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THE BANK LENDING CHANNEL IN VENEZUELA: EVIDENCE FROM BANK LEVEL DATA

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Índex

Abstract
In this paper we empirically tested the presence of the bank-lending channel in Venezuela. Bank characteristics such as size, liquidity and specialization were taken as proxies for sources of informational asymmetries within the domestic financial sector. If relevant, such asymmetries should imply that monetary policy has distributional effects. As long as a policy tightening leads to a reduction in deposits that some banks may not be able to offset, loan supply will fall accordingly. Results in this paper do not support the presence of a bank-lending channel in Venezuela. Bank characteristics (size, liquidity or loan specialization) do not seem to be sources of cross-sectional differences in the response of loan supply to changes in monetary policy.

Resumen
En este trabajo contrastamos empíricamente la presencia del canal del crédito bancario en Venezuela. Características de los bancos tales como tamaño, grado de liquidez se toman como indicadores de posibles fuentes de asimetría de información dentro del sector financiero. De ser relevantes, tales asimetrías implicarían que la política monetaria tiene efectos distributivos. En tanto una política monetaria restrictiva conlleve a una reducción en depósitos que algunos bancos no puedan compensar con otros fondos, la oferta de crédito caerá. Los resultados de este trabajo no arrojan evidencia sólida sobre la presencia del canal del crédito bancario en Venezuela. Las características de los bancos no parecen ser relevantes para explicar diferencias en la respuesta de la oferta de crédito entre bancos a cambios en la política monetaria.

JEL Classification: E44, E52, C33.

Keywords: Monetary ransmission mechanism, Bank loan supply, Informational frictions.

Palabras clave: Mecanismo de transmisión monetaria, Oferta de préstamos bancarios,problemas de información.

1. INTRODUCTION

It is known that the degree of financial markets participation has important implications for the monetary transmission. Recent evidence suggests that the traditional lending channel is not very strong in Venezuela[1]. Changes in the real interest rate do not seem to induce significant responses of aggregate demand, investment or consumption, curtailing the ability of the central bank to affect inflation through this channel. One of the reasons underlying the lack of importance of the interest channel in Venezuela may perhaps be the limited scope for intermediation through domestic financial markets that prevails in the economy. While the interest rate channel operates through changes in the demand for loans, it seems important to investigate whether there are relevant supply-side effects in the credit market that can further affect monetary transmission.

In fact, much attention has been devoted lately to the effects of monetary policy on bank lending in the presence of financial market imperfections. The traditional interest rate channel relies on the crucial assumption that there are no frictions in the credit market. Thus, following a tightening of monetary policy the liquidity of the financial system and the market interest rate adjust accordingly, triggering an increase in the cost of capital that reduces investment, consumption and thereby aggregate demand. But in the presence of asymmetric information or moral hazard, distributional effects associated to the supply of bank loans may intensify the impact of monetary policy.

The literature distinguishes two mechanisms for monetary policy to affect loan supply in the presence of information problems: the broad

1 See Arreaza, Ayala and Fernández (2002), Mendoza (2003), and Arreaza, Blanco and Dorta (2004).

credit channel or balance sheet channel and the lending channel (Cecchetti, 1995, Bernanke and Gertler, 1995). The balance sheet channel is based on asymmetric information and moral hazard problems between lenders (financial institutions) and borrowers (consumers or firms), so that the external finance premium of the latter depends on their net worth as reflected in their balance sheet. A policy-induced deterioration in the balance sheet of potential borrowers[2] will limit their access to external finance by reducing their creditworthiness and increasing their risk premium. Without perfect substitutes for bank loans as a source of external funding, this leads to a reduction of investment and consumption beyond the entailed by the increase in the cost of capital. This may imply that socially efficient projects of some borrowers may not be funded.

The bank-lending channel, on the other hand, studies the effects of information frictions between banks and the providers of their funds. Essentially, if monetary policy tightens and deposits fall, asymmetric information problems may make it difficult for some banks to protect their credit lines because of a limited access to non-deposit sources of funds. For instance, offsetting a deposit reduction with alternative sources of funds may be harder for small and illiquid banks than for large, liquid or more capitalized banks (Kashyap and Stein, 2000). Information problems may be of particular importance in emerging economies where capital markets are not well developed, and firms and consumers have limited sources of external funding.

When assessing the presence of the lending channel, recent studies have looked at time-series variations in cross-sectional data from banks' balance sheets. Assuming that demand for loans is homogeneous across banks, the testable implication of this theory is that the effect of monetary policy on loan supply varies across banks,

2 This deterioration is due either to the increase in the real value of nominally denominated debt or the reduction of future cash flows.

depending on their characteristics. That is, monetary policy will have a distributional effect in addition to the traditional demand effects. Recent findings suggest that these asymmetries may be relevant in many countries. For instance, Kashyap and Stein (2000) find evidence that supports the presence of a lending channel in the US. Favero, Giavazzi and Flabbi (1999), and Ehrmann, *et al*. (2001) find that bank lending contracts in the Euro area following a contractionary monetary policy. Vasquez (2001) finds the lending channel to be present in a number of developing economies.

In this paper we investigate the presence of the lending channel in Venezuela using bank level data, which has not been done before. Previous findings that support the presence of the bank-lending channel in Venezuela employed aggregate data, which is not appropriate (Cecchetti, 1995). The testable implication of the lending channel is distributional, that is, monetary policy will have different effects across agents, and this cannot be gauged with aggregate data, making previous evidence hardly conclusive. Following Ehrmann, *et al*. (2001) and Hernando and Martinez-Pages (2001), we employ monthly bank level data to determine whether bank characteristics such as size, liquidity, and specialization (household loans or commercial and corporate loans) affect the ability of banks to protect their credit lines from policy-induced reductions in bank deposits. In this study we do not find strong evidence to support the presence of a bank-lending channel in Venezuela.

