

# **The World Financial Crisis And Behaviour Of Short-Term Interest Rates – International And Domestic Aspects**

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**Abstract:** A wave of bankruptcies of large mortgage and investment banks in the U.S. and Europe during 2008 was followed by strong state intervention. Some banks thought to be “too big to fail” were bailed out by central banks which pumped hundreds of billions of U.S. dollars into the financial sector. We are portraying here the deepest world financial crisis since 1929-1933, the one caused by the collapse of the sub-prime mortgage market in the U.S. The loss of confidence and increased reluctance of banks to continue lending in the interbank money market have caused new market falls. This is confirmed by a drastic increase in interest rates on overnight inter-bank loans, implying that the 3-Month and 6-Month LIBOR and EURIBOR, as well as central banks reference interest rates, are of less relevance for the banks’ decision making and risk evaluation processes. Negative repercussions of the crisis on the Serbian financial sector are manifested through a significant increase in lending rates, limited access of the corporate sector to cheap cross-border loans, reduced availability of foreign exchange, etc. The inability of the National Bank of Serbia to aggressively reduce its key interest rate like central banks in developed countries have done, partly explains why short-term interest rates of banks have not declined in Serbia. The first section of this paper examines the effects of the financial crisis on the behaviour of short-term interest rates in the U.S. and Europe. The second section provides an estimate of the effects of the world financial crisis on interest rates in the Serbian banking sector. Concluding remarks will be presented at the end of the paper.

**Key words:** world, financial crisis, behaviour, short-term interest rates, international, domestic, aspects

**JEL Code:** G21

## **1. Effects of financial crisis on behaviour of short-term interest rates in the U.S. and Europe**

The world financial crises initiated by the collapse of the U.S. sub-prime mortgage market in August 2007 escalated during September and October 2008. The wave of shocks ensued and their intensity can only be compared to the intensity of the Great Depression from 1929-1933. This section provides a list of the key events that took place in the U.S. financial sector during the current crisis.

Firstly, on 16 September 2008, the US central bank, the Federal Reserve System (Fed) helped the largest U.S. insurance company, American International Group (AIG) by injecting 85 billion US dollars in exchange for 79,9% of shareholders capital. An intervention on such a scale has never been attempted before.

Secondly, in early October 2008, U.S. Congress approved a historic \$700 billion financial-rescue package allowing the Treasury department to use its 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 do not lose money if borrowers default;
- purchasing equity in a broad array of financial institutions; and
- helping delinquent borrowers stay in their homes.

According to some officials this was done with one simple goal in mind - to restore capital flows to the consumers and businesses that form the core of the U.S. economy.<sup>1</sup>

Thirdly, on 10 October 2008, Lehman Brothers, the fifth largest U.S. investment bank founded 158 years ago officially went bankrupt, while Merrill Lynch, founded 94 years ago, accepted the offer of the Bank of America and was bought for 50 billion USD which was almost a half of its 2007 market value.

The effects of the U.S. financial crises quickly spread throughout Europe. However, until beginning of October 2008 it was not estimated that the growth of losses in certain European banks which were exposed to the risk of U.S. mortgage loans market would require state interventions to save the banking sector.

After the black Friday (10 October 2008), during which the largest fall of one weeks Dow Jones Stoxx Bank Index, EU member states 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 banks shares continued – the value of the above index was halved at the beginning of November 2008 relative to the beginning of 2008.

As presented in Table 1, the financial support provided by states was huge and varied from providing loan guarantees to capitalisation of banks. After Island announced that it had gone bankrupt,

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<sup>1</sup> Source: Speech of N. Kashkari in Washington, D.C., before the Institute of International Bankers, Factiva Reuters.

Ireland changed its banking regulations to guarantee payment of all citizens deposits regardless of the amount of deposit. Following Irish reaction, other EU countries adopted similar regulations to avoid panic among depositors.

Table 1

**The Support of EU governments to Banking Sector**  
(in billion EUR)

	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

Source: Intesa Sanpaolo, Thomson Reuters, Financial Times, and national sources.

