What Microeconomic Banks Data Tell Us about Monetary Policy Transmission and Financial Stability in Guatemala

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Abstract

This paper aims to research the credit channel in Guatemala in a microeconomic context. The country currently conducts its monetary policy through an explicit inflation targeting regime, and previous studies have concluded that the monetary policy transmission mechanism is rather weak. However, the empirical evidence of those studies is based on aggregate data. This paper contributes by performing detailed analysis of individual data for each bank, classified by bank size and loan type. The hypothesis is that policy transmission is heterogeneous by these characteristics. First, a descriptive analysis of the response of interest rates and lending to policy rate variations is carried out. Second, econometric panel data techniques are applied to estimate the lending channel. We find that there is a transmission of monetary policy, but it is heterogeneous, and liquidity, capitalization and bank size play an important role in it. The factors contributing to weakening the mechanism are excess liquidity in the banking system, portfolio dollarization, bank size and the method for calculating reserve requirement.

Keywords: monetary transmission mechanisms, credit channel, financial stability.

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1. INTRODUCTION

The aim of this paper is to research the credit channel in Guatemala as a basis for assessing the impact of monetary policy on the banking system and the financial stability. Different studies, by the Economic Research Department of the Banco de Guatemala and the International Monetary Fund (Medina Cas et al., 2011), have concluded that monetary policy transmission mechanisms in the country are weak. Nevertheless, all those papers have one thing in common: They are based on aggregate data, mainly employing autoregressive vector models.

This paper contributes to study of the credit channel in Guatemala by using a microeconomic bank database. It is hoped this research will provide answers to "why the transmission mechanism is weak." Banks are the first link in the transmission of monetary policy to consumption and investment. This paper, therefore, analyzes the transmission of the policy rate to market rates, which is the origin of the credit demand channel. However, the main focus of the work is to identify and estimate the lending channel, which reveals the impact of monetary policy on the supply of bank loans.

The particular interest in performing a detailed study of the lending channel stems from the fact that it may help to reveal the interaction between monetary policy and banks, and, therefore, to discover the factors that influence the effectiveness of the Banco de Guatemala's monetary policy actions.

First, we conduct an event study. Identifying and estimating monetary policy transmission mechanisms is complicated in small economies with underdeveloped financial markets, frequent structural breaks, and relatively short data sets. Hence, as a first step in studying the monetary policy transmission, this paper takes an event narrative approach as in Bergm, Charry, Portillo, and Vlcek (2013). However, unlike the referred paper, event analysis is performed with microeconomic data instead of aggregate data. This approach is used to analyze policy rate movement events and banks' response to them, classified by bank size and loan type. The approach not only helps to assess the effects on financial institutions in accordance with their characteristics but also helps to guide later econometric work.

Micro economic data of 18 banks in Guatemala's banking system for the period from January 2010 to April 2014 was used to build a data panel for the econometric study of this research. The lending

channel is estimated for the data group as a whole, and for subgroups organized by bank size and loan type.

The outcomes confirm the hypotheses on the factors weakening the transmission channel. In particular, it was found that partial dollarization of the financial system, excess bank liquidity, and bank concentration influence the rigidity of monetary policy transmission (RMPT). Also, the microeconomic study of the Guatemalan banking system provides other explanations that can help identify concrete measures that financial supervisory and monetary authorities can adopt over the medium-term to improve the transmission of monetary policy signals, while at the same time increasing the soundness of the financial system. In specific, we found that improving the method for calculating reserve requirement can lead to more efficient bank liquidity management, which is an important variable that determines RMPT. De-dollarization of bank balances –especially large banks–, as well as greater bank internationalization and deconcentration, are all macroprudential policy directions that can also improve RMPT, among other issues that can be addressed gradually over the medium term.

Other significant rigidities found are the predomination of so-called *large corporate loans* at preferential interest rates that do not obey policy rate movements, the post-crisis attraction of investing in central government securities and capital restrictions faced by a specific banking segment. In general, it seems that monetary policy transmits better through medium and small-size banks.

The Guatemalan economy has been characterized by a long tradition of macroeconomic and financial stability. In the context of financial stability, this research contributes with a macroeconomic study of the lending channel, which is a fundamental precondition for linking the impact of monetary policy with financial stability. Said link, however, is not directly addressed in this paper, although it does lay the groundwork for doing so in later studies. Notwithstanding, it can be seen that there are no significant monetary policy implications for financial stability through the lending channel.

The first part of this paper characterizes the Guatemalan banking system based on the event narrative and other indicators. The second part includes an econometric study of the lending channel, using panel data techniques. A brief analysis of the financial system in Guatemala is presented in the third part, and the fourth gives the conclusions.

2. CHARACTERIZATION OF THE TRANSMISSION CHANNEL: EVENT NARRATIVE APPROACH

This section presents the event narrative approach. In particular, based on the microeconomic data collected from each of the 18 banks making up the Guatemalan financial system, stylized facts for monetary policy transmission mechanisms in Guatemala are profiled, specifically the bank lending channel. Said facts are inferred in the graphical analysis by particularly studying the period from September 2011 to December 2013. This period was chosen for two main reasons. First, the policy rate of Banco de Guatemala recorded three increases in 2011 after having remained unchanged at 4.5% from September 17, 2009. In specific, on March 31, 2011, it was raised to 4.75%, on July 28 to 5% and on September 29 to 5.5% (see Figure). These events represent an appropriate period for assessing the transmission of monetary policy, considering that they were successive hikes after an extended period of having kept the rate fixed and that the inflation targeting scheme in Guatemala, after being implemented six years previously, was by that time more mature.

Second (and this is connected with the *greater maturity* of the scheme), in 2011 the term for Banco de Guatemala's certificates of deposit, which constitute its policy instrument, was reduced from seven days to one day (overnight operations). The inflation targeting scheme was formally adopted on January 1, 2005. The 2005-2010 period is ruled out because it is influenced by several changes in the definition of the monetary policy rate, assigning that property to central bank certificates at different terms, decreasing from 91 to seven days and, finally, overnight operations in 2011.

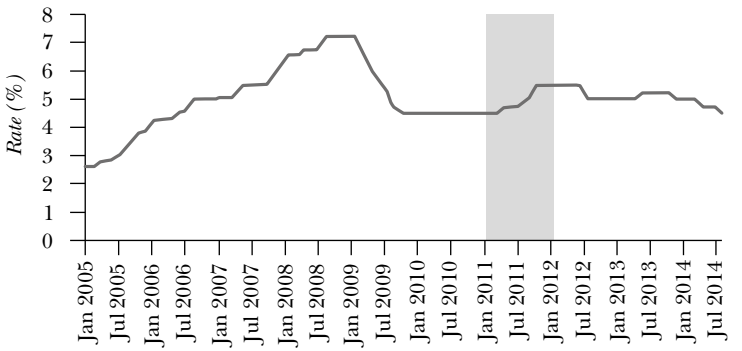
2.1 Transmission of Policy Rates to Market Rates

2.1.1 Transmission of Policy Rates to Short-term Rates

As of September 1, 2011, when the overnight rate for central bank certificates was adopted as the monetary policy instrument–within a monetary regime of explicit inflation targets–, there has been a significant improvement in monetary policy transmission (MPT) to the money market. In fact, as can be seen in Figures A.2 and A.3 in Annexes, in the three periods of policy rate hikes between 2011 and 2013, repo rates in the national stock market and interbank market rates increased in line with said adjustments, converging towards

Figure 1

POLICY INTEREST RATE



the monetary policy rate. Figure A.2 shows the evolution of the total interest rate (weighted average for all terms), the rate for terms of one to seven days and the overnight rate. The transmission is clearly shown in the figures, and it is fairly comprehensive in very short-term operations (overnight) but is not as strong at slightly longer terms (from one to seven days and total), although the transmission is still evident. The graphical event analysis makes it possible to infer that there is a clear transmission from the policy rate to short-term market rates.

Also, the Banco de Guatemala implemented an organizational change in its structure that has allowed it to improve bank liquidity management. In specific, the central bank established a front, middle, and back office system. As part of the front office functions, the central bank communicates with all banks in the system on a daily basis to establish their liquidity requirements, which serves as a reference for fixing the size of central bank participation in the daily auctions of its certificates in the money market. This is complemented by establishing an interest rate corridor to guide banks participation in the money market towards the monetary policy rate.

2.1.2 Transmission of the Policy Interest Rate to Bank Lending Rates

The reaction of bank lending rates to adjustments in monetary policy rate has been varied, differing in nature according to bank group (large, medium or small-sized) and the type of market they target their operations on (large corporate loans, small business loans, consumer loans, and mortgages). In accordance with the hypotheses set forth by this paper, a detailed disaggregated study is performed by bank size and loan type. In specific, an event analysis is carried out using the same policy rate increases employed in previous sections, comparing them with the path of interest rates by bank size (large, small and medium) and loan type: large corporations, small business, consumer, microcredit, and mortgage.

The figures of the event analysis are presented in Annexes (Figure A.3). The figures show how, in response to the 2011 policy interest rate hikes, the sensitivity of interest rates for large corporate loans by large banks is null; they do not even affect the overall trajectory observed in the opposite direction –decline–. Very similar behavior is observed for medium-sized banks. Small banks are the exception, where behavior in the same direction as policy rate changes is identified. Nevertheless, large banks, unlike the majority of other banks, generally concentrate their loans on this type of customers and it can be seen how the interest rate fixed for such loans have a significant component that does not necessarily respond to market conditions that can be influenced by monetary policy. These specific conditions of the financial market in Guatemala are feasible under a context of high bank liquidity and a few large firms with strong bargaining power that agree on interest rates on very large loans with the banks. Given that large and medium-sized banks make up almost 90% of the country's banking system, and that large corporate loans constitute almost 60% of the total bank portfolio, the effect policy rate might have on large corporate loan interest rates must be very small. It, therefore, becomes more important to understand the transmission mechanisms to identify their rigidities and, consequently, suggest measures for improving them.

The same occurs with small business loans (Figure A.3), where it is observed that the market rates of large and medium-sized banks do not react to policy rate increases either. In a similar way to large

corporate loans, small bank interest rates seem to react with some lags and only temporarily, without affecting their long-term trajectory.

In the case of consumer loans, there is a better adjustment in the market interest rates of medium-sized banks and, probably, of small sized ones, but not of large banks. The overall result improves after the overnight rate was adopted as the monetary policy instrument in September 2011. In any case, this is not the type of loan with the most significant influence on the economy's aggregate demand, meaning its importance for improving monetary policy transmission mechanisms is not so decisive.

Mortgage loans do not exhibit sensitivity to monetary policy rate adjustments either in the graphical analysis. Microloans and mortgages are not very important in the portfolio. As regards mortgages, this result could be because they require a guarantee from the Instituto de Hipotecas Aseguradas and include specific conditions in the financial characteristics of the loans.

2.2 Impact of the Policy Rate on Lending

To typify and obtain a first approximation of the impact of the monetary policy rate on lending, this section analyzes in graphic form the effects of the policy rate increase events during 2011 by different loan types and bank size. In the same way, as in the previous section, bank size is classified into large, medium, and small, and loan type into large corporations, small business, microcredit, and consumer.

The results are shown in Figure A.4. The figures for the total lending show there is a contraction in lending, which operates with lags, in response to the policy rate increases for all three bank sizes.

In the same way, lagged contractions in lending are observed in response to policy rate increases in large and small business loans for large, medium and small-sized banks (Figure A.4).

In the case of consumer credit, microloans, and mortgages, the graphical evidence is less clear (Figure A.4).

In general, a stronger contraction can be seen after the last policy rate increase which took place at the end of September 2011. This could be attributable to the change made that same month by the Banco de Guatemala to shorten the term of its policy instrument (central bank certificates of deposit) from seven days to one. However, this is an assumption that cannot be proven with graphical analysis.

Graphical event analysis is not conclusive regarding the contraction of lending in response to policy rate hikes. The decreases that occurred after the rate increase could be due to many other reasons. On the other hand, the graphical analysis is extremely useful for making a first approximation in the study of monetary policy transmission, form some initial ideas and characterize the behavior of the banking sector in Guatemala.

The above observations mean positive expectations can be made regarding the presence of a lending channel, that it operates with lags, that not all episodes are the same and that the use of shorter-term instruments could have helped to boost transmission. Nevertheless, at this point, all these statements are only assumptions.

2.3 Dollarization of Bank Balances

Dollarization of bank balances, indicated by a 43% share of the portfolio in foreign currency, as a proportion of the total portfolio, and around 18% of deposit liabilities (Figure A.5), could be having a major influence on the above results, mainly because the group of large banks is the most dollarized. In general, those banks mainly grant large corporate loans to major firms in foreign currency due to the nature of their business and because there is a market for supplying funds in foreign currency at lower interest rates –in the current global financial environment–. This implies that a considerable amount of bank funding is not tied to local market conditions.

Although the process of dedollarizing bank assets is important for enhancing monetary policy transmission mechanisms, it should be taken into account that the observed postcrisis increase is a tendency to recover precrisis levels, meaning we should expect to be at a time when dollarization is beginning to recede. In fact, the portfolio in foreign currency is now growing slower than that in domestic currency. Nonetheless, financial dollarization is relatively high, meaning it could be considered as a macroprudential instrument in the future, not without considering the dedollarizing effect the start of hikes of monetary policy reference rate by the Federal Reserve System of the United States might have.

2.4 The Composition of Bank Assets

It is worth asking whether the composition of bank assets tells us anything about the behavior of bank lending, particularly because in

recent years banks have been investing large amounts of their available resources into treasury bonds issued by the central government. This was seen above all after the recent international financial crisis that led to an easing of countercyclical fiscal policy in different countries, including Guatemala (see Figure A.6). In fact, after observing fiscal deficits of 2% or less, the latter have reached between 2% and 3% (although with a downward trend). This led to higher funding requirements and the resulting increase in issues destined for the domestic market, where the banking system is the main purchaser.

Consequently, large banks have increased their investments in government bonds, pursuing less risk and greater yields. It is important to mention this because there has supposedly been a minor breach of the portfolio theory, which states that the higher the risk, the higher the interest rate. However, investments in government bonds offer better interest rates than portfolio placement in the large corporate loans segment, for instance, along with lower risk. Increased investments in government securities could be affecting monetary policy transmission. This cannot be seen in the graphical analysis, and if said investments have indeed been growing, it has not significantly affected the ascending behavior of the loan portfolio. Intuitively the latter portfolio, particularly that of large corporate loans, is insured for its customers. This is based on the fact that several periods of decline or slowing in the growth rate of lending observed recently are due to private firms finding external sources of funding at lower costs than those offered by banks operating in the domestic market.

2.5 Banking System Liquidity

Guatemala's banking system suffers from chronic excess liquidity. This is demonstrated by the fact that the Banco de Guatemala conducts open market operations to withdraw excess liquidity on a daily basis with its certificates of deposit at overnight term. Historically there have only been two events where the Bank has had to inject liquidity. This chronic excess liquidity is a significant constraint for the lending channel given that, according to theory, in order for the channel to exist, banks should always be at the limit of their liquid assets and reserves.

Figure A.7 shows available liquid resources (excess reserves plus overnight investments in the Banco de Guatemala) along with policy

interest rate increase and decrease events. It can be seen that bank liquidity follows an upward trend and in the case of large and medium-sized banks it is immune to policy rate movements. In particular, it shows graphically how small banks exhibit slight variations around the points where rate changes occur.

2.5.1 Method for Calculating Reserve Requirements

The current methodology requires banks to maintain reservable assets on a monthly basis, being able to be without required reserves for up to 14 days during a month. This causes bank treasurers to make significant liquidity forecasting efforts to satisfy the requirement by the end of the month, under a context where the increase in financial transactions could put this compliance at risk (above all when there might be unexpected movements beyond the control of the treasury strategy). For this reason, banks continue to be very cautious in how they must hold resources in excess of the reserve requirement in anticipation of such contingencies. Thus, although the implementation of overnight operations has improved bank liquidity management, the method for calculating reserve requirements continues to constrain it. Changing to some type of daily requirement with a two-day settlement term could improve the system's liquidity management, while strengthening monetary transmission.

2.5.2 Banking System Liquidity

The graphical analysis shows, according to the balance of the liquid assets available to the banking system, that there is space to continue improving liquidity management, above all in small banks, where it can be seen how the buildup of liquid assets is very sensitive to expansive monetary policy (Figure A.7). In the case of all three bank groups, the buildup of liquidity has moderated slightly during periods of restrictive monetary policy. Thus, an improvement in the methodology for calculating reserve requirements would support the financial activity of small banks more.

In addition, short-term interbank interest rates have also converged towards the monetary policy reference rate, which is further evidence of improvements in bank liquidity management (Annex A.8).

3. THE LENDING CHANNEL

3.1 Literature Review

The broad credit channel comprises the balance-sheet channel, net flows channel, and bank lending channel. We specifically analyze the bank lending channel in this paper. The latter is the relevant channel for researching the role of banks in monetary policy transmission and, particularly, how this can affect banks' financial stability.

