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## THE INFLUENCE OF INTERBANK MONEY MARKET STRESS LEVELS ON CREDIT MARKETS DURING THE POSTCRISIS PERIOD IN THE US AND THE EURO AREA

**ABSTRACT:** *Despite the anti-crisis measures in the US and the euro area that were the policy response to the global financial crisis in 2007 and 2008, the stress on the interbank money market was still present in 2009 and 2010. The increasing inflationary pressures will require an increase in the ECB key interest rate in the second half of 2011. The over indebted euro area countries will have to raise funds by issuing and selling bonds with high yields.*

*Taking into account such an environment, in this paper we analyse the relevant interbank money market stress indicators during 2010 and the beginning of 2011, in order to estimate the effects of money markets interest rate movements on credit market interest rates, primarily in the euro area, during the post-crisis period.*

**KEY WORDS:** *money market, credit market, interest rate, financial crisis*

**JEL CLASSIFICATION:** E42, G20, G21

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## **1. INTRODUCTION**

Following the outbreak of the global financial crisis between 2007 and 2009, and the implementation of measures taken by the governments of developed countries to mitigate the crisis impact, researchers and policy makers focused on the stress levels on interbank money markets (Giannone, D., M. Lenra, H. Pill, R. Reichlin, 2011; Inyeob, Ji P., F. In, 2010; Thornton, D.L., 2009). One of the main reasons was the repercussions that could affect credit market interest rates, and thereby the recovery of the economy.

The object of this paper is to analyse the indicators of interbank money market stress levels following the implementation of anti-crisis measures in the US and the euro area. This research follows our previous analysis that covered the period during the financial crisis (Đukić, Đ., & Đukić, M., 2009), and takes into account the impact of money market stress on credit markets during 2010 and the beginning of 2011, when complexities appeared due to the outbreak of the debt crisis in certain EMU member countries. The asymmetric impact of the anti-crisis measures in the euro area has become more obvious, while the ECB has faced the problems of returning to a monetary policy focused on price stability (Karagiannis S., Y. Panagopoulos, P. Vlamis, 2010). The indicators analysed in this paper estimate future interest rate movements in credit markets primarily in the euro area. This is of great importance for all EU member countries as well as potential candidate countries such as Serbia, considering the high level of dependence of potential EU candidate countries on credit markets in the euro area.

## **2. THE IMPACT OF ANTI-CRISIS MEASURES ON INTERBANK MONEY MARKET STRESS INDICATORS**

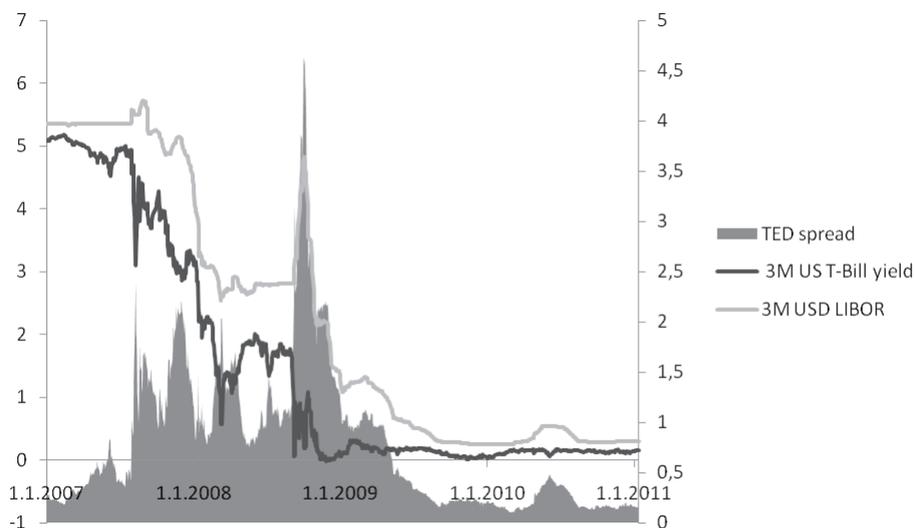
After the outbreak of the financial crisis in the US, triggered by the bursting of the sub-prime mortgage market in August 2007, and the outbreak of the global financial crisis in 2008, three parameters came out as indicators of the disruption in money markets. They are as follows:

- TED Spread i.e. the difference between the yield on 3 month USA Treasury bills, and 3 month USD LIBOR
- LIBOR-OIS Spread i.e. the difference between 3-month USD LIBOR and rates for overnight indexed swap - interest rate swap agreement, where fixed rate is replaced by the previously determined published index of daily reference

interest rate for the agreed period (OIS); and EURIBOR-OIS Spread i.e. the difference between 3 month EURIBOR and rates for euro overnight indexed swap (OIS).<sup>1</sup>

The three parameters have de facto depicted the confidence of banks in the anti-crisis measures that have been implemented by central banks and governments of US and euro area countries. As a credit risk measure for interbank borrowing, the TED Spread reached its peak in September 2008. Following the implementation of anti-crisis measures in the USA its value decreased significantly (see Graph 1 and Table 1). Before the global financial crisis the TED spread fluctuated within a spread of 10-50 basis points. After the crisis emerged a higher spread indicated 1) that the banks treated each other as risk counterparties and 2) a decline in share prices after liquidity was withdrawn from the market.

