Earning Management and the Likelihood of Financial Distress in Banks
Evidence from Pakistani Commercial Banks

Summary: This research studies the relationship between financial distress (FD) and usage of discretion by employing earning management practices in twenty commercial banks of Pakistan, listed at Pakistan Stock Exchange (PSX). The study utilizes the data spread over from the year 2010 to 2015. Altman Z-Score has been employed to assess financial distress. Further, the value of Z-score has been used for the classification of banks into distressed and non-distressed banks. Moreover, earning management has also been categorized into non-discretionary (NDA) and discretionary accruals (DA). The logistic approach has been used to study the relationship among variables. The findings reveal that banks use non-discretionary and discretionary accruals to manage their financial distress. This research study provides useful insights for investors, auditors and regulators as it identifies usage of specific provisions by management despite strict regulations.

Keywords: Earning Management, Financial distress, Discretionary accruals, Z-Score

JEL codes: C33, G21

The emergence of the financial crisis has further stimulated interests of investors, regulators and practitioners in the manipulation of bank accounts. Banks use loan loss provisions (LLPs) for manipulation of earnings, by setting aside a major chunk to handle expected losses on riskier loans (Elnahass, Izzeldin, & Abdelsalam, 2014). Further, the bankruptcy of major banks like Citigroup New York, Lehman Brothers and Anglo Irish Bank triggered the attention of researchers (Simić, Kovačević, & Simić, 2011). Earnings management (EM) happens when managers mislead stakeholders by showing healthy financial statements and hide the actual position (Wahlen, 1994). However, earning management can be cured through the implementation of rules and regulations by the regulatory bodies as well as proper audit (Omurgonulsen & Omurgonulsen, 2009).

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Discretion is used by banks in anticipation of loan loss provisions (LLPs) (Lobo, & Yang, 2004; Bushman, 2014). The literature further reveals that smoothing practices are on the higher side as compared to signalling (Beatty & Liao, 2014).

Banks play a role of backbone in financing as well as in economic growth of Pakistan (Husain, 2004). Credit risk in banks increases systemic risk, which affects the functioning of the economy (Macey & O’hara, 2003). Pakistani commercial banks play the pivotal role in the economy. In Pakistan, there are commercial, specialized and foreign banks, but this study has focused on commercial banks due to their significant and competitive role through provisions of a wide range of services. Pakistani banking sector witnessed an increase in profit before and after tax by Rs. 71.22 billion and Rs. 28.80 billion in 2015. This paper not only extends but also complements existing literature and study the relationship between financial distress (FD) and usage of discretion by employing earning management practices in twenty commercial banks listed at Pakistan Stock Exchange (PSX). This study utilizes the data spread over from the year 2010 to 2015. Altman Z-Score has been employed to assess financial distress. Further, the value of Z-score has been used for the classification of banks into distressed and non-distressed banks. Moreover, earning management has been categorized into non-discretionary (NDA) and discretionary accruals (DA). The finding shows that banks use non-discretionary and discretionary accruals in financial distress. This shows that Pakistani banks identify and handle credit problems early, especially in good times by building up loan loss reserves and also to achieve management objectives like signalling, smoothening and capital management.

This paper has made significant contributions to the literature and differs from earlier works. Firstly, this research study is amongst the few which utilizes Altman Z-score for the calculation of financial distress (FD) in Pakistani commercial banks. Secondly, earlier literature devoted attention on the relationship between financial distress (FD) and earning management (EM) in the non-financial sector, whereas limited evidence exists on financial distress and earning management in banking sector especially in emerging economies (Macey & O’hara, 2003). Thirdly, this paper has categorized earning management specifically into non-discretionary (NDA) and discretionary accruals (DA), which provides specific results. This study helps standard setters, regulators and auditors in the specific identification of earnings management, i.e., discretionary and non-discretionary practices used in the Pakistani banking sector, rather than consolidated earning management, which can help them making customized and stringent regulations to reduce earning management. The study also gives awareness to investors of the ground realities, so that they can make optimal investment decisions. The paper is structured as follows. The second part discusses the literature review and formulates the hypotheses. The 3rd part describes the model specification, estimation strategy and variables. The fourth part elaborates empirical analysis and the results. The final part includes conclusion and discussion, limitations and recommendations for future research.

