

BANK OF ALBANIA

ROLE OF BANKS IN THE MONETARY POLICY TRANSMISSION IN ALBANIA

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ABSTRACT

This paper contributes to the empirical findings on the bank lending channel of monetary policy in Albania by using the individual data from the main twelve commercial banks. In particular, it is aimed to analyze whether the private loans developments can be explained by changes in the monetary policy indicator, as measured by the rate of one-week repurchase agreements. The empirical findings suggest that bank loans have responded only modestly to monetary policy decisions during the 2004q1:2006q4 period. Coefficients of the monetary policy indicator are statistically significant and have the expected negative sign, thus supporting the theoretical relationship between interest rates and the volume of loans. Nevertheless, the empirical evidence to support the existence of a bank lending channel in Albania is mixed. While the smaller banks are found to be less sensitive to the monetary policy stance compared to the larger banks - and which is contrary to theoretical and intuitive expectations - the results show that yet the more liquid banks are better shielded to monetary policy changes - which is in line with the bank lending channel theory.

1. INTRODUCTION

A vast literature in economics has tried to properly conceive and assess the transmission mechanism through which monetary policy affects the course of the real economy. In the traditional view, also known as the “money view”, monetary policy operates through short-term interest rates to influence the cost of borrowing and, consequently, the investment and spending behavior in the economy. However, this textbook story is incomplete and most empirical analyses on macro-level data have been unsuccessful to show how small changes in interest rates would be able to trigger important responses in the economy. Therefore, researchers have been looking for other channels of the monetary transmission mechanism, which could compliment the traditional money view and magnify the reaction of the economy.

A number of studies in recent decades have tried to explore whether asymmetric information and other “frictions” in financial markets might help explain the potency of monetary policy. According to this alternative view, monetary policy may affect not only the demand for loans – as in the interest rate channel – but also the supply of loans. Because banks are exposed to adverse selection and moral hazard problems, their willingness to lend may have consequences for the transmission of monetary policy. In the literature, this has been referred to as the bank lending channel, which stresses that in an economy where at least some borrowers are bank-dependent, the existence of financial frictions should give banks an important role in the monetary transmission mechanism.

In case of Albania, the current view of how monetary policy affects the real economy is still built on the traditional interest rate channel theory. However, the potency of this channel has not been truly explored for Albania, usually due to the lack or poor quality of national statistical data. Muço et al (2004) studied this impact of monetary policy on movements in output and inflation rate but their estimates demonstrated a weak transmission link from money supply to the price level.

On the other hand, in our work we have taken a different approach in the transmission mechanism to study the bank lending channel of monetary policy in Albania by using quarterly data from 2004 to 2006. Following the empirical literature on bank lending view, we use the model specification of Kashyap and Stein (1994) to capture the reaction of bank loans to changes in the monetary policy. To analyze the cross-sectional differences in the effectiveness of the lending channel, the test is based on a panel data, taking into account the bank-specific characteristics like size and liquidity.

The remaining of the paper is structured as follows. Section 2 gives an overview of the existing literature on the interest rate and bank lending channel, while Section 3 describes the banking development and institutional characteristics of the Albanian economy during the transition period. Section 4 introduces the econometric model, and then presents the evidence on the response of banks' loans and deposits to monetary policy changes.

2. THE NATURE OF THE BANK LENDING CHANNEL

In the textbook *IS-LM* and *AD-AS* models, the interest rate channel is the key monetary transmission mechanism through which monetary policy can affect aggregate demand. In a monetary contraction, the central bank drains reserves from the banking system, thereby causing a rise in real interest rates in the credit markets. Households must then increase their bonds holding and reduce the amount of money held in their portfolios. If prices are sticky and do not adjust to changes in money supply, a fall in household money holdings represents a decline in real money balances. With a higher cost of borrowing, firms and households will have to reduce their spending, thereby leading to a decrease in aggregate demand and a fall in output.

Changes in real interest rates would equally apply to both businesses' decisions on new fixed investment and consumer spending on residential housing and durable goods. Higher interest

rates increase the rate of return required by investors and causes businesses to cut down on investment. Additionally, they have a negative impact on consumption as households substitute future for present purchases of more expensive houses and other long-lasting assets.

Another way movements in interest rates can affect prices and gross domestic product is by influencing the domestic currency value. An increase in interest rates could lead to real exchange rate appreciation, thereby making domestic goods less competitive in local and foreign markets and worsening the trade balance position. If goods were priced in local currency, movements in exchange rates would be absorbed in firms' profit margins, which might then induce them to switch from domestic to foreign goods.

In the traditional interest-rate view, money and credit are treated asymmetrically. The LM curve treats money as a special asset, while loans, bonds, and other debt instruments are lumped together in a "bond market" assuming that there are no capital market imperfections (Bernanke & Blinder, 1988). In other words, borrowers and lenders can perfectly substitute loans for bonds as if there are no adverse selection or moral hazard problems in the financial markets. One implication of this assumption is that banks play a passive role in the transmission of monetary policy, because they can offer no special services on the asset side of their balance sheet, except that of issuing deposits on the liabilities side. In this view, monetary policy actions only influence the cost of borrowing, so aggregate demand components and prices would be responsive solely to changes in policy controlled interest rates (Angeloni et al., 2003).

While the traditional interest rate channel is widely used in textbook models for analyzing monetary policy effects on economic activity, this view is incomplete in several important ways because it focuses mainly on aggregate outcomes of monetary policy shocks. As such, it offers no *distributional*, or cross-sectional, responses to policy actions, nor of aggregate implications of this heterogeneity (Hubbard, 1994). Furthermore, as Bernanke and Gertler (1995) argue, changes in real interest rates appear relatively small to be

able to explain the much larger cyclical movements in housing, business fixed investment and inventories. Therefore, it is difficult to identify a quantitatively important relationship between the neoclassical cost-of-borrowing variable and movements in these “interest-sensitive” components of aggregate demand. On the other hand, there is a presumption that monetary policy has its strongest influence on the short- rather than long-term interest rates. For instance, central banks in many European countries, including Albania, use the one-week repo (repurchase agreement) rate as the most closely controlled interest rate. Therefore, the effects of monetary policy should be weaker on purchases of long-lasting assets, such as residential housing and durable goods, which are likely to be more sensitive to real, long-term rates.