The paper is structured as follows. The second section contains stylized facts about the recent evolution of the financial sector in Venezuela. The third section develops the econometric model and reports the results, and the final section contains our conclusions.

2. STYLIZED FACTS

Since the capital market is rather small, the financial sector in Venezuela is bank dominated. Banks have a predominant role as financial intermediators in Venezuela. The banking sector holds about 75% of domestic financial assets, while capital markets only have a 20% share and insurance companies 5%[3].

Starting in 1989, the banking sector has experienced dramatic changes. Financial liberalization started in 1989, and foreign banks were allowed to operate in the country in 1992, which increased competition among domestic banks. But liberalization was done without proper banking surveillance or enforcement of prudential regulations, so that lack of transparency in banking operations and book-entry practices, plus a low degree of capitalization prevailed. Some banking institutions thus became very vulnerable, and did not stand in good shape after the 92-93 recession (Ayala, *et al*, 2002). Then, a significant number of banks went under during the severe banking crisis in 1994-1995[4].

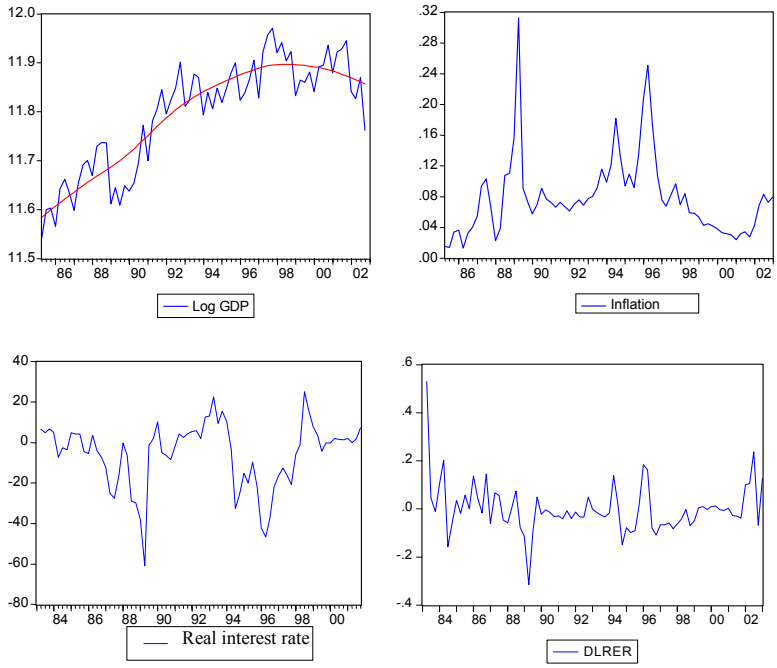
After the banking crises a more comprehensive and stricter *Law of Banking Surveillance and Supervision* was passed in 1997. Under this new regulation and in order to reduce costs and improve capitalization, a process of mergers and consolidation between institutions developed, reducing the number of banks and increasing potential gains from economies of scale. In spite of a higher

3 Source: Central Bank of Venezuela, Department of Financial Market Analysis, for 2001.
4 For a detailed description of the banking crisis see Krivoy (2002).

concentration, there is still no strong evidence of collusion within the banking sector[5]. As shown in Tables 1 and 2, most banks now operate as universal or commercial banks. In 1993, before the crisis there were 167 banks, whereas by the end of 2002 there were only 55, 35 of which were commercial and universal banks. Our analysis centers in universal and commercial banks, since these banks carry the bulk of the intermediation between deposits from the public and loans, and account for 98% of the financial assets of the whole system (Fernandez, 2004).

But if regulation has improved after the banking crisis, financial depth has not recovered as expected. Poor economic performance throughout the period may be underlying this fact. Figure 1 depicts the dynamics of quarterly GDP and inflation during the past 20 years.

Figure 1. Output, Inflation, real interest rate and real exchange rate 1983-2003



Source: Central Bank of Venezuela. Own calculations.

5 See Zambrano, Vera and Faust (2001), Arreaza, Fernandez and Mirabal (2001), and Fernandez (2004).

GDP exhibited an increasing trend until 1998. Then it started to decline, exhibiting large fluctuations around the trend. The liberalization program in 1989, the banking crisis in the mid-nineties and the political events in 2002-03 marked 3 periods of recession. The average growth of GDP between 1983 and 2003 has been less than 1%, with a standard deviation on 5%, a high degree of volatility even by Latin American standards. Inflation has been highly volatile as well, with an average annual rate near 40%, and a standard deviation of 25%[6]. The real exchange rate and the real interest rate exhibited a large volatility during the period, with standard deviations of 10% and 16%, respectively. It is worth noticing that the real interest rate was negative throughout most of the period.

Such poor macroeconomic performance, high degree of volatility and the presence of real negative deposit rates during may well then explain the low degree of monetization of the Venezuelan economy[7]. The demand for domestic financial assets by residents has secularly declined in favor of assets in foreign currency held in the international financial system[8]. As opposed to other Latin American countries, domestic banks in Venezuela are not allowed to carry deposits in foreign currency. This dynamics had led not only to a reduction in total deposits, but to a change in their composition, since the fraction of demand deposits has increased relative to time deposits. By 2003, for instance, demand deposits represented around 55% of total deposits (Fernandez, 2004).

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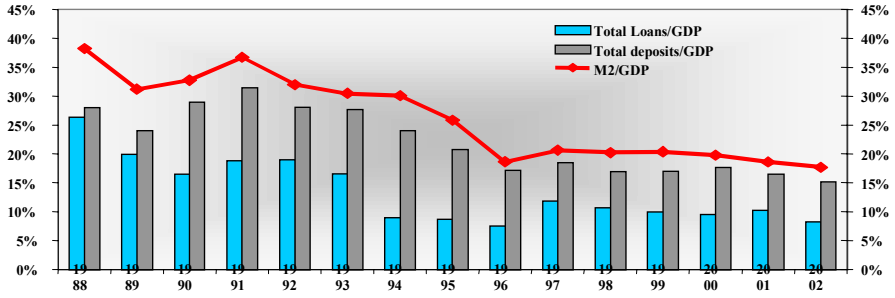
6 Inflation dynamics are very similar to the nominal exchange rate ones, with peaks in 1989 and 1996 that coincide with large devaluations of the nominal exchange rate that followed the end of capital control regimes. Between 1996 and 2002, inflation rates declined with the adoption of exchange rate bands, and then the trend picked up again when the bands were abandoned in 2002.