**Graph 1.** 3 month TED Spread from January 1, 2007 to January 1, 2011



**Source:** Bloomberg, Market Data, www.bloomberg.com, January 20, 2011.

<sup>1</sup> The detailed explanation and analysis of these parameters during the global financial crisis were elaborated in: Đukić, Đ., M. Đukić. (2009). The Global Financial Crisis And The Behaviour Of Short-Term Interest Rates – International And Serbian Aspects, *Panoeconomicus*, 4, pp. 491-506.

**Table 1.** Minimum and maximum values of 3m US T-bill yield, 3m USD LIBOR and TED spread during 2010

	3M US T-Bill yield		3M USD LIBOR		TED spread	
	Date	Value	Date	Value	Date	Value
Max	30.6.2010	0,18	17.6.2010	0,54	14.6.2010	0,48
Min	11.1.2010	0,03	18.1.2010	0,25	16.3.2010	0,10

After the US Congress adopted economic recovery measures the TED spread decreased from its record level of 463.61 basis points as of October 10, 2008. As indicated in Graph 1, the value of the TED spread amounted to nearly 110 basis points at the beginning of March 2009, showing a declining trend from the value reported a year previously. One of the major events contributing to the declining trend was the announced intention of the Federal Open Market Committee (FOMC) in January 2009 to purchase T-Bills with longer maturity, as well as the debts of agencies and mortgage-backed securities. This would happen if circumstances indicated that such transactions would be particularly efficient in improving conditions in private credit markets. During the second quarter of 2009 the TED spread continued to decline, settling at 41.75 basis points and reaching a level that had previously been recorded at the beginning of August 2007, on the eve of the financial crisis.

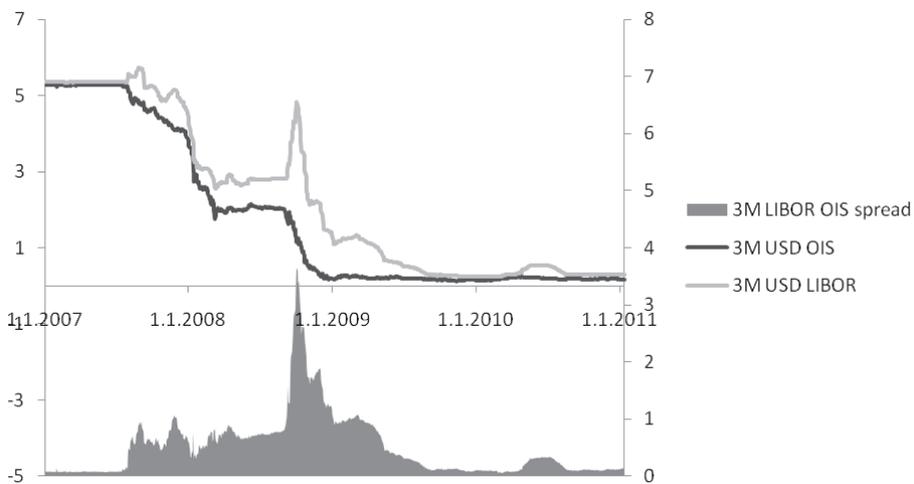
In the first quarter of 2010 the spread reached its lowest value yet of 9.55 basis points. However at the end of May 2010 it increased by 32 basis points. As of June 14, 2010 the TED spread reached its maximum value of 48.13 basis points, creating a new upward trend that soon transformed into a downward sloping curve, leaving the TED spread value at 17.78 basis points, 2.1 basis points less than the value recorded at the end of 2009. TED spread movement analysis implies that the measures of central banks and governments in the US and the euro area reduced money market tensions in 2010 but did not eliminate the tensions.

The second complementary indicator of money market stress is the LIBOR-OIS spread. High values of the LIBOR-OIS spread reflect the unwillingness of banks to lend money. In addition, they indicate that credit markets are not functioning smoothly, which is a sign of potential economic contraction. A lower LIBOR-OIS spread indicates the existence of a higher degree of liquidity in the money market and that credit markets are functioning smoothly. The reduction of the spread could be a signal of potential economic expansion. As such, the spread is treated as an indicator of the banks' perception of financial institutions' creditworthiness and general availability of funds for borrowing. As stated by former Fed Chairman

Alan Greenspan, “Libor-OIS remains a barometer of fears of bank insolvency” (Thornton, 2009, p.1). Before the outbreak of the global financial crisis the LIBOR-OIS spread ranged from 1 to 10 basis points. After reaching the historical maximum of 364 basis points in October 2008, it showed a slight declining trend with high daily oscillations until February 2009 (see Graph 2). At the beginning of March 2009 the value of the LIBOR-OIS spread again exceeded 100 basis points. Therefore the US money market was in a state of acute stress, despite the stimulation measures worth USD 787 billion approved by the U.S. Congress.

