SBP Working Paper Series

No. 105 December, 2020

Response of Deposits to Fixation of Minimum Rate of Return: Evidence from Pakistan's Banking System

Muhammad Ejaz

STATE BANK OF PAKISTAN

SBP Working Paper Series

Editor: Farooq Pasha

The objective of the SBP Working Paper Series is to stimulate and generate discussions on different aspects of macroeconomic issues among the staff members of the State Bank of Pakistan. Papers published in this series are subject to intense internal review process. The views expressed in these papers are those of the author(s) not State Bank of Pakistan.

Price per Working Paper (print form)

Pakistan:	Rs 50 (inclusive of postage)
Foreign:	US$ 20 (inclusive of postage)

Purchase orders, accompanied with cheques/drafts drawn in favor of State Bank of Pakistan, should be sent to:

Chief Spokesperson,
External Relations Department,
State Bank of Pakistan,
I.I. Chundrigar Road, P.O. Box No. 4456,
Karachi 74000. Pakistan.

Soft copy is downloadable for free from SBP website: http://www.sbp.org.pk

For all other correspondence:

Postal: Editor,
SBP Working Paper Series,
Research Department,
State Bank of Pakistan,
I.I. Chundrigar Road, P.O. Box No. 4456,
Karachi 74000. Pakistan.

Email: wps@sbp.org.pk

ISSN 1997-3802 (Print)
ISSN 1997-3810 (Online)

Published by State Bank of Pakistan, Karachi, Pakistan.
Printed at the SBP BSC (Bank) – Printing Press, Karachi, Pakistan

Response of Deposits to Fixation of Minimum Rate of Return: Evidence from Pakistan's Banking System

Muhammad Ejaz [1]

Abstract

This paper evaluates the impact of the policy of fixing a minimum return on deposits on growth in deposits. The analysis, based on balance sheet data of 36 banks for the period from 1Q2008 to 2Q2019, shows that 4-quarter moving average growth in total, fixed, and saving deposits declines because of fixing minimum rate of return. This result varies considerably across maturity buckets and types of banks. The event analysis conducted over different sizes of the banks shows that deposit growth was lower for smaller banks and higher for big banks. This indicates redistribution of deposits from small to big banks. The evidence points towards the possibility of policy induced changes in the pricing behavior of the smaller banks, who may have been overpricing their deposits before the fixation of minimum rate.

JEL Classification: G14, G21, E43, E58
Key Words: Deposit, monetary policy, interest rate, event analysis

Acknowledgments

Authors would like to thank Sajawal Khan, Farooq Arby and anonymous reviewer for the thoughtful comments on an earlier version of this paper.

Contact for correspondence:
Muhammad Ejaz
Joint Director,
Monetary Policy Department
State Bank of Pakistan
I.I. Chundrigar Road
Karachi 74000.
Email:
Mohammad.Ejaz@sbp.org.pk

[1] Joint Director, Monetary Policy Department, State Bank of Pakistan, Karachi

Non-Technical Summary

Central banks can influence the earnings generated and realized on investment (otherwise known as yield) through many channels. One such channel is the interest rate channel. Changes in central banks' policy rates work though this channel first by affecting the rate at which commercial banks borrow and lend among themselves in interbank market, and then sebsequent interest rates for bsinesses and individuals. While, these changes in policy rate quickly transmit to interbank rate; their impact on retail lending or deposit rates comes with some lag. In fact, such changes in central banks' policy rate do not always fully transmit to ultimate interest rates on loans and deposits due to a number of frictions.

However, central banks can devise mechanisms to bypass the usual transmission mechanism and directly affect final rate on loans or deposits. One such strategy is to link the minimum rate of return on deposits paid by banks to their depositors. This may be done by tagging the interest rate on deposits with policy rate. The intention behind such mechanism can be twofold: First to quicken the transmission; and second to be prudent especially where market structure has asymmetries.

In 2008, SBP decided to introduce such a mechanism through its circular BP&RD No. 07/2008. The mechanism was revised a few times until 2013 when SBP set the minimum rate of return on deposits to 50 basis points below the prevailing SBP repo rate of the interest rate corridor (ICR).

This paper explores empirically the effects of such a mechanism on deposit growth. Apparently, deposits should grow faster after such policy of fixing minimum deposit rate as compared to in the absence of such policy because the opportunity cost of holding money in presence of policy is higher.

However, we have found, on the basis of a rigorous Event analysis, that the deposit growth was lower during the period after fixing of minimum rate as compared to that before the introduction of this policy. Moreover, the results vary considerably across various maturity buckets and deposit-sizes. The event analysis conducted over different sizes of banks shows that deposit growth was lower for smaller banks while for big banks, the deposit growth rates actually increased. This indicates redistribution of deposits. One explanation of this result is that, in the absence of the policy of fixing the return, smaller banks may have been overpricing their deposits. Subsequent to the policy, these banks may have lowered their margin on top of minimum return, which resulted in redistribution of deposits from smaller banks to bigger banks.

1. Introduction

Traditionally, the central banks, including State Bank of Pakistan (SBP), influence the yield on government securities in an attempt to affect monitor money market rates, which in turn transmit to both lending and deposits rates. The changes in these rates affect the cost of capital of banks and eventually determines the level of investment and consumption in the economy. This is the traditional view of monetary policy transmission as established in literature.

However, in May 2008, SBP directly influenced the deposit rate and fixed a minimum interest rate of 5 percent on saving deposits, apparently for the benefit of depositors.[1] This rate was later increased to 6 percent in 2012.[2] Then in 2013, SBP linked the return on deposits to prevailing floor of the interest rate corridor (ICR).[3] This policy is in vogue since then.

Although not explicitly stated in the regulatory instructions, the purpose of fixing the minimum rate on deposits appears to be regulatory in nature, aimed at forcing banks to pass on benefit of rising interest rates to depositors; and consequently, to ensure a steady growth in deposits. Theoretically, this would increase the opportunity cost of holding cash thereby encouraging growth in deposits of the banking system. Yet an unintended consequence of this policy is that it directly affects the cost of a major source of banks' financing (deposits) thus affecting their pricing decision.

Accordingly, it is important to test whether subjecting deposits to a minimum return has had a meaningful impact on the primary purpose – that is deposit growth. Therefore, this study examines the impact of the policy on deposit growth in Pakistan's banking system.

We have used bank level data and aggregated it across various types of banks such as Private Banks (PBs), Public Sector Banks (PSBs), Foreign banks (FBs) and Islamic Banks (IBs); and by size (Big, Medium and Small) on the basis of their average deposit size (Table-1). We have explored if the effect of minimum rate of return policy varied with the type and size of bank across various different dimensions of deposits, i.e., category, maturity and size.

The remainder of the paper is divided in eight sections. Section 2 reviews the literature. Section 3 outlines the methodology used for evaluation of the policy. Section 4 discusses data and sample properties. In section 5, we present findings of the event analysis to see the trajectory of growth in deposits over time before and after the policy. Sixth section summarizes the findings of event analysis in tabular form to establish factually whether the growth before and after intervention was any different. Seventh section of the paper provides results of the regression analysis while eighth section concludes findings.

[1] http://www.sbp.org.pk/bprd/2008/C7.htm
[2] http://www.sbp.org.pk/bprd/2012/C1.htm
[3] http://www.sbp.org.pk/bprd/2013/C7.htm

2. Literature Review

This section examines the existing literature on implications of forcing banks to link pricing of their deposits with the policy rate. Goodfriend and Macullum (2007) provides evidence to suggest that a central bank that fails to recognize the distinction between interbank and other short rates could miss its appropriate settings by as much as four percent per annum. Also, shocks to banking productivity or collateral effectiveness call for large responses in the policy rate. Kwapil and Schlarer (2006) studied the pass through of policy rate to retail interest rate for US and Euro Area (EA) economies. The general finding is that pass through is incomplete and limited which may have implications for stabilizing role of monetary policy. By the same corollary, linking of deposit rate with policy rate must complete the pass through and in turn increase the stabilizing role of monetary policy. According to Sellon (2002), in a simple and stylized view of the interest rate channel, monetary policy first influences bank lending rates and short-term market interest rates. Changes in short-term rates are then transmitted to long-term rates. Since the regulatory decision to link policy rates applies to deposits across all tenors, it is likely that the transmission of policy to long-term rates may be direct for investments in financial products. Agénor and Aynaoui (2010) used a model with credit market imperfections to study the implications of excess bank liquidity on monetary policy effectiveness. In their model, opportunity cost of holding cash is one of the determinants of excess reserves. Authors argue that excess liquidity may impart greater stickiness of the deposit rate in case of a monetary contraction. This will ease collateral requirement on borrowers and reduce risk premium. As a result, asymmetric bank pricing behavior under excess liquidity can affect monetary policy's effectiveness for arresting inflation. In a regime where cost of funding is fixed for every bank in the financial system, there is no basis for asymmetry in pricing of loans. Accordingly, the presumed effectiveness of monetary policy may not be severely compromised. Arteta et. al (2016) study the effectiveness of negative interest rate policies (NIRP). NIRP could pose financial stability risk particularly when policy rates are kept substantially below zero for a protracted duration. Madaschi and Nuevo (2017) investigated profitability of banks in Sweden and Denmark in the context of negative interest rate. They provide evidence to confirm that transmission mechanism was not impaired in negative interest regime. The banks' interest expense decrease significantly, which bolstered the resilience of their net income, which points to downward stickiness in the bank deposit rate.

In the literature, researchers have mainly looked at the fixation of return on deposits from the perspective of transmission mechanism.

3. Methodology

The study uses Event Analysis technique as well as regression analysis for the purpose of exploring the impact of fixing minimum rate of return on deposits. In case of event analysis, let E_t denotes the point in time when minimum rate of return is fixed on saving deposits.[4] For each bank i at time t, we calculate GD_{it} which is 3-months moving average of the Quarter-on-Quarter growth in deposits. The moving average has been calculated to filter out any noise in deposits due to cyclical changes. Accordingly, the behavior of growth in deposits around E_t can be seen by centering the trend component of growth in deposits GD_{it} by creating a window of eight quarters before and after E_t for banks.

[4] These instructions were issues on 13 April, 2012 vide BP&RD Circular No. 1 of 2013

The event analysis covers three major dimensions: (1) variation in trend components of fixed, saving and individual private deposits around E_t; (2) behavior of small deposits (up to Rs. 100,00) and large deposits (up to Rs. 5 million); (3) behavior across maturities, short (up to 1-month, 3-months, 6-months and 12-months) and long maturities (between 3 to 5 years and 5 to 10 years).

The event analysis has been carried out first across various types of banks in order to explore the heterogeneity in the corporate structures and varying scales of operations. The banks have been categorized broadly in four categories: (1) Local Private Banks – LPBs; (2) Foreign Banks – FBs; (3) Public Sector Banks – PSBs; and (4) Islamic Banks – IBs.

Similarly, the event analysis is also carried out for various sizes of the banks because size could also feature as an important factor in pricing power across banks. Size of banks has been determined by averaging the total deposits over the sample period and ranking them in ascending order. Banks with average deposits of Rs. 400 billion or above are referred to as Big Banks, those with deposits of more than 100 billion and less than 400 billion as Medium sized banks, whereas banks with average deposits below 100 billion are classified as Small banks.

Note that this classification, based on type and size, allows sufficient level of aggregation. It also helps capture impact of policy on deposits growth, if any, due to difference in such characteristics. Also, the classification based on type and size is broadly in line with the characterization of banks for the purpose of financial stability analysis used in State bank of Pakistan.

4. Data and Sample

The sample consists of a panel data obtained from unaudited balance sheets of 36 banks[5] for the period 1Q2008 till 2Q2019.

The selection of time period is based on availability of the data. Although SBP first fixed the minimum return on deposits in 2008, the balance sheet data for 8 quarters prior to the announcement of policy in 2008 was not readily available for all 36 banks. Accordingly, this analysis is limited to evaluating the version of policy that occurred in 2012Q2. Also, certain tweaks in the policy such as linking the minimum return with interest rate corridor (ICR) occurred in the 2012 version of the policy.

As for selection of banks in the sample of this study, the criterion was such that the bank should have been in normal business at the time the policy of fixation of minimum return on saving deposits announced. Note that, any mergers or acquisition occurring in the sample do not necessarily cause unnecessary bumps in deposits growth since the analysis has been carried out by aggregating the deposits either by type of banks or by size of banks. Therefore, unless the so-called merger or acquisition change the type or size of a bank, there would be no problems with the calculation of variables.

[5] Covers 100 percent of banks operative during sample period (see notes to Table-1)

As per notifications available on SBP's website, about 22 mergers/acquisitions have taken place over the period 2004-2017[6]. Of these, five occurred between 2008 and 2011, which happens to be the window for event analysis in this paper. Al Baraka Islamic bank was merged into Emirates Global, Atlas was merged into Summit Bank (Dec 2010), RBS was merged into Faisal Bank in the same year, and Maybank was merged into Summit Bank. None of these mergers or acquisitions has had any effect on size or types of resulting banks in the sample.

For the series to be used in the analysis, we first calculated Quarter-on-Quarter (QoQ) growth in the variable of interest. Then 4-quarters moving average growth rate has been calculated to get rid of any noise. The event (linking minimum deposits on saving rates to floor of interest rate corridor) occurred on April 13, 2012 or which falls in 2012Q2. Accordingly, we see the impact of this policy eight quarters before and after 2012Q2 when the policy was invoked. While selection of lag length is arbitrary, the fact that lag exists between price changes and response of customers to such changes is quite natural according to Hannan and Berger (1991). For Pakistan, Qayyum et. al. (2005) found that pass-through of treasury rate to banks' deposits rates takes longer due to rigidities. Table 2 provides summary growths of the various series used for analysis in this study. Overall, there is an implicit assumption embedded in the studies reviewed so far that pricing of deposits is somehow not a concern. The pricing of deposits is assumed to be market based with no intervention from regulator on the issue. However, Chiappori et. al (1995) attempted to study the consequences of regulation of rates paid on deposit. Their main finding is that in the long run such a policy results in lower equilibrium credit rates because of increased competition.

5. Results of Event Analysis

We present here results of event analysis carried out first by the types of banks and then by their sizes.

5.1. Bank type-wise analysis

Growth in types of deposits across various types of banks

As evident from Figure-1 on 4 quarter QoQ growth for different kind of deposits, Saving deposits of PBs and IBs grew immediately after policy went into effect. For PSBs, the growth was modest. Interestingly for FBs, the growth in saving deposits picked up after 2013.

Growth in different categories of deposits across various types of banks

Figure-2 provides 4-quarter moving average of QoQ growth in individual depositors[7] and customer depositors.[8] Similar to behavior in Figure-1, both individual and customers deposits increased in the quarters after event E_t for PBs. The growths of individual and customers depositors did no budge for PSBs and FBs. For IBs, however, an uptick can be seen towards the end of 2012.

[6] https://www.sbp.org.pk/notifications/bpd/index.htm
[7] Excluding deposits of business entities.
[8] Other than deposits of Financial Institutions.

Growth in deposits up to Rs. 100,000 with various maturities and types of banks

Figure-3 plots the 4-quarter moving average growth of deposits up to Rs. 100,000 centered at E_t for various maturity buckets. Deposits in the maturity buckets up to 1-month increased slightly after E_t for PBs. For PSBs, the sharp rise came in towards the end of 2012. For IBs and FBs, the growth after event E_t was unaffected. In fact, it fell afterwards.
Figure-3.1 shows 4-quarter QoQ growth in deposits upto Rs. 100,000 having maturity greater than 1-month but less than 3-months. Deposits of FBs and PSBs grew sharply after E_t but the rise flattened out eventually. For PBs and IBs, the growth was on the decline.
Deposits maturing between 3-month to 6-month have been plotted in Figure-3.2. First, the series behaves erratically around event E_t. Nonetheless, for FBs and PBs, a sharp rise can be seen immediately after E_t. For PSBs, the growth appears to flattened out after a sharp decline after about middle of 2011. For IBs, a similar pattern can be observed.

