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# COMPARATIVE ANALYSIS OF CREDIT GROWTH AND BANK LENDING CHANNEL AMONG THE SOUTH EASTERN EUROPEAN ECONOMIES DURING THE PERIODS OF ECONOMIC GROWTH AND ECONOMIC RECESSION

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## Abstract

*The main aims of this analysis are to assess the credit growth and whether the bank lending channel is operational among the economies from South Eastern Europe during the two periods: a) period of relatively stable macroeconomic environment and economic growth: 2004-2008 and b) period of economic recession: 2009Q1 and 2010Q1. In order to investigate these issues, we aim to provide a brief assessment of the key central bank interest rate movements, the major developments on the deposit market as a major source of financing of banks' lending activities and the credit growth. The data presented, indicate that in all almost all SEE economies there have been an episode of "credit boom" during the period of economic growth (2004-2008). An exception from this is Croatia that had two episodes of "credit boom" that occurred much earlier. Regarding the existence of the bank lending channel, the data presented and the results from the correlation coefficient imply that probably in all SEE economies, apart from Croatia, the bank lending channel is not operational.*

**Key words:** monetary policy, credit growth, bank lending channel, Central and South Eastern Europe

**JEL Classification:** E4, E5, E52, E58

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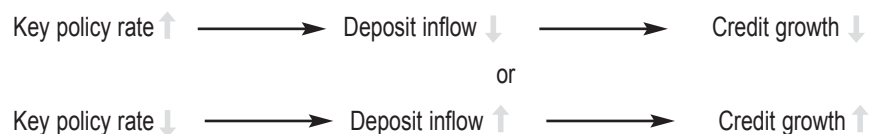
## 1. Introduction

Assessing the credit growth and the factors that affect the credit growth from both, the supply and demand side of the loan market is seen to be quite important issues for the monetary policy makers. The credit growth is seen to be an important factor because it may affect the overall economic activity through the credit channel, which is a distinctive part of the monetary transmission mechanism. According to CC-LM

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20) The views and opinions expressed in this article are the authors' own do not necessarily represent the official one(s) of the National Bank of the Republic of Macedonia.

model designed by Bernanke and Blinder (1988), the credit channel is defined as a supplementary enhancement channel of the interest rate channel of the monetary transmission. Hence, changes in the referent policy rate may not affect the economic activity only through the changes in the banks' retail rates (the interest rate channel), but also through the quantity of loan supply by the commercial banks (the bank lending channel). The latter may directly affect the aggregate demand and the overall economic activity through the personal and investment consumption. More specifically, when the monetary policy tightens, e.g. an increase of the referent policy rate, the commercial banks would not only react by the adjustment of lending and deposit rates, but also through the adjustment of quantity of loan supply. According to the CC-LM model this is explained as follows: an increase of the referent policy rate may lead to reduced inflow of deposits that will shrink the sources of financing of banks credit activity. Consequently, the banks will react by reducing the quantity of loan supply. Under these conditions, the loan market equilibrium will be restored not only through the upward adjustment of lending rates, but also through the reduction of the quantity of newly issued loans because in the loan market may still exist some borrowers that are eager to borrow even at the higher lending rate by investing in riskier projects. This type of restoring the loan market equilibrium by reducing the quantity of loan supply by the banks is known as "credit rationing". Ultimately, the credit channel may make the monetary policy more effective. A simplified scheme of how bank lending channel works may be presented as follows:



Analysing the credit growth and banks' loan supply adjustment to changes in the monetary policy stance may be especially intriguing among the economies from South Eastern Europe (SEE). The rationale for analysing the credit growth in these economies is because the loans, similar as in other transition economies, are the major source of external financing of the private sector. The importance of loans as a major source of financing of the business sector as well as the households among the SEE economies is even greater compared to the more advanced transition economies from Central and Eastern Europe due to the less developed financial markets as an source of external financing. An additional factor that may also increase the relevance of exploring the credit growth in SEE is the so-called excessive credit growth, i.e. the "credit boom" phenomenon, that occurred a bit later compared to the more advanced transition economies of Central and Eastern Europe (Cottarelli et al., 2005). According to the empirical analysis related to the credit growth in transition economies, the "credit boom" periods are implicitly defined when the annual credit growth is higher than 30% (Kraft and Djankov, 2005; Egert et al., 2006; Kiss et al., 2006). As additional indicator for the "credit boom" period may be used the annual rate of growth of the level of financial intermediation defined by the credit-to-GDP ratio. Namely, according to the EBRD Transition Report 2009, the "credit boom" episodes may be defined when the credit-to-GDP ratio exceeds two percentage points on annual basis. Consequently, according to EBRD Transition Report 2009, the periods of excessive credit growth occurred in almost all transition economies in various periods during the process of transformation from centrally-planned to market oriented economy. One of the major reasons for the excessive credit growth in the transition economies is that all of them had a relatively low starting level of financial development and suppressed credit growth that was below the optimal level in the initial period of transition. Accordingly, after the initial stage of the transition process, the activity on the loan market started to develop rapidly in order to achieve higher level of financial development and financial intermediation, a more comparable one to the developed economies from the Western Europe, known as a "catching-up" process.

