FACTA UNIVERSITATIS
Series: **Economics and Organization** Vol. 6, N° 3, 2009, pp. 221 - 236

THE IMPACT OF GLOBAL FINANCIAL CRISIS ON CHANGING THE CENTRAL BANK ROLE IN THE MARKET POSITIONING OF FINANCIAL INSTITUTIONS*

UDC 336.711:338.124.4

Borko Krstić, Mirjana Jemović

Faculty of Economics, University of Niš, Serbia
borko.krstic@hotmail.com, mirjanajemovic@yahoo.com

Abstract. *A clear position of the central bank as a supreme monetary institution, taken on pursuing monetary policies, is of crucial significance for its credibility. For this reason, the central bank informs the public of its intentions through announcing official interest rates, that is, by publishing the data on discount rates and changes. Current insecurity and panic, existing in the financial markets due to a systemic liquidity crisis, have intensified the central bank responsibility for "fine market adjustment" by means of appropriate discount policy. The aim of this paper is to present the instruments applied by the central bank in the procedure of securing the liquidity of banks and providing general financial stability and to explain, from the aspect of newly formed market conditions of business activities, why Bagehot's doctrine of a "lender of last resort" has become inconsistent in time, giving way to the role of central bank as a "market-maker of last resort".*

Key Words: *Discount rate, effect of notice, lender of last resort, market maker of last resort, standing facilities*

INTRODUCTION

The global financial crisis, which started in mid-2007, has regenerated the concern about financial stability and caused a reconsideration of the central bank role as the last resort of banks. In order to provide a sufficient amount of liquid assets to financial institutions and market, the central bank applied standard, but to a certain extent corrected monetary policy instruments. At the same time, in accomplishing its mission of the last resort of banks, the central bank relied on the discount window as the only direct arrangement for central and commercial banks in the conditions of market economy. There-

Received December 14, 2009
* This paper is a part of the research project entitled "Developing a Competitive Advantage of Serbian Enterprises in the Conditions of European Integrations", Number 149052, financed by the Ministry of Science of the Republic of Serbia

fore, in the first part of the paper, we shall give a general review of the discount rate as one of the monetary policy instruments and examine its influence not only on the quantity of money in circulation, but on the course of business activities and payments balance of the country. The second part of the paper shall investigate how recent events have affected general characteristics of central banks as lenders of last resort, in the sense of central bank reorientation from a *lender of last resort* toward a *market maker of last resort*. A brief comparative survey of the application of standing facilities as one of the most frequent instruments of short-term liquidity management in transition countries is given in the last section of the paper.

1. DISCOUNT RATE AS ONE OF THE MONETARY POLICY INSTRUMENTS

1.1. Introductory discount rate review

Monetary policy cannot be implemented against a unique model that would be identical for all the market economy countries, since countries differ regarding their development levels and financial system structures. In the implementation of monetary policy, the central bank disposes of many monetary policy instruments, first of all discount rate and open market operations. However, although the implementation of any of these instruments is to the same effect - money market control, their respective representation differs from country to country. In the countries with underdeveloped financial markets, discount operations represent a crucial instrument of monetary policy, while their application is marginal in the countries with developed financial markets, due to their greater reliance on open market operations.

Discount rate is one of the most significant instruments by which the central bank performs monetary control and monetary management in line with the monetary policy objectives. This is the minimum interest rate on which commercial banks and other depository institutions may get loans at the central bank in order to adjust their short-term financial imbalances. The discount policy, implying the determination of discount rate and discount credit requirements, is the oldest money-supply regulating instrument applied by the central bank. This policy affects money supply by influencing the volume of discount credits (part of the reserves that banks acquired by borrowing from the central bank), which represent a monetary base constituent. The growth in discount credits volume increases the monetary base and money supply, while the discount credit volume decline induces a decrease in monetary base and money supply.

The discount rate theory, which investigates the impact of discount rate as a monetary policy instrument, has two parts. The first part is related to *the effects of discount rate as an instrument for regulating the quantity of money in circulation*. With regard to the desired kind of effects on the money supply, the central bank shall decide to conduct either expansive or restrictive monetary-credit policy. Through a discount rate decrease, the expansive monetary-credit policy stimulates the banking sector to borrow money from the central bank, by which their credit potential increases, thus increasing the monetary base and, finally, the money supply or the amount of money in circulation. The opposite situation is in the case of restrictive monetary-credit policy.

The mentioned discount rate theory conclusions are deduced based on the constant value of monetary multiplier. In reality, however, it is very difficult to predict the effect

that changes in the discount rate may have on the volume of borrowings from the central bank, having in mind that the central bank credits granted to commercial banks represent only one of the ways to compensate for the deficit of liquid assets in commercial banks. Guided by profit, commercial banks shall choose the alternative of financing that implies the lowest costs.

The second part of the discount policy theory deals with the question of *how changes in the discount rate affect the flows of economic activities and, in particular, the payments balance of the country* [8, p. 504]. The discount rate increase shall stipulate the increase of market interest rates - bigger and faster in short-term than in long-term rates. The increase of market interest rates causes a rise in the costs of credits that banks grant to companies and citizens, which all induce a decrease of investment and individual consumption. A drop in aggregate demand influences the decrease of imports, exerting positive effects on the balance of payments. On the other hand, in consequence of the increase of domestic interest rates, the domestic capital outflow to foreign countries shall be reduced, which shall also positively affect the balance of payments. In the case of discount rate decrease, the trends are reverse.

