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The Global Financial Crisis and the Behaviour of Short-Term Interest Rates – International and Serbian Aspects

Summary: Throughout the current global financial crisis the market has continued to fall due to a lack of confidence of those banks that are not yet prepared to lend on the interbank money market. For instance, the negative repercussions of the crisis onto the Serbian financial sector have created a number of issues including a significant increase in lending rates, a difficulty, or impossibility, for the corporate sector to use cheap cross-border loans and a reduction in the supply of foreign exchange on that basis. The inability of the National Bank of Serbia to follow the aggressive reduction of the key interest rate that has been implemented by central banks in developed countries, partly explains the lack of a decline in short-term interest rates by the Serbian banking industry. The first section of the paper focuses on the effects of the financial crisis through the behaviour of short-term interest rates in the US and Europe, while the second section gives an estimation of the effects of the global financial crisis on interest rates in the banking industry in Serbia.

Key words: World, Financial crisis, Short-term interest rates, International and domestic aspects.

JEL: G20, G21.

The current financial crisis, caused by the collapse of the sub-prime mortgage market in the US, has been accompanied by a loss of confidence among those banks that are unwilling to lend money on the interbank money market. Given this situation, a number of researchers have focused on the behaviour of money market short term interest rates, as well as on the interest rates' insensitivity to central banks' actions, namely the continuous fall of key interest rates. With a drastic jump in interest rates on overnight lending among banks it is implied that the long-term LIBOR, EURIBOR and central banks key interest rates are almost irrelevant for the banks' decision making processes. This had not been the case prior to emergence of the financial crises.

The first section of the paper examines the effects of the financial crisis on the behaviour of short-term interest rates in the US and Europe. The emphasis is on the banking industry's reaction to the zero interest rate policy implemented by the Federal Reserve System in the US and to the European Central Bank's continuous reduction of the key interest rate policy after September 2008.

The second section of the paper provides an estimation of the effects of the global financial crisis on interest rates in the Serbian banking industry. The reduction of the key interest rate is aimed at achieving the reduction of interest rates on commercial bank loans, thereby increasing the aggregate demand. The authors will attempt to prove that the Serbian monetary authorities are unable to implement the aggressive interest rate cuts that have been carried out by the central banks of the US and the European Monetary Union.

1. The Effects of the Financial Crisis on the Behaviour of Short-term Interest Rates in the United States and in Europe

The global financial crisis, which was initiated by the collapse of the US sub-prime mortgage market in August 2007, escalated throughout September and October 2008 in the form of shocks that were similar in intensity to those experienced in the 1929-1933 Great Depression. Carmen M. Reinhart and Kenneth S. Rogoff (2009) emphasise that more than 1000 billion USD was invested on the sub-prime mortgage market which consisted of poorest and least creditworthy borrowers in the US. The following section provides a list of the key events that occurred within the US financial sector.

Firstly, on December 12th, 2007 the Federal Reserve System (Fed), the European Central Bank (ECB) and the central banks of the UK, Switzerland and Canada announced an expansion of their liquidity measures in order to lower borrowing costs. This included a Fed approved \$160 billion for short-term loans in six auctions through the Term Auction Facility (TAF) between mid-December 2007 though the beginning of March 2008. The ECB injected a record \$500 billion into the banking system on December 18th, 2007. On March 7th 2007, the Fed announced that it would increase the amount of its two TAF sales during that month from \$30 to \$50 billion each, and boost them further “should conditions warrant” such a move. Simultaneously the Fed announced it would make \$100 billion available through weekly 28-day term repurchase agreements (Bloomberg 2009a).

Secondly, on March 16th, 2008 JPMorgan Chase & Co expressed its intention to acquire rival investment bank Bear Stearns. The takeover (with a bid which marks an over 90% discount to Bear Stearns’ market capitalization) was fully approved by the Fed and by the Ministry of Finance. This in itself highlights the risks that banks and financial companies in the US were dealing with in the midst of a deepening subprime-mortgage crisis. The fact that JP Morgan purchased Bear Stearns, with guarantees that the Fed would bear losses of up to \$30 billion, was seen by market participants as the first step in a long chain of downward steps to follow.

Thirdly, on September 7th, 2008 the US government nationalized two mortgage giants - Fannie Mae and Freddie Mac. This guaranteed about fifty percent of US mortgages, as the rising mortgage delinquencies registered by the two lenders and sponsored by the government, prevented them from completing their mission to shore up the housing market safely. Explaining the reasons for this government measure, Henry Paulson, the Treasury Secretary, said “A failure of Fannie Mae or Freddie Mac would cause a major crisis in financial markets, both in United States and in other countries.” (Factiva 2009).

Fourthly, on September 16th 2008, the Fed lent assistance to the large US insurance company, American International Group (AIG), by injecting 85 billion US dollars in exchange for 79.9% of the shareholders capital. This was the first such intervention of its kind by the Fed. Following this step, at the beginning of October 2008, the US Congress approved a historic \$700 billion financial-rescue package allowing the Treasury Department to use authority on five fronts:

- purchasing troubled mortgage-backed securities;
- buying mortgages, particularly from regional banks;
- insuring mortgage-backed securities and mortgages, ensuring banks and investors against losses if borrowers default;
- purchasing equity in a broad array of financial institutions; and
- helping delinquent borrowers stay in their homes.