The search for a monetary transmission mechanism broader than the interest rate channel has pushed many economists to identify whether credit market imperfections and other “frictions” in financial markets might help explain the potency of monetary policy. This alternative view – known as the bank lending channel – stresses that financial intermediaries do have an active role in the transmission of monetary policy, due to the problems of asymmetric information in lending to the economy. In this view, a reduction in bank reserves by the central bank would possibly reduce banks’ loanable funds more than what is conceived in the traditional money view.

The model of Bernanke and Blinder (1988) extends the conventional *IS-LM* framework by taking into account the bank credit as a separate asset when analyzing the impact of monetary policy. They argue that if some borrowers are bank dependent and they have limited access to capital markets for external financing, bonds and loans are imperfect substitutes so that changes in the composition of bank assets will also affect investment. Due to asymmetric information and high monitoring costs banks will curtail their lending to certain (small) companies when monetary policy tightens. Hence, the more limited companies are to enter the credit markets for raising new funds, the more affected they are going to be. Thus, any changes in bank willingness to lend will put pressure on certain borrowers directly, generating a bank lending channel in the monetary transmission. In this way, monetary

policy can influence not only the general level of interest rates as in the traditional money view, but also the costs associated with the principal-agent problem between lenders and borrowers. Because some agents cannot easily switch to alternative forms of external borrowing, changes in bank lending will be different than those in bond purchases, thereby changing the spread between loans and securities rate. The magnitude of this spread, however, depends on the elasticities of demand for bank loans and supply of bonds.

A number of studies over the last decade have attempted to test for the existence of the bank lending channel, thus the empirical evidence is mixed. While many authors are quite confident that the credit channel exists, they are much less certain about its overall quantitative significance. Bernanke and Blinder (1990) examine the impulse responses of money, loans, and various measures of economic activity in the U.S. to changes in Federal funds rate. Their results show that when the Fed raises interest rates, the money stock falls almost immediately. Bank loans fall also, but with a significant lag – they show up approximately six to nine months later. Production goes down with a lag also, and indeed seems to move roughly at the same time with loans.

However, the concurrence of both output and loans decline in the results of Bernanke and Blinder does not necessarily mean that the former was caused by the latter. Kashyap, Stein and Wilcox (KSW, 1992) argue that the fall in production following a monetary contraction might have been due to the traditional money channel, while the reduction in credit granted by banks simply reflects a decrease in loan demand (due to the fall in production). In an effort to resolve this ambiguity, KSW (1992) use micro data to test some of the cross-sectional implications of the credit view. They find that, apart from the loan supply effects on output, inventory and investment declines in response to a monetary tightening are disproportionately affected among bank-dependent firms (which have scarce cash reserves and limited access to non-bank sources of finance).

In another study on the effects of bank lending channel across U.S. banks between 1976-93, Kashyap and Stein (1997) find that

effects of monetary policies appear more pronounced in banks with less liquid balance sheets. This finding lends some credibility to the bank lending view of monetary transmission. This also points to a need for central banks to balance their goals of price stability and financial stability. Focusing on price stability alone might have adverse effects on financial stability through credit channel effects. Therefore, while exploring the monetary transmission mechanism, the bank lending channel should be a priority for central banks where price stability is the major goal.

Apart from the test to U.S. banks, Kashyap and Stein (1997b) study the implications of the lending channel for monetary transmission mechanism for a number of countries that initially joined the European Monetary Union. Given the noisy nature of their data, the authors could not make strong claims about the potency of lending channel in different countries. However, based on a subjective weighting of the factors that determine the importance of the credit channel, they expect banks in Italy and Portugal to play an important role in the transmission of monetary policy, while evidence on U.K. (not yet in the EMU), Belgium and Netherlands suggesting a relatively weak lending channel. The overall picture for the remaining countries was less clear.

Similarly, Favero et al (1999) find less support for any bank lending channel in France, Germany, Spain, and Italy (the results for the latter are in contrast to the findings of Kashyap and Stein). Their results show that bank credit did not change significantly during the monetary tightening episode of 1992.

However, in their study on bank balance sheets in the euro area, Ehrmann et al (2001) show that bank loans shrink significantly after a monetary contraction both on the aggregate euro area as well as on the country level. Using micro data, they find that the size of liquid assets is an important factor that characterizes the response of banks to changes in monetary policy: in general, the less liquid banks appear to react more strongly than more liquid banks. In contrast to findings in the U.S., effects of size and the degree of capitalization of a bank appear to be less important on the way European banks adjust their lending to interest rate changes. This

can be partly explained by a lower degree of informational frictions in euro area, where government role, bank networks, and very few bank failures altogether contribute to a reduction in problems of asymmetric information.

In case of Albania, studies on the transmission of monetary policy have been scarce and have usually focused on the impact of monetary policy actions on movements in output and inflation rate. Using a VAR model, Muço et al (2004) estimate a weak relationship between money supply and the price level during 1990s. However, this relationship appears to have somehow improved after the change from direct to indirect instruments of monetary policy in late 2000.

Another study from Shijaku (2007) examines the short- and long-run links among macroeconomic variables in Albania by relying on the VECM estimation method. The preliminary findings identify a long-run relationship between aggregate demand and the price level. Also, the latter demonstrate a positive link with money, the exchange rate and foreign prices. Contrary to theoretical expectations, interest rate shows a positive long-run relationship with the price level and an incorrect sign with gross domestic product.

