TARGETING OF KEY INTEREST RATE AS A SOURCE OF CRISIS

YANA SOKOLOVA
St. Petersburg State University, Faculty of Economics, Russia

Abstract

In response to the world economic crisis of 2008 the authorities of many countries have launched policies of interest rate reduction through large-scale asset purchases on the open market. The paper provides an efficiency analysis of these programs as implemented in the USA, the Eurozone and the UK. It also studies the positive and negative effects of artificial key rate targeting. The author explains how changes of the federal funds rate increased bank interest rate risk and provoked the recession of 2007-2009. The results of this paper show that key interest rate adjustment can be harmful for the whole economy, and especially for financial institutions.

Keywords: interest rate targeting; financial crisis; interest rate risk; federal funds rate; commercial bank.

1. Introduction

Economic crisis, which began in the USA in 2007, negatively affected the whole globalized financial and commodity market. Deep recession and skyrocketing government debt in many countries were triggered by the mortgage crisis and stock market crash in the United States. The crisis also revealed numerous risky undertakings of the world-famous financial giants. These facts are indeed undeniable and have become the part of economic history, but one very challenging question remains unexplained: what circumstances forced managers of large and reliable banks to rush into such risky undertakings as sub-prime lending and investing huge amounts of assets in mortgage-backed securities? Of course, we could say that the bankers just made a mistake; however, the idea of mass delusion of highly skilled specialists seems to be erroneous. This paper investigates whether that reckless financial market behavior was provoked by a different factor: significant and repetitive changes of the federal funds rate by the Federal Reserve System.

One of the basic instruments of central bank monetary policy is steering the short-term money market rate with the help of open market operations. In the United States, this rate is called the federal funds rate and in the Eurozone, the main refinancing rate. It plays a very important role in the financial market, as it determines the cost of interbank overnight loans, which then influences the overall level of interest rates in the country. Thus, targeting of key

interest rate is a powerful instrument of monetary policy. The objective of this paper is to study positive and negative effects of artificial key rate adjustment, and estimate the efficiency of such kind of monetary policy. To reach the established objective, the following research methods were employed: comparative analysis and synthesis, quantitative and qualitative approaches, observation and aggregation.

2. Literature review

The author examined different sources of scientific literature and statistical data. Since the end of the 17th century, when first central banks began to appear, the interaction between government and central bank enables to conduct monetary policy. Literature review shows that over the period of the history there were a lot of advocates and opponents of key interest rate targeting and money supply regulation. The most well-known theorists in this area are J.M. Keynes (1936) and M. Friedman (1968). Among the prominent opponents of key interest rate targeting should be mentioned such scientists as M.N. Rothbard (2006) and J.T. Salerno (2010).

Economists that came to the agreement for the general question had different opinions about some details. For example, J.M. Keynes believed that when a new key interest rate is established it should be brought to the determinate size by open market operations. However, M. Friedman stated that open market operations should provide steady growth of monetary base, allowing interest rates to fluctuate as they will. M.N. Rothbard and J.T. Salerno were against of monetary authority intervention on the market as they thought that it causes the distortion of financial system. This paper compares and contrasts different scientific outlooks and presents the author's view of the problem.

3. Theoretical benefits of key interest rate adjustment

Let us consider monetary policy mechanism that is widely applied all over the world. If the economy falls into recession, central banks of many countries tend to lower base interest rates. According to the National Bureau of Economic Research, a recession is defined as a decrease in business activity, "lasting more than a few months, normally visible in real GDP, real income, employment, industrial production, and wholesale-retail sales" (National Bureau of Economic Research, 2010). Low interest rates, reduced by a central bank, make loans more affordable and increase demand for them. The real sector of the economy gets on opportunity to raise cheap funds, which stimulates its development. As a result, unemployment falls and the Gross Domestic Product starts to rise again.

A rapid economic growth rate and an excess of consumer demand over productive capacity can lead to the "overheating" of an economy, increase inflation and consequently cause market meltdowns. In such cases, central banks usually decide to increase key interest rate. This provides monetary contraction in the economy because the cost of interbank overnight loans rises, which leads to increase in all other interest rates. Therefore, the business activity and inflation rate slow down.

In order to reduce interest rates, central banks increase the money supply by purchasing government liabilities on the open market. Thus, the amount of money in the economy grows and its cost falls, which means that loan interest rates decrease. If a central bank pursues the goal of increase in interest rates, it sells government liabilities on the open market. As a result, monetary funds raised by a central bank are recalled from circulation. The supply of

money shrinks and interest rates rise. So, at first glance, this mechanism looks simple and harmless.