According to officials, this was done with one simple goal, to restore capital flows to the consumers and businesses that form the core of the US economy.¹

On October 10th 2008, Lehman Brothers, the fifth largest US investment bank, filed for bankruptcy, while Merrill Lynch accepted Bank of America's purchase offer of 50 billion USD. This was almost half of Merrill Lynch's 2007 market value. Starting from 2008, over 30 U.S. banks have become insolvent and have been taken over by the Federal Deposit Insurance Corporation (FDIC). Combined, these banks hold over \$55 billion in deposits, and the estimated takeovers have cost the federal government up to \$17 billion (Federal Deposit Insurance Corporation 2009).

The effects of the US financial crisis quickly spread throughout Europe. However, up until October 2008 there were no expectation that the growth of losses in certain European banks, which were exposed to the risk of the US mortgage loans market, would require state intervention to save the banking sector. Money market tensions in the US markets transmitted to the euro money market via the foreign exchange swap market as the provider of US dollar liquidity. As stated by ECB, "foreign exchange swap rates increased because of higher counterparty risk, and the market became less liquid as liquidity became more valuable at the outset of the market turbulence. This increased swap rate carried through to the unsecured euro interbank markets and, as a final result, euro money market spreads increased in times of higher tensions in the US dollar money market" - (European Central Bank 2008, p. 30).

Following Black Friday (October 10th 2008), which was the largest weekly fall in the Dow Jones Stoxx Bank Index, EU member state governments adopted urgent measures to support the troubled banking sector in order to avoid panic on the market. However, following such news, and after a short recovery, the collapse of bank shares continued, where the value of the aforementioned index had dropped fifty percent between the beginning of 2008 and November 2008.

As presented in Table 1, the financial support provided by states was quite large and varied from providing loan guarantees to the capitalisation of banks. After announcing its bankruptcy, Ireland changed its banking regulations to guarantee all

¹ Speech made by N. Kashkari in Washington, D.C., before the Institute of International Bankers (Factiva 2009).

citizens deposits regardless of the deposited amount. Following the Irish reaction, other EU countries adopted similar regulations to avoid panic from their depositors.

Table 1 EU Government Support to the Banking Sector (In Billion EUR) until the beginning of October 2008

	Debt guarantee (maximum amount covered)	Capital support	Other measures	
Austria	85	15	-	EUR
Belgium	NA	7.7	-	EUR
France	320	41	-	EUR
Germany	400	70	10	EUR
Ireland	300	-	-	EUR
Italy	NA	NA	40	EUR
Luxembourg	NA	2.5	-	EUR
Netherlands	200	4	-	EUR
Portugal	20	-	-	EUR
Spain	100	-	30	EUR
UK	250	37	-	GBP
Total (ex.UK)	>1425	>140		EUR
Total	>1745	>187		EUR

Note: The data for Ireland does not include retail deposits insurance for consistence. The support for Dexia and Fortis is included in the estimates for France, Belgium, Luxembourg and the Netherlands. Other measures include purchase or swap of bank assets.

Source: Factiva (2008), Financial Times (2008).

In mid-December 2008, in response to the deepening economic crisis, European leaders supported a package of economic measures worth 200 billion EUR which amounted to 1.5% of the GDP of 27 EU member countries. The objective of the package was to offer more money to banks as a means for them to provide more loans to companies (European Commission 2008). This strategy is in direct relation to combat one of the indicators of the depth of the current global financial crisis, being the unwillingness of banks to lend on the inter-bank money market, which implies lending with high risk premium due to the credit risk. As stated by Mizen “the complexity of the structured products increased the difficulty of assessing the exposure to subprime and other low-quality loans. Even after the credit crunch influenced the capital markets in August 2007, many banks spent months rather than weeks evaluating the extent of their losses.” (Paul Mizen 2008, p. 541). Mizen concludes that the doubts about the scale of these losses created considerable uncertainty in the interbank market, and banks soon became reluctant to lend to each other unless they were compensated with larger risk premiums.

The “TED Spread”, as a measure of credit risk for inter-bank lending, reached record levels in late September 2008 (Figure 1), where prior to the emergence of subprime mortgage losses in 2007, the TED spread had generally floated within the range of 10 and 50 basis points. The higher spread indicates that banks perceive each other as riskier counterparties. Nevertheless, the Treasury yield movement was a more significant driver of the “TED Spread” than the changes in LIBOR. In this case, a three month T-Bill yield so close to zero implies that people are willing to forego interest in order to keep their money (principal) safe for three months; this is a very high level of risk aversion and indicative of tight lending conditions.

A rising TED spread often indicates a drop in stock prices as liquidity is withdrawn from the market. When this occurred in the recent economic situation US T-Bill yields tumbled to a 0.29% low, as investors sought safe haven investments, and LIBOR was pushed to 4.82%. This created a record high TED spread of 4.53 percentage points on October 10th, 2008.² Such circumstances were a clear sign the markets were truly in the midst of the worst financial crisis in history.