Figure-3.3 plots the figure for deposits maturing between 6 to 12 months. While slight uptick can be seen immediately after event E_t, the growth appears to be on the downward trajectory in the quarters subsequent to E_t.

Figure-3.4 plots longer term maturity deposits. There is no substantial difference in the growth rates when compared to short terms deposits growth as shown in Figures-3 and Figures-3.1-3.3. In fact, the deposit growths continued to fall after E_t indicating re-profiling of longer term deposits.

Growth in deposits up to Rs 5 million with various maturities and types of banks

Figure-4 plots growth in large deposits of size up to 5 million maturing within 1-month. IBs registered a sharp decline before E_t but then recovered sharply afterwards. In rest of the three cases, the growth was either flat or declined after E_t.

Growth in large deposits up to Rs 5 million maturing within 1 to 3 months is shown in Figure-4.1. For PSBs the rise can be seen after E_t which fell again towards the end of 2012. For IBs, the deposit growth was already on the rise before E_t and kept growing until the end of 2012. For FBs, however, the rise came much later (around 2013) thus cannot be attributed to E_t.

Figure-4.2 shows behavior of growth large deposits maturing within the 3 to 6 months. The QoQ growth in the deposits did not behave much differently from growth in large deposits up to 3-month maturity bucket except that for all types of banks, the growth was falling in the period after event E_t happened.

The next maturity bucket of growth in deposits maturing within 6 to 12 months is plotted in Figure-4.3. As with lower maturity bucket, the growth in deposits did not respond to E_t except for IBs where a healthy rise can be seen. However, this appears to be the result of momentum in growth that started in early 2011. An important point is that for all types of banks, the growth started to nose up in the beginning of 2013.

Figure-4.4 shows growth in large deposit of longer maturity (3 to 5 years) for four types of banks. There is recovery of negative growth for PBs and PSBs in this category of deposits around E_t. For IBs and FBs, the growth in this type of deposits were falling sharply. Also just when the growth was falling for PBs, a sharp

rise can be seen in PSBs. Similarly, when deposits of PBs were rising in 2013 (which is about 4 quarters after event E), the growth in PSB appears to be falling as much indicating shift in deposits from one type of banks to another.

5.2. Bank size-wise analysis

For the purpose of this analysis, banks were categorized as Big, Medium or Small as mentioned earlier. The motive behind this analysis is that bank size matters in the sense that banks with larger size may have more pricing power compared to medium or smaller sized banks. However, fixing minimum return on deposits was applicable independent of the size of a bank. Accordingly, holding everything else constant, the growth or lack thereof should have affected all banks equally. The analysis is carried out for various types of deposits (total, fixed and saving), types of depositors (individual or customers), various maturities (short and long) and different sizes of deposits (smaller or large).

Growth in types of deposits across various sizes of banks

Figure-5 shows plot of total, saving and fixed deposits for various sizes of banks categorized as big, medium or small banks. It may be noted that for big-6 and medium-sized banks, the saving deposits rose sharply after E_t but eventually the growth came down sharply. However, the growth in fixed deposits was not that sharp in the aftermath of E_t. For small banks, however, the growth in all types of deposits was collapsing leading up to event E_t. This indicates that there may have been redistribution of the deposits around event E_t.

Growth in types of depositors across various sizes of banks

In Figure-6, we have plotted growth in customer deposits and individual private deposits. For big banks, the growth took off after 2Q2012 for both individual private depositors and customer depositors. Whereas in medium sized banks, the individual private depositors rose much sharply after E_t compared to customer depositors. For smaller sized banks, the deposits growth in both categories of deposits (individual private deposits and customer deposits) fell sharply after E_t which indicates redistribution.

Growth in small deposits (up to Rs. 100,000) with various maturities and sizes of banks

For big banks, there is a sharp rise in this category of deposits as shown in Figure-7. However, for medium-sized banks, the QoQ growth in this category of deposits nosedived. For smaller banks, the smaller deposits were growing QoQ prior to event E_t and kept rising until after beginning of 2013 when the growth fell again.

Deposits growth shown in Figure-7.1 for smaller deposits up to Rs 100,000 behaves erratically across various bank sizes. No visible change in growth of this category of deposits is seen for big banks around event E_t. For medium sized, the growth shot up much before E and came down equally sharply towards end of 2012. However, for smaller banks, the growth in this category of deposits was tanking prior to E_t but took off sharply after E_t. Nonetheless, the volatility in growth is very high.

Figure-7.2 shows QoQ growth in small deposits maturing within 3-6 months. This graph shows no visible effect for big or medium sized banks around E_t. However, for smaller banks, the growth picked up sharply immediately after E_t. However, when seen over eight quarters before and after E_t, the growth appears very volatile.

Behavior of growth in small deposits maturing within 6 to 12 months around E_t can be seen in Figure-7.3. For all three sizes of banks', the growth was on downward trajectory until beginning of 2013. For medium sized banks, the growth rose in the first quarter of 2013 while for smaller banks, it took off a bit earlier.
Figure-7.4 shows growth in smaller deposits with longer maturity (between 3 to 5 years) around E_t. For medium and smaller sized banks, the growth subsequent to E_t was falling while for big sized bank, the growth flattened out post event E_t until it started rising again towards the end of 2012. This coincides with sharp fall in deposits of medium and smaller banks.

Growth in large deposits (up to Rs. 5 million) with various maturities and sizes of banks

Figure-8 shows that larger deposits maturing within one month only seem to have grown modestly after E_t for smaller banks.[9] For big and medium sized banks, the growth in larger deposits was declining.

The growth in category of large deposits maturing within 3 months is shown in Figure-8.1. The behavior of this category of deposits is similar to the one shown in Figure-8. That is, growth in both big and medium sized bank was falling after E while that in smaller banks responded only moderately to E_t.

Figure-8.2 shows growth in large deposits maturing within 3 to 6 months' time bucket. The growth for big banks was substantial but this growth came two quarters after event E_t. For medium sized banks, it fell after E_t and continued to decline. The growth in large deposits at smaller banks, however, rose moderately after E_t and seemed to have flattened out eventually.

The growth in this category of deposits is shown in Figure-8.3. For Big banks, the figure shows that growth behaved erratically after event E_t with each successive rise compensating for the fall in prior quarter. Similar dynamics can be seen for medium sized banks around E_t. For, smaller banks, however, the larger deposits were growing sharply leading up to events E_t but then fell sharply afterwards only to recover modestly later.
Figure-8.4 shows large deposits with maturity falling in the time bucket of 5 years to 10-years. Interestingly, the growth appears to be very volatile for big and medium sized banks around E_t. For smaller banks, the growth does not seem to be as volatile. Nonetheless, the size of growth appears to be overwhelmingly negative before E_t but less negative or flat after E_t for big banks. For medium sized banks, the opposite appears to have happened around E_t. Lastly, for smaller banks, momentum in growth appears to have flattened out after event E_t.

[9] For this graph only, the data is until 1Q2013 instead of 2Q2013.

6. Tabular Analysis

In this section, we put together the results of the event analysis to see factually if the growths before and after the event E_t differed. we have put the average growth rates calculated for eight quarters before the policy vis-s-viz with the average growth rates calculated for eight quarters after the policy.[10] This analysis has been divided into two subsections. First, we discuss the impact of policy for different types of banks followed by size-wise analysis.

6.1. Bank-type wise analysis

Table-3 provides a comparative analysis of average growth rates for various categories of deposits. Overall, average growth in deposits for 8 quarters (before policy went into place) remained 3.94 percent, which compares to 2.9 percent after the intervention. Similarly, for saving and fixed deposits the average growth rates also fell after the announcement of policy. However, for local private banks, the average growth rate for saving deposits increased from 3.99 percent before policy was announced to 4.8 percent after the policy was rolled out. Also, for PSB, the average growth rates increased substantially after the policy for total, fixed as well as saving deposits. The opposite holds true for Foreign banks. The average growth in all types of categories for IBs also appears to have lowered but not as badly as average growths for FBs, which lowered substantially.

The shorter and longer term maturity-wise average growth rates before and after policy announcement shown in Table-4 shows that average growths in deposits in 8 quarters after the policy collapsed compared to average growth in 8 quarters preceding the announcement of policy. The growths fell for almost all types of banks after the policy except in IBs where growth in small deposits of longer maturity was higher after the policy was put into effect. On the positive side, the volatility of growth in smaller deposits was considerably higher before policy which almost halved (overall) after the announcement of policy.

The analysis of shorter and longer term maturity-wise average growth rates of larger deposits (up to Rs. 5 million) provided in Table-5 show similar dynamics. Overall, the average growth rate of large deposits fell sharply after the policy when compared to growth rates before policy was put into effect. Unlike smaller deposits, there is no easing of volatility in growth rates of larger deposits after the policy. However, two important observations can be made. Foreign banks appear to have been affected mostly as their growth plunged more compared to any other type of bank. Secondly, for domestic private banks, the negative growth in longer term maturity deposits actually improved after the policy. This is important given that private banks form the major chunk of overall deposits.

6.2. Bank-size wise analysis

Table-6 provides 8-quarter-average-growth rates for total, fixed and saving deposits before and after the policy for Big, Medium and Smaller sized banks. The average growth rate for saving deposits has increased from 4.21 percent before policy was announced to 4.28 percent after intervention. However, average growth rates for fixed and saving deposits have fell after the policy was put in force. However, there are important

[10] The eight quarters after E includes the quarter in which policy went into force. I-e, 2Q2012

differences in growths of big banks when seen in comparison with medium and smaller banks. For big banks, the growth rates were higher after policy for all three categories of deposits whereas for smaller banks, the opposite was true. For medium banks, only average growth rate of saving deposits was higher after the intervention.

Tabl-7 provides average growth rates of small deposits (up to Rs. 100,000) of longer and shorter maturity before and after the announcement of policy. Overall, the growth rates fell after policy for both short and longer term maturity buckets. However, for small banks, the growth rates after the policy are higher compared to the growth rates before the policy was enforced. For medium sized banks, only longer term maturity deposits grew while for big banks, average growth of both short and long term maturity deposits fell after policy.

Table-8 shows average growth rates of large deposits (size up to Rs. 5 million) having short or longer maturities before and after announcement of policy for various bank sizes. Similar to dynamics observed in for smaller deposits, the overall average growth rates fell in both maturity buckets. Size-wise growth rates show that for all three sizes of banks, the policy appears to have had same effect. That is, the average growth rate of large deposits was higher in longer maturity bucket but lower for shorter maturity bucket post intervention.

7. Regression Analysis

The event analysis does not control for variables that might have affected growth in saving deposits such as effective interest on deposits, economic growth, inflation, efficiency and risk profile of a bank. To account for these factors, we have also run regression to isolate the true impact of policy. we have estimated the following fixed effect model to gauge the effect of policy on growth in saving deposits.

$$Y_{it} = \beta_0 + \beta_k X_{k,it} + \sigma_t T_t + U_{it} \quad (1)$$

Where Y_{it} is the growth in saving deposits for bank i at time t and $X_{k,it}$ denotes the kth independent variable for bank i at time t. These independent variables include: income, inflation, effective cost of deposits (or return on deposits from the perspective of depositors) and growth in currency. β_k denotes the respective coefficients of the aforementioned independent variables. U_{it} is the error term. T_t is the time dummy defined as follows:

$$T = \begin{cases} 1 & if\ T \geq 1Q2012 \\ 0 & Otherwise \end{cases} \quad (2)$$

A major problem with Fixed effect model is that it assumes the errors are uncorrelated with independent variable. This is an assumption that is frequently violated in practice. The presence of autocorrelation can lead to bias in the standard error. To account for this issue I have estimated the models using robust standard error (Kezdi, 2003).

Using a general-to-specific approach, we have tested all the variables that could potentially affect the return on deposits. The estimated models can be seen in Table-8. Two observations are immediately clear from the results in Table-8: first, the fixation of return on saving deposits negative affected the QoQ growth in saving deposits in all the specifications. Secondly, lagged (or momentum in deposit growth) is a significant indicator of growth in saving deposits. None of the control variables is statistically significant. Amid competing models, the model in specification (2) appears to outperform other since it explains as much variation within groups as model in specification (7). The other reason for this model being efficient is that

it also controls for any pass through effects of loose monetary policy in the periods 2012-2017, which needs be removed to isolate the effect the policy of fixing return on deposits. Figure-9 shows that performance of this model in predicting actual deposit growth within sample. Thus, in general, the results indicate that pricing of deposits may have affected the growth of saving deposits.

To see if the impact of policy varied across various sizes of the bank, we estimated model (2) on sub-samples of Big, Medium and Small banks. The results are provided in Table-9. The policy favored big banks while it affected relatively smaller banks unfavorably. Note that the policy has had a positive impact on saving deposits growth for big banks but it has had a negative impact for small banks. This finding is intriguing. In the absence of the policy (when banks were left to price the deposits on their own), smaller banks did not know the cost of big banks deposits. Thus, it was possible that these banks overpriced their products to attract deposits. Post intervention, small banks could now get near perfect information on deposits' cost structure of the competitor banks especially the big banks. Accordingly, they might have repriced their saving deposits by reducing the margins on top of the minimum return specified by SBP. This may have led to redistribution of some of the deposits from smaller banks to big banks. In fact, the Figure-10 confirms this view as effective interest paid by a bank varied with it size. The magnitude of the fall in price for smaller banks post intervention is much higher than the rise in effective interest paid by big banks post intervention. Simply put, the gap between price paid by big banks and small banks has narrowed significantly, than it was before the policy.

Table-10 shows that model (02) estimated across two types of institutions: first local private banks and 2) all others which include foreign, Islamic and public sector banks. Since the local private banks consist predominantly of big and medium sized banks, therefore the asymmetric impact of the policy is also evident in the results. The private banks' deposits grew less negatively than the negative growth of all others. More importantly, the coefficient for second type of banks is statistically significant.

The analysis in the section shows that the policy of fixing minimum return on saving deposits affected the way banks price their deposits and its impact is asymmetric across size and types of banks.

8. Conclusion

In 2012, State Bank of Pakistan (SBP) fixed a minimum return on saving deposits at 6 percent. Later in 2013, SBP set the minimum return on deposits to 50 basis point below the prevailing SBP repo rate of the interest rate corridor (ICR). Such a policy can be assumed to have a positive effect on deposit growth as opportunity cost of holding cash rises when nominal interest rates rise.

In this study, we have evaluated the impact of aforementioned policy on deposit growth using unaudited balance sheet data of 36 banks for the period 1Q2008 till 2Q2019. Our event analysis shows that in the quarters after the policy went into force, the four-quarter moving average QoQ growth in total, fixed, and saving deposits was lowered compared to that when no such policy was in place. This result varied considerably across various maturity buckets and deposit-sizes. However, the event analysis conducted over different sizes of the bank shows that deposit growth was lower for smaller banks while for big banks, the deposit growth rates actually increased. This indicates redistribution of deposits. we hypothesized that in the absence of SBP's policy to fix the return, smaller banks may have been overpricing their deposits.

