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Determinants of Credit Growth: The Case of Montenegro

Abstract: In the period before the crisis, Montenegro experienced a rapid credit growth, which coincided with the privatization of several banks and was followed by the entry of foreign banking groups, amplifying the banks' lending process and increasing competition in this sector. This paper focuses on identification and estimation of determinants of credit growth in Montenegro, exploring both demand and supply side factors, and particularly paying attention to supply factors. Our findings confirm that positive economic developments and an increase in banks' deposit potential lead to higher credit growth. Furthermore, our findings emphasize that the banking system soundness is decisive for promoting further bank`s lending activities. We provide evidence that the weakening of banks` balance sheets, in terms of high non-performing loans and low solvency ratio, has a negative effect on credit supply.

In addition, this paper provides a nuanced analysis of the determinants of credit growth by allowing these to be different before and after the global financial crisis. The post-crisis model finds that credit supply indicators gained in importance in explaining credit growth, while the model in pre-crisis period provides evidence that both demand and supply indicators matter in explaining credit growth.
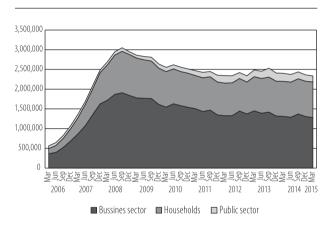
Keywords: credit growth, global financial crisis, fixed effects linear model

JEL Classification Numbers: E32, E44, E51, G21

1. Introduction

In the pre-crisis period, Montenegro was in a group of transitional economies that were growing at an accelerated pace. After a relatively low GDP growth rate in the first years of this millennium, during the three-year pre-crisis period Montenegro saw a remarkably accelerated economic growth with an average rate of 8 per cent. The growth model of the Montenegrin economy in that period was based on the large foreign capital inflows that spurred credit expansion and led to unrealistic increase in asset prices and was not sustainable in the long term.

Figure 1: Credit to businesses sector, households and public sector, ml euro

Source: Central bank of Montenegro

The Montenegrin banking sector experienced a rapid credit growth, especially from 2006, which coincided with the privatization of state capital in local banks and entry of foreign capital. Namely, three banks have been privatized, two banks have been merged, and one regional banking group entered in the market. These developments in the Montenegrin banking sector amplified the lending process and increased the competition in this sector.

The majority of loans and other receivables of banks referred to the corporate and household sectors.
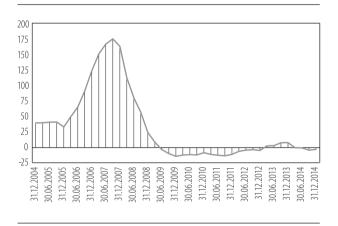
Similar to other emerging European markets, looking by the supply side, the credit surge was facilitated by foreign financial institutions entering these markets, with the objective of rapidly increasing their market share (Hilbers et al., 2006). The presence of foreign banks may be beneficial for consumers by offering superior products and services, for the financial industry by increasing the quality of services and finally, for the economy by increasing efficiency (Yildirim and Philippatos, 2007). However, there may be some costs associated with the entry of foreign banks. Hellmann et al. (2000) reveal that in order to maintain or increase

their market share, foreign banks are inclined towards higher risk activities. On the demand side, the credit expansion was supported by optimistic customers' expectations, particularly by higher income expectations. As documented by Hilbers et al. (2006), the credit expansion in Central and East European countries was supported by higher income expectations, often related to these countries' (prospect of) accession to the European Union.

As previously mentioned, extremely high rates of credit growth in the pre-crisis period (125 per cent in 2006 and 165 per cent in 2007) were significant factors assisting the development of the real economy. However, such high growth rates in loans were not accompanied by adequate growth rates in provisions and capital, so the Central Bank of Montenegro issued a set of restrictive measures in the fourth quarter of 2007 which limited credit growth in 2008. The biggest limitations were imposed on the biggest banks since the negative consequences of excessive credit expansion of those banks would have had the greatest impact on the overall stability of the banking sector. In addition to credit growth limitations, a requirement to maintain the solvency coefficient at a minimum 10 per cent in 2008 (legal minimum amounted to 8 per cent) was prescribed. Namely, increasing the amount of banks' capital was expected to ensure adequate protection of bank clients' interests.