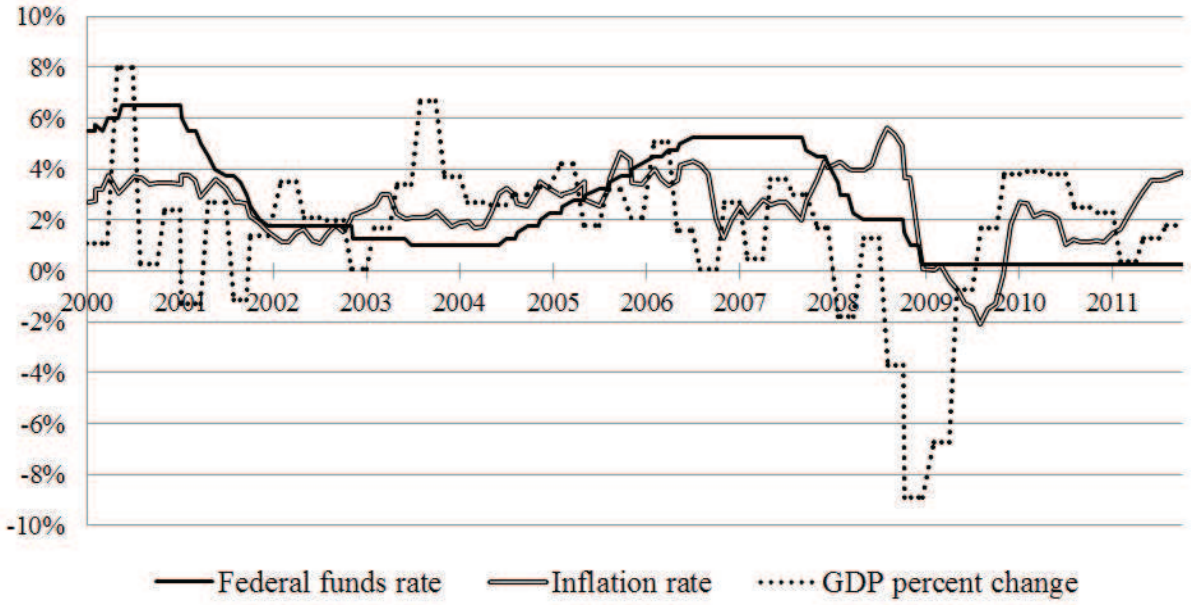
4. Disadvantages of targeting the level of interest rates

Although in theory, the motivations and results of open market operations are convincing and logical, in practice, we are faced by several nuances that drastically change the picture and lead to undesirable consequences. The disadvantages of targeting the key interest rate can be illustrated by the outcomes of the Federal Reserve System's behavior in the USA. This country was chosen not only because it is the place where the global economic crisis of 2008 was conceived, but also because it has a huge stock market, which gives the USA the ability to change its federal funds rate quickly and effectively.

Theoretically, the decline of the federal funds rate stimulates economic growth, and the increase of this rate helps to combat inflation. In spite of the fact that this pattern in some cases can be really seen on diagrams in Figure 1, there are also situations in which practice differs from theory. If the federal funds rate was artificially decreased, inflation can run out of control and reach a high level, which undoubtedly hampers economic development. The rapid increase of prices doesn't allow depositary institutions to reduce the loan interest rates because they must compensate for the depreciation of money. For instance, with the considerable decline of the federal funds rate, we can observe the stagflation of the U.S. economy in 2008 (Figure 1). While the GDP was plummeting, the inflation rate was skyrocketing. On the other hand, a significant increase in the federal funds rate can lead to a slowdown or even to a drop in economic growth, as it occurred in 2005.

In other words, instead of finding out the reasons behind recession and eliminating them, the Federal Reserve System just reduces the federal funds rate. An increase in GDP, stimulated in such a way, generally results in distortion and overheating of the market. In this case, the Federal Reserve raises the federal funds rate in order to slow down inflation. This course of action usually leads to another recession. Economic downturn doesn't occur out of nowhere. Rather, it is a signal that something has gone wrong. First of all, it is necessary to understand exactly which factors are negatively influencing the business climate and make every effort to eliminate them. Instead, the Federal Reserve begins to conduct open market operations by acquiring government securities and injecting money into the economy. Therefore, interest rates fall as a result of an artificial expansion of the money supply, and not due to increased revenues from profitable projects. The Federal Reserve encourages entrepreneurs to invest in inefficient businesses that have already caused recession. Thus, motivation to cardinally change production technology and distribution systems is sufficiently reduced. Crisis should stimulate the appearance of innovations and the exit of unprofitable organizations from the market. The monetary policy of targeting key interest rate by open market operations impedes progressive changes. This measure usually has only short-term effects because, in time, old problems begin to crop up again. Only investments of real savings and resources, accumulated by the effective work of production and service spheres, can lead to stable, long-term economic growth. Similar opinions on this question were expressed by A.R.J. Turgot, J. Bentham and certain representatives of the Austrian school, including, M.N. Rothbard and J.T. Salerno.

Figure 1 – Influence of the federal funds rate on inflation rate and GDP percent change in the USA.



Source: Compiled by the author from data published by the Federal Reserve System (Federal Funds Rate), the U.S. Department of Labor (Consumer Price Index) and the Bureau of Economic Analysis (Gross Domestic Product).

Due to the world financial crisis, many countries, along with the USA, issued more government liabilities to make up the budget deficit. The United States Treasury should maintain a large amount of outstanding securities not only to raise additional money, but also in order to afford an opportunity for the Federal Reserve to conduct open market operations. This significantly increases government debt, which supposes regular interest payments. In 2011, the aggregate volume of U.S. borrowings reached $15 trillion dollars and became approximately equal to the size of its Gross Domestic Product (International Monetary Fund, 2011). This situation led to the lowering of its credit rating and the deterioration of economic conditions in the country. Also, the Eurozone suffers from significant debt burden, which was increased in order to stimulate economic growth. For example, Portugal, Ireland, and Greece have difficulties with repayment of their borrowings.

Moreover, it is impossible to justify the huge expenditures of the Federal Reserve System that were inserted directly into commercial banks in order to fight against the lack of liquidity during the financial crisis of 2007-2010. Banks obtained $600 billion dollars and were expected to offer more domestic loans and refinance mortgages. However, they decided to make more profitable investments and put the money into foreign currencies and emerging markets (Stiglitz, 2010). As a result, the internal problems of the U.S. economy were not solved and money flowed out overseas.

It is worth mentioning that there is time lag of 6–9 months between the announcement of a new federal funds rate and its appearance at that level on the interbank market. Therefore, the Federal Reserve System must foresee changes in the economy and take measures to prevent recession or reduce inflation before those events happen in reality. That being said, the possibility for error in such forecasts always exists, and monetary policies that can be very expensive may lead to negative results.

