Evidence of Bank Lending Channel in the Philippines

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Abstract. This paper empirically tests the presence of a bank lending channel of monetary policy in the Philippines. It aims to demonstrate that bank lending channel is present in the Philippines by showing that loan growth is affected by monetary policy shocks. This study uses quarterly data from 2008 to 2011 of the country's 35 commercial and universal banks. The banks are segregated according to the size of their assets: >Php300 (large), Php200B<size<Php300B (large1), Php100B<size<Php200B (large2), Php50B<size<Php100B (medium1), Php25B<size<Php50B (medium2) and <Php25B (small). Panel ordinary least squares method is used to check the relationship between loan growth and monetary policy. Results show that loan growth of small banks is sensitive to movements in monetary policy, thus providing evidence for a bank lending channel in the Philippines. Increase in policy rates result in a decrease in loan supply of smaller banks. This paper presents that bank characteristics, particularly size, can have influence in the existence of the bank lending channel.

Keywords: Bank Lending Channel, Monetary Policy, Loan Supply

1. Introduction

A number of empirical studies have been made on the effects of monetary policy movement on the economy and the mechanisms by which these effects are subsequently transmitted into the real economy (e.g Bernanke and Blinder,1992; Kashyap and Stein, 1995 and Islam and Rajan,2011). Two subchannels within the credit channel are suggestive of the role of banks in the transmission of monetary policies. These are the balance sheet channel and the bank lending channel (Cecchetti,1995; Kishan and Opiela,2000 and Bernanke and Gertler,1995). The balance sheet channel is the channel wherein policy can weaken the balance sheet of borrowers that can, in turn, affect their borrowing capacity. The bank lending channel, on the other hand, is evident when tight monetary policy are shown to be related to the decrease in loan supply of banks rather than a decline in loan demand (Kishan and Opiela,2000). The bank lending channel can only be possible under two conditions: if there are borrowers who are dependent on banks for their loan requirements and if the loan supply of these banks are affected by movements in monetary policy (Coll,Torres,and Santander,2005). Following the papers of Kishan and Opiela (2000) and Kashyap and Stein (1995), this study categorized banks by the size of their assets (bank size). Kishan and Opiela (2000) suggests that banks with sufficient capitalization can absorb the negative effects of monetary policy constraint on the growth of their loan portfolio. The hypothesis of this study is that movements in policy rates have an effect on the loan growth of smaller banks, thereby providing evidence for bank lending channel.

2. Literature Review

At least two aspects are to be considered in evaluating the transmission of monetary policy into the real economy; namely, the transmission of the policy from instruments directly controlled by the central bank to the private sector and the relationship between the financial conditions and consumption decisions of the consumers (Guinigundo, 2008). In the case of central bank policy, the transmission mechanism applies as it affects both bank assets and deposits (Bernanke and Gertler,1995). The instruments controlled by central bank in relation to the monetary policy transmission are reserve requirements and the interest rate.

Studies by Bernanke and Gertler (1995),Bernanke and Blinder (1992) and Kashyap and Stein (1995) have shown the existence of credit channels by which monetary policy affects the economy. These are the borrower's net worth channel and the bank lending channel (Peek and Rosengren,1995). Constraints on

monetary policy can result in an increase in the cost of capital as its tightening consequently affects the financial system's liquidity (Coll, Torres and Santander, 2005). For the bank lending channel to be operational, two conditions must be met namely, that there should be borrowers who are dependent on the credit facilities provided by banks and that the lending activities of the banks are constrained by monetary policy stance (Apergis and Alevizopoulou,2011). Morris and Sellon (1995) states that "the costs of obtaining information about a firm's (financial) condition are greater for smaller firms, thus smaller firms find it difficult and more costly to obtain credit. Banks have a comparative advantage over other intermediaries in information processing that enables them to lend to smaller firms at a lower cost." As in most parts of the world, banks are still major sources for financing for the private sector, specifically for smaller firms. The banks' role in the transmission of monetary policy becomes evident through the lending channel (Bayangos, 2010).