Hence, the main tasks of this research are to analyze the credit growth among the SEE economies and to investigate, as argued by Cottarelli et al. (2005) and EBRD Transition Report 2009, whether there have been episodes of "credit boom" during the period of stable macroeconomic environment 2004 - 2008. Furthermore, by investigating the key central bank interest rate movements, deposit and credit growth, we aim to explore whether they move in systematic pattern in line with the bank lending channel. Consequently, we would be able to examine whether the bank lending channel has been operational among the SEE economies during both periods, i.e. period of stable macroeconomic environment and economic growth and period of economic recession.

In order to fulfill the aims of this paper, this paper is structured as follows: section 2 assesses the movements of the key policy rates, deposit and credit growth and examines if the bank lending channel has been operational during the period of economic growth. Section 3 investigates the changes in the monetary policy stance during the period of economic recession and hence, the changes in the deposit and loan markets in order to explore if the bank lending channel has been functional during this period. The final section provides the concluding remarks of this research.

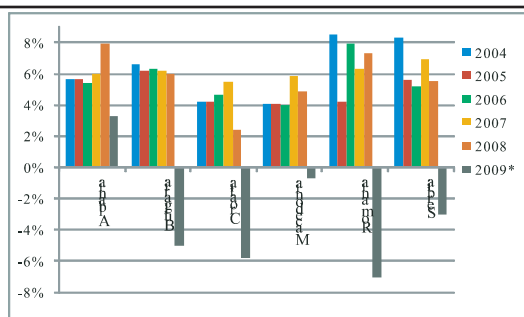
## 2. Assessing the key interest rate movements, deposit and credit growth during the period of "stable" macroeconomic environment

In order to investigate if there is a systematic pattern among the three key variables of the bank lending channel (the key interest rate, deposit and credit growth), during the period of relatively stable macroeconomic environment and economic growth (see figure 1), we start first by analysing the key interest rate movements, followed by the assessment of the major developments on the deposit and loan markets. The reason for dividing the period into two subperiods is for the reason that during the first subperiod (2004 - 2008) there is a relatively high annual growth of the GDP in all SEE economies, whereas during the second subperiod (2009) all SEE economies, apart from Albania, registered negative rates of growth. Even though GDP growth remained positive in Albania, the pace of growth slowed substantially in 2009.

**Figure 1:**  
annual rates of GDP growth at market prices,  
(in %).

\*Preliminary data

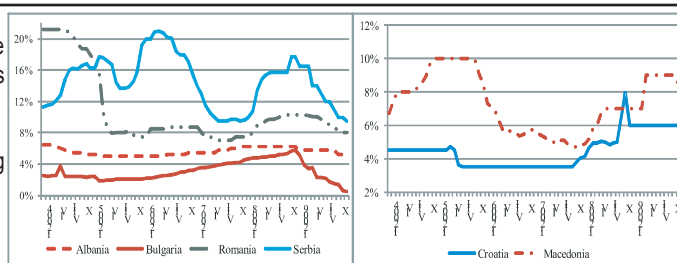
Source: EUROSTAT and central bank web-sites  
of the respective countries.



### 2.1. Key central bank movements

Analysing the key policy rates among the SEE economies, as presented on figure 2, it can be noticed that they have quite divergent movements through time, different starting levels and different variability. For example, regarding the interest rate movements, in general there is a downward trend up to 2008 at the policy rates in Romania, Macedonia and partially Croatia, unlike the interest rates of Albania and Bulgaria which started to increase continually from 2006 till the end of 2008. However, a common feature of the key policy rates of all SEE economies is their upward trend during 2008 when the central banks of all SEE economies started to increase their key policy rates due to the higher inflationary pressure caused mainly by the rise of world's commodities prices (mainly food prices) and energy prices (mainly the crude oil).

**Figure 2:** key central bank interest rate movements among the SEE economies that have explicit or implicit inflation targeting regime (left figure) and those that have fixed or tight managed floating exchange rate regime (right figure), for the period 2004 - 2009, (in %).



Source: respective central bank web-sites of the respective economies.

Regarding the starting levels of the key policy rates, the lowest starting levels had Bulgaria and Croatia of 2.5% and 4.5%, respectively, whereas the key policy rates of Macedonia and Albania had almost the same starting levels of approximately 6.5%. The highest starting level of around 21% had the reference rate of Romania, which declined sharply during the following period down to 8% in June 2005. A relatively high starting level of around 11% also had the key policy rate of Serbia, which has the highest variability among the comparison economies. Nonetheless, this is not surprising having in mind the switch of the monetary policy regime towards inflation targeting in 2006 when there was a gradual fall of the key policy rate. A relatively high variability of the key policy rates can also be noticed in Romania and in Macedonia, whereas the reference rates of Albania, Bulgaria and Croatia have been much more stable.

