Evidence of market discipline from market for uninsured liabilities: The Case of Pakistan

Ayesha Afzal
Lahore School of Economics, Main Campus, Burki Road, Lahore, Pakistan.

This paper investigates the existence of market discipline in Pakistan’s commercial banking sector. This paper employs an unbalanced panel of listed banks between 2004 and 2009 to analyze the tendency of depositors to impose discipline by demanding higher rate of return. A CAMEL based risk measure is deployed to examine their relation with cost of deposits and deposit switching. The control variables of GDP growth and size were introduced to account for macroeconomic shocks and scale of firm operations. The results supported the presence of market discipline with significant factor loadings on capital, asset quality and liquidity. However, it could not deduce very strong findings in favour of deposit switching behaviour. These findings have policy implications for monitoring and supervising financial intermediaries in a rapidly developing economy that could enable more prudent control of vulnerable financial systems.

Key words: Market discipline, uninsured liabilities, CAMEL.

INTRODUCTION

The vulnerability of financial sector, towards various risks, is critical both for the economy and related stakeholders. The devastating impact of systemic risks towards the financial system is evident in almost all banking crises. To mitigate the negative impact of banking risks towards economy, financial sector is strongly regulated across all economies of the world. This involves monitoring of a bank’s risk activities and ensuring adequate risk absorption capacity through different statutory requirements, such as capital adequacy, statutory liquidity reserve requirements, and minimum paid up capital.

In a traditional financial system, the state, through the central bank, is responsible for regulating financial institutions. However, it is historically evident that even in the presence of state monitoring, financial institutions have experienced systemic crisis leading to failure of financial system resulting in massive economic costs. Therefore, regulators have proposed alternate mechanisms to monitor and regulate activities of financial institutions. One such mechanism was proposed by deliberations of Basel committee (Basel Accord II 2001, Pillar 3) to involve stakeholders, depositors, other creditors and shareholders, to discipline risk appetite of banks. The purpose of this proposal was twofold.

Primarily, to share the burden of monitoring with relevant stakeholders that not only entails more prudent supervision but will be cost effective for the regulators. Secondly, as these stakeholders are providers of capital, their actions could directly affect the cost of funds for the banks. One possible hurdle for this sort of disciplinary framework is the information asymmetry between banks and these agents. For this, Basel committee proposed complete disclosures of assets and liabilities portfolio with relevant risks and their mitigation techniques. In Pakistan, all banks are in compliance with this disclosure requirement and properly disseminate their annual accounts in traditional as well as electronic form. Based on this disclosure, depositors and investors are expected to evaluate a bank’s risk level and should align their preferences accordingly. In case of an increase in risk

E-mail: ayeshaa@lahoreschool.edu.pk.

JEL classifications: G20, G21.
level, they should either demand a higher risk premium or else diversify their portfolios to match their risk tolerance. Therefore, market discipline by private agents such as depositors refers to two aspects. The first is related to the ability of stakeholders to monitor and identify changes in the banks' fundamentals, while the second aspect is concerned with the power of these stakeholders to influence the actions of bank management by demanding higher required rate of returns.

The empirical literature on the subject is aimed at establishing whether, in banks, the various associated risks are priced in uninsured liabilities or publicly traded capital securities (stocks and bonds). Based on the nature of uninsured liabilities and capital market securities, the empirical investigation can be classified into three categories. These include market discipline for:

i. Uninsured liabilities (bank deposits)
ii. Subordinated debt
iii. Bank equity

The discipline in market for deposits and subordinated debt is similar as analyses are based on impact of banking risks on cost of deposits and subordinated debt (or interest rate margins). Among these three categories, market for subordinated debt provides a unique rationale for accurate evaluation of banking risks. The banking deposits in some countries are safeguarded through deposit insurance or contractual guarantees. Even in the absence of such insurance or explicit guarantees, the regulators are cautious towards systemic risk of depositors and regulatory framework employs various caveats to mitigate any risk to bank deposits. On the contrary, the subordinated loans are not insured and expected loss in case of default for subordinated debt is substantially high as compared to depositors owing to the junior claim for such debt. Therefore, in case of bankruptcy, subordinate debt is compensated after all other obligations and is senior only to the equity holders. This would warrant the accurate and continuous evaluation of financial condition of a bank by the unsecured subordinate debt holders.