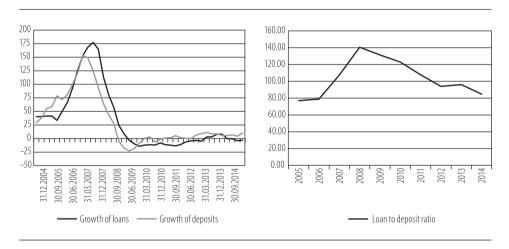**Figure 2: Annual growth of total outstanding loans in Montenegro, 2004 - 2014**

Source: Central Bank of Montenegro

Lending activity began to decline in the last quarter of 2008 due to the impact of the global financial crisis, with total outstanding loans declining some two per cent in the last quarter of 2008 as banks became concerned about their deteriorated liquidity situation and the ability of their parent banks to provide additional financing. That decline continued in 2009, when total outstanding loans fell by 14 per cent, mainly due to banks' deterioration of asset quality and a decline in demand for loans from the corporate sector, which was affected by the weaken-

ing situation in the real economy. In 2010, total outstanding loans declined by a further eight per cent. This decline continued until 2012. Banks' lending activity picked up slightly in 2013[1] only to decline again in 2014.

The decline in lending activity can be explained by supply and demand side effects. Looking from the supply side, banks have tightened their lending standards; while on the other hand, the private sector has reduced its demand for bank lending. Banks became more careful, as their borrowers experienced difficulties refinancing their loans. Projects that seemed attractive and profitable in good times suddenly became risky. The weakened economy, particularly poor performance of the construction sector and the real estate market, contributed to a rapid increase in non-performing loans (NPLs). This rapid increase of NPLs, combined with increasing banking regulation, more stringent supervision, and the impact of those assets on banks' risk-weighted assets (RWAs) encouraged Montenegrin banks to reconsider their long-term strategies concerning their assets.

Figure 3: Annual percentage change in loans and deposits, and the ratio of total loans to total deposits in the Montenegrin banking sector

Source: Central bank of Montenegro

Until 2007, credit growth was supported by an increase in deposits related to high capital inflows, and a greater formalization of the economy. However, from 2007
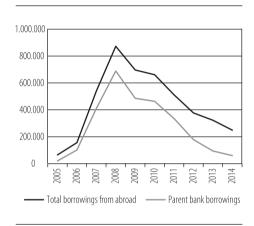
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[1] The growth in loans and other receivables primarily resulted from the implementation of the International Accounting Standards, whereby the banks transferred a portion of written-off loans and other receivables (category E) from the off-balance sheet records into their balance sheets in January 2013.

credit growth significantly exceeded deposit growth. The loan to deposit ratio (LtD) was extremely high and rising until 2013, suggesting that deposits in that period were not able to meet loan requests. This has led to an increasing dependency on foreign funding, which has mainly been channelled through the banking sector. Additional reason for high LtD was that due to the global financial crisis total deposits declined significantly. Significant withdrawals of deposits have been compensated with an increase in borrowings and credits.

The most significant share of total borrowings was borrowings from abroad. According to the banks reports submitted to the Central Bank of Montenegro (CBCG), the rapid growth of loans was mainly based on borrowings from abroad. Most of the foreign borrowings refer to the borrowing from foreign parent banks whose subsidiaries dominate the Montenegrin banking sector (see Figure 4).

Figure 4: Banks' borrowing from abroad in the period 2005-2014, in millions of euro

Source: CBCG database

Funding from parent banks (borrowings from parent banks as a share of total liabilities) increased from 2005, reaching the peak in 2008. Financing from parent banks constituted 76 per cent of total borrowings at end-2008, exposing the banking sector to liquidity shocks in case where parent banks were unable to sustain financing to their subsidiaries. However, this share decreased by 20 per cent in 2009, additional 5 per cent in 2010, and a further 23 per cent in 2011.