Note: Data for Ireland do not include retail deposits insurance for consistence. Support fro Dexia and Fortis included in estimates for France, Belgium, Luxemburg and Netherlands. Other measures include purchase or swap of bank assets.

At mid-December 2008, in response to the deepening economic crises, European leaders supported a package of economic measures worth 200 billion EUR which was 1,5% of GDP of 27 EU member countries. The objective of the package was to offer more money to banks, so that the banks would be able to provide loans to companies.<sup>2</sup>

One of the indicators of the depth of the current world financial crises is the unwillingness of banks to lend on inter-bank money market which implies lending with high risk premium due to the credit risk. The “TED Spread”, as a measure of credit risk for inter-bank lending, reached record levels in late

<sup>2</sup> Source: European Commission, Presidency conclusions, Council of the European Union, 17271/08, Brussels, 12 December 2008, [www.ec.europa.eu](http://www.ec.europa.eu).

September 2008 (Graph 1). A 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. A three month t-bill yield so close to zero meant that people were willing to forego interest just to keep their money (principal) safe for three months--a very high level of risk aversion and indicative of tight lending conditions. Prior to the emergence of subprime mortgage losses in 2007, the TED spread had generally stayed within a range of 10 and 50 basis points.

A rising TED spread often indicated a drop in stock prices as liquidity is withdrawn from the market. U.S. T-Bill yields tumbled to a low 0.29% as investors looked for safe haven investments, while Libor pushed higher at 4.82% - creating a record high TED spread of 4.53 percentage points on 10 October 2008.<sup>3</sup> That was 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 U.S. Congress, TED spread was reduced. As presented in Graph 1, 23 January 2009, TED spread value was 1.00 which is almost its value recorded one year earlier. However, the value was below an expected benchmark value recorded before the U.S. economic crises.

Apart from TED spread, Libor-OIS spread, the difference between the three-month Libor for dollars and the overnight indexed swap rate, is another indicator which shows whether the money market is under stress. A higher spread is typically interpreted as indication of a decreased willingness to lend by major banks, while a lower spread indicates higher liquidity in the market (Mizen, 2008). As such, the spread can be viewed as indication of banks' perception of the creditworthiness of other financial institutions and the general availability of funds for lending purposes. The LIBOR-OIS spread has historically varied around 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 1.00% in mid-January 2009, but remaining well above historical averages.

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<sup>3</sup> “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.” – (source:www.financialpost.com).

Graph 1

**TED Spread**  
(Previous year, up to January 23rd, 2009)



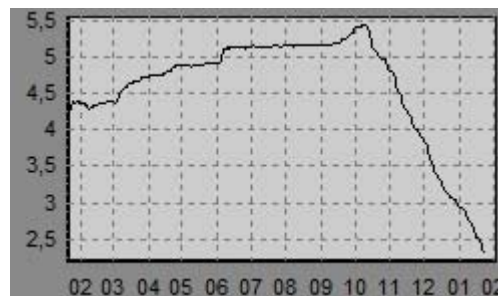
Source: Bloomberg.com.

Note: "TED Spread" is the difference between: 1) the three-month U.S. treasury bill rate; and 2) the three-month London Interbank Borrowing Rate (LIBOR), which represents the rate at which banks typically lend to each other. The t-bill is considered "risk-free" because the full faith and credit of the U.S. government is behind it.

On the other hand, the drastic jump of 1month, 3month and 6 month EURIBOR that took place at end of September and beginning of October 2008, despite the reduction of ECB interest rate on main refinancing operations presents an indicator of absence of trust on interbank market in Eurozone. The 6 month EURIBOR usually used for the calculation of interest rates on mortgage loans reached its maximum level of more than 5,4% on 10 October despite the 50 basis points reduction of ECB main refinancing rate to 3,75% two days earlier. Only after several EU countries announced that they will provide guarantee on inter-bank loans, 6 month EURIBOR significantly dropped (Graph 2).