All of the above-mentioned disadvantages of targeting key interest rate exert influence

on the general condition of a country's economy, but they are especially detrimental to the financial system. An artificial change in key rate throws the market off balance. Commercial banks sometimes don't have enough time to readjust for new conditions due to many reasons. Thus, key rate changes sufficiently increase all sources of bank interest rate risk such as repricing risk, yield curve risk, risk of embedded options and basis risk.

5. Artificial changes in the federal funds rate provoked financial crisis

The diagram of GDP percent change in Figure 1 shows that in 2001 a noticeable economic downturn caused by mass shares depreciation of internet trading companies occurred in the USA. Consequently, hundreds of organizations, which worked through websites and were referred to as dot-coms, became bankrupt, and were liquidated or sold. This happened because most business models of internet companies were inefficient and the money that was made on the stock market was spent on marketing campaigns and advertising. On September 11, 2001, a cruel act of terrorism also shook the U.S. economy. And finally, the large American companies Enron and WorldCom collapsed as their huge illegal overstatement of profits was disclosed.

At first glance, the problems of the USA that caused recession in 2001 seem to be rather serious; however, close scrutiny reveals that they were relatively local and temporary. The bankruptcy of unprofitable internet companies made room for more efficient businesses, which sought for investments. The events of September 11 were a huge shock, but they did not have a long-term negative influence on the economy. Financial statements falsifications could be eliminated by increasing legislative pressure and government control. However, authorities considered these measures insufficient and decided to stimulate GDP growth by decreasing the federal funds rate.

A small reduction in the key interest rate probably would not harm the financial system, but the fall of the federal funds rate by 5.5% (from 6.5% to 1%) over the period from January 2001 to June 2003 (Figure 1) had a significant negative effect. Depository institutions usually have a large variety of assets and liabilities, which mature and reprice at different times. Thus, the extremely sharp 4% decline in rates, which lasted 11 months, from January to November 2001, placed considerable stress on the market and significantly increased so called repricing and yield curve risks. If, during that period, a bank expected more assets than liabilities to be redeemed or repriced, it suffered from a reduction in profits. For example, rate sensitive liabilities are equal to 100 million dollars and bear 7 percent interest per annum. These payments for commitments are financed by 150 million dollars of rate sensitive assets that earn 10 percent per annum. The bank net interest income is equal to 8 million dollars. If interest rates fall by 4%, after the redemption and reprisal of financial instruments, the new rates will be equal to 3% and 6%, respectively. So, the net interest income will decrease from 8 million dollars to 6 million dollars.

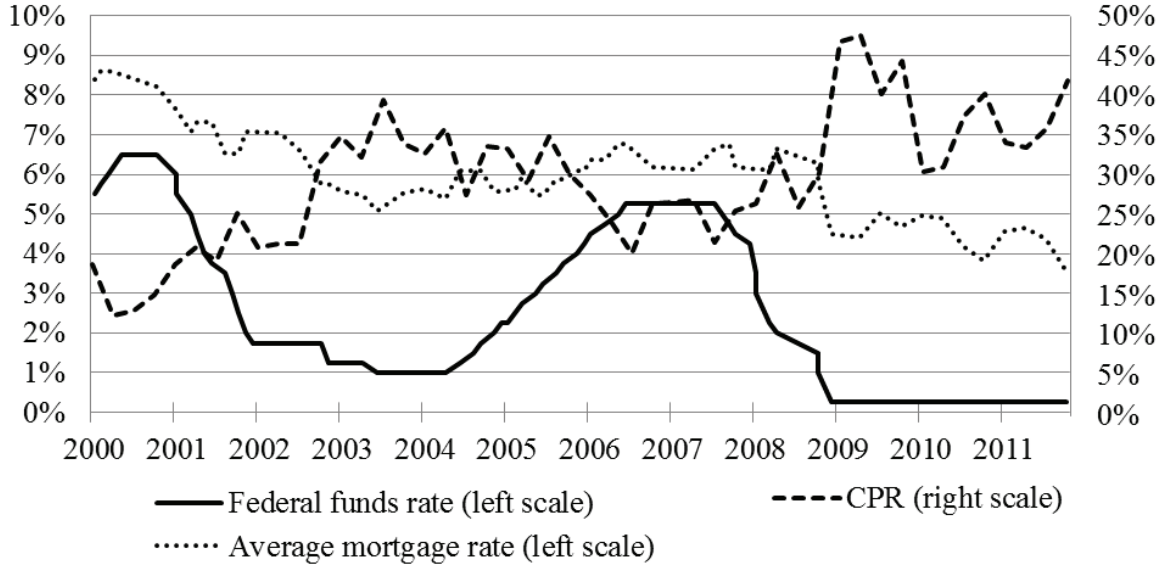
It could be worse if a bank financed long-term uncallable liabilities with fixed rates by short-term assets. Long-term rates of commitments would stay, for example, at 7% and short-term rates of earning assets would fall from 10% to 6%. Thus, interest income would not cover interest expense anymore and the bank would suffer losses. In this situation, the yield curve of the bank portfolio would steepen as the difference between short-term and long-term rates would temporary increase. Although depository institutions are notified about coming decreases or increases in the federal funds rate, it can be very difficult and costly for them to change the balance structure in order to reduce interest rate risk. Of course, a drop in the interest rates level can put some banks in favorable positions. If a bank has more rate-sensitive liabilities than rate-sensitive assets (that is, if it finances short-term liabilities with long-term

assets), it may increase profits until the borrowers start to refinance their loans at lower rates.