One drawback in analyzing the link between monetary and real variables in Albania is the poor quality of data. GDP measures are viewed with skepticism, while other statistical data on new, emerging private sector are still inadequate. Therefore, the authors find little evidence on the Albanian transmission mechanism. Albania still remains a largely cash economy – the informal sector accounts for about one-third of economic activity – which considerably constrains the effectiveness of conventional monetary policies.

In this work, we shall try to empirically assess the distributional effects of monetary policy actions on bank loans to the private sector in Albania, at microeconomic level during the period of 2004Q1:2006Q4. Also, it will be interesting to see whether bank characteristics like bank size and the degree of liquidity generate differences in the ability of banks to acquire deposits or increase their credit as monetary policy eases.

3. ROLE OF BANKS IN THE TRANSMISSION MECHANISM IN ALBANIA

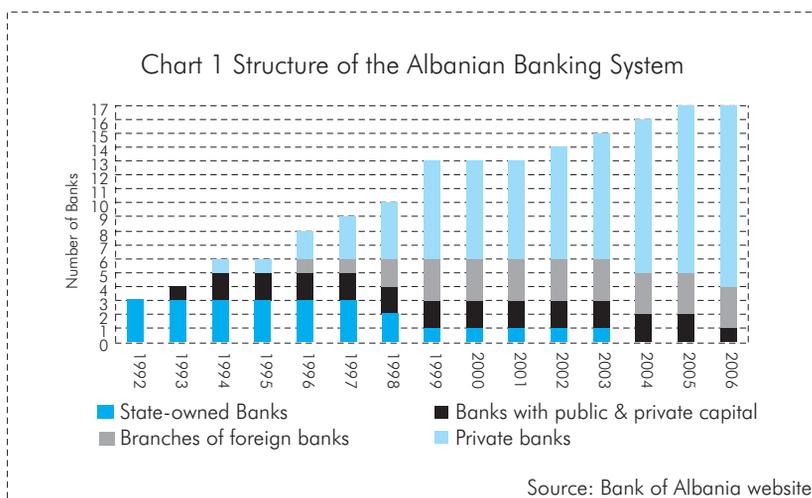
DEVELOPMENTS IN THE ALBANIAN BANKING SECTOR

Since its transition to the market economy, Albania has gone through a continuous process of establishing and strengthening its banking system. In the past decade, this process was relatively slow due to the outspread “virus” of pyramid schemes, which had infected the domestic economic and financial development. The much higher interest rates offered by these illegal renter firms had almost substituted the income from bank deposit interest rates, hence holding in abeyance the effectiveness of monetary policy in managing interest rates. Likewise, the reforms in the banking sector had been stalled by a number of other problems, like the high concentration of deposits and loans in the three state-owned banks, their operational losses resulting from an increasing portfolio of non-performing loans, which were favored by a wide and inadequate regulatory framework.

The consolidation of the banking system apparently accelerated after the collapse of pyramid firms, a period that is characterized by a reduction in state-owned banks’ domination, their gradual privatization and a rapid increase in the number of private banks (including branches of foreign banks) from four that operated in 1997, to seventeen banks in 2006 (Chart 1). This rather shows that authorities have been very prudent in selecting and granting licenses to private banks, where only three recently licensed banks were fully established by local citizens.

Despite the increased number of commercial banks in Albania, the expansion of the banking activity has taken place in a conservative way and by confining itself in line with domestic economic growth rates. During the period of 1998-2003, total assets of the banking system have grown attuned to GDP at around 13 percent annual rate. However, the following three years evidence a rapid expansion of banking assets by 67 percent, which is 2 to 3 times higher than the cumulative growth of nominal GDP. In this way, the ratio of bank assets to GDP in Albania jumped to a record level of 70

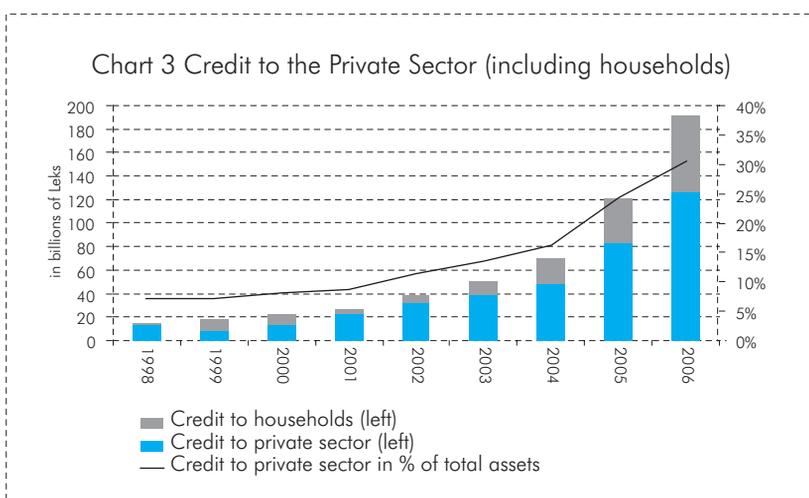
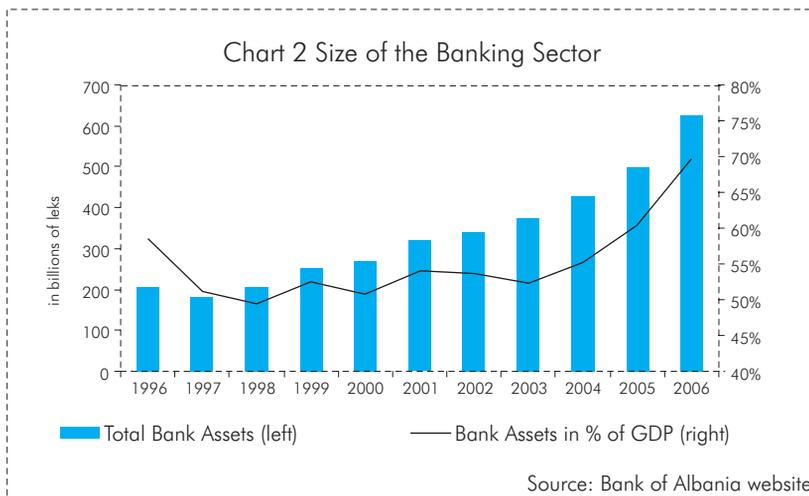
percent in 2006 (Chart 2), which is comparable now to the other ratios in the CEE countries¹.