Graph 2

**6 month EURIBOR**  
(Previous year, up to January 23, 2009)



Source: www.euribor.org.

The continuous fall of 6 month Euribor from the second decade of October 2008 to 23 January 2009 is a result of frequent and significant fall of the ECB main refinancing rate which assumes that the

recession will even be deeper than expected. In November 2008, the ECB main refinancing rate was reduced to 3,25%, in December 2008 to 2,50% and in January 2009 to 2,00%. Mid-January 2009, ECB reduced the interest rate to the lowest level in more than three years, signalling that borrowing costs could fall further. January 23rd, 2009 the 6 month Euribor was only 2,25%.

## 2. Effects of world financial crisis on interest rates in 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.

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-a-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

Source: IMF, "Global Financial Stability Report", Washington, October 2008, pp. 46.

Notes: Projections of the current account balance and GDP for 2008 in dollar terms from the WEO. 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 Bistre latest observations ranging from February 2007/08 to June 2007/08 from the IFS. Year-on-year inflation in July 2008 or latest observations.

Taking into account the current account ratio as a percentage of GDP, Bulgaria and then Serbia are the countries with the highest exposure to negative effects of the world financial crises. 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 countries which are less exposed to the crises. 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 the year 2008. Hungary narrowly averted a financial crisis in October 2008 after securing some \$25 billion in financing from the IMF and the EU to shore up its wobbling bank sector. Hungarian Forint fell from its all-time high of 227,70 in mid-July to a record low of 286,15 against the euro at end-October, down for more than 25%. Romania, the only EU member to have a "junk" sovereign credit rating over its ability to service its debt, saw its Leu slide to a record low of 3,986 in early October, down 15 % from a one-year high set two months earlier.

In October 2008, dinar lost almost 10% of its value against the euro, and appreciated in December of the same year, but in January 2009, it weakened by 7,2%. As presented in Table 3 showing the dynamics of exchange rates of national currencies in a selected group of countries which apply the inflation targeting concept, dinar lost one fifth of its value from end of September 2008 to 26 January 2009, which is significantly more compared to the 12% to 16% fall of value of Czech, Romanian, Hungarian and Turkish currencies. Only Polish zloty depreciated more than the dinar, by over 22%. However, it should be noted that in Poland, it is possible to apply antirecessionary monetary policy due to Polish relatively low inflation rate which is not the case in Serbia. In January 2009, National Bank of Poland reduced its reference interest rate by 0,75 percentage points to 4,25% p.a. after an annual growth of consumer prices of 3,3% it was recorded December 2008. This is below the upper limit for deviations from the target set at 2,5-3,5%, mainly driven by falling fuel prices.<sup>4</sup>

Table 3

**Dynamics of exchange rates of national currencies against euro in a selected group of countries from end of September 2008**

**(September 30th 2008 = 100, drop means depreciation, increase in value represents appreciation)**

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
1-26. Jan. '09.	-4.2	-7.1	-5.1	-7.9	-7.2	0.2
Total change relative to end of September 2008	-12	-13	-22	-15	-20	-16

Source: Documentation of National Bank of Serbia.

