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Who Responds More to Monetary Policy? Conventional Banks or Participation Banks

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Abstract:

In this paper I investigate whether there is a systematic difference between conventional banks and participation banks in terms of their response to monetary policy shocks. For this purpose I look at the quarterly loan growth of commercial banks and participation banks in Turkish banking sector and see whether the lending channel of monetary policy differs depending on bank type. At the same time I control for some bank specific variables, namely the log of real assets, the ratio of liquid assets to total assets and the ratio of equity to total assets. I find that participation banks show larger reaction to monetary policy. In terms of bank specific variables, banks with higher liquidity ratio tend to have higher loan growth whereas, banks with larger asset size have smaller loan growth.

Key Words: *Lending Channel, Participation Banks, Commercial Banks*

JEL Classification*: E51, E52, G21*

1. Introduction

The lending channel of monetary policy has been a topic of research for many economists and policymakers. The general wisdom is that when the central bank adopts a monetary policy tightening by raising the interest rates, this leads to a rise in the funding costs of banks and therefore a reduction in loan growth. The studies reveal that lending channel of monetary policy works for many economis but the reaction of banks to changes in monetary policy is not uniform and depends on various factors. In this regard bank fundamentals have a significant impact on the lending channel of monetary policy. Peek and Rosengren (1995) find that bank capitalization measured by the ratio of capital to total assets, affects the reaction of banks to monetary policy. Kishan and Opiela (2000) investigate lending channel of monetary policy for U.S. banks from 1980 to 1995 and they find that small banks and undercapitalized banks are more affected by monetary policy. Kashyap and

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Stein (2000) also analyze the monetary transmission mechanism for U.S. banks and find that the lending channel of monetary policy has larger impact on banks with lower ratios of cash and securities to assets.

The studies also reveal that bank ownership and the level of competition in the market also affect the lending channel of monetary policy. Macit (2012) studies the Turkish banking sector from 2006 to 2010 and investigates whether the ownership structure of banks affects their response to monetary policy. He finds that public banks show the smallest reaction to monetary policy, whereas foreign banks are the most responsive banks.[2] Bhaumik, Dang and Kutan (2011) analyze the implications of bank ownership for lending channel of monetary policy for Indian banking sector. They find that bank ownership has significant impact on the reactions of banks to monetary policy. Olivero, Li and Jeon (2011) investigate the impact of level of competition in banking sector on the lending channel of monetary policy by looking at the data for commercial banks in 10 Asian and 10 Latin American countries from 1996 to 2006. They find that the lending channel of monetary policy is weakened as the level of competition increases.

The contribution of this paper to existing literature is that it investigates the lending channel of monetary policy for Turkish banking sector and analyze whether banks' reactions to monetary policy change depending on their type. In particular, I investigate whether there is a systematic difference in the response of commercial banks and participation banks to changes in monetary policy. In Turkish banking sector there are three types of banks, namely commercial banks, participation banks, and investment and development banks.[3] Table 1 shows the number of banks and total asset size for each type by the end of the third quarter of 2011. In Turkish banking sector commercial banks significantly dominate the sector and they hold about 92.5% of the total assets in Turkish banking sector. Participation banks operate according to Islamic rules in their lending and deposit collection activities and they own about 4.4% of total assets in the sector. As opposed to commercial banks they do not promise a fixed interest payment to their depositors. Instead, the funds that are collected from depositors are utilized in trade and industry and the profit that is obtained from the lending pool is shared by the depositors. The name "participation banks" also stems from the fact that the depositors participate in profit or loss that results from the activities of the bank. As can be seen in Figure 1 and Figure 2, even though these banks occupy a small place in the sector, their rapid growth rate implies an important future potential for these banks.

[2] Aydin and Igan (2010), Catik and Karacuka (2011), and Alper, Hulagu and Keles (2012) are some other examples who study the lending channel of monetary policy for Turkish banking sector.

[3] I do not take into account investment and development banks when looking at whether the lending channel of monetary policy changes depending on bank type. The reason is that as opposed to commercial banks and participation banks these banks are not entitled to collect deposits and this might create a significant difference.