Following the approval of the financial-rescue package by the US Congress, the TED spread declined. As presented in Figure 1, on March 6th, 2009 the TED spread value was close to 110 basis points, implying a downward trend compared to the value recorded one year earlier. However, the 110 basis points value is above the expected benchmark value recorded prior to the US economic crisis. In January 2009 the Federal Open Market Committee stated that in addition to the purchase of agency debt and mortgage-backed securities already under way, “it was prepared to purchase longer-term Treasury securities if evolving circumstances indicated that such transactions would be particularly effective in improving the conditions in private credit markets” (Board of Governors of the Federal Reserve System 2009, p. 36).

In addition to the TED spread, the LIBOR-OIS spread illustrates the difference between the three-month LIBOR for dollars and the overnight indexed swap rate. This is another indicator that shows whether the money market is under stress. A higher spread is typically interpreted as the indication of a decreased willingness on the part of major banks to lend, while a lower spread indicates higher liquidity in the market. As such, the spread may be viewed as an indicator of the banks' perception of the creditworthiness of other financial institutions, and the general availability of funds for lending purposes. The LIBOR-OIS spread has historically shifted across 10 basis points however, in the midst of the current financial crisis the spread spiked to an all-time high of 364 basis points in October 2008. Since that time the spread has declined erratically but substantially, dropping below 100 basis points in mid-January 2009, but remaining well above historical averages. At the beginning of March 2009, the spread had a value of more than 100 basis points. Consequently, the US money market is currently in a state of acute stress, despite the 787 billion USD stimulus measure enacted into law in .

Using a non-arbitrage model of term structure, John B. Taylor and John C. Williams (2008) illustrate that increasing counterparty risk between banks contributed to the rise in spreads, finding no empirical evidence that the introduction of the new term auction facility (TAF) by the Fed has reduced spreads between the overnight inter-bank lending and term Libors (Taylor and Williams 2008).

On the other hand, the drastic jump of 1month, 3month and 6 month EURIBOR that took place at the end of September and the beginning of October 2008, despite the reduction of the ECB interest rate on main refinancing operations, is an indicator of the absence of trust in the interbank market of the Euro zone. The 6 month EURIBOR usually used for the calculation of interest rates on mortgage loans

² “Looking at the last 20 years, there was the 87 crash, there was the first Gulf War, the Russian crisis, Enron and a technology bubble, and right now, the TED spread is the highest it’s ever been.” Paul Vaillancourt, director of portfolio strategy for Franklin Templeton Managed Investment Solutions said “This is unprecedented.” (Financial Post 2009)

reached an all time high of more than 5.4% on October 10th, despite the 50 basis point reduction of the ECB main refinancing rate to 3.75% two days earlier. Only after several EU countries had announced that they would provide guarantees on inter-bank loans, did the 6 month EURIBOR significantly drop (Figure 2).

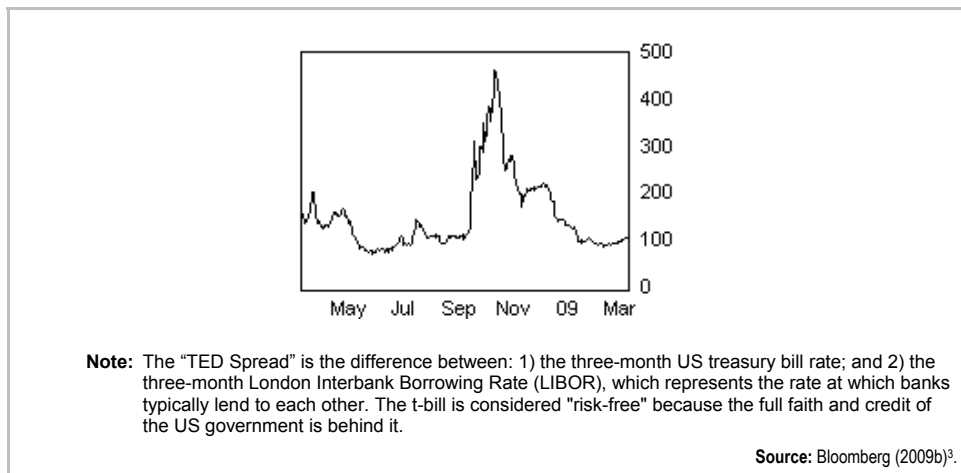


Figure 1 TED Spread (April 2008 - March 2009)