1.2. The influence of discount rate change on market interest rates and the effect of discount rate change notice

Empirical evidence proves that a variety of market interest rates is formed around the discount rate, but with certain delays in time and with incomplete implementation of market changes [7, p. 165].

Regarding the influence of discount rate changes upon market interest rates, two standpoints have been developed. The first standpoint presents the fact that the discount rate is undoubtedly the most significant element of the total interest rate structure and that it affects first the level of short-term and then the level of long-term interest rates. This is the situation of Great Britain, where market interest rates get substantially adjusted to the course of discount rate.

The second standpoint is based on the opposing fact - discount rate is not the exclusive factor of market interest rate changes. Market interest rates are very often changed under the influence of different factors and discount rate changes occur only subsequently (with certain time delay). This is the case of recognizing already made market changes, so it may be stated that discount rate changes do not have the initial role but they only get adjusted to market changes [3]. Thus, discount rate changes should be observed in the context of the entire arsenal of monetary policy instruments, since these changes mainly represent technical adjustments.

It would be most convenient for the central bank if the discount rate were either above market rates or constantly in line with their changes. However, this is not feasible for two reasons. First, it is very difficult to grant credits to financial institutions encountering liquidity problems due to high interest rates, as this would endanger their profitability. In the opinion of many theoreticians, determination of the discount rate as a penalty rate, i.e., above market rates, would disturb the stabilizing discount policy function or, in other words, impair the discount mechanism operation as a safety valve for adjusting short-term imbalances of banks with minimum disturbances in the financial market [5]. The other reason is the so-called effect of notice, that is, the effect of announcing discount rate

change as a manner of the central bank communication with all interested in the changes of its policy. This effect accelerates the process of spreading the initial change of this rate, as the market comes in a position to interpret the discount rate increase as an official signal for the beginning of a period of less money in circulation, which shall therefore be more expensive (monetary policy reorientation from expansive to restrictive). The opposite situation occurs in the case of the discount rate decrease (a reorientation from restrictive to expansive monetary policy). Nevertheless, since any discount rate change affects the change of other interest rates, central banks avoid frequent changes of the discount rate, even if the discount rate change is justified by the change of general financial conditions in a concrete economy. The net effect of notice is small as a rule, because the discount rate change may be interpreted in at least two different and contradictory ways. The increase - an intention to introduce more restrictive monetary policy or the central bank acknowledgement that it is not capable of restraining inflation, so it tries to adjust the discount rate to the increases of short-term interest rates.

The problem of not knowing the monetary effect of lowering discount rates is particularly pronounced in the countries in transition and underdeveloped countries, where the demand for credits primarily depends on their availability and not on their price, due to inflexible functioning of investments in the changes of interest rates. Therefore, the central banks of these countries apply various other instruments of monetary policy, chiefly the policy of mandatory reserves and direct credit restrictions. Moreover, the mentioned countries have no possibilities of more efficient implementation of open market policy, as well, due to traditionally undeveloped financial structure and pronounced tendency of these countries toward financing budgetary deficits from primary issues.

However, even in highly developed countries the influence of discount policy on changing the market interest rates and the demand for money gets lower, but for absolutely contrary reasons, that is, along with the development of new financial markets and institutions competing against commercial banks. For this reason, central banks are less and less using discount policy to regulate the amount of money in circulation, primarily attempting through the discount-rate change to influence the level of borrowings by commercial banks from the central bank.

Another deficiency reflects in the fact that a variety of market interest rates is formed around the discount rate, but with certain delay in time, leading to a greater variability, or to the discount rate inflexibility and discontinuity in relation to the average market interest rate variability. The fact that central bank does not fully control credits granted to commercial banks, as opposed to the open market operations that are under its full control, leads to the conclusion that the discount policy use in the implementation of monetary policy does not offer much advantage. However, the reliance on discount rate policy in the moments of banking panic when assets are directed straight to the banks in need of money, as well as the fact that discount policy, especially regarding rate changes, is a very simple and easily comprehensible technique for informing the market on the future course of monetary policy [1, pp. 225-230], impose the necessity of deciding on the application of this instrument with regard to a specific situation.

1.3. Central bank credits granted to commercial banks (discount policy)

Discount policy does not reflect only in operating with discount rate in the sense of its increase or reduction, but it represents a complex area of monetary regulation, which enters the functioning spheres of other instruments as well. Apart from regulating interest rates, the discount policy includes other conditions under which the central bank grants rediscounting credits to commercial banks (rediscount requirements, terms, securities to be accepted for rediscount, etc.).

Economic theory and practice contain two basic mechanisms for creating primary currency by the central bank. One primary currency creating mechanism is realized through open market operations and it is characteristic for the countries with developed financial markets. The other mechanism for primary currency creation is reduced to direct crediting of banks by the central bank and it is characteristic for the countries with underdeveloped marketing mechanisms.

There are different kinds of refinancing in the practice of central banks, while the following ones are the most frequent:

1. Rediscount credit - The essence of these credits is that the central bank extends them to commercial banks on the basis of bills previously discounted by commercial banks [10, p. 441]. The bills of exchange submitted to the central bank for rediscounting originate from the bank clients and they entered its portfolio by being discounted by the bank. In order to be accepted for rediscount by the central bank, these bills must have specific properties - they have to be valid commercial bills (backed up by solvent economic entities), they have to be guaranteed by three reliable guarantors (the buyer of goods, the seller of goods and the bank that discounted the bill of exchange), and the maturity of draft cannot exceed 90 days. By having the bills discounted, economic entities cash their outstandings against the sold but unpaid goods, while commercial banks invest their assets at shorter terms (up to 3 months).