Figure 1. The Growth Rate of Assets For Different Bank Types

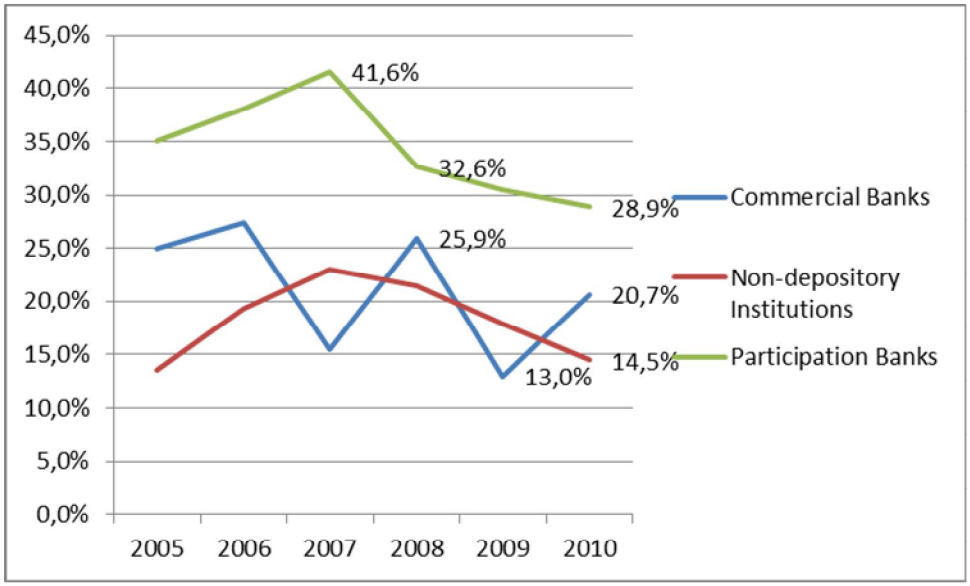

Figure 2. Share of Participation Banks in Terms of Assets, Loans, and Deposits

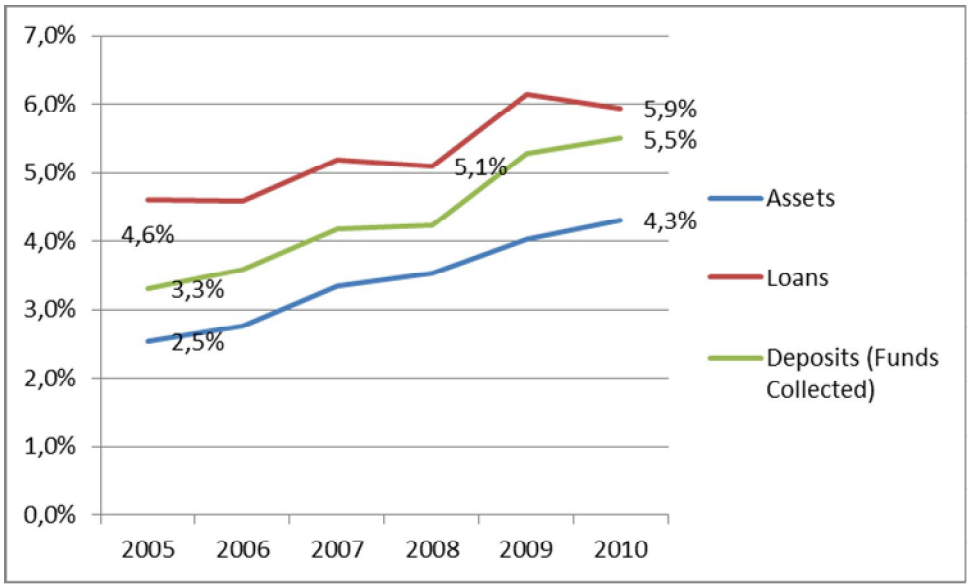

Table 1. Number of Banks and Total Asset Size (Million TL)

Bank Types	# Banks	Total Asset Size	% Share
Commercial Banks	30	1121032	92.5%
Participation Banks	4	53550	4.4%
Investment and Development Banks	13	37898	3.1%
TOTAL	**47**	**1212480**	**100.0%**

In order to investigate whether there is a difference in the reactions of commercial banks and participation banks to changes in monetary policy I look at the quarterly loan growth of these banks and see how it is affected from a change in monetary policy instrument. At the same time I control for some bank specific variables, namely the log of real assets, the ratio of equity to total assets, and the ratio of liquid assets to total assets. I find that participation banks are more responsive compared to commercial banks in terms of lending channel of monetary policy. The results also reveal that in general, banks that have higher ratios of liquid assets to total assets tend to have higher loan growth whereas banks with larger asset size are more likely to have lower loan growth.

The rest of the paper is organized as follows. Section 2 gives a description of the data and empirical model. Section 3 presents the estimation results and policy implications. Section 4 concludes.