Thus, the real sector of the economy actively incurred debts in 2002, while commercial banks were gradually losing their profits. With the decline in rates, they earned less income on assets and had to pay higher interest on liabilities, which were attracted, for example, one year earlier. Since the rates had been diminished, individuals and entities borrowed money more willingly. Mortgage loans gained special popularity. In addition, many American homeowners used this opportunity to refinance their loans. Banks, on their part, could not unilaterally dissolve agreements for long term deposits, which still were bearing high interest rates. Thus, the interest rate risk of depository institutions continued to grow.

In Figure 2, we can perfectly observe the inverse relation between changes in the federal funds rate and the constant prepayment rate (CPR). The CPR shows the share of loan principal that will be refinanced or prepayed during the next 12 months. With a decrease in the federal funds rate and the consequent decrease in the mortgage loans rate the percent of refinanced borrowings rises. And vice versa, with an increase in the federal funds and mortgage rates, the share of refinanced loans falls. The same correlation can be retraced for all callable liabilities acquired by depositary institutions. The probability of financial instruments' early redemption or withdrawal is called the risk of embedded options; that is one of the main interest rate risks of commercial banks. The monetary policy of the Federal Reserve System provoked an increase in the refinancing and prepayment rate in 2002 – 2005, which reached its peak in 2003 (Figure 2), when borrowers refinanced 70% of mortgages lent in this year (Hedberg et al., 2010).

Figure 2 – The influence of the federal funds rate on CPR and commitment rate of 30-year conventional mortgages



Source: Compiled by the author from data published by the Federal Deposit Insurance Corporation (Quarterly Banking Profiles) and the Office of Thrift Supervision (Selected Asset and Liability Price Tables).

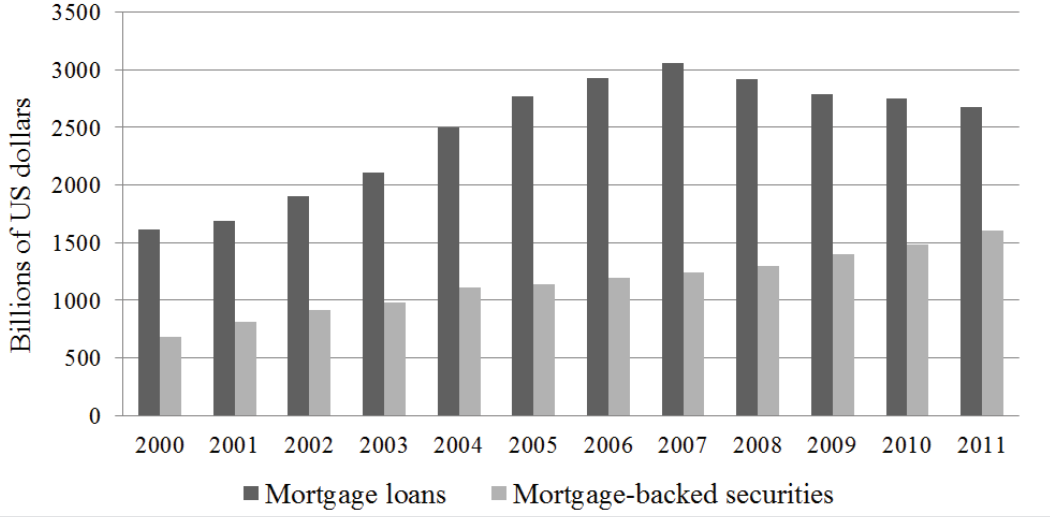
The necessity of refinancing loans at lower rates forced banks to search for alternative sources of funds. This situation caused an increase in demand for mortgage-backed securities. These financial instruments offered an opportunity to slow down the decline in net margin due to interest spread drop. However, the aggregate net interest margin of depository institutions in the USA continued to fall. From the beginning of 2002 to the end of 2005, margin decreased by 60 basis points (Federal Deposit Insurance Corporation). The issues of collateralized mortgage

obligations enabled banks to receive money back quickly without waiting for the date of loan repayment and invest these funds again to obtain additional income. The risk of mortgage securities defaults was successfully hedged by credit derivatives. Over the period from 2000 to the present time, the amount of credit derivatives in securities portfolios of commercial banks has increased by 55 times (Office of the Controller of the Currency).

As we can see in Figure 3, from 2000 to 2007 the mortgage-backed securities market developed rapidly. It is necessary to note that, in 2005, demand for mortgage loans began to decline, as the majority of the creditworthy population had already borrowed money and bought houses. However, it was difficult to abandon issuing and purchasing mortgage-backed securities and other collateralized debt obligations, as the demand for them grew rapidly. Besides, banks needed additional sources of funds, as they were involved in financial difficulties caused by U.S. monetary policy. At first, the Federal Reserve System significantly decreased the federal funds rate, and then, after obtaining the desired rise in GDP, it began to increase the key rate (Figure 1). By that time, commercial banks had already lent a large amount of long-term mortgage loans at low interest rates and were faced with the problem of how to conduct payments for new deposits with high interest rates. Thus, the gap between earnings on assets and costs of liabilities narrowed and net interest income fell. The Federal Reserve considerably increased repricing and the yield curve risk of depository institutions by raising the federal funds rate from 1% to 5,25% over the period from June 2003 to June 2006 (Figure 1). Since the demand for housing was almost satisfied, banks had no choice but to offer mortgages to subprime borrowers with unconfirmed incomes and without initial payment. This decision was provoked by high demand for mortgage securities, which gave banks an opportunity to earn necessary profits.