**LITERATURE REVIEW**

Earning management is a painting of financial reports in such a manner to hide actual figures, with the intention to mislead stakeholders (Leuz, Nanda, & Wysocki, 2003). Earning management practices are also followed to gain benefits like bonuses, salaries increase and authority (Biurrun & Rudolf, 2010).
HYPOTHESES DEVELOPMENT

The quantum of discretionary accruals \((DA)\) is reliant on the intensity of financial distress \((FD)\). The trend of provisions used to portray accruals which show healthy income is on the higher side, especially when distress is less. On the other side, when companies are on the verge of failure, companies use income-decreasing earning management practices (Jaggi & Lee, 2002). In financial distress, companies use income-decreasing earnings management. Moreover, banks also customize their lending strategy in financial distress \((FD)\), so that they can achieve their ultimate goal of earning management. In view of the above, discretion in allowance and provisions pertaining to loan losses has an association with the financial distress of the bank. In view of the position explained above, it is hypothesized that;

**H1:** THERE IS A RELATIONSHIP BETWEEN FINANCIAL DISTRESS AND EARNING MANAGEMENT, I.E., DISCRETIONARY AND NON-DISCRETIONARY ACCRUALS.

Loan loss provisions present a healthy picture of the companies (Leventis, Dimitropoulos, & Anandarajan, 2011). The literature shows that loan loss provisions \((LLPs)\) are the composition of two main rudiments non-discretionary accruals \((NDA)\) and discretionary accruals \((DA)\). The first rudiment is non-discretionary accruals \((NDA)\), which deals with bad loans (Beaver & Engel, 1996; Laeven & Majnoni, 2003; Bikker & Metzemakers, 2005; Iftekhar Hasan & Wall, 2004). Whereas, the second rudiment is discretionary accruals \((DA)\), in which managers use their discretion for smoothing of earnings, capital management and signalling (DeFond, Jiambalvo, & Subramanyam, 1998, Frankel, Johnson, & Nelson, 2002). Loan loss provisions are reduced when earnings of the banks are on the lower side. Whereas, when earnings of the banks are on the higher side, banks use discretionary accruals. Further, loan loss provisions are kept on the higher side in expansion and growth time period and reduce during a slump phase (Collins, Shackelford, & Wahlen, 1995; Ahmed, Takeda, & Thomas, 1999; Bouvatier & Lepetit, 2012, Kanagaret-nam et al., 2004). The regulators of the federal bank also express that provisions cannot be assessed fully and there is always room for imprecision. Therefore, the gap for imprecision is exploited by banks (Anandarajan, Hasan, & McCarthy, 2007). In view of the above, it is hypothesized;

**H2:** THERE IS A RELATIONSHIP BETWEEN FINANCIAL DISTRESS \((FD)\) AND DISCRETIONARY ACCRUALS \((DA)\)

Timely identification of financial distress can help in taking remedial measures (Telmoudi, El Ghourabi, & Limam, 2011). As per the report of Federal Deposit Insurance Corporation, (2015), 486 banks resulted in bankruptcy in the United States over the period from 2009 to 2015, which cost $74,777.8 billion. Z-score is the renowned, accurate and reliable tool used to measure financial distress in the banks (Strobel, 2011). The main underlying reason for non-discretionary accruals \((NDA)\) is macroeconomic factors which include the business environment, which is beyond the scope of management of banks. Further, there is a positive association between non-discretionary accruals \((NDA)\) and Loan loss provisions \((LLPs)\). Increase in bad loans increases the credit risk, which ultimately increases loan loss provisions \((LLPs)\) to deal with the losses (Shawtari, Saiti, Razak, & Ariff, 2015). Moreover, the study of Albanian banks, over the period from 2004 to 2014, also reveals that a major chunk of loan loss provisions \((LLPs)\) are driven by non-discretionary accruals \(NDA\) (Dushku, 2016). Thus, in view of the above, it is hypothesized;
H3: THERE IS A RELATIONSHIP BETWEEN FINANCIAL DISTRESS (FD) AND NON-DISCRETIONARY ACCRUALS (NDA)