In 2012, both citizens and corporates restored their confidence into the domestic banking system and deposits growth was recorded. During 2013 and 2014, positive trends in total deposits continued and they rose annually by 5.9% and 9.9%, respectively. The corporate and household sectors largely contributed to the increase in total deposits in banks. In 2014, the loans to deposit ratio improved significantly in comparison with previous years, and it amounted to 84.7, suggesting that banks have enough available funds to grant loans.

Bearing in mind these different dynamics in the Montenegrin banking sector, this paper aims to identify and estimate both demand and supply factors that affect credit growth. Obtained empirical findings help us identify factors that

would further boost the future lending activities. In the end, we will be able to suggest policy recommendations.

2. Literature review

Several theoretical and empirical studies have been conducted to analyse the determinants of credit growth, considering both demand and credit supply effects. Although there is no standard model assessing the determinants of credit demand, the most common explanatory variables across studies are GDP, inflation and interest rate. Besides macroeconomic variables, bank-specific determinants, which affect bank lending channel and financial position of the borrowers, are often used in models that assess credit supply. There are studies which include both indicators in one model estimation, while other studies try to consider them in two separate models.

Catão (1997) analyses both demand and supply indicators of private sector credit in Argentina from 1991 to 1996. On the demand side, he identified that changes in interest rates, the level of indebtedness of the private sector coupled with expected changes in the economy and level of unemployment may have contributed to the weakening of private sector credit. On the supply side, he reports that the private sector was constrained because of adverse selection mechanisms exacerbated by the crisis. Calza, et al. (2001) apply a Vector Error Correction Mechanism (VECM) to model the factors that affect the demand for credit in the euro area. They find that in the long run, credit is positively related to real GDP growth and negatively to short term and long term real interest rates. Applying the same modelling technique, Shijaku and Kalluci (2013) assess the long run determinants of bank credit to the private sector in the case of Albania. Their empirical findings suggest that lending is positively linked to economic growth. Furthermore, they stress that banking and financial intermediation, as well as financial liberalisation would stimulate higher lending demand, while lower cost of lending, diminishing government domestic borrowing and a more qualitative bank credit would create further lending incentives.

Mendoza and Terrones (2008) while studying 27 credit booms in industrial countries and 22 in emerging economies during the 1960-2006 period, identify the key empirical regularities of credit booms, considering macroeconomic aggregates and micro-level data. Namely, the build-up phase of these booms is associated with economic expansions, rising equity and housing prices, real currency appreciation, and widening external deficits, followed by the opposite dynamics in the downswing. Similar dynamics are observed in firm-level indicators of

leverage, firm values, and dependence on external financing, and in bank-level indicators of asset quality, profitability and lending activity. Furthermore, Igan and Tamirisa's (2009) analysing credit growth in the Baltics and Central and East European countries revealed that bank profitability, measured by net interest margins, was a significant driver of private sector credit expansion. Iossifov and Khamis (2009) empirical finding, on credit growth in the Sub-Sahara African countries from 1997-2007, suggest that bank credit to the private sector was mainly driven by GDP per capita, the nominal interest rate, the money multiplier and credit extension of foreign banks to local banks.

Barajas, et al. (2010) analysing the credit slowdown among Middle Eastern and North African (MENA), find that the important role was played by bank funding (deposit growth and external borrowing considerably slowed). Furthermore, they find that bank-level fundamentals such as capitalization and loan quality helped to explain differences in credit growth in Middle Eastern and North African countries. Guo and Stepanyan (2011) examine changes in bank credit across 38 emerging market economies. Analysing both pre-crisis and post-crisis periods, authors find that domestic deposits and non-residents liabilities contribute positively and symmetrically to credit growth. Furthermore, they stress that loose monetary conditions result in higher credit growth rates. Their results also indicate that stronger GDP growth leads to higher credit growth and high inflation, while increasing the nominal credit decreases the real credit growth. Finally, they highlight that a banking sector with a healthy balance sheet and lower NPLs is desirable for credit growth. Similarly, using bank-level data in 90 countries between 1995 and 2005, Igan and Pinheiro (2011) investigate the relationship between credit growth and bank soundness considering the potential two-way causality. Their empirical findings reveal that while sounder banks tend to grow faster at moderate growth periods, credit growth becomes less dependent on soundness during booms. Furthermore, Tan (2012) links credit growth constraints in the Philippines with the weakness in bank balance sheets, consumption – led economic growth and high net interest margins. Furthermore, he reports that interest margin rises with bank size, bank capitalization, foreign ownership, overhead costs, and tax rates.