Money market nervousness reduced during the second quarter of 2009, and the market stabilised in the fourth quarter, which indicated that the measures undertaken by the FED and Treasury Department had resulted in a partial return of confidence in the money market. During September 2009 the LIBOR-OIS spread increased again, reaching the level that was recorded just before the outbreak of the crisis (10 -11 basis points). During December 2009 the indicator stabilised and maintained a level of 9 to 10 basis points until May 6, 2010. With the bad news regarding problems of servicing public debt in Greece, Portugal, Italy, Spain, and Ireland, the LIBOR-OIS spread started rising and tripled the 9-10 basis points level: in July 2010 the spread reached its 2010 maximum at 34 basis points (see Table 2). This significant jump indicated increased tension in the money market. At the end of July 2010 tensions in the money market declined, and the spread varied in the range from 10 to a maximum of 12.6 basis points.

**Graph 2.** 3 month LIBOR OIS Spread from January 1, 2007 to January 1, 2011



Source: Bloomberg, Market Data, [www.bloomberg.com](http://www.bloomberg.com), January 20, 2011.

**Table 2.** Maximum and minimum values of 3m LIBOR OIS spread, 3m USD OIS, and 3m USD LIBOR during 2010

	3M USD OIS		3M USD LIBOR		3M LIBOR OIS spread	
	Date	Value	Date	Value	Date	Value
Max	7.5.2010	0.25	17.6.2010	0.54	15.7.2010	0.34
Min	12.1.2010	0.14	18.1.2010	0.25	18.3.2010	0.05

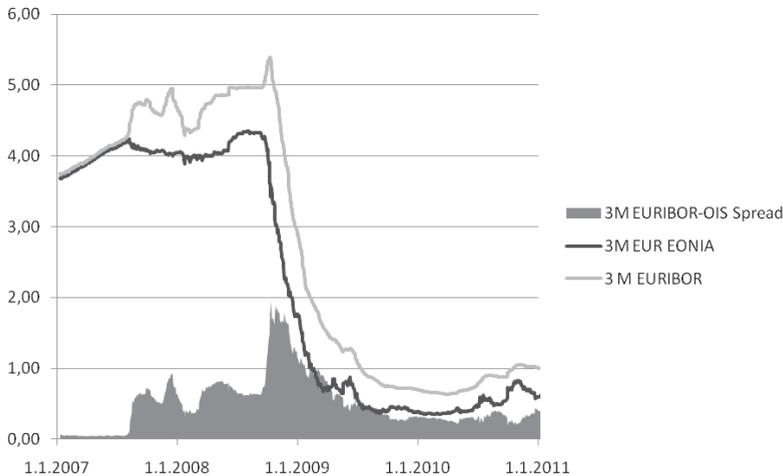
During the period September 2008 - January 2011 the three-month euro market EURIBOR-OIS spread had a similar pattern to the LIBOR-OIS spread. Prior to the outbreak of the financial crisis this spread amounted to almost three to five basis points. The relative stability of this indicator reflected the fact that funds were freely circulating among borrowers and lenders. In addition money market participants noticed that the probability of default on loans taken in the money market was low.

The EURIBOR-OIS spread reached a record level of 194 basis points on October 10, 2008 (see Graph 3). From the second ten-day period of October 2008 to June-end 2009, the EURIBOR-OIS spread had a downward trend with several short-term daily shocks. On the last day of June 2009 its value decreased to 50 basis points, which was ten times the highest value of the fluctuation area before the crisis outbreak. The continuous injection of funds into the banking sector by the ECB and its policy of frequent reductions of the key rate (see Graph 4) had an impact on the money market. The confidence in the interbank market for unsecured short-term borrowing in the euro area had slowly returned.

The downtrend trend in the EURIBOR-OIS spread continued during 2009 and in the first quarter of 2010. However the EURIBOR-OIS spread value of 20 basis points at the end of March 2010 was much higher than the values recorded during the period before the crisis outbreak. Regaining confidence in the interbank money market in the euro area is a slow process. After the outbreak of the debt crisis in Greece there is little chance that this confidence will be regained in the near future. Drenovak and Urošević (2010) analysed the spreads of 10-year eurozone government bond yields against German government bonds from January 2007 to April 2010. They concluded that “higher demand for German government debt significantly raised its volatility, making it one of the most volatile bond classes in the eurozone (second only to Greek government debt)” (Drenovak and Urošević, 2010, p. 43). At the end of May 2010 the EURIBOR-OIS spread amounted to 23-24 basis points. The spread continued to increase reaching its 2010 high of 44.8 basis points on December 22, 2010 (see Table 3).