In the bank lending channel, assymetric information problems between banks and the depositors create constraints for these banks to have access to sources of loanable funds other than demand deposits (Kashyap and Stein, 2000). It will be more difficult and costly for smaller and undercapitalized banks to replace loan supply with other sources of funds (Coll,Torres and Santander,2005). If these banks are not able to provide viable alternative source of loanable funds with the tightening of monetary policy, they will be pressured to limit their lending activities; thus, transmitting the effect of the policy stance into the economy (Olivero, Li and Jeon, 2011, Fruhwirth-Schanatter and Kaufmann, 2006). Kishan and Opiela (2000) and Kashyap and Stein (2000) have provided evidence that bigger banks with sufficient capital and liquidity are more likely to have the resources to cushion the effects of monetary policy tightening. Sources of loanable funds other than demand deposits are available to these larger banks, providing them with alternative forms of loan supply (Olivero, Li and Jeon,2011). With their access to other forms of sources for their loan supply, bigger banks are less likely to restrain on their lending activities (Fruhwirth-Schnatter and Kaufmann,2006).

The level of the bank's capital and liquidity remain to be the determinants of the bank's ability to transmit policy stance into the real economy (Bischel and Perrez,2005 and Kishan and Opiela,2000). Van de Huevel (2006) and Bayangos (2010) have established that capital adequacy of banks is a significant factor in the bank's ability to sustain their lending activities after monetary policy movements. Excess liquidity can likewise be a source of loan supply for banks as it can be an alternative to equity or debt (Bischel and Perrez,2005).

The study of Bayangos (2010) on the lending channel in the Philippines points out the significance of bank credit channels in the transmission mechanism of monetary policy. Results of her study show that during periods of inflation targeting years 1999-2002, the interest and exchange rate channels have become more distinct and that, as she states, "bank credit channel matters in transmitting impulses into the real economy."According to Guigundo (2008), liberalization in the financial markets in the Philippines in the 1990's has opened up alternatives to bank lending resulting in a decrease in the ability of credit to be a channel for monetary transmission. However, he adds that despite the decline in corporate borrowings, a steady demand for consumer loans is sufficient to keep the credit channel significant. In the Philippine setting, the lending channel remains to be the mechanism by which monetary policy stance is transmitted in the economy (Guinigundo, 2008). The policy rates relevant to the transmission are Bangko Sentral ng Pilipinas[2] (BSP) overnight reverse repurchase rate (ORRP) and the overnight repurchase rate (RP). As BSP policy rates affect the level of liquidity in the system, it then affects the short term market rates which include the 91-day treasury bills rates and consequently, the banks' lending and deposit rates (Guinigundo,2008). Policy rates impact the real economy as a low policy rate can stimulate consumption and investment demand (Islam and Rajan,2011)

3. Theoretical Framework

The theoretical framework presented in this paper is adapted from the papers of Kashyap and Stein (1995), Bischel and Perrez (2005) and Kishan and Opiela (2000). The transmission of monetary policy into the real economy is dependent on at least two determinants of the banks' loan supply namely, liquidity and

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[2] Bangko Sentral ng Pilipinas is the central bank of the Philippines