Subsequent to the policy, these banks may have lowered their margin on top of minimum return, which resulted in redistribution of deposits from smaller banks to bigger banks. Our results based on sub-sample estimation of the effect of policy using fixed effect model show that smaller banks' deposit declined on average 9.4% on QoQ basis while the big banks deposits grew by 0.42% over the period of the sample. Thus, it is not out of place to conclude that the policy of fixing the return has had an unintended consequence for pricing and therefore redistribution of one of major source of financing for smaller banks.

References

Agénor, P. R., & El Aynaoui, K. (2010). Excess liquidity, bank pricing rules, and monetary policy. Journal of Banking & Finance, 34(5), 923-933.

Arteta, C., Kose, M. A., Stocker, M., & Taskin, T. (2016). Negative interest rate policies: Sources and implications. The World Bank.

Chiappori, P. A., Perez-Castrillo, D., & Verdier, T. (1995). Spatial competition in the banking system: Localization, cross subsidies and the regulation of deposit rates. European Economic Review, 39(5), 889-918.

Ejaz, M. (2019). Regulatory Capital Regime, Competition and Stability: The Case Study of Banking Sector of Pakistan. preprint available at https://www.researchgate.net/profile/Muhammad_Ejaz37/publication/339018353_Regulatory_Capital_Regime_Competition_and_Stability_The_Case_Study_of_Banking_Sector_of_Pakistan/links/5e394ef2299bf1cdb90b247e/Regulatory-Capital-Regime-Competition-and-Stability-The-Case-Study-of-Banking-Sector-of-Pakistan.pdf

Goodfriend, M., & McCallum, B. T. (2007). Banking and interest rates in monetary policy analysis: A quantitative exploration. Journal of Monetary Economics, 54(5), 1480-1507.

Hannan, T. H., & Berger, A. N. (1997). The rigidity of prices: Evidence from the banking industry. J. Reprints Antitrust L. & Econ., 27, 245.

Kezdi, G. (2003). Robust standard error estimation in fixed-effects panel models. Available at SSRN 596988.

Kwapil, C., & Scharler, J. (2006). Limited pass-through from policy to retail interest rates: empirical evidence and macroeconomic implications. Monetary policy and the Economy Q, 4, 26-36.

Madaschi, C., & Pablos Nuevo, I. (2017). The profitability of banks in a context of negative monetary policy rates: The cases of Sweden and Denmark (No. 195). ECB Occasional Paper.

Qayyum, A., Khan, S., & Khawaja, I. (2005). Interest rate pass-through in Pakistan: Evidence from transfer function approach.

Sellon, G. H. (2002). The changing US financial system: some implications for the monetary transmission mechanism. Economic Review-Federal Reserve Bank of Kansas City, 87(1), 5-36.

Table-1: **Average Deposits, Type and Size** of the banks in the sample (1Q2008 until 2Q2019)

SN	Bank	N	Avg. Deposits Billion Rs.	Size	Type
1	HBL	46	1,244	Big	Private Bank
2	NBP	46	1,145	Big	Public Sector Bank
3	UBL	46	843	Big	Private Bank
4	MCB	46	639	Big	Private Bank
5	ABL	46	587	Big	Private Bank
6	BAFL	46	492	Big	Private Bank
7	BAHL	46	419	Medium	Private Bank
8	Askari	46	351	Medium	Private Bank
9	Meezan	46	337	Medium	Islamic Bank
10	BOP	46	333	Medium	Public Sector Bank
11	HMB	46	295	Medium	Private Bank
12	SCBPL	46	293	Medium	Private Bank
13	Faysal	46	249	Medium	Private Bank
14	Soneri	46	146	Medium	Private Bank
15	JSBL	46	119	Medium	Private Bank
16	NIB	38	102	Medium	Private Bank
17	BankIslami	46	90	Small	Islamic Bank
18	SBL	46	86	Small	Private Bank
19	BOK	46	86	Small	Public Sector Bank
20	DIBPL	46	83	Small	Islamic Bank
21	SILKBANK	46	76	Small	Private Bank
22	RBS	12	74	Small	Private Bank
23	SindhBank	35	72	Small	Public Sector Bank
24	Citibank	46	66	Small	Foreign Bank
25	AlbarkaPak	46	62	Small	Islamic Bank
26	HSBC	27	39	Small	Foreign Bank
27	BBP	27	32	Small	Foreign Bank
28	ICBC	32	30	Small	Foreign Bank
29	Samba	46	30	Small	Private Bank
30	ZTBL	46	23	Small	Public Sector Bank
31	BBL	35	21	Small	Islamic Bank
32	FWBL	46	13	Small	Public Sector Bank
33	Deutsche	46	12	Small	Foreign Bank
34	BTML	46	3	Small	Foreign Bank
35	SME	46	3	Small	Public Sector Bank
36	Oman	31	0.449	Small	Foreign Bank

Notes: As of 1Q2008, there were 37 banks[11] whereas on 2Q2019 total reported banks were 35 including NIB, which had been merged into MCB effective July-2017[12].

[11] Annexure-4 to Financial Stability Review 2007-08 available at https://www.sbp.org.pk/FSR/2008/Annexes.htm
[12] Table 1.16 to Quarterly Compendium: Banking Statistics https://www.sbp.org.pk/ecodata/fsi/qc/2019/Jun.pdf

Table-2: Quarter-on-Quarter Growth-4-Quarters Moving Average

	Mean	Min	Max	St.Dev
Total Deposits	3.83	-5.96	14.11	3.33
Saving Deposits	4.38	-9.20	24.65	4.52
Fixed Deposits	3.05	-9.53	14.1	4.50
Customer (other than FIs) Deposits	3.86	-5.8	16.60	3.47
Size 100K Maturity upto 1M	627.47	-33.67	20767.4	3293.21
Size 100K Maturity >1M & <3M	121.95	-51.42	3682.76	567.6
Size 100K Maturity >3M&<6M	117.98	-44.65	2619.79	435.48
Size 100K Maturity >6M & 12M	21.24	-48.92	185.37	40.22
Size 100K Maturity >3Y&<5Y	35.23	-56.16	472.62	89.06
Size 5 Mn. Maturity upto 1M	41.57	-91.80	917.14	140.05
Size 5 Mn. Maturity >1M & <3M	9.10	-33.68	78.76	19.95
Size 5 Mn. Maturity >3M & <6M	30.32	-55.	888.80	138.20
Size 5 Mn. Maturity >6M & <1Y	6.1	-43.86	52.36	15.07
Size 5 Mn. Maturity >3Y & <5Y	10.86	-53.76	131.25	29.24

Table-3: Four Quarter Moving Average of QoQ Growth Rates of various **Types of banks**

Type of Bank	Before Policy			After Policy was put into effect		
	Total	**Saving**	**Fixed**	**Total**	**Saving**	**Fixed**
Private Banks	4.31	3.99	3.64	3.65	4.8	1.06
	[1.3]	[0.909]	[2.22]	[0.499]	[0.643]	[1.75]
Foreign Banks	1.1	2.52	0.316	-2.16	-0.667	-3.81
	[2.34]	[2.6]	[3.65]	[3.38]	[5.65]	[4.72]
Public Sector Banks	1.55	1.39	0.933	3.66	3.57	4.87
	[2.44]	[2.74]	[2.59]	[0.863]	[2.26]	[4.97]
Islamic Banks	8.88	9.48	9.01	6.45	7.45	4.1
	[1.68]	[1.45]	[2.07]	[0.66]	[1.65]	[2.19]
Total	3.94	4.35	3.47	2.9	3.81	1.56
	[3.65]	[3.72]	[4.33]	[3.61]	[4.25]	[4.94]

[ ] standard deviation

Table-4: Four Quarter Moving Average of QoQ Growth Rates of Small **Deposits Size up to Rs. 100K** with Short and Long Maturities for various **types of banks**

Type of Bank	Before Policy		After Policy was put in effect	
	Maturity < 12	**Mat. >3y & < 5Y**	**Maturity < 12**	**Mat. >3y & < 5Y**
Private Banks	11.1 [13.2]	-4.1 [10.5]	2.18 [5.25]	-3.71 [4.84]
Foreign Banks	100 [82.8]	115 [4.43]	-4.01 [12.2]	-
Public Sector Banks	36.5 [30.5]	100 [86]	18.1 [26]	40.6 [55.2]
Islamic Banks	54.1 [57.7]	-6.44 [9.4]	34.3 [64.1]	22.8 [18.2]
Total	50.4 [60.4]	42 [71.4]	14.4 [38]	19.9 [37.2]

[ ] standard deviation

Table-5: Four Quarter Moving Average of QoQ Growth Rates of Large **Deposit Size up to Rs. 5 Million** with Short and Long Maturities for various **types of banks**

Type of Bank	Before Policy		After Policy was put in effect	
	Maturity < 12	**Mat. >3y & < 5Y**	**Maturity < 12**	**Mat. >3y & < 5Y**
Private Banks	7.71 [4.41]	-5.51 [7.5]	-2.44 [2.85]	-1.8 [8.04]
Foreign Banks	14.4 [22.5]	27.4 [39]	4.64 [25.1]	-35.1 [14.1]
Public Sector Banks	14.5 [19.9]	-4.8 [12.1]	6.79 [5.77]	7.59 [7.95]
Islamic Banks	11.2 [11.2]	16.4 [13.5]	8.8 [13.3]	-5.04 [6.75]
Total	12 [15.7]	8.36 [25.2]	4.45 [14.5]	-5.84 [16.7]

[ ] standard deviation

Table-6: Four Quarter Moving Average of QoQ Growth Rates for various **Sizes of banks**

Size of Bank	Before Policy			After Policy was put into effect		
	Total	**Saving**	**Fixed**	**Total**	**Saving**	**Fixed**
Big Banks	3.38 [0.594]	2.78 [0546]	2. 45 [1.77]	3.84 [0.561]	4.49 [0.832]	2.84 [0.911]
Medium Banks	4.17 [0.55]	4.23 [0.784]	3.86 [3.65]	3.45 [0.311]	5.24 [1.2]	0.147 [1.78]
Small Banks	3.94 [0.872]	5.61 [2.1]	3.17 [1.84]	2.76 [0.668]	3.13 [1.51]	0.784 [1.29]
Total	3.83 [0.738]	4.21 [1.73]	3.16 [1.66]	3.35 [0.686]	4.28 [1.46]	1.26 [1.76]

[ ] standard deviation

Table-7: Four Quarter Moving Average of QoQ Growth Rates of Small **Deposits Size up to Rs. 100K** with Short and Long Maturities for various **Sizes of Banks**

Type of Bank	Before Policy		After Policy was put in effect	
	Maturity < 12	**Mat. >3y & < 5Y**	**Maturity < 12**	**Mat. >3y & < 5Y**
Big Banks	41.7 [24.5]	94.1 [83.6]	19.2 [27.3]	49.7 [67.8]
Medium Banks	23 [26.6]	-5.54 [13.6]	-14.5 [29.8]	8.9 [10]
Small Banks	1.15 [1.55]	-2.94 [5.19]	2.37 [3.34]	5.49 [8.32]
Total	22 [26.1]	28.5 [66.6]	12.0 [23.5]	21.4 [43.3]

[ ] standard deviation

Table-8: Four Quarter Moving Average of QoQ Growth Rates of Small **Deposits Size up to Rs. 5 Million** with Short and Long Maturities for various **Sizes of Banks**

Type of Bank	Before Policy		After Policy was put in effect	
	Maturity < 12	**Mat. >3y & < 5Y**	**Maturity < 12**	**Mat. >3y & < 5Y**
Big Banks	6.11	-9.24	1.14	0.36
	[4.9]	[9.99]	[3.27]	[5.53]
Medium Banks	6.26	-1.48	-0.286	2.87
	[3.69]	[6.21]	[2.71]	[27.9]
Small Banks	6.13	-11.2	5.89	-3.54
	[7.97]	[9.71]	[2.61]	[3.86]
Total	6.17	0.151	2.25	-0.103
	[5.55]	[12]	[3.85]	[16]

[ ] standard deviation

Table-8: Fixed Effects Panel Data Regression Estimates

Dependent Variable: QoQ Growth in Saving Deposits	**(1)** Policy Fixed Dummy	**(2)** Deposit Rate	**(3)** Inflation	**(4)** Growth	**(5)** Efficiency	**(6)** Riskiness	**(7)** Combined
L1 Saving Deposit Growth	0.111***	0.114***	0.111***	0.111**	0.110***	0.111***	0.113***
	(2.27)	(2.36)	(2.28)	(2.25)	(2.23)	(2.25)	(2.28)
Policy- Fixed	-4.56***	-5.56***	-5.07***	-4.31**	-4.40**	-4.56**	-5.07**
	(-3.13)	(-3.18)	(-3.51)	(-3.16)	(-2.78)	(-2.85)	(-3.24)
Effective Interest Rate		-1.04					-1.24
		(-1.32)					(-1.55)
L3. Inflation			-0.36				-0.01
			(-0.78)				(-0.02)
L1.Growth				-1.10			-1.52
				(-1.16)			(-1.37)
Efficiency					0.48		0.66
					(0.42)		(0.52)
Riskiness						0.01	0.04
						(0.05)	(0.31)
_cons	8.90***	12.91***	9.92***	10.37***	7.83**	8.82***	15.29***
	(8.6)	(4.31)	(5.98)	(5.37)	(2.77)	(3.63)	(3.80)
Obs.	1343	1343	1343	1343	1339	1337	1337
R-Overall	0.213	0.241	0.214	0.213	0.217	0.214	0.255
R-Between	0.650	0.638	0.655	0.642	0.578	0.639	0.573
R- Within	0.168	0.176	0.169	0.170	0.168	0.168	0.181
F-Statistics	6.62	4.73	9.02	4.73	5.47	4.62	12.13
Corr(u_i, xb)	0.236	0.266	0.237	0.234	0.241	0.238	0.280

t-statistics is in parenthesis, Robust Standard Errors
**** p<0.01, ** p<0.05, * p<0.1*

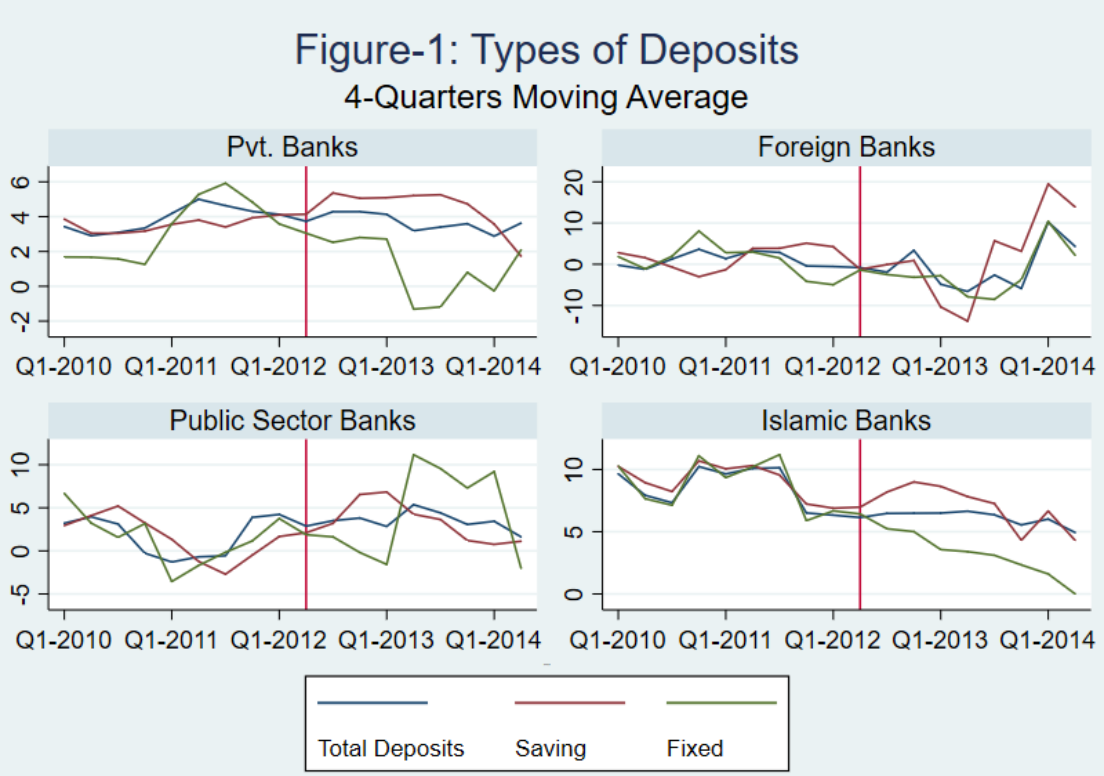
Table-9: Fixed effect model estimates for sub sample based on **size of the bank**