In the first ten days of January 2011 tensions in euro area sovereign markets mounted, pushing Portuguese and Spanish sovereign yields to their highest levels since the beginning of December 2010. Due to market concerns as to whether the over-indebted countries would be able to raise funds at sustainable interest rate levels, the money market was again under stress. This was indicated by an increase in the EURIBOR-OIS spread to 35 basis points on January 10, 2011. 3M EURIBOR, the main gauge of unsecured interbank euro lending and a mix of interest rate expectations and banks' appetite for lending, was reduced to 0.995% on the same day, which was the lowest level since mid-October 2010. The EURIBOR value change reflected the ECB policy of providing unlimited three-month funds to the region's weaker banks until at least April 2011.

**Graph 3.** 3 month EURIBOR-OIS Spread from January 1, 2007 to January 1, 2011



**Source:** Bloomberg, Market Data, [www.bloomberg.com](http://www.bloomberg.com), January 20, 2011.

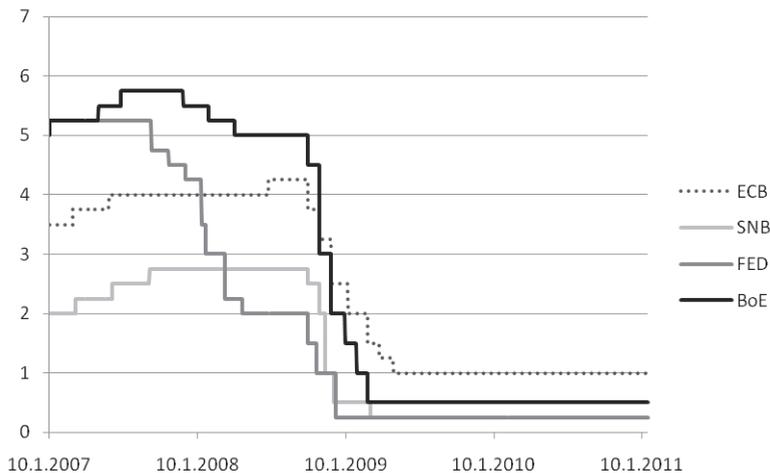
**Table 3.** Minimum and maximum values of 3m EUR EONIA, 3m EURIBOR, and 3M EURIBOR-OIS Spread during 2010

	3M EUR EONIA		3M EURIBOR		3M EURIBOR-OIS Spread	
	Date	Value	Date	Value	Date	Value
Max	28.10.2010	0.83	4.11.2010	1.05	22.12.2010	0.45
Min	10.3.2010	0.35	31.3.2010	0.63	30.9.2010	0.19

Looking back at 2008, the drastic increase in one-day, three-month and six-month EURIBORs that occurred at the end of September and the beginning

of October 2008, in spite of the decrease in the ECB key interest rate, was an indicator of lack of confidence in the euro area interbank money market. The six-month EURIBOR used for the calculation of interest rates on mortgage loans reached a record level of 5.4% on October 10, 2008, despite the reduction of the key ECB interest rate to 3.75% on October 8, 2008. A significant decline in the six-month EURIBOR occurred only after several EU member states had announced that they would guarantee interbank borrowings. Frequent reduction of the ECB key interest rate to the level of 1% in May 2009 (see Graph 4) resulted in a decline of the six-month EURIBOR to 1.84% at the beginning of March and to 1.31% at the end of June 2009. In the first quarter of 2010 the rate was below 1%. However from April 2010 a moderate upward trend was recorded, until the end of 2010 when the six-month EURIBOR reached 1.23%, while at the end of January 2011 its value was 1.30%.

**Graph 4.** Key interest rates of central banks from January 10, 2007 to January 10, 2011



**Source:** Bloomberg, Market Data, [www.bloomberg.com](http://www.bloomberg.com), January 20, 2011.

As shown in Graph 4 above, the key interest rates of the ECB, the Swiss National Bank (SNB), the Federal Reserve (Fed), and the Bank of England (BoE) remained unchanged in 2010. These central banks recognised that the possible positive effects of fast reduction in the key interest rate as a tool in their fight against recession and crisis had long been exhausted. The empirical research regarding the interest rate transmission mechanism in the US and the euro area confirmed that the efficiency of the monetary policy transmission had been disrupted,

which was reflected by the widening of the spreads between the central bank policy rates and the money market rates, as well as between the former and credit market interest rates (Karagiannis S. et al, 2010, p. 333).

The money markets showed clear signs that banks would be more reluctant to lend funds to each other, as the quality of collateral used as security for loans was low. This was a direct consequence of the deterioration of conditions for financing the budget deficit of some EU states and unwillingness of investors to buy bonds issued by some states.

### **3. REPERCUSSIONS OF INTERBANK MONEY MARKET STRESS ON CREDIT MARKETS DURING 2010**

At the beginning of June 2009 the highest ECB officials announced that by implementing its covered bond purchase programme (CBPP) the ECB would purchase covered bonds in primary and secondary markets. This influenced the expectations of banks in the money market.<sup>2</sup> Jean-Claude Trichet announced that, based on the adopted programme, the ECB would be purchasing covered bonds for a longer period than expected, from July 2009 to the end of June 2010. This was probably due to the fact that the market needed time to react to such information. The intention was to assist the issuers of covered bonds who were unable to enter the primary market and who had high quality covered bond programmes. This programme for increasing the liquidity of the euro area was worth EUR 60 billion in euro denominated bonds.