2. Relombard credit - A lombard credit is granted by the bank on the basis of coverage in securities, gold or merchandise. Most often it amounts to 75% of the base and it is very favorable for the debtor, who gets necessary assets without having to sell the base security. The lombard loan may be used by the bank for a lombard re-loan at the central bank. A lombard loan is more flexible than a classic rediscount credit, being that it can be discontinued in a day (a rediscount credit may be suspended only upon the maturity of draft). For this type of credits, a special interest rate is determined (a lombard interest rate) and it is, as a rule, always above the discount rate. The central bank can use lombard rates to punish the banks that are not skilled enough in managing liquidity. In cases of little need for lombard loans and high liquidity of the banking system, the interest rate on lombard credits represents the upper limit for the level of daily interest rate in the market, because banks shall not borrow in the market at higher rates if they can use lombard loans at lower rates. When the central bank has no government securities at its disposal, it regulates the course of short-term interest rates by establishing corridors, which shall be discussed in more details in the chapter related to standing facilities.

3. Selective credits - These are the credits granted by banks for determined selective purposes, in line with confirmed economic policy goals of the country. By granting selective (qualitative) credits, financial resources are allocated in favor of certain population segment, economic sector, exporter, etc. with the aim of improving economic perform-

ances. Thus, for example, the central bank shall grant credit requests that reduce imports and increase exports, employment, agriculture, country's defense capability and similar, while it shall turn down those credit requests that are oriented toward financing stock-exchange gambling, building of luxury facilities, etc.

In the American monetary system, the Fed extends credits to banks at a discount rate and at the discount window. There are three types of discount credits that the Fed grants to banks: primary credit, secondary credit and seasonal credit [4, p. 401].

1. Primary credit implies a constantly available discount credit intended for solid (sound) banks having problems with short-term liquidity that may result from a temporary outflow of deposits. It has the overnight maturity, while the interest rate for it is the discount rate, which is higher from the target interest rate on federal funds usually by 100 basis points, that is, 1 percentage point. Current interest rate on the primary credit (discount rate) is 0.50%.

2. Secondary credit is designed for banks with serious financial difficulties and liquidity problems, and it is not expected that such borrowed assets can be quickly repaid. The interest rate on these credits is 50 basis points (0.5 percentage points) above the discount rate and it represents a higher, "penal" rate indicating the bad situation of these debtors. Current interest rate on the secondary credit is 1%.

3. Seasonal credits - They are intended for small banks having seasonal fluctuations in deposits in the periods of annual vacations, as well as for the banks whose business operations include supplying credits to agriculture. The interest rate on a seasonal credit is related to the average interest rate on federal funds and interest rates on certificates of deposit, and it is 0.15%.

The discount window appeared in the conditions of insufficiently developed financial market. However, the marketing mechanism development imposed the question of its justifiability, where two opposite standpoints were derived. Advocates of the first standpoint believed that the discount window is redundant and that systemic risk resolution should be accomplished through open market operations and not by granting super short-term credits to insolvent banks. In the other standpoint, there was a positive attitude toward implementing the discount window, as it was considered to be an indispensable source of additional funding not only for small and medium banks, but also for bigger banks in the conditions of eroded confidence in them. This attitude was assumed both in the countries with underdeveloped financial markets and in highly developed countries, like the USA.

Outside the USA, central banks mainly use discount credits as the instrument of monetary policy and as the means of mitigating financial crises. The European Central Bank applies standing discount facilities in order to provide and absorb overnight liquidity and to signal the monetary policy position. As in the case of the USA (where discount credits are extended by regional banks), administration of discount facilities is also decentralized and performed by each national central bank.

The Table 1 contains official interest rates of specific central banks. In some cases, these are the discount rates in the classical sense (Denmark, Japan, Croatia, Serbia), while in other cases they are minimum rates against which the central bank credits the banking sector, where the Fed uses the primary credit interest rate, the ECB applies the minimum rate on main refinancing operations in the open market, and Great Britain implements the official interest rate of its central bank.

Table 1 Official interest rates of central banks

State	Rate
Fed - primary credits (discount rate)	0.50%
ECB- European Central Bank	1.00%
Japan	0.10%
Denmark	1.00%
Great Britain - official central bank interest rate	0.50%
Croatia	9.00%
Slovenia	1.00%
Serbia	8.50%

Source: www.federalreserve.gov, www.ecb.int, www.boj.or.jp, www.nationalbanken.dk, www.bankofengland.co.uk, www.hnb.hr, www.bsi.si, www.nbs.rs

2. The Role of Central Bank in Resolution of Banking Crises by Relying on Discount Policy

2.1. Introductory review of banking crises

As compared to the crises of other types of financial and non-financial firms, banking crises have much more serious adverse consequences, not only affecting a general decline of economic activities through low availability and higher prices of credits, but endangering the entire status of monetary policy [13]. Financial panic may seriously damage the economy, since it lowers the monetary policy efficiency. Namely, with the decrease of financial intermediation efficiency, as banks are being closed down on a large scale, the crisis cost gets higher.