Dependent Variable: QoQ Growth in Saving Deposits	(8) Big-6	(9) Medium Sized Banks	(10) Small Banks[1]
L1 Saving Deposit Growth	0.544***	0.553***	0.110**
	(12.44)	(10.55)	(2.53)
Policy- Fixed	0.426*	-0.246***	-9.449***
	(2.42)	(-0.45)	(-3.49)
Effective Interest Rate	0.678**	0.631**	-1.534
	(3.37)	(3.26)	(-1.62)
_Cons	-0.686	0.197	19.88***
	(-1.24)	(0.21)	(5.07)
Obs.	246	402	688
R-Overall	0.399	0.524	0.271
R-Between	0.023	0.899	0.688
R- Within	0.410	0.524	0.212
F-Statistics	146.78	39.36	5.51
Corr(u_i, xb)	-0.109	0.323	0.262

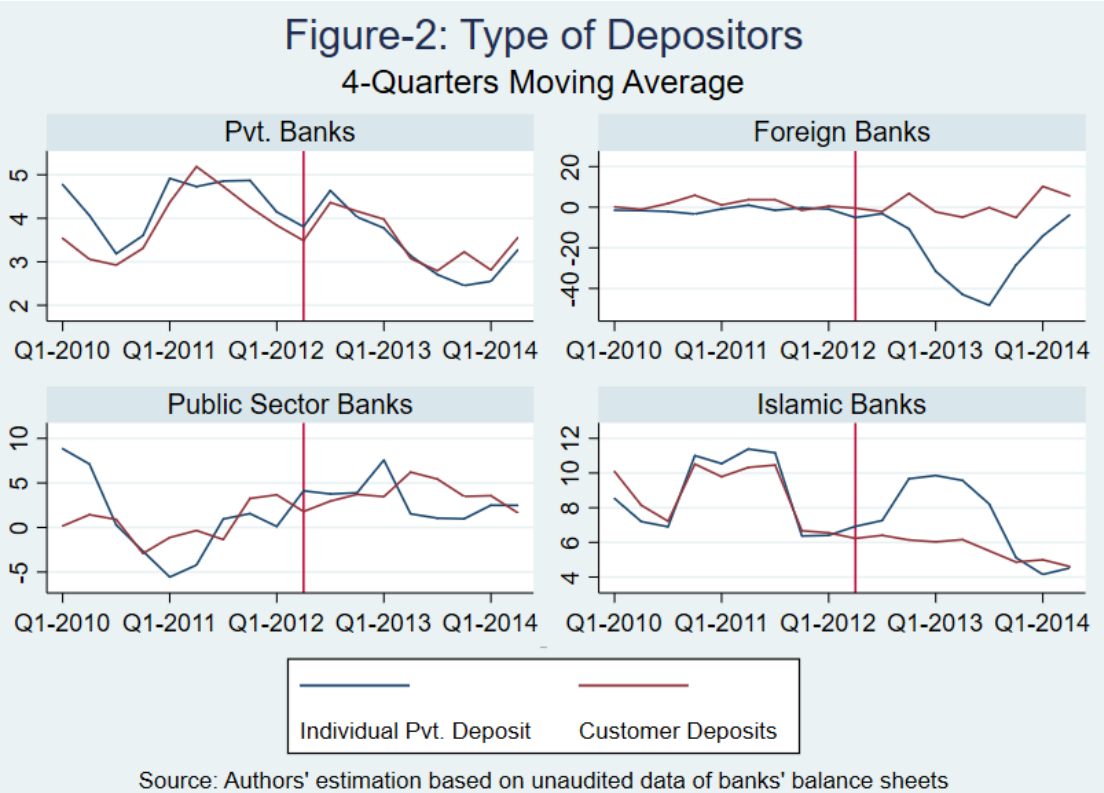
t-statistics is in parenthesis, Robust Standard Errors, *** *p<0.01, ** p<0.05, * p<0.1* [1]Excluding RBS

Table-10: Fixed effect model estimates for sub sample based on **type of the bank**

Dependent Variable: QoQ Growth in Saving Deposits	**(11)** Domestic Private Banks	**(12)** Rest of the banks
L1 Saving Deposit Growth	0.592***	0.068**
	(20.47)	(3.13)
Policy- Fixed	-1.044	-8.156
	(-1.54)	(-1.57)
Rate of Deposit	-0.463	-5.249
	(-0.96)	(-1.30)
_Cons	3.404***	25.595**
	(5.06)	(2.48)
Obs.	550	191
R-Overall	0.531	0.144
R-Between	0.996	0.598
R- Within	0.436	0.185
F-Statistics	160. 29	3.56
Corr(u_i, xb)	0.420	0.113



Source: Authors' estimation based on unaudited data of banks' balance sheets



Source: Authors' estimation based on unaudited data of banks' balance sheets

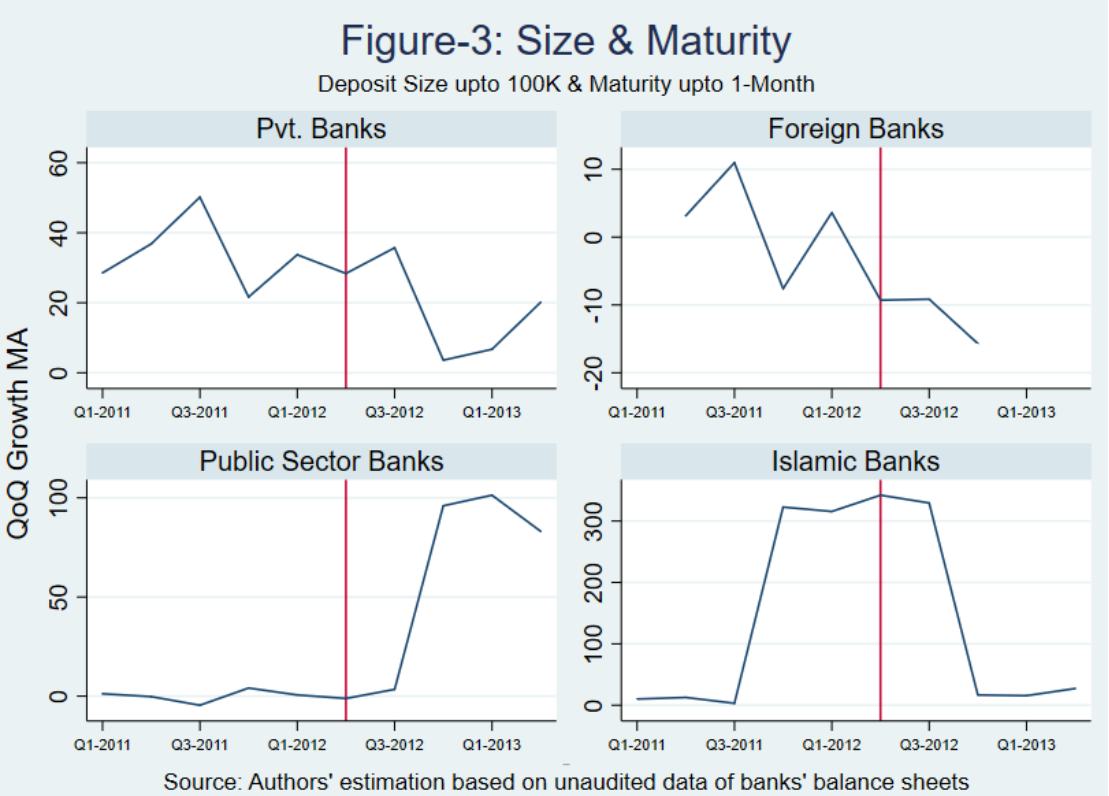


Figure-3: Size & Maturity
Deposit Size upto 100K & Maturity upto 1-Month
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

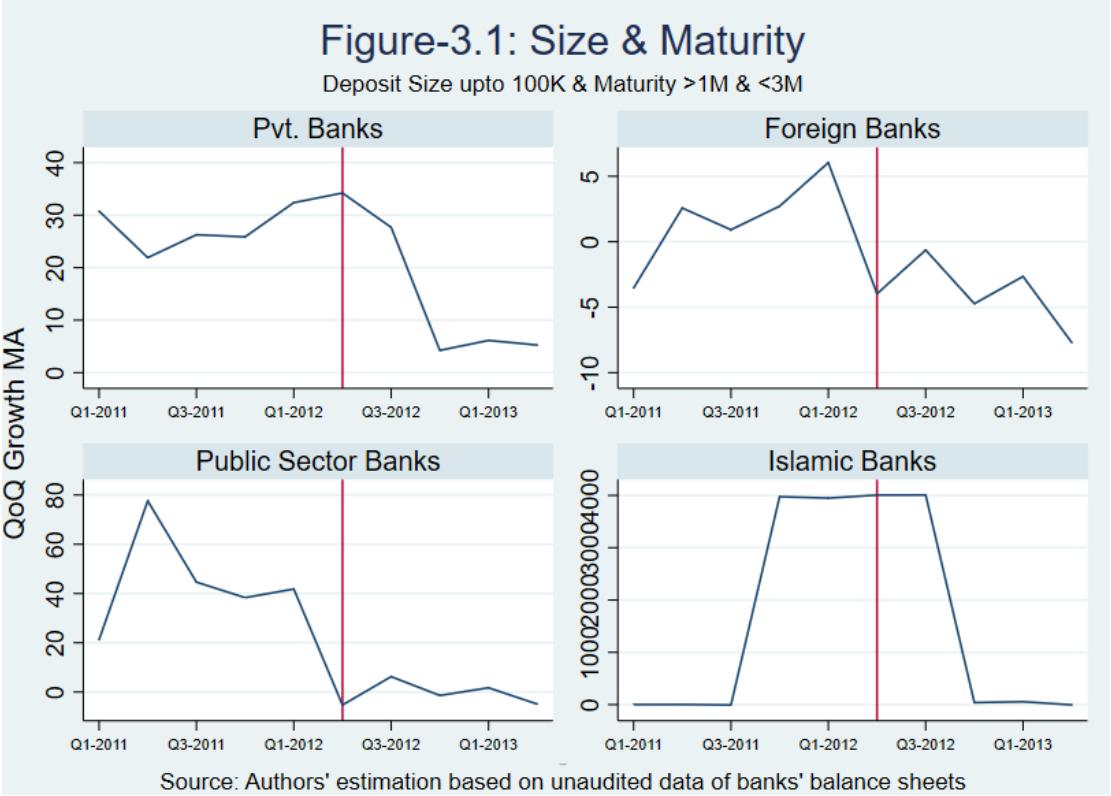


Figure-3.1: Size & Maturity
Deposit Size upto 100K & Maturity >1M & <3M
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

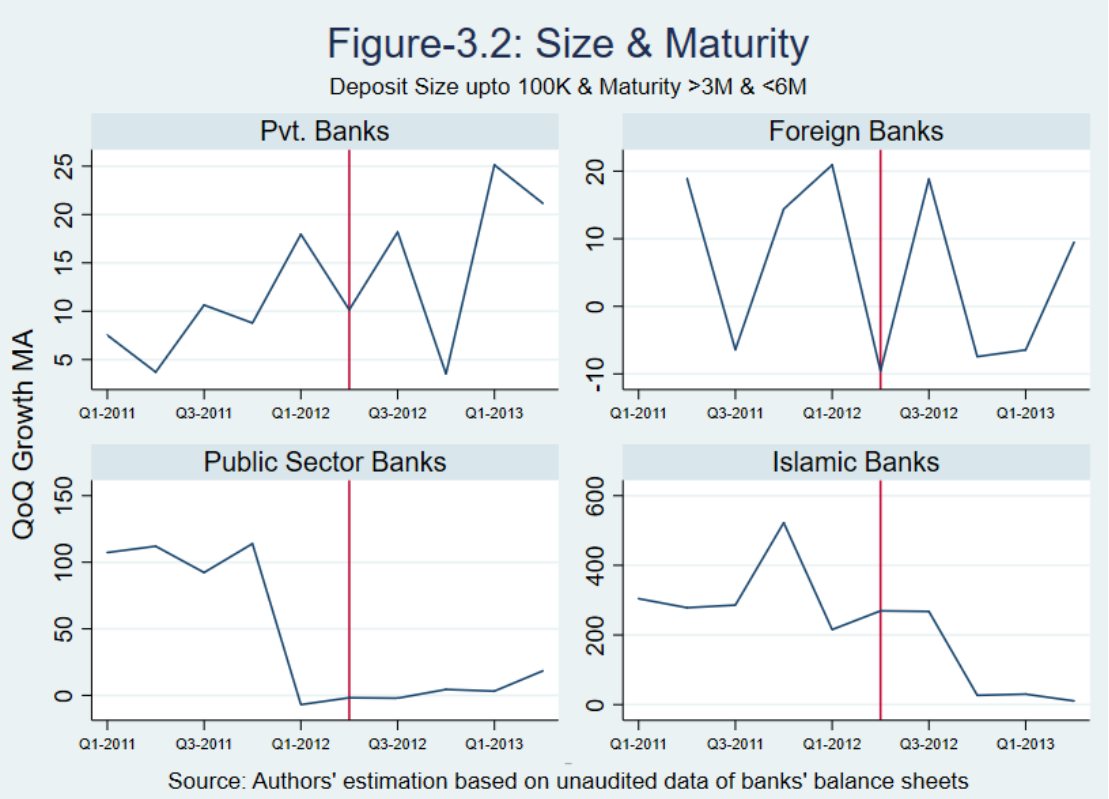


Figure-3.2: Size & Maturity
Deposit Size upto 100K & Maturity >3M & <6M
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