Overall, it can be summarised that the key policy rates of the economies of SEE, apart from the upward trend in 2008, had a divergent movements. That can be a result of the various monetary policy regimes, specific macroeconomic characteristics and the different degree of development of the financial and banking systems.

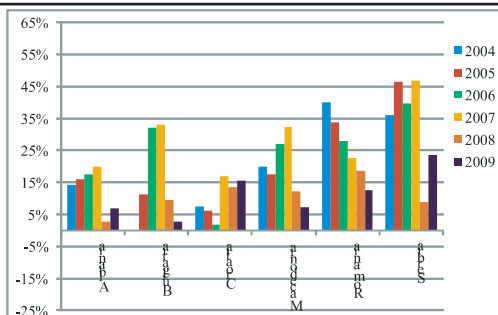
## 2.2. Deposit growth

The deposit growth during the period 2004 - 2008, has been quite different among the SEE economies (see figure 3). For example, a continual increase of the deposit growth is noticed in Albania, Bulgaria and Macedonia during the period 2004-2007, which declined later on in 2008. In Romania the deposit growth has been changing in contrary direction. Namely, the deposit growth had a downward trend during the whole period of analysis. In Serbia and Croatia, the deposit growth varies differently over the years and no common trend can be noticed. Regarding the size of the annual rates of growth of deposits, they are also different among the analysed economies. For example, the highest rates of deposit growth of approximately 47% can be noticed in Serbia in 2005 and 2007, and in Romania in 2004 of approximately 40%. A bit lower rates of deposit growth of around 30% are registered in Bulgaria in 2006 and 2007 and in Macedonia in 2007. Nonetheless, a relatively sluggish deposit growth can be seen in Albania and Croatia, compared to the peer group of economies. However, one of the reasons for this relatively sluggish deposit growth of Albania and Croatia may be the higher starting level of financial intermediation measured by the deposit-to-GDP ratio, compared to the rest of the SEE economies (see figure 4).

**Figure 3:**

Annual rates of deposit growth among the SEE economies during the period: 2004 - 2009, (in %).

Source: central bank web-sites of the respective countries.

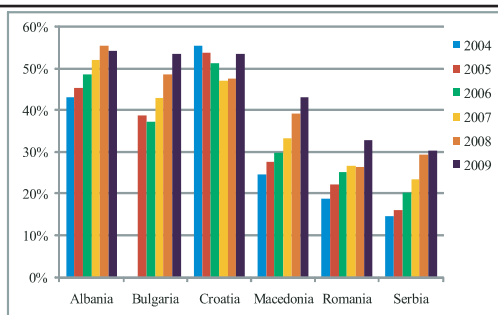


By analysing the deposit-to-GDP ratio as an indicator for the level of financial intermediation, as shown on figure 4, we can notice that in all almost all SEE economies it has been growing continually till 2008. An exception is Croatia whose deposit-to-GDP ratio has declined in 2007 and 2008, probably due to the highest starting level of deposit-to-GDP ratio among the comparison group of economies.

**Figure 4:**

Deposit-to-GDP ratio among the SEE economies during the period: 2004 - 2009, (in %).

Source: author's own calculations upon the data from the central bank web-sites of the respective countries and EUROSTAT.



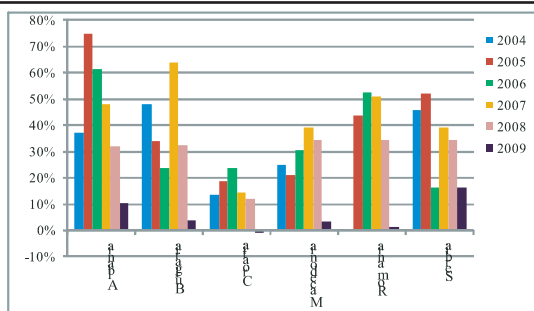
### 2.3. Credit growth and the level of financial intermediation

The credit growth during the period of stable macroeconomic environment and period of economic growth, at almost all economies from SEE apart from Croatia has been relatively high (figure 5). The annual rates of growth of total outstanding loans to the non-financial private sector have been quite high, i.e. much higher than 30%. If we analyse the credit growth by each country individually, in Albania the highest rate of credit growth of 75% occurred in 2005. According to the Bank of Albania Annual Report (2005) this is explained by the favourable macroeconomic conditions, rapid development of the overall financial system including the loan market, increased competitiveness in the banking system and introduction of new loan products by which banks could expand their lending activities. In Bulgaria, the most intensive credit expansion occurred in 2006 when the annual rate of credit growth reached 64%. Similar trends can also be noticed in Romania and Serbia. For instance, the highest rates of credit growth of more than 50% in Romania are noticed in 2006 and 2007, whereas in Serbia the highest rates of credit growth occurred a year earlier in 2005. However, during 2006 the credit growth in Serbia slowed down substantially to a level of 16% mainly due to the shift in the monetary policy regime towards inflation targeting. The shift in the monetary policy regime affected the supply side of the loan market by reducing the confidence of the banking sector in granting loans due to the perceived higher risks of borrowers' default caused by the uncertainty related to the stability of the price level that ultimately might result in worsening of their loan portfolio. On the demand side, the shift of the monetary policy regime increased the uncertainty of the private sector about the stability of the macroeconomic environment and the expected fall in the future income that might result in higher probability of borrowers' default. Consequently, the borrowers refrained from taking new loans.