7 Recent papers explore the reasons behind capital flight and currency substitution in emerging economies. The gradual substitution of domestic deposits for foreign currency denominated assets may result from recurring episodes macroeconomic instability and high inflation Savastano (1996), or from agents' portfolio decisions to hedge against inflation and foreign exchange risk that is not compensated by the deposit rate spread (Levy Yeyati and Ize, 2003).

8 Using data from the BIS and SUDEBAN (Superintendencia de Bancos), Ayala, Mirabal and Fernandez (2002) and Fernandez (2004) estimate that domestic agents hold a fraction of at least 55% of their financial assets in the international banking system.

Figure 2
Total Loans, Deposits and M2 (1988-2002)



Source: Fernandez (2004)

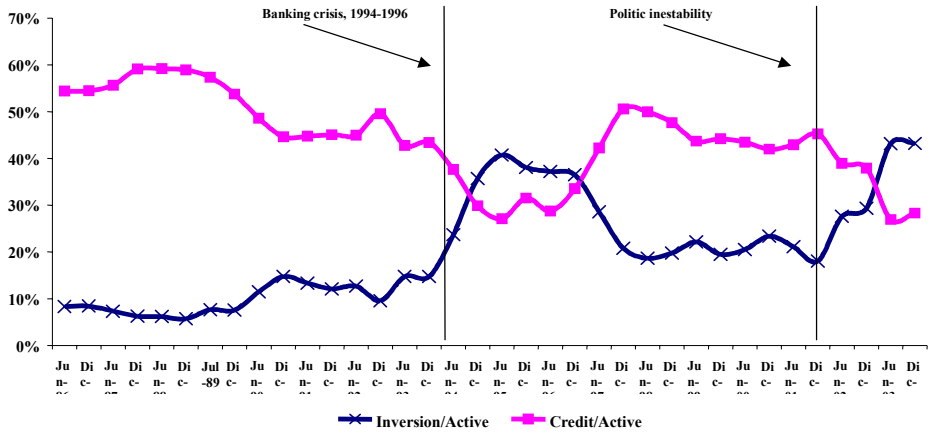
The M2/GDP ratio has declined from 40% in 1988 to 18% by 2002. The amount of total deposits to GDP in the banking sector has dropped considerably in the same fashion: from 30% in 1988 to 15% in 2002. There is a clear declining trend of this ratio until the end of the banking crisis in 1996, but the amount of deposits did not regain its pre-crisis levels after 1997. The ratio of total loans to GDP, in spite of improving after the crisis, is still very low, amounting to less than 10% by 2002. Such a low degree of financial depth is remarkable, even for Latin America standards, and it severely curtails the scope for financial intermediation[9].

Looking at the supply side of the credit market, we notice that the composition of banks' portfolios has also changed during the period. The share of securities and government bonds in bank's portfolios has increased since the nineties and particularly after 2000, coinciding with the growth of domestic currency denominated debt. These dynamics are depicted in Figure 3.

9 The Credit/GDP ratio is around 70% in Chile, for instance.

In the late eighties, banks allocated nearly 60% of their portfolios to loans and just a small fraction to securities and bonds. In the nineties the share of loans decreased progressively, reaching a minimum of less than 30% during the banking crisis, and then it went back to pre-crisis levels around 1997. Starting in 2001, when the economy started to show signs of recession[10], the share of loans started to decrease again. By 2003, the amount of resources allocated to loans is smaller to the one allocated to securities and bonds. The decline of loans coincided with the growth of domestic currency denominated public debt, which has increased thrice-fold between 1999 and 2003. Aggregate loan supply is then affected by portfolio adjustments in response to domestic risks faced by the banking sector. What we would like to investigate next is whether these adjustments are frictionless across banks, or if there are asymmetric information problems within the financial sector able to generate relevant distributional effects that further affect intermediation.

Figure 3
Universal and Commercial Bank's Portfolio, 1999-2003
Loans/Assets vs. Securities+Bonds/Assets



Source: Fernandez (2004)

10 GDP decreased by 8.9% in 2002 and by 7.6% in 2003.

Figure 4 depicts the asset composition of banks classified into four groups, according to the share of assets held by of each bank of the total assets of the banking system[11]. The figure displays the shares of total loans, reserves, liquid assets and securities and bonds to total assets. We can pin down some facts by simply looking at these pictures. First, a common feature across groups is the increase in loans after the banking crisis and then subsequent decline, which may be seen as systemic effects (e.g. macroeconomic conditions and monetary policy). But on the other hand, small banks tend to have a smaller share of their assets allocated to loans and their behavior also seems more volatile. This may be an indication of the existence of some cross-sectional differences in the response of bank loans to monetary policy, but in order to test for the presence of the lending channel we need to resort to an econometric analysis to control for loan demand and systemic effects.

11 Group 1 (Large banks): greater than 5%.
Group 2 (Medium-large banks): between 1% and 4.99%.
Group 3 (Medium-small banks): between 0.50% and 0.99%.
Group 4 (Small banks): less than 0.5%.

3. ECONOMETRIC APPROACH

To address the question of whether asymmetric information problems between banks affect the ability of some banks to protect their credit lines from policy-induced reductions in deposits, we will follow the approach in Hernando and Matinez-Pages (2001) and Ehrmann, *et al*, (2001). The idea behind these papers is to determine if monetary policy-induced changes in banks' insured deposits translate into changes in their supply of loans, depending on banks' characteristics, such as size, liquidity or capitalization. These characteristics may be taken as proxies of informational asymmetries. For instance, in case of a tight monetary policy, asymmetric information problems may make it difficult for small and illiquid banks to offset the reduction of insured deposits by frictionlessly raising alternative sources of funds to isolate their credit lines.