The impact of the lending channel is through bank assets and not their liabilities, which is the traditional money channel approach. In general, the channel operates as so: in response to a policy rate increase the central bank carries out open market operations (selling bonds to commercial banks), banks' reserves decrease, banks must reduce reservable deposits and, consequently, these lost reservable deposits must be replaced with nonreservable liabilities or, alternatively, they can reduce assets such as loans and securities. In Guatemala, all deposits are subject to reserve requirements, meaning banks would have to reduce their assets (reduce lending) in response to a policy rate increase.

For the bank lending channel to be operational, prices must not adjust fully and instantaneously in the face of a change in the demand for money. Moreover, the central bank's open market operations must affect the supply of bank loans, and loans and bonds must not be perfect substitutes (as a source of credit for borrowers). This ensures that at least part of the adjustment will fall on loans.

The empirical challenge is to identify if a change in monetary policy affects bank lending. However, a decrease in lending might reflect a reduction in demand and not supply. It is therefore important to control for demand factors that can alter lending.

Performing a study from the point of view of liquidity and portfolio size, Kashyap and Stein (2000) show in their work how banks with small loan portfolios and more liquid banks are the most sensitive to monetary policy shocks.

Meanwhile, Kishian and Opiela (2000) argue that the loan portfolios of the most capitalized banks are less sensitive to monetary policy shocks, with the opposite being true for badly capitalized banks.

With respect to banks with capital restrictions, Peek and Rosengren (1995) find evidence that the portfolios of banks without capital restrictions (in England) have a greater capacity to respond to monetary policy shocks than banks with restrictions.

In the area of investment, the work of Gertler and Gilchrist (1994) stands out. They show that, at an aggregate level, the investment of a group of small firms is more sensitive to changes in monetary policy as compared to the investment of a group of large firms.

Meanwhile, Driscoll (2004) employs an aggregate-level panel data model to investigate to what degree changes in bank loan supply affect output. Using specific shocks to money demand as an instrumental variable for addressing the problem of endogeneity, he did not find any significant impact of loan supply shocks on state-level economic activity.

Holod and Peek (2007) distinguish between two types of banks: publicly traded on the stock exchange and non-publicly traded. They find that the portfolios of publicly traded banks are less affected by monetary policy than non-publicly traded banks.

Finally, Maddaloni and Peydró (2011) adopt an alternative approach to address identification challenges based on surveys of bank lending standards (for the Eurozone and the United States). They find that low short-term interest rates soften standards for household and corporate loans, which reinforces the lending channel that operates through banks.

3.2 Econometric Model

The econometric model for researching the lending channel in Guatemala is based on the work of Kashyap and Stein (1994), and of Kishan and Opiela (2000). In particular, the econometric approach in this research is based on Carrera (2011), and Joyce and Spaltro (2014), which in turn are based on the theoretical model of Ehrmann et al. (2003).

The following equation expresses the econometric model:

$$C_{it} = \sum_{j=0}^{n} \rho_i C_{it-j} + \sum_{j=0}^{n} \sigma'_j a_{it-j} + \tau'_j b_{it-1} + \sum_{j=0}^{n} w'_j b_{it-1} a_{3it-j} + \varepsilon_{it}, \quad (1)$$

where C_{it} is the annual growth of loans (total, commercial and consumption), a_{it} is the vector of macroeconomic variables (a_{3it} is the bank interest rate), b_{it} is the vector that contains the characteristics of each bank's variables (liquidity, size and capitalization), ε_{it} is a vector that contains the error terms and n is the number of lags.

Taking into account that it is a dynamic panel, the most widely used estimation methodology is that of Arellano and Bond, which allows for obtaining consistent estimators, a property that is not observed when using ordinary least squares.

The model is estimated with four lags, using a maximum of four lags as instrumental variables as well.

3.3 Data

This section describes the data used in this investigation for the empirical study of the lending channel transmission mechanism and its impact on microfinancial stability.

Total banking system loans in domestic currency, commercial loans, and consumer loans, are used as the lending variable. Each of these items is divided into bank size, grouped into large, medium, and small. This classification is based on the ratio of each bank's deposits to total deposits in the domestic banking system. If the ratio is greater than 10% it is defined as a large bank, if it is between 2% and 10% it is a medium-sized bank, and if it is below 2% it is considered a small bank.

The interest rate, liquidity, a size variable and a capitalization variable are employed as independent variables. Four definitions are used for interest rates, which are very closely related to the monetary policy rate. These interest rates are: *1)* the interbank rate; *2)* the interest rate of stock market repo operations; *3)* the interest rate on certificates of deposit of the Banco de Guatemala at one and seven days terms, and *4)* the monetary policy rate. Four interest rate definitions are used in pursuit of sound results and to identify the interest rate through which policy operates directly.

Liquidity is defined as the ratio of cash assets to deposits plus financial liabilities, where cash assets are bank reserves plus deposits. The size is the ratio of each bank's total assets to total system assets (sum of all banks' assets).

The capitalization variable is equity as a proportion of each bank's total assets. The monthly economic activity indicator (MEAI) adjusted by season and real exchange rate is employed as a control variable to capture lending variations deriving from changes in demand. The MEAI is an indicator of monthly output that is compatible with the quarterly gross domestic product (GDP).

3.4 Results

This section presents the results from estimating the model of the lending channel in Guatemala. Equation 1 was estimated for the period from January 2010 to April 2014 for 18 banks in the system. The banks were also grouped into small, medium, and large. Estimates were made for total lending, commercial credit, and consumer credit in order to distinguish how the lending channel can vary according to bank size and the type of market in which it operates. The hypothesis is that large banks can better shield themselves against policy rate shocks, in such way that movements in policy interest rates do not affect the sum of the loans they offer. Moreover, medium and small banks have fewer sources of funding available and are therefore more vulnerable to policy shocks, which affect their capacity to grant loans.

It is also expected that the commercial credit of large banks would be less affected by policy changes. This stems from the fact that this type of lending obeys the investment projects of large firms, mainly industrial, the disbursements and interest rates are agreed in advance with disbursements programmed according to a contract.

3.4.1 Total Lending

Banking system: the results are presented in Table B.1. There is evidence of a lending channel operating directly through the interest rate on the certificates of the Banco de Guatemala and the policy interest rate with lags of between two and three months. All the interest rates seem to act through bank size and equity, although the latter effects are very small. There is also evidence of effects through liquidity, but they appear to be very weak.

Large banks: the evidence of direct effects of interest rates on large banks is practically inexistent (Table B.2). As for indirect effects, there appears to be a minimal impact on capital operating with a lag of between three and four months.

Medium-sized banks: there is evidence for the direct effects of interest rates, mainly the policy rate and, to a lesser degree, repo and Banco de Guatemala interest rates (Table B.3). There is also evidence of indirect effects through liquidity, size, and capital. The effects of liquidity and capital are very small, and those of capital have a negative sign. The size effect is bigger but presents inverse signs. In the aggregate, a stronger effect than that for large banks can be seen.

Small banks: the direct effects of interest rates on small banks' total lending is significant, although it has the opposite sign than that expected (Table B.4). Concerning indirect effects through liquidity, size and capital, they are not significant.

3.4.2 Commercial Credit

Banking system: there is evidence of the direct influence of interbank interest rates, certificates of the Banco de Guatemala and the policy rate, although the aggregate impact appears to be small (Table B.5). There is also evidence of indirect effects through capital and interest rates, but they are very small. There is no solid evidence of effects through liquidity.

Large banks: the results only show negative effects on the loans of large banks and the interbank interest rate (Table B.6). There are also indirect effects of the interbank interest rate and repos through liquidity and size. All the interest rates impact the lending of large banks through capital, although these effects are extremely small in the aggregate.

Small banks: the outcomes reveal that there are direct effects of four interest rates (interbank, repos, certificates of the Banco de Guatemala, and policy). There are also significant indirect effects through liquidity, size, and capital, although they are substantially smaller. In general, the lending channel operates stronger in small banks than in large ones (Table B.7).

Small banks: contrary to what might be expected, the lending channel for the commercial loans of small banks is not very strong (Table B.8). The evidence of direct effects is weak and is only observed for certificates of the Banco de Guatemala and repo rates, although their net impact is positive. The evidence of indirect effects is extremely weak and seems to be present only through the capital.

3.4.3 Consumer Credit

Banking system: the direct effect of interest rates on the lending channel is present and significant with all rates, although the effect of interest rates on the certificates of the Banco de Guatemala has the opposite sign to that expected (Table B.9). There is also evidence of indirect effects through liquidity, size, and capital.

Medium-sized banks: there is evidence of direct effects mainly from interbank interest rates and repo and policy rates (Table B.10). There is also evidence that the channel operates through liquidity, size,

and capital. Nevertheless, the net impact of direct and indirect effects is very small.

Small banks: the results show direct effects of interest rates on the supply of loans, mainly through the interbank rate and, to a lesser degree, repo rates (Table B.11). There is also evidence of indirect effects through liquidity, size, and capital. The aggregate effect is, however, small in all cases.

According to the results, in general terms, the lending channel can be seen in the whole banking system, for both total lending and commercial and consumer credit. It can be seen how its effects are stronger in total lending and consumer credit than in commercial credit.

The lending channel has a little direct impact on the commercial credit of large banks; its indirect effects seem to be more significant. The commercial and consumer credit of medium-sized banks is affected by the lending channel in a very similar way, although with greater influence on commercial credit. The lending channel has a significant effect on the consumer credit of small banks, while its impact on commercial credit is almost nonexistent.

4. FINANCIAL STABILITY

This is a topic of recent discussion and is difficult to identify. The literature with the models that allow for understanding the macroprudential themes is still being developed. In the case of this paper, it was hoped that if it proved the lending channel operates on the supply-side, that is, if reference interest rate movements generate changes in the composition of bank liabilities that cause movements from core liabilities to non-core liabilities, which in turn adjust the supply of loans, then there might be some impact on financial stability. However, it is the opposite case: it has been found that the phenomenon is more on the demand than the supply side.

Notwithstanding, a study by bank group of the behavior of indicators such as: *1)* capital adequacy; *2)* leverage; *3)* return on assets (ROA), and *4)* return on equity (ROE), suggest that financial stability has not been at risk during the period of study. In fact, with respect to Basel I and II capital adequacy, all bank groups show levels above 8% and even up to 10% (see Figure C.1). Data for small banks is exceptionally large because they specialize more in investments than granting loans. In the case of leverage, banks do not pass a ratio of 12 as suggested by the literature (Figure C.2). As for ROE, banks obtain

higher returns than on 10-year Treasury bonds (approximately 7%) except in the case of small banks during a short period in 2013 that is substantially influenced by a bank that was implementing a planned expansion (Figure C.3). The returns for that group of banks then go back to normality. Finally, ROA – an indicator of efficiency– is above 1% for all banks as is also suggested by the studies (Figure C.4).

5. CONCLUSIONS

The investigation on the lending channel in Guatemala contains two core components: a characterization of the lending channel using an event narrative approach and an econometric study based on microeconomic panel data for 18 banks in the system. This section presents the main findings of the study.

The event narrative analysis reveals that the interest rate for business loans, both small and large, does not react to policy rate changes. Meanwhile, the interest rate on consumer loans does appear to be affected by the policy rate, particularly after the Banco de Guatemala reduced the term of its policy instrument from seven days to overnight operations. Finally, the interest rate on mortgage loans and microloans do not seem to be affected by the policy rate either.

The graphical examination of the impact of policy interest rate hikes on lending suggests that there is a contraction in total lending that operates with lags for all three bank sizes. The reduction in lending is mainly observed in business loans, both large and small, while the evidence is less clear for consumer loans, microloans and mortgage loans.

This research also shows that the banking system in Guatemala has been characterized by an increase in investment in government securities, growing loan portfolio dollarization, and chronic excess liquidity. This is due to the upward trend of the country's fiscal deficit, which has prompted the government of Guatemala to issue bonds with very attractive yields. Moreover, the predominantly low-interest rates worldwide along with excess liquidity have led domestic banks (mostly the large ones) to take advantage of the credit lines offered by international banks at very low-interest rates, which has led to a significant supply of loans in US dollars.

Finally, for many years there has been chronic excess liquidity in the national financial system, leading the Banco de Guatemala to carry out open market operations on a daily basis to mop up liquidity.

Historically there have only been two exceptional cases where said central bank has needed to inject liquid resources into the financial market instead of withdrawing them. All the factors above (high investment in government bonds, growing credit dollarization, and chronic excess liquidity) weaken the monetary policy transmission mechanism.

Another factor that contributes to weakening the transmission mechanism is the method for calculating the reserve requirements of banks in Guatemala. In accordance with current legislation, banks must maintain a monthly average of reserve requirements but may default on these requirements up to 14 days within a month. This implies that banks have relatively wide room for maneuver when managing their treasury. Thus, in response to policy rate increases banks can reduce reserves without urgently needing to recompose their reservable liabilities or decrease lending and, therefore, avoid or diminish the impact of monetary policy.

With respect to econometric estimates, these reveal that, in general terms, the lending channel operates in Guatemala with lags and is relatively small. Evidence was found that for commercial credit the lending channel mainly operates through medium-sized banks, while for consumer credit the channel operates significantly through both medium-sized and small banks. With respect to large banks, the lending channel is extremely small and, in some cases, inexistent. There is also clear evidence that bank liquidity, capitalization and size variables play a very important role in the presence and strength of said channel.

Finally, financial stability indicators reveal that the financial system in Guatemala does not show any signs of fragility. Taking into account that there is a lending channel, although small, it is possible to believe that monetary policy does not currently represent a risk for financial stability. Thus, this paper lays the foundation for further studies that formally and meticulously link the relationship between these two variables.

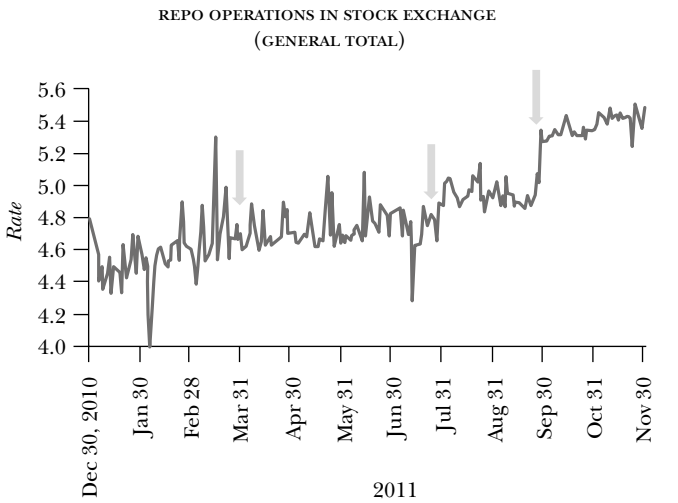
In sum, the transmission of monetary policy to market rates and lending is weak. This can be explained by the chronic excess liquidity of the financial system, high investment in government bonds, portfolio dollarization, and the method for calculating bank reserve requirements. The lending channel is present in Guatemala, but its impact is very small and determined by type of loan, bank size, capitalization, and liquidity.

ANNEXES

Annex A. Figures

Figure A.1

REPO OPERATIONS INTEREST RATE



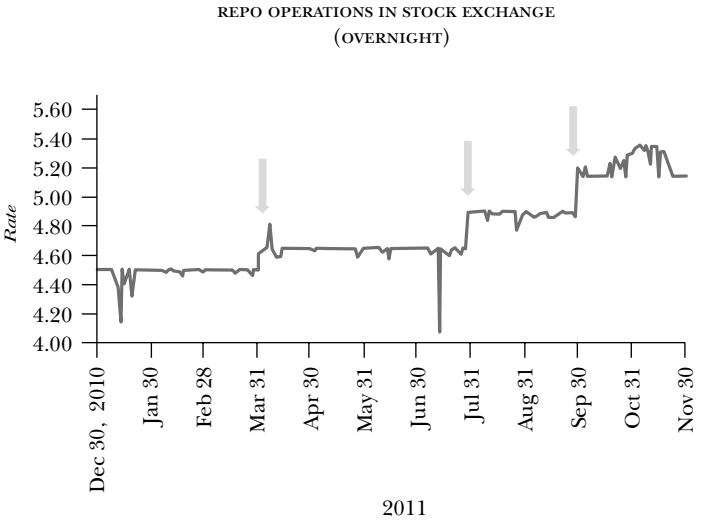
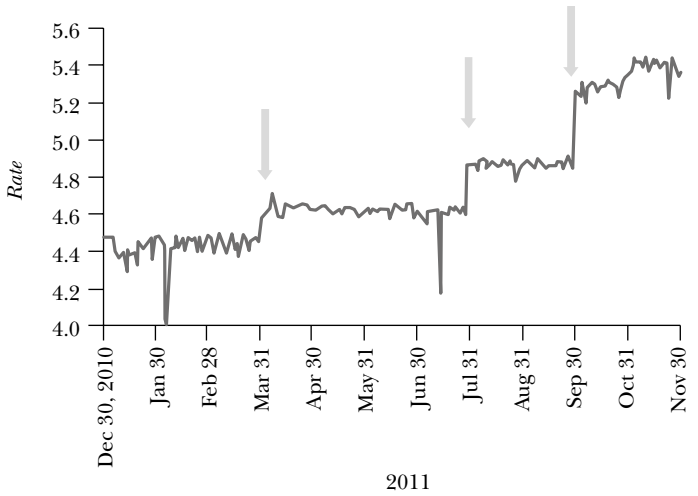


Figure A.1 (cont.)