Loan loss provisions (LLPs) is an important apparatus for earning management which reveal mixed results (Collins et al., 1995). On the other side, some studies also revealed that Loan loss provisions (LLPs) had not been used for earning management (Ahmed et al., 1999). The reasons for diverse results include a diversity of models (Ahmed et al., 1999). Some banks use discretionary earning management practices by using allowances for loan losses, with the aim to show the competence of the organization rather than for an opportunistic purpose. They build up a reserve with the objective to handle credit risk and forecasted losses rather than managing earnings (Jin, Kanagaretnam, & Lobo, 2016). On the other side, some managers use non-discretionary earning management practices (Fonseca & Gonzalez, 2008; Kilic, Lobo, Ranasinghe, & Sivaramakrishnan, 2012).

RESEARCH DESIGN AND SAMPLE SELECTION

Sample selection and Data: In order to investigate all of the hypotheses of this study, a sample of 20 conventional Pakistani banks listed on Pakistan Stock exchange (PSX)² have been selected from the year 2010 to 2015 through random sampling. Moreover, the sample excludes Islamic and development banks due to different operational and regulatory frameworks. The total numbers of bank-year observations are 100. Data has been extracted from the SBP various publications, i.e., financial statements analysis of the financial sector for the year 2010 to 2014 and 2011 to 2015. Further, bank variables data has also been extracted from bank annual reports. Financial statements analysis of financial sector issued by State Bank of Pakistan is a comprehensive document which provides consolidated information on bank-related variables. Further, data has been further organized and compiled after its extraction. Data has been carefully reviewed in order to avoid double counting of the banks.

MODEL SPECIFICATIONS AND ESTIMATION STRATEGY

Model Specification

To study the connection between EM and the likelihood of financial distress in banks, we have specified the following econometric models.

\[
FD_{it} = \beta_0 + \beta_1 NDA_{it} + \beta_2 SIZE_{it} + \beta_3 PROF_{it} + \beta_4 LEVG_{it} + \beta_5 LIQ_{it} + \beta_6 AQ_{it} + \epsilon_{it} \\
\]

\[
FD_{it} = \beta_0 + \beta_1 DA_{it} + \beta_2 SIZE_{it} + \beta_3 PROF_{it} + \beta_4 LEVG_{it} + \beta_5 LIQ_{it} + \beta_6 AQ_{it} + \epsilon_{it}
\]

Whereas: 
- \(FD_{it}\): Dummy variable 1 and 0, which denotes 1 for financial distress and 0 for financial healthy banks. 
- \(NDA_{it}\): Non-discretionary accruals. 
- \(DA_{it}\): Discretionary Accruals. 
- Size of the bank (\(SIZE_{it}\)), Profitability (\(PROF_{it}\)), Leverage (\(LEVG_{it}\)), Liquidity (\(LIQ_{it}\)) and Asset Quality (\(AQ_{it}\)) are employed as control variables.

Estimation Strategy: The logistic approach is used to study the discretion used by managers by employing earning management practices and its relationship with financial distress in twenty commercial banks of Pakistan, listed at Pakistan Stock Exchange (PSX). This approach is used when the dependent variable is binary and the independent variables are interval or ratio scale. It is preferred when the de-
pendent variable is a dummy, which is either 0 or 1 because it triumphs over the constraints of Ordinary Least Squares (OLS) model. Moreover, logistic regression is also widely used and accurate to predict bankruptcies (Al-Saleh & Al-Kandari, 2012; Valahzaghard & Bahrami, 2013, Zaghdoudi, 2013).