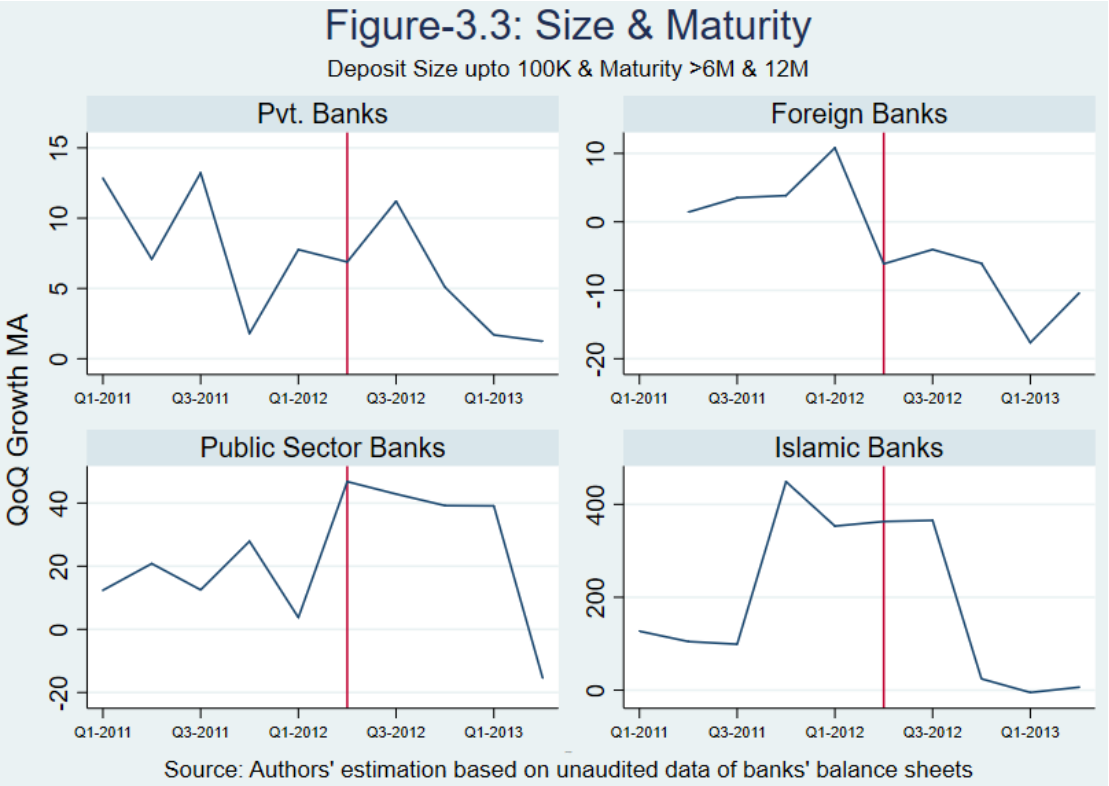


Figure-3.3: Size & Maturity
Deposit Size upto 100K & Maturity >6M & 12M
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

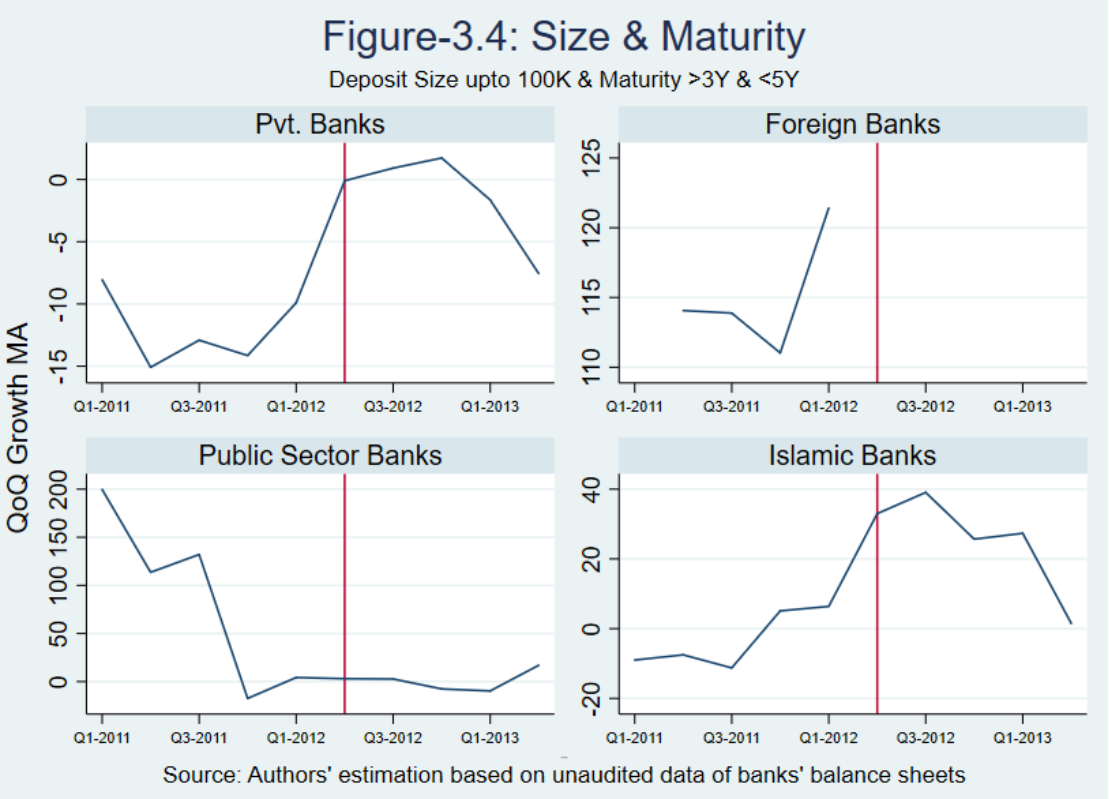


Figure-3.4: Size & Maturity
Deposit Size upto 100K & Maturity >3Y & <5Y
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

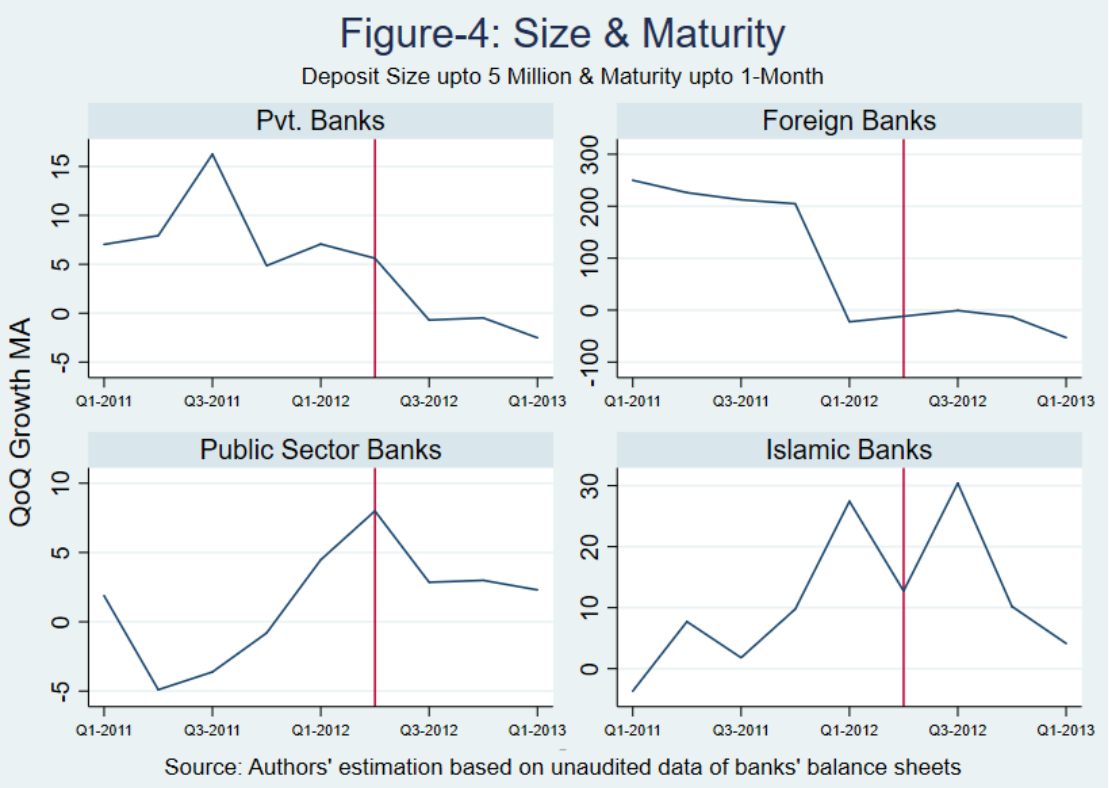


Figure-4: Size & Maturity
Deposit Size upto 5 Million & Maturity upto 1-Month
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

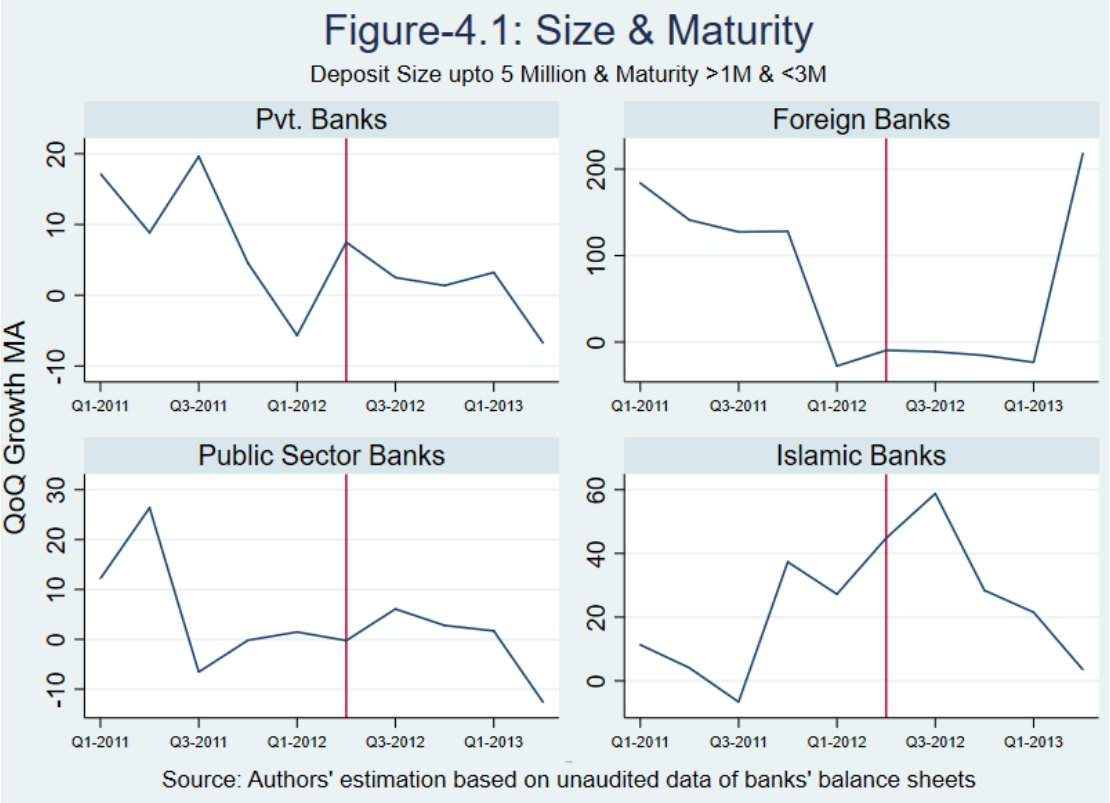


Figure-4.1: Size & Maturity
Deposit Size upto 5 Million & Maturity >1M & <3M
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

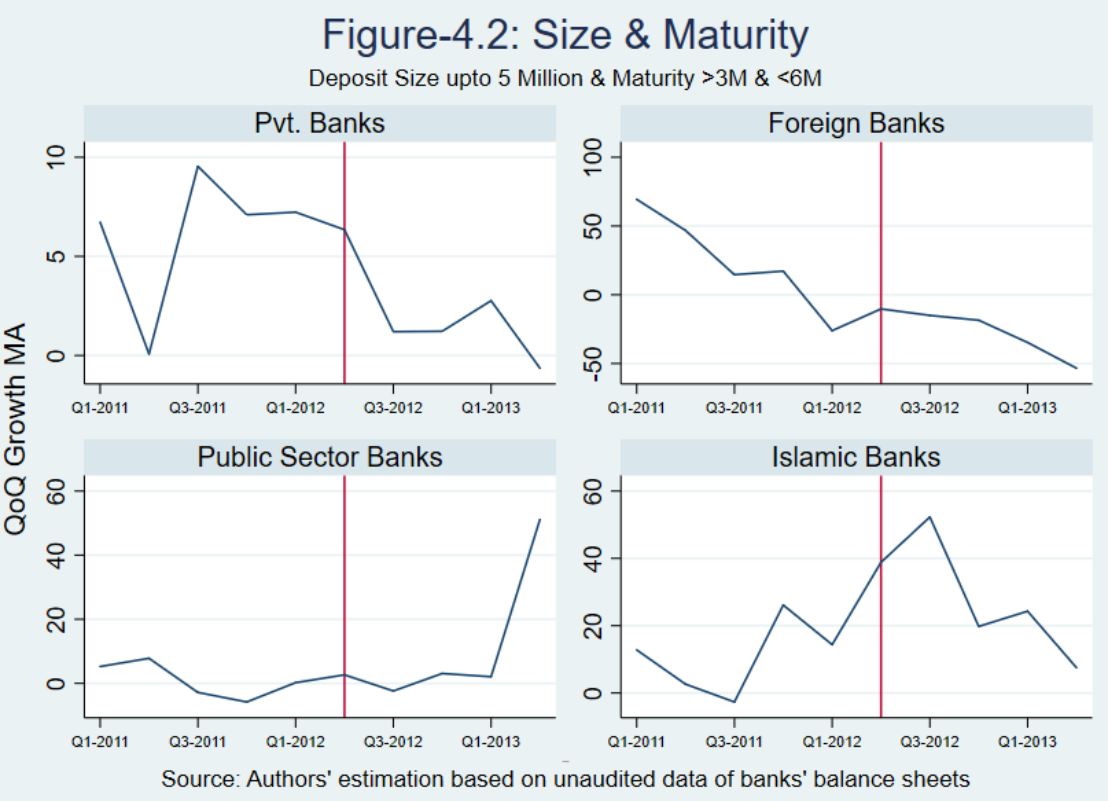


Figure-4.2: Size & Maturity
Deposit Size upto 5 Million & Maturity >3M & <6M
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

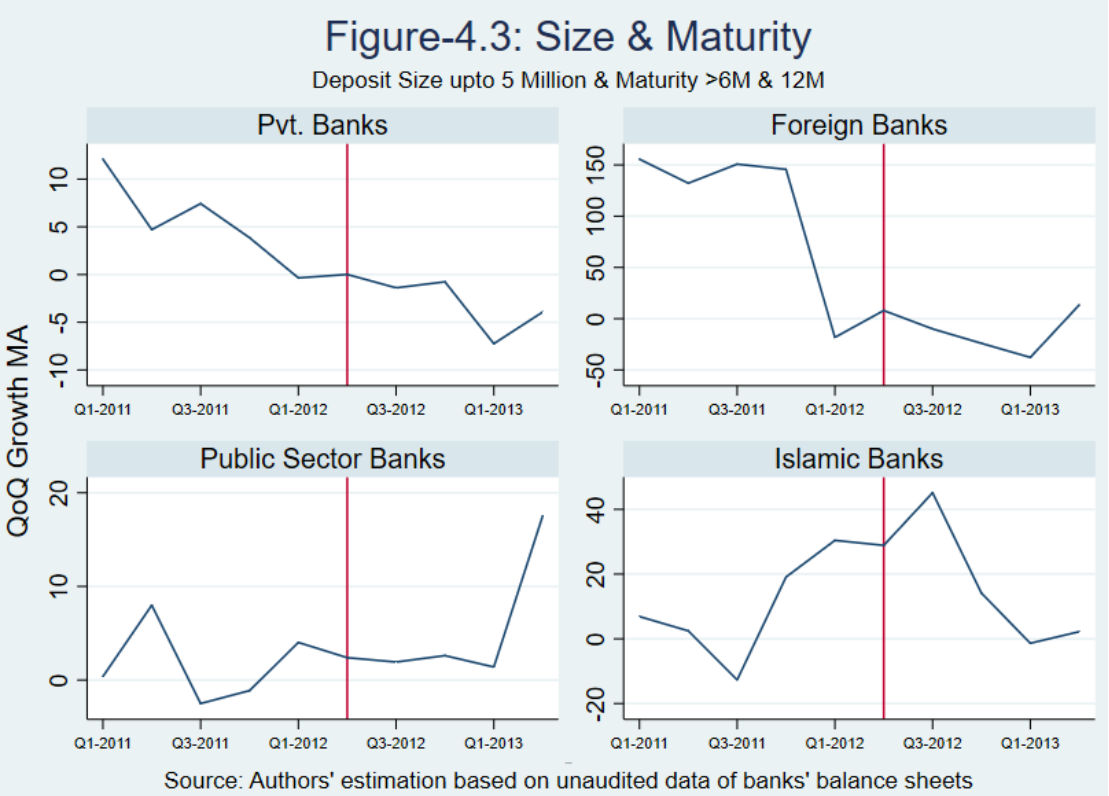


Figure-4.3: Size & Maturity
Deposit Size upto 5 Million & Maturity >6M & 12M
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