The growth of bank lending to private sector and individuals has continuously shown a better performance than banks' total assets. Starting from a low level in the first decade of transition, this indicator has significantly improved in recent years by registering a cumulative growth rate of 175 percent during 2005-06, the largest increase in the region as well as the CEECs. On the other hand, the portfolio of non-performing loans, albeit it increased to 3.1 percent of gross loans, speaks for a relatively limited exposure of banks to the risk of default on payments².

Despite the satisfactory improvement on the quality of assets and financial performance in recent years, banking services still evidence a relatively small penetration in the Albanian economy. The ratio of credit to private sector and individuals to GDP remains low at about 21.3 percent in 2006 as compared to 49 percent in Central-Eastern Europe, suggesting that bank services have not yet fully benefited from the domestic potentialities. Another shortcoming that characterizes bank credit to the private sector is that nearly three-fourth of total loans is made in dollar or euro currency. Because interest rates on foreign currency-denominated loans are mainly determined by interest changes in the international markets

and, as a result, they do not respond to the domestic monetary policy actions, this reduces the central bank's ability to influence economic activity toward desired levels.



INSTITUTIONAL CHARACTERISTICS DURING THE TRANSITION PERIOD

Recent researches on whether banks play an important role in the transmission of monetary policy in the economy have focused

on two necessary *issues*: first, whether firms and households are dependent on bank loans to finance their activities, and second, whether central banks are able to shift the bank loans' supply curve.

Regarding the *first issue*, commercial banks dominate the Albanian financial system with the largest share as compared to all other European countries. In 2002, assets of other financial institutions, like insurance companies, pension funds, savings and loan associations, etc, constituted around 4.5 percent of total assets in the financial system³. Because of the large scarcity of these economic agents as well as the inexistence of proper capital and money markets in Albania, it has been difficult to develop and use other financial instruments like bonds or equities to raise new capital. In these conditions, almost all companies and households should depend on bank lending as the only alternative for external funds. Also, the experience in the developed economies notes that small and medium enterprises (SME) are more bank-dependent and suffer more during monetary tightening because it is harder for them to access the capital markets to raise new funds. In 2005, SME constituted over 96 percent of non-financial firms in Albania, realizing nearly 37 percent of the total business turnover⁴. Therefore, one should expect these firms rely more on banks and their activity be sensitive to monetary policy shocks.

However, the Bank of Albania's survey on business confidence in 2004 reveals that domestic private enterprises are not too dependent on bank loans. Nearly 70 percent of 238 firms that have responded to the questionnaire claim that they rely mainly on their internal and other informal sources of finance. Yet a large number of private companies acknowledge bank credit as the most important channel of external finance, while approximately 60 percent of them blame to some extent the numerous requirements that banks ask when providing loans.

Indeed, there are many problems that hinder a faster penetration of banking services in the economy, for example a weak functioning of the legal system, "window dressing" of firms' balance sheets, adverse selection and moral hazard problems, and so on. Because

the costs of monitoring and evaluating the position of small firms' balance sheets is very high, we can sense why commercial banks have hesitated to expand their credit very rapidly in the past.

Nevertheless, as long as firms of any size are unable to access the securities markets for raising new capital and bank loans are considered as the only alternative for external finance, commercial banks may play an important role in the transmission of monetary policy. Most of the private banks operating in Albania are relatively small and would prefer to lend to small and medium enterprises rather than exposing themselves too much by lending high amounts of money to large companies. On the other hand, the greater the dependence of small and medium firms on bank financing, suggests that they should be more affected than larger enterprises to reductions in credit availability. Kashyap & Stein (1997b) argue that smaller firms – which in Albania realize more than one-third of the domestic economic activity – are more likely to rely on small banks, hence more subject to monetary policy shocks. From this point of view, restrictions in the availability of bank loans could have macroeconomic consequences by affecting the investment and spending behavior of bank-dependent borrowers.

The *second condition* for monetary policy to work through a bank lending channel is that monetary authority should be able to shift the supply of bank loans. To determine whether changes in monetary policy affect bank lending behavior, a number of studies in the U.S. and Europe have looked at how banks adjust their loans and securities on the assets side and deposit and non-deposit liabilities during periods of monetary tightening.

During the 1990s, the Bank of Albania has tried to exercise its monetary policy by using two main direct instruments: 1) it had put a ceiling on bank credit to ensure an effective control of credit growth (and hence aggregate demand), and 2) it had also set a minimum interest rate on lek-denominated time deposits. The effects of these two instruments, however, gradually waned by the end of 1990s. After the economy collapsed in '97, the Savings Bank and National Commercial Bank that dominated the banking system went bankrupt due to a large portfolio of bad loans⁵, therefore

their credit activity was prohibited while their excess reserves were afterwards used to finance government spending. On the other hand, private banks were relatively small and they could satisfy a very limited portion of the demand for loans.

The enormous growth of the informal credit markets in mid-1990s, and the investment of huge reserves of the two state-owned banks in Treasury bills later on gradually lessened the importance of credit ceilings on banks, which were eventually abandoned in 1999. Similarly, the drastic fall in inflation rate during the period of 1999-2000 caused bank interest rates not to respond to the continual reductions in managed interest rates by the central bank. In these circumstances, the Bank of Albania was forced to reconsider once again its entire operational framework, by shifting its attention to other indirect instruments.

