevents/speech/bernanke20100103a.htm>.
4. Board of Governors of the Federal Reserve System: Monetary Policy Report to the Congress. – Washington D. C., July 21, 2009 – 56 P.
 5. Chan, S. (2011). Financial Crisis Was Avoidable, Inquiry Finds / The New York Times, January 25. Retrieved from: <http://www.nytimes.com/2011/01/26/business/economy/26inquiry.html?mcubz=1>.
 6. Dokko, Jane, Brian Doyle, Michael T. Kiley, Jinill Kim, Shane Sherlund, Jae Sim, and Skander Van den Heuvel (2009). Monetary Policy and the Housing Bubble, Finance and Economics Discussion Series 2009-49. Washington: Board of Governors of the Federal System, December. Retrieved from: <https://www.federalreserve.gov/pubs/feds/2009/200949/200949abs.html>.
 7. FOMC (2017). Economic projections of Federal Reserve Board members and Federal Reserve Bank presidents under their individual assessments of projected appropriate monetary policy, June. – P. 1–5.
 8. Federal Reserve Act. Section 2A: Monetary policy objectives. The Board of Governors of the Federal Reserve System. Retrieved from: <https://www.federalreserve.gov/aboutthefed/section2a.htm>.
 9. Federal Reserve issues FOMC statement (2012). Washington: Board of Governors of the Federal Reserve System, December 12. Retrieved from: <https://www.federalreserve.gov/newsevents/pressreleases/monetary20121212a.htm>.
 10. Federal Reserve issues FOMC statement (2014). Washington: Board of Governors of the Federal Reserve System, October 29. Retrieved from: <https://www.federalreserve.gov/newsevents/pressreleases/monetary20141029a.htm>.
 11. Federal Reserve System: Purposes and Functions (2016). A publication of the Board of Governors of the Federal Reserve System. – Tenth Edition, October. – pp. 20-53. Retrieved from: <https://www.federalreserve.gov/pf/pf.htm>.
 12. Friedman, M. (1968). The Role of Monetary Policy. The American Economic Review, Vol. 58, No.1. March, pp. 1–17.
 13. Johannsen, B.K. & Mertens, E. (2016). The Expected Real Interest Rate in the Long Run: Time Series Evidence with the Effective Lower Bound / FEDS Notes. Washington: Board of Governors of the Federal Reserve System, February 9. Retrieved from: <http://dx.doi.org/10.17016/2380-7172.1703>.
 14. Lindcey, D. E. (2003). A Modern History of FOMC Communication: 1975–2002 / Authorized for public release by the FOMC Secretariat, June 24.

15. Mishkin F.S. (2011). Monetary Policy Strategy: Lessons from the Crisis. National Bureau of Economic Research: Working Paper. – Cambridge, February.
16. Rosa, C. (2012). How «Unconventional» Are Large-Scale Asset Purchases? The Impact of Monetary Policy on Asset Prices. – Staff Report №560, Federal Reserve Bank of New York, May.
17. Taylor, J. B. (2017). Sound Monetary Policy: Testimony before the Subcommittee on Monetary Policy and Trade Committee on Financial Services U. S. House of Representatives, March 16.
18. Taylor, J. B. (2016). Unconventional Monetary Policy, Normalization, and Reform: Testimony before the Subcommittee on Monetary Policy and Trade Committee on Financial Services U.S. House of Representatives, December 7.
19. The Financial Crisis Inquiry Commission (2011). Final Report of the National Commission of the Causes of the Financial and Economic Crisis in the United States: U. S. Government Printing Office. – Washington, DC.
20. Yellen, J. (2017). The Economic Outlook and the Conduct of Monetary Policy: Remarks at Stanford Institute for Economic Policy Research. – Stanford University: Stanford, California, January 19.

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