We employ balance sheet data of 20 universal and commercial banks between 1997 and 2001. We use this period in order to avoid the possible structural changes. In the aftermath of the banking crisis in 1996, banks were required to change book-entry procedures and a new banking regulation was passed in 1997. Thus, we do not want to use data prior to 1997. The substitution of the currency bands for a free float in February 2002, and the subsequent substitution of the free float for capital controls in 2003, implied changes in the way monetary policy was conducted that would possibly affect our analysis.

We include in our panel only those banks that capture deposits from the public and issue corporate, commercial (small businesses) and consumption loans. We excluded small banks that only participate in the reserve market, and branches of foreign banks that closed operations during the period. Mergers were treated by considering the data of the merged institutions as the data of the largest bank, and

reconstructing the data backwards as the sum of the two banks before the merge, so no new bank appears.

Since monetary policy tends to affect economic variables with lags, a dynamic panel specification is more appropriate for our purposes than a static panel[12]. Our baseline equation is thus the following:

$$\Delta CR_{i,t} = \alpha_i + \sum_{j=1}^{l} \rho_j \Delta CR_{t-j} + \sum_{j=1}^{J} \beta_{1j} \Delta GDP_{t-j} + \sum_{j=1}^{J} \beta_{2j} \Delta ER_{t-j} + \sum_{j=1}^{J} \beta_{3j} \Delta R_{t-j} + \sum_{j=1}^{J} \beta_j^n \Delta R_{t-j} W^n{}_{i,t-1} + \delta W_{i,t-1} + \sum_{j=1}^{11} \beta_{5j} D_j + u_{it} \quad (1)$$

Where *CR* is total loans, *GDP* is monthly output, *ER* is the real exchange rate, *R* is the indicator of monetary policy, W^n stands for bank characteristics (liquidity and size), and *D* are seasonal dummies[13]. Liquidity is measured as the ratio of liquid assets to total assets, and size is measured as the fraction of assets held by each bank with respect to total assets of the banking sector. All variables are in logs, except interest rates and seasonal dummies. All the bank specific data enters with lags in the equation to avoid endogeneity problems.

We included macroeconomic variables such as GDP and the real exchange rate in the equation to control for demand side effects. Since we are dealing with monthly data, this allowed us to analyze the accumulated effect of monetary policy on loans after 6, 9 and 12 months.

12 Preliminary results using a static panel version of Equation 1 do not suggest the presence of the lending channel in Venezuela.

13 GDP quarterly data is transformed into monthly data using an algorithm based on variations of a monthly production index. The real exchange rate is simply proxied by CPI_{US}*nominal exchange rate/$CPI_{domestic.}$

We investigate whether the long-run response of credit to monetary policy shocks differs depending on bank characteristics, which play as indicators of informational asymmetries. Long-run coefficients are computed as the sum of the coefficients of the lags of the regressors, divided by one minus the sum of the coefficients of the dependent variable, $\sum_{j=1}^{J}\beta_j^n \Big/ \left(1-\sum_{j=1}^{J}\rho_j\right)$. If the bank-lending channel holds, the long-run interaction coefficients between policy variables and bank characteristics should be positive and significant.

Pinning down a variable that indicates the stance of monetary policy in Venezuela over a long period of time is not a clear-cut task. During the period of analysis, the exchange rate bands conditioned the control exerted by the central bank over monetary aggregates and domestic interest rates[14]. But as opposed to fixed exchange rate regimes, even under perfect capital mobility currency bands allow certain control over domestic interest rates. Deviations of the exchange rate from the central parity generate expectations of currency depreciation[15] that affect domestic interest rates, allowing the central bank certain control on the latter (Svenson, 1994). This, of course, depends on the credibility of the bands. Pineda, Toledo and Zavarce (2001) analyze the behavior of the exchange rate between during the currency bands regime and find that the exchange rate was consistently below the central parity, and that the volatility of the exchange rate was much lower than the bandwidth. They find that the credibility of the announced band depended mostly on the level of international reserves, and that the central bank seemed to operate within a narrow unannounced 'mini-band', which was in fact credible. It is within that credible 'mini-band' that the central bank had certain independence for monetary policy.

14 Under a fixed exchange rate regime, the equilibrium domestic interest rates is equal to international interest rates, plus a foreign exchange rate risk premium, given that the expected domestic currency depreciation rate should be equal to zero (UIP condition). Any attempt by the central bank to shift interest rates from equilibrium will imply capital movements that will force the central bank to shift domestic rates back to equilibrium.

15 The currency depreciations expectations depend on the band realignment expectations plus and the expected depreciation relative to the central parity or within the band.

In this paper we opted for two variables as indicators of the stance of monetary policy: a policy interest rate and bank reserves, although we focus more on interest rates[16]. There are caveats with both measures though. Bank reserves may be reflecting demand side changes that we may not be able to control for. Additionally, interest rates have not been actively and consistently used as monetary policy instruments in Venezuela. Traditionally, the central bank has based its financial programming on monetary aggregates. It is only after 2002 when the central bank started to shift attention from using monetary aggregates as instruments of monetary policy to using interest rates of interest rates. Nevertheless, even in periods where aggregates were the main instrument of monetary policy, the central bank still cared about the level of the interest rates. In fact, the central bank adjusted quantities of open market operations with TEMs and DPNs, when interest rates exceeded certain ranges (Guerra and Dorta, 2003). Therefore, it seems that interest rates may be used as well as an indicator of the stance of monetary policy in Venezuela.