Beirne, J. et al. (Beirne, J. et al. 2011, p. 24) conclude that the effects of implementing the CBPP programme were positive. By increasing the number of euro area credit institutions that turned to the covered bond product as a funding instrument, the CBPP contributed significantly to improving the overall funding situation in the euro area and also in non-euro area financial institutions, and to a decline in money market term rates. The programme lessened some of the pressure on euro area banks to rely on central bank liquidity, which helped to increase primary market activity. Despite the emergence of the sovereign debt crisis in May 2010, Beirne et al. conclude that the positive impact of the programme is notable.

As indicated in Graph 5, euro area systemic risk increased significantly on May 6, 2010 due to the emergence of problems in sovereign debt markets. Liquidity

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<sup>2</sup> Source: Reuters 4 Jun 2009, Factiva.

became scarce on inter-bank markets. As stated by the ECB, the probability of simultaneous default of two or more euro area large and complex banking groups caused a sharp rise of systemic risk on May 7, reaching values higher than in the aftermath of the collapse of Lehman Brothers.<sup>3</sup>

**Graph 5.** Systemic risk indicator in the euro area  
(Percentages: Jun 2007 – May 2010, probability of default)



Source: ECB, Monthly Bulletin, June 2010, p. 38.

The risk for the banking sector was that the banks had the largest portion of government bonds in their portfolios, and in the case of an extreme debt crisis they would rely on their governments to be rescued<sup>4</sup>. Credit Default Swaps (CDS) rose to a record level in the case of Spanish and Portuguese banks, according to DateVision prices. In the case of Portuguese bank Comercial Portugues SA, CDS increased by 44 basis points to 523, and in the case of Espirito Santo SA CDS increased by 44 basis points to 555. In the case of Spanish bank Santander SA, CDS rose by 24.5 basis points to 231.5. In the case of Bilbao Vizcaya Argentaria Sa, they rose by 24.5 basis points to 267.<sup>5</sup>

In May 2010 CDS increased in four countries – Greece, Portugal, Spain and Italy – to a level that had not been previously recorded. Swaps for Greece increased by 83 basis points to 927, for Portugal by 40.5 basis points to 456, for Spain by 41 basis points to 271, and for Italy by 34 basis points to 221.<sup>6</sup> With respect to the reaction to the crisis in Greece, the information launched by the ECB only increased the lack of confidence in the money markets, demonstrated through

<sup>3</sup> Source: ECB, Monthly Bulletin, June 2010, p. 38.

<sup>4</sup> Source: Bloomberg, 16 May 2010.

<sup>5</sup> Source: Ibid.

<sup>6</sup> CMA prices – source: Ibid,

the rise of the EURIBOR-OIS spread. The ECB officials' announcement induced speculation that the ECB might step back from its long-range principle of not directly purchasing government bonds, as other central banks had done after the outbreak of the global financial crisis. Analysts followed very carefully Jean-Claude Trichet's announcements and ECB intentions in that respect. The analysts interpreted a portion of his statement given at the beginning of May 2010 as saying that the ECB did not have any plan for this area "at this stage". It was obvious that ECB officials left open the possibility of ECB purchase of government bonds<sup>7</sup>.

According to the data collected by Bloomberg, the vulnerability of European banks that emerged from the sovereign debt crisis is related to the portfolio structure of the largest financial companies. These companies held more than 134 billion Euros in Greek, Portuguese, and Spanish government bonds.<sup>8</sup> Even after launching the EUR 750 billion plan for recovery of over-indebted countries in the euro area, investors remained sceptical with regards to the banks' ability to deal with the debt crisis. In September 2010 investors required high risk premiums when purchasing Greek bonds. According to the statistical data of long term interest rates for EU member states published by the ECB, on average the yield on 10-year Greek government bonds was 11.34%, which was 9.04 percentage points higher than the yield on similar German government bonds. In the case of Ireland, the spread between the yield of Ireland and Germany's ten-year bonds was 3.84%, while the yield spread between Portuguese and German bonds was 3.78%. Therefore the required premium and the yield in both the case of Portugal and Ireland were significant, although much lower than the risk premium and yield required on Greek government bonds. Looking further at the countries that were affected by the sovereign debt crisis in September 2010, the smallest yield difference was recorded in Spain and Italy, at 1.79% and 1.56% respectively.