However, in the following years 2007 - 2008, due to the confidence rebound in the macroeconomic and monetary stability by both the banking sector and the private sector, the credit activity in Serbia intensified again, reaching annual rates of credit growth of more than 30%. Regarding the Republic of Macedonia, a more intensive credit growth activity was noticed a bit later. More precisely, the annual rate of credit growth of more than 30% for the first time was noticed in 2006, reaching the historically highest level of 39% in the following year. Nonetheless, compared to the rest of the SEE, the historically highest rate of credit growth in Macedonia of 39% is much lower, indicating that probably the credit expansion did not intensify with the same pace as it was the case for example, in Albania, Bulgaria and Romania.

**Figure 5:**  
Annual rates of credit growth among the SEE economies during the period: 2004 - 2009, (in %).

Source: central bank web-sites of the respective countries.



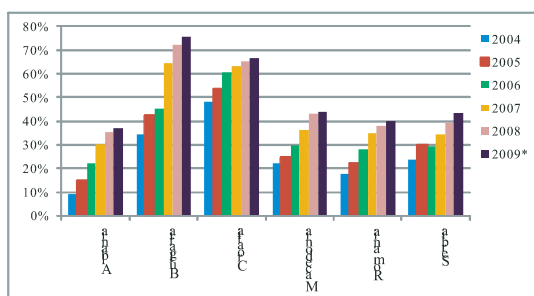
Republic of Croatia may be an exception from the rest of the economies from SEE because the credit growth during the period 2004 - 2008 was much lower. This can be probably explained with the argument that two periods of intensive credit activity occurred earlier than the rest of the economies in the region. For example, the first period of intensive credit activity could be noticed in 1997 and during the first half of 1998 when the annual rates of credit growth were higher than 40%. Nevertheless, this period of intensive credit activity was interrupted by banking crises as a result of the chained banking failure of around 16 banks during the period June 1998 - March 1999 (Kraft and Djankov, 2005). The second episode of intensive credit growth, but with lower pace happened again in 2002 with the annual rates of credit growth higher than 30%. However, during the following years the credit activity slowed down and in the end of 2008, the annual rate of credit growth went down to 12%, which was the lowest one among the countries of comparison.

As additional indicator for the intensive credit activity and the development of the financial intermediation can be taken the credit-to-GDP ratio. As presented in figure 6, at all SEE economies there is a continual increase of the credit-to-GDP ratio, indicating to a higher level of financial intermediation. The highest level of financial intermediation can be noticed in Bulgaria and Croatia where the credit-to-GDP ratio in 2008 reached more than 70% and 60%, respectively. A similar level of financial intermediation can be noticed in Macedonia, Romania and Serbia where the credit-to-GDP ratio is in the range between 40% and 44%. The lowest level of financial intermediation can be noticed in Albania where the credit-to-GDP ratio equals around 37%. This may imply that in future it might be expected a more intensive credit activity in order to reach the level of financial intermediation as the rest of the SEE economies.

**Figure 6:**  
Credit-to-GDP ratio among the economies from SEE, (in %).

\* The data for GDP for 2009 is preliminary.

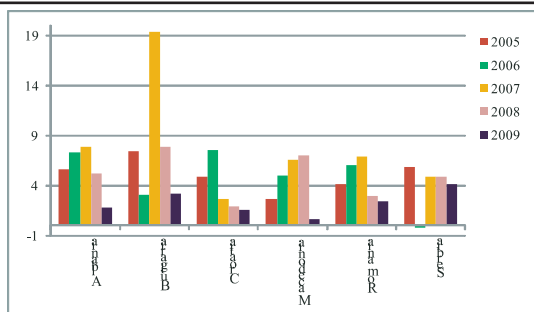
Source: author's own calculations upon the data from the central bank web-sites of the respective economies and EUROSTAT.



The relatively high credit activity expansion of the banking sector and consequently, the increased level of financial intermediation, can also be analysed by the annual rate of growth of credit-to-GDP ratio. As shown on figure 7, the annual rates of credit-to-GDP ratio during the period 2004 - 2008 in almost all economies from SEE, apart from Serbia in 2006, are higher than two percentage points than can be explained by the intensive credit growth.

**Figure 7:**  
Annual rates of changes of the level of financial intermediation among the SEE economies measured by the credit-to-GDP ratio, (in percentage points).

Source: author's own calculations upon the data from the central bank web-sites of the respective economies and EUROSTAT.



According to the previously presented arguments, it can be summarised that during the period of stable macroeconomic and in period of economic expansion of the SEE economies, it could be noticed an episode of "credit boom". As explained in section 1, this can be inferred by two indicators: a) the relatively high annual rates of credit growth that in almost all SEE economies, except from Croatia, were much higher than 30% and b) the annual rates of growth of credit-to-GDP ratio that during the period 2004 - 2008 were higher than two percentage points. These two indicators may imply to both, an intensive credit activity and higher level of financial intermediation.