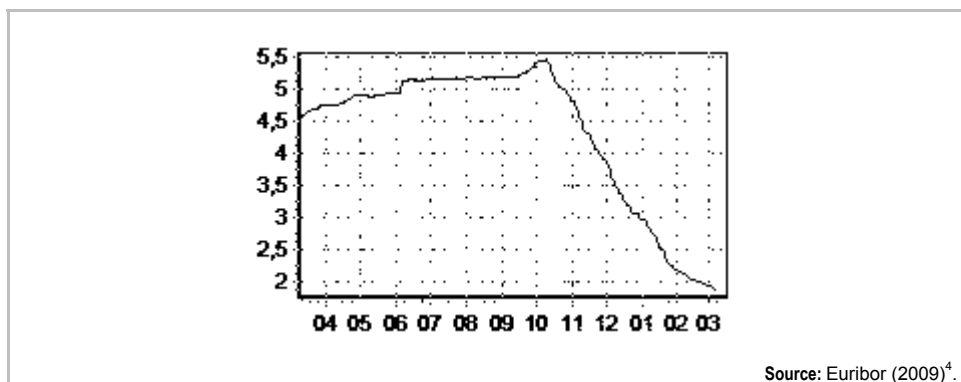


Figure 2 6 Month EURIBOR (March 2008 - March 2009)

The continuous fall of the 6 month Euribor from October 2008, to the beginning of March 2009, is a result of frequent, and significant, falls of the ECB main refinancing rate. This pattern leads to the assumption that the recession will continue deepen even further than expected. In November 2008, the ECB main refinancing rate was reduced to 3.25%, to 2.50% in December 2008, to 2.00% in January 2009,

³ Bloomberg. 2009b. Market Data. www.bloomberg.com (accessed April 15, 2009).

⁴ Euribor. 2009. Euribor Historical Data. www.euribor.org (accessed April 15, 2009).

and to 1.50% in March 2009. In mid-January 2009 the ECB had reduced the interest rate to the lowest level in more than three years, signalling that borrowing costs could fall further. At the beginning of March 2009 the 6 month Euribor was cut to 1.84%. Following the March 2009 cut in the ECB refinancing rate, one may expect a further reduction in borrowing costs within the Euro zone.

To avoid the possibility of deflation and stagnation, George W. Evans, Eran Guse, and Seppo Honhapohja (2008) recommend “a combination of aggressive monetary and fiscal policy triggered whenever inflation threatens to fall below an appropriate threshold. Monetary policy should immediately reduce nominal interest rates, as required, even (almost) to the zero interest floor if needed, and this should be augmented by fiscal policy if necessary” (Evans, Guse, and Honhapohja 2008, p. 1457). This recommendation is in its essence the New Keynesian approach, which has been adopted and implemented by the central banks throughout the majority of developed countries with the exception of the European Central Bank. As an argument in favour of the earlier implementation of the recommended policies, the aforementioned authors emphasise that this will mitigate the use of government spending.

In addition, it is important to stress that the traditional monetary ammunition in the ECB remains. Thus it has a clear option to cut its benchmark rate by 50bps to 1%, and narrow its deposit facility margin corridor by 50bps to ½ percent – in line with the Bank of England and slightly above the Fed (0.25%) and the Bank of Japan (0.1%). Since this is not fully priced into the market, the ECB has the rare opportunity to push down the eonia curve and narrow the Euribor/OIS spreads in longer maturities, which would further increase the “liquidity advantage” reflected in these spreads versus the US and UK money markets.

2. The Effects of the Global Financial Crisis on Interest Rates in the Banking Industry in Serbia

The economic indicators for some emerging European states, including Serbia (Table 2) show the level of external exposure to the financial crisis.

Taking into account the current account ratio as a percentage of the GDP, Bulgaria, closely followed by Serbia, are the countries with the highest exposure to the negative effects of the global financial crisis. However, given the other two indicators, the gross reserves to short-term external debt (ratio) and growth in credit to the private sector, Serbia is among those countries which are less exposed to the crisis.

Before the September collapse of Lehman Brothers, which sent global markets into a tailspin, central and eastern European currencies were among the strongest foreign-exchange performers in 2008. Hungary narrowly averted a financial crisis in October 2008 after securing some \$25 billion in financing from the IMF and the EU. During this period, the Hungarian forint fell from an all-time high of 227,70 in mid-July to a record low of 286,15 against the euro by the end of October, a 25% decrease. Romania is the only EU member to have a “junk” sovereign credit rating over

its ability to service its debt ('BB+'/'BBB-'/'Negative Outlook, according to Fitch long-term foreign and local currency ratings). Its Leu slid to a record low of 3,986 in early October, down 15 % from a one-year high set two months earlier. During October 2008, the dinar lost almost 10% of its value against the euro, appreciating in December 2008, and losing 5.8% of its value in January 2009.

Table 2 Macro and Financial Indicators in Selected Emerging Market Countries

Country	Current account balance (% of GDP)	Gross reserves to short-term external debt (ratio)	Net external position vis-à-vis BIS reporting banks (% of GDP)	Growth in credit to the private sector (in percent, year-on-year)	Inflation (in percent)
Bulgaria	-21.9	1.1	-29.0	54.5	14.5
Croatia	-9.0	0.9	-59.7	11.6	8.4
Hungary	-5.5	0.9	-54.1	18.0	6.7
Romania	-14.5	0.9	-36.4	62.0	9.0
Serbia	-16.1	2.8	-15.1	37.0	14.3
Ukraine	-7.6	1.0	-9.5	63.9	26.8

Notes: The projections of the current account balance and the GDP for 2008 in dollar terms from the World Economic Outlook. Short-term debt is measured at remaining maturity. End-2007 estimated by IMF staff. Data on external positions of reporting banks vis-à-vis individual countries and all sectors from the BIS. Latest observations ranging from February 2007/08 to June 2007/08 from the International Financial Statistics. Year-on-year inflation in July 2008 or latest observations.