Despite European government measures aimed at saving the Irish economy from bankruptcy, in November 2010 government bond markets signalled that investors did not believe that a sustainable solution had been implemented. In January 2011 the difference in yield between Irish ten-year bonds and benchmark German bonds increased to 571 basis points. The cost of insuring against default by Ireland rose, with CDS climbing 11.5 basis points to 614.5 as of January 24, 2011, according to Bloomberg data. Due to the provided money market and capital market developments, there was an initiative to increase the 750 billion euro rescue fund so that over-indebted countries could be helped to buy back

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<sup>7</sup> Source: *Financial Times*, 3 May 2010, [www.ft.com](http://www.ft.com).

<sup>8</sup> Source: [www.bloomberg.com](http://www.bloomberg.com), September 8, 2010.

their bonds, and to lower interest rates on bailout loans. This proposal was subject to the EU summit held March 23 – 24, 2011 in Brussels.

The caution of investors in relation to the government bond market was reflected in the bank bonds spread. Some European banks faced higher borrowing costs than their US counterparts. The yield spread between five- and ten-year bonds issued by Paris-based BNP Paribas SA (according to assets value the largest bank globally in 2010) and government bonds was 383 basis points. Comparative premiums on Citigroup bonds and JPMorgan Chase & Co bonds (both New York-based) amounted to 275 and 192 basis points respectively, according to Bank of America Merrill Lynch index data.

Due to the prolonged effects of the global financial crisis during 2010, a significant number of financial institutions, mostly banks, continued to rely on central banks for funding. During June, July, and August 2010, the ECB lent EUR 132 billion to 171 financial institutions. On September 2, 2010 the president of the ECB decided to extend the period of emergency lending measures for banks into 2011. The ECB continued to offer unlimited one-week and one-month loans until at least January 2011, as well as to offer additional three-month funds in October, November, and December 2010.

Despite the ECB's liquidity injection, banks were not willing to increase the amount of approved loans to the extent that was needed to stimulate economic activity. Banks were lending money to each other with caution, or decided to 'park money' in the ECB. As of June 9, 2010 banks in the euro area deposited a record EUR 369 billion overnight in the ECB, which is greater than the amount deposited during the credit meltdown in October 2008.

During 2010 the increase in banks' toxic assets in the euro area was caused by 1) the troubled government bonds of over-indebted countries and 2) the fact that during 2010 banks still held many troubled assets from the 2008 meltdown. According to IMF estimates, as of April 2010 banks in the euro area had written off about 3% of their assets from the peak of the credit crisis to the end of 2010. The alleged 3% write-off is smaller than the estimated 7% write-off in US banks. The difference in write-offs was partly explained by the fact that US banks held a higher proportion of securities than European banks.

The decisiveness of European policymakers in solving the problem of investors' lack of trust and speculation that the over-indebted countries may face default was obvious in January 2011. The European Financial Stability Facility was selling

top-rated bonds (EFSF bond), EUR 5 billion were raised by issuing five-year EFSF bonds with a yield of 2.89% (above the German benchmark).

Investors showed great interest in buying EFSF bonds – the total bid amount was almost nine times the amount offered. This measure was implemented to allow the most indebted countries access to affordable funding. Ireland received EUR 3.3 billion in February 2011, the remaining amount being held as a cash buffer to ensure the top AAA rating of EFSF.

#### **4. REPERCUSSIONS OF INTERBANK MONEY MARKET STRESS LEVELS ON FUTURE CREDIT MARKET INTEREST RATE MOVEMENTS**

The possible implications of the above-analysed 2010 interbank money market indicators on future credit market interest rate movements are as follows:

- Rise of short-term interest rates in the near future, which will be a direct consequence of inflationary pressures, in the USA as well as the euro area countries, due to the fiscal stimulus to overcome the global financial crisis and mitigate the crisis impact.
- An upward long-term trend in interest rates in money markets and credit markets.
- Increase of lending rates on loans to corporate clients, particularly those that are not classified as big first class clients.
- Increase of lending rates on retail loans, particularly mortgage loans.

The above-stated estimated interest rate movements in credit markets are related to the time-lag of the expansionary monetary policy that was implemented both by U.S and euro area central banks during 2010.

At the G-20 meeting that took place November 11, 2010, following the opposing attitudes of the US on one side and China, Germany, and Brazil on the other, the ‘currency war’ was announced. This was a reaction to the Fed announcement of November 3, 2010, that it would implement a second round of unconventional monetary easing (QE2) i.e. the plan to acquire 600 billion USD of Treasury securities through June 2011 and reinvest maturing mortgage holdings.<sup>9</sup> The intention of the Fed’s new injection of cash into the banking system was first,

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<sup>9</sup> Source: „Fed Buys \$7.229 Billion of Treasuries as Easing Resumes“, November 12, 2010, [www.bloomberg.com](http://www.bloomberg.com).

to drive down borrowing rates; second, to help bring down the unemployment rate which had reached a 26-year high; and third, to avert deflation. Fed officials also stated that the policy of approaching a zero benchmark interest rate and an earlier programme of quantitative easing – the purchase of USD 1.7 trillion of securities by the Fed following the outbreak of the crisis - had not been successful in reducing the unemployment rate. Dwyer and Tkack estimated in 2009 that the policy actions taken in 2008 and 2009 had only been treating the symptoms of the financial turmoil in US. “The underlying cause – the doubtful condition of financial institutions due to their ownership of difficult-to-value heterogeneous assets and the counterparty risk that follows from it – had not resolved itself” (Dwyer, G. P. and P. Tkack, 2009, p. 1312).