#### 2.4. Is there a systematic movement among the key interest rates, banks' deposits and loans that is in line with the bank lending channel during the period of stable macroeconomic environment?

By assessing the movements of the key policy rates, deposit and credit growth in the previous subsections, we should be able to draw a rough conclusion whether the bank lending channel is operational among SEE economies. The testable hypothesis should be the ones presented with the simplified scheme in section 1. As a first method of analysis may be a simple visual inspection of the data presented.

The first chain of the bank lending channel implies to a negative relationship between the key policy rate and deposit growth (inflow). The data regarding this link among the SEE do not indicate to a straightforward conclusion. For instance, in Albania the key policy rate has been declining during 2004 and 2005 and it was increased again later on in 2007 and 2008, whereas the deposit growth has been growing continually up to 2008. Similarly in Bulgaria, the key policy rate started to rise continually from 2005 up to the end of 2008, whereas deposit growth has also been increasing continually up to 2007. Thus, these movements between the key policy rate and deposit growth in Albania and Bulgaria indicate to a positive relationship among each other and are contrary to the predictions of the bank lending channel theory. Moreover, the positive association between the deposit inflow and changes in the key policy rate may be even more obvious in the case of Romania. For instance, the key policy rate fell down sharply in 2005 and again in 2007 whereas the deposit growth has been declining during the whole period of analysis, instead of reverse relationship. A more synchronised and negative association between the key policy rate and deposit growth that is in line with the bank lending channel theory, can be noticed in Macedonia, Serbia and Croatia. The data indicate that when the policy rate has been declining, the deposit growth has been intensifying and vice versa. An example for this may be the case of Macedonia when the key policy rate has increased in 2005, the deposit



growth declined within the same year, whereas during 2006 and 2007 the key policy rate declined and the deposit inflow intensified.

The second chain of the bank lending channel is the connection between the deposit flow and credit growth, which should lead to a positive association between the two. The visual inspection of the data again indicates to an ambiguous conclusion. For example, in Albania and Bulgaria the deposit growth has been intensifying during 2004 - 2007, whereas the credit growth has been declining. This is contrary to the predictions of the bank lending channel theory. In Croatia and Romania it cannot be given any straightforward conclusion because in some years the credit growth has been in line with the deposit growth according to the bank lending channel theory, whereas in other periods this relationship has been reversed. Nonetheless, in Serbia and Macedonia it seems that the credit growth goes in consistent manner with the deposit growth, which might be in line with the bank lending channel.

As a second method of investigation of whether there is any systematic pattern of movement between the key policy rates, deposit and credit growth and whether it is in line with the bank lending channel theory, is to conduct a simple correlation analysis. The correlation coefficients presented in table 1 indicate that in all SEE economies there is a negative correlation between the key policy rates and deposit growth and a positive one between the deposit and credit growth. These results seem to be in line with the bank lending channel theory. However, the correlation coefficients are only statistically significant in the case of Croatia, which may imply that probably the bank lending channel is not operational in the rest of the SEE economies during the period of stable macroeconomic environment and economic growth. Nonetheless, these results should be taken with caution due to the relatively short time span.

Table 1: correlation coefficients between the key policy rates and deposit growth and deposit growth and credit growth for the SEE economies during the period 2004 - 2008.

	For the period 2004 - 2008					
	Albania	Bulgaria	Croatia	Macedonia	Romania	Serbia
Correlation between the key policy rate and deposit growth	-0.34	-0.04	-0.82*	-0.63	-0.65	-0.38
Correlation between deposit and credit growth	0.60	0.38	0.91**	0.45	0.41	0.22
*** / ** / * denotes significance at 1%, 5% and 10% level of significance, respectively.						

Source: authors own calculations upon the data from the central bank web-sites of the respective countries.

### 3. Assessing the key interest rate movements, deposit and credit growth during the period of economic recession

During the period of economic recession in 2009 and first quarter of 2010, there have been some substantial changes in the monetary policy stance and some reversal movements on the loan market. Due to the spillover effects of the world's economic and financial crisis, especially from the developed economies; the monetary policy authorities of SEE economies had to take various monetary policy measures in order to reduce the risks of deterioration of the stability of the financial and banking systems, reduce the negative trend in the economic activity by supporting the credit activities of the banks etc.