Banking crises have a considerably long history. During the last few decades, many countries have been struck with financial troubles of different levels of severity, while some of them have encountered repeating problems of the kind. In almost all countries in transition - which have transformed their command economies to market-oriented systems - leading banks have suffered large losses, as the result of a high and fluctuating inflation and a loss of traditional enterprise clients. Financial problems are not exclusive attributes only of underdeveloped, developing and transition countries, which may be confirmed by the actual mid-2007 crisis that occurred in the USA and subsequently, by the "domino effect" principle, spread to all the countries worldwide.

In order to explain the systemic crisis, as well as crises of individual banks, we are giving the following theoretical approaches to banking crises [11, pp. 48-53]:

Theory of bank run: Non-existence of deposit insurance systems, even if there is no initial worsening of the bank balance conditions, causes a run on the bank, because it is believed to have become insolvent. When partially informed depositors accept this as the signal that other banks are also at risk (contagious panic), the bank run grows into a bank panic. The run on the bank may be avoided by either explicit or implicit deposit insurance. However, if a financial liberalization is in progress in a country with the deposit insurance system, and it is not accompanied by a well-designed and effective system of prudential regulation and supervision, it may happen that bank managers take excessive risk for their own personal advantage, which shall in the end increase the likelihood of a banking crisis.

Theories of banking panic: There are two traditional views of bank panics. In one of them, they are regarded as random events that have no connection with changes in real economy. Namely, if everybody believes that a bank panic shall occur, all the depositors shall be encouraged to withdraw their deposits, while only those in current need of liquidity shall withdraw their assets in case nobody believes in the appearance of banking panic. There will be no panic if banks dispose of sufficient liquid assets to fulfill these legitimate demands. The other view is that panics are not random events but a natural consequence of a business cycle. If depositors get the information on the approaching cycle recession, they shall anticipate financial difficulties in the banking sector and try to withdraw their assets, which shall accelerate the crisis.

Concept of asymmetric information: The theory of asymmetric information is dominant in explaining banking crises. Asymmetric information represents a situation in which one party in a financial transaction has more or superior information compared to another. For example, loan-raising debtors are usually much better informed than creditors on potential returns and on the risk associated with investment projects they plan to undertake. Asymmetric information leads to two basic financial system problems - adverse selection and moral hazard.

Adverse selection is the problem of asymmetric information that appears before a transaction, as borrowers with less quality and higher risk are the ones who are most ready to take a loan or pay the highest interest rate because they are aware that most probably they will not repay it. Thus, the parties who will most probably create undesirable (negative) results are most likely to be selected.

Moral hazard occurs after the transaction took place, as the creditor is exposed to the risk that debtor intends to start activities that may mean less probability of reimbursing the loan. In order to minimize the problem of moral hazard, creditor has to impose restrictions and other contractual conditions that will prevent debtors to engage in the activities that may make the loan reimbursement less probable.

So-called *free rider problem* is another problem that is very important for the comprehension of difficulties in good functioning of the financial system. The problem of free rider appears in a situation in which people use information gathered by other people without engaging any resources. The result of all free riders is that investors seeking information can no longer profit from the total increase of securities value arising from additional information.

The world financial crisis started in a relatively small segment of the American financial market of high-risk mortgage and housing credits (*sub-prime lending*) that were granted to the persons without a credit history and with a high credit risk. Favorable credits lead to a high demand of real estate, which caused the increase in real estate prices, alongside with the Fed's expansive monetary policy. However, for the absurd to be even greater, banks transformed sub-prime loans into mortgage bonds through the process of securitization, and then sold them further to investors who wanted speculative profits. Everything was going on well, until the investors realized that their portfolios contained much riskier securities than they had thought at the beginning, which induced their massive selling. Repayment of second mortgage loans had been regular until interest rates started growing and real estate prices dropped. With the increasing number of clients who were not capable of meeting their credit liabilities, banks faced the problem of worthless mortgages due to the increased real estate offer and decreased prices in the real-estate

market. At the beginning of 2008, the crisis extended from the mortgage market into the stock market, which caused the financial crisis escalation and collapse of American giants by September 2008. From the American market, in a domino effect, the crisis spread not only to the countries having similar mortgage credit systems, but to all the stock exchanges in the world. The stock-exchange panic was replaced by the banking panic with hasty withdrawals of deposits and with growing interest rates, which induced a complete stoppage of short-term interbank lendings. The cash price increase destabilized investment activities in the real sector, resulting this way in a global economic crisis.

Our conclusion is that the contemporary financial crisis is only a modern variant of traditional banking crises, which is eventually manifested in the form of a general banking panic and withdrawal of deposits from the banks. However, this crisis differs from the others by the fact that, for the first time, central banks, providing liquidity to insolvent institutions, allowed banks and other financial institutions to replace the collateral that includes illiquid financial instruments with the access to cash through the discount window. For these reasons, we talk about the central bank reorientation from the *lender of last resort* toward the *market maker of last resort.*

2.2. Central bank as the Lender of Last Resort (LOLR)

The central bank function as a lender of last resort may be connected with preventing and mitigating financial crises. Although open market operations can affect the availability of bank funds and short-term interest rates, this instrument is inefficient in solving the problems of individual banks. Therefore, to fulfill its role of the lender of last resort, the central bank relies on the discount window as the only direct arrangement of the central bank and commercial banks in the conditions of market economy. By its function of the lender of last resort, the central bank secures the macroeconomic system liquidity by providing special quanta of money and credits to commercial banks.