The beginning of 2011 did not bring a change in the Fed’s policy of purchasing USD 600 billion worth of treasury bonds . This absence of policy change resulted in the most intense political reaction of the three previous decades and a request by certain republican congressmen to shut down the US Federal Reserve System. The Fed’s argument in favour of the all-time record monetary stimulus was the reduction of the unemployment rate, which was 9.8% at the end of November 2010 and 9.4% at the end of December 2010. According to the Fed a few years would be needed to achieve full employment and a rate of inflation of around 2%.<sup>10</sup> However not all Fed officials agreed with the official Fed policy. Thomas M. Hoenig, the president of the Federal Reserve Bank of Kansas City, stated that the additional injection of USD 600 billion was risking runaway inflation, asset bubbles, and a weakened dollar. Therefore the objective of reducing long-term interest rates by buying securities was mistaken. As for the reduction of the high unemployment rate there was not much that Fed would be able to do.<sup>11</sup>

Outside the US, and especially in China, Germany, and Brazil, the Fed policy was interpreted as the US monetary authorities’ intention to increase inflation, and thereby shift the burden of debt to investors outside the US that hold large amounts of US securities in their portfolios. In January 2011 China had USD 907 billion worth of US treasuries, while its currency reserves amounted to USD 2.8 trillion.<sup>12</sup> The US president’s justification that this policy aimed at reducing the unemployment rate was unconvincing.

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<sup>10</sup> Source: „Fed Officials Say Strengthening Economy Doesn’t Alter Bond-Purchase Plans“, Bloomberg, January 15, 2011, [www.bloomberg.com](http://www.bloomberg.com).

<sup>11</sup> Source: „Fed’s Contrarian Has a Wary Eye on the Past“, *New York Times*, December 13, 2010. [www.nytimes.com](http://www.nytimes.com).

<sup>12</sup> Source: Bloomberg, January 13, 2011, [www.bloomberg.com](http://www.bloomberg.com).

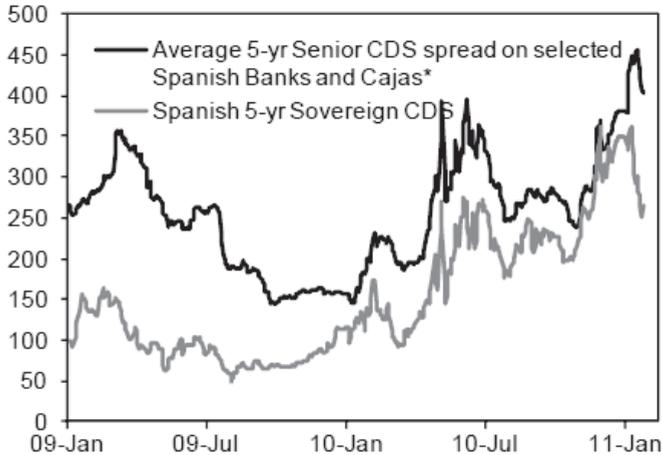
The extended expansionary monetary policy and the reduction of key interest rates also had an impact on US companies. Instead of applying for loans, a majority of companies decided to issue securities outside the US in order to be able to invest abroad. According to data collected by Bloomberg, US companies mobilised more than USD 1.07 trillion by issuing securities abroad. Conversely non-US companies issued securities in the US and mobilised USD 605.9 billion. As of November 4, 2010 the average yield on corporate bonds fell to its 2010 minimum of 4.4%.<sup>13</sup> Two year earlier, following the outbreak of the crisis in mortgage markets, the average yield on corporate bonds was 10.6%. Apparently the Fed can create liquidity but cannot control the way that the liquid funds are used. The long term interest rates on government bonds jumped significantly. The 10-year US Treasury note yielded 3.41% on January 21, 2011, compared to 15.8% in 1981 and a record low of 2.04% in December 2008.

Following the sovereign debt crisis the ECB warned euro area banks that they might face refinancing problems of debt amounting to EUR 1.000 billion over the next two years, because of a nervous market and the increased borrowing needs of over-indebted countries for large amounts of cash to service due debt. This amount is not significantly greater than that due in the past: the difference is that banks will compete with euro area member countries issuing large amounts of bonds to service the debt. This may force banks to offer higher interest rates so as to attract investors in the future. The position of banks in the euro area varies depending on their location. Banks in over-indebted countries remain locked out of lending markets and have become reliant on the ECB for funding, which is an obstacle to exiting from crisis-fighting measures. Borrowing by Portuguese banks from the ECB rose by roughly 8% to EUR 40.9 billion in December 2010, ending a three-month decline. Borrowing by Spanish banks rose from EUR 64.5 billion to 70 billion. Irish banks are in the most difficult position. They borrowed EUR 132 billion from the ECB in December 2010. The aforementioned countries' sovereign and bank-funding costs, as measured by CDS, remain highly correlated (Goldman Sachs Global ECS Research, 2011, p. 5), which was confirmed by the case of Spain (see Graph 6).