The role of subordinated debt for imposing market discipline is considered so critical that proposal on mandatory subordinated debt has been extensively discussed by policy makers and researchers especially in emerging markets (Karacadag and Shrivastava, 2000) that are subject to fragile financial systems, less developed capital markets and weak supervisory capacities. In emerging markets, the relevance of market discipline is critical as financial system is dominated by banks and the role of financial markets is limited leaving financial intermediaries as major source of raising capital. Pakistan's banking sector has undergone financial liberalization with an aim of reduced government intervention and promotion of market based functioning. The major reforms were targeted at improving market structure by privatizing nationalized banks, lowering the entry barriers, enhancing the economies of scope for banks and promoting mergers and consolidation of financial institutions.

It is interesting to note that despite capital market reform, the major source of corporate financing in Pakistan takes place through financial intermediaries, mostly banks. Table 1 represents the share of commercial banks in corporate financing in Pakistan. These banks channel most of their funds through uninsured liabilities (on average, approximately 80% of the funding is through deposits). Therefore, depositors could be taken as most relevant agents to impose market discipline on the banks. Surprisingly, in Pakistan, no evidence on market discipline by the depositors has been reported. The only study in Pakistan has been on role of capital market information in imposing discipline on banks by Afzal and Mirza (2011). They reported that share prices that represent contingent claim on banking assets can be used to extract valuable information that can be used by depositors to align their risk return preferences. However, for an average depositor, extracting relevant information from market based prices could be tricky and they would be more comfortable with accounting based information disclosed by the banks. Therefore, it might be interesting to study these fundamental variables and their role in disciplining the activities of a firm. Further, evidence by Afzal and Mirza (2010) demonstrate that depositors of Pakistan's commercial banking sector are interest rate sensitive based on risk perception about the bank. This finding provides a valid case for the investigation of existence of market discipline by depositors.

Using an unbalanced panel of listed banks for a

<table>
<thead>
<tr>
<th>Year</th>
<th>Banks</th>
<th>IPO</th>
<th>TFC</th>
<th>Total financing</th>
<th>Bank financing as % of total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>873</td>
<td>21.70</td>
<td>0.00</td>
<td>894.70</td>
<td>97.57</td>
</tr>
<tr>
<td>2005</td>
<td>1076</td>
<td>9.80</td>
<td>6.60</td>
<td>1092.40</td>
<td>98.50</td>
</tr>
<tr>
<td>2006</td>
<td>1270</td>
<td>3.00</td>
<td>3.00</td>
<td>1276.00</td>
<td>99.53</td>
</tr>
<tr>
<td>2007</td>
<td>1520</td>
<td>4.90</td>
<td>4.00</td>
<td>1528.90</td>
<td>99.42</td>
</tr>
<tr>
<td>2008</td>
<td>2016</td>
<td>6.90</td>
<td>12.60</td>
<td>2035.50</td>
<td>99.04</td>
</tr>
<tr>
<td>2009</td>
<td>2065</td>
<td>1.10</td>
<td>0.00</td>
<td>2066.10</td>
<td>99.95</td>
</tr>
</tbody>
</table>
period of six years for this study, some preliminary evidence of market discipline in Pakistan’s commercial banking sector was found. It was established that there was support to the notion that bank-specific variables and stock prices reveal important risk-related information and banks offer compensation when they are perceived risky. Since banks provide a premium for high risk, we could not find evidence that increase in risk could result in deposit switching. These findings provide some preliminary insight about the dynamics of market discipline in Pakistan.

LITERATURE REVIEW

Fonseca and Gonzalez (2010) studied the influence of market discipline imposed by depositors, by comparing the relation of cost of deposits and bank capital buffers. Their study comprised a panel of 1,337 banks from 70 countries spanned over a period between 1992 and 2002. The capital buffer was measured as the proportion of excess (difference between actual and required capital) and required regulatory capital while the cost of deposits was ratio of interest expense to interest bearing liabilities in excess of treasury rate. The results favoured the notion of market discipline with a significant positive coefficient for deposit cost. They concluded that market discipline would penalize the banks with low risk absorption capacity by augmenting the cost of deposits. Such banks would then increase the capital buffers to reduce the perceived risks and ultimately benefit by low cost of deposits. This study was mainly based on banking firms’ fundamental information and ignored market-based risk measures. Shimizu (2009) provided evidence on market-based variables to examine the impact of market discipline.