REPO OPERATIONS INTEREST RATE

REPO TRANSACTIONS
IN THE STOCK EXCHANGES (TERM OF 1 TO 7 DAYS)



LEADING INTEREST RATE OF MONETARY POLICY

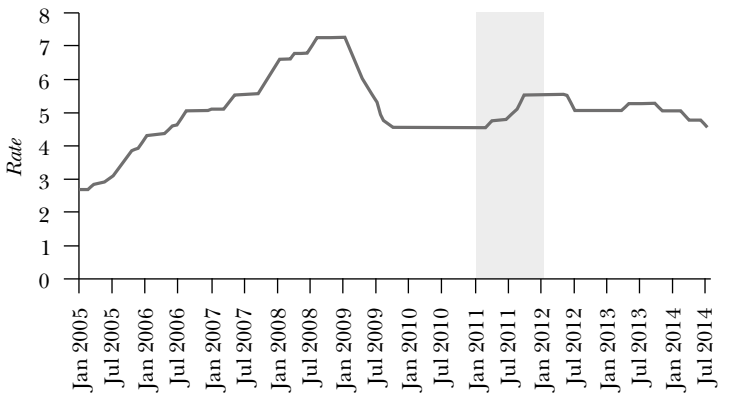
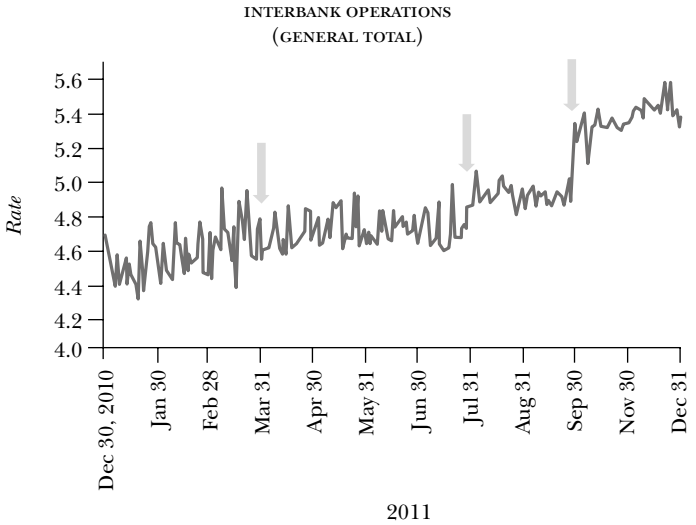


Figure A.2

INTERBANK INTEREST RATES



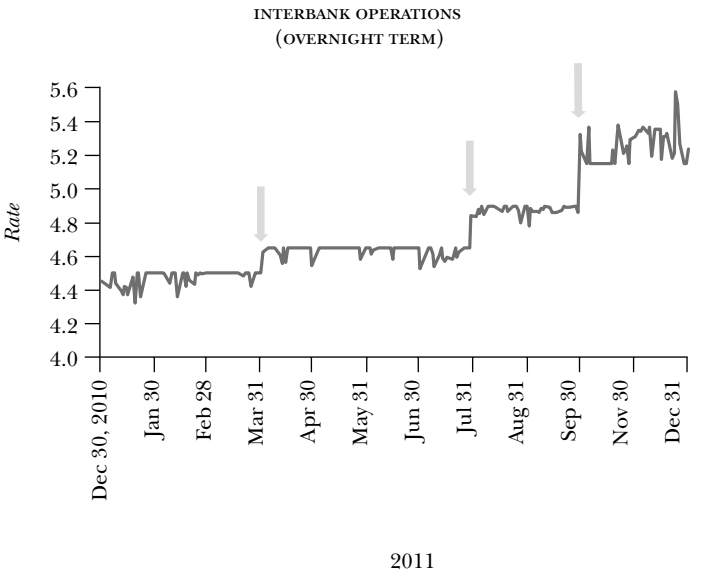
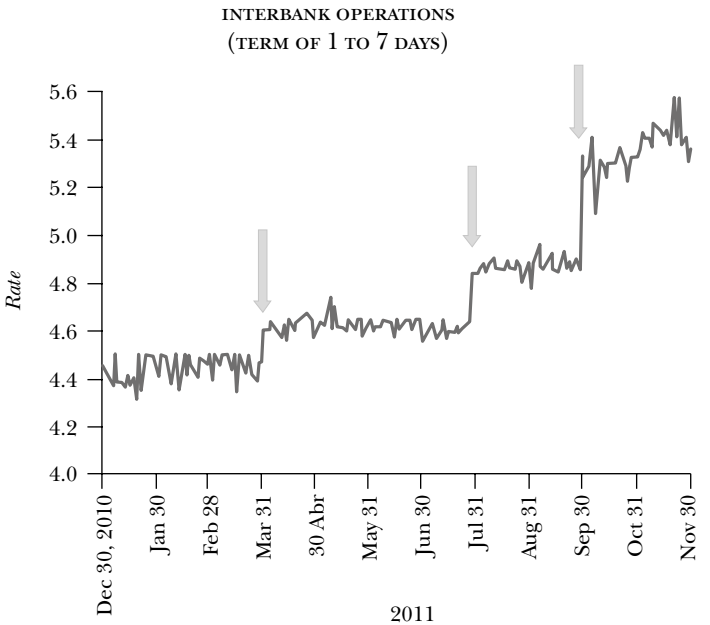


Figure A.2 (cont.)

INTERBANK INTEREST RATES



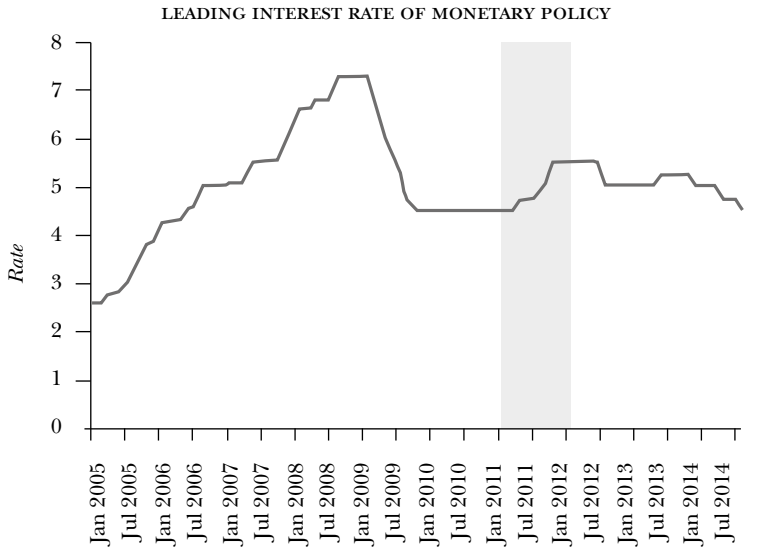
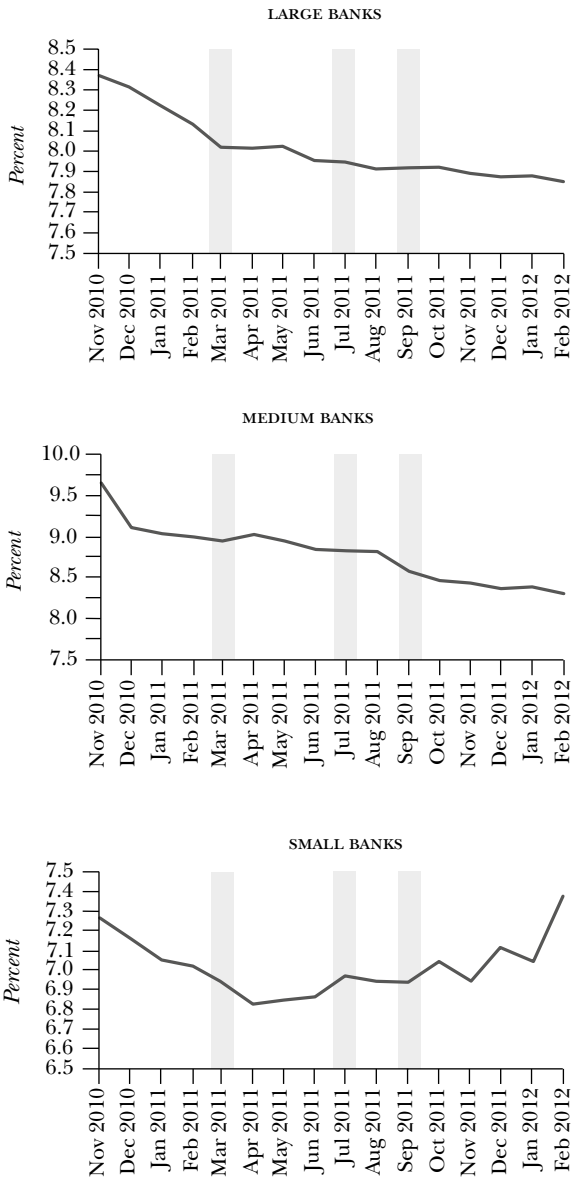


Figure A.3

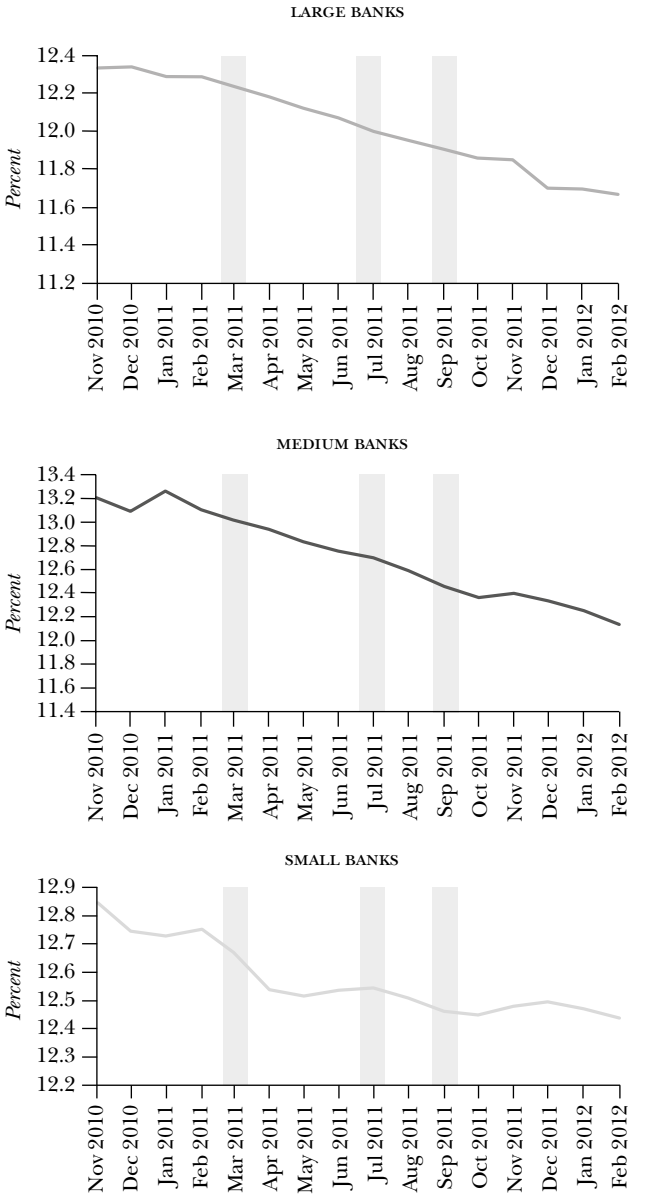
BEHAVIOR OF INTEREST RATES OF CREDIT TO MAJOR BUSINESS SECTOR[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.3 (cont.)

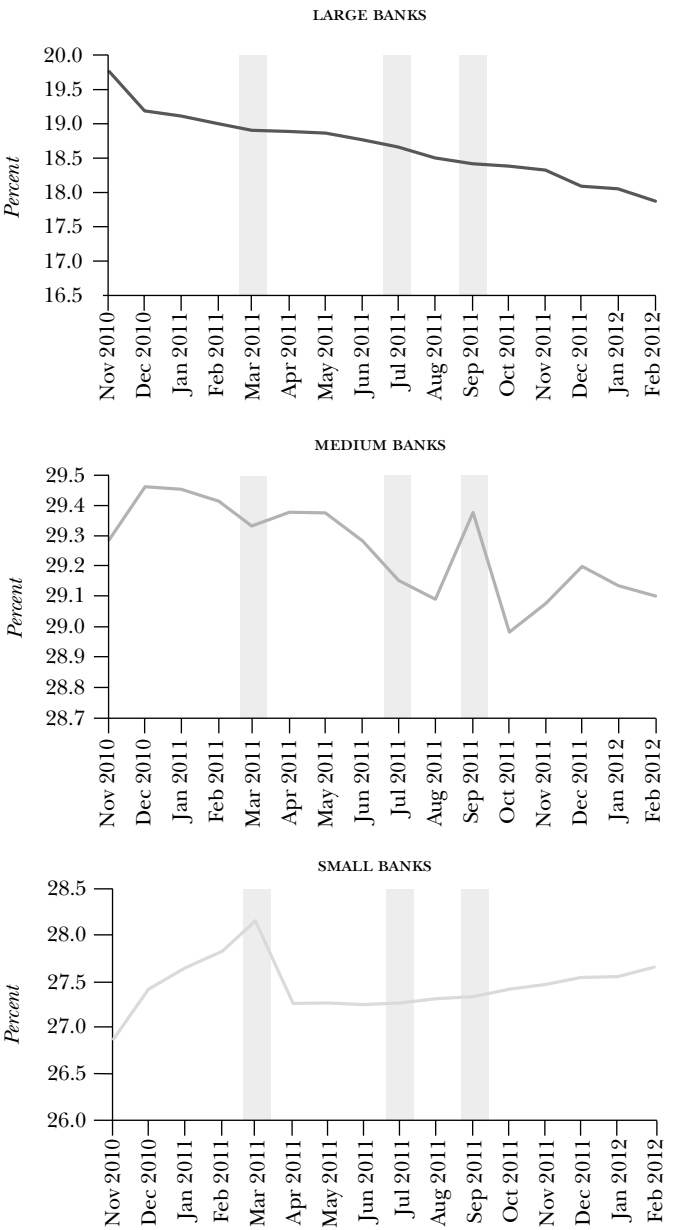
BEHAVIOR OF CREDIT INTEREST RATES TO THE LESSER BUSINESS SECTOR[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.3 (cont.)

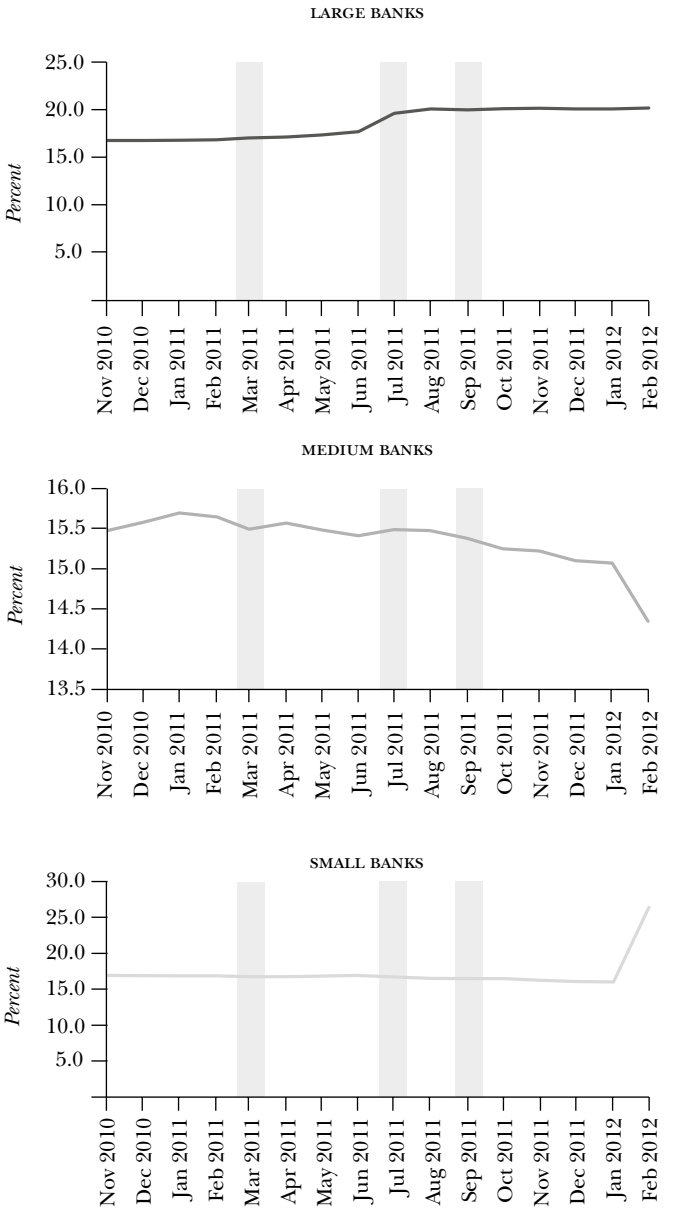
BEHAVIOR OF INTEREST RATES OF CONSUMER CREDIT[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.3 (cont.)