Since September 2000, the central bank has conducted its monetary policy via repurchase agreements (repo) as its main instrument, which aims at managing liquidity level in the banking system as well as determining the course of interest rates in the economy. In this regard, repos with different terms to maturity have played an important role in mopping up or injecting liquidity in the system, hence affecting interest rates on bank loans and consequently the spread between loans and T-bills rates.

Nonetheless, the large share of liquid assets in bank balance sheets might have restrained the ability of Bank of Albania to influence banks' willingness to lend. Because of financial frictions, commercial banks keep a high level of liquid assets in the form of cash, interbank transactions, T-bills and other securities. In recent years, the ratio of liquid assets to total assets in commercial banks has experienced a gradual decline from 80 percent at the end of 2004 to about 66 percent in 2006. Anyhow, the volume of liquid assets remains relatively large and can substantially help banks shield their credit portfolio and not react to monetary policy shocks.

Other important factors that have influenced not only the spread between loans and T-bills rates, but also the inconsistent responses

of T-bills rates to monetary policy actions, are the banking system imperfections – e.g. the high degree of domination by two large banks, low competition, etc. – and also the government budget which has continuously been the biggest “consumer” in the money market, as reflected in the high government debt indicators in the banking sector. The domination of the Savings Bank (today Raiffeisen Bank) has persistently influenced the domestic debt management, T-bills interest rates, and open market operations, hence hindering the conduct of BoA’ s monetary policy via indirect instruments (Baleta et al., 2000). Similarly, shocks on demand for money from the government have lowered or raised the yield on Treasury bills, thus putting pressure on the central bank to change its interest base rate in the money market (Cani & Hadëri, 2002).

In conclusion, although changes in monetary policy have generally been reflected on interest rate movements in credit and securities markets, the effectiveness of a bank lending channel in the Albanian economy remains at modest levels, hampered by a large cash economy, an underdeveloped interbank market, a relatively high level of currency substitution, banks’ preference to lend in foreign currencies, a modest presence of bank services in the economy as indicated by a relatively low ratio of bank loans to GDP, and so on.

4. MEASURING MONETARY POLICY

In this section we will try to estimate through an empirical method the response of bank loans to monetary policy actions in Albania. The findings on this relationship would help in determining the scheme of domestic transmission mechanism and the role of commercial banks in this process. First we briefly present the specification form of the selected model and later try to interpret the results.

THE MODEL SPECIFICATIONS

When analyzing the bank lending channel, many papers have followed and enhanced the econometric models introduced by

Bernanke and Blinder (1988) and Kashyap and Stein (1994). Both models aim at measuring how informational frictions at the bank level can generate a credit channel in the transmission of monetary policy and also investigate whether banks react differently to changes in monetary policy. Assuming that we can capture the relevant time effect by including domestic output and exchange rate developments, the regression model would take the following form:

$$\Delta \ln k_{it} = a_i + \sum_{j=1}^l b_j \Delta \ln k_{it-j} + \sum_{j=1}^l c_j \Delta r_{t-j} + \sum_{j=1}^l d_j Z_{it-j} \Delta r_{t-j} + \sum_{j=1}^l e_j Z_{it-j} + \sum_{j=1}^l f_j \Delta \ln x_{t-j} + \sum_{j=1}^l g_j \Delta \ln y_{t-j} + u_{it} \quad (1)$$

where

i = an individual bank ($i=1 \dots N$)

t = quarter ($t=1, \dots, T$)

l = number of time lags (2 lags)

k_{it} = volume of bank loans

r_t = monetary policy indicator as measured by the one-week repo rate

x_t = exchange rate of lek

y_t = real GDP

Z_{it} = bank characteristic (size, liquidity)

a, b, c, d, e, f, g = parameters to be estimated

u_{it} = error term

The intercept a_i in the equation indicates fixed effects for each individual bank. The direct overall effect of monetary policy actions on bank credit growth is captured by parameter c in front of the monetary policy indicator, r . Another coefficient of interest is d in front of the interaction terms, which indicates how significant are bank specific characteristics in the response of each bank to monetary policy changes. Hypothetically, parameter d is expected to be significantly positive, the smaller and less liquid banks are. On the other hand, parameter e illustrates whether there is a linear relationship between bank characteristics and bank loans.

In order to control for demand effects, there have been added two macroeconomic variables, the lek exchange rate and real GDP

growth. The inclusion of these two variables intends to capture the cyclical movements of bank loans independently from changes in monetary policy. The reason to include the exchange rate instead of consumer price inflation was motivated by the currency borrowing options, which are offered in lek and foreign currencies by commercial banks. These choices would make the loan portfolio more sensitive to changing opportunity costs resulting from fluctuations in the value of lek.

The regression model above assumes that individual banks face a homogeneous reaction of the demand for loans, therefore the effects of monetary policy on bank loans should be more obvious. Given that bank credit is the main source of external finance for all types of firms in Albania, the aforementioned model could serve as a reasonable benchmark in identifying the loan supply effects.

As a monetary policy indicator, we have used the change in the one-week repurchase agreements interest rate from the Bank of Albania. The two bank characteristics, size (S) and liquidity (Lq) are intended to test for the existence of distributional effects across banks. They are measured as follows:

$$S_{it} = \log A_{it} - \frac{\sum_i \log A_{it}}{N_t}$$

$$Lq_{it} = \frac{L_{it}}{A_{it}} - \left[\sum_t \frac{\sum_i L_{it}/A_{it}}{N_t} \right] / T$$

where A_{it} denotes total assets and L_{it} represents liquid assets (cash, interbank lending and securities) of bank i at time t . Therefore, in the above equations size is expressed by the log of total assets, while liquidity is measured by the ratio of liquid assets to total assets (please see Appendix 1 for a more detailed data description).