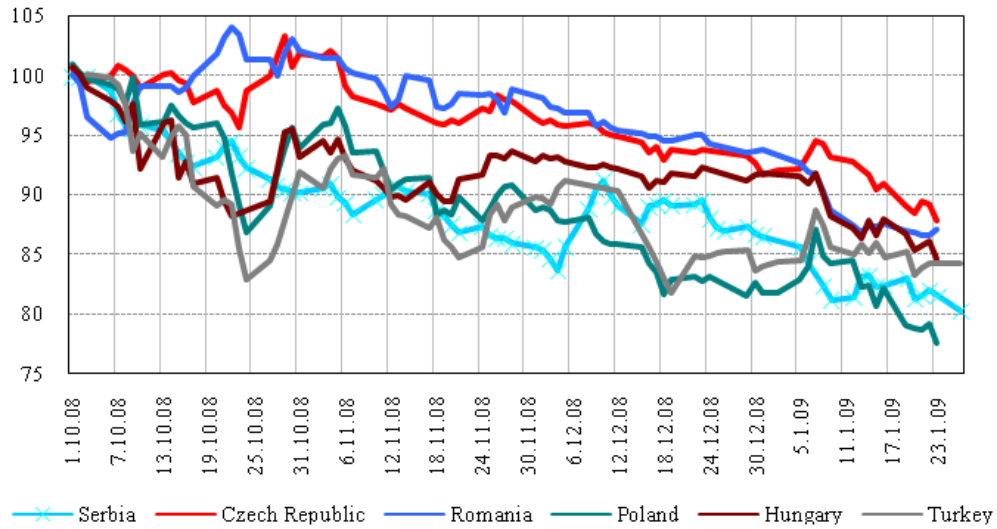
The changes of exchange rates of the mentioned currencies and a general trend of decrease in value against euro with regards to the end of September 2008 are presented in Graph 3.

<sup>4</sup> Source: National Bank of Poland, [www.nbp.pl](http://www.nbp.pl).

Graph 3

**Fluctuations of exchange rates of national currencies against the euro in selected countries of transition from the end of September 2009**

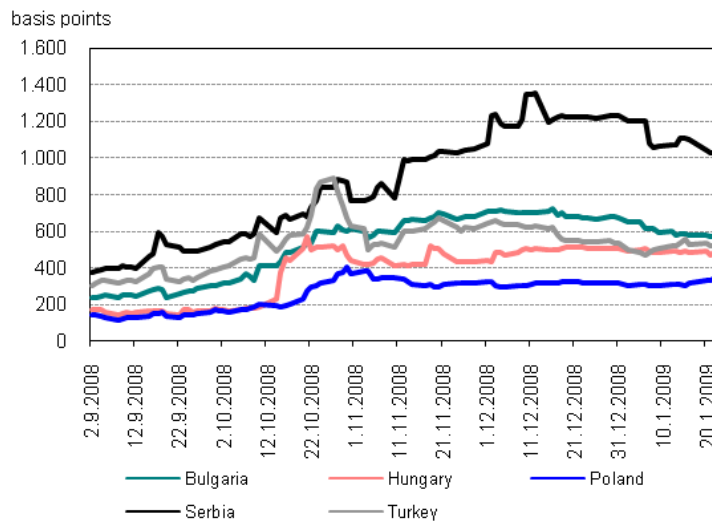
(September 30th, 2008=100, drop in value represents depreciation)



Source: Documentation of National Bank of Serbia.

Graph 4

**EMBI index in selected countries from September 2008**



Source: Documentation of National Bank of Serbia.



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

First, increase in lending interest rates as a result of a sudden increase of the key policy rate – 2 week repo rate of the National Bank of Serbia (NBS) increased from 15,75% to 17,75% at the end of October 2008 with the aim of reducing core inflation which was 10,7% in October 2008 as opposed to the targeted 3-6% . Another aim was to reduce the pressure of further dinar depreciation against the euro.

Second, limited access of the corporate sector to cheap cross-border loans.<sup>5</sup> Following continued growth of approved cross-border loans which in total reached the sum EUR 10.770 million in September 2008, the effects of the financial crises are manifested through unwillingness of foreign banks to guarantee such loans in October 2008. End of 2008, one may expect the reduction in the stock of cross-border loans used by domestic companies as some of the companies were obliged to pay back the due loans by the end of the 2008.