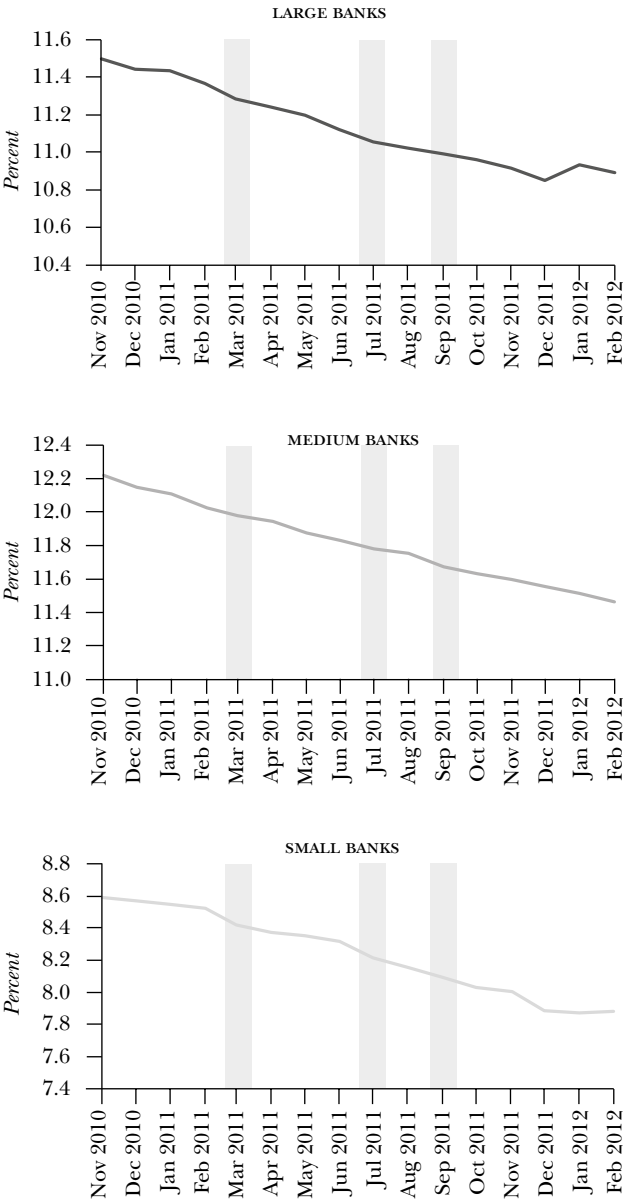
BEHAVIOR OF INTEREST RATES OF CREDIT TO THE MICROCREDIT SECTOR[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.3 (cont.)

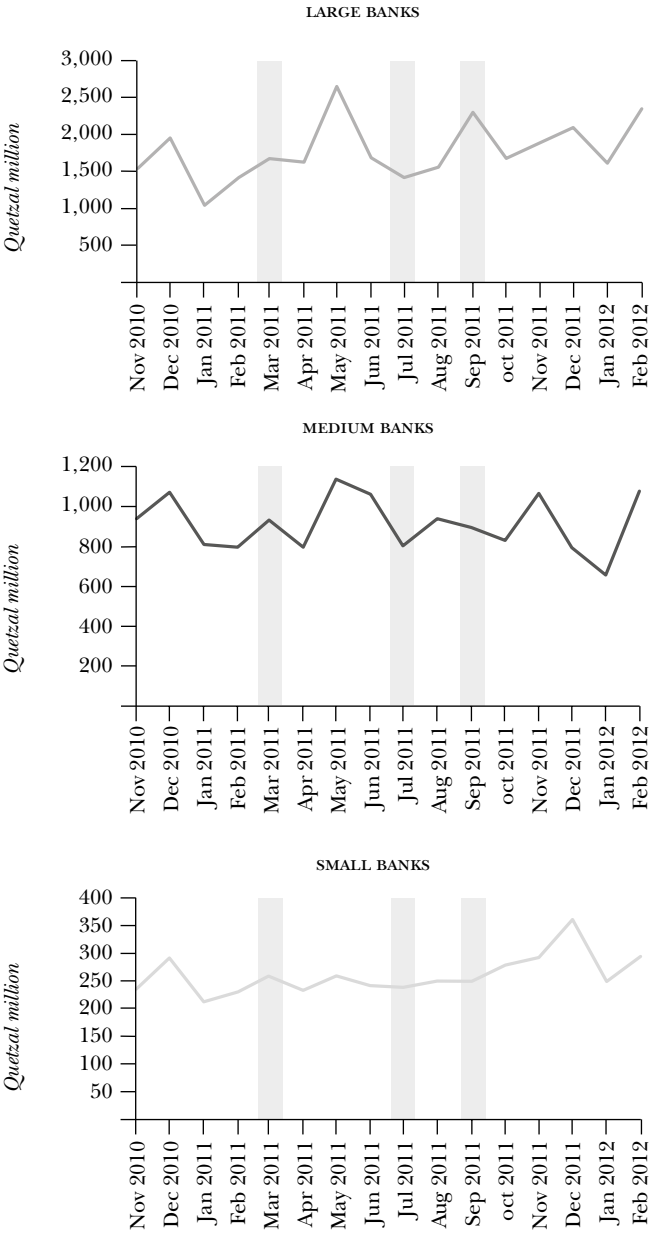
BEHAVIOR OF INTEREST RATES OF MORTGAGE CREDIT FOR HOUSING[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.4

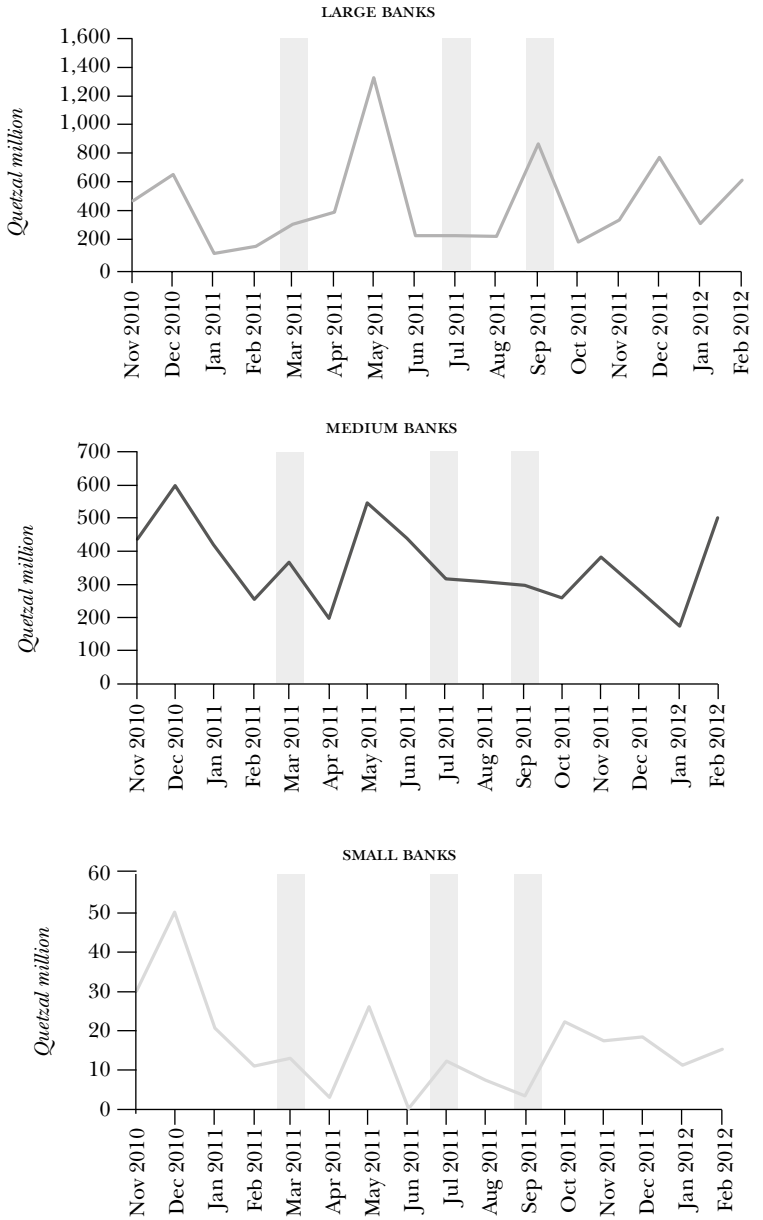
BEHAVIOR OF CREDIT IN NATIONAL CURRENCY[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.4 (cont.)

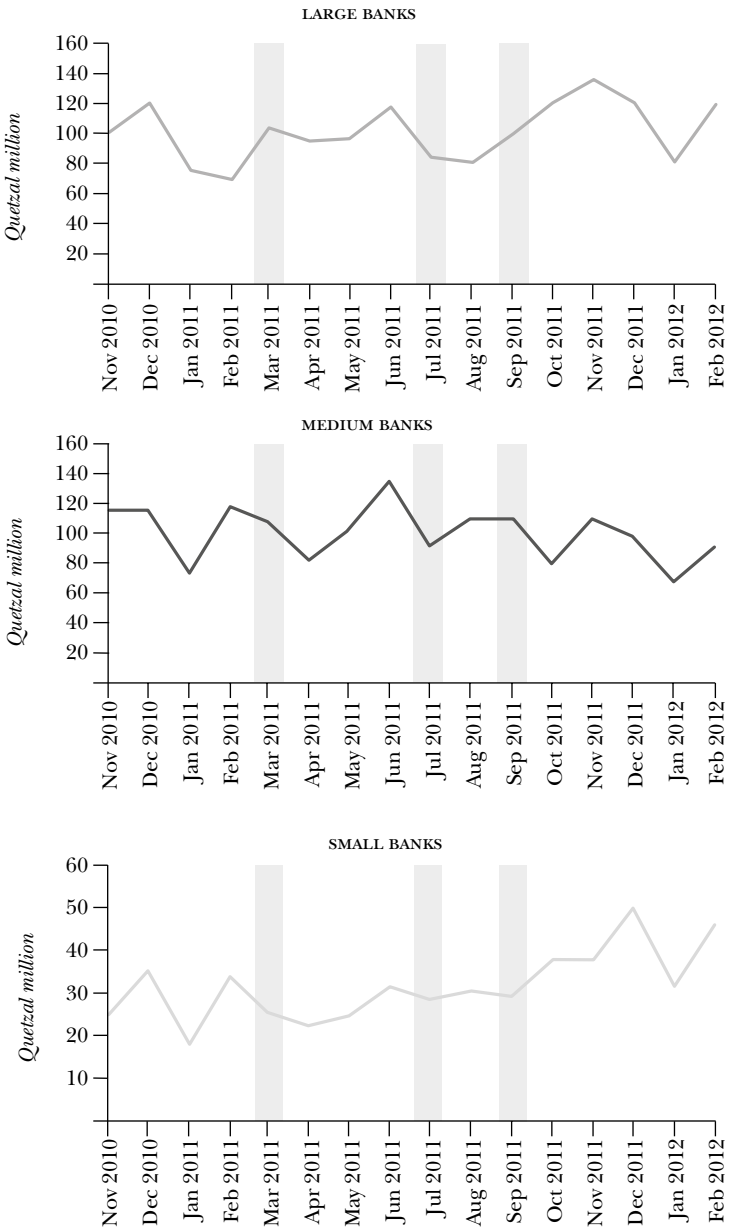
BEHAVIOR OF CREDIT IN NATIONAL CURRENCY TO THE MAJOR BUSINESS SECTOR[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.4 (cont.)

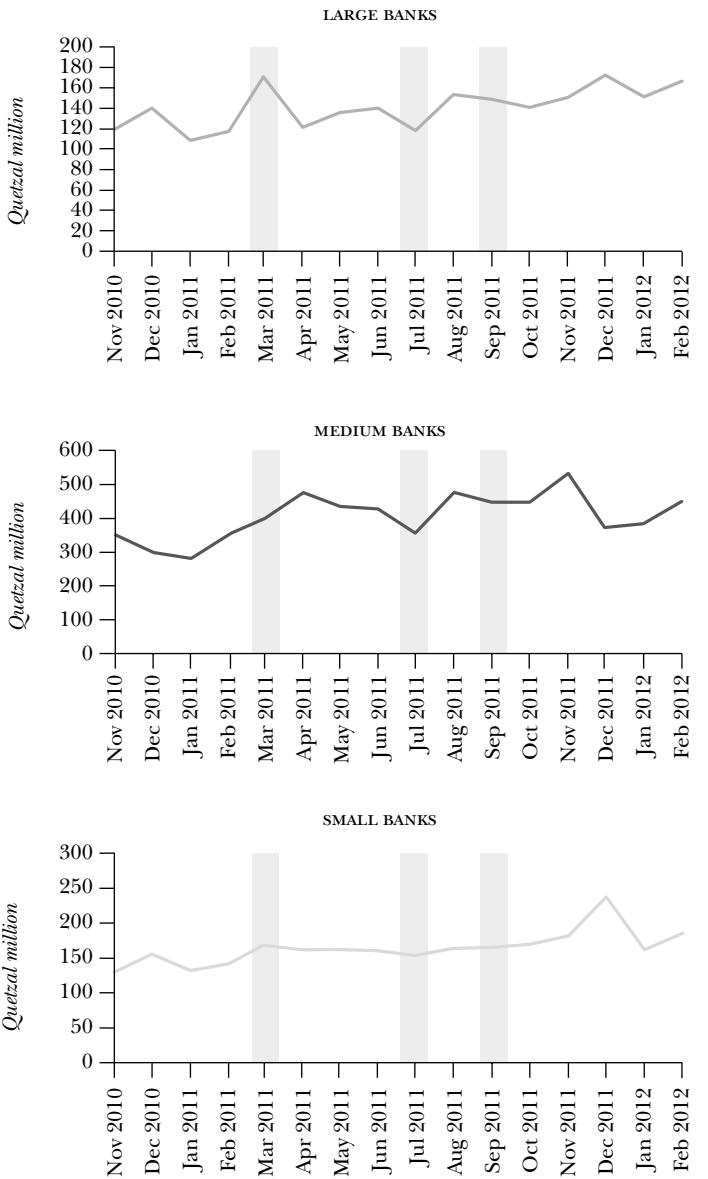
CREDIT BEHAVIOR IN NATIONAL CURRENCY TO THE LESSER BUSINESS SECTOR[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in monetary policy rate).

Figure A.4 (cont.)

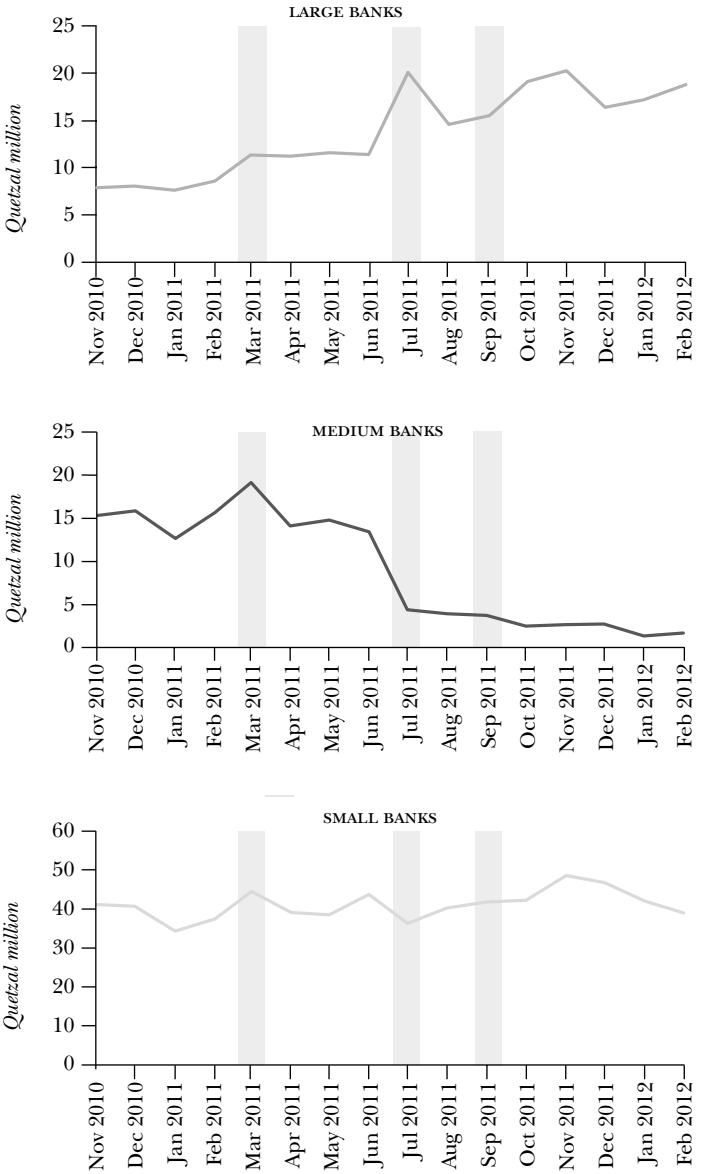
BEHAVIOR OF CREDIT IN NATIONAL CURRENCY TO THE CONSUMER SECTOR[1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in monetary policy rate).