More recent analyses of credit growth by Allen et al. (2014) indicate that bank-specific characteristics, such as deposit growth and profitability ratios, are important determinants of credit growth during both normal economic times and crisis periods. Their findings are in line with Ivashina and Scharfstein (2010) who stressed that banks with better access to deposit financing decreased lending to a lesser degree during the recent financial crisis. To summarize, many studies may have dealt with credit growth supply and demand factors, in a context of panel

countries. This paper will contribute to the existing literature, given that to our best knowledge, this is the first paper that estimates the determinants of credit growth specifically for Montenegro.

3. Data and Methodology

This paper focuses on the period from 2004 to 2014, using quarterly data and a panel data set of 11 banks operating in Montenegro. Combining time series and cross-section observations, panel data provides data that are more informative possess more variability, more degrees of freedom, less collinearity among variables and more efficiency (Gujarati, 2004). During this period, the Montenegrin banking system could be characterized as a sector which was responding to global market changes. In addition, this period encompasses a part of the boom period and also of the global financial crisis. Thus, contrasting phases of the business cycle are represented in the observed time period.

Our analysis focuses on the following variables: credit growth, GDP growth, inflation, one year Euribor, spread, deposit growth, non-performing loan (NPL) ratio, solvency ratio, inefficiency ratio, and return on equity (ROE).

Due to data availability, as two banks started its business during the observed period, the panel is not balanced. We will investigate a fixed effect linear model. Fixed effects estimation allows for arbitrary correlation between the unobserved bank specifics and the observed explanatory variables (Wooldridge, 2002). Furthermore, under the assumption of strict exogeneity, it also takes into account bank-specific differences. The fixed effect linear model is presented in the equation below.

$$credit_{growth_{i,t}} = \beta_0 + \beta_1 gdp_{growth_t} + \beta_2 inflation_{rate_t} + \beta_3 euribor_t + \beta_4 spread_{i,t} + \beta_5 deposit_{growth_{i,t}} + \beta_6 NPL_{ratio_{i,t}} + \beta_7 solvency_{ratio_{i,t}} + \beta_8 inefficiency_{ratio_{i,t}} + \beta_9 ROE_{i,t} + \lambda t + e_{i,t} \tag{1}$$

The dependent variable is growth rate of total loans (*credit_growth$_{i,t}$*). The explanatory variables are:

GDP growth rate - represents the overall state of the economy. Economic conditions and developments determine consumption and investment demand, and thus reflect the demand for credit. Higher GDP growth should be translated into higher credit growth. However, high credit growth may lead to higher GDP growth. Therefore, following Guo and Stepanyan's (2011) and Tan's (2012) ap-

proach to avoid reverse causality; we will include lagged values of GDP growth in the model estimation.

Inflation rate - is measured by the consumer price index (CPI), and it is anticipated to decrease real bank loans.

Euribor - measures the cost of foreign banks' borrowing. The hypothesis for the inclusion of Euribor in model specification is reflected in the fact that the lower the Euribor rate, and consequently looser the liquidity conditions for banks, the higher the credit growth.

Spread - represents the difference between the interest rate on loans and the interest rate on deposits. Higher bank spread may be discouraging for credit demand, and hence negatively affect banks` lending. On the other hand, higher spread, due to the high interest rates on loans, positively affects banks` profitability and encourages banks to lend more, suggesting that spread might take a positive sign in our model.