In the presence of individual fixed effects, direct OLS estimation of Equation 1 leads to inconsistent and inefficient estimates. In order to obtain consistency and efficiency, the data should be transformed by first differences or orthogonal deviations to eliminate fixed effects. But since the lagged values of the transformed data will be correlated with the transformed error term, an instrumental variable method must be employed[17]. Thus, we used the Arellano and Bond (1991) GMM approach for dynamic panels, with orthogonal deviations of the bank specific data to remove individual effects and allowing for White period robust standard errors. We use the Sargan test to check for the validity of our instruments, i.e., that they are not correlated with the transformed residuals and check for autocorrelation.

16 This policy rate is a combination of the central bank CD rate and the TEM rate (Titulos de Estabilizacion Macroeconomica) used in Dorta and Guerra (2003). TEMs were central bank-issued instruments since DPNs (domestic public debt bonds) were insufficient for the volume of open market operations.

17 See Baltagi (1995).

Tables 3 though 7 report the estimates of the long-run coefficients of the explanatory variables in Equation 1 for J=6, J=9 and J=12. In Tables 3, 4, 5 and 6 we use TEMs rates as a monetary policy indicator. The first column Tables 3-5 reports estimates of Equation 1 using two bank characteristics, size and liquidity, while the second and third columns shows results considering one characteristic at a time. In Table 6 we analyze the case of a double interaction between size and liquidity with monetary policy. The underlying idea of this double interaction is that the effect of a tight monetary policy should be larger for small and illiquid banks than for large and illiquid banks (Kashyap and Stein, 2000).

The effects of the interest rate on total loans are always negative and almost always significant. Output growth has a positive and significant effect on loans and an depreciation of the real exchange rate seems to have a negative impact on loans, which may be the consequence of balance sheet effects derived from devaluations[18].

None of the variables are significant after 9 months, which is not at odds with previous findings suggesting that the impact of monetary policy on output through the interest rate and exchange rate channels vanishes after 3 quarters[19]. These results seem to be robust across different specifications.

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18 According to the Mundell-Fleming model, depreciations should have an expansionary effect on output, since domestic goods become more competitive relative to foreign goods. But when firms' revenues are denominated in domestic currency while their debt or inputs are denominated in foreign currency, devaluations have a deleterious effect on firms' balance sheets, which limits their ability to borrow and invest, leading to output drops (Krugman, 1999). More recently, Galindo, Panizza and Schiantarelli (2003) find evidence supporting the presence of balance sheet effects in Latin American economies, which may be consistent with our finding here.

19 See Arreaza, Blanco and Dorta (2003).

When we study the interaction between the policy variable and the bank characteristics, liquidity is never significant, while size appears to be significant sometimes but at 10% level. The double interaction between size and liquidity with the policy variable is only marginally significant for J=9 at a 10% level[20]. Table 7 displays the results when we use changes in bank reserves as an indicator of the stance monetary policy. Results do not vary much from the previous ones, just that changes in bank reserves do not appear to be significant, and may not be a good policy indicator[21]. Hence, assuming we are properly controlling for demand effects, we do not find strong evidence of a differential response to monetary across banks, that supports the presence of a bank-lending channel in Venezuela.

These results may have some problems though. There may be other bank characteristics correlated with bank size, such as the bank specialization on household or commercial loans, which may be more relevant to explain different effects of monetary policy across banks. We therefore ran an additional set of regressions adding a dummy variable that takes the value of and 1 if the bank specializes on household loans, and 0 if the bank more oriented to commercial and corporate loans[22]. We interacted this dummy with the policy variable and again, the results do not suggest that this characteristic is a source of distributional effects of monetary policy. We report the results of this exercise in Table 8.

20 The p-value was = 0.0961.

21 Using changes in net domestic credit of the central bank instead of total reserves generates similar results.

22 Household loans oriented banks are those which allocate a fraction of over 50% of their loan portfolio to consumption loans. This is obviously a very imperfect measure, but it is still informative about bank specialization. From the bank's balance sheet data it is not possible to perfectly discriminate between household loans and commercial loans. Credit cards and vehicle loans are just a rough measure of what can be considered as household loans, which is what we actually used for the purpose of this classification. Therefore, results of this particular exercise should be taken with certain reserve.

4. FINAL COMMENTS

In this paper we empirically tested the presence of the bank-lending channel in Venezuela. Bank characteristics such as size, liquidity and specialization were taken as proxies for sources of informational asymmetries within the domestic financial sector. If relevant, such asymmetries should imply that monetary policy has distributional effects. As long as a policy tightening leads to a reduction in deposits that some banks may not be able to offset, loan supply will fall accordingly. Results in this paper do not suggest that these bank characteristics (size, liquidity or loan specialization) are sources of cross-sectional differences in the response of loan supply to changes in monetary policy.

We believe these findings are relevant to improve our understanding of the effects of monetary policy in Venezuela. But if informational frictions are not relevant within the banking sector, they may still be important between banks and potential borrowers. In such case, balance sheet effects could be affecting intermediation and thus the effects of monetary policy. Unfortunately, information at a firm level on their sources of financing is not available, hindering a thorough study about the presence and importance of balance sheet effects. Nevertheless, other paths could be explored to understand why intermediation has such limited scope in Venezuela. For instance, the impact on intermediation of the recent growth of off-balance operations by banks (trust funds and offshore transactions) has not been studied yet, and should become a matter of future investigation.