Figure A.4 (cont.)

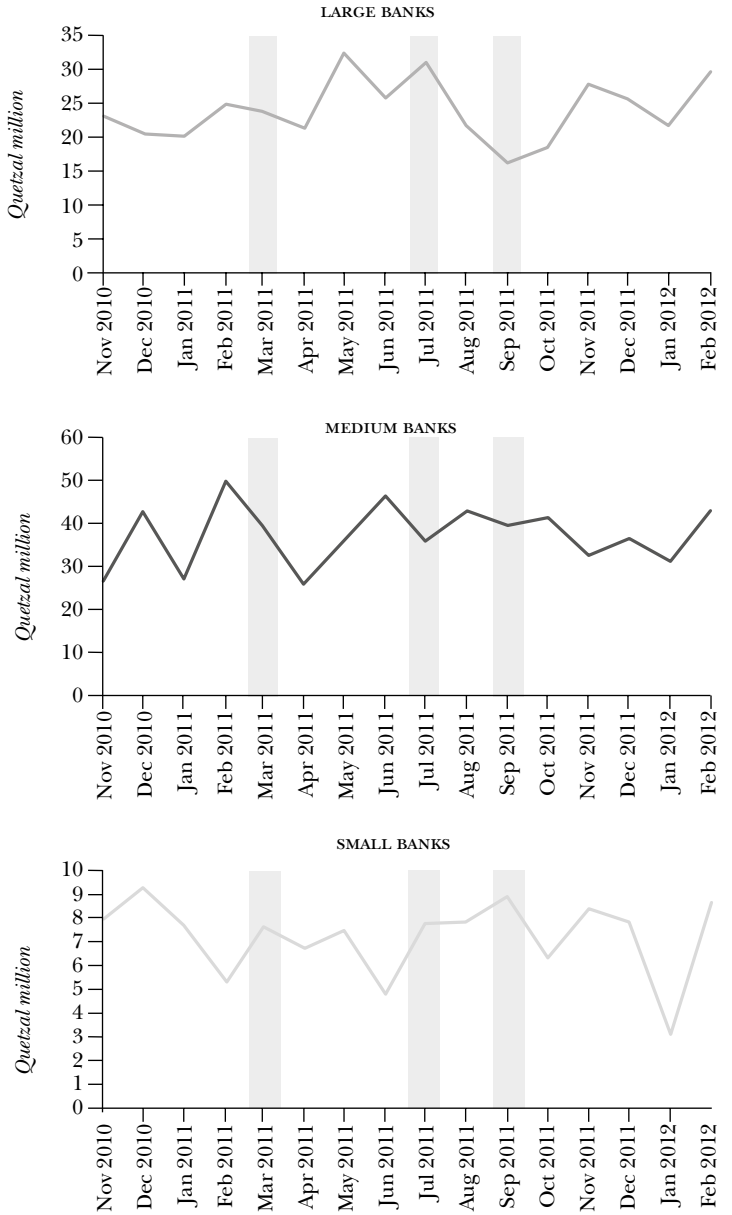
BEHAVIOR OF CREDIT IN NATIONAL CURRENCY TO THE MICROCREDIT SECTOR [1]



[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.4 (cont.)

BEHAVIOR OF MORTGAGE CREDIT IN NATIONAL CURRENCY FOR HOUSING[1]

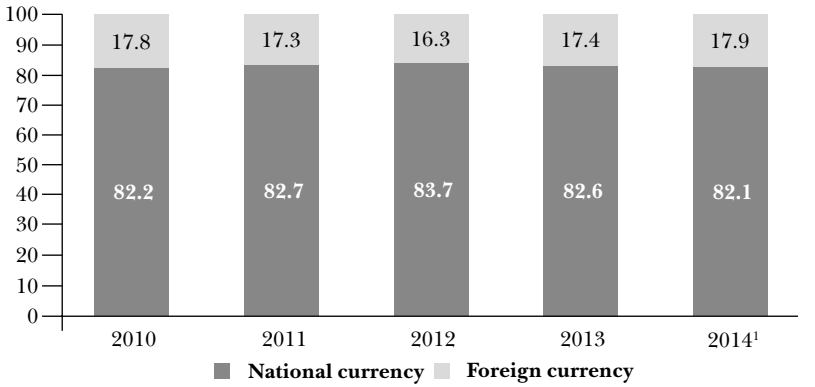


[1] The shaded area indicates episodes of contractive monetary policy (increase in the monetary policy rate).

Figure A.5

DOLLARIZATION OF THE BANKING SYSTEM

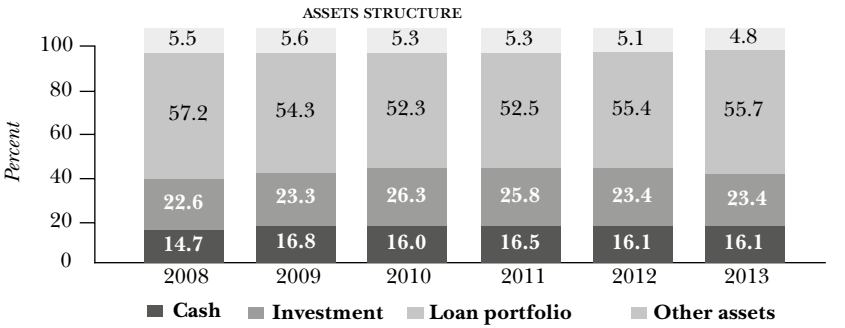
Depositary bonds
Structure by type of currency

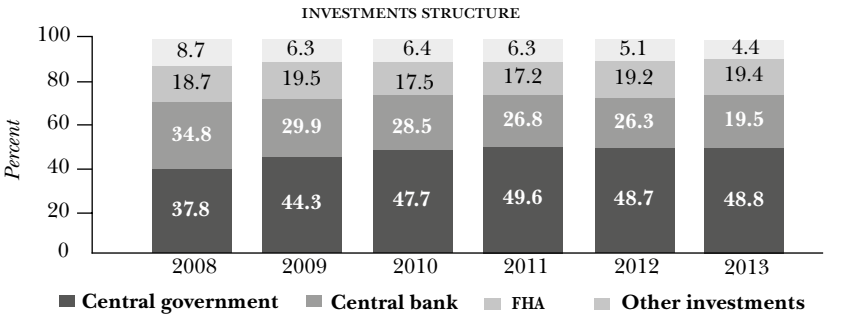


[1] September.

Figure A.6

STRUCTURE OF ASSETS AND INVESTMENTS OF THE BANKING SYSTEM[1]



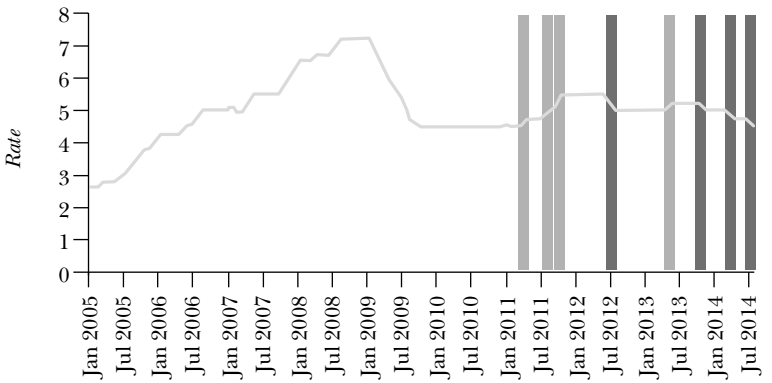


[1] The figures are as of December of each year.

Figure A.7

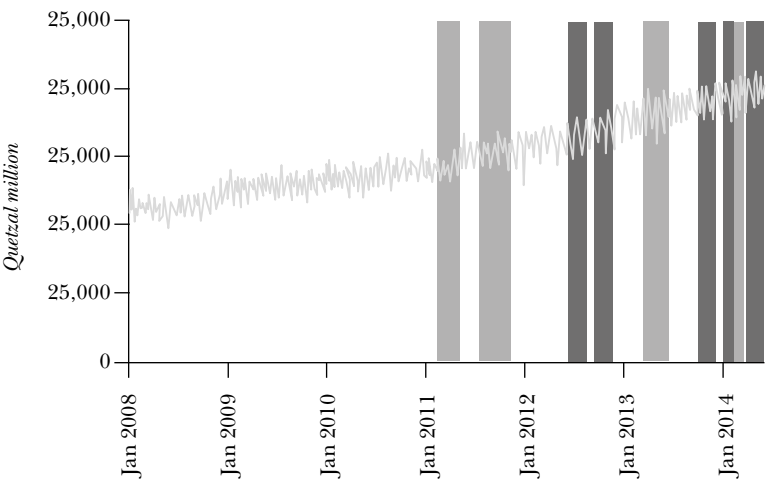
LIQUIDITY OF THE BANKING SYSTEM[1]

LEADING MONETARY POLICY RATE



LIQUID RESOURCES AVAILABLE

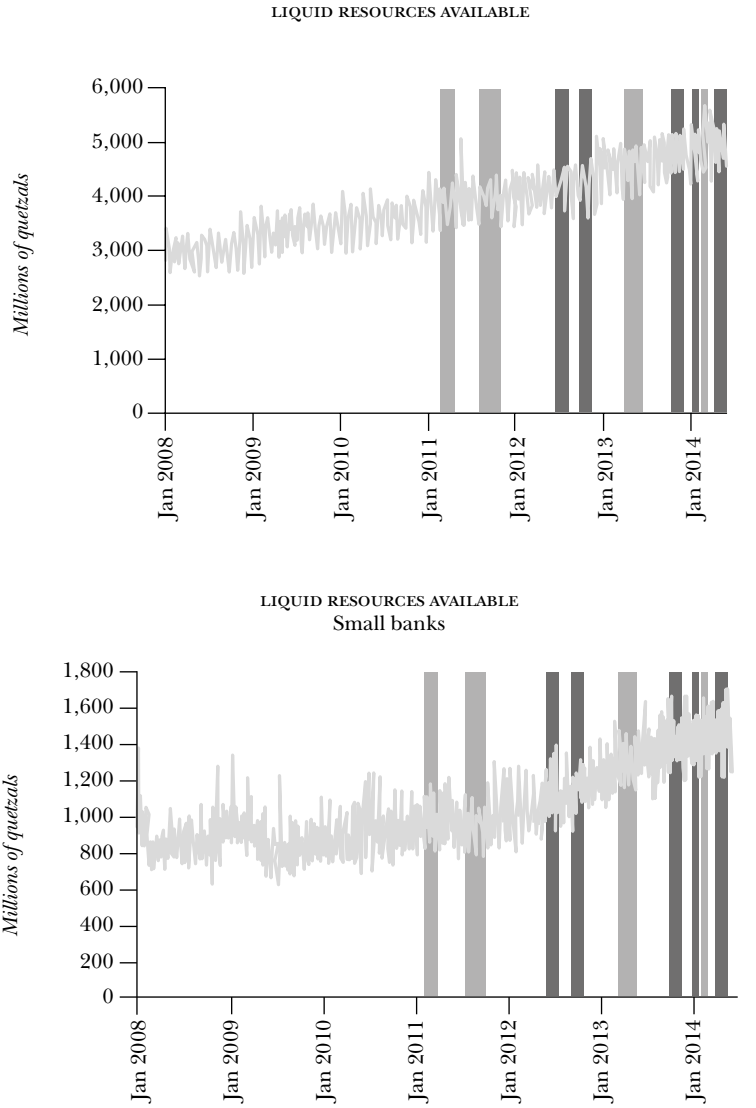
Large banks



[1] The areas in light gray indicate an episode of contractive monetary policy (increase in the monetary policy rate). The dark gray areas indicate an episode of expansive monetary policy (decrease in the monetary policy rate).

Figure A.7

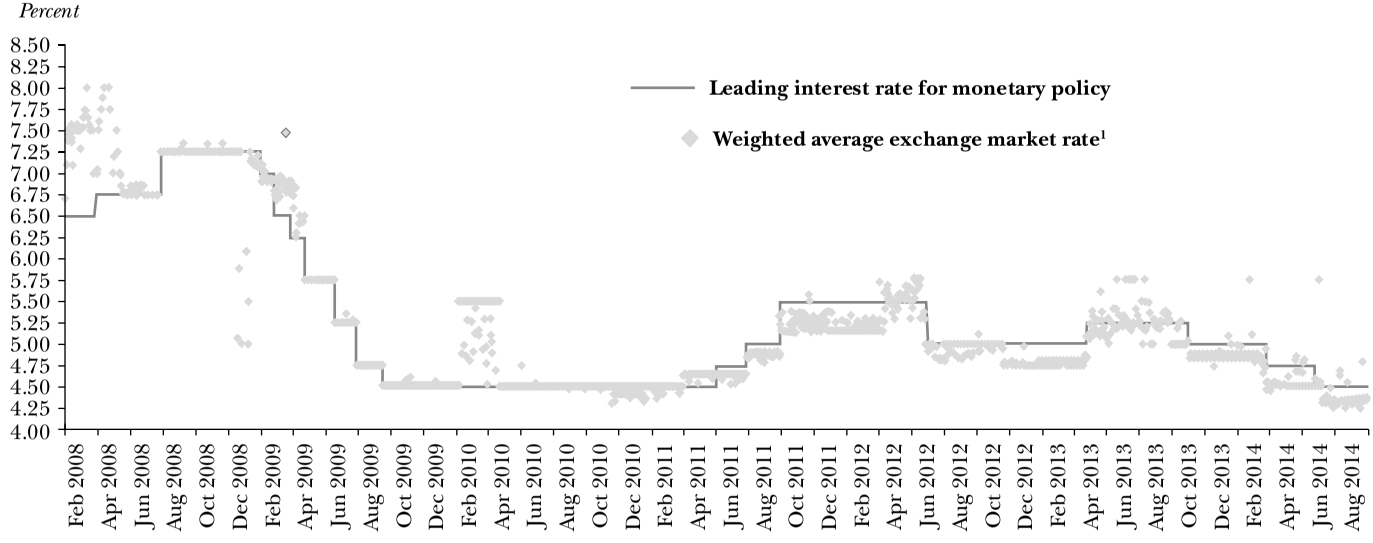
LIQUIDITY OF THE BANKING SYSTEM[1]



[1] The areas in light gray indicate an episode of contractive monetary policy (increase in the monetary policy rate). The dark gray areas indicate an episode of expansive monetary policy (decrease in the monetary policy rate).

Figure A.8

INTEREST RATE OF MONETARY POLICY AND OVERNIGHT INTEREST RATE, WEIGHTED AVERAGE OF REPO OPERATIONS IN THE STOCK MARKET AND OVER-THE COUNTER INTER-BANK MARKET



[1] As of June 1, 2011, the Execution Committee established that the term of operations would be one day. Previously, operations were carried out within seven days.