In December 2005, the market yield curve reversed due to the skyrocketed federal funds rate and open market operations of the Federal Reserve. This meant that short-term rates exceeded long-term rates. Since 1968, the lag between an inversion of the U.S. Treasury yield curve and the beginning of a recession has been, on average, equal to 14 months (National Bureau of Economic Research, 2010). Last recession started after 24 months, on December 2007. Probably this lag was larger in comparison with others because the yield curve was flat or slightly inverted for a long time prior the beginning of the recession.

Figure 3 – The amount of mortgage loans and mortgage-backed securities provided by depository institutions in the USA



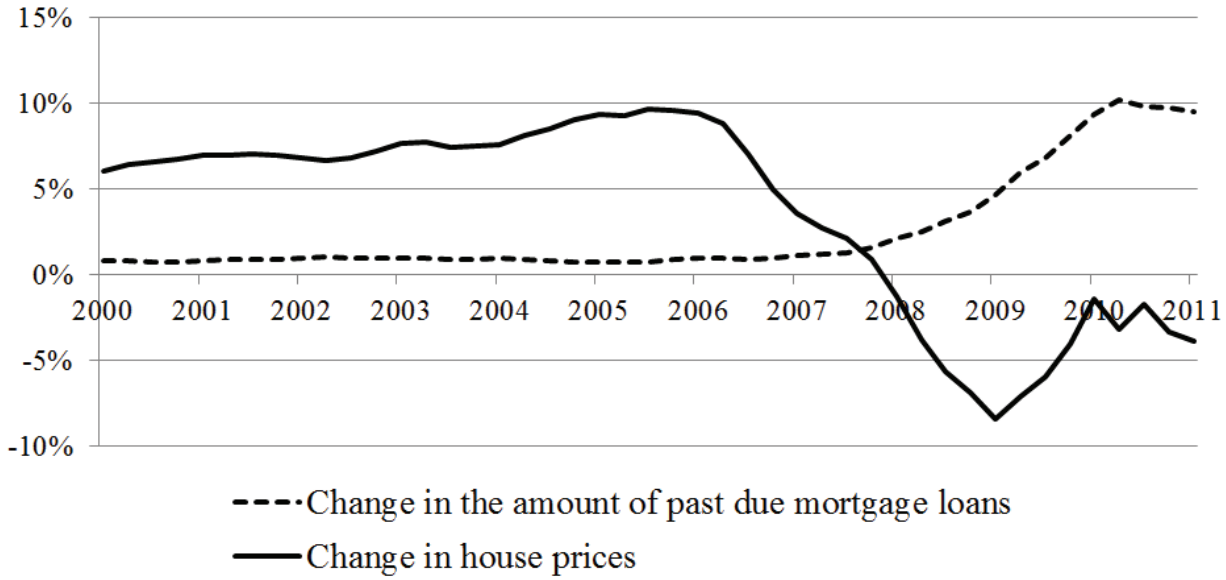
Source: Compiled by the author from data published by the Federal Deposit Insurance Corporation (Quarterly Banking Profiles).

Since World War II, only twice has the yield curve inverted without being followed by a recession. This occurred in 1965, during the Vietnam War, and in 1999, when the U.S. Treasury announced a program to buy back outstanding long-term Treasury bonds (Koch et al., 2010). Monetary authorities usually explain that they change the key interest rate in order to smooth business cycles amplitudes. This can be reasonable if monetary policy doesn't lead to an inversion of the yield curve. Long-term financial instruments are riskier than short-term ones, and this should be reflected in the size of their interest rates. Many analysts attribute the lack of recession during the Vietnam War to massive federal government spending. An increase in state expenditures can help to fight recession, but it is better to invest in the public goods and develop the infrastructure of a country rather than finance wars or conduct large-scale open market operations.

Changing the key rate also influences basis risk, which "arises from imperfect correlation in the adjustment of the rates earned and paid on different instruments with otherwise similar repricing characteristics" (Bank for International Settlement, 2004). Depository institutions hold assets and liabilities with fixed and floating interest rates. While the Federal Reserve System was decreasing the federal funds rate between 2001 and 2004, fixed rates on outstanding financial instruments remained constant, but floating rates (especially those tied to the federal funds rate) were decreasing. Borrowers turned out to be in a beneficial situation, while commercial banks were losing their incomes. When the Federal Reserve was raising the key interest rate from 2005 to 2006, many borrowers, who had mortgage loans with floating rates felt that their debt burden had become overwhelming and gradually stopped paying it. As a result, the amount of past due loans increased (Figure 4).

Moreover, it is worth mentioning that real estate prices grew constantly until 2006. Less reliable borrowers purchased houses at higher prices and took loans with higher rates as the Federal Reserve started to increase the federal funds rate (Figure 1). By the time that monetary policy had affected inflation and real estate prices began to decline, the size of many homeowners' debts exceeded the real cost of their residential property. Since that time, there has been no benefit from purchasing houses on credit. As prices were constantly falling, after a while, the loan principal became larger than the market price of a house, and, in addition, the borrower had to pay interest. It is not surprising that the amount of past due loans skyrocketed. In Figure 4, we can see the correlation between a decrease in house prices and a rise in the number of mortgage payments that were delayed by more than 90 days. Consequently, the credit rating of mortgage-backed securities was reduced in December of 2006, and in 2007 mass defaults began. Financial institutions in the USA and other countries also suffered losses because they had issued credit derivatives for hedging asset-backed securities. As collateralized mortgage obligations of U.S. organizations were sold all over the world, the indexes of many stock exchanges considerably decreased, which negatively influenced the global economic conjuncture.