Deposit growth - represents a funding source. It is expected that higher deposit growth leads to higher credit growth as banks have more available funds. Thus, on the supply side, deposit growth should be a significant driver of credit growth. Barajas et al. (2010) note that banks which have more funding availability are able to perform their financial intermediation function better and should have stronger lending growth.

NPL ratio - represents a proxy for the loan quality. An increase in NPLs encourages banks to reconsider their long-term strategies concerning their assets. Thus, it is expected that loan quality is negatively related to credit growth (Barajas et al., 2010; Guo and Stepanyan, 2011)

Solvency ratio - measures the capital strength of a bank, indicating whether the bank has enough capital to meet the potential losses which can occur. Better capitalized banks have higher capacity to extend lending than weakly capitalized banks. The solvency ratio can be linked with the "Moral Hazard" behaviour. The link is to be found in the moral hazard incentives on the part of bank managers who increase lending and the riskiness of their loan portfolio when their banks are thinly capitalized (Berger and DeYoung, 1997).

Inefficiency ratio - indicates banks' cost effectiveness and it is measured by the cost-income ratio. As explained by Barajas et al. (2010), banks that have higher costs relative to income, probably due to the higher wages, more employees or larger branch network, might have higher marginal lending.

ROE - measure of banks` profitability. Banks are more capable to perform their lending activities with better profitability. Albertazzi and Gambacorta (2006) explain that after a drop in bank profitability, if equity is sufficiently low and it is too costly to issue new shares, then a bank will usually reduce lending, otherwise they fail to meet regulatory capital requirements.

In this model, the fixed effects β_{0i} capture the effect of time invariant, unobserved bank-specific, variables that are otherwise omitted from the model; λ_t represents a set of time dummies; and $\varepsilon_{i,t}$ is the idiosyncratic error term (since we do not know where it comes from) which represents the unexplained part of dependent variable for each observation, in other words for each bank for each quarter.

As presented in equation (1), quarterly time dummies (λ_t) are included in the model. There are two important reasons for specifying model with full sets of time dummies (of course omitting the 1st period). Firstly, to model group specific invariant but time specific influences otherwise omitted from the model. Secondly, including time dummies allows us to address a developing concern in the econometric literature on panel analysis, and on dynamic panel analysis in particular: cross-group residual correlation. This is a serious issue largely neglected by applied researchers. Yet, the failure to address cross-group correlation may invalidate statistical inference (specifically standard errors are likely to be underestimated). The recommended strategy to remove, or at least to minimize, cross group correlation is to include a full set of time dummies.

Furthermore, an important consideration is to address the problem of potential endogeneity between bank-specific and macroeconomic variables. The use of lagged explanatory variables might alleviate potential endogeneity problems. There are studies that aim to overcome the bias associated with the potential endogeneity of explanatory variables using either the fixed effects or the GMM system estimator (Jimenez and Saurina, 2005; Quagliarello, 2007; Espinoza and Prasad, 2010; Louzis, et. al. 2010). In addressing these concerns, it is useful to precisely identify the sources of endogeneity. In applied econometrics, Wooldridge (2002) indicates that endogeneity usually arises in one of the three ways: omitted variables which should appear when controlling for additional variables but due to data unavailability one cannot include them in the regression model; measurement error is the case of measuring the (partial) effect of a variable observed only by an imperfect measure of it; and simultaneity which occurs when at least one of the explanatory variables is determined mutually with the dependent variable. In our model, bias may stem from the possible simultaneity of the explanatory variables and credit growth ratio. To tackle this issue, macroeconomic and bank

specific variables will be used in a form of lagged value to avoid potential endogeneity.

The macroeconomic data, such as GDP growth rate, are provided by Central Bank of Montenegro (CBCG), while the inflation rate is provided by the Statistical Office of Montenegro (MONSTAT). GDP quarterly data are determined using the standard techniques for interpolation by the Statistics Department of the CBCG since during the sample period, quarterly GDP data were not reported by MONSTAT. The bank-specific data are collected from the CBCG Supervision Department.