On condition that the total liquidity position of the banking system as a whole has not dropped below a tolerable level, individual banks can satisfy their needs for liquid assets in the short-term interbank money market, the function of which is to redistribute liquid assets from the banks with surplus funds to the banks showing deficits. In such cases, the central bank should not appear as "the lender of last resort". The precondition for its intervention is, as a rule, a systemic illiquidity of the banking sector, and not the problems of individual banks. The central bank's function of preventing massive bankruptcy of banks reflects in its appearance as the lender of last resort.

In considering the issue of the width of central bank credit support, an optimal solution should be found because, on one hand, unlimited and cheap support of the central bank would lead to a total suppression of market methods of financing, while on the other, limited and expensive central bank support would cause instability of the financial system and economy as a whole if a greater number of banks undergoes serious financial disturbances. For the above-mentioned reasons, the consideration of the need to realize the function of the central bank as the lender of last resort has to include analysis of all the relevant factors that are important for making this decision. Thus, for example, the need of banks to take liquidity loans at the central bank shall be reduced inasmuch as the interbank money market is more developed.

Notwithstanding the fact that central banks are capable and ready to grant credits to banks in the time of crisis, when other banks are not able or ready to do it, it is important to emphasize that by this function the central bank covers only current deficits of commercial banks. So, it is not the unconditional guarantor of the banking system liquidity, being that it does not guarantee liquidity of individual commercial banks. It has no obligation to accommodate banks with liquidity loans in the required amounts only because the banks are ready to pay the discount rate. Hence the thesis that the central bank is "the lender of last resort" [6, p. 17], meaning practically that, in their business policy, banks should hesitate with taking loans at the central bank because of the so-called reputation risk, and that they should use the discount mechanism only as the last resort in case of liquidity crisis, after they have tried all other options (primary liquidity reserves, secondary liquidity reserves and credits at correspondent banks).

When the Fed was formed, its most important function was the role of the lender of last resort, in order to prevent banking and financial panics and, consequently, the occurrence of banking crises. Unfortunately, the Fed was not granting credits aggressively enough during the period of Great Depression, so its intervention as a lender of last resort was deemed unsuccessful. Having learnt from its past mistakes, the Fed performed its role as a lender of last resort at a high level in the period after the World War II. Thus, first in October 1987 and then again in September 2001, the Fed announced that it shall provide the means necessary for the financial system through the discount window, having confirmed in this way the role of discount policy in reducing the costs of financial disturbances in economy [4, p. 404].

Beside its good sides, reflecting in the banking and financial panic prevention, the Fed's function of the lender of last resort has its bad sides, too. If a bank expects the Fed to extend a discount credit to it when it gets into crisis, it will engage in higher risks, being sure that the Fed shall help anyway. This creates a problem of moral hazard, since the borrowers (in this case, the banks) are undertaking actions that aggravate the credit reimbursement to the central bank. The moral hazard problem becomes even greater in the case of big banks that consider themselves too big to fail and are, therefore, sure that the Fed shall always grant them credits whenever they fall into troubles, because their failure would condition the rise of banking panic. Such behavior of banks may also inspire other financial institutions to take greater risks, because they will also expect the Fed to grant them credits in case of liquidity problems.

Moreover, borrowings of banks and other financial institutions from the central bank cause a reputation risk to these institutions, having in mind that they shall be characterized as insolvent institutions, which would induce withdrawal of deposits from such banks and, finally, a systemic crisis, that is, a crisis of the entire financial system. It is precisely because of the mentioned discount policy advantages and disadvantages that the central bank is obliged to prepare a comparable cost-benefit analysis, i.e., to compare the bad side of the lender of last resort function (moral hazard) with the good side of its function (prevention of financial panic) and only after this analysis to decide whether it shall use the discount window as a panic-preventing instrument.

2.3. Central bank as the Market Maker of Last Resort (MMLR)

The lending of last resort function is based on the principles set before 135 years (in the 19th century) by Walter Bagehot, according to whom central banks should, in order to avoid banking panic, grant timely and unrestricted loans to solvent but illiquid depository institutions that have corresponding collaterals, by charging penalty interest rates [16, pp. 99-102]. In bank-based financial systems, in which banks are the main providers of liquid assets, the central bank role in securing financial stability is reduced to the lender of last resort function. At first glance, it seems that the central bank role in the conditions of banking panic is strictly determined. However, as the indirect financing (financing through financial intermediaries) is increasingly being substituted by the direct financing (financing through financial markets), liquidity problems are taking wider dimensions as compared to the liquidity problems faced by individual financial institutions. Current financial crisis focuses on the market illiquidity that cannot be solved by the policy of lending against good collateral exclusively to commercial banks, which basically is the lender of last resort. At the same time, it should be remembered that Bagehot's doctrine does not lose its relevance with this, but it only becomes hardly applicable in newly developed market conditions.

Most certainly, structural changes of the financial system and the systemic liquidity crisis that we are facing should not leave us blindly tied to the mid 19th century regulations. For this reason, the function of the central bank as the lender of last resort has become inconsistent in time. In order to assure the financial market "resurrection" and continuity, the central bank takes the role of a market maker of last resort (MMLR). The question is: what is the essence of this central bank role and when it appeared? The MMLR is defined as a public body that appears in the role of a buyer of last resort, on a non-competitive basis and without any possibility of profiting, intending to secure the market continuity in the conditions of crisis by accepting "bad property" as collateral [9].