2. Data and Empirical Model

2.1 Full Sample Level

The data that is used in the paper is a quarterly data that cover the period from 2006Q1 to 2010Q4.[4] The data for commercial banks which include quarterly loan growth, the log of real assets, the ratio of liquid assets to total assets, and the ratio of equity to total assets is calculated from unconsolidated balance sheets of banks which are obtained from Banks Association of Turkey database. Participation Banks Association of Turkey database is the data source for participation banks.

Table 2 gives a brief summary of bank specific variables used in the model. The results reveal that in general commercial banks are much more liquid than participation banks measured by the ratio of liquid assets to total assets. This is in fact related with the nature of participation banks. These banks, as they operate according to Islamic rules, are not allowed to hold interest-bearing securities.

[4] The data for commercial banks include the largest 15 commercial banks which account for more than 97% of total loans for commercial banks.

Therefore, their alternatives in terms of investing in liquid assets are very limited and they keep a very large portion of their assets in the form of loans.

Table 2. Summary Statistics For Bank Specific Variables

Variables	**Total**	**Commercial**	**Participation**
Real Assets			
Mean	207910.3	253615.5	36515.7
Standard Deviation	207911.9	211629.6	13805.5
Liquidity			
Mean	28.05	30.99	17.03
Standard Deviation	10.80	10.11	4.17
Equity			
Mean	11.81	11.71	12.20
Standard Deviation	2.64	2.71	2.31
Loan Growth			
Mean	7.10	6.77	8.36
Standard Deviation	7.26	7.47	6.33

There does not exist a big difference between commercial banks and participation banks in terms of their capitalization. Both types of banks are well-capitalized. In terms of loan growth, participation banks have higher quarterly loan growth on average. This is actually consistent with the purpose of these banks as they channelize a very large portion of the funds they collect to lending.

In terms of the choice of monetary policy instrument, the literature generally uses the target interbank rate by the central bank as the monetary policy instrument. For instance, in U.S. case Kashyap and Stein (1995) use the federal funds rate as the monetary policy instrument. Gambacorta (2005) uses the refinancing rate of European Central Bank for a study related with European banking sector. In this paper, I use the overnight lending rate by the Central Bank of Turkey as the monetary policy instrument. The reason is that this rate significantly affects the interbank rate and therefore by influencing the funding costs of banks has an impact on loan supply of banks.

2.2 Empirical Model

The reduced form equation that is estimated using fixed effects estimation can be written as follows:

$$\Delta loan_{it} = \mu_i + \alpha_1 \Delta MPI_{t-1} * CD_{it} + \alpha_2 \Delta MPI_{t-1} * PD_{it} + \beta' * BSV_{it-1} + \delta * GDP_t + \varepsilon_{it} \quad (1)$$

where $\Delta loan_{it}$ represents the quarterly loan growth of bank i at time t and ΔMPI_{t-1} refers to the change in monetary policy instrument at time t. The monetary policy instrument is put in the model with a lag as any change in monetary policy will be more likely to affect the loan growth of banks only next quarter. CD and PD are dummy variables representing commercial banks and participation banks respectively. BSV_{it-1} is a vector of bank specific variables for bank i at time $t-1$. It includes the log of real assets (LRA_{it-1}), the ratio of liquid assets to total assets (LIQ_{it-1}), and the ratio of equity to total assets (ETA_{it-1}). Again following Bhaumik, Dang and Kutan (2011) bank specific variables are put in the model with a lag. The growth rate of GDP is included as a macroeconomic control variable and μ_i stands for unobserveable bank specific fixed effects.

The model is estimated using fixed effects estimation method. The other commonly used estimation technique for panel data models is random effects estimation. The difference between the two estimation techniques is that fixed effects estimation treats the bank specific unobserveable effects μ_i as fixed, whereas the random effects model treats them as random. However, in order to be able to obtain consistent estimators in random effects estimation one should assume that $\mu_i's$ and the other independent variables in the model are not dependent. Hausman (1978) provides a test statistics in order to test whether $\mu_i's$ and other explanatory variables are independent. The results reveal that they are not indepedent and fixed effects estimators should be preferred to random effects estimators in order to obtain consistent estimators.

3. Estimation Results and Policy Implications

3.1 Estimation Results

Estimation results are given in Table 3. The bank specific fixed effects are not reported here but the F-statistics related with the joint significance of these effects is significant at 1% level. The F-statistics for the overall significance of the model is reasonably high and the R-squared of the regression is 0.34.