4. Results

As explained in the previous section, we applied a fixed effects linear model to identify the determinants of credit growth in Montenegro, which allows controlling for unobserved heterogeneity across banks. The results from the fixed effects linear model are presented in the following Table.

Table 1: Results from fixed effects linear model with time dummies

Variable Name	Label	Coefficient	P-Value
GDP growth rate	GDP(-2)	0.40*	0.055
Inflation rate	INF(-1)	0.52	0.212
EURIBOR	EUR	-2.57	0.130
Spread	SP(-1)	-0.37	0.459
Deposit Growth	DG(-1)	0.12*	0.058
Non-performing loans ratio	NPL(-1)	-0.48***	0.000
Solvency ratio	SOLR(-1)	0.19*	0.101
Inefficiency ratio	INEF(-1)	0.01	0.150
Return on equity	ROE(-1)	-0.01	0.832
Quarterly time dummies		yes	
Joint test for time dummies before the crisis		Prob > F = 0.0082	
Joint test for time dummies after the crisis		Prob > F = 0.1725	

Source: Author`s calculation

Note: * Significant at the 10 percent level, ** Significant at the 5 percent level, *** Significant at the 1 percent level

The results presented in Table1broadly confirm that both macroeconomic and bank-specific factors play a role in affecting the banks' credit growth. Looking at

the estimation results, there is evidence that higher GDP growth leads to more demand for credit and hence higher credit growth. Namely, an increase of one percentage point in the GDP growth rate during the first quarter leads to an increase of 0.40 percentage points in the credit growth rate during the third quarter.

Focusing on the bank-specific coefficients, the results comply with expectations. Namely, the health of banks in terms of banks loans quality and their capitalisation might be an important determinant of credit growth. Our results provide evidence that NPL, which is proxy for the loans quality, is negatively related to credit growth. Specifically, an increase of one percentage point in the NPL ratio, at the 1% significance level, leads to a decrease of 0.48 percentage point in the credit growth rate. Furthermore, the results suggest that the banks with higher deposit potential lend more, as an increase of one percentage point in the deposit growth rate leads to an increase in 0.12 percentage points in the credit growth rate, at the 10% significance level. Moreover, better capitalised banks are likely to expand their lending. Namely, an increase of one percentage point in the solvency ratio in the first quarter leads to an increase in 0.19 percentage points in the credit growth rate in the second quarter, albeit at the borderline of 10% significance level. Therefore, we can reject the hypothesis that „moral hazard" refers to bank managers who increase lending and the riskiness of their loan portfolio when their banks are thinly capitalized (Berger and DeYoung, 1997).

While the main purpose of time dummies is to control for omitted group invariant, time specific effects and to address possible cross-group residual correlation, in this model they do have a plausible economic interpretation. The signs of the time dummies after the crisis period are uniformly negative and jointly significant, suggesting that the crisis has a negative influence on credit growth, while the time dummies before the crisis are not jointly significant.

The diagnostic test for the serial correlation indicates that the model well specified with respect to within-group residual autocorrelation. However, we identified the problems with heteroscedasticity, which is expected in panel data analysis. The problem of heteroscedasticity was overcome by estimating the model with robust standard errors.

In order to check for robustness of the results, and particularly to evaluate the effect of the global financial crisis, we split the sample in two sub-samples—the pre-crisis period (2004–2008q3) and post-crisis period (2008q4-2014). These results are reported in Table 2.

Table 2: Results from fixed effects linear model in pre- and post-crisis periods

Variable Name	Variable Label	Pre-crisis period		Post-crisis period	
		Coefficient	P-Value	Coefficient	P-Value
GDP growth rate	GDP(-2)	0.30**	0.042	0.04	0.545
Inflation rate	INF(-1)	-2.36	0.127	0.10	0.577
EURIBOR	EUR	4.53	0.172	-0.66	0.317
Spread	SP(-1)	-0.88	0.216	0.62	0.110
Deposit Growth	DG(-1)	0.16*	0.066	0.09***	0.000
Non-performing loans ratio	NPL(-1)	-0.09	0.749	-0.10**	0.046
Solvency ratio	SOLR(-1)	0.17**	0.047	0.03	0.557
Inefficiency ratio	INEF(-1)	-0.04***	0.000	0.02***	0.003
Return on equity	ROE(-1)	0.11	0.213	0.03*	0.089