In a market-oriented financial system, the central bank appears as a market maker of last resort, based on the obligation of the central bank to supply credits through the discount window to a wider circle of partners (not only to commercial banks, as in LOLR), accepting in so doing a wider spectrum of collaterals mainly of dubious quality [15, pp. 171-178]. Starting from the crisis in the stock market of 1987 and explosion of technological advances in 2001, all that monetary authorities did was the following: (1) reduction of short-term interest rates; and (2) provision of huge amounts of liquid assets exclusively on the basis of high-quality collaterals and never on the basis of illiquid ones. The ultimate effect of getting out of these crises was a tremendous amount of liquidity that the markets, after having recovered, could not absorb. Instead of that, if the central bank accepted illiquid financial instruments as collaterals, there would be considerably lesser amounts of injected liquidity in the recovered financial markets. For these reasons, in market-oriented financial systems, the function of the market maker of last resort appears not only as a complement but rather as a substitute of the lender of last resort function of the central bank. It is, of course, of key significance that the acceptance of illiquid financial instruments for collateral shall require adequate evaluation by the central bank, since the market is not capable of doing it.

The mentioned dilemma related to the role of the central bank as lender of last resort vs. market maker of last resort was also discussed by the Fed in relation to the discount

window vs. TAF (Term Auction Facility). The function of the lender of last resort, which included borrowing at the discount window in accordance with Bagehot's principles, underwent severe criticism as it was strongly believed that such a model of lending exposed the bank to a reputational risk, degraded it by sending signals to the market about an unfavorable liquidity position of the bank. This so-called "stigma" problem is responsible to a great extent for a modest application of the mechanisms of borrowing from the discount window during the last few months. The Fed's efforts to recover liquidity by the application of standard monetary policy instruments (discount policy and open market operations) gave no results. In December 2007, together with the central banks of Canada, Great Britain, EU and Switzerland, the Fed announced measures aimed at easing the pressures in the short-term financial markets [12]. In this program, the Fed provides predetermined amount of funds to depository institutions for the period of 28 and 84 days against the same collateral used to secure conventional loans from the discount window. The funds are auctioned, while the Fed sets the amount to be bidded. The TAF proved to be quite a successful instrument that, in spite of its temporary character, managed to end the so-called "stigma" problem, which can be witnessed by a large number of bidding participants, as well as by the total auction amount.

In March 2008, the Fed introduced a new landing facility, the Primary Dealer Credit Facility (PDCF), enabling all financial institutions (both banking and non-bank) acting as primary dealers to borrow loans from the Fed through the discount window in exchange for a wider collateral [2, p. 13]. This way, the Fed performed for the first time in history a direct crediting of investment banks that are out of its control (e.g. Bear Stearns) by accepting a wider collateral set. Alongside with this, the Fed Act entitles all IPCs (Individuals, Partnerships and Corporations) to have access to the discount window, on condition that they are entities of essential significance for the American economy and upon the approval of at least 5 members of the Board of Governors of the Federal Reserve System.

Financial crisis prevention and overcoming is an extremely complex process in which the functions of the central bank and other public entities are of crucial significance in the situations when markets "fail" [15, p. 171]. This is due to the fact that further continuity of market operations and the way out of the universal liquidity crisis shall depend precisely on their credit support. Therefore, central banks would have to justify their existence by acting just as market makers of last resort, through accepting financial instruments of dubious quality and granting funds to a wide scope of banks and non-bank financial institutions.

3. AUTOMATIC FACILITIES AS A DESTIGMATIZED INSTRUMENT OF THE CENTRAL BANK IN PROVIDING OVERNIGHT LIQUIDITY: A COMPARATIVE ANALYSIS OF DEPOSIT AND CREDIT FACILITIES AS A SUPPLEMENTARY INSTRUMENT OF THE MONETARY POLICY OF THE NATIONAL BANK OF SERBIA AND ECONOMIES IN TRANSITION

The financial unrest in 2007 and collection of penalty interest rates set for crediting banks by the central bank have brought about the so-called "stigma problem", which stimulated the hesitation of banks to apply for credits at the central bank, despite their actual needs for liquid funds, just for the fear of being characterized as insolvent institutions (the reputational risk, mentioned in the previous text).

This diminished the discount window use and induced innovations in monetary policies of many central banks, by implementing so-called credit auctions. Credit granting based on wider collateral to a greater number of financial institutions significantly contributed to the support of the system by liquidity. However, credit auctions are of a temporary character, they are available only periodically, rather during two weeks or a month than on a daily basis. For these reasons, it is necessary to rely on a monetary policy instrument which is continually available and freed of the stigma. For these purposes, the central banks of many countries implement automatic facilities.

The automatic facilities, known in our banking as standing facilities, have a twofold character: if they serve to provide overnight liquidity, we are talking of credit facilities, while it is the issue of deposit facilities if they are used for depositing short-term excess liquidity. The interest rates on credit and deposit facilities form an interest corridor that should contribute to the improvement of short-term interest rate control in the interbank market. Unlike the Fed and the Central Bank of Japan, which apply only credit facilities, the European Central Bank and the National Bank of England allow both credit and deposit facilities. The use of these facilities was restricted at the Fed due to the mentioned stigma problem and to certain limitations of this instrument during the pre-crisis period. On the contrary, the ECB was frequently using standing facilities before and during the crisis, as it was less burdened by the stigma.