**Measurement of discretionary accruals (DA) and non-discretionary accruals (NDA) of Loan loss provisions (LLPs):** Earning management has been estimated by using models of Kanagaretnam, Lobo & Yang (2005), Corneaux, McNutt & Tehrani, (2009); van Oosterbosch (2010) and Leventis et al., (2011).

**Step 1: Estimation of the Regression Parameters**
The NDA accruals are estimated for a bank in year \( t \), by using the following equation.

\[
LLP_t = \alpha_0 + \alpha_1 LCO_t + \alpha_2 LLA_{t-1} + \alpha_3 \Delta NPL_t + \alpha_4 EBTP_t + \epsilon_t
\]  

Whereas:
Loan loss provision for year \( t \) (LLP\(_t\)) is the dependent variable. Independent variable include:
\( LCO_t \): Net loan charge-offs for year \( t \),
\( LLA_{t-1} \): Loan loss allowance or reserve at the end of year \( t-1 \),
\( \Delta NPL_t \): Change in non-performing loans during year \( t \) measured by the non-performing loans for year \( t \) minus the non-performing loans for the year \( t-1 \),
\( EBTP_t \): Earnings before tax and loan loss provisions for year \( t \).

**Step 2: Estimation of the non-discretionary loan loss provisions (NDLLPs)**
The coefficients of Eq(3) \( \alpha_0, \alpha_1, \alpha_2 \) and \( \alpha_3 \) have been used to estimate non-discretionary loan loss provisions (NDLLPs).

\[
LLP_t = \alpha_0 + \alpha_1 LCO_t + \alpha_2 LLA_{t-1} + \alpha_3 \Delta NPL_t + \alpha_4 EBTP_t + \epsilon_t
\]  

**Step 3: Estimation of the discretionary loan loss provisions (DLLPs)**
Discretionary loan loss provisions (DLLPs) are estimated by taking the absolute value of the negative residuals from Eq. (4). The same has been calculated by using models of Lo, (2008), Kanagaretnam, Lim, & Lobo (2010) and Kanagaretnam, Lim, & Lobo (2014). Loan losses are estimated on the basis of bad loans/non-performing loans in the previous year and in the current year \( (\Delta NPL_t) \) and loan charge-offs \( (LCO_t) \), which are considered as losses on bad loans in the current year. Kanagaretnam et al. (2005) also mentioned that loan loss provisions \( (LLP_t) \) are dependent on the trend of non-performing loans \( d(NPL) \) and charge-offs. Hence, the predicted signs of the \( \alpha_i \) and \( \alpha_3 \) are positive.

Loan Loss Allowance \( (LLA_{t-1}) \) is taken as a control variable, to cater for variations in loan loss provisions (Anandarajan et al., 2007). Bank creates a lower cushion when \( LLA_{t-1} \) are high. Therefore, the expected sign \( \alpha_2 \) is negative. The coefficient \( \alpha_4 \) is used for \( EBTP_t \) (Earnings before tax and provisions). The expected sign is positive and significant. Earlier literature reveals that earning management techniques are used, while earnings are on the higher side (Hamdi & Zarai, 2012, Pinho & Martins, 2009).

**Measuring Financial Distress:** Altman Z Score model used by non-manufacturers to forecast failures in developing countries (Altman, Hartzell, & Peck, 1995), is as under:

\[
Z\text{-Score}=6.51 X_1 + 3.26 X_2 + 6.72 X_3 + 1.05 X_4
\]  

Whereas:
\( X_1 = \text{Working Capital/Total Assets} \)
\( X_2 = \text{Retained Earnings/Total Assets} \)
\( X_3 = \text{EBIT/Total Assets} \)
\( X_4 = \text{Book Value of Equity/ Total liabilities} \) (Hartzell et al., 1995)

When the value of Z-score exceeds 2.6, it
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is safe. Whereas, when the value of Z-score is less than 1.1, it is distress time period. Further, when the value of Z-score is between 1.1 and 2.6, this shows a grey zone. Therefore, lower values of Z-score shows higher financial distress.