Source: International Monetary Fund (2008, p. 46).

Table 3, illustrates the dynamics of national currency exchange rates against the euro in a selected group of countries which apply the inflation targeting concept. From the end of September 2008 to the end of January 2009, the dinar lost 19% of its value, marking a significantly higher fall compared to the 11% to 15% drop in the value of the Czech, Romanian and Turkish currencies. Only the Polish zloty depreciated more than the dinar by 23%. However, it should be noted that in Poland it is possible to apply antirecessionary monetary policy due to the relatively low Polish inflation rate, which is not the case in Serbia. In January 2009, the National Bank of Poland reduced the key policy rate by 0.75 percentage points to an annual level of 4.25% after recording an annual growth in consumer prices to 3.3% in December 2008. This is below the upper limit for deviations from the target set at 2.5-3.5%, which is mainly driven by falling fuel prices (National Bank of Poland 2009). On the other hand, the fall in the value of the Hungarian forint is almost equivalent to that of the Serbian dinar.

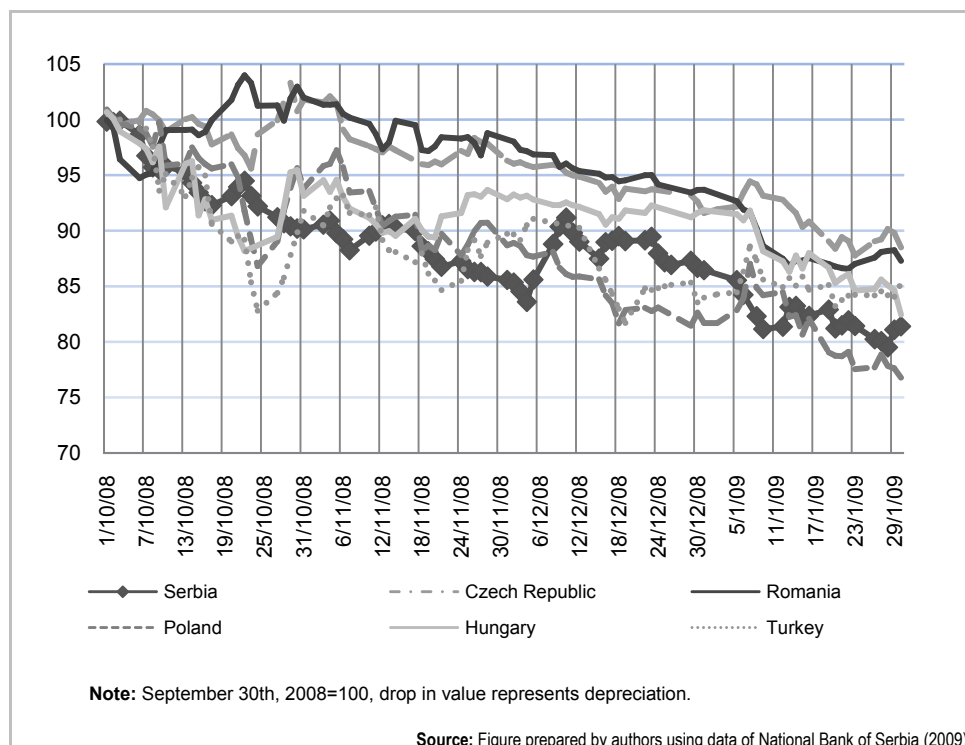
The changes in the exchange rates of the aforementioned currencies, and the general trend of decrease in value against the euro with regards to the end of September 2008, are presented in Figure 3.

Table 3 The Dynamics of National Currency Exchange Rates against the Euro in a Selected Group of Countries from the end of September 2008

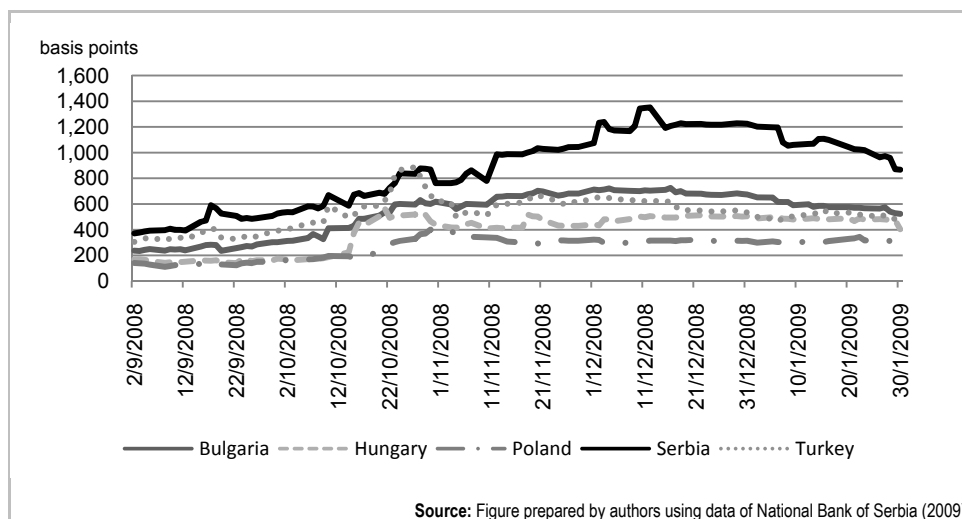
Month / Country	Czech Republic	Romania	Poland	Hungary	Serbia	Turkey
October 2008	1.8	2.0	-6.2	-6.9	-9.9	-8.2
November 2008	-3.9	-3.1	-3.3	0.6	-4.7	-3.1
December 2008	-6.4	-5.2	-10.0	-2.0	0.7	-5.6
January 2009	-3.4	-6.8	-6.0	-10.2	-5.8	1.5
Total change relative to end of September 2008	-11	-13	-23	-18	-19	-15