Figure 4 – The correlation between decreases in house prices and rises in the amount of past-due mortgage loans



Source: Compiled by the author from data published by the Federal Deposit Insurance Corporation (Quarterly Banking Profiles) and the Federal Housing Finance Agency (FHFA Seasonally Adjusted House Price Index for USA (1991 Q2 – 2010 Q4)).

The Federal Reserve System decided to struggle with the crisis of 2007 using old methods and again significantly reduced federal funds rate from 5.25% to 0.25% over the period from June 2006 to December 2008 (Figure 1). These changes increased the interest rate risk of depository institutions, distorted the market, and deprived entrepreneurs of any stimulus to develop innovations in order to deal with the situation. By the end of 2011, the Federal Reserve policy of targeting key rate hadn't led to a considerable rise in GDP (Figure 1). However, inflation continues to grow, which explains the small upturn of the GDP percent change in the USA. In order to fight against increases in inflation, the Federal Reserve System will probably start to raise the federal funds rate and cause new problems for the whole economic system all over again.

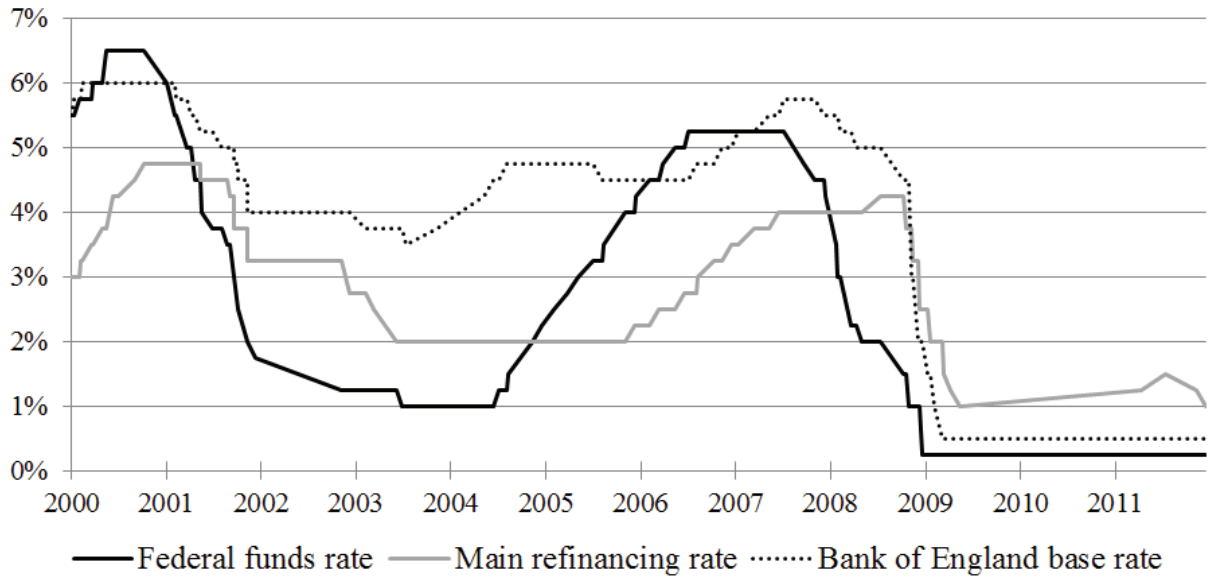
6. Comparative analysis of key rate targeting in the USA, the Eurozone and the UK

The pattern of Federal Reserve policy is also actively implemented by the monetary authorities of other countries. The correlation between different target rates is illustrated in Figure 5. If we compare the fluctuations of the federal funds rate in the USA and the main refinancing rate in Europe, we notice that the European Central Bank follows the trend of Federal Funds System, but with smaller amplitude of oscillations. Thus, the more conservative monetary policy of the Eurozone may smooth some considerable negative effects of key interest rate targeting, but they nevertheless can damage the economy.

The base rate is the only rate that is artificially established by the Bank of England and is used for enacting monetary policy. The size of the LIBOR (London Interbank Offered Rate) is determined by the market without interventions of regulatory authorities, as opposed to the effective federal funds rate, which is targeted by the Federal Reserve. In Figure 5, we can

observe that during the reviewed period, the base rate in the UK was much more stable than in the Eurozone and the USA until 2009. Due to the world financial crisis, the United Kingdom decided to follow the example of other countries and the base rate plummeted to 0.5% (The Bank of England).

Figure 5 – The comparison of target federal funds rate in the USA, main refinancing rate in Europe and base rate in the UK