In analysing the main changes in the monetary policy stance, it should be stressed that various economies from SEE have taken different monetary policy measures due to the different risks by which the economies were faced off and different monetary policy regimes conducted. In general, the monetary policy measures taken, were mainly in a direction of maintaining the stability of the financial system and preventing the banking sector from the possible risks of failure caused by the economic recession. More precisely, the monetary policy measures of the Serbian National Bank, which conducts inflation targeting regime, were

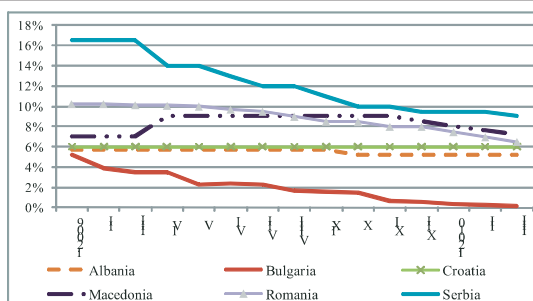


directed towards the three areas: a) increasing the foreign exchange liquidity of the banking sector; b) stimulating the credit activity and c) protecting the financial stability. The monetary policy measures of the Croatian National Bank were also in a direction of supporting the credit activity of the banking system. For example, one of the most important was the abandoning of the credit growth limit since the middle of 2009. More precisely, this credit limit was imposed during 2008 in a period of inflationary pressures and was aimed to reduce the credit growth and hence, to reduce the inflationary pressure from the aggregate demand side.

The monetary policy measures of the National Bank of the Republic of Macedonia were in a different direction compared to the central banks of Serbia and Croatia. More specifically, the monetary policy measures were mainly in direction of limiting the banks' lending activities. This was done for the reason of reducing banks' liquidity due to the pressures on the foreign exchange market in a direction of depreciation of the Macedonian currency. Consequently, the credit growth limit was kept in force till the end of 2009, that similar as in Croatia, was imposed in 2008 during a period of inflationary pressures and more intensive credit growth. As additional measure for limiting the banks' lending activities was the increase of the reserve requirement for the loans denominated in foreign currency.

**Figure 8:**  
Key central bank interest rate movements  
among the SEE economies during the period:  
2009 M1 - 2010 M3, (in %).

Source: central bank web-sites of the respective countries.

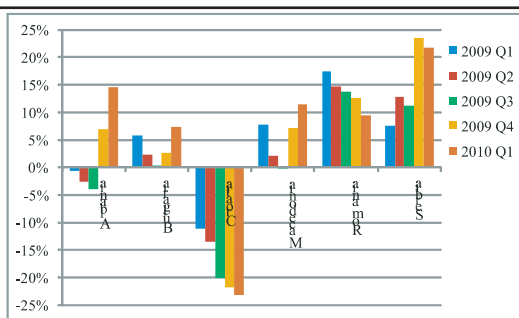


The changes in the reference monetary policy rates among the economies from SEE were also in a different direction that depicts the differences in the monetary policy regimes conducted. The monetary policy authorities of the SEE economies that implicitly or explicitly conduct an inflation targeting regime, have reduced their key policy rates in order to stimulate the lending activities of the banking system and to reduce the decline in the aggregate demand. As can be seen from figure 8, the central banks of Albania, Romania and Serbia have been continually reducing their key policy rates during 2009 and additionally during the first quarter of 2010. For example, the central banks of these three countries have reduced their key policy rates from the level of 6.3%; 10.3% and 17.8 in the end of 2008 to a level of 5.3%; 6.5% and 9%, respectively, in March 2010. The Bulgarian National Bank, although conducts a currency board regime, which is the strongest form of fixed exchange rate regime, has also substantially reduced its key policy rate that might be a results of the historically sharpest decline of the 3-month EURIBOR rate. The reaction of the Croatian National Bank, that conducts a tight managed floating exchange rate regime, was in a direction of maintaining the same level of its key policy rate as it was in December 2008 of 6%. Regarding the monetary policy stance in the Republic of Macedonia, during 2009 it can be noticed a completely divergent reaction. Namely, due to the fixed exchange rate regime strategy, the National Bank of the Republic of Macedonia has increased its key policy rate by two percentage points, i.e. from 7% to 9% in April 2009. More precisely, the major reasons for this sharp increase of the key policy rate were the pressures on the foreign exchange market in a direction of depreciation of the Macedonian currency. For example, during the first half of 2009 there have been relatively high risks of further deterioration of the current account deficit and additional substantial fall of the foreign currency inflows caused not only from the reduced exports, but also by the substantial reduction of the foreign direct and portfolio investments and private transfers. Nonetheless, due to the foreign currency inflow in the fourth quarter of 2009 on the basis of the Eurobond issuance and the sluggish

recovery of the domestic economy, the National Bank Republic of Macedonia decided to ease the monetary policy by reducing the key policy rate by a half percentage points in the end of 2009 and additionally by around one percentage points during the first quarter of 2010.

Regarding the deposit growth (inflow) the movements are quite different and no common pattern can be noticed (see figure 9). For example, in Albania, Macedonia and Bulgaria the deposit growth was declining during the first three quarters and afterwards is started to rebound moderately. In Romania and Croatia, the deposit inflow (growth) was declining during the whole period (2009Q1 - 2010Q1), but the major difference between these two economies is that in Romania the deposit growth was in positive territory whereas in Croatia it was in negative territory during the whole period. A completely different dynamics of the deposit growth was noticed in Serbia, where the deposit base was growing continually during the economic recession.