In almost all transition economies, the automatic facilities appeared as supplementary instruments of monetary policies [14, pp. 129, 134-139], and we shall analyze their implementation in further exposure, in the cases of Czech, Polish, Croatian and Serbian monetary systems.

Czech National Bank uses automatic facilities for providing and depositing liquidity overnight, where the interest rates applied to them form the corridor for short-term money market interest rates. The minimum volume of transactions for both deposit and credit facilities is limited to 10 million CZK, while the required transactions against the Czech National Bank have to be executed not later than 15 minutes before the end of the clearing day for deposit facilities, or 25 minutes before the end of the clearing day for credit facilities. The interest rate calculated for deposits is the discount rate and it represents the lower limit of forming short-term interest rates in the money market, while the lombard rate that is applied on credit facilities makes the upper limit of forming short-term interest rates in the money market.

National Bank of Poland, alike the Czech National Bank, applies deposit-credit facilities in which government securities are used as collateral, among them primarily Treasury Notes, where the granted credit amount may not exceed 80% of the nominal value of mentioned securities and the credit is disposable the next working day from the day of being granted.

Croatian National Bank uses automatic facilities with the aim of stabilizing unexpected liquidity changes in commercial banks. Standing facilities have the overnight maturity and they may be applied in the form of a lombard credit in case of liquidity deficit, or in the form of a cash deposit in case of excess liquidity. By them, an interest rate corridor was set, in which the interest rate on lombard credit is the upper interest range limit, and the overnight deposit interest rate is the lower limit of the interest range. The lombard credit is granted on the basis of deposited treasury notes, amounting to 90% of their nominal value.

Central Bank of Montenegro can grant, from its own separate account, an intraday or intranight credit to a bank for its liquidity maintenance. The granted credit amount has to be totally covered by the securities issued by the Republic, an EU member or other country as defined by the Central Bank regulations. Credit is extended on the basis of a contract, up to the level of 80% of the nominal value of deposited securities. Securities must be minimum 3 days and maximum one year to maturity. Since Montenegrin banks have not used these credits so far, their presentation shall be omitted from the Table 2.

National Bank of Serbia also applies standing facilities as the monetary policy supplementary instrument, and they include the implementation of collateralized credits for liquidity maintaining and depositing surplus liquidity in the National Bank of Serbia. These operations are initiated by commercial banks. Interest rates on standing facilities are used as the interest corridor, as they provide liquidity control and reduction of short-term interest rate fluctuations in the interbank market. The corridor of overnight standing facilities is determined according to the reference interest rate level and its current range is as follows: the overnight credit rate for daily liquidity maintenance: 2W + 2.5 percentage points, as the interest rate ceiling; and the overnight deposit rate: 2W - 2.5 percentage points, as the floor of the interest rate.

A comparative survey of automatic facilities as a supplementary instrument of the monetary policy of central banks, with official interest rates, is given in the Table 2.

Table 2 Deposit and credit facilities as the monetary policy instrument of central banks

Instruments / Central Banks	Czech R.	Poland	Croatia	Serbia
2W repo operations 2W repo rate	1.25%	3.50%	/	10.00%
Interest rate on deposit facilities	0.25%	2.00%	0.50%	7.50%
Interest rate on credit facilities	2.25%	5.00%	9.00%	12.50%

Source: www.cnb.cz, www.nbp.pl, www.hnb.hr, www.nbs.rs

It may be concluded from this that, in the absence of a developed market, the use of primary issuance of government or central bank securities, combined with rediscount credits of the central bank, represents the essential monetary management instrument of the countries in transition. In this, the automatic facilities (deposit and credit) are the supplementary instruments, whose function is only to support the essential instrument of monetary policy.

It is here necessary to point out the essential difference in the monetary policy conduct in the countries with developed market economies as compared to the developing countries, related to the period after the financial crisis outbreak. Namely, a great number of central banks in developed market economies reacted by lowering reference rates, while the reaction of the central banks of developing countries, due to depreciation pressures and increased risk level of the country, reflected in conducting restrictive monetary policy, that is, in the increase of reference rates [18]. However, taking into account evident slowing down of economic growth and decline in investment in 2009, the opportunities have substantially decreased for conducting a restrictive monetary policy through increasing the NBS basic rates. Therefore, a switch has been made toward an expansive monetary policy, which stabilized monetary and economic trends to a certain

extent. Based on the current projection, the mitigation of monetary policy by further lowering of the reference interest rate (present level is 10%) shall additionally affect further recovery of economic activities [17].

CONCLUSION

Current financial crisis substantially endangered the financial system stability and imposed a necessary review of the adequacy of existing monetary policy instruments and the development of new ones. Notwithstanding the fact that, at the onset of the crisis, developed and developing countries conducted completely different monetary policies, expansive in the developed and restrictive in the developing countries, the deterioration of the general economic situation and the financial crisis propagation to the real sector, which gave it global dimensions, conditioned the formation of a common attitude of all central banks. All of them turned to the monetary policy mitigation, by lowering central bank reference rates, which resulted in certain recovery of economic activities in 2009.

Prevention and overcoming of a financial crisis represent an extremely complex process in which a crucial significance is attached to the role of the central bank and other public entities. The current financial crisis puts in the spotlight the market illiquidity, which can be resolved only with adequate support of the central bank. In this, it should be kept in mind that Bagehot's doctrine "lend freely at a high rate, on good collateral" [16] can hardly be applicable in newly created market conditions. Namely, the policy of lending on good collateral exclusively to commercial banks, which is the lender of last resort in its essence, is not a suitable solution for systemic illiquidity. Therefore, central banks should justify their existence by functioning practically as market makers of last resort, through accepting financial instruments of dubious quality and granting funds to a wide scope of banks and non-bank financial institutions.