Note: September 30th 2008 = 100, drop means depreciation, increase in value represents appreciation.

Source: Aggregated table prepared by authors using data of National Bank of Serbia (2009)⁵.

**Figure 3** Fluctuations of National Currency Exchange Rates against the Euro in Selected Countries of Transition from the end of September 2008

⁵ National Bank of Serbia. 2009. National Bank of Serbia Statistics. www.nbs.rs (accessed February 23, 2009).



Source: Figure prepared by authors using data of National Bank of Serbia (2009).

Figure 4 The EMBI Index in Selected Countries from September 2008

The negative repercussions of this crisis on the Serbian financial sector are manifested through the following:

Firstly, a jump in lending interest rates. This is the result of a sudden increase in the key policy rate, where a 2 week repo of the National Bank of Serbia (NBS) increased from 15.75% to 17.75% at the end of October 2008 with the intention of reducing core inflation, which was 10.7% in October 2008 as opposed to the targeted inflation rate of 3-6%. In addition the policy move aimed to reduce the pressure of further dinar depreciation against the euro.

The second effect is the impossibility of the corporate sector to use cheap cross-border loans (Djukić 2008). Following the continuous increase in approved cross-border loans until the end of September 2008, and the average net value of debt in the first nine months of 2008 standing at around 480 million USD, the effects of the financial crisis are manifested through the unwillingness of foreign banks to guarantee such loans in October 2008. At the end of 2008, the reduction in the stock of cross-border loans used by domestic companies was to be expected due to the fact that some of the companies were obliged to pay back the due loans by the end of 2008. In November 2008, companies' net value of foreign debt was reduced to USD 320 million, while in December 2008 it dropped to USD 123 million. In January 2009, almost no cross border loans were approved, the net value of debt being only USD 10 million.

Additionally, the situation in Serbia became further complicated due to the increase of the risk premium (measured by Emerging Markets Bond Index – EMBI) compared to the selected group of countries which applies the targeted rate of inflation concept (Figure 4). The rapid increase in the lack of confidence of foreign investors in Serbia is a direct consequence of political risk, the IMF's announcement of a possible approval of the stand-by arrangement at the time when Hungary and Ukraine concluded similar arrangements, and uncertainty regarding the Serbian 2009 budget.

Figure 5 illustrates the de-seasoned quarterly rates of the increase in value of retail and corporate loans, with a significant decline in the growth of cross-border loans during the fourth quarter of 2008. This is in contrast to the decline in corporate and the stagnation of citizens loans.

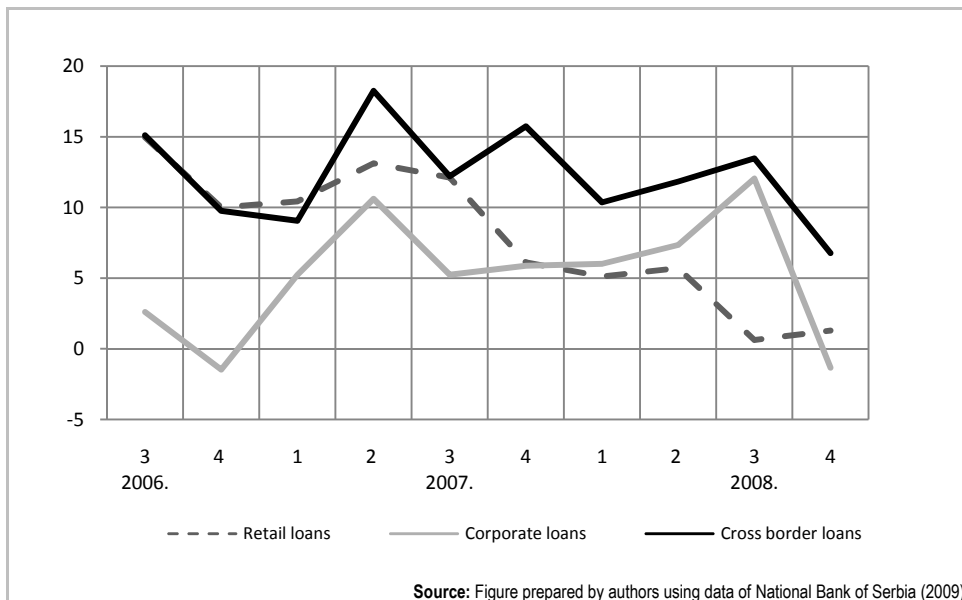


Figure 5 Quarterly Growth Rates of Retail and Corporate Loans in Real Terms (in %)