Uchida and Satake (2009) investigated the hypothesis of market discipline imposed by depositors and market investors on Japanese banks between 2000 and 2005 using an inefficiency framework of banking costs and profits. They ranked the cost and profit factors based on various discipline and control variables. The discipline variables included bank listing, proportion of subordinated loans, subordinated bonds, straight bonds, convertible bonds and deposits to total assets ratio. Moreover, they included dummies for bank compliance with international standard of the capital adequacy and if the bank constitutes the part of a banking holding company. The control variables included bank size, loan to deposit ratio, interest margin and number of bank branches. The results reported a significant negative relation between depositors and cost inefficiency. They concluded that depositors are the prime source of market discipline and in banks with greater number of depositors the management was found to face immense pressure to reduce cost inefficiencies. All these studies provided evidence on market discipline imposed by depositors and shareholders. The role of subordinated debt in imposing market discipline was analysed by Gropp et al. (2006).

Gropp et al. (2006) studied the impact of stock and bond market information on bank fragility in a sample of 103 US banks between 1991 and 2003 by analysing spread on subordinated debt. The bank sensitivity was measured as a downgrade to speculative rating of C or below by FITCH ratings. The results showed spread on subordinated debts was able to predict the bank fragility with spread predicting fragility 12 months in advance. They conclude that bonds data provided valuable information for the participants to forecast and differentiate between good banks and weak banks.

Maechler and McDill (2006) reported the impact of depositor discipline by analysing the choice of deposit insurance vis-à-vis risk tolerance and spread premium of US banks between 1987 and 2000. The research was dynamic as depositor reaction and bank response was modelled simultaneously. The factors determining the proportion of uninsured deposits included price variables, bank specific factors (size, capital, growth in assets, etc.) and some macroeconomic variables (GDP, inflation, etc.). The results provide evidence in favour of depositor discipline with significant coefficients on bank fundamentals reflecting that uninsured depositors are sensitive towards bank fundamentals. Therefore, for bigger and stronger banks, the uninsured depositors would require a lower premium as compared to small and weaker banks. The bank response towards depositors was price sensitive with significant coefficients for pricing variables suggesting that banks could increase the proportion of uninsured deposits by raising the interest rates. They concluded that depositor behaviour and bank response seemed to impact the risk premium as well as the risk appetite of bank managers by limiting very high level of risks.

Goyal (2005) examined the discipline imposed by subordinate debt holders on excessive risks taking by US banks using panel data between 1974 and 1995 and a sub period of relatively less regulatory supervision of 1981 to 1988. The influence of market discipline was analysed by observing the impact of banks’ risk exposure on yield spreads and restrictive debt covenants. The results supported evidence of market discipline in yield spreads as well as debt covenants. A significant negative relation was observed between risk incentives and restrictive covenants that reflected a possible decrease in excessive risk taking in the presence of prudent debt covenants. This disciplinary feature of debt covenants was even more evident in a moderately regulated sub period. They concluded that inclusion of restrictive covenants in subordinated debt act as disciplinary tool and can substitute some regulatory monitoring.

Bongini et al. (2002) compared the extent of information that could be extracted from a set of variables to indicate bank fragility. The sample constituted of East Asian banks between 1996 and 1998 while the variable
sources comprised of balance sheet data (CAMEL ratings), stock market prices and credit ratings. The research was based on both ex post and forecasted ex ante estimates. The results showed that ex post balance sheet variables provided significant information to discriminate between the banks of varying financial health. They conclude that multiple sources of public information were likely to provide confusing signals and investors in less developed financial systems should rely on multiple indicators of bank fragility to enforce market discipline.

**RESEARCH METHODOLOGY**

**Sample criteria**

This study employed panel data of various bank specific, equity market and macroeconomic variables to empirically examine whether the depositors impose some market discipline on Pakistan’s commercial banking sector. The sample was selected based on the following criteria:

i. The sample period constitutes of post financial reform period of 2004 to 2009. This sample period also represent the time span when commercial banks were adapting the disclosure requirements proposed in pillar 3 of Basel Accord II and III (2006, 2010).

ii. Only public listed banks would be included with data available about their balance sheet, income statement and other financial disclosures.

iii. Foreign banks will be excluded from the sample owing to their constrained activities in Pakistan.

Based on this criterion, final sample constitutes of an unbalanced panel. The number of banks in sample each year is presented in Table 2. The information on bank fundamental variables, on annual basis, will be extracted from the yearly financial reports of the respective banks.