Control variables: The first control variable employed in this study is leverage (LEVG). It is the capital ratio, i.e., total equity to total assets. Abdullah & Ansar (2013) used leverage as control variable and revealed that higher leverage increases financial distress (FD) in the banks. The second control variable used in this study is liquidity (LIQ), which is measured by cash and cash equivalents to total assets. Logistic regression was used by Chiaramonte & Casu (2016) who also revealed that increase in liquidity causes a decrease in financial distress (FD). The third control variable is size LOG (TA), which is calculated by taking the log of total assets. Boyd & Runkle (1993) found an inverse relationship between bank size and Z-score and performance. This negative relationship is also supported by Kosmidou, Pasiouras & Tsaklanganos (2007), Sufian & Habibullah (2009) and Cole & White (2012). The fourth control variable used in this study is profitability (PROF). High profitability promotes stability, which in turn strengthens the capital base (Flamini, Schumacher, & McDonald, 2009). The last control variable used in this study is asset quality (AQ), which is estimated by dividing non-performing loans (NPL) with gross advances. The study of Karim, Chan & Hassan (2010) revealed that a higher ratio of bad loans affects cost-efficiency. Further, Ozili (2017) also supported that non-performing loans (NPL) negatively affects efficiency.

Empirical Analysis and Results

The descriptive statistics, correlations, empirical analysis and results of this research paper are as under:

Descriptive Statistics: Table 1 shows the descriptive statistics of independent and control variables including size, profitability, leverage, liquidity, and asset quality. The size of Pakistani banks, i.e., total assets (TA) ranges from Rs.30 million to Rs.4722 million, which means that the sample is catering small to larger banks. Likewise, the

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Std. Dev.</th>
<th>Obs</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDA</td>
<td>165.531</td>
<td>119.36</td>
<td>711.078</td>
<td>2.814</td>
<td>156.732</td>
<td>100</td>
</tr>
<tr>
<td>DA</td>
<td>42.777</td>
<td>30.029</td>
<td>487.398</td>
<td>0.483</td>
<td>52.812</td>
<td>100</td>
</tr>
<tr>
<td>TA</td>
<td>516.919</td>
<td>348.257</td>
<td>4.722.38</td>
<td>30.511</td>
<td>597.479</td>
<td>100</td>
</tr>
<tr>
<td>PROF</td>
<td>18.068</td>
<td>10.261</td>
<td>136.746</td>
<td>0.129</td>
<td>20.76</td>
<td>100</td>
</tr>
<tr>
<td>LEVG</td>
<td>0.101</td>
<td>0.076</td>
<td>0.519</td>
<td>-0.031</td>
<td>0.088</td>
<td>100</td>
</tr>
<tr>
<td>LIQ</td>
<td>0.082</td>
<td>0.076</td>
<td>0.158</td>
<td>0.044</td>
<td>0.027</td>
<td>100</td>
</tr>
<tr>
<td>AQ</td>
<td>0.143</td>
<td>0.127</td>
<td>0.516</td>
<td>0.021</td>
<td>0.092</td>
<td>100</td>
</tr>
</tbody>
</table>

Note: NDA: Non-discretionary Accrual, DA: Discretionary Accrual, TA: Total Assets, PROF: Profitability, LEVG: Leverage, LIQ: (Cash & Cash equivalent to total assets), AQ: (Non-performing loans to gross advances)

Source: Own edited
profitability \((PROF)\) of the banks also ranges from a minimum of 12.9\% to 13.6\%, with an average of 18 \%. Further, leverage \((LEVG)\) of banks ranges from –3 \% to 51.9\%, which means that the sample also includes both high and low leveraged banks. The mean liquidity \((LIQ)\) of banks is 8.2 \%, which shows banks’ ability to meet short term obligation ranges from minimum 4.4 \% to maximum 15.8 \%. Lastly, the mean ratio of asset quality \((AQ)\) in terms of its non-performing loans \((NPL)\) to gross advances is 14.3 \%. Moreover, the range of asset quality \((AQ)\) is 2.1\% to 51.6\%, which means that the sample includes banks with less and high non-performing loans \((NPL)\).