**Figure 9:**  
Annual rates of deposit growth among the SEE economies during the period: 2009 Q1 - 2010 Q3, (in %).

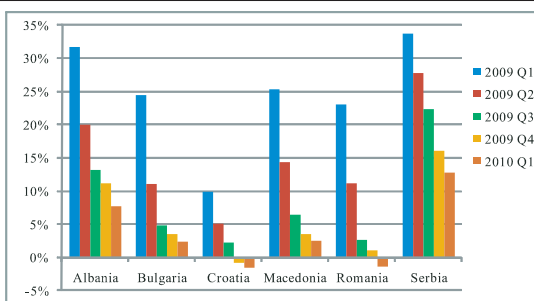


Source: central bank web-sites of the respective countries.

Another interesting point worth noting is that in 2009, the deposit-to-GDP ratio in Bulgaria, Croatia, Macedonia and Romania has increased (see figure 4) that can be mainly explained by the negative rates of growth of the GDP (see figure 1).

The credit activity substantially slowed down during 2009 and continued to decline further during the first quarter of 2010 (see figure 10), mainly as a result of the negative spillover effects from the global economic recession and financial crisis in the world and hence, the reduced sources of financing from abroad. The negative spillover effects were firstly felt on the loan market in the last quarter of 2008 and have gradually intensified during the 2009. Analysed from the supply side on the loan market, the banks were faced off with reduced sources of financing their lending activities and increased risk of borrowers' default. On the demand side the major factors that affected the slowdown of the credit activity were increased uncertainty about the future macroeconomic developments and relate to that increased uncertainty about the expected future income, uncertainty about the job security, worsening of the financial performances of the business sector and reduced profitability. These factors ultimately resulted in reduced interest at the private sector for taking new loans. Consequently, both factors from the supply side and demand side have affected the credit activity in 2009.

**Figure 10:**  
Annual rates of credit growth among the SEE economies during the period: 2009 Q1 - 2010 Q3, (in %).



Source: central bank web-sites of the respective countries.

As a result of these changes in the economies from SEE, including the changes in the monetary policy stance; the credit growth dynamics has substantially slowed down during the 2009 and continued to slow down further during the first quarter of 2010. For example, the annual rate of credit growth in Albania and Serbia from above 30% in the first quarter of 2009 went down to around 8% and 13%, respectively in March 2010. Similarly, in Bulgaria and Macedonia, the credit growth from more than 25% during the first quarter of 2009 was reduced to less than 5% in first quarter of 2010. In some economies such as Romania and Croatia, the credit growth was even negative in 2009 and first quarter of 2010. For instance in these two economies, the credit growth from 23% and 10% in the first quarter of 2009 went down to around -1.5% in first quarter of 2010. Consequently, because of the gradual slow down of the credit growth, there has been a substantial slow down of the development of the financial intermediation. This can be noticed by the reduction of the growth dynamics of credit-to-GDP ratio that in some economies like Albania, Croatia and Macedonia was reduced to less than two percentage points (see figure 7).

### *3.1. Is the bank lending channel operational during the period of economic recession?*

As already discussed in section 2.4, the first method of analysis is the visual inspection of the data. The key policy rates of all SEE economies, apart from Macedonia have been reduced, whereas the deposit growth was different among the SEE economies, for which, again no straightforward conclusion can be drawn. For example, in Albania and Bulgaria, despite the gradual reduction of the key policy rates, the deposit inflow has been declining till the third quarter of 2009, which is in contrast to the bank lending channel theory. Nonetheless, in the forthcoming quarters it started to rebound which is in line with the bank lending theory. In Romania the deposit growth has been declining continually during the economic recession despite the continual decrease of the key policy rate that is also in contrast to the bank lending channel theory. In Croatia the deposit growth has also been declining continually whereas the key policy rate was kept almost unchanged. A more systematic pattern that is in line with the bank lending theory, can be noticed in Macedonia and Serbia. More precisely in Serbia, the deposit growth has been increasing whereas the key policy rate has been declining continually. In Macedonia the deposit growth has been declining till the third quarter of 2009 when the key policy rate has been increased. Later on during the next quarters when the key policy rate was reduced, the deposit growth started to rebound.

Regarding the second chain of the bank lending channel, i.e. the connection between the deposit and credit growth, again no straightforward conclusion can be drawn. For example, in all SEE economies the credit growth has been declining continually during the economic recession, whereas the deposit inflow has varied, i.e. in some quarters in some economies it has increased and in others it has decreased. The only systematic connection that is line with the bank lending channel theory can be noticed in Croatia. More precisely, the deposit inflow has been declining continually during the period of economic recession and the same reaction is noticed on the loan market.

Additionally, in order to summarise if the bank lending channel is operational during the economic recession, similarly as in section 2.4, we conduct a simple correlation analysis. The results from the correlation coefficients between the key policy rates and deposit growth in almost all SEE economies, apart from Romania, are negative (see table 2) and unlike the previous results presented in section 2.4; they are statistically significant for three more countries, e.g. Albania, Macedonia and Serbia. This may indicate that in these economies might exist a significant connection between banks' deposit inflow and changes in the key policy rate that is in line with the bank lending channel theory. For the case of Romania, the correlation coefficient between the key policy rate and the deposit growth is statistically significant but has a contrary sign from the predictions of the bank lending channel theory. Regarding the correlation coefficients between the deposit growth and credit growth (the second chain of the bank lending channel), the correlation coefficients, unlike previously, is positive and statistically significant for one more country, e.g. Romania. However, for Serbia the correlation coefficient is statistically significant but negative which is in contrast to the predictions of the bank lending theory.