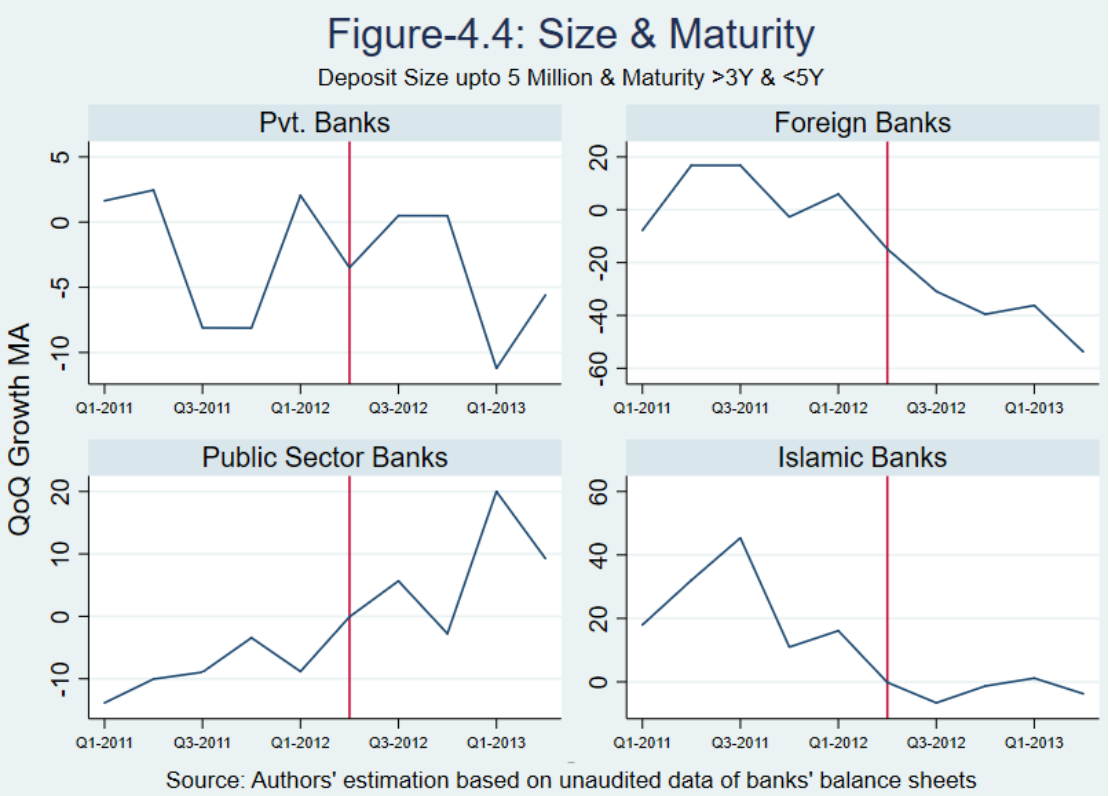
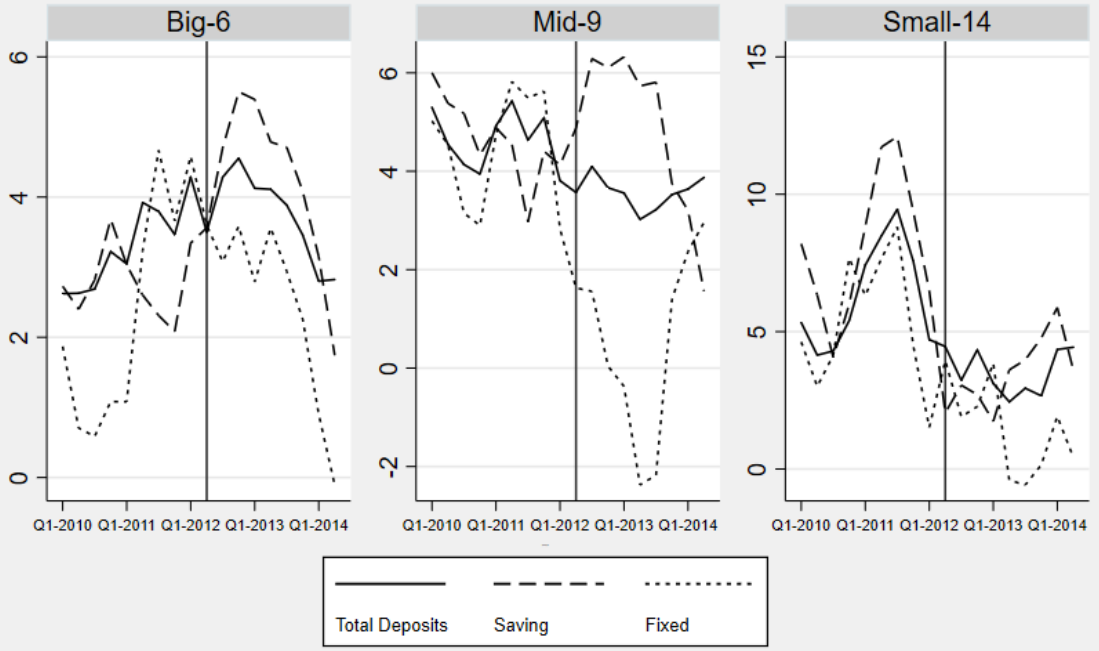


Figure-4.4: Size & Maturity
Deposit Size upto 5 Million & Maturity >3Y & <5Y
Pvt. Banks
Foreign Banks
Public Sector Banks
Islamic Banks
QoQ Growth MA
Q1-2011
Q3-2011
Q1-2012
Q3-2012
Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

Figure-5: Types of Deposits

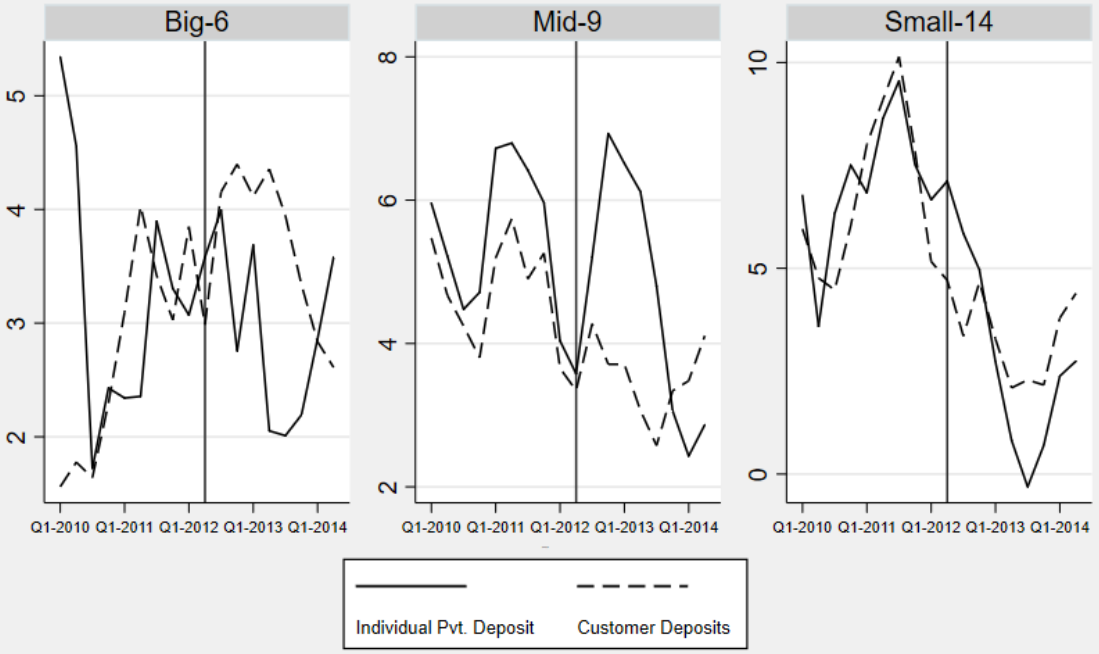
4-Quarters Moving Average



Source: Authors' estimation based on unaudited data of banks' balance sheets

Figure-6: Types of Depositors

4-Quarters Moving Average



Source: Authors' estimation based on unaudited data of banks' balance sheets

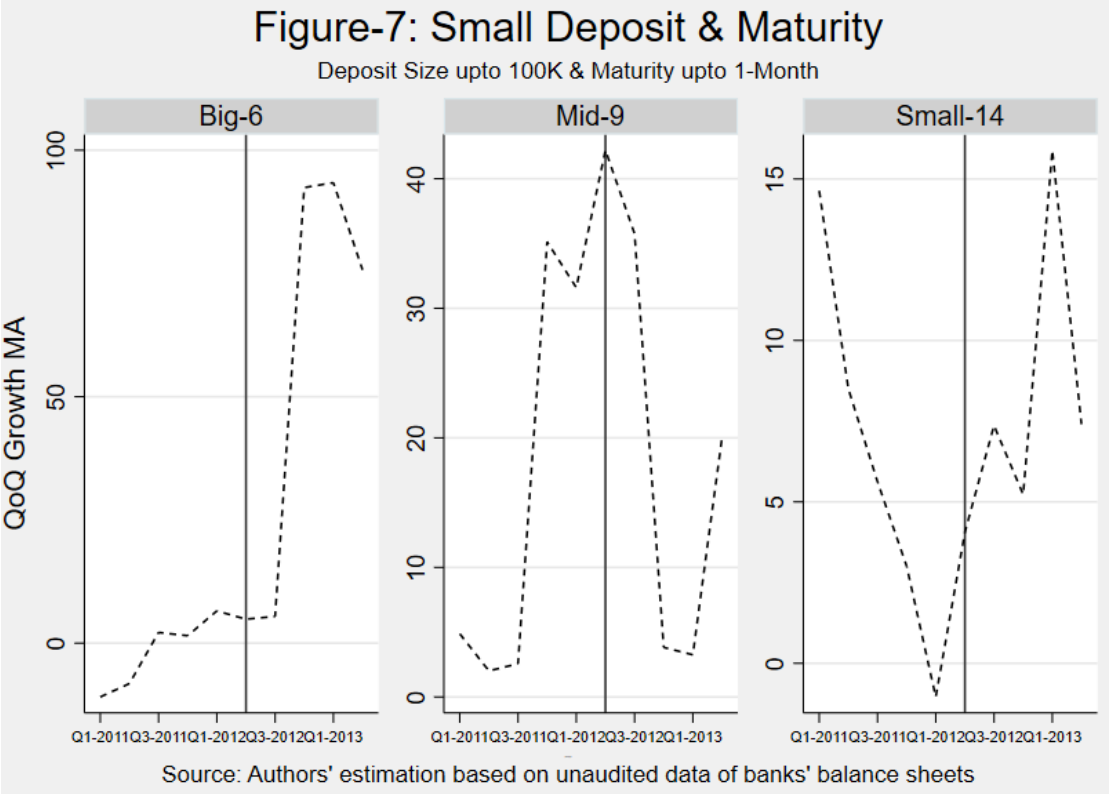


Figure-7: Small Deposit & Maturity
Deposit Size upto 100K & Maturity upto 1-Month
Big-6
Mid-9
Small-14
QoQ Growth MA
0
50
100
0
10
20
30
40
0
5
10
15
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

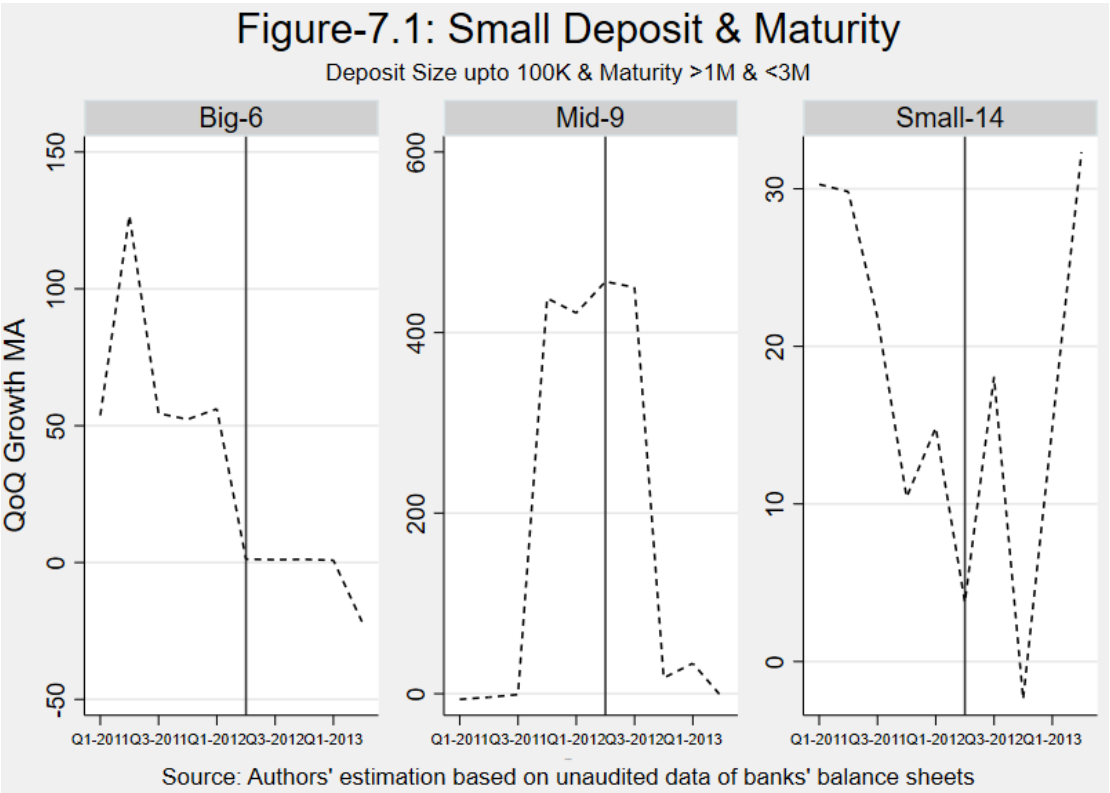


Figure-7.1: Small Deposit & Maturity
Deposit Size upto 100K & Maturity >1M & <3M
Big-6
Mid-9
Small-14
QoQ Growth MA
-50
0
50
100
150
0
200
400
600
0
10
20
30
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