Table 3. Estimation Results

Coefficients	Loan Growth
LRA	-11.1865***
	(1.6735)
ETA	0.0371
	(0.2022)
LIQ	0.1513***
	(0.0555)
GDP	0.4606***
	(0.0515)
ΔMPI*CD	-0.7870***
	(0.2035)
ΔMPI*PD	-1.1374***
	(0.3735)
F-statistics	30.32
Prob>F	0.0000
R-squared	0.3388
F-statistics (all $\mu_i = 0$)	4.48
Prob>F	0.0000
# observations	380

Notes: In terms of the statistical significance of the coefficient estimates * denotes the significance at 10% level, ** denotes significance at the 5% level, and *** denotes significance at the 1% level. The numbers in paranthesis are the respective standard errors.

In terms of bank specific variables the results show that asset size and the ratio of liquid assets to total assets are significant variables. It is seen that smaller banks tend to have higher loan growth. This is consistent with the findings of Kishan and Opiela (2000) who investigate the response of U.S. bank to monetary policy and find that small banks are more responsive to changes in monetary policy. In terms of liquidity, more liquid banks are likely to have higher loan growth. Kashyap and Stein (2000) also find that U.S. banks that have lower ratio of cash and securities to total assets tend to be more affected by the lending channel of monetary policy. The ratio of equity to total assets does not seem to be a significant bank specific characteristic that affects loan growth.

The response of commercial banks and participation banks to lending channel of monetary policy is measured by the change in monetary policy instrument that interacts with the respective dummy variables for both types of banks. The coefficients of $\Delta MPI * CD$ and $\Delta MPI * PD$ are both negative implying that an increase in overnight lending rate, which is the monetary policy instrument here, leads to a decline in loan growth of both commercial banks and

participation banks. That is, the lending channel of monetary policy works for Turkish banking sector. However, the results reveal that the reactions of commercial banks and participation banks are not the same. To be more specific, for commercial banks one percent increase in overnight lending rate of central bank is expected to generate 0.79 percent decline in quarterly loan growth. On the other hand, participation banks show larger reaction to the lending channel of monetary policy. Numerically, one percent increase in overnight lending rate is expected to reduce the quarterly loan growth of participation banks by 1.14 percent.

3.2 Policy Implications

One can derive three important policy implications related with Turkish banking sector from the results obtained in this paper. First of all, for a combined sample of commercial banks and participation banks bank specific variables affect the lending channel of monetary policy. It is found that small banks and banks with higher ratios of liquid assets to total assets tend to have higher loan growth. In terms of asset size this shows us that for Turkish banks, small banks are more aggresive in terms of their loan growth. Another bank specific variable that affects bank lending is the ratio of liquid assets to total assets. The results show that banks that are more liquid are likely to have higher loan growth. This result is not surprising, as one could expect more liquid banks to respond less to monetary policy as they have more space to move in case of a monetary tightening.

Secondly, the results show that the lending channel of monetary policy works for Turkish economy. The coefficients for the change in monetary policy instrument, which is interacted with dummy variables for commmercial banks and participation banks, are both negative. Therefore, when the Central Bank of Turkey wants to affect the total demand in the economy via the lending channel, banks show considerable reaction to changes in monetary policy instrument.

Thirdly, the results provide evidence that there is a difference in the reactions of commercial banks and participation banks to the lending channel of monetary policy. It is found that participation banks are more responsive to monetary policy shocks in terms of their loan growth. One can conjecture that this may be due to the operating nature of these banks. Participation banks operated according to Islamic rules and they are basically doing interest-free banking. Therefore, in comparison to commercial banks they are more restricted in terms of their funding alternatives. For instance, participation banks cannot borrow in the form of syndicated loans which is an important source of external finance for Turkish banks. So limitation in funding alternatives could make participation banks more responsive to monetary policy shocks in terms of their lending.

4. Conclusions

In this paper I investigate the lending channel of monetary policy for Turkish banking sector for the period from 2006 to 2010 and analyze whether banks' reactions change according to their type. In particular, I look at whether commercial banks and participation banks respond differently to changes in monetary policy instrument. At the same time I control for some bank fundamentals that are assumed to affect bank lending.

In terms of bank specific variables, the results reveal that asset size and liquidity affect bank lending. In particular, small banks and banks that have higher ratio of liquid assets to total assets tend to have higher loan growth. This result is consistent with the other studies in the literature that are carried out for U.S. banking sector and other economies.

The results also reveal that lending channel of monetary policy works for Turkish economy for a combined sample of commercial banks and participation banks. That is, an increase in overnight lending rate by the central bank generates a reasonable decline in loan growth of Turkish banks. However, there are important differences in the responses of commercial banks and participation banks. On average, participation banks tend to be more responsive to monetary policy shocks, whereas commercial banks are less influenced from the lending channel of monetary policy. One could attribute this difference to the operating nature of participation banks which operate according to Islamic rules and therefore, have limited funding opportunities compared to commercial banks.

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