**Correlation Matrix:** Correlation matrix of the explanatory variables is shown in Table 2. There is a positive correlation between Size \((TA)\) and \(NDA\) (non-discretionary accruals) i.e., \(r = 0.67\), at the 10\% level, which is significant. There is also a positive correlation between \(PROF\) (profitability) and \(NDA\) (non-discretionary accruals) \((r = 0.74\), at the 10\% level\), \(LIQ\) (liquidity) \((r = 0.50\), at the 5\% level\) and non-discretionary accrual \((NDA)\). \(LEVG\) (leverage) and \(AQ\) (asset quality) has negative correlation \(i.e. r = (0.21)\) and \(r = (0.16)\) at the 5\% level. There is positive correlation between \(TA\) (size) and \(DA\) (Discretionary accruals), \((r = 0.38\), at the 5\% level\), which is significant. There is a positive correlation of \(PROF\) (profitability) and \((r = 0.45\), at the 5\% level\), \(LIQ\) (liquidity) \((r = 0.19\), at the 5\% level\) and \(DA\) (discretionary accrual). Further, \(LEVG\) (leverage) and \(AQ\) (asset quality) has negative correlation \(i.e. r = (0.13)\) and \(r = (0.07)\) at the 10\% level and 5\% level.

**Loan Loss Provisions \((LLPs)\):** The results of loan loss provisions \((LLPs)\) are shown in Table 3. In accordance with literature and as expected, the coefficients of loan charge offs \((LCO)\) and Change in non-performing loans \((\Delta NPL)\), are positive. Whereas, the coefficient of loan loss allowance \((LLA)\) is positive, which is contrary to expectations, i.e., negative, which means that banks have made large building in the current year. Whereas the coefficient of Earning before tax and provisions \((EBTP)\) is positive and significant, this means that banks use earning management through loan loss provisions \((LLPs)\). The results show

<table>
<thead>
<tr>
<th>Var.</th>
<th>NDA</th>
<th>DA</th>
<th>TA</th>
<th>PROF</th>
<th>LEVG</th>
<th>LIQ</th>
<th>AQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDA</td>
<td>1.00</td>
<td>0.29</td>
<td>0.67</td>
<td>0.74</td>
<td>–0.21</td>
<td>0.50</td>
<td>–0.16</td>
</tr>
<tr>
<td>DA</td>
<td></td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TA</td>
<td>0.67</td>
<td>0.38</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROF</td>
<td>0.74</td>
<td>0.45</td>
<td>0.55</td>
<td>1.00</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LEVG</td>
<td>–0.21</td>
<td>–0.15</td>
<td>–0.13</td>
<td>–0.18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LIQ</td>
<td>0.50</td>
<td>0.19</td>
<td>0.24</td>
<td>0.48</td>
<td>–0.27</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>AQ</td>
<td>–0.16</td>
<td>–0.02</td>
<td>–0.07</td>
<td>–0.29</td>
<td>0.17</td>
<td>–0.19</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Note: \(NDA\): Non-discretionary Accrual, \(DA\): Discretionary Accrual, \(TA\): Total Assets, \(PROF\): Profitability, \(LEVG\): Leverage, \(LIQ\): (Cash & Cash equivalent to total assets), \(AQ\): (Non-performing loans to gross advances)

Source: own edited
that management uses discretion in the allowance for loan losses to portray the efficiency and to achieve management objectives.

The $R^2$ for Loan loss provisions (LLPs) is 84% and the adjusted $R^2$ is 83%, which shows that the variables used in this model, shows a better explanation. F-statistic is 125.1535 and probability of F-statistic is significant at 1% significance level. Moreover, the results reveal that the model is consistent; therefore the results are also reliable.