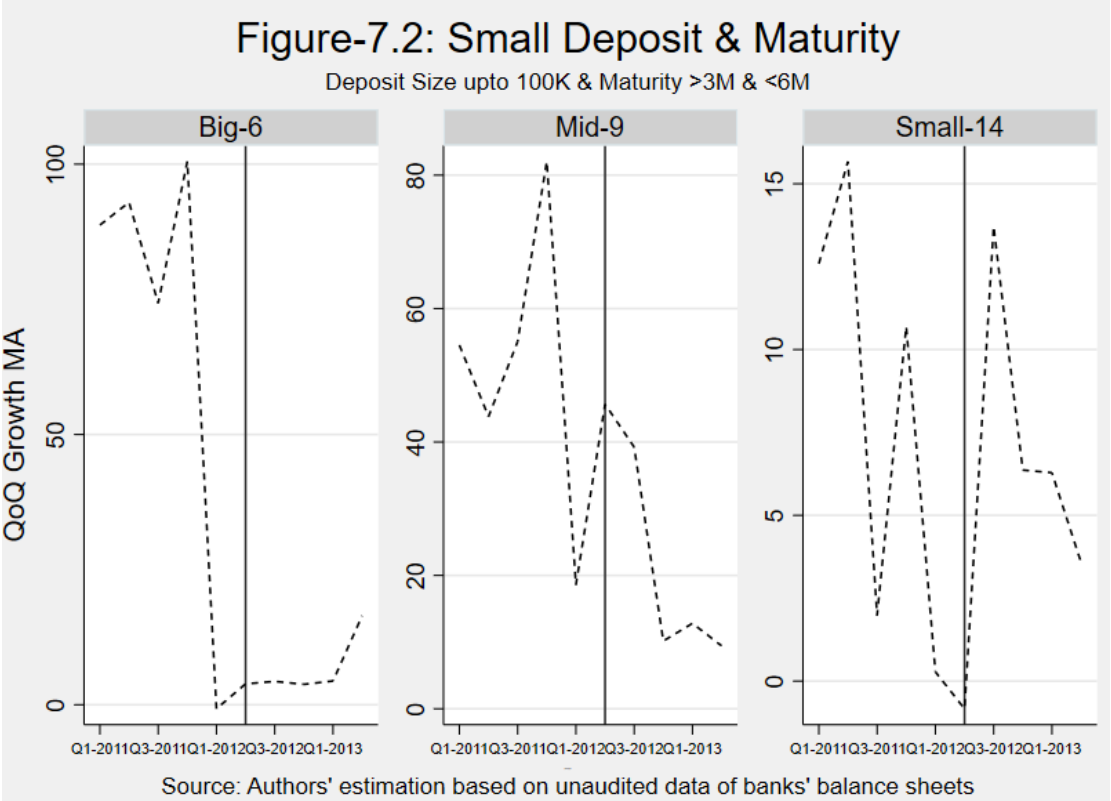


Figure-7.2: Small Deposit & Maturity
Deposit Size upto 100K & Maturity >3M & <6M
Big-6
Mid-9
Small-14
QoQ Growth MA
0
50
100
0
20
40
60
80
0
5
10
15
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

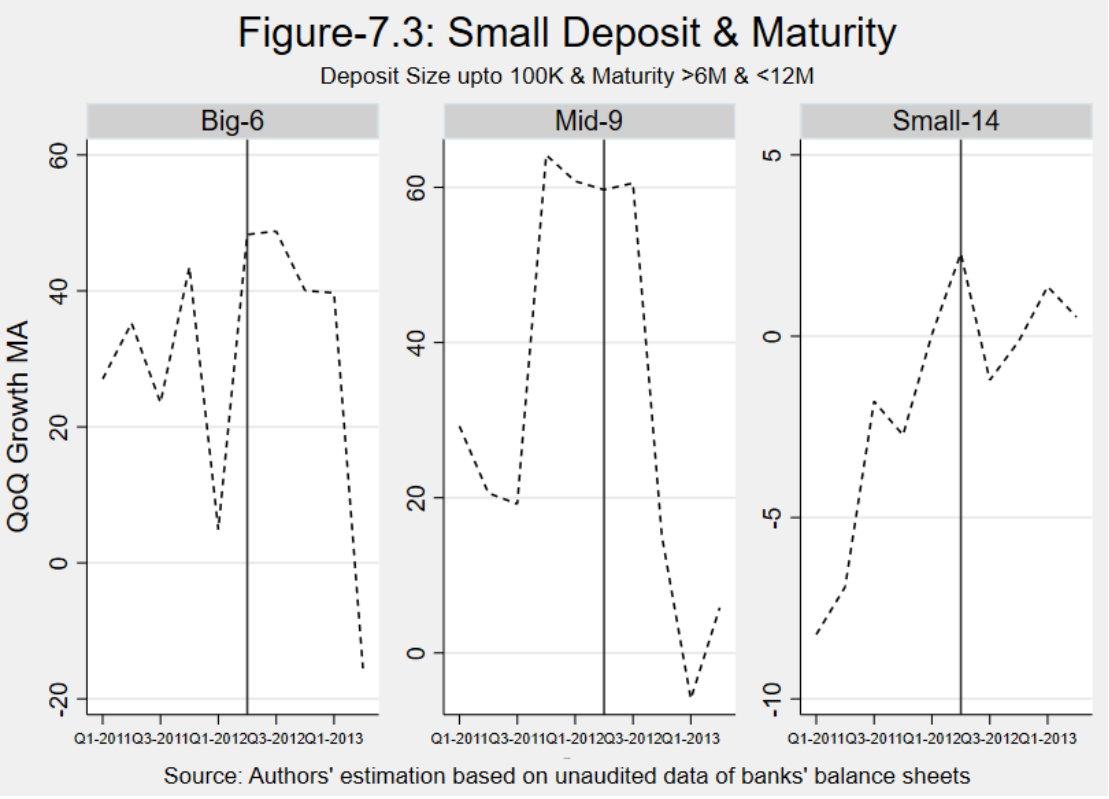


Figure-7.3: Small Deposit & Maturity
Deposit Size upto 100K & Maturity >6M & <12M
Big-6
Mid-9
Small-14
QoQ Growth MA
-20
0
20
40
60
0
20
40
60
-10
-5
0
5
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

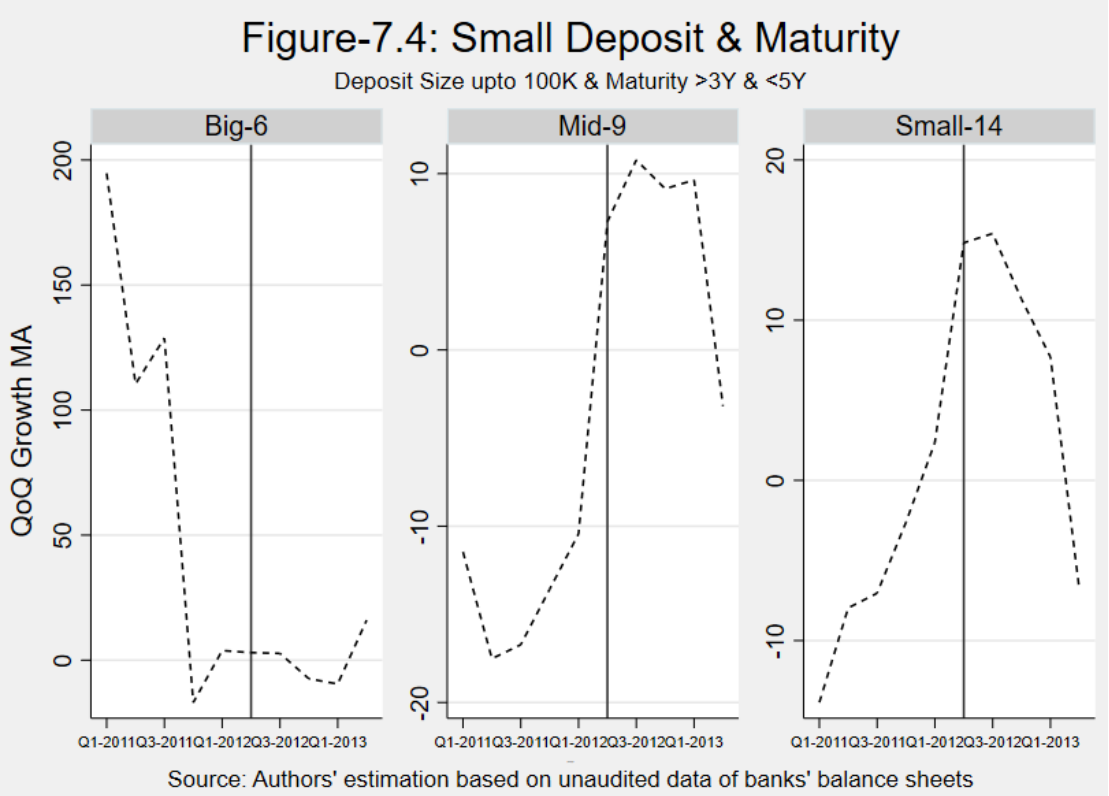


Figure-7.4: Small Deposit & Maturity
Deposit Size upto 100K & Maturity >3Y & <5Y
Big-6
Mid-9
Small-14
QoQ Growth MA
200
150
100
50
0
10
0
-10
-20
20
10
0
-10
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

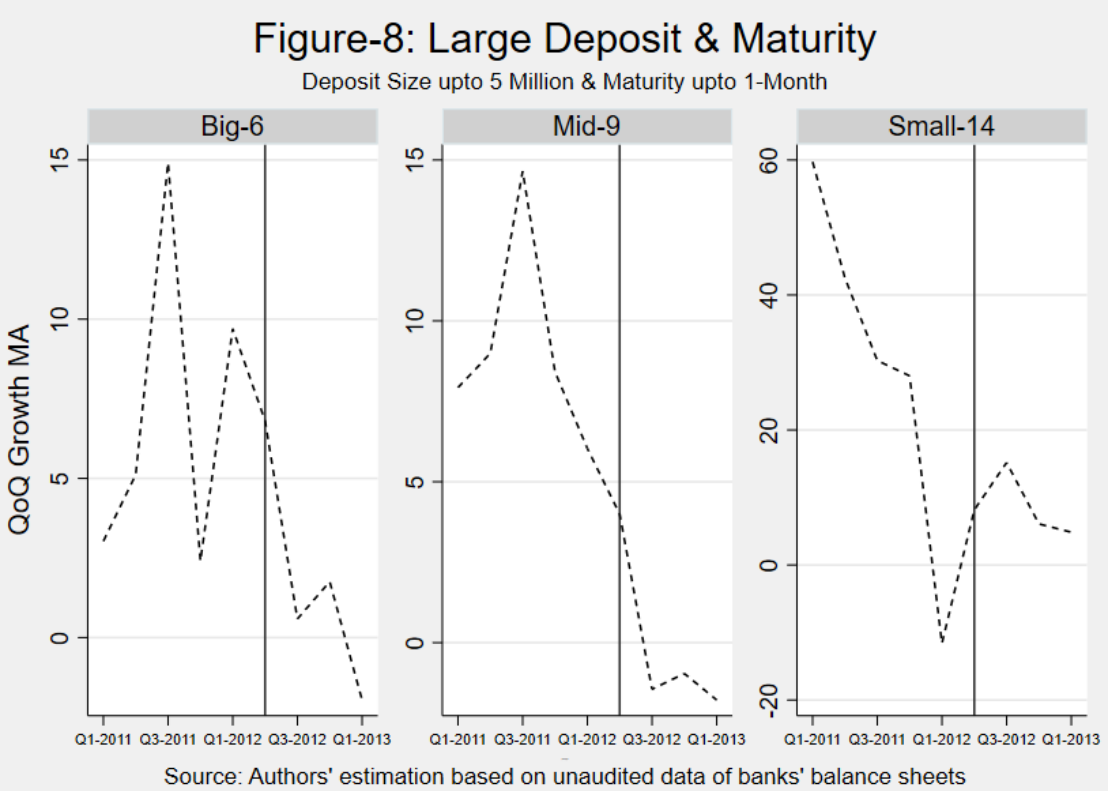


Figure-8: Large Deposit & Maturity
Deposit Size upto 5 Million & Maturity upto 1-Month
Big-6
Mid-9
Small-14
QoQ Growth MA
15
10
5
0
60
40
20
0
-20
Q1-2011 Q3-2011 Q1-2012 Q3-2012 Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

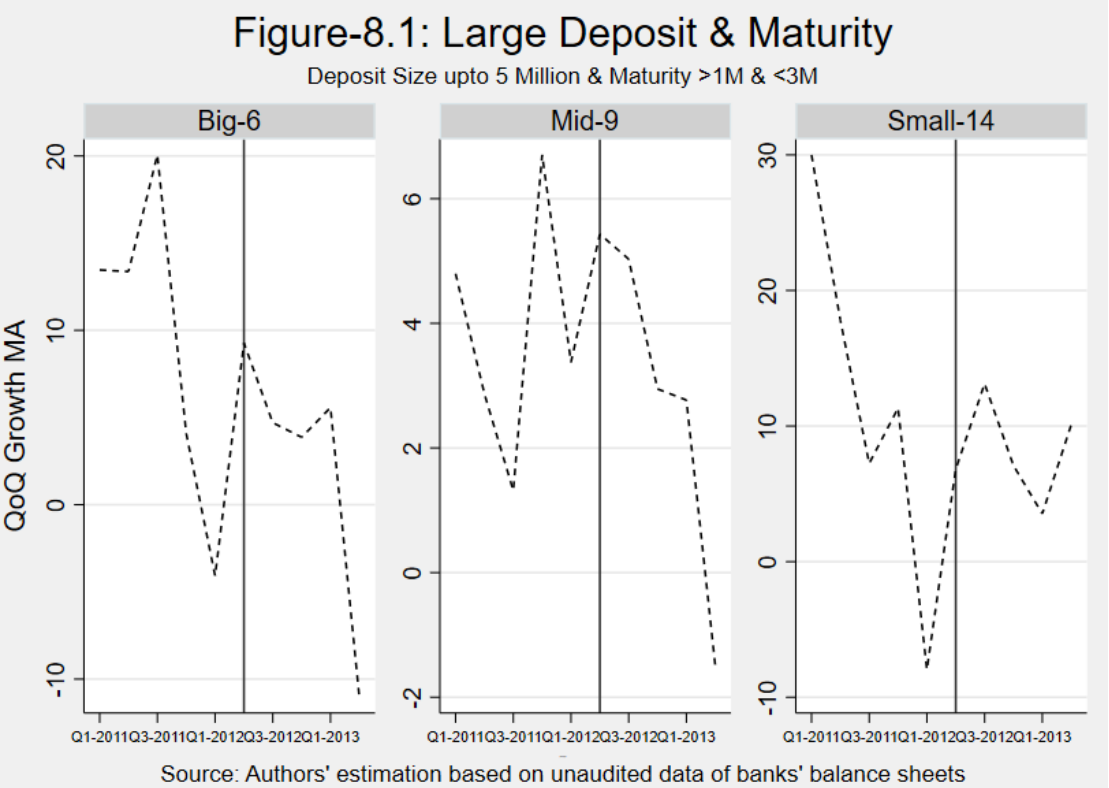


Figure-8.1: Large Deposit & Maturity
Deposit Size upto 5 Million & Maturity >1M & <3M
Big-6
Mid-9
Small-14
QoQ Growth MA
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