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APPENDIX

Table 1
OWNERHIP STRUCTURE OF THE FINANCIAL SECTOR IN VENEZUELA
(2002)

Institutions	Private	State owned	Total
Universal Banks	17	0	17
Commercial Banks	17	1	18
Banks with Special Regulations	0	5	5
Investment Banks	8	1	9
Mortgage Banks	3	0	3
Financial Leasing Companies	2	1	3
Savings Banks	5	0	5
Mutual Funds	4	0	4
TOTAL	56	8	64

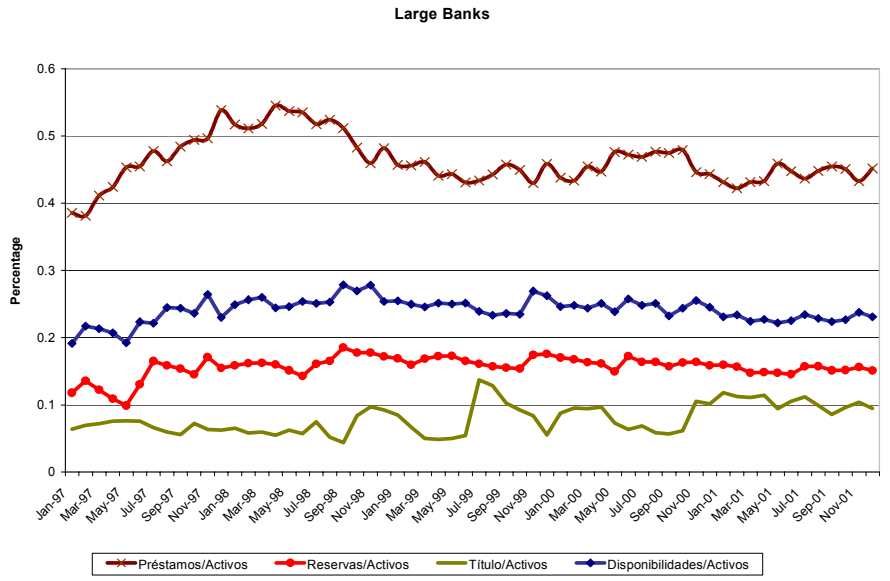
Source: Ayala, Fernandez and Mirabal (2002). Data: SUDEBAN (Superintendencia de Bancos)

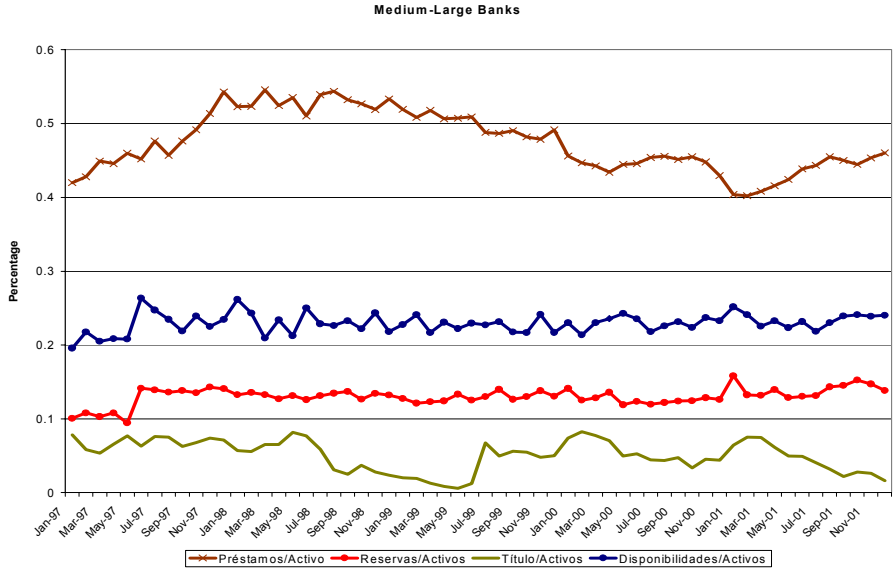
Table 2
EVOLUTION OF THE FINANCIAL INSTITUTIONS IN VENEZUELA*

YEAR	Universal Banks	Commercial Banks	Investment Banks	Mortgage Banks	Financial Leasing Co.	Savings Banks	Total
1993	0	46	47	17	36	21	167
1994	0	40	25	8	22	21	116
1995	0	39	20	9	18	21	107
1996	2	37	18	7	16	21	101
1997	12	29	15	5	12	21	94
1998	14	26	13	5	9	17	84
1999	15	26	11	4	5	17	78
2000	14	24	12	4	5	12	71
2001	18	22	10	3	4	5	62
2002	17	18	9	3	3	5	55

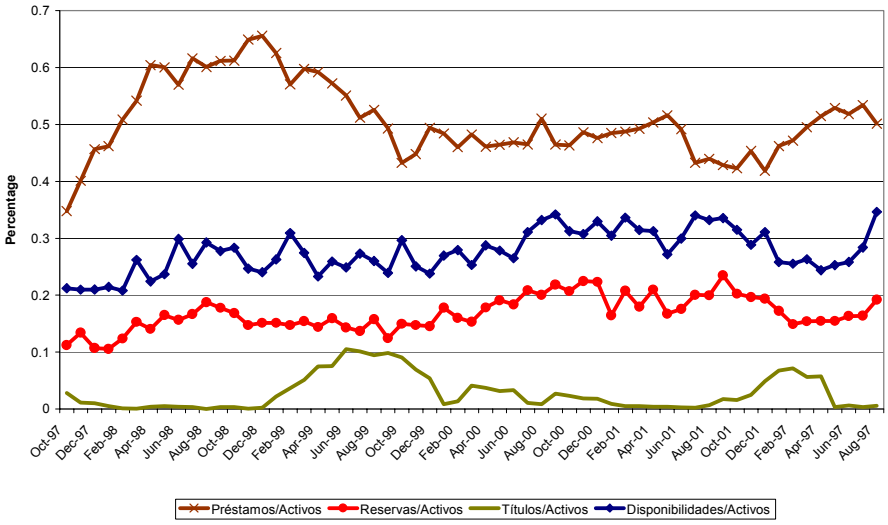
Source: Ayala, Fernandez and Mirabal (2002). Data: Department of Financial System Analysis, Central Bank of Venezuela
*Excludes Mutual Funds and Special Regulation Banks.