**Estimating for market discipline**

As mentioned earlier, the literature on market discipline proposed three types of markets that can be examined to ascertain market discipline. In Pakistan’s case, only two of these three markets are relevant. The subordinated debt does not constitute an important source of financing in Pakistan’s commercial banks, mainly because of negligible existence of debt markets. Moreover, subordinated debt in Pakistan is mainly through private placement of group/holding firms, so, being insiders, they are not likely to impose discipline in its essence. Lastly, subordinated debt in Pakistan’s banks is primarily to meet regulatory capital which otherwise have low access to equity markets and limited retained earnings due to constrained profitability. Therefore, subordinated debt is excluded from this analysis. An earlier paper by Afzal and Mirza (2011) explored the role of capital markets; so, this research will be focused only on the information extracted by the bank.

### Table 2. Sample Distribution 2004 to 2009.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>No of banks</td>
<td>25</td>
<td>25</td>
<td>25</td>
<td>24</td>
<td>21</td>
<td>21</td>
</tr>
</tbody>
</table>

In the presence of market discipline, the cost of funds should be aligned with various risks associated with the bank. If depositors have the ability to adequately assess the risk level, they should require a higher rate of return in case of increasing risk profile. This would result in increase in cost of funding for the banks. The cost of funds will be estimated as:

$$c_{it} = \left( \frac{IE_{it}}{IntLiab_{it}} \right),$$

where $c_{it}$ represent percentage cost of capital, $IE_{it}$ represent interest paid to depositors and $IntLiab_{it}$ would reflect all interest bearing liabilities, for bank $i$ at time $t$.

On the contrary, if depositors are not offered a higher rate of return to compensate for the risk, then they should switch to some other bank that matches their risk return preference. Similarly, some investors will not choose assets which are beyond their risk limits even if such assets are offering a high risk premium. In the presence of market discipline, this phenomenon for banks will generally result in deposit switching from high to low risk banks. A switch in deposit would be estimated as year on year change on deposits. Mathematically, this variable will be represented as:

$$\Delta D_{it} = \lambda_{it} = \frac{D_{it} - D_{i,t-1}}{D_{i,t-1}}.$$ 

With $\lambda_{it}$ as change in deposits in year $t$, $D_{it}$ as deposits of bank $i$ in year $t$, and $D_{i,t-1}$ as deposits of bank $i$ in year $t-1$.

### Independent variables

In order to test for market discipline in deposit market, the rating supervision system of CAMEL is followed. The CAMEL represents five factors that are related to risk and risk absorption capacity. These are capital adequacy, asset quality, management, earnings, and liquidity. In addition to CAMEL, two control variables of banks size that are measured as log of total assets and a macro variable of growth in GDP are also employed. We use a panel data set from 2004 to 2009 for sample banks and various accounting measures are extracted from the annual reports. The following fixed effects model for cost of deposits will be estimated for bank fundamental variables:

$$c_{i} = \alpha_{i} + \beta_{1} CAR_{i} + \beta_{2} (NPL_{i} / GL_{i}) + \beta_{3} (REV_{i} / INV_{i}) + \beta_{4} (OH_{i} / TA_{i}) + \beta_{5} \log(TA_{i}) + \beta_{6} \log(GL_{i}) + \beta_{7} \log(OH_{i}) + \beta_{8} \log(REV_{i}) + \beta_{9} \log(INV_{i}) + \beta_{10} \log(NPL_{i}) + \epsilon_{i}.$$ 

### Capital adequacy ratio (CAR)

In this equation, CAR is the regulatory capital adequacy ratio that is vital part of every bank’s disclosure. Capital adequacy represents the capital buffer against contingent losses. Banks with strong CAR are considered less vulnerable to shocks and are considered as low risk bank. If market discipline exists, a high CAR would result in low cost of funds representing a negative relation with interest rate on liabilities.

### Asset quality of advances and investments

Asset quality (AQ) is measured as a proportion of nonperforming loans to gross loans portfolio. A high ratio would represent a high
The proportion of nonperforming loans and total loans would be an indicator of bad asset quality. Banks with bad asset quality are expected to be disciplined by increasing the cost of the deposits. Asset quality for investment portfolio is also measured as a proportion of revaluation surplus to investment portfolio. A higher revaluation surplus would indicate better risk absorption capacity for the bank and such banks are expected to experience a low cost of deposits. For management performance, a non interest expenditure to total assets ratio will be used as proxy. A high ratio would indicate higher proportion of overhead indicating inefficiency on part of managers and such inefficiencies would warrant a high cost of deposits.