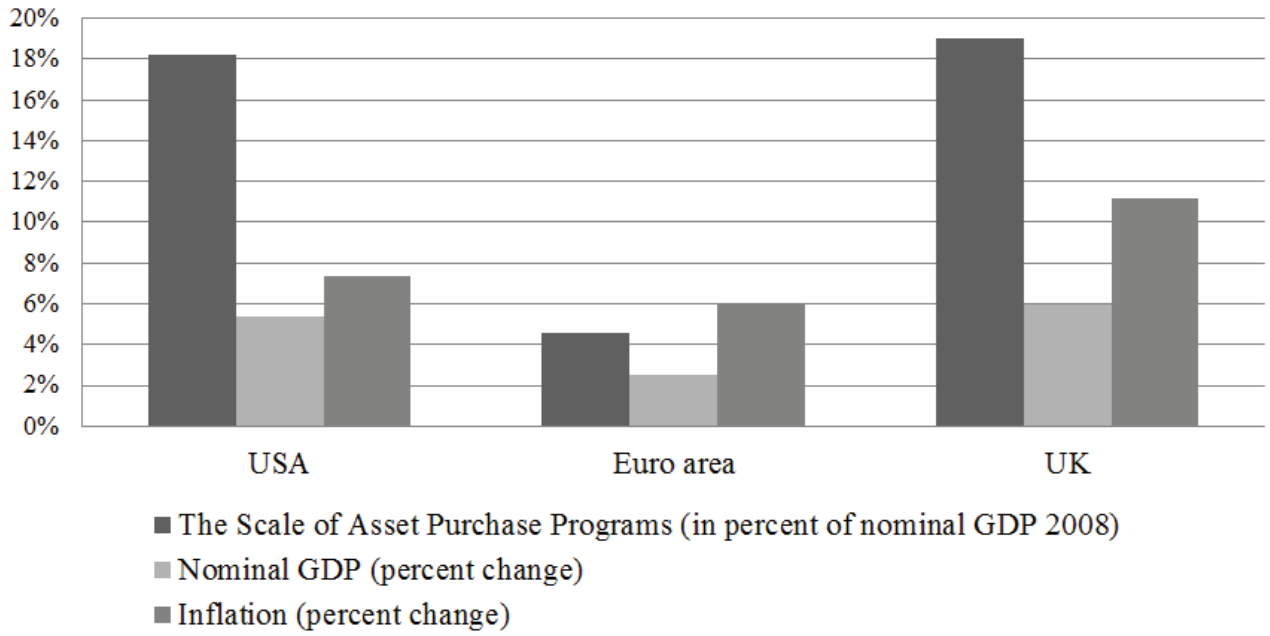
Source: Compiled by the author from data published by the Federal Reserve System (Intended Federal Funds Rate), the European Central Bank (Key ECB Interest Rates) and the Bank of England (Official Bank Rate History).

In December 2008, the United States launched a program of government securities purchasing by open market operations, called "Large Scale Asset Purchases" (LSAPs). The total value of this program rose to $2.6 trillion over a period of three years, from 2009 to 2011. In March 2009 the United Kingdom joined the USA and implemented a program referred to as "Quantitative Easing" (QE). In the time leading up to 2012, the Bank of England purchased £275 billion and "at its meeting in February 2012 the Committee decided to purchase £50 bn to bring total asset purchases to £325 bn" (Joyce et al., 2011). Also, in July 2009 the Eurosystem launched the "Covered Bond Purchase Program" (CBPP) in to order to purchase euro-denominated covered bonds and, since May 10, 2010, it has conducted interventions in debt markets under the "Securities Markets Program" (SMP). The sum of total operations in the euro zone reached €415 billion by the end of 2011 and continued to increase (European Central Bank, 2011). All above-mentioned asset purchases were unsterilized, which means that monetary authorities electronically created new uncovered money in the accounts of security sellers. Thus, it is not surprising that in Figure 6 we can see a rise in inflation that is higher than increase of the nominal GDP in all reviewed countries.

Moreover, the scale of asset purchase programs exceeded the amount of nominal GDP growth more than twice (Figure 6). If these programs didn't stimulate the economic growth enough to cover the inflation rate, it is reasonable to consider them rather ineffective. A money supply that has been increased by open market operations makes loans cheaper and lowers

the market competition. Therefore, it doesn't encourage entrepreneurs to implement new technologies. They produce the same goods and services using the old inefficient methods that have already led to crisis. The Eurozone achieved higher levels of GDP growth in comparison with the scale of asset purchase programs (Figure 6). This can be explained by the fact that the European Central Bank mainly purchased privately issued bonds (Beirne, et al., 2011). Thus, it directly financed the private sector of economy. The Federal Reserve and the Bank of England, on the other hand, purchased government securities, which encouraged speculation and caused money to flow out overseas.

Figure 6 – The Results of the Asset Purchase Programs in the USA, the Euro Area (17 countries) and the UK over a Period of Three Years (2009 - 2011)



Source: Compiled by the author from data published by the Federal Reserve Bank of New York (Large-Scale Asset Purchases), the European Central Bank (Open market operations), the Bank of England (Quantitative Easing Explained), the Eurostat (Gross Domestic Product, Harmonized Indices of Consumer Prices (HICP)), the U.S. Department of Labor (Consumer Price Index).

According to monetarists, expected inflation may occur in the case of regular money injections into economy (Friedman, 1968; Muth, 1961). Producers and sellers establish higher prices on resources and goods beforehand, as they anticipate that authorities are going to increase money supply, which will definitely enlarge effective demand. People begin to buy goods at higher prices, and, consequently, the inflation rate grows. In such situations, central banks should try to deceive market expectations. However, if depository institutions and other financial organizations are not informed about the scale of asset purchase program, they will suffer from interest rate risk.

The policy of key interest rate targeting should not be the main method used to recover from recession or to struggle with inflation. It can be successfully supplemented or substituted by tax regulations, as the neoclassicists proposed (Ando, 1974). Figure 6 shows that large-scale injections of money increased inflation to more than the Gross Domestic Product. Thus, implementation of a Keynesianism proposal to pump money into the economy without any restrictions can lead to negative consequences (Keynes, 1936). However, the proposal of the

Austrian school to return to the gold standard (Rothbard, 2006) is also impossible nowadays.

The monetary policy of key rate targeting can be harmless only if it does not significantly increase the fluctuations of interest rates. While the economy is experiencing growth, the government should accumulate monetary reserves in order to spend them during times of recession. It is easier to cope with crisis if authorities reduce taxes, invest in the development of alternative energy sources, high tech and core industries, which enable the country to be competitive on the global market.