Figure 4. Asset composition of banks by Size Groups





Medium-Small banks



Small banks

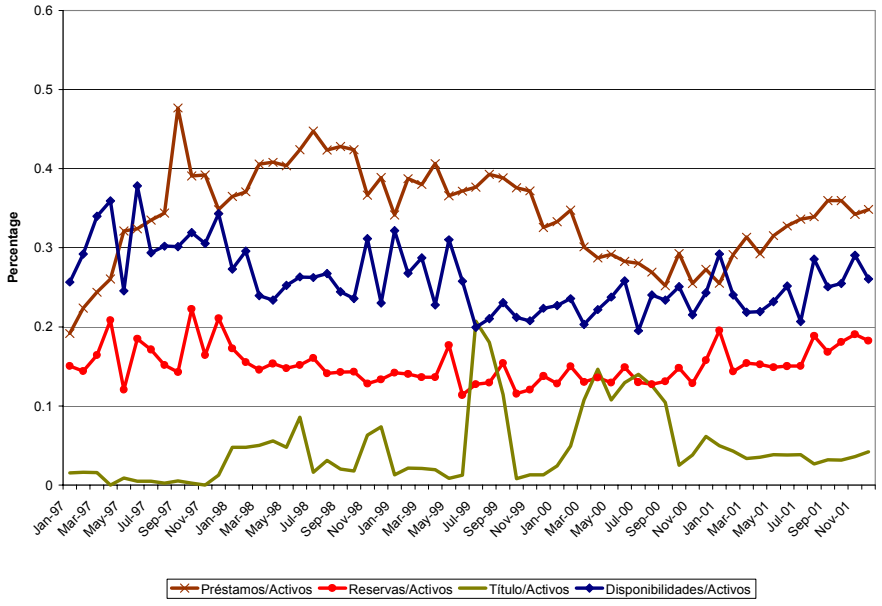


Table 3. Long-run Multipliers, 6 lags

Monetary Policy Indicator: TEMs rate. Dependent variable: first difference of the log of total loans

Panel GMM estimation. 2SLS instrument weighting matrix. White period standard errors

Number of observations: 1025. Number of banks: 20

	1. Size and Liquidity		**2. Liquidity**		**3. Size**	
	Coeff.	S. Error	Coeff.	S. Error	Coeff.	S. Error
Bank characteristic:						
Size	0.0050	0.0084			0.0071	0.0079
Liquidity	0.0098	0.0095	0.0072	0.0113		
Policy indicator (PI)	-0.0046*	0.0026	-0.0039	0.0032	-0.0019**	0.0009
Real GDP growth	1.7150***	0.4330	2.0485***	0.3567	2.2900***	0.4137
Real exchange rate	-1.4114***	0.2978	-1.8642***	0.2824	-1.7205***	0.3142
	Test	p-value	Test	p-value	Test	p-value
Residual correlation						
1	0.397	0.528	2.525	0.112	0.015	0.902
2	1.888	0.389	2.594	0.273	0.375	0.945
6	10.981	0.089	9.715	0.137	9.861	0.131
12	17.644	0.129	16.053	0.189	16.257	0.180
Sargan Test	413.667	0.9898	514.936	0.9888	492.628	0.9193

Note: */**/*** significance at 10%, 5%, 1% level.

Regressors: 3 lags of the dependent variable, macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 1 of bank characteristics multiplied by the policy indicator, seasonal dummies.

Instruments: levels of the dependent variable (lag 4 up to 12), macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 4 of bank characteristics multiplied by the policy indicator, seasonal dummies.

Table 4. Long-run Multipliers, 9 lags

Monetary Policy Indicator: TEMs rate. Dependent variable: first difference of the log of total loans

Panel GMM estimation. 2SLS instrument weighting matrix. White period standard errors

Number of observations: 971. Number of banks: 20

	1. Size and Liquidity		**2. Liquidity**		**3. Size**	
	Coeff.	S. Error	Coeff.	S. Error	Coeff.	S. Error
Bank characteristic:						
Size	0.0190	0.0154			0.0234*	0.0121
Liquidity	0.0226	0.0163	0.0093	0.0129		
Policy indicator (PI)	-0.0124***	0.0048	-0.0071*	0.0042	-0.0047***	0.0016
Real GDP growth	1.0333	0.7101	1.1626	0.7305	1.4684**	0.6491
Real exchange rate	-1.8054***	0.5870	-1.8064***	0.4619	-1.4788***	0.5053
	Test	**p-value**	**Test**	**p-value**	**Test**	**p-value**
Residual correlation						
1	1.207	0.272	0.341	0.559	1.103	0.293
2	3.151	0.207	0.358	0.836	1.642	0.440
6	11.699	0.069	10.159	0.118	9.870	0.130
12	19.049	0.088	18.657	0.0977	17.448	0.133
Sargan Test	402.908	0.973	419.197	0.889	482.118	0.941

Note: */**/*** significance at 10%, 5%, 1% level.

Regressors: 3 lags of the dependent variable, macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 1 of bank characteristics multiplied by the policy indicator, seasonal dummies.

Instruments: levels of the dependent variable (lag 4 up to 12), macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 4 of bank characteristics multiplied by the policy indicator, seasonal dummies.

Table 5. Long-run Multipliers, 12 lags

Monetary Policy Indicator: TEMs rate. Dependent variable: first difference of the log of total loans

Panel GMM estimation. 2SLS instrument weighting matrix. White period standard errors

Number of observations: 914. Number of banks: 20

	1. Size and Liquidity		**2. Liquidity**		**3. Size**	
	Coeff.	S. Error	Coeff.	S. Error	Coeff.	S. Error
Bank characteristic:						
Size	0.0209	0.0197			0.0314*	0.0188
Liquidity	0.0307	0.0243	0.0085	0.0191		
Policy indicator (PI)	-0.0097	0.0127	-0.0026	0.0120	-0.0029	0.0053
Real GDP growth	-0.9741	1.4631	-0.3842	1.4437	-0.4851	1.4417
Real exchange rate	-0.9085	2.4200	-1.2812	2.8272	-1.4309	1.8926
	Test	p-value	Test	p-value	Test	p-value
Residual correlation						
1	1.366	0.242	0.927	0.335	0.430	0.512
2	2.469	0.291	1.008	0.604	0.660	0.719
6	11.703	0.069	11.013	0.088	8.340	0.214
12	18.771	0.094	19.535	0.076	13.929	0.305
Sargan Test	366.260	0.916	441.660	0.864	442.971	0.873

Note: */**/*** significance at 10%, 5%, 1% level.