Earnings and liquidity

The earnings are measured by return on assets (ROA) and highly profitable banks as measured by ROA are likely to have lower cost of deposits. The liquidity needs of a bank would arise from demand deposits. Therefore, liquidity is calculated as percentage of liquid assets to demand deposits. Banks with stronger liquidity should have low cost of funds. The bigger banks are expected to enjoy economies of scale in deposits. This would put smaller banks at a disadvantage; so, to control for large variations, bank size will be a critical variable.

The deposit switching variable is estimated by percentage change in deposits and using it as the dependent variable. The equation will take the following form:

\[
\Delta D_{it} = \alpha + \beta_1 \text{CAR}_t + \beta_2 (\text{NPL/GL})_t + \beta_3 (\text{REV/INV})_t + \beta_4 (\text{OH/TA})_t + \beta_5 (\text{LIQ})_t + \beta_6 (\text{Log(TA)})_t + \beta_7 \text{dp} + \epsilon_{it}
\]

**EMPIRICAL RESULTS**

The fixed effect regression results for deposit costs are reported in Table 3.

**Market discipline and cost of deposits**

The results demonstrate significant coefficient loadings on many explanatory variables. The asset quality variables for both investment and advances books are significant at 99% representing strong impact of these factors on cost of funds. The loan quality was measured as a proportion of nonperforming loans to total advances and a higher ratio will represent a deteriorated asset quality of the bank. As mentioned earlier, non performing loans will put pressure on both profitability and asset liability management of the bank. Therefore, banks with infected portfolios will be subject to a higher degree of credit risk and this will warrant a higher cost to compensate depositors. A positive coefficient on non performing advances signals the presence of credit risk premium that banks with low asset quality would pay in form of higher cost of deposits. The asset quality of investment and trading portfolio was measured as a proportion of revaluation surplus to investments.

The revaluation surplus represents the spread between market and purchase price of investments and provides cushion against contingent risks. The revaluation surplus is classified as Tier II capital and banks with higher revaluation surplus are expected to have high risk absorption capacity and can attract depositors at low cost. The negative coefficient on revaluation surplus to investments, reflect that banks with higher revaluation surplus can mobilize funds at low cost because of their low risk profile perception of depositors. Similar results were observed for liquidity with significant negative coefficients. This represents that banks with higher liquidity are likely to enjoy low cost of deposits owing to a low liquidity risk. This is in line with the concept of market discipline where depositors would be satiated by low returns if they perceive low risk for the bank. The regulatory capital adequacy ratio was significant at 95% with negative coefficient representing low cost of funds for bank that have strong capital adequacy. Lastly, overhead to total assets was marginally significant at 90% with positive coefficient reflecting that with inefficiencies owing to higher overheads, depositors will be sceptical, requiring higher compensation for the funds. We could not deduce significant result in favour of bank size and profitability. The insignificance of bank size coefficient can be interpreted in plausible ways. Firstly, in context of market discipline, this would reflect that depositors do not consider total assets as a relevant variable for risk and place more value on specific risk factors (credit risk, liquidity risk) or risk absorption capacity (revaluation surplus, CAR) that have significant coefficients with appropriate signs.

The second aspect of this significant coefficient supports notion of market discipline in an indirect way. The irrelevance of total assets towards cost of deposits refutes general convention of low cost of deposits for larger banks which in fact is also in line with our earlier observation of interest rate sensitive deposits. This would require banks to improve on efficiency (both in profitability and risk management) to tap low cost funds.

The results provide support to the common...
observation of small banks offering higher rate of return to depositors as a compensation for risk due to constrained balance sheets.