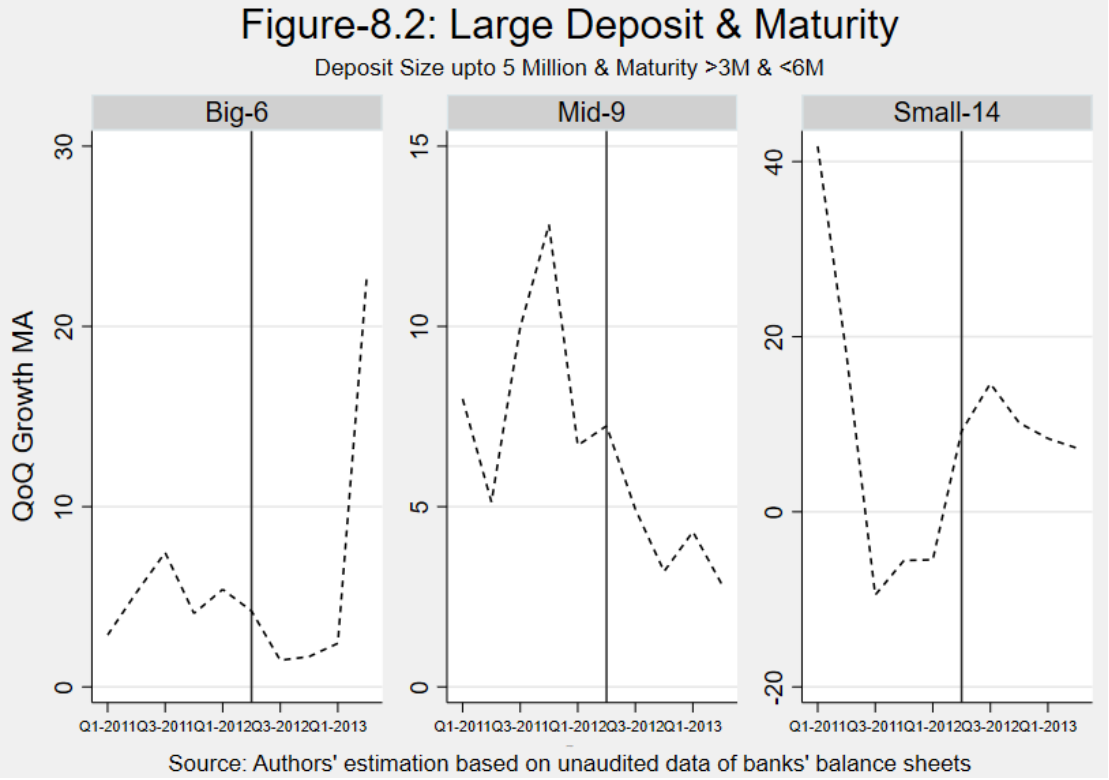


Figure-8.2: Large Deposit & Maturity
Deposit Size upto 5 Million & Maturity >3M & <6M
Big-6
Mid-9
Small-14
QoQ Growth MA
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

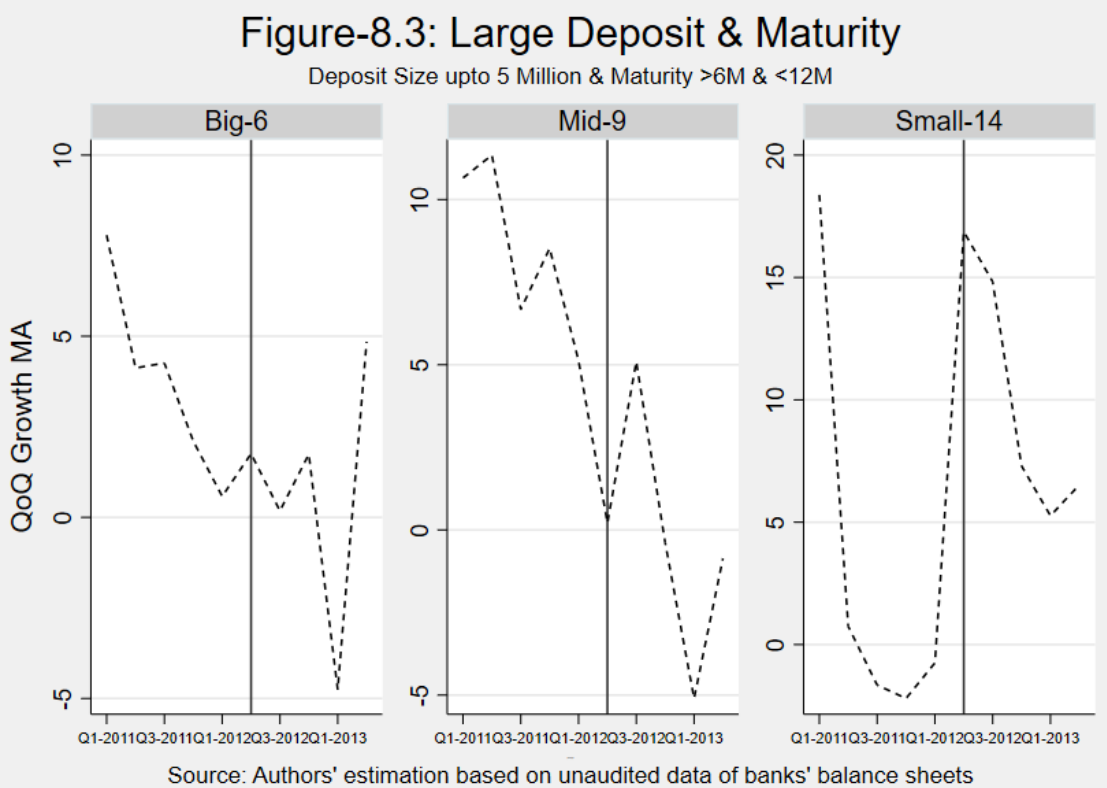


Figure-8.3: Large Deposit & Maturity
Deposit Size upto 5 Million & Maturity >6M & <12M
Big-6
Mid-9
Small-14
QoQ Growth MA
10
5
0
-5
20
15
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

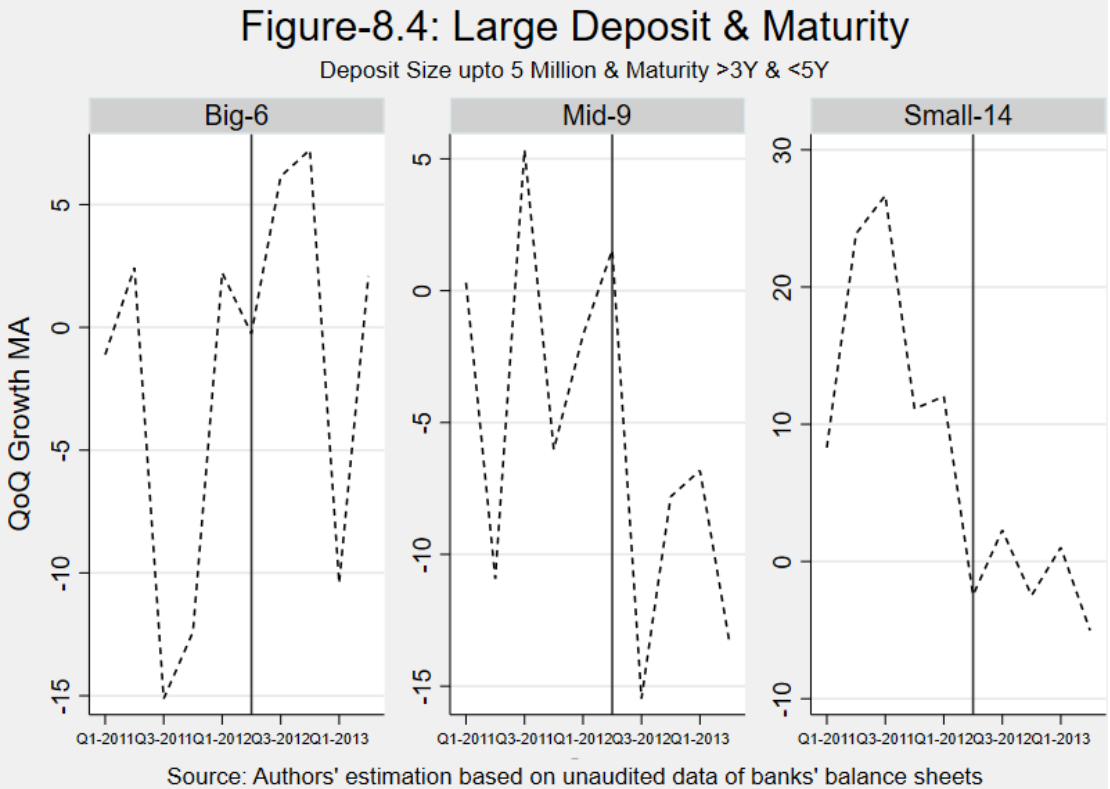
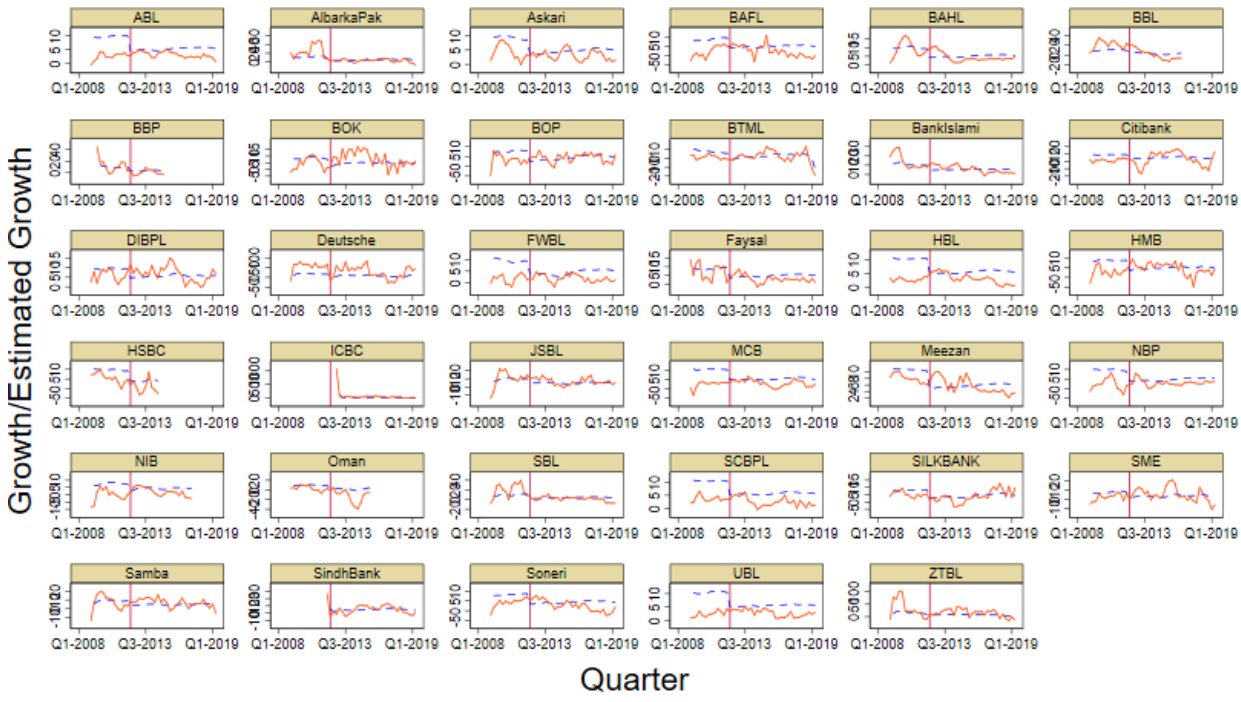
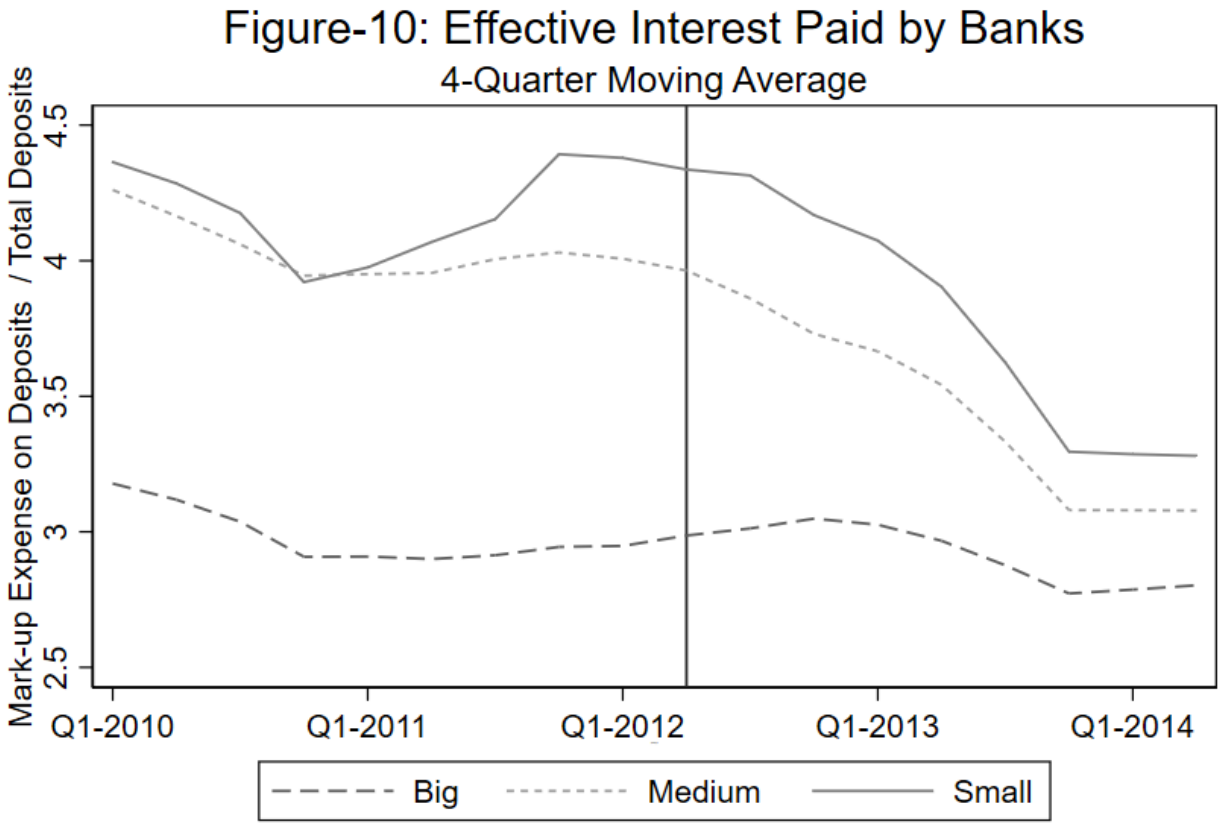


Figure-8.4: Large Deposit & Maturity
Deposit Size upto 5 Million & Maturity >3Y & <5Y
Big-6
Mid-9
Small-14
QoQ Growth MA
5
0
-5
-10
-15
30
20
Q1-2011Q3-2011Q1-2012Q3-2012Q1-2013
Source: Authors' estimation based on unaudited data of banks' balance sheets

Figure-9 Performance of Base Model



Author Estimation



Source: Author's calculations