Regressors: 3 lags of the dependent variable, macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 1 of bank characteristics multiplied by the policy indicator, seasonal dummies.
Instruments: levels of the dependent variable (lag 4 up to 12), macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 4 of bank characteristics multiplied by the policy indicator, seasonal dummies.

Table 6. Long-run Multipliers. Double Interaction bet. Size and Liquidity.

Monetary Policy Indicator: TEMs rate. Dependent variable: first difference of the log of total loans

Panel GMM estimation. 2SLS instrument weighting matrix. White period standard errors

Number of observations: 1025, 971, 920. Number of banks: 20

	1. 6 Lags		**2. 9 Lags**		**3. 12 Lags**	
	Coeff.	S. Error	Coeff.	S. Error	Coeff.	S. Error
Bank characteristic:						
Size*Liquidity	0.0226	0.0170	0.0460*	0.0272	0.0473	0.0488
Policy indicator (PI)	-0.0020**	0.0288	-0.0046***	0.0015	-0.0035	0.0049
Real GDP growth	2.3220***	0.4113	1.4811**	0.6568	0.6959	1.4554
Real exchange rate	-1.6902***	0.2957	-1.4207***	0.5111	-1.7883	1.7556
	Test	p-value	Test	p-value	Test	p-value
Residual correlation						
1	0.026	0.871	1.117	0.290	0.2929	0.588
2	3.186	0.203	3.420	0.181	1.771	0.412
6	12.916	0.044	12.222	0.047	9.816	0.133
12	19.613	0.075	19.671	0.074	16.332	0.176
Sargan Test	444.846	0.9213	436.528	0.9552	399.216	0.7142

Note: */**/*** significance at 10%, 5%, 1% level.

Regressors: 3 lags of the dependent variable, macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 1 of bank characteristics multiplied by the policy indicator, seasonal dummies.
Instruments: levels of the dependent variable (lag 4 up to 12), macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 4 of bank characteristics multiplied by the policy indicator, seasonal dummies.

Table 7. Long-run Multipliers.

Monetary Policy Indicator: Reserves. Dependent variable: first difference of the log of total loans

Panel GMM estimation. 2SLS instrument weighting matrix. White period standard errors

Number of observations: 1025, 971, 920. Number of banks: 20

	1. 6 Lags		**2. 9 Lags**		**3. 12 Lags**	
	Coeff.	S. Error	Coeff.	S. Error	Coeff.	S. Error
Bank characteristic:						
Size	-0.000001	0.00001	-0.000001	0.000001	-0.0000021*	0.0000013
Liquidity	-0.000007	0.000007	0.000001	0.000001	-0.000006	0.000012
Policy indicator (PI)	-0.000002	0.000002	0.0000003	0.000003	-0.000001	0.000005
Real GDP growth	2.3042***	0.4669	2.1476***	0.7037	0.0332	4.2282
Real exchange rate	-1.1976**	0.5084	-0.2371	0.8336	-0.6373	3.9349
	Test	p-value	Test	p-value	Test	p-value
Residual Correlation						
1	0.611	0.434	1.286	0.257	0.857	0.354
2	2.814	0.245	2.855	0.240	1.396	0.498
6	12.382	0.054	11.242	0.081	10.924	0.091
12	19.634	0.074	16.857	0.155	14.900	0.109
Sargan Test	442.871	0.9168	431.484	0.9369	434.423	0.7953

Note: */**/*** significance at 10%, 5%, 1% level.

Regressors: 3 lags of the dependent variable, macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 1 of bank characteristics multiplied by the policy indicator, seasonal dummies.
Instruments: levels of the dependent variable (lag 4 up to 12), macroeconomic variables and policy indicator, lag 1 of the bank characteristics, lag 4 of bank characteristics multiplied by the policy indicator, seasonal dummies.

Table 8. Long-run Multipliers. Type of bank.

Monetary Policy Indicator: TEMs rate. Dependent variable: first difference of the log of total loans

Panel GMM estimation. 2SLS instrument weighting matrix. White period standard errors

Number of observations: 1025, 971, 920. Number of banks: 20

	1. 6 Lags		**2. 9 Lags**		**3. 12 Lags**	
	Coeff.	S. Error	Coeff.	S. Error	Coeff.	S. Error
Bank characteristic:						
Dummy1	-0.0015	0.0014	-0.0020	0.0018	-0.0041*	0.0023
Policy indicator (PI)	-0.0016*	0.0009	-0.0019	0.0014	-0.0024	0.0029
Real GDP growth	0.9238***	0.2823	1.5635***	0.5272	0.8463	0.9816
Real exchange rate	-1.5889***	0.3113h	-0.5939	0.4419	-1.3650	1.1030
	Test	p-value	Test	p-value	Test	p-value
Residual correlation						
1	0.718	0.397	1.102	0.294	0.091	0.763
2	1.778	0.411	1.331	0.514	0.204	0.903
6	11.070	0.086	9.694	0.138	9.367	0.154
12	16.806	0.157	16.554	0.167	16.888	0.154
Sargan Test	509.994	0.9501	490.094	0.9653	450.028	0.9104

Note: */**/*** significance at 10%, 5%, 1% level.

Regressors: 3 lags of the dependent variable, macroeconomic variables and policy indicator, Dummy1 multiplied by lags of the policy indicator, seasonal dummies. Dummy1= 1 if the bank is household loan oriented, and 0 otherwise.
Instruments: levels of the dependent variable (lag 4 up to 12), macroeconomic variables and policy indicator, Dummy1 multiplied by the policy indicator, seasonal dummies.

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