Equation (1) is specified such that explanatory variables are included as growth rates rather than levels. This form of estimation is useful when there are problems of unit roots in the equation. In this case, the estimated coefficients indicate the short-run relationship between bank loans and explanatory variables.

Also, the estimation is based on the GMM method as suggested by Arellano and Bond (1991). This method is widely applied to avoid any bias in parameters that is caused by including the lagged dependent variable on the right side of the equation as well as from the possibility of endogeneity in certain variables, such as bank characteristics.

The following subsection shows the empirical estimates for the quarterly period from 2004q1 to 2006q4. The results are based on a panel data of 12 commercial banks, which consist of at least one percent of total loans each and cover more than 98 percent of the credit market in the Albanian banking sector. To get a preliminary idea on the bank loan response to monetary policy and macroeconomic conditions, we have first estimated a “benchmark model”, which excludes bank characteristics and the interaction term. Therefore, the complete equation (1) will be referred as the “extended model”.

RESULTS

Changes in the monetary policy stance are expected to exercise a direct influence on the volume of lek-denominated bank loans. While lending in foreign currency would be primarily determined by developments in interest rates abroad. *Prima facie*, these assets are imperfect substitutes and, in that event, the central bank is likely to influence the volume in lending in lek as well as total bank credit. For that reason, in order to distinguish the response of total private loans from those denominated in Albanian leks, separate equations were estimated for each of them.

The results obtained from the benchmark and the extended models are summarized in Table 1. The reported coefficients indicate the long-run reaction of private loans, where the long-run effects are computed as the sum of coefficients of a certain variable (the current plus the lagged values) divided by one minus the sum of coefficients of the lagged dependent variable. Each model is first estimated by including the current and two lags for every explanatory variable, and later gradually dropping the statistically insignificant variables.

Table 1 Results from the GMM estimation (long-run coefficients)

Quarterly data 2004-2006						
Dependent variable: <i>Private loans in leks</i>						
	Benchmark Model		Extended Model			
	Coef.	p-values	Size		Liquidity	
Coef.			p-values	Coef.	p-values	Coef.
Repo	-0.7900	0.0137	-0.4183	0.0008	-0.4523	0.0002
NEER	9.7399	0.0242	9.4861	0.0766	10.5714	0.0881
PBB	0.8310	0.0132	0.7311	0.0388	0.7932	0.0357
Repo*Size			-0.3348	0.1929		
Size			-0.8363	0.0077		
Repo*Liquidity					0.8811	0.1916
Liquidity					0.3822	0.3079
Quarterly data 2004-2006						
Dependent variable: <i>Total private loans (in leks & foreign currency)</i>						
	Benchmark Model		Extended Model			
	Coef.	p-values	Size		Liquidity	
Coef.			p-values	Coef.	p-values	Coef.
Repo	-0.6756	0.0575	-0.1875	0.0007	-0.1630	0.0107
NEER	2.9581	0.0138	4.1056	0.0011	2.4924	0.0069
PBB	0.1738	0.0000	0.1136	0.0112	0.1248	0.0024
Repo*Size			-0.3073	0.0009		
Size			-0.6273	0.0000		
Repo*Liquidity					0.4901	0.2476
Liquidity					0.2019	0.5004

The benchmark model estimates show a negative relationship of the same magnitude between monetary policy indicator and both, the lek loans and total loans (which include lek plus foreign currency loans). The parameters are statistically significant and exhibit a considerable long-run influence of monetary policy actions. Also, the effects of Bank of Albania's policies appear to be somewhat more effective than those in some regional central banks. Using similar estimations of the benchmark model, Jimborean (2006) finds large differences in the degree of central banks' effectiveness in ten central-eastern European countries. During the 1999-2005 period, movements in policy rates seem to have moderately influenced bank lending in Bulgaria and Lithuania, whereas in other countries the impact was insignificant.

In our analysis, the existence of bank lending channel can be determined by the sign and significance of estimated coefficients in

the “extended model.” In particular, our concern is related to the importance of the link between lending and bank characteristics (parameter e in eq. (1)) together with the interaction term (parameter d), which measures the impact of interest rate setting behaviour with respect to the size and liquidity of banks.

As it was previously mentioned, during a period of monetary tightening, smaller and less liquid banks usually find it harder to acquire external financing. Therefore, they have to reduce their lending supply and be more sensitive than larger banks that are equipped with more liquid assets. Because bank credit is negatively related to interest rate movements, the coefficient of the interaction term between monetary policy indicator and bank characteristics is expected to be positive and significant.

The results indicate that almost all coefficients related to bank size are statistically significant and demonstrate similar effects on lek denominated loans as well as total loans. However, the sign of these coefficients are negative, implying that larger banks reduce their lending by more than smaller banks in response to tightening monetary policies. This finding denies in a way the existence of bank lending channel in Albania, by contradicting the idea that lending supply of smaller banks should be more sensitive to interest rate setting behaviour.

Nevertheless, the theoretical inconsistency with regard to bank size in Albania seem to be a phenomenon in other banking sectors in the region, like in Bulgaria, the Czech Republic, Romania, Hungary, and Lithuania. The empirical findings by Jimborean (2006) show that a negative and significant link between total loans and bank size or the interaction term, suggesting a higher sensitivity of larger banks. The dissonance of theoretical expectations with empirical findings is further supported by another study on the bank lending channel in the Czech Republic by Pruteanu (2004), which is based on quarterly data from 1996q1 to 2001q4.

Contrary to size, the link between liquidity as a bank characteristic and lending to the private sector seem to be positive – in line with the lending channel theory. However, all the coefficients related to

liquidity and its distributional effects are statistically insignificant in both equations, therefore the magnitude of their impact on lending supply could be unsteady (as it is shown by the p -value in Table 1).