Source: Author`s calculation

Note: * Significant at the 10 percent level, ** Significant at the 5 percent level,
*** Significant at the 1 percent level

The findings from the initial model have been broadly confirmed, however, there are differences in determinants of credit growth before and after the financial crisis. For example, in the pre-crisis period, the contribution of the GDP growth rate had a positive significant influence on credit growth, while in the post-crisis period, the contribution of GDP was not found to be significant.

The bank-specific indicators seem to play a role in both periods although there are differences among them. Namely, in the pre-crisis period, variables such as deposit growth and solvency ratio appeared to have had positive influence on banks` credit growth, suggesting that banks with better deposit and capital base were likely to expand their lending activities. These findings are in line with the results from the initial model with time dummies. Furthermore, we find that the more efficient banks, measured by cost to income ratio, are likely to lend more. Thus, a decrease of one percentage point in the cost-to-income ratio leads to an increase in 0.04 percentage points in the credit growth rate, at the 1% significance level.

Our results provide evidence that in the post-crisis period, credit growth is only determined by bank-specific indicators. Similarly to the findings of the initial model, the NPL ratio was found to have negative statistical influence on credit growth in the post-crisis period. These findings are also in line with Shijaku and Kalluci (2013), Labonne and Lame (2014), and Everaert et al. (2015). They explained that rising NPLs in the post-crisis period led banks to tighten lending standards, while uncertainty about firms' and households' future economic pros-

pects also weighed on supply. In our case, an increase of one percentage point in the NPL ratio in the post-crisis period leads to a decrease of 0.10 percentage point in the credit growth rate.

Furthermore, the results suggest that deteriorated bank profitability has an influence on credit growth rate. Namely, in the post-crisis period, a decrease of one percentage point in the ROE ratio, at the 1% significance level, leads to a decrease of 0.03 percentage point in the credit growth rate. This finding is in line with Albertazzi and Gambacorta (2006). Similarly to the previous models, the deposit growth has positive influence on the credit growth rate. However, contrary to the pre-crisis model results, more efficient banks are likely to decrease their lending in the post-crisis period.

5. Conclusion

In this paper we used a fixed effects linear model to investigate the determinants of credit growth in the Montenegrin banking sector. Using data at the individual bank level, we examined demand and supply factors that affect credit growth. In particular, we evaluate the effect of the global financial crisis on the credit growth.

In our initial model with full sets of time dummies, the empirical findings suggest that, ceteris paribus, improving macroeconomic conditions lead to higher credit growth, increasing the demand for credit and banks` willingness to lend. Namely, it was found that GDP growth captures most important forces behind the loan demand. Analysing the supply factors, we provide evidence that the deposit potential of banks is an important driver of credit growth. Looking at individual banks, the study emphasizes that the banking system`s soundness is decisive for promoting further bank lending activities. We provide evidence that the weakening of banks` balance sheets, in terms of high non-performing loans and low solvency ratio, has a negative effect on credit supply. Specifically, a low share of non-performing loans in banks' balance sheets is found to determine greater supply of credits. In addition, banks with higher capital base, which is protecting them from potential risks, would encourage credit supply.

Finally, as it was anticipated, the global financial crisis has had a substantially negative effect on the Montenegrin banks` lending. The signs of the time dummies after the crisis period are uniformly negative and jointly significant, suggesting that the crisis has a negative influence on credit growth. Namely, as presented in section 1, bank credit shrank for the six consecutive years. In Montenegro, the

global financial crisis only emphasized the cyclical component of systemic risk, given that there has been excessive risk-taking in the period of expansion, while in the contraction period banks reduced or even suspended their lending activities. The boom and bust cycle in Montenegro left behind a large number of accumulated problems, including the poor quality of many loans in banks` books. Furthermore, the crisis highlighted certain inefficiencies and accumulation of risks which were present in the period before the crisis. This refers to shortcomings of the regulatory framework (the legal gaps and deficiencies in regulations - such as procyclicality of Basel II), but also the shortcomings of the market itself (lack of information, false expectations and risk assessment).