Figure C.1

INDICATORS OF THE BANKING SYSTEM

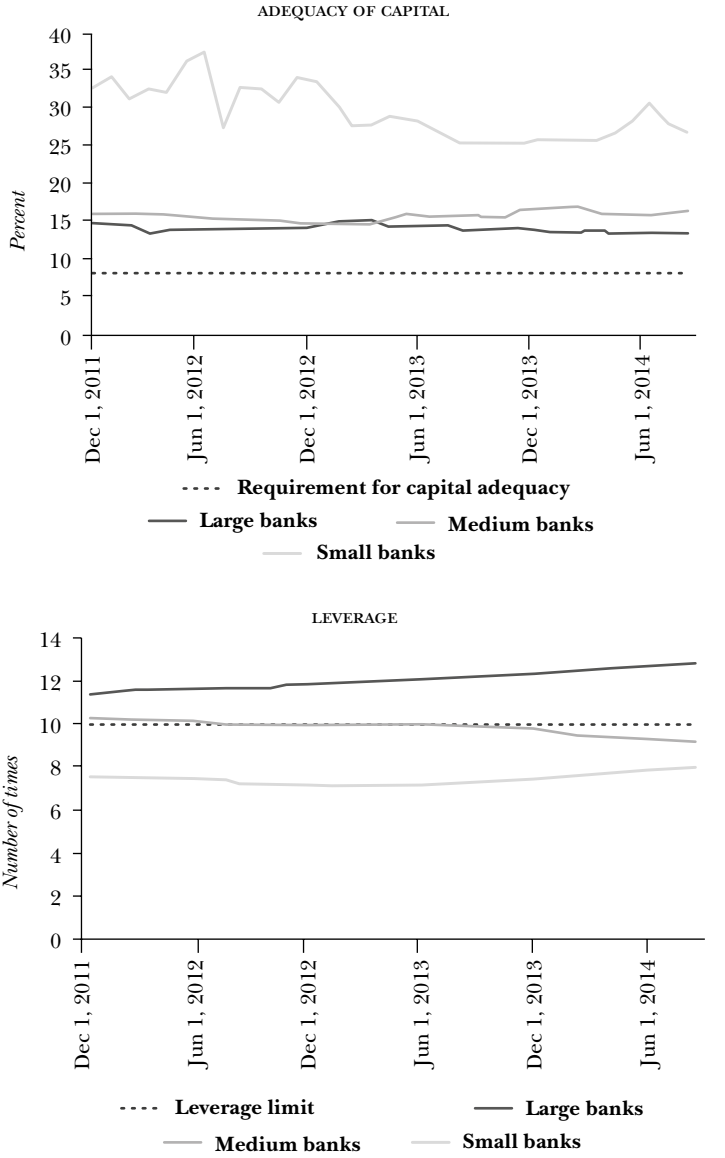
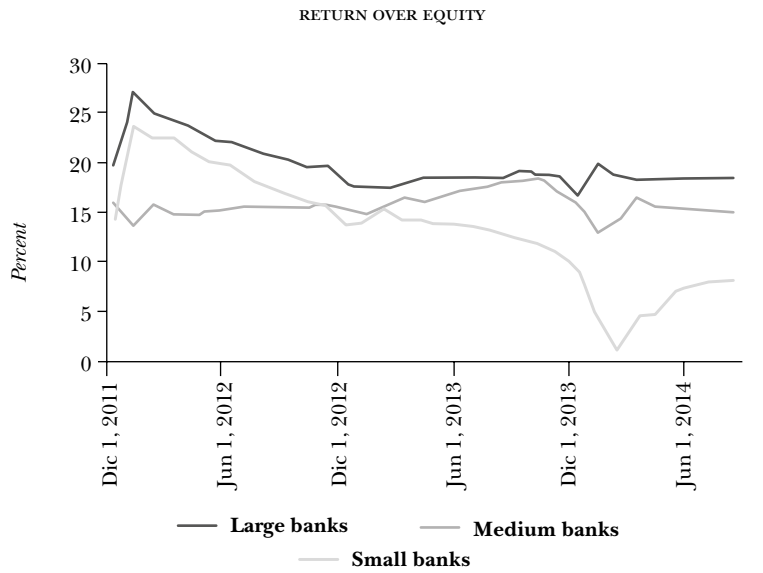
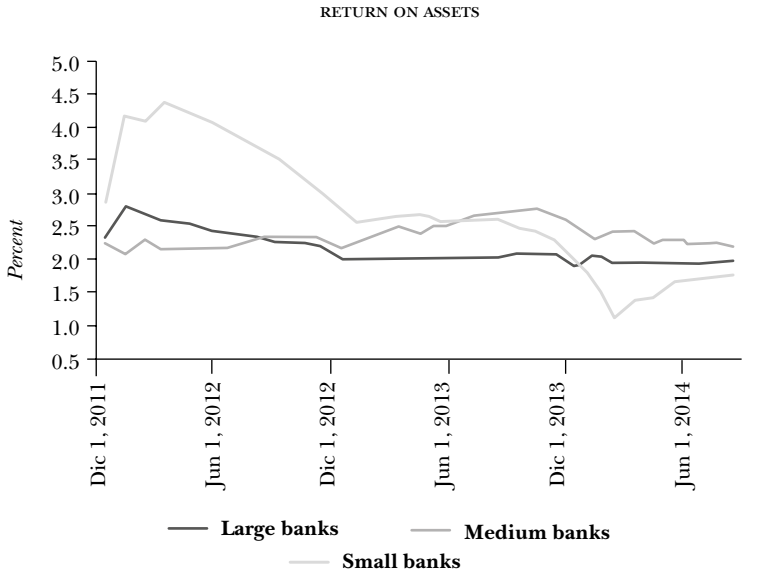


Figure C.1 (cont.)

INDICATORS OF THE BANKING SYSTEM





Annex B. Lending Channel Regressions

Table B.1

TOTAL CREDIT OF THE BANKING SYSTEM
Dependent variable: Log(total credit)
Banks: 18

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−0.4909377	0.074	−0.4619099	0.184	−0.1252282	0.614	−0.1957404	0.314
L1	0.7237534	0.025	0.8482868	0.004	−0.1167119	0.523	0.2445011	0.271
L2	−0.2069681	0.456	−0.2925259	0.113	−0.2851544	0.056	−0.1789511	0.380
L3	−0.3976827	0.160	−0.2208082	0.338	−0.083836	0.633	−0.4947765	0.033
L4	0.3203206	0.068	0.182936	0.248	0.3596766	0.104	0.651466	0
Log(MEAI)								
T	3.407028	0.052	3.388981	0.047	3.00124	0.091	3.232304	0.079
L1	−3.721268	0.216	−5.902379	0.091	−3.936543	0.202	−4.97924	0.095
L2	2.540394	0.442	4.682591	0.189	1.7337	0.560	2.15809	0.478
L3	5.10627	0.038	3.398524	0.142	2.436927	0.256	2.43657	0.234
L4	−1.39544	0.707	0.0504513	0.988	1.836709	0.541	0.5192603	0.867
Log(real exchange rate)								
T	2.606976	0.430	−0.7785922	0.802	−1.046257	0.730	1.152934	0.688
L1	−6.57062	0.044	−1.205755	0.673	−1.550082	0.525	−7.646531	0.013
L2	14.90129	0	11.70891	0	10.0457	0	13.2232	0
L3	−7.145291	0	−6.411225	0	−3.260583	0.048	−4.622826	0.007
L4	−0.7924288	0.735	−0.8922811	0.727	−2.191903	0.362	−1.273638	0.573

Log(liquidity)*interest rate								
T	0.008451	0.488	−0.0032606	0.827	−0.001048	0.457	0.0004433	0.762
L1	0.0006872	0.638	0.001013	0.546	−0.0015982	0.097	−0.0000719	0.941
L2	0.0017263	0.289	0.0015726	0.315	0.0006815	0.588	0.0017803	0.183
L3	−0.0022305	0.219	−0.0022291	0.216	−0.0035304	0.160	−0.0025581	0.251
L4	−0.0015592	0.14	−0.0018777	0.091	−0.0027257	0.025	−0.0019493	0.020
Size*interest rate								
T	−10.73332	0.003	−6.50576	0.069	−1.784911	0.670	−1.594393	0.357
L1	0.5247567	0.645	−1.904766	0.192	−0.6648962	0.276	2.265303	0.030
L2	1.646029	0.411	2.374594	0.064	3.212196	0.002	1.532912	0.282
L3	0.8998345	0.41	0.5498481	0.589	−1.51582	0.042	0.078065	0.954
L4	−0.1431472	0.894	0.5454194	0.592	0.076216	0.945	−1.194204	0.493
Capital*interest rate								
T	0.0005574	0.014	0.0004543	0.092	0.0002517	0.487	0.0000186	0.792
L1	−0.0000464	0.263	−0.0000487	0.159	0.0000307	0.444	0.0000163	0.682
L2	−0.0000518	0.148	−0.0000425	0.382	−0.0000375	0.417	−0.0000482	0.070
L3	0.000132	0.008	0.0001124	0.026	0.0001194	0.007	0.000098	0.005
L4	−0.0001159	0.187	−0.0001064	0.222	−0.000101	0.217	−0.0001001	0.211
Liquidity	−0.038205	0.562	0.0202396	0.793				
Size	80.66147	0.009	61.48712	0.047	16.3114	0.597		
Capital	−0.0027225	0.018	−0.0021448	0.088	−0.0013637	0.400		
Constant	−30.11688	0.325	−27.69959	0.348	−20.87977	0.517	−11.85381	0.697
Observations	823		823		759		823	

Table B.2

TOTAL CREDIT OF LARGE BANKS

Dependent variable: Log(total credit)

Banks: 3

	Interbank interest rate		*Repo interest rate*		*Interest rate from 1 to 7 days.*		*Policy interes rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−2.060481	0.032	−1.186908	0.257	−2.147539	0.169	−0.5126384	0.449
L1	0.3371757	0.344	−0.3101836	0.602	−1.022698	0.008	0.6399861	0.428
L2	−0.383901	0.446	−0.0632279	0.631	1.128346	0.031	0.0477821	0.720
L3	0.0461861	0.959	0.0046602	0.994	−1.397854	0.127	−0.6950076	0.343
L4	0.3352813	0.464	0.2856284	0.443	1.063632	0.199	0.5519077	0.132
Log(MEAI)								
T	−1.299923	0.704	−0.9589005	0.606	3.632756	0.002	3.455825	0.147
L1	−5.087289	0.134	−5.237427	0	−11.48038	0	−3.295123	0.099
L2	−4.612838	0.397	−5.424773	0.218	−4.163673	0.210	−1.673104	0.762
L3	6.527088	0.063	1.371275	0.681	−0.7807842	0.710	0.9770222	0.753
L4	2.9324	0.242	7.618708	0.049	9.384027	0.055	1.15092	0.235
Log(real exchange rate)								
T	−7.940776	0	−9.321351	0	−10.38663	0.005	−1.316862	0.508
L1	0.151278	0.873	1.965378	0.153	1.121857	0.685	−5.553732	0.008
L2	14.02251	0.009	9.396626	0.018	9.654653	0.003	13.29795	0.008
L3	−8.593314	0	−3.129221	0.220	−4.38664	0.008	−11.10065	0.001
L4	−2.268397	0.444	−5.112575	0.175	−1.833766	0.44	3.301395	0.058

Log(liquidity)*interest rate								
T	−0.0002191	0.994	0.0113629	0.788	0.082329	0.264	0.0040051	0.328
L1	0.0008443	0.868	−0.0013144	0.773	−0.0002662	0.954	0.0017196	0.796
L2	0.0083131	0	0.0089024	0.033	0.0043831	0.460	0.0054896	0.105
L3	0.0028068	0.529	0.0020123	0.518	0.0030621	0.400	0.0007159	0.876
L4	−0.0008173	0.748	−0.0013641	0.510	−0.0075363	0.058	−0.007266	0.051
Size*interest rate								
T	−0.6558221	0.679	−1.830743	0.287	−1.270686	0.636	0.0978354	0.877
L1	1.228524	0.553	2.536272	0.142	0.6294615	0.712	1.221393	0.567
L2	0.9397125	0.254	−1.107058	0	−0.6767586	0.523	−0.6205081	0.453
L3	−1.03512	0.333	1.112346	0.513	0.54892	0.741	−0.7801117	0.591
L4	−1.858068	0.142	−2.492131	0.075	−1.699907	0.470	−0.5478345	0.711
Capital*interest rate								
T	0.0004557	0.001	0.0002904	0.054	0.0003502	0.048	−0.0000129	0.795
L1	0.0000379	0.396	0.0000568	0.122	0.000087	0.003	0.0000364	0.413
L2	−0.0000258	0.508	−0.000067	0.217	−0.0000732	0.142	−0.0000579	0.157
L3	0.000129	0.091	0.0001573	0.026	0.0001494	0.080	0.000146	0.020
L4	−0.0001232	0.001	−0.0001266	0	−0.0001116	0.011	−0.0001051	0.001
Liquidity	0.0268869	0.862	−0.030047	0.889	−0.3739555	0.309		
Size	0.9073731	0.827	4.567614	0.358	6.711039	0.513		
Capital	−0.0024622	0	−0.0015957	0.040	−0.0018112	0.078		
Constant	29.42842	0.141	34.91201	0.004	44.01609	0	4.523113	0.826
Observations		153		153		141		153

Table B.3

TOTAL CREDIT OF MEDIUM BANKS

Dependent variable: Log(total credit)

Banks: 6

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−0.8448465	0.242	−0.8355787	0.156	0.2691549	0.544	−0.3673222	0.088
L1	0.4018894	0.102	0.2927494	0.424	0.1349061	0.346	0.8125943	0.043
L2	−0.3817442	0.240	−0.0699238	0.842	−0.4128702	0.079	−0.5704682	0.070
L3	−0.4877373	0.187	−0.7859304	0.005	0.0384806	0.788	−0.6700826	0.075
L4	0.2460712	0.435	0.2963538	0.197	−0.3357417	0.175	0.3313726	0.209
Log(MEAI)								
T	4.507404	0.210	5.381941	0.113	4.463939	0.126	1.67906	0.612
L1	−3.009558	0.174	−5.376489	0.029	−0.765239	0.536	−3.646972	0.049
L2	3.224714	0.130	4.714926	0.073	1.503945	0.458	4.744049	0.002
L3	3.125566	0.370	3.596832	0.232	2.198652	0.426	3.21037	0.271
L4	2.541359	0.457	2.064539	0.428	3.373703	0.344	2.754518	0.483
Log(real exchange rate)								
T	−0.5788985	0.795	−2.619259	0.272	−2.944582	0.344	−0.8053176	0.798
L1	3.689941	0.125	6.463213	0.094	6.133376	0.143	0.8906468	0.792
L2	9.338449	0	8.459793	0.001	6.95547	0.001	11.3831	0
L3	−7.316414	0	−7.351132	0.003	−5.569923	0.038	−8.543409	0.001
L4	−0.2102113	0.937	−0.3123799	0.919	−0.2371758	0.935	−1.003442	0.669

Log(liquidity)*interest rate								
T	0.0195852	0.441	0.0165286	0.38	−0.0064214	0.633	−0.005224	0.004
L1	0.0006105	0.514	0.0011883	0.235	−0.0009489	0.326	−0.0003612	0.712
L2	0.0031276	0.097	0.0024918	0.192	0.0020457	0.425	0.0036351	0.054
L3	−0.0008138	0.654	−0.0004847	0.753	−0.0005651	0.716	−0.0012166	0.463
L4	−0.0019539	0.259	−0.0021357	0.298	−0.0036145	0.129	−0.0034501	0.102
Size*interest rate								
T	−0.433405	0.972	−1.920377	0.872	−2.541695	0.705	−1.836952	0.624
L1	−3.406611	0.016	−3.531004	0.077	−5.063878	0.083	−3.204646	0.253
L2	5.804696	0.251	4.932536	0.277	4.55189	0.189	4.847404	0.342
L3	6.023309	0.059	6.925737	0.016	−1.973405	0.061	3.004937	0.241
L4	1.863036	0.571	2.919205	0.329	8.456508	0	5.814996	0.021
Capital*interest rate								
T	0.0002074	0.572	0.0003376	0.417	−0.0001268	0.792	−0.0000456	0.580
L1	−0.0000176	0.835	0.00000434	0.957	0.0000219	0.720	0.0000293	0.749
L2	−0.000014	0.389	−0.0000426	0.125	−0.0001322	0.312	−0.0000189	0.180
L3	0.0000267	0.577	0.0000447	0.374	0.0002281	0.343	0.00000527	0.935
L4	−0.0001118	0.005	−0.0001119	0.005	−0.0001153	0.175	−0.0001187	0
Liquidity	−0.1161879	0.329	−0.0991972	0.252	0.0040568	0.948		
Size	−4.743059	0.940	−0.9659825	0.988	24.87261	0.193		
Capital	−0.0011253	0.619	−0.0018386	0.464	0.0001721	0.936		
Constant	−47.2888	0	−46.52654	0.002	−50.49184	0.003	−36.52279	0.006
Observations		306		306		282		306

Table B.4

TOTAL CREDIT OF SMALL BANKS

Dependent variable: Log(total credit)

Banks: 9

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−0.5413136	0.398	−0.7210839	0.232	2.115953	0.068	−0.1712745	0.621
L1	1.338554	0.052	1.350212	0.020	−0.2075881	0.450	0.0410789	0.939
L2	−0.7575616	0.200	−0.6945605	0.021	−0.3154399	0.308	−0.3683911	0.558
L3	−0.4407134	0.329	−0.1647669	0.582	−0.2523904	0.412	−0.4146268	0.466
L4	0.2151312	0.490	−0.0102199	0.948	0.6231161	0.069	0.7971114	0.004
Log(MEAI)								
T	4.402802	0.139	2.914529	0.325	1.812233	0.614	6.903398	0.015
L1	−4.956174	0.407	−9.157553	0.264	−6.177943	0.233	−9.81595	0.100
L2	1.849494	0.793	5.399663	0.472	4.566799	0.53	−0.5150726	0.947
L3	3.4549	0.501	1.730122	0.772	3.362041	0.468	0.2544303	0.954
L4	−11.04304	0.129	−8.028912	0.228	0.2236906	0.968	−2.718774	0.669
Log(real exchange rate)								
T	2.849307	0.680	−2.368695	0.750	−3.189563	0.643	−0.7417765	0.921
L1	−14.33659	0.023	−5.761743	0.230	−4.290599	0.227	−13.46916	0.026
L2	20.13806	0.022	15.4437	0.071	14.6427	0.024	16.65633	0.022
L3	−12.45281	0.004	−11.50043	0.005	−4.422712	0.160	−3.596682	0.322
L4	0.9123698	0.822	0.7302012	0.874	−4.659553	0.392	−1.670999	0.718