**Table 2:** Correlation coefficients between the key policy rates and deposit growth and deposit growth and credit growth for the SEE economies during the period 2009Q1 - 2010Q1.

	For the period 2009 Q1- 2010 Q1					
	Albania	Bulgaria	Croatia	Macedonia	Romania	Serbia
Correlation between the key policy rate and deposit growth	-0.92**	-0.09	-0.96***	-0.83*	0.97***	-0.86**
Correlation between deposit and credit growth	-0.59	0.22	0.97***	0.08	0.91**	-0.91**

\*\*\* / \*\* / \* denotes significance at 1%, 5% and 10% level of significance, respectively.

Source: authors own calculations upon the data from the central bank web-sites of the respective countries.

Overall, the results from the correlation coefficients may indicate once again that the bank lending channel even during the economic recession is operational in Croatia, but not in the rest of the SEE economies because either the correlation coefficients have a contrary sign(s) from the theoretical predictions and/or are statistically insignificant. Nonetheless, as mentioned in section 2.4, these results should be taken with caution due to the relatively small number of observations and the short time span.

#### 4. Conclusions

The main aims of this paper were to assess the credit activity among the SEE economies and whether the bank lending channel is operational in periods of stable macroeconomic environment and in period of economic downturn during 2009 and the beginning of 2010. Consequently, we have analysed the key central bank interest rate movements, deposit and credit growth in order to examine if they are interrelated and move in a systematic pattern as the bank lending channel theory predicts.

By analysing the key interest rate moments and deposit growth among the SEE economies during the period of economic growth, no clear common pattern could be established. Namely, the key central bank interest rate movements among the SEE economies had different starting levels, different variability and different movements over time. Similar conclusions can be drawn for the deposit growth, which has also been with different intensity and in different direction among the SEE economies. Regarding the credit growth, it can be summarised that in all SEE economies, apart from Croatia, has been relatively high till the end of 2008. More precisely, in almost all SEE economies in most of the years the annual rates of credit growth have been much higher than 30% that may indicate to a period of "credit boom". Additionally, the relatively high credit growth led to high level of financial development. This may be seen by the continual increase of the credit-to-GDP ratio that may also indicate to a "credit boom" because in almost all SEE economies it has been growing by more than two percentage points.

In period of economic recession, the monetary policy authorities have taken various monetary policy measures in order to maintain the stability of the financial and banking system and in some of the to stimulate the credit activity and hence, the aggregate demand. Regarding the changes in the reference interest rates, apart from Macedonia, have been in the same (downward) direction. Regarding the reaction of the deposit inflow, again no clear pattern can emerge, whereas the credit growth in all SEE economies has been changing in the same direction. More precisely, during 2009 and first quarter of 2010, the credit growth has been declining continually.

Furthermore, this paper attempted to explore if the bank lending channel has been operational during the two distinctive periods: a) period of stable macroeconomic environment and economic growth and b) period of economic recession. The main finding from both methods, i.e. visual inspection of the data and correlation coefficients, may imply that during the both periods the bank lending channel might not be

operational in the SEE economies. An exception might be Croatia where according to the correlation coefficients; there might be some indication that the bank lending channel is operational. However, one of the weaknesses of the bank lending channel theory of Bernanke and Blinder (1988) is that it explains the credit activity basically through the loan supply function that takes into account mainly the supply side factors of the loan market. As argued by, Kashyap and Stein (1993) and Bernanke and Gertler (1995), the loan market equilibrium and the functioning of the bank lending channel can also be driven by the loan demand side but nonetheless, in the empirical literature it is difficult to clearly disentangle what specific factors may affect the loan demand side. This might also be the case in the SEE economies where the functioning of the bank lending channel might have also been affected by various demand side factors.

As open issues for a further research may be to explore what are the major factors that cause the bank lending channel to be non-operational. Related to that, it might be important to explore how various macroeconomic factors and banks' specific characteristics like quality of their loan portfolio, asset size and liquidity; may affect banks' loan supply function and banks' lending behaviour. Moreover another important factor worth investigating is the role of the foreign ownership into the banking sector. As argued by Coricelli et al. (2006), the foreign ownership sometimes is seen to impede the functioning of the bank lending channel because the foreign owned banks may borrow from their "parent" institutions from abroad by much cheaper price in order to expand their lending activities on the loan market. Additional issues worth investigating in more depth may be how the concentration and the degree of competitiveness among the banks may also affect their lending behavior. By investigating these issues, it will provide some useful information to the monetary policy authorities in designing their monetary policy more appropriately in order to take more efficient monetary policy measures, especially in periods of economic downturn as it was during 2009 and beginning of 2010.

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