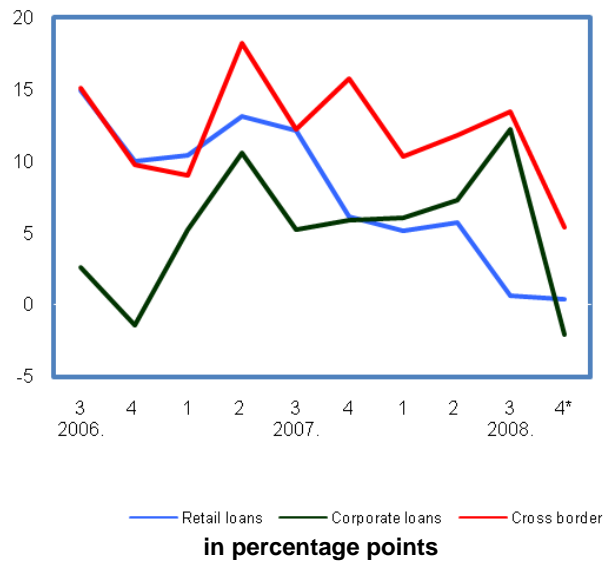
The situation in Serbia became much more complex due to the increase of risk premium (measured by Emerging Markets Bond Index – EMBI) compared to the selected group of countries which apply the concept of targeted rate of inflation (see: Graph 4). Swift loss of confidence of foreign investors in Serbia is a direct consequence of the political risk, announcement of the IMF regarding the possible approval of stand-by arrangement at the time when Hungary and Ukraine concluded similar arrangements as well as the uncertainty regarding the Serbian 2009 budget.

As presented in Graph 5 which shows seasonally adjusted quarterly rates of increase in value of retail and corporate loans, during the fourth quarter of 2008, there was a significant deceleration of the increase in cross-border borrowing. This is in contrast to the decline of corporate loans and stagnation of retail loans.

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<sup>5</sup> For more information see: Djukić, Dj. “Dramatičan rast prekograničnih kredita u Srbiji – lice i naličje”, *Biznis & Finansije*, *Finansije top 2007*, jun 2008, pp. 20-21.

Graph 5

**Quarterly growth rates of realistic retail and corporate loans**

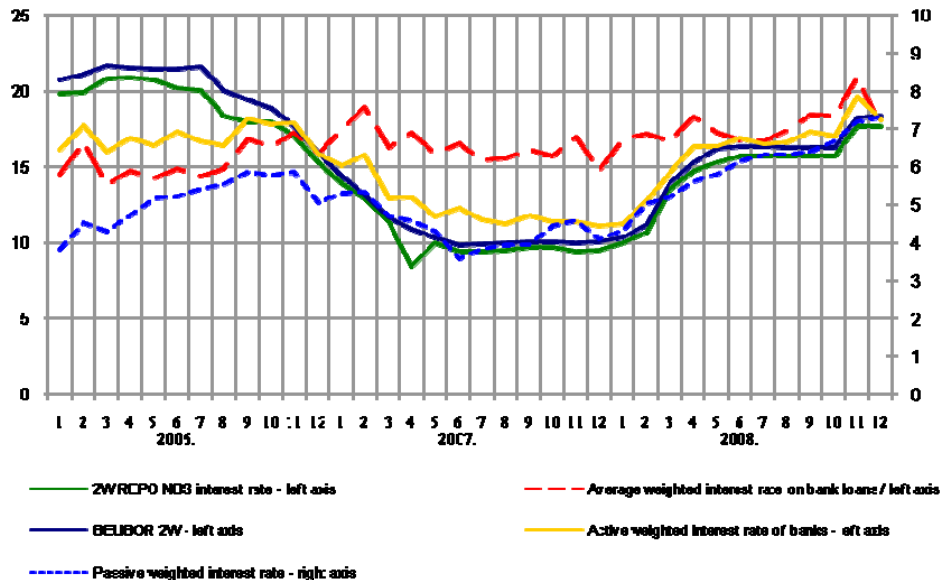
Source: Documentation of National Bank of Serbia.

Third, reduced supply of foreign currencies due to discontinued cross-border lending to domestic companies. Still, in the period to come, domestic companies which need to pay off their loans will create additional pressure on the foreign exchange market in order to purchase foreign currency.