Log(liquidity)*interest rate								
T	0.0039437	0.709	−0.00229	0.821			0.0025841	0.147
L1	0.0022334	0.448	0.0026576	0.404	0.0011955	0.666	0.000627	0.782
L2	0.0017698	0.379	0.002001	0.324	0.002435	0.274	0.0012469	0.469
L3	−0.0031611	0.233	−0.0031154	0.248	−0.0022425	0.129	−0.0041326	0.164
L4	−0.0015504	0.418	−0.0021585	0.25	−0.0001199	0.955	−0.0017335	0.277
Size*interest rate								
T	39.23574	0.484	104.129	0.089	−71.59759	0.233	22.60016	0.531
L1	−17.43401	0.733	−39.51217	0.457	−7.405139	0.872	−1.021446	0.980
L2	58.99465	0.189	75.80798	0.092	33.26888	0.314	49.66126	0.210
L3	−10.92922	0.706	−27.85802	0.367	−36.661	0.290	−23.4312	0.326
L4	17.59433	0.458	33.06268	0.174	2.232245	0.898	12.1443	0.635
Capital*interest rate								
T	−0.0019595	0.515	−0.0040948	0.167	0.0019244	0.562	−0.0001449	0.884
L1	−0.0000313	0.956	0.0001302	0.732	−0.0003049	0.564	−0.0000463	0.904
L2	−0.0006008	0.532	−0.0004903	0.654	−0.0003967	0.725	−0.0001849	0.821
L3	0.0007631	0.334	0.0003678	0.631	0.0010778	0.267	0.0008977	0.252
L4	0.0001287	0.862	0.0002938	0.724	−0.0005383	0.257	−0.0002886	0.740
Liquidity	0.0039437	0.709	0.027898	0.596	0.3994744	0.006		
Size	−115.9692	0.718	−388.4445	0.127	649.4785	0.116		
Capital	0.01168	0.494	0.0220077	0.156	−0.0101861	0.592		
Constant	37.42318	0.557	42.85562	0.517	−23.22178	0.706	35.95073	0.601
Observations		364		364		336		364

Table B.5

COMMERCIAL CREDIT FROM BANK SYSTEM

Dependent variable: Log(commercial credit)

Banks: 18

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−0.1952672	0.739	−0.4657869	0.529	0.5308674	0.517	−0.1168049	0.708
L1	0.5888104	0.004	1.082555	0	0.2206208	0.463	0.4667097	0.094
L2	−0.1810883	0.387	−0.8716866	0.013	−0.7316877	0.003	−0.4383737	0.123
L3	−0.5218952	0.09	0.1396752	0.657	0.0922854	0.717	−0.6496786	0.006
L4	0.4529672	0.04	0.0779143	0.713	−0.141577	0.652	0.5816782	0.003
Log(MEAI)								
T	2.413952	0.43	1.110489	0.736	6.056361	0.005	3.965276	0.151
L1	−2.254114	0.581	−2.344005	0.610	1.122593	0.802	−0.6300461	0.870
L2	−3.882751	0.183	−1.020404	0.750	−6.777204	0.015	−3.241335	0.285
L3	10.89977	0.01	6.839705	0.070	5.860846	0.097	6.023036	0.063
L4	2.630294	0.482	4.260845	0.281	2.202356	0.591	0.4122242	0.907
Log(real exchange rate)								
T	0.8435724	0.782	−3.43049	0.205	−1.286432	0.68	1.207124	0.631
L1	−4.510552	0.096	2.976957	0.351	−1.803012	0.574	−6.049659	0.019
L2	16.24715	0	10.71674	0.001	9.316857	0.001	13.75906	0
L3	−7.561572	0.004	−6.024797	0.008	−2.431373	0.163	−7.23363	0
L4	1.76508	0.635	0.9735073	0.792	0.9507437	0.761	1.404284	0.674

Log(liquidity)*interest rate								
T	−0.0166932	0.546	−0.017863	0.566	−0.0234378	0.56	−0.0057465	0.019
L1	−0.0003318	0.764	0.0000588	0.961	0.0000812	0.963	−0.0004977	0.701
L2	0.0010873	0.489	0.0006748	0.668	−0.000219	0.897	0.0009505	0.535
L3	0.0019161	0.256	0.0021985	0.217	0.0009208	0.535	0.001739	0.329
L4	−0.0003338	0.855	−0.0010641	0.569	−0.0018845	0.343	−0.0013926	0.499
Size*interest rate								
T	−7.300077	0.184	−1.072763	0.837	−1.503694	0.79	−2.456129	0.398
L1	1.420129	0.215	−1.648875	0.325	−1.737466	0.178	1.379605	0.352
L2	1.562335	0.509	3.065453	0.01	4.774158	0	3.218865	0.091
L3	0.8476729	0.511	0.1236167	0.933	−2.63547	0.019	0.1161459	0.941
L4	0.573178	0.711	1.658812	0.29	3.516021	0.068	0.1412326	0.954
Capital*interest rate								
T	0.0002849	0.47	0.000072	0.849	−0.0000437	0.898	−0.0000431	0.576
L1	−0.0000203	0.686	−0.0000182	0.648	0.0000424	0.41	8.08E−06	0.891
L2	−0.0000251	0.573	−0.0000211	0.735	−2.55E−06	0.965	−0.000017	0.65
L3	0.0001483	0.014	0.0001334	0.02	0.0001063	0.001	0.0001251	0.001
L4	−0.0002819	0	−0.0002804	0	−0.0002178	0.004	−0.0002702	0
Liquidity	0.0570598	0.683	0.0607674	0.694	0.0817978	0.669		
Size	47.22299	0.301	17.57713	0.682	22.32312	0.209		
Capital	−0.0016723	0.438	−0.000553	0.786	−0.0003297	0.86		
Constant	−56.02469	0.059	−47.29661	0.093	−44.76053	0.164	−30.43354	0.255
Observations		734		734		674		734

Table B.6

COMMERCIAL CREDIT OF LARGE BANKS

Dependent variable: Log(comercial credit)

Banks: 3

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−2.746482	0.003	−1.137441	0.311	−2.717861	0.118	−0.7760462	0.352
L1	0.518873	0.030	−0.2597881	0.677	−1.279654	0	0.7668683	0.367
L2	−0.5526882	0.536	−0.2943018	0.467	1.329904	0.064	0.1922495	0.667
L3	0.0374358	0.975	0.2241838	0.746	−1.762833	0.143	−0.9904491	0.321
L4	0.4670497	0.353	0.2755625	0.418	1.184378	0.227	0.6267173	0.167
Log(MEAI)								
T	−1.735387	0.689	−2.556433	0.299	5.774162	0.004	4.873107	0.137
L1	−6.990026	0.095	−5.755376	0	−12.82058	0.002	−4.169698	0.035
L2	−6.611359	0.352	−7.315641	0.218	−6.389268	0.180	−3.040581	0.667
L3	6.581078	0.176	−0.4042687	0.926	−4.996485	0.022	−1.00207	0.778
L4	4.955312	0.137	11.04053	0.016	11.09481	0.130	2.151317	0.186
Log(real exchange rate)								
T	−11.18208	0	−13.1494	0	−13.68244	0	−2.174917	0.494
L1	0.6354872	0.681	4.194613	0.001	2.365351	0.485	−5.905318	0.051
L2	17.12262	0.014	10.25472	0.050	9.063164	0.056	14.38041	0.029
L3	−9.012654	0	−2.317428	0.489	−4.262575	0.200	−11.57745	0.031
L4	−3.872277	0.297	−7.164972	0.034	−1.328558	0.68	3.413233	0.130

Log(liquidity)*interest rate								
T	0.0003048	0.991	−0.0014781	0.974	0.1047907	0.19	0.0089379	0.045
L1	0.0018335	0.818	−0.0013851	0.841	0.0002499	0.969	0.0029882	0.768
L2	0.0105145	0.002	0.0119759	0.047	0.0063183	0.466	0.0073571	0.176
L3	0.0054724	0.422	0.0035033	0.478	0.0052676	0.33	0.0024423	0.717
L4	0.0003224	0.912	−0.0001545	0.956	−0.0094942	0.033	−0.0083253	0.028
Size*interest rate								
T	−1.508297	0.382	−2.676631	0.219	0.9576013	0.816	0.4024897	0.659
L1	1.115259	0.641	3.324261	0.073	0.1029022	0.953	1.107877	0.639
L2	2.001821	0.08	−1.224608	0.186	−0.3744608	0.822	−0.343352	0.649
L3	−1.816777	0.155	1.197361	0.567	0.9557564	0.684	−1.14359	0.535
L4	−2.515497	0.073	−3.438104	0.046	−1.98364	0.468	−0.8276232	0.627
Capital*interest rate								
T	0.0006411	0	0.0003414	0.033	0.0002822	0.287	−2.72E−06	0.964
L1	0.0000428	0.358	0.0000728	0.042	0.0001286	0	0.0000456	0.293
L2	−0.0000273	0.669	−0.0000876	0.288	−0.0000834	0.266	−0.0000725	0.318
L3	0.0001658	0.089	0.000205	0.018	0.0001838	0.065	0.000187	0.026
L4	−0.000149	0.001	−0.0001526	0	−0.0001037	0.029	−0.0001145	0.004
Liquidity	0.0511299	0.714	0.0613922	0.798	−0.4530979	0.269		
Size	7.721098	0.047	10.23538	0.142	−6.949472	0.727		
Capital	−0.0033931	0	−0.0018498	0.034	−0.001464	0.326		
Constant	44.60479	0.192	47.91921	0.033	69.76511	0.002	13.97103	0.640
Observations		153		153		141		153

Table B.7

COMMERCIAL CREDIT OF MEDIUM BANKS

Dependent variable: Log(commercial credit)

Banks: 6

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	0.0124608	0.99	−0.4375447	0.731	−0.4956476	0.749	−0.3119854	0.560
L1	0.7335517	0.054	1.017053	0.001	0.4990262	0.12	0.852573	0.166
L2	−0.878847	0.014	−1.002772	0.066	−0.9171677	0.009	−0.9015741	0.025
L3	−0.9174303	0.033	−0.8145425	0.074	0.2167642	0.638	−1.030245	0.023
L4	0.7689661	0.058	0.6203104	0.150	−0.8685804	0.034	0.662068	0.049
Log(MEAI)								
T	1.949191	0.721	2.833494	0.650	3.851696	0.304	1.941213	0.605
L1	2.190835	0.661	0.0346542	0.996	3.501251	0.553	1.67811	0.800
L2	0.1825088	0.934	4.070513	0.233	−6.108447	0.149	0.1025886	0.962
L3	6.022093	0.166	2.938023	0.333	1.990034	0.265	3.185463	0.176
L4	−3.015551	0.295	−1.733416	0.201	−1.051339	0.809	−1.901406	0.526
Log(real exchange rate)								
T	7.513458	0.043	2.451508	0.477	2.195322	0.680	6.38855	0.138
L1	−4.812092	0.222	4.832029	0.223	−1.485344	0.797	−7.954879	0.009
L2	12.06689	0.002	5.948958	0.068	6.807236	0.001	12.82469	0.001
L3	−10.30706	0.026	−8.762593	0.010	−1.578002	0.565	−7.856664	0.094
L4	2.278327	0.611	2.075186	0.641	−1.609332	0.584	−0.7187891	0.871

Log(liquidity)*interest rate								
T	0.0012942	0.969	−0.0017748	0.966	0.0086592	0.851	−0.007621	0
L1	0.002074	0.182	0.0033987	0.015	0.0025264	0.013	0.00224	0.193
L2	0.0023084	0.119	0.0008646	0.627	0.001227	0.695	0.0036538	0.095
L3	0.0024167	0.388	0.003597	0.198	0.0033104	0.046	0.0029959	0.260
L4	0.0010212	0.705	0.0009511	0.722	0.001633	0.628	0.0008993	0.801
Size*interest rate								
T	1.9032	0.913	4.063233	0.819	−15.05949	0.565	−6.111284	0.527
L1	3.030703	0.685	−0.2990812	0.978	0.1848929	0.988	2.387488	0.763
L2	10.58401	0.048	11.18339	0.010	9.64897	0.05	7.151587	0.387
L3	5.754053	0.179	7.208232	0.139	−8.05	0.176	1.234019	0.746
L4	−1.803765	0.668	−1.927377	0.685	11.88569	0	4.264168	0.111
Capital*interest rate								
T	−0.0012571	0.015	−0.0007931	0.077	0.0008332	0.462	−0.0000155	0.917
L1	−0.000075	0.712	−0.0000991	0.592	0.0000451	0.738	−0.0000736	0.743
L2	0.0000796	0.253	0.0000346	0.471	−0.000183	0.409	0.0000491	0.475
L3	0.00000211	0.933	0.0000412	0.358	0.0001882	0.15	0.00000165	0.976
L4	−0.0002798	0	−0.0002823	0	0.0001966	0.552	−0.0001585	0.060
Liquidity	−0.0352769	0.828	−0.0242741	0.904	−0.0866666	0.687		
Size	−59.50757	0.216	−50.90979	0.181	40.24076	0.663		
Capital	0.0066779	0.005	0.0043059	0.053	−0.0043098	0.404		
Constant	−43.15354	0.063	−45.66382	0.069	−8.332783	0.575	−22.73011	0.293
Observations		300		300		276		300

Table B.8

COMMERCIAL CREDIT OF SMALL BANKS

Dependent variable: Log(commercial credit)

Banks: 9

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	0.5181065	0.719	−1.34532	0.327	1.470955	0.057	0.5683128	0.243
L1	0.1043881	0.718	1.218945	0.021	0.1182979	0.847	−0.1056033	0.868
L2	0.204834	0.502	−1.073738	0.065	−0.6762621	0.094	−0.1346671	0.852
L3	−0.5404779	0.144	0.5525608	0.168	0.2209939	0.554	−0.2381973	0.605
L4	0.016434	0.929	−0.4017794	0.277	−0.0732487	0.859	0.1580966	0.686
Log(MEAI)								
T	5.976343	0.246	2.085996	0.742	5.928652	0.327	6.805235	0.127
L1	−4.188342	0.711	−2.243686	0.864	0.3409801	0.965	−3.983015	0.655
L2	−5.940211	0.294	−1.650497	0.776	−9.139661	0.187	−7.024099	0.223
L3	12.88644	0.108	10.71028	0.218	12.36065	0.176	10.36036	0.107
L4	−4.619261	0.502	−2.33971	0.706	0.1977204	0.97	−4.423334	0.587
Log(real exchange rate)								
T	0.5883475	0.84	−0.8838548	0.781	−1.567794	0.585	0.6700556	0.841
L1	−4.674338	0.409	1.340651	0.817	−0.3710512	0.944	−4.917068	0.389
L2	14.40596	0.032	10.83902	0.126	9.21181	0.163	13.45374	0.001
L3	−8.064161	0.229	−8.372164	0.125	−4.002546	0.318	−7.265279	0.071
L4	4.94087	0.436	5.223512	0.366	4.102706	0.363	5.87753	0.289

Log(liquidity)*interest rate								
T	−0.0240081	0.601	0.0081448	0.832	−0.0435454	0.196	−0.0020396	0.388
L1	−0.0030471	0.242	−0.0023363	0.4	−0.0000645	0.988	−0.0036219	0.15
L2	−0.0001353	0.963	−0.000304	0.922	0.0007632	0.813	−0.0011193	0.702
L3	−0.0015179	0.249	−0.0009169	0.293	−0.0006074	0.637	−0.0022942	0.006
L4	0.0023654	0.352	0.0019765	0.459	0.0003056	0.893	0.0008956	0.673
Size*interest rate								
T					−31.6423	0.601	−17.12293	0.571
L1	26.77212	0.414	−1.306842	0.976	−6.204653	0.883	20.98064	0.54
L2	−4.84202	0.729	24.42041	0.117	−17.29096	0.481	0.2020334	0.991
L3	6.432083	0.692	−11.64778	0.121	8.532964	0.682	−4.433993	0.764
L4	18.65982	0.428	28.44896	0.123	18.72083	0.38	15.52189	0.599
Capital*interest rate								
T	0.0011121	0.653	0.0018113	0.444	−0.0014825	0.803	−0.0010785	0.031
L1	0.0012515	0.004	0.0007989	0.218	−0.000241	0.723	0.0012589	0.066
L2	−0.0004159	0.772	0.0001012	0.952	0.0007149	0.645	0.0001022	0.943
L3	0.0012254	0.037	0.0007986	0.307	0.0005399	0.375	0.0011261	0.008
L4	−0.0006103	0.358	−0.0006268	0.408	−0.0003554	0.748	−0.0008428	0.174
Liquidity	0.1130941	0.638	−0.0517698	0.793	0.2026051	0.195		
Size	79.32864	0.809	−205.6554	0.396	229.5736	0.536		
Capital	−0.0117136	0.43	−0.0163471	0.247	0.0039388	0.903		
Constant	−32.91442	0.157	−39.66989	0.051	−64.08103	0.011	−21.12529	0.455
Observations		281		281		257		281

Table B.9

CONSUMER CREDIT OF THE BANKING SYSTEM

Dependent variable: Log(consumer credit)