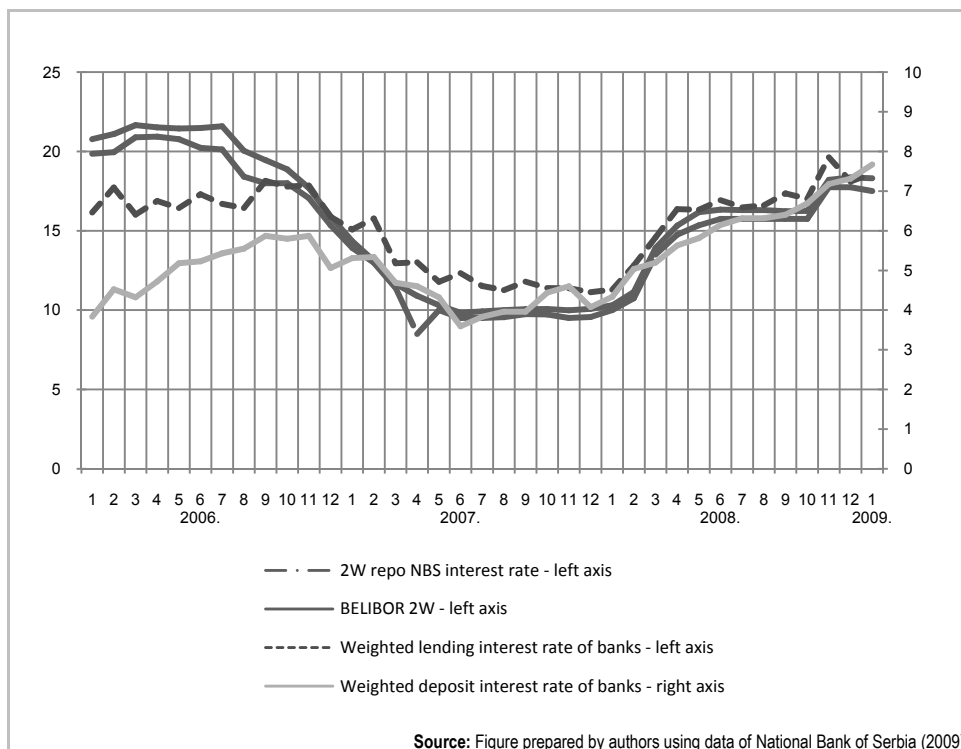
The third effect is a reduction in the supply of foreign currencies due to the drastic reduction, or abolishment, of cross-border loans to domestic companies. Nevertheless, in the period to come, domestic companies, which need to pay off their loans, will create additional pressure on the foreign exchange market as they will have to purchase foreign currency for loan repayments. Due to the reduction in the foreign currency inflow, the NBS intervened on the inter-bank foreign currency market by selling the net of Euros 894.7 million in order to prevent further depreciation of the national currency. In January 2009, the largest monthly intervention took place; Euros 381.3 million were sold by the NBS on the inter-bank foreign currency market. This is related to empirical findings of Kosta Josifidis, Jean-Pierre Allegret, and Emilija Beker Pucar (2009) that the dominant transmission channel is the exchange rate channel.

The fourth effect is on the potential increase of lending rates as a result of the increased competition of banks on the deposits market. This is accompanied by the pressure on foreign banks in Serbia from their parent bank to expend their credit activities based on domestic deposits. The majority of banks are offering interest rates between 8-9% per annum for one year euro-denominated saving accounts to citizens. Pessimistic forecasts, the news regarding the effects of the financial crisis, the un-

foreseen consequences on the Serbian economy, created distrust among citizens. The €976.7 million withdrawal of deposits, which took place during the fourth quarter of 2008 (National Bank of Serbia 2009), kept the interest rates on deposits at a high level.

Essentially, certain psychological factors related to citizens' memories of the undesirable events of the banks and the governments inability to return citizens' deposits two decades ago, were present. However, a high level of liquidity and the capitalisation of banks in Serbia, as well as the readiness of the NBS to sell foreign currency to those banks which had to return foreign currency deposits, exerted a contrary effect (i.e. returning trust to the banking sector). Starting in January 2009, savings in banks increased by €76.2 million.

As a result of the increase in the citizens' deposit interest rate, the average weighted deposit interest rate in the Serbian banking sector increased significantly throughout November and December 2008, to 7.18% and 7.32% respectively as presented in Figure 6. Consequently, November and December 2008 were marked by a significant increase in the weighted lending rate. The increase of lending and deposit interest rates continued into January 2009. In addition the reduction in the NBS key interest rate to 16.50% at the end of January 2009 should not cause a reduction in the commercial banks' interest rates, yet it will encourage banks to buy foreign currency and thereby cause further depreciation of the dinar.