Market discipline and deposit switching

We attempted to study the deposit switching behaviour by using both bank specific and prices based risk measures but could not find substantial evidence in support. The asset quality of credit book was significant at 99%, while capital adequacy ratio was significant at 95%. These findings reinstate the value relevance of advances towards credit risk of the bank. Similarly, regulatory capital was an important determinant of depositors’ choice for its role of risk absorption capacity. All other variables were insignificant and therefore, overall explanatory power of results for deposit switching was low with adjusted $R^2$ of 29.3%. Results are presented in Table 4.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t ratio</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAR</td>
<td>-0.0123</td>
<td>0.0055</td>
<td>-2.2110</td>
<td>0.0299**</td>
</tr>
<tr>
<td>NPL/GL</td>
<td>0.0938</td>
<td>0.0272</td>
<td>3.4520</td>
<td>0.0008***</td>
</tr>
<tr>
<td>REV/INV</td>
<td>0.0164</td>
<td>1.4207</td>
<td>0.0116</td>
<td>0.9908</td>
</tr>
<tr>
<td>OH/TA</td>
<td>0.0184</td>
<td>0.2457</td>
<td>0.0750</td>
<td>0.9404</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.7201</td>
<td>0.9131</td>
<td>-0.7887</td>
<td>0.4327</td>
</tr>
<tr>
<td>LIQ</td>
<td>-0.9422</td>
<td>2.4661</td>
<td>-0.3821</td>
<td>0.7034</td>
</tr>
<tr>
<td>Log(TA)</td>
<td>0.1305</td>
<td>0.2218</td>
<td>0.5882</td>
<td>0.5581</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.0128</td>
<td>0.0047</td>
<td>-2.7150</td>
<td>0.0082***</td>
</tr>
<tr>
<td>Const</td>
<td>0.0317</td>
<td>0.0234</td>
<td>1.3566</td>
<td>0.1787</td>
</tr>
<tr>
<td>$R^2$</td>
<td></td>
<td>0.5558</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td></td>
<td>0.3814</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F Stats</td>
<td></td>
<td>3.1881</td>
<td></td>
<td></td>
</tr>
<tr>
<td>P value (F)</td>
<td></td>
<td>0.0000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** represents significance at 99%, ** at 95% and * at 90%

We attempt to study the deposit switching behaviour by using both bank specific and prices based risk measures but could not find substantial evidence in support. The asset quality of credit book was significant at 99%, while capital adequacy ratio was significant at 95%. These findings reinstate the value relevance of advances towards credit risk of the bank. Similarly, regulatory capital was an important determinant of depositors’ choice for its role of risk absorption capacity. All other variables were insignificant and therefore, overall explanatory power of results for deposit switching was low with adjusted $R^2$ of 29.3%. Results are presented in Table 4.

There could be plausible reasons for inability of proposed models to explain deposit switching. One possible explanation could be that with increase in risk profile as perceived by the financial markets, banks offer higher returns to satiate the risk appetite of depositors and therefore, the depositors and other creditors have no motivation to switch their bank. However, this paper does not provide evidence on this hypothesis and strongly feel that deposit switching behaviour should be examined in greater depth beyond the notion of market discipline.

Conclusion

This paper examined the evidence for market discipline in the post financial system reform period in Pakistan. We estimated various risk factors based on CAMEL methodology to analyze their impact on the cost deposits for a sample of listed commercial banks in Pakistan. Our findings support the presence of market discipline by significant coefficients on our risk factors. The cost of deposits and borrowing was significantly related to capital adequacy, asset quality of loans and investment portfolio as well as liquidity. Banks with higher capital adequacy are likely to be perceived low risk firms with cushion to absorb contingencies, consequently enjoying low cost of deposits. Similarly, banks with higher asset quality, both in terms of credit and market books, are likely to yield higher rate of returns increasing their retention power to guard against probable losses. Lastly, banks with higher liquidity could enjoy low cost of deposits. These findings depict sensitivity of investors towards banking risks in general. Although the sample period was relatively short, this primary evidence is beneficial to report that stakeholders have the tendency to impose market discipline, and bank specific factors reveal relevant information about the risk profile of a bank. These findings have important implications in context of market discipline. The banks indulging in excessive risk taking activities should compensate their depositors by offering a high risk premium thus increasing the cost of deposits. The increased cost of deposits is expected to moderate banks’ risk taking behaviour lowering a systemic panic in the banking sector. Moreover, with market discipline mechanism the supervision costs for monitoring would be low as state’s role of regulating will be shared by other relevant agents. Lastly, disciplinary feature in banking sector will improve financial sector efficiency by pushing inefficient institutions to exit while those remaining can survive only if they do not compromise on performance.

REFERENCES

APPENDIX

**Exhibit 1.** Expected signs.

<table>
<thead>
<tr>
<th>Market for uninsured liabilities</th>
<th>Variable</th>
<th>Expected signs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost of deposits $c_t$</td>
<td>Capital adequacy</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Impaired lending to gross advances</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Revaluation surplus to total investments</td>
<td>-</td>
</tr>
<tr>
<td>Variation in deposits $\frac{\Delta D_t}{D_{t-1}}$</td>
<td>Non interest expenses to total assets</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>Return on assets</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Liquid assets to demand deposits</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total assets (control variable)</td>
<td>+</td>
</tr>
<tr>
<td></td>
<td>YoY growth in GDP</td>
<td>-</td>
</tr>
</tbody>
</table>