Fourth, future increase in lending rates as a result of increased competition of banks on the deposits market, followed by the pressure on foreign banks in Serbia from parent banks to expand their credit activities based on domestic deposits. Majority of banks are offering interest rate between 8-9% per annum on one year euro-denominated saving accounts of citizens. As a result, average weighted deposit interest rate in the Serbian banking sector increased significantly in October and November 2008 to 6,67% and 7,18% respectively as presented in Graph 6. Consequently, in October and November 2008, there was a significant increase in the weighted lending rate.

Graph 6

**2W REPO rate, interest rates of commercial banks  
(annual weighted average in %)**



Source: Documentation of National Bank of Serbia.

In the year 2009, citizens and companies in Serbia will be able to obtain loans but at higher interest rates. As presented in Table 3, interest rates on short-term household loans in Serbia were extremely high relative to the relevant group of countries – Bulgaria, Croatia and Romania. With regard to the housing loans, interest rates were a bit higher compared to Croatia, and a lot lower compared to Bulgaria, which implies that the competition among banks was most intensive in this segment of the loan market.<sup>6</sup>

<sup>6</sup> For more information see: Djukić, Dj. “Analysis of Effects of Foreign Bank Entry on Credit Interest Rate Behaviour in Serbia”, Panoeconomicus, No. 4 2007, pp. 429-443.

Table 3

Country	Interest rates on citizens loans in %			
	Short-term loans		Housing loans	
	December 2007	November 2008	December 2007	November 2008
Bulgaria	8.62	10.67	11.20	9.30
Croatia	6.84	8.68	5.12	6.04
Romania	6.30	9.36	6.43	6.24
Serbia	30.25	32.66	6.05	6.66

Sources: Statistics of central banks.

Note: The last available data for Croatia and Romania refer to October 2008. In case of Bulgaria and Romania, interest rates are applied to fresh new EUR – denominated loans. In Croatia, rates are applied to Croatian kuna loans indexed to foreign currency, while in Serbia, mostly, the interest rate is applied to dinar loans indexed on foreign currency.

With regard to interest rates on corporate dinar loans in Serbia, the situation is different. For short term loans (up to two years), interest rate is determined on the basis of Belibor (Belgrade Interbank Offered Rate) with maturity of one month and is higher than the NBS reference interest rate and a margin added by a bank. The range of annual interest rates is between 21% and 27% and depends on the client's credit rating. Regarding the long-term loans (with maturity of over two years), interest rate is determined on the basis of Belibor with maturity of one month and the bank margin ranging from 2% to 5% depending on the client's credit rating. Consequently, first class bank clients receive loans with an interest rate not less than 20% to 21%.

### 3. Concluding remarks

Now is too soon to discuss how exactly the current crises will be resolved since its consequences have not fully materialised as yet. However, some understanding can be extracted from events that have taken place so far.

Current financial crisis, the deepest since 1929-1933, is caused by the collapse of the sub-prime mortgage market in the U.S. The crisis is followed by the loss of confidence in banks which are no longer prepared to lend money on the interbank market fired by new crashes on other markets. That is confirmed by a drastic jump in interest rates on overnight inter-bank lending, which implies that over a longer run neither the LIBOR and EURIBOR nor the central bank reference interest rates are relevant for the banks' decision making processes.

Negative repercussions of this crisis on the Serbian financial sector are manifested through: a rise in lending rates, limited access of the corporate sector to cheap cross-border loans, reduced supply of foreign exchange due to a drastic drop in prices of securities. Future increase in lending rates would be a result of increased competition among banks on the deposits market, followed by the pressure on foreign banks in Serbia from their parent banks to expand their credit activities based on domestic deposits. Majority of banks are currently offering interest rate between 8-9% per annum for one year

euro-denominated saving accounts of citizens, which implies that in the year 2009, citizens and companies in Serbia will be able to obtain loans but at higher interest rates.

The inability of the National Bank of Serbia to implement aggressive reduction in its key interest rate, as central banks in developed countries have done, partly explains the absence of a short-term interest rate decline in the Serbian banking industry.

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