The empirical studies on liquidity effects as a bank characteristic in CEE countries evidence a positive and significant link with credit growth only in the Czech Republic (see Jimborean, 2006 and Pruteanu, 2004). The estimations on other countries exhibit anemic and insignificant links (e.g. in Hungary, Lithuania and Latvia), meaning that less liquid banks are less responsive to monetary policy actions. These findings call in question the functioning of the lending channel via liquid assets in these countries.

5. CONCLUDING REMARKS

In short, the preliminary results above suggest that monetary policy in Albania affects the amount of loans supplied by commercial banks. In addition, the impact of the Bank of Albania's policy rate on bank lending seem to be more effective than in other countries in central eastern Europe, as it is shown by the empirical findings by Jimborean (2006).

Also, the estimations lead to mixed conclusions that can not lend support to the existence of bank lending channel in Albania. The size of banks appear not to play a role in the response to monetary policy actions, where the negative sign in front of the parameters of bank size and its distributional effects implies that larger banks are more sensitive than smaller banks.

On the other hand, the positive link between loans and liquidity as a bank characteristic together with the interaction term suggests the existence of a bank lending channel via the amount of liquid assets held by commercial banks. Although the degree of the impact of this channel is uncertain if we consider the statistical significance of the parameters, the presumption that the elasticity of loan supply with respect to monetary policy actions is non-homogeneous across banks and different from zero is more satisfying.

The aforesaid remarks with regard to the existence of bank lending channel in Albania are to certain extent similar to the empirical findings by Jimborean (2006) and Pruteanu (2004) for a number of transition countries. Anyhow, the results on the Albanian banking sector ought to be interpreted with caution if one bears in mind the noise in the data series and the relatively short sample period. Therefore, the analysis of the lending channel will remain a concern of researcher in the future.

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APPENDIX 1: DATA DESCRIPTION

The series are taken from the consolidated balance sheets of individual bank statistics at the Bank of Albania. The analysis includes 12 commercial banks that have an individual share of at least one percent of total credit in the banking system and together consist of over 98 percent of bank loans in 2006. All data series are quarterly and not deseasonalized. *Loans* represent credit to private nonfinancial sector (including credit to households); bad loans are excluded. *Liquidity* is computed as the ratio of liquid assets to total assets; according to the Bank of Albania's definition, liquid assets consist of reserves, repurchase agreements, foreign assets, treasury bills and government bonds. *Size* of a bank is measured by the logarithm of total balance, which is then centered with each period average.

APPENDIX 2: RESULTS IN EIVIEWS

"Benchmark Model" – Loans in leks				
Dependent Variable: DLOG(LOAN)				
Method: Panel Generalized Method of Moments				
Transformation: First Differences				
Sample (adjusted): 2005Q1 2006Q4				
Cross-sections included: 12				
Total panel (balanced) observations: 96				
Difference specification instrument weighting matrix				
White period standard errors & covariance (d.f. corrected)				
Instrument list: @DYN(DLOG(LOAN),-2)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(LOAN(-1))	0.1993	0.0692	2.8797	0.0050
D(REPO(-1))	-0.6325	0.2513	-2.5169	0.0136
DLOG(REER5(-2))	7.7984	3.3996	2.2939	0.0241
DLOG(GDP)	0.6653	0.2630	2.5300	0.0131
DBKGL	-2.3691	0.2718	-8.7154	0.0000
Effects Specification				
Cross-section fixed (first differences)				
Mean dependent var	-0.0137	S.D. dependent var	0.5735	
S.E. of regression	0.4178	Sum squared resid	15.8873	
J-statistic	31.4344	Instrument rank	44	

"Benchmark Model" – Total Loans (in leks & foreign currency)				
Dependent Variable: DLOG(LOAN2)				
Method: Panel Generalized Method of Moments				
Transformation: First Differences				
Sample (adjusted): 2005Q1 2006Q4				
Cross-sections included: 12				
Total panel (balanced) observations: 96				
Difference specification instrument weighting matrix				
White period standard errors & covariance (no d.f. correction)				
Instrument list: @DYN(DLOG(LOAN2),-2)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(LOAN2(-1))	0.1908	0.0611	3.1250	0.0024
D(REPO)	-0.3801	0.0843	-4.5096	0.0000
D(REPO(-2))	-0.1666	0.0865	-1.9254	0.0574
DLOG(NEER)	2.3938	0.9532	2.5112	0.0138
DLOG(GDP)	0.1406	0.0296	4.7585	0.0000
DRZBL2	0.4663	0.1306	3.5697	0.0006
DBISHL2	-0.6340	0.1952	-3.2478	0.0016

Effects Specification			
Cross-section fixed (first differences)			
Mean dependent var	-0.0044	S.D. dependent var	0.1524
S.E. of regression	0.1049	Sum squared resid	0.9799
J-statistic	42.9637	Instrument rank	44

"Extended Model" – Loans in leks – Size				
Dependent Variable: DLOG(LOAN)				
Method: Panel Generalized Method of Moments				
Transformation: First Differences				
Sample (adjusted): 2004Q4 2006Q4				
Cross-sections included: 12				
Total panel (balanced) observations: 108				
Difference specification instrument weighting matrix				
White period standard errors & covariance (d.f. corrected)				
Instrument list: @DYN(DLOG(LOAN),-2,-3) @DYN(D(REPO),-3,-3)				
@DYN(SIZE,-2,-5) @DYN(SIZE*(D(REPO)),-4)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(LOAN(-1))	0.1523	0.0586	2.5971	0.0108
D(REPO(-1))	-0.3546	0.1030	-3.4437	0.0008
DLOG(NEER(-1))	8.0418	4.4827	1.7940	0.0758
DLOG(GDP)	0.6198	0.2954	2.0978	0.0384
SIZE(-1)	-0.7090	0.2603	-2.7236	0.0076
SIZE(-1)*(D(REPO(-1)))	-0.2838	0.2155	-1.3172	0.1908
DBKGL	-2.4961	0.1636	-15.2541	0.0000
DEMPL	-1.9870	0.8607	-2.3085	0.0230
Effects Specification				
Cross-section fixed (first differences)				
Mean dependent var	0.0260	S.D. dependent var	0.5788	
S.E. of regression	0.3999	Sum squared resid	15.9915	
J-statistic	48.9464	Instrument rank	70	