**Empirical Results:** The results of logit regression, for the Eq (1) and (2) are shown in Table 4. Equation has been estimated to study relationship between financial distress and earning management practices, including non-discretionary accruals (NDA) and discretionary accruals (DA) along with control variables including size, profitability, leverage, liquidity and asset quality in the Pakistani commercial banks listed on Pakistan Stock Exchange (PSX), over the period from the year 2010–2015.

The results of Model 1 (Eq 1) pertain to the linkage between non-discretionary (NDA) and financial distress (FD) are shown in Table 4. In this study, odd ratios have been used and coefficients are indirectly interpreted. It reveals that there is an inverse but the insignificant linkage between the likelihood of financial distress and non-discretionary accruals (NDA) as distress decreases with increase in non-discretionary accruals (NDA). Therefore, Pakistani banks use non-discretionary practices to reduce their distress level. The study of Dushku (2016) supported the provisions are manipulated through a non-discretionary component. The odd ratio of size is 4.20, which is greater than one, which means that the increase in bank size raises the financial distress of the bank. The study of Hoffman (2011) and Kohler (2015), also maintained that increase in banks size contributes towards financial distress of the bank. Similarly, the odd ratio of profitability is 1, which shows that it is neutral and has no impact on the financial distress of the bank.

The odd ratio of the leverage is 0.044, which is less than one, which shows that an
creased level of bank leverage reduces financial distress. Abdullah & Ansar (2013) concluded that financial leverage has a positive outcome for financial distress. Moreover, the odd ratio of the liquidity is 0.156, which is less than one, which also means that it has an inverse relation with financial distress. It shows that the increase in liquidity results in a reduction in bank financial distress, as it strengthens banks to meet its short term obligations. Chiaramonte & Casu (2016) supported that financial distress decreases with increased liquidity holdings. Further, the odd ratio of the asset quality is 1.252, which is greater than 1, means it is positive. Therefore, asset quality contributes to the financial distress of the banks. This implies that distress increases as a result of an increase in non-performing (NPL) to gross advances. The results are in accordance with the research of Ozili (2017), which also confirms that NPL is negatively linked with stability and efficiency of the bank.

The results of Model 2 (Eq2), pertain to the linkage of financial distress (FD) with dis-

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<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Odd Ratio 1</th>
<th>Odd Ratio 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constans</td>
<td>$-15.40$ ($-1.642$)</td>
<td>$-8.127$ ($-0.73$)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>NDA</td>
<td>$-0.543$ ($-1.121$)</td>
<td>–</td>
<td>0.581</td>
<td>–</td>
</tr>
<tr>
<td>DA</td>
<td>–</td>
<td>$-0.468$ ($-1.06$)</td>
<td>0.626</td>
<td></td>
</tr>
<tr>
<td>MÉRET</td>
<td>1.436 (2.15)</td>
<td>0.96 (2.01)</td>
<td>4.20</td>
<td>2.611</td>
</tr>
<tr>
<td>PROF</td>
<td>$-0.06$ ($-0.115$)</td>
<td>$-0.08$ ($-0.181$)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>LEVG</td>
<td>2.94 (0.649)</td>
<td>3.37 (0.64)</td>
<td>0.044</td>
<td>0.174</td>
</tr>
<tr>
<td>LIQ</td>
<td>$-1.85$ (0.902)</td>
<td>$-1.084$ (0.07)</td>
<td>0.156</td>
<td>0.338</td>
</tr>
<tr>
<td>AQ</td>
<td>$-1.37$ (0.69)</td>
<td>$-1.483$ (0.42)</td>
<td>1.25</td>
<td>0.227</td>
</tr>
<tr>
<td>McFad R-square</td>
<td>0.103</td>
<td>0.103</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>LR statistic</td>
<td>7.60193</td>
<td>7.85</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Prob. LR statistic</td>
<td>0.026</td>
<td>0.027</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Note: NDA: Non-discretionary Accrual, DA: Discretionary Accrual, TA: Total Assets, PROF: Profitability, LEVG: Leverage, LIQ: (Cash & Cash equivalent to total assets), AQ: (Non-performing loans to gross advances)