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<sup>13</sup> Source: „Bernanke's Cheap Money Spurs Corporate Investment Outside US“, Bloomberg , November 17, 2010. [www.bloomberg.com](http://www.bloomberg.com).

**Graph 6.** Sovereign and Bank Funding Costs in Spain  
(January 9, 2010 – January 11, 2011)



\*BBVA, Santander, Sabadell, Banco Popular, La Caixa, Caja de Valencia, Castellon y Alicante, Caja de Madrid.

**Source:** Goldman Sachs Global ECS Research, Fixed Income Monthly, January 2011, p. 5.

As the ECB faces challenges in defining and implementing monetary policy, the boomerang effect emerges in the form of inflationary pressures. ECB President Jean-Claude Trichet stated that the dependency of banks on the ECB was complex to tackle.<sup>14</sup> Options that the ECB might consider for banks that are dependent on the ECB are as follows:

- To keep lending banks as much money as they want, which would mean the prolongation of the 'full-allotment' tactic, at least in the form of one-week loans; although this policy was designed to be temporary. This means that the ECB would not have full control over money market liquidity, while the spill-over effects on interest rate movements could be complex to deal with. Under such conditions banks would not be encouraged to restructure their balance sheets.
- To continue pushing the governments of countries in which the banks underperform to inject additional capital and recapitalize them. For the ECB this is a preferred option: however it has brought limited results as those countries face the problem of high debt and do not wish to increase their budget deficit.

<sup>14</sup> Source: Factiva, Reuters, January 14, 2011, [www.factiva.com](http://www.factiva.com).

- To create national funding allowances which would allow the ECB to limit which banks in a euro area member country could borrow from ECB. This would create pressure on banks to consider merging or to take measures to repair their balance sheets. However due to the lack of confidence in the interbank money market the troubled banks would still find it difficult to borrow money.

Apart from the options stated above, there are others that are not under the jurisdiction of the ECB, such as the creation of a pan-euro area 'bad bank' that would contain the non-performing assets and that would be treated by tools used by so-called 'hospital banks'. Even if such an idea were to become reality the government would still have to deal with such a bank, just as certain countries did in the 1990s.

As of the beginning of 2011 the ECB has not been in a position to focus primarily on the target inflation rate. The possible increase of the ECB key interest rate that may take place in the second half of 2011 would push the euro area interbank money market interest rates up. The ECB's January 2011 Bank Lending Survey, conducted between December 6, 2010 and January 10, 2011 on 120 euro area banks, was in favour of the forecasted interest rate increase. It stated that all types of borrowers in the euro area are expected to encounter tougher lending standards in the coming months. "Looking forward, euro area banks expect a very slight further tightening, in net terms, of credit standards for all categories of loans in the first quarter of 2011." (Bank Lending Survey, 2011, p. 1). "The tightening of credit standards translated mainly into a tendency to increase margins on riskier loans." (Bank Lending Survey, 2011, p. 8).

The relationship between tightening credit standards in the euro area and money market stress conditions was obvious from the following data: 25% of the surveyed banks reported deteriorated access to the short-term money market with maturities exceeding one week. A prolongation of deteriorated access to money markets in the first quarter of 2011 was expected by 10% of the surveyed banks. On the other hand, due to the increasing needs of over-indebted countries to issue and sell bonds to service the public debt, banks may have to offer higher interest rates on their debt instruments. The potential increase of long term interest rates on banks' debt instruments would increase the long term interest rates on long term loans, especially on mortgage loans.

## 5. CONCLUSIONS

Despite monetary and fiscal anti-crisis measures, the stress presence in the interbank money market in the US and the euro area indicates that there will be upward pressures on credit market interest rates in the future. Analysis of the relevant indicators during 2010 and the beginning of 2011 indicates the possible implications of interest rate movements in the interbank money market for future credit market interest rate movements. These are a rise in short-term interest rates in the near future, as a direct consequence of growing inflationary pressure following the implementation of monetary and fiscal stimulus measures to overcome the economic crisis; a long-term upward trend in interest rates in money markets and banking loan markets; an increase in lending rates on loans to corporate clients, particularly those that are not classified as big prime clients; and an increase in lending rates on loans to retail clients, particularly mortgage loans.

Upward pressure on credit market interest rates in the euro area will be intensified due to increasing inflationary pressure, and therefore there will be a need to increase the ECB key interest rate in the second half of 2011. Another factor influencing credit market interest rates will be the need of over-indebted euro area countries to raise funds by issuing and selling bonds with high yields. The increase in banks' long-term debt securities will put upward pressure on the interest rate of loans, especially mortgage loans.

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