"Extended Model" – Total Loan (in leks & foreign currency) – Size				
Dependent Variable: DLOG(LOAN2)				
Method: Panel Generalized Method of Moments				
Transformation: First Differences				
Sample (adjusted): 2005Q1 2006Q4				
Cross-sections included: 12				
Total panel (balanced) observations: 96				
Difference specification instrument weighting matrix				
White period standard errors & covariance (d.f. corrected)				

Instrument list: @DYN(DLOG(LOAN),-3,-4) @DYN(D(REPO),-3,-3)				
@DYN(SIZE,-2,-5) @DYN(SIZE*(D(REPO)),-4)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(LOAN2(-2))	0.1531	0.0368	4.1614	0.0001
D(REPO(-1))	-0.1588	0.0452	-3.5124	0.0007
DLOG(NEER(-1))	3.4770	1.0279	3.3828	0.0011
DLOG(GDP)	0.0962	0.0371	2.5966	0.0111
SIZE(-1)	-0.5312	0.0900	-5.9019	0.0000
SIZE(-1)*(D(REPO(-1)))	-0.2603	0.0758	-3.4329	0.0009
DRZBL2	0.6906	0.1235	5.5921	0.0000
DBISHL2	-0.4411	0.0927	-4.7574	0.0000
DBISHL22	0.3612	0.0657	5.5017	0.0000
Effects Specification				
Cross-section fixed (first differences)				
Mean dependent var	-0.0044	S.D. dependent var		0.1524
S.E. of regression	0.0970	Sum squared resid		0.8192
J-statistic	61.8529	Instrument rank		66

"Extended Model" – Loans in leks – Liquidity				
Dependent Variable: DLOG(LOAN)				
Method: Panel Generalized Method of Moments				
Transformation: First Differences				
Sample (adjusted): 2004Q4 2006Q4				
Cross-sections included: 12				
Total panel (balanced) observations: 108				
Difference specification instrument weighting matrix				
White period standard errors & covariance (d.f. corrected)				
Instrument list: @DYN(DLOG(LOAN),-2,-3) @DYN(D(REPO),-3,-3)				
@DYN(LIQ,-2,-5) @DYN(LIQ*(D(REPO)),-4)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(LOAN(-1))	0.207855	0.035306	5.887276	0.0000
D(REPO(-1))	-0.35829	0.093596	-3.82803	0.0002
DLOG(NEER(-1))	8.374111	4.86279	1.72208	0.0881
DLOG(GDP)	0.628366	0.295103	2.129311	0.0357
LIQ(-1)	0.302719	0.295351	1.024947	0.3079
LIQ(-1)*(D(REPO(-1)))	0.697946	0.530835	1.314806	0.1916
DBKGL	-2.70503	0.065816	-41.0997	0.0000
DEMPL	-1.43432	0.358785	-3.99773	0.0001
Effects Specification				
Cross-section fixed (first differences)				

Mean dependent var	0.025963	S.D. dependent var	0.5788
S.E. of regression	0.402806	Sum squared resid	16.225
J-statistic	60.73082	Instrument rank	70

"Extended Model" – Total Loan (in lek & foreign currency) – Liquidity				
Dependent Variable: DLOG(LOAN2)				
Method: Panel Generalized Method of Moments				
Transformation: First Differences				
Sample (adjusted): 2005Q1 2006Q4				
Cross-sections included: 12				
Total panel (balanced) observations: 96				
Difference specification instrument weighting matrix				
White period standard errors & covariance (d.f. corrected)				
Instrument list: @DYN(DLOG(LOAN),-3,-4) @DYN(D(REPO),-3,-3)				
@DYN(LIQ,-2,-5) @DYN(LIQ*(D(REPO)),-4)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG(LOAN2(-2))	0.19613	0.067393	2.910257	0.0046
D(REPO(-1))	-0.13099	0.050227	-2.60802	0.0107
DLOG(NEER(-1))	2.003604	0.723729	2.768446	0.0069
DLOG(GDP(-2))	0.100358	0.032127	3.123795	0.0024
LIQ(-1)	0.162295	0.238525	0.680412	0.4981
LIQ(-1)*(D(REPO(-2)))	0.393955	0.337645	1.166774	0.2465
DRZBL2	0.743523	0.108805	6.833511	0.0000
DBISHL2	-0.42105	0.034524	-12.1961	0.0000
DBISHL22	0.488151	0.062344	7.829958	0.0000
Effects Specification				
Cross-section fixed (first differences)				
Mean dependent var	-0.00444	S.D. dependent var	0.1524	
S.E. of regression	0.099132	Sum squared resid	0.8550	
J-statistic	78.94063	Instrument rank	66	

ENDNOTES

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The views in this paper are of the author and do not necessarily reflect those of the Bank of Albania.

¹ During 2000-06, the ratio of total bank assets to nominal GDP in six Central-Eastern European countries has varied between 70 and 72 percent (Source: EcoWin and Economist Intelligence Unit)

² Source: Bank of Albania's Annual Report 2006, p. 121.

³ Source: Bank of Albania, Annual Report of Bank Supervision 2005 (p. 39), www.bankofalbania.org

⁴ Source: Institute of Statistics' Website, "Structural Survey of Economic Enterprises", www.instat.gov.al/

⁵ In the third quarter of 1997, non-performing loans constituted more than 39 percent of total credit (IMF Staff Country Report No. 98/62, August 1998)

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