7. Conclusion

The conducted research has proven that key rate targeting by monetary authorities can significantly harm the whole economy and especially its financial system. Although open market operations are theoretically intended to fight inflation with the help of high rates and to stimulate business activity using low rates, they can cause a lot of negative effects, such as:

- an increase in the interest rate risk;
- a distortion of market;
- a rise in inflation;
- a slowdown or even drop in economic growth;
- investment in inefficient projects;
- low motivation for cardinal changes and innovations;
- an increase in government debt;
- the consequences of mistakes in market forecasts.

A historical analysis of federal funds rate adjustment shows that the World Financial Crisis occurred in many respects due to the rise of the main sources of interest rate risk. Firstly, sharp changes in rates increase the repricing risk, because the assets and liabilities of depository institutions mature and reprice at different times. Thus, cash flows alter as instead of redeemed financial instruments appear new ones with changed interest rates. Secondly, key interest rate targeting activates the risk of embedded options. If rates are lowered, this can cause massive refinancing of loans and callable securities. If rates are raised, clients will withdraw deposits and invest them again at a higher interest rate. Thirdly, basis risk increases, as some floating rates of bank assets and liabilities change according to the size of the federal funds rate, and some are tied to different basic rates, which can lead to a considerable narrowing of interest spread. Fourthly, federal funds rate adjustment influences market expectations and raises the risk of changes in the shape and slope of the yield curve. In particular, if a monetary authority increases the key rate, yields of short-term financial instruments can exceed the yields of long-term financial instruments. Thus, the yield curve inverts and the market becomes distorted, as long-term rates should be higher than short-term because lending money for a longer period of time carries a higher risk.

It is difficult to deny that a change in key rate often enables an economy to reach desirable results for a limited period of time. However, the true causes of recession or the “overheating” of the economy are not eliminated. The real sector loses its stimulus to foster innovations and carefully choose investment projects because monetary authorities reduce the cost of money. As a result, unsolved problems begin to occur again after a while. What is more, significant errors in the forecasting of market behavior are possible since there is a time lag between the establishment of a key rate and its implementation. Thus, the danger of a rise in inflation or

slowdown of economic growth presents itself. Furthermore, open market operations are possible only if a fairly large amount of government securities was issued, which leads to an increase in government debt. All of the above-mentioned negative consequences of artificial key rate changes deteriorate the economic conjuncture of the country and engender various risks.

In all likelihood, instead of targeting interest rate level, authorities should invest money in infrastructure and develop core industries. Interest rates would then fall naturally due to an increase in real savings from profitable projects. Injecting money into the economy through open market operations does not always lead to the growth of effective production. However, it usually feeds speculators and creates financial bubbles. Keeping this in mind, the USA, the Eurozone, the UK and many other countries should revise their monetary policy.

References

Ando, A. (1974). Some aspects of stabilization policies, the monetarist controversy, and the MPS model. *International Economic Review*, vol. 15, no. 3, pp. 541-571.

Bank of England (2012). *Statistical Interactive Database – Official Bank Rate History*. Retrieved from http://www.bankofengland.co.uk/boeapps/iadb/Repo.asp.

Beirne, J., Dalitz, L., et al. (2011). The Impact of the Eurosystem's Covered Bond Purchase Programme on the Primary and Secondary Markets. *The European Central Bank*, no. 122, pp. 1-34.

European Central Bank (2011). *Monthly Bulletin: November 2011*, pp. 97-100. Retrieved from http://www.ecb.int/pub/mb/html/index.en.html.

Federal Deposit Insurance Corporation. *Quarterly Banking Profiles (2000-2012)*. Retrieved from http://www2.fdic.gov/qbp/qbpSelect.asp?menuItem=QBP.

Federal Reserve Bank of New York (2012). *Large-Scale Asset Purchases.* Retrieved from http://www.newyorkfed.org/markets/funding_archive/lsap.html.

Friedman, M. (1968). The Role of monetary Policy. *The American Economic Review*, vol. 58, issue 1, p. 1-17.

Hedberg, W. & Krainer, J. (2010). Mortgage Prepayments and Changing Underwriting Standards. *FRBSF Economic Letter*, no. 2010-22. Retrieved from http://www.frbsf.org/publications/economics/letter/2010/el2010-22.pdf.

International Monetary Fund (2011). *World economic outlook: a survey by the staff of the International Monetary Fund.* Washington, DC: IMF.

Joyce, M., Tong, M., & Woods, R. (2011). The United Kingdom's quantitative easing policy: design, operation and impact. *Bank of England Quarterly Bulletin*, vol. 51, no. 3, pp. 200-212.

Keynes, J. M. (1936). *The General Theory of Employment, Interest and Money.* UK: Cambridge University Press.

Koch, T.W. & MacDonald, S.S. (2010). *Bank Management*, 7th ed. USA: South-Western Cengage Learning.

Muth, J.F. (1961). Rational expectations and the theory of price movements. *Econometrica: Journal of the Econometric Society*, vol. 29, no. 3, pp. 315-335.

National Bureau of Economic Research (2010). *US Business Cycle Expansions and Contractions.* Retrieved from http://www.nber.org/cycles.html.

Office of the Controller of the Currency. *OCC's Quarterly Reports on Bank Trading and Derivatives Activities* (2000-2012). Retrieved from http://www2.occ.gov/topics/capital-markets/financial-markets/trading/derivatives/derivatives-quarterly-report.html.

Rothbard, M.N. (2006). *Classical Economics: an Austrian Perspective on the History of Economic Thought*, vol. 2. Edward Elgar Publishing.

Salerno, J.T. (2010). *Money, Sound and Unsound.* Ludwig von Mises Institute.
Stiglitz, J. (2010). New $600B Fed Stimulus Fuels Fears of US Currency War. *Democracy Now*. Retrieved from http://www.democracynow.org.