REFERENCES

1. Charls E.Walker, *Discount policy in the light of recent experience*, The Journal of Finance, Vol. 12, No. 2 (May, 1957).
2. CGFS - *Central bank operations in response to the financial turmoil*, Bank for International Settlements, 2008, available at: http://www.bis.org/publ/cgfs31.pdf?noframes=1
3. Daniel L. Thornton, *The Market's Reaction to Discount Changes What's Behind the Announcement Effect?*, Federal Reserve Bank of St. Louis, Working Paper 1992-003A, available at: http://research.stlouisfed.org/wp/1992/92-003.pdf
4. Frederic S.Mishkin, *The Economics of Money*, Banking and Financial Markets, Seventh Edition, Pearson, Boston, 2004.
5. Gordon H. Sellon, Jr, *The Role of the Discount Rate in Monetary Policy: A Theoretical Analysis*, available at: http://www.kc.frb.org/PUBLICAT/ECONREV/EconRevArchive/1980/2q80sell.pdf
6. Goodhart Charles A.E and Haizhou Huang, *A Model of the Lender of Last resort*, Working Paper (March), International Monetary Fund, Washington D.C., 1999.
7. Đurović Todorović Jadranka, Jovanović M., Krstić B., *Monetarni i fiskalni menadžment*, Faculty of Economics, Niš, 2006.
8. Živković A., Kožetinac G., *Monetarna ekonomija*, Faculty of Economics, Belgrade, 2003.
9. Jonathan Chiu, Thorsten V. Koepppl, *Market Making of Last Resort: Optimal Intervention when Financial Markets are Frozen*, July 31,2009, available at: http://www.econ.queensu.ca/pub/faculty/koeppl/research/MMLR_WiP1.pdf
10. Krstić, B., *Bankarstvo*, Faculty of Economics, Niš, 1999.

11. Lakić S., *Bankarske krize u ekonomijama u razvoju i tranziciji*, "Preduzetnička ekonomija", Faculty of Economics, Podgorica, 2006.
12. Mark Jickling, *Averting Financial Crisis*, CRS Report for Congress, 2008, available at: http://fpc.state.gov/documents/organization/103688.pdf
13. Marinković S., *Tri talasa ekonomske krize u Srbiji*, "Ekonomika preduzeća", May-June 2009.
14. Raonić I., *Efikasnost instrumenata monetarne politike*, master thesis, Faculty of Economics, Niš, 2007.
15. Willem Buiter and Anne Sibert, *The central bank as the market-maker of last resort: from lender of last resort to market-maker of last resort*, The First Global Financial Crisis of the 21th Century, A VoxEU.org Publication, available at: http://www.voxeu.net/reports/subprime/report.pdf
16. Xavier Vives, *Bagehot, central banking and the financial crisis*, IESE Business School and CEPR, available at: http://www.econ.queensu.ca/pub/faculty/koeppl/research/MMLR_WiP1.pdf
17. Presentation given by the Deputy Governor Bojan Marković, Report on Inflation – November 2009, available at: http://www.nbs.rs/export/internet/latinica/15/konferencije_guvernera/prilozi/20091120_IR_prezentacija.pdf
18. Institute of the Faculty of Economics, Finance and Administration, Studies&Research No. 11/2009, *Svetska ekonomska kriza i posledice po privredu Srbije*, Belgrade, 2009, available at: http://www.fefa.edu.rs/files/pdf/StudijeIstrazivanja/sveska11SvetskaEkonomskaKrizaIposledicePoPrivreduSrbije.pdf.

UTICAJ GLOBALNE FINANSIJSKE KRIZE NA PROMENU ULOGE CENTRALNE BANKE U TRŽIŠNOM POZICIONIRANJU FINANSIJSKIH INSTITUCIJA

Borko Ž. Krstić, Mirjana Jemović

Zauzimanje jasnog stava centralne banke kao vrhovne monetarne institucije, oko vođenja monetarne politike od krucijalnog je značaja za njen kredibilitet. Iz tih razloga, centralna banka, preko objavljivanja zvaničnih kamatnih stopa tj. objavljivanjem podataka o visini eskontne stope i njenim promenama, upoznaje javnost sa svojim namerama. Nesigurnost i panika koja trenutno vlada na finansijskim tržištima, usled sistemske krize likvidnosti, još više su pojačali odgovornost centralne banke da, odgovarajućom politikom eskontne stope izvrši "fino podešavanje tržišta". Cilj rada je da pokaže kojim instrumentima se centralna banka koristila u postupku osiguranja likvidnosti banaka i obezbeđenja opšte finansijske stabilnosti i zašto je, s aspekta novonastalih tržišnih uslova poslovanja, Bejghotova doktrina "zajmodavca u krajnjoj instanci" (lender of last resort) postala vremenski nekonzistentna ustupivši mesto ulozi centralne banke kao "podržavaoca tržišta zadnjih kreditnih linija" (market maker of last resort).

Ključne reči: *eskontna stopa, efekat najave, zajmodavac u krajnjoj instanci, podržívač tržišta zadnjih kreditnih linija, kreditne olakšice*