In order to evaluate the effect of the global financial crisis on credit growth, we analysed separately the determinants of credit growth in the pre- and post-crisis periods. This approach allows a more nuanced analysis of the determinants of credit growth by allowing these to be different before and after the global financial crisis.

Our findings suggest that once the crisis does take a place, the determinants of credit growth slightly change. Namely, in the pre-crisis period, the contribution of the GDP growth rate, deposit growth, solvency ratio and banks` efficiency have positive significant influence on the credit growth. In contrary, in the post-crisis period the contribution of GDP and solvency ratio was not found to be significant. The results could be explained by the fact that although the positive GDP growth has resumed after the crisis, it has remained moderate to boost credit demand. Furthermore, even the banks have been solvent during both pre- and post-crisis period, in the post-crisis period they started to be more risk averse and to lend carefully. The empirical results also indicate that in the post-crisis period, NPLs appeared to have a significant negative influence on credit growth. After the crisis, the banking sector has been left with high levels of NPLs, which are proving challenging to resolve or restructure, leaving the corporate sector crowded with high debt (Everaert et al., 2015). An important credit supply determinant - such as deposit growth, is found to have a positive influence on credit growth in both models (before and after the crisis).

To sum up, in the post-crisis period, the model finds that credit supply indicators gained in importance in explaining credit growth, while the model in the pre-crisis period provides evidence that both demand and supply indicators matter in explaining credit growth.

Our findings have several implications for policy and regulation. Despite all efforts that banks have put in solving the problem of non-performing loans,

through the relocation, sale of toxic assets, and various modalities of restructuring, during the post-crisis period, the NPL ratios are still high and remain a substantial obstacle for further credit growth. Therefore, addressing NPLs is one of the priorities. The recently adopted "Podgorica Approach"[2] has the potential to facilitate banks` debts, however since it is based on voluntary basis; it should be given some time in order to see its effects. Within the same project, the Decision Amending the Decision on Minimum Standards for Credit Risk Management in Banks entered into force. The implementation of this Decision should improve the practices of credit risk management, especially regarding NPLs. Namely, according to this Decision, banks are obliged to adopt three-year strategies and annual operating objectives for NPL workouts. Nonetheless, there is a need for the further reforms regarding the NPLs solutions, particularly reforms which will address problems with contract enforcement and securing collateral that have impeded NPLs resolution. Furthermore, efforts should be done in order to limit legal barriers that obstruct the clean-up of private sector balance sheets, including overloaded court systems and too lengthy proceedings that delay collateral execution.

As discussed, in general, bank specific determinants remain a constraint for further credit growth. However, in the medium term, with improving economic conditions, banks' lending should improve, and credit supply along with its demand should begin to recover. As documented in the paper, banks` deposits have been on an uptrend over the past three years. Thus, high levels of liquid assets are expected to put more pressure on banks' lending and on a decrease in interest rates for good clients. However, it is a process that requires time. In addition, greater financial liberalization would simultaneously boost lending and lower the risk of lending to the private sector. It is expected that the increased number of banks should lead to increased competitiveness, quality of service, and more relaxed lending, as measured by the price and amount of loans granted to corporate and retail sectors. Still tenacious banks` risk aversion which inhibits bank lending could be alleviated by better financial regulation and the introduction of better standards for credit enforcement.

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[2] The model is designed with the aim to improve loan quality in Montenegrin banks, allowing the revitalization of bank lending to productive sectors of the Montenegrin economy (Ministry of Finance Bulletin, 2014). The "Podgorica Approach" implies voluntary restructuring of non-performing loans of banks based on the new measures and incentives for banks and companies to comply the assessment of their credit portfolios with the post-crisis economic conditions of their borrowers (Ministry of Finance Bulletin, 2014).

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