Source: Figure prepared by authors using data of National Bank of Serbia (2009).

Figure 6 2W REPO Rate, Interest Rates of Commercial Banks (Annual Weighted Average in %)

In 2009, citizens and companies in Serbia will be able to receive loans but at higher interest rates. As presented in Table 3, interest rates on short-term citizens' loans in Serbia were extremely high in comparison with the relevant group of countries – Bulgaria, Croatia and Romania. With regard to housing loans, interest rates were slightly higher compared to Croatia, and considerably lower compared to Bulgaria, which implies that the competition among banks was at its most intensive in this segment of the loan market (Djukić 2007).

Table 3 Interest Rates on Citizens' Loans in %

Country	Short-term loans		Housing loans	
	December 2007	December 2008	December 2007	December 2008
Bulgaria	10,24	9,45	8,13	9,15
Croatia	6,84	8,65	5,12	6,08
Romania	8,22	8,77	6,43	6,79
Serbia	30,25	26,49	6,05	6,66

Notes: 1. In the case of Bulgaria and Romania, interest rates are applied to new EUR – denominated loans: consumer loans with up to 1 year maturity and mortgages with over 10 year maturity. In Croatia, the rates are applied to Croatian Kuna loans indexed on foreign currency, while in Serbia the interest rate is mainly applied to dinar loans indexed on foreign currency. 2. The fall of the interest rate on short-term loans in Serbia during December 2008 is a result of the drastic reduction of cash loans at high interest rates. With the exception of December 2008, the interest rate on short-term loans was above 30% while in January 2009, it reached 32.97%.

Source: Table prepared by authors using data of national banks: Bulgarian National Bank (2009)⁶, Croatian National Bank (2009)⁷, National Bank of Romania (2009)⁸, National Bank of Serbia (2009).

The situation is different with regard to interest rates on corporate dinar loans in Serbia. For short-term loans (up to two years), the interest rate is determined on the basis of Belibor (Belgrade Interbank Offered Rate) with one-month maturity and is higher than the NBS reference interest rate and the margin added by the bank. The range of annual interest rates is between 21% and 27% and depends on the credit rating of the client. Regarding the long-term loans (maturity greater than two years), the interest rate is determined on the basis of Belibor with one-month maturity and the bank's margins which range from 2% to 5% depending on the credit rating of the client. Consequently, bank clients receive loans at interest rates no lower than 20% to 21%.

Based on the existing series of banks lending interest rates, which in addition to interest rates for dinar loans also include those for loans indexed on Euros and Swiss francs as well as other bank assets (NBS securities and T-bills), we are currently unable to examine the real influence of the NBS interest rate on the behaviour of banks' interest rates by applying the Vector Autoregression Analysis (VaR analysis). As soon as the preconditions for the adequate application of VaR analysis have been met, this will become the subject of new research.

⁶ **Bulgarian National Bank.** 2009. Statistics. www.bnb.bg (accessed February 27, 2009).

⁷ **Croatian National Bank.** 2009. Statistics. www.hnb.hr (accessed February 26, 2009).

⁸ **National Bank of Romania.** 2009. Statistics. www.bnro.ro (accessed February 26, 2009).

3. Concluding Remarks

During the time that this paper was written it was too early to discuss exactly how the global financial and economic crisis will be resolved, as its consequences have yet to fully materialised. However, some insights may be extracted from the events that have occurred thus far.

The current financial crisis, the most serious since that in 1929-1933, was caused by the collapse of the sub-prime mortgage market in the US. The crisis is accompanied by the loss of confidence in banks, which are not ready to lend money on the interbank market fired by new crashes on other markets. This is confirmed by the drastic jump in interest rates on overnight lending among banks, which implies that the LIBOR and EURIBOR for longer periods, as well as the central banks' key interest rates, are not relevant for the banks' decision making processes.

The negative repercussions of this crisis on the Serbian financial sector are manifested through a jump in lending rates, the impossibility of the corporate sector to use cheap cross-border loans, a reduction in the supply of foreign exchange on that basis and drastic dinar depreciation against the euro. The potential increase in lending rates will occur as a result of the increased competition of banks on the deposits market, accompanied by the pressure on foreign banks in Serbia from their parent bank to expend their credit activities based on domestic deposits. The majority of banks are offering interest rates between 8-9% per annum for one-year euro-denominated saving accounts to citizens, which implies that in 2009, citizens and companies in Serbia will be able to receive loans but at higher interest rates.

The impossibility of the National Bank of Serbia to follow the aggressive reduction of the key interest rate, as implemented by central banks in developed countries, partly explains the absence of a decline in short-term interest rates in the banking industry in Serbia. The anti-recessionary monetary policy of the National Bank of Serbia will create an inflationary spiral followed by the bankruptcy of those companies and citizens which are servicing loans indexed on foreign currency.

The examination of the effects of NBS interest rates on the behaviour of interest rates of commercial banks by applying the Vector Autoregression Analysis (VaR analysis) will be the subject of future research as soon as adequate statistical data on all interest rates in the National Bank of Serbia becomes available.

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