capital (Bischel and Perrez, 2005). Excess liquidity can be a source of funds to expand the bank's loan portfolio instead of sourcing the funds from debt or equity. Therefore, it is expected that banks with sufficient capitalization can very well benefit from its lending operations as it has more funds to lend out. The bank's level of capital, which is a measure of a bank's financial strength, is also a determinant of its credit supply. The size of the bank's loan portfolio is dependent on the level of its capital as well as liquidity as these are the bank's main sources of funds for lending. A monetary policy shock in the form of interest rate increase will decrease bank reserves should the bank opt not to augment its credit supply from additional equity or debt. An increase in interest rates may cause depositors to shift their funds from demand deposits (which is a source of low cost funds for lending out) to time deposit. Sourcing credit supply from time deposit will be costly for banks as this type of deposit pay higher interest to depositors, thus giving banks lower spreads on their lending. Consequently, loan growth of undercapitalized bank or banks with low level of liquidity will be more affected by monetary policy shocks. The basic concept of the bank lending channel is that specific characteristics of banks affect its ability to cushion the effects of monetary policy shocks on the credit supply of these banks (Bischel and Perrez, 2005). Restrictive monetary policy may decrease banks reserves thereby driving banks to cut back on their lending activities (Fruhwirth-Schnatter and Kaufmann, 2006). Therefore a tightening of monetary policy in the form of an increase in interest rate may translate to a decrease in loan supply of undercapitalized banks. Hence, banks with sufficient capital and/or enough liquidity will be able to sustain its lending activities despite of monetary policy tightening.

4. Data, Results and Analysis

This study uses the balance sheets of the 35 universal and commercial banks in the Philippines. Items in the balance sheet relevant to the study are the total assets and total loans. Total assets of the banks serve as basis for categorizing the banks according to size. The total loans per bank are used to calculate loan growth. The proxy for shifts in monetary policy is the sum of changes in overnight reverse repurchase rate (R) while the proxy to reflect economic condition is real GDP (Q) and the inflation rate (P), defined as the percentage change in the GDP deflator.

To be able to examine the cross-sectional differences in the loan growth, banks are segregated into 6 categories according to total asset size: >Php300B (large category),Php200B<size<Php300B (large1 category), Php100B<size<Php200B (large2 category), Php50B<size<Php100B (medium1 category), Php25B<size<Php50B (medium2 category) and <Php25B (small category). Quarterly data from 2008 to 2011are used. Panel ordinary least squares (OLS) method is utilized to check the relationship between the dependent variable, loan growth and the independent variable R, which represents the monetary policy indicator. ORRP is chosen, as data on RRP is incomplete. R is the sum of the first difference of ORRP, ORRP lag (1), ORRP lag (2) and ORRP lag (3). The loan growth, which is the dependent variable, is computed as follows:

Loan growth= log (Lt/Lt-1); where Lt is the total loans of each bank.

The independent variable, R, is computed as follows:

R= dORRPt + dORRPt-1 + ORRPt-2 + dORRPt-3

The estimation model is as follows:

dlog(Loans) = Constant + a1R + a2dlog(Q) + a3dlog(P)

where Q is GDP, P is the GDP deflator, R is as defined above and dlog takes the first difference of logarithms of the variables and the a's are the regression coefficients.

In the initial estimates, the growth in deposits and securities were included as independent variables as in Kishan and Opiela (2000). This was done to check if an increase in the banks' deposits can cushion the loan supply from the effects of shifts in monetary policy. However, the securities data of most banks is incomplete; therefore this variable was excluded in the estimation. Including total deposit growth yielded unsatisfactory results and are not presented in this paper anymore.

Size B=Billion	>Php300B Large	<Php300B >Php200B Large 1	<Php200B >Php100B Large 2	<Php100B >Php50B Medium 1	<Php50B >Php25B Medium 2	<Php25B Small
Constant	-0.0668	-0.1122	-0.0693	0.0139	-0.1027	-0.6857
t-stat	(2.1895)	(2.8040)	(1.7297)	(0.1851)	(0.6340)	(2.7872)
R	-0.0061	-0.0144	-0.0144	-0.0125	-0.0222	-0.2492
t-stat	(0.5259)	(1.0466)	(1.0001)	(0.4942)	(0.4031)	(3.0002)
GDP growth	0.5334	0.2567	0.2614	0.0155	0.0732	-0.3414
t-stat	(2.9511)	(2.3914)	(1.8722)	(0.1025)	(0.1744)	(0.5456)
Inflation	2.1079	1.9619	2.4282	-0.2404	7.855	-4.2592
t-stat	(2.0066)	(1.6794)	(1.8457)	(0.1197)	(1.6802)	(0.6325)
Time trend	0.0072	0.0113	0.0065	-0.0003	0.0022	-0.2416
t-stat	(2.5079)	(3.1773)	(1.7891)	(0.0523)	(0.1526)	(1.9244)
AR(1)	-0.5732	-0.2355	-0.3487	-0.1012	-0.2223	-0.2416
t-stat	(4.6630)	(1.8423)	(2.4618)	(0.7104)	(2.4138)	(1.9244)
Adj R^2	0.6372	0.2861	0.2340	-0.0646	0.0375	0.1011
Durbin Watson	1.8723	1.6450	1.9031	1.9278	2.0127	1.9135
No.of banks	4	6	4	5	10	6