Banks: 18

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−0.508486	0.124	−0.4559609	0.132	−0.4987562	0.353	−0.1814174	0.415
L1	0.3817457	0.008	0.184955	0.319	0.0410404	0.864	0.491845	0.047
L2	−0.2456633	0.006	0.2816057	0.173	−0.2653019	0.102	−0.2602982	0.042
L3	−0.264208	0.029	−0.7273989	0.004	0.1183518	0.344	−0.3048213	0.006
L4	0.3063568	0.046	0.4736485	0.008	0.2543522	0.030	0.4832584	0
Log(MEAI)								
T	3.678627	0.018	4.327084	0.005	1.244175	0.549	1.666999	0.320
L1	−0.8951289	0.742	−3.172934	0.255	−1.543023	0.638	−3.634583	0.185
L2	4.276038	0.114	5.608634	0.034	4.353367	0.162	4.263249	0.121
L3	2.650963	0.327	4.066075	0.108	4.6854	0.066	4.53865	0.103
L4	−2.455379	0.263	−2.993435	0.195	0.8508831	0.760	0.8246218	0.703
Log(real exchange rate)								
T	−0.7935599	0.593	−1.407786	0.290	−3.247731	0.027	−2.396276	0.060
L1	−0.8619887	0.725	0.6822708	0.754	2.436969	0.468	−1.943461	0.445
L2	5.636247	0.025	5.305556	0.002	5.856303	0.002	8.351389	0.001
L3	−4.816378	0.001	−5.362725	0	−4.098013	0.003	−4.080075	0.005
L4	−2.023701	0.291	−1.356471	0.472	−3.650795	0.075	−2.369832	0.160

Log(liquidity)*interest rate								
T	0.0326708	0.029	0.0269111	0.060	0.0193	0.240	0.0007505	0.501
L1	−0.0006089	0.585	−0.0006957	0.540	−0.0005402	0.708	−0.00004	0.973
L2	0.0020022	0.034	0.0021548	0.032	0.0029133	0.016	0.0025676	0.007
L3	0.0014762	0.181	0.0014476	0.204	0.0018806	0.184	0.0016954	0.198
L4	0.0001961	0.698	0.0003296	0.543	−0.0003408	0.653	−0.000289	0.686
Size*interest rate								
T	2.242759	0.362	0.7171308	0.754	−1.965476	0.522	1.643149	0.204
L1	−1.149859	0.046	−0.4531029	0.522	−0.8503253	0.358	−1.80682	0.021
L2	1.008525	0.031	0.0852247	0.905	0.3446335	0.611	1.252448	0.174
L3	0.8743333	0.329	1.24825	0.259	−0.8324535	0.256	0.6195622	0.494
L4	−1.634419	0.146	−1.146926	0.335	−0.5188997	0.513	−1.458757	0.220
Capital*interest rate								
T	−0.0002026	0.363	−0.0001145	0.575	0.0002338	0.255	−0.0000708	0.002
L1	−7.24E−07	0.968	9.99E−06	0.520	0.0000148	0.450	5.55E−06	0.755
L2	−0.00004	0.013	−0.0000516	0.002	−0.0000483	0.139	−0.0000402	0.007
L3	0.0000357	0.058	0.0000442	0.015	0.0000124	0.654	0.0000274	0.240
L4	−0.0000494	0.174	−0.0000655	0.091	−0.0000473	0.097	−0.0000753	0.053
Liquidity	−0.162668	0.028	−0.1300654	0.063	−0.090523	0.263		
Size	−7.191554	0.708	4.235661	0.799	13.84144	0.486		
Capital	0.0006785	0.555	0.0001708	0.866	−0.0017987	0.088		
Constant	−25.17243	0.261	−30.14078	0.210	−36.28096	0.110	−30.91736	0.142
Observations		793		793		729		793

Table B.10

CONSUMER CREDIT OF MEDIUM BANKS

Dependient variable: Log(consumer credit)

Banks: 6

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	−1.678186	0.082	−1.184656	0.121	−0.508465	0.278	−0.1440416	0.326
L1	0.3325247	0.005	−0.3169102	0.293	−0.0974718	0.756	0.9099204	0.012
L2	−0.3223165	0.059	0.6295952	0.119	−0.2148955	0.365	−0.7985492	0.005
L3	−0.5724017	0.090	−1.297863	0.009	0.2147636	0.132	−0.6087405	0.046
L4	0.7645619	0.124	0.9758033	0.035	0.2984903	0.202	0.8322986	0.051
Log(MEAI)								
T	7.390604	0.073	9.176843	0.039	0.5354771	0.876	1.546356	0.556
L1	−7.942219	0.001	−10.42584	0	−7.386049	0.028	−10.8876	0.001
L2	9.258991	0.042	8.803011	0.033	10.16421	0.009	10.49764	0.022
L3	−4.554498	0.019	−1.266963	0.653	−0.7045347	0.733	−0.6529453	0.720
L4	1.746347	0.647	−0.2435631	0.952	5.412033	0.144	5.022261	0.093
Log(real exchange rate)								
T	−2.582821	0.265	−2.343108	0.244	−6.118255	0.004	−4.079473	0.034
L1	2.62105	0.595	1.629523	0.681	8.969606	0.178	2.316299	0.629
L2	5.016026	0.077	6.727463	0.003	4.798638	0.126	8.942561	0
L3	−7.061614	0	−8.778237	0	−8.22987	0	−8.476565	0
L4	0.8267003	0.728	2.306947	0.291	0.3774674	0.886	0.6475282	0.836

Log(liquidity)*interest rate								
T	0.0699889	0.033	0.0640837	0.013	−0.0025223	0.931	−0.000666	0.644
L1	−0.0004322	0.758	−0.0003291	0.800	−0.001521	0.428	−0.0004444	0.744
L2	0.0023312	0	0.0020642	0	0.0029411	0.009	0.0031305	0.006
L3	−0.0005342	0.737	−0.0010047	0.467	−0.001089	0.588	−0.0014983	0.237
L4	−0.0006634	0.567	−0.0006266	0.600	−0.0044718	0.105	−0.0030497	0.099
Size*interest rate								
T	0.9581948	0.862	−5.754769	0.128	5.550391	0.081	1.086911	0.662
L1	−5.862591	0.069	−2.327119	0.551	−5.402918	0.304	−8.115613	0.056
L2	5.895959	0.032	3.326273	0.121	6.213572	0.073	9.706246	0.005
L3	7.0428	0.102	7.424869	0.127	0.6943676	0.867	6.114332	0.191
L4	−10.8494	0.198	−9.597725	0.206	−5.066277	0.317	−10.85165	0.165
Capital*interest rate								
T	0.0005308	0.079	0.0005467	0.121	0.0004215	0.349	−0.000037	0.250
L1	−7.76E−06	0.908	0.0000437	0.386	0.000054	0.248	0.0000191	0.657
L2	−0.000052	0.082	−0.0000733	0	−0.0002783	0.128	−0.0000682	0.091
L3	0.0000272	0.620	0.000037	0.495	−0.000062	0.851	0.00000674	0.902
L4	0.0000382	0.286	0.0000489	0.131	0.0001509	0.309	0.0000483	0.309
Liquidity	−0.3476285	0.028	−0.3124355	0.011	0.0063333	0.965		
Size	8.72808	0.759	30.67346	0.043	−15.50523	0.531		
Capital	−0.0029303	0.060	−0.0031844	0.080	−0.0023618	0.274		
Constant	−15.94507	0.536	−19.51749	0.433	−33.28763	0.185	−23.32263	0.261
Observations		306		306		282		306

Table B.11

CONSUMMER CREDIT OF SMALL BANKS

Dependent variable: Log(consumer credit)

Banks: 9

	Interbank interest rate		*Repo interest rate*		*1-to-7-days interest rate*		*Policy interest rate*	
Variable	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*	*Coefficient*	p *value*
Interest rate								
T	0.7816919	0.413	0.3393521	0.678	−0.7269764	0.302	−0.2950523	0.413
L1	0.4382741	0.033	0.3773966	0.146	0.3427675	0.452	0.3643891	0.382
L2	−0.313859	0.002	0.0821507	0.797	−0.5543495	0.172	−0.2436027	0.277
L3	−0.3089103	0.018	−0.6947387	0.042	0.2369871	0.395	−0.2415755	0.083
L4	0.5201907	0.014	0.6559587	0.013	0.1894788	0.276	0.5889466	0
Log(MEAI)								
T	4.468997	0.046	5.222764	0.001	4.387605	0.171	2.469467	0.368
L1	2.275046	0.612	−0.6395372	0.886	4.784449	0.460	0.6492252	0.875
L2	2.02785	0.284	5.156365	0.015	0.7656722	0.798	1.780561	0.476
L3	8.047917	0.060	8.31077	0.050	9.472557	0.045	7.963802	0.064
L4	−6.212098	0	−5.960052	0.008	−3.590953	0.292	−3.699575	0.009
Log(real exchange rate)								
T	1.594697	0.402	0.5157135	0.787	1.080689	0.671	0.3191855	0.897
L1	−4.072873	0.230	0.1440071	0.960	−1.314857	0.710	−4.628037	0.246
L2	9.563759	0.025	7.086135	0.062	6.28869	0.053	9.997692	0.051
L3	−5.232969	0.088	−5.881816	0.050	−4.367015	0.123	−4.235891	0.205
L4	−3.023942	0.366	−1.767256	0.518	−3.367153	0.297	−3.184467	0.131

Log(liquidity)*interest rate								
T	−0.0166895	0.494	−0.006431	0.717	−0.0025163	0.837	0.0000511	0.964
L1	−0.0006605	0.706	−0.0009045	0.633	0.0008936	0.581	−0.0000253	0.987
L2	0.0015914	0.082	0.0017794	0.096	0.002933	0.027	0.0018756	0.072
L3	0.001713	0.010	0.0016546	0.036	0.0023096	0.001	0.0018586	0.018
L4	0.0007254	0.300	0.0008786	0.124	0.0015363	0.105	0.0004984	0.622
Size*interest rate								
T	−63.12185	0.244	−42.1234	0.297	5.686298	0.889	3.038467	0.649
L1	27.55232	0.008	19.57125	0.085	14.72873	0.198	15.04851	0.044
L2	−0.7645215	0.855	3.500985	0.609	2.253779	0.775	3.921724	0.589
L3	5.247083	0.597	2.591425	0.786	7.88746	0.469	3.103132	0.744
L4	−14.72979	0.018	−9.730482	0.090	−9.219955	0.376	−6.947952	0.291
Capital*interest rate								
T	0.00000703	0.983	−0.0001011	0.771	0.0028393	0.261	−0.0000876	0.822
L1	−0.0002544	0.620	−0.0002592	0.597	−0.0004599	0.307	−0.0002385	0.606
L2	−0.0002724	0.352	−0.000248	0.340	−0.0001821	0.511	0.00000814	0.974
L3	0.0000981	0.844	0.0000818	0.865	−0.0000351	0.943	−0.0000263	0.957
L4	−0.0005092	0.093	−0.0005532	0.029	−0.0006707	0.092	−0.0004149	0.022
Liquidity					0.017592	0.769		
Size	0.0814375	0.500	0.0298319	0.725	−20.10115	0.937		
Capital	338.2408	0.278	237.8141	0.294	−0.0131308	0.309		
Constant	−54.40616	0.082	−62.01305	0.045	−71.49521	0.008	−41.56582	0.108
Observations		334		334		306		334

Annex C. Banking System Indicators

Figure C.1

INDICATORS OF THE BANKING SYSTEM

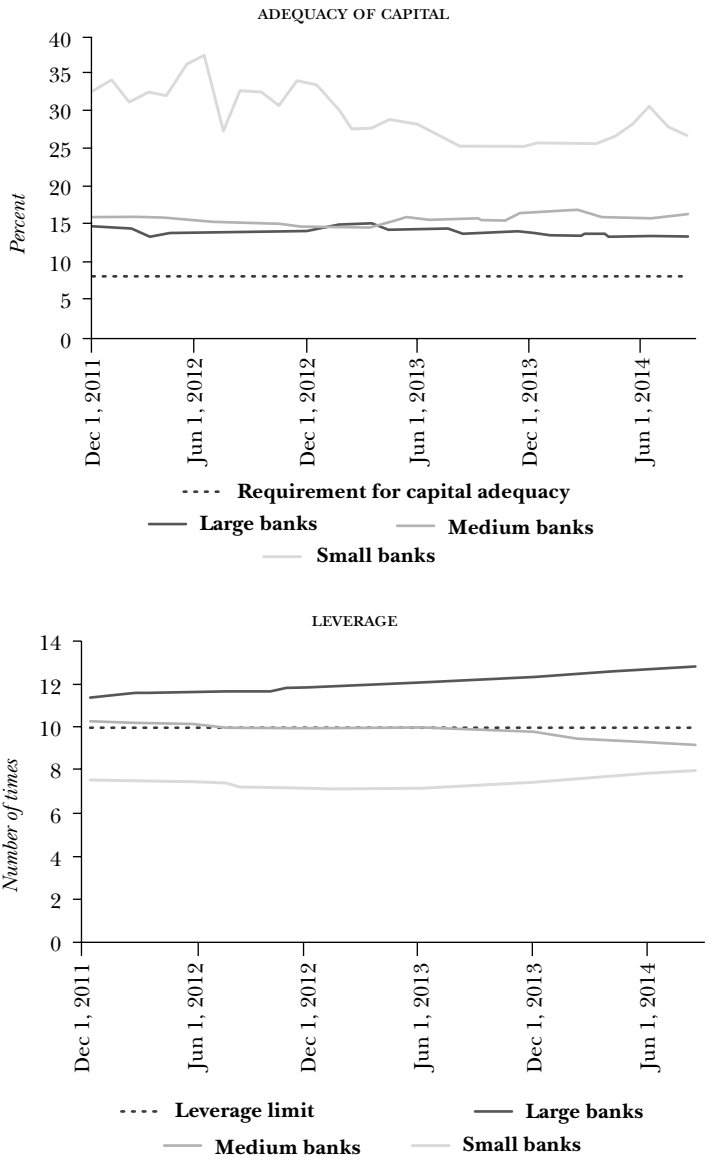
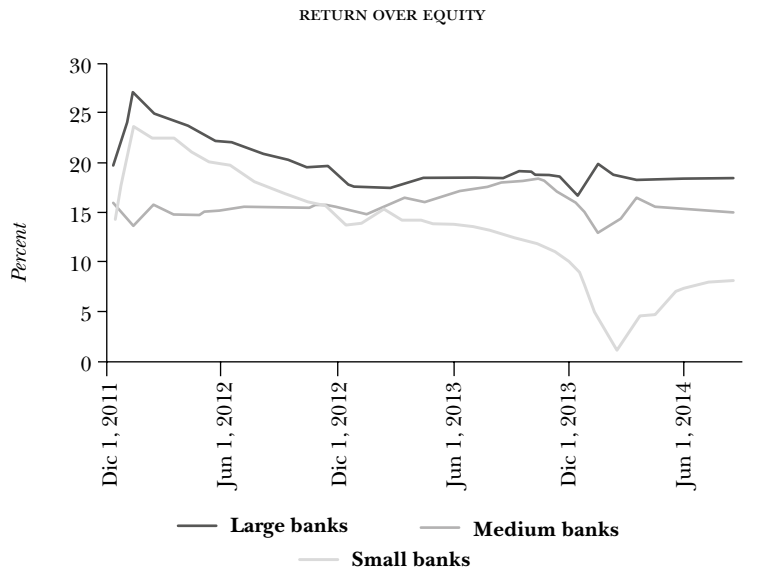
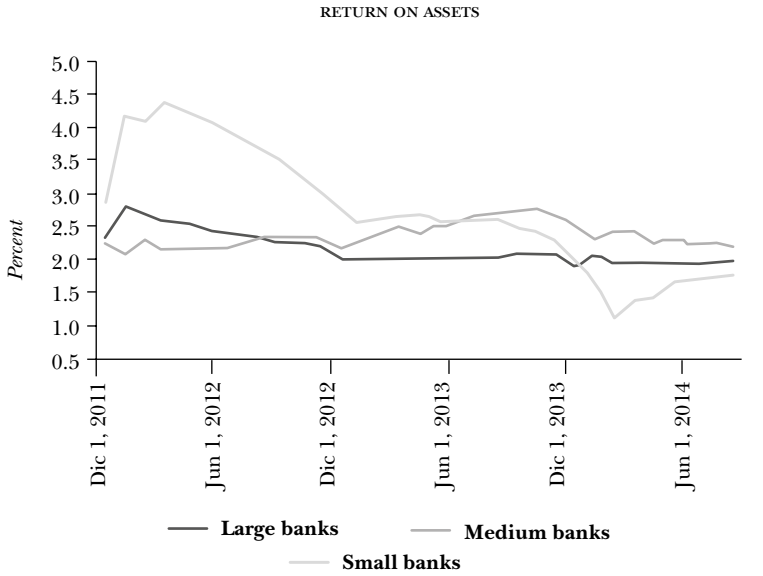


Figure C.1 (cont.)

INDICATORS OF THE BANKING SYSTEM





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