Source: own edited
cretionary accruals (DA) are also shown in Table 4. The findings reveal that there is inverse but insignificant relationship between the likelihood of non-discretionary accruals (NDA) and financial distress (FD), which means that discretionary accruals reduce financial distress in Pakistani Commercial banks. The odd ratio of size is 2.611, which is greater than one, which shows that the increase in bank size has a positive relationship with the financial distress of the bank. The same is substantiated by the literature like the studies of Hoffmann (2011) and Köhler (2015). Similarly, the odd ratio of profitability is 1, which implies that profitability does not have a significant relationship with the financial distress of the bank.

The odd ratio of the leverage is 0.174 which is less than one, which implies that an increase in the bank leverage results in a decrease in the financial distress of the bank. The result of this study is in line with the research of Abdullah & Ansar (2013) which also showed that financial leverage has quite a positive impact on financial distress. Moreover, the odd ratio of the liquidity is 0.338, which is also less than one, which shows that it has a negative relation with financial distress. It shows that increase liquidity holdings decrease bank financial distress. The results of this study are in accordance with the research of Chiaramonte & Casu (2016) which also reveals that results of different versions of the logistic probability model indicate that the probability of financial distress decreases as a result of an increase in liquidity holdings. Whereas, the odd ratio of the asset quality is 1.227, which is greater than 1; it implies that it has a positive association with financial distress, which means that increase in NPL results in an increase in bank financial distress. The results are in accordance with the research of (Ozili, 2017), which also agreed that non-performing loans are negatively associated with the stability and efficiency of the banking system.

**SUMMARY AND CONCLUSION**

This paper examined the relationship between financial distress and usage of discretion by employing earning management in the commercial banks listed on Pakistan stock exchange during the year 2010–2015. Earning management has been further segregated into discretionary and non-discretionary accrual and their relationship with financial distress. The study hypothesized that there is a relationship between financial distress and non-discretionary accruals, in which management uses non-discretionary accruals to manage the unexpected risk of non-performing loans. The study also hypothesizes that there is a relationship between financial distress and discretionary accruals, in which management uses discretion for achieving management objectives. Panel data and logistic regression approaches have been used to study the relationship among variables.

The empirical evidence is consistent with the hypothesis that there is an association between financial distress (FD) and non-discretionary accruals (NDA) and banks create a reserve to manage the risk of unexpected losses from the portfolio. It is consistent with the findings of the Wahlen (1994) and Iftekhar Hasan & Wall (2004), which also shows that non-discretionary accruals (NDA) are used to manage credit risk and losses of non-performing loans (Bikker & Metzemakers, 2005). Further, a recent study of Albanian banks over the period from 2004 to 2014 also showed that bank Loan loss provisions (LLPs) are influenced by non-discretionary loan loss provisions (Dushku, 2016). Therefore, this empirical study concludes that Pakistani banks use non-discretionary practices to reduce their financial distress by creating reserves to handle the unexpected risk of non-performing loans. Further, the study also shows that control variables including banks size increase credit risk,
which in turn increases non-performing loans and these factors augment financial distress. Whereas, leverage and liquidity reduce financial distress. Profitability has no impact on the financial distress of banks.

Further, the empirical evidence of this study also supports the hypothesis that there is a significant association between financial distress and discretionary accruals. Therefore, Pakistani banks use discretionary accrual practices to reduce financial distress and also to achieve management objectives, which might include capital management and signalling. The control variable of bank size increases financial distress because of high exposure of loans, out of which, some become non-performing. Whereas, profitability does not affect financial distress. On the other side, leverage, liquidity and asset quality play a role in reducing financial distress of banks.

This research study also has some limitations. Firstly, the sample size is restricted to commercial banks. Further, future research may be extended to Islamic and Development banks. This research study provides useful insights for investors, auditors and regulators as it identifies usage of specific provisions by management despite strict regulations.

Notes


2 PSX (Pakistan stock exchange)

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