The above table presents the estimates of the effects of monetary policy, represented by R on the loan growth. Following Kishan and Opiela (2000) and as previously stated, R is measured as the sum of the first difference of the ORRP up to the third lag. It is interesting to note that the estimated coefficient of R is negative in all categories but is statistically significant only for the smallest bank group (size<Php25B,t stat=(3.0002)), a result that more or less conforms to the findings of Kishan and Opiela (2000). As they point out,unlike their results, studies using aggregate data show positive and insignificant effect of monetary policy on loan growth (See Becketti and Morris, 1992; Bernanke and Blinder, 1992 and Friedman and Kuttner, 1993).

The result of this study implies that loan supplies of larger banks are insensitive to monetary policy while the loan supplies of banks belonging to the smallest category are responsive to changes in monetary policy stance. The results also show that for small banks, a one per cent change in R results in a decrease of 0.2492 in the growth rate of loans. This is the biggest decrease in loan growth rate compared to the decrease in growth rates of the other groups. The effect of shifts in monetary policy on the other size categories is insignificant. Of all the categories, the bank group with the largest asset base (>Php300B) shows GDP growth as being significant to loan growth (t-stat= 2.9511). The findings of the research offer evidence to support the hypothesis of this paper that movements in monetary policy rates are inversely related to loan growth. It shows evidence that a bank lending channel is present in the Philippines and the evidence becomes visible when data is disaggregated according to bank asset size. As shown above, the distributional consequence of monetary policy for US found in Kishan and Opiela (2000) is also shown in the Philippines.

5. Conclusion

The presence of the lending channel is significant to the transmission of the monetary policy into the economy. Empirical studies categorize banks according to certain characteristics when testing for the existence of these channels. The results of this paper are consistent with the hypothesis that the bank lending channel is evident in banks with smaller assets. As Bayangos (2010) points out, that though she has shown that the lending channel in the Philippines has its significance in the monetary policy transmission, empirical studies about this has not been actively undertaken.

This paper segregated the banks according to the size of their assets, and then tested the relation of the movements of the ORRP with the loan supply of these banks. The study finds that small banks are more sensitive to contractions in monetary policy rates than banks with bigger assets. Though the results are as expected, further studies can be made and more variables can be added to strengthen the evidence of the presence of these lending channels. Further studies can pursue the inclusion of finer types of deposits and securities as these can influence the supply of loans. Some studies such as Kishan and Opiela (2000)

included these variables. As policy rates shift upward, increase in time deposits and securities may be able to cushion the decline in loan supply for smaller banks.

Another area for research is the examination of the presence of the lending channel relative to the banks' capitalization with the use of the banks' capital leverage ratio. The capital leverage ratio is another bank characteristic that may influence the movements of loan supply in relation to policy rates. This was not implemented in this paper due to data limitations.

This study covers only evidence of the lending channel. Empirical studies can be done on providing evidence for the existence of the borrowers' net worth channel in the Philippines.

Finally, this paper shows that asset size can play an important role in the formulation of monetary policy by its influence on the loan growth. Therefore, bank characteristic, particularly asset size, must be recognized and considered when examining and evaluating the distributional effects of monetary policy on loan supply and ultimately, its effect on the real economy.

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