Panel Data Analysis of the Relationship between Earnings Management, Bank Risks, Loan loss Provision and Dividend per Share

Wan Masliza Wan Mohammad*, Shaista Wasiuzzaman** and Rapiah Mohd Zaini***

This paper examines the relationship between earnings management (discretionary accruals), bank risks, loan loss provision and dividend per share. A balanced panel study of 10 banks over the period of 2000-2009 was used to observe the effect of loan loss provision (LLP), risks and dividend per share (DPS) as the potential cause that thrive earnings management. The model is tested using both panel random effects and feasible generalized least square. The results revealed that earnings management is significantly affected by the level of LLP, operational risks and systematic risks.

Field of Research: Earnings management, Discretionary accruals, Bank risk

1. Introduction

In recent years, the alarming increase in worldwide cases of bank collapse, exacerbated by the consequent meltdown in the banking industry, raised legitimate concerns and provided the catalyst that fuelled and further intensified interest in understanding and improving the agility inherent in these banking institutions. Basel regulation, for instance, enforced requirements on capital, liquidity and risks for all banks governed by this regulation (Basel Committee on Banking Supervision 1999). One of the major concerns of the market is earnings management being the underpinning cause in these banks’ catastrophic collapse.

To date there have been several studies that focused on earnings management in the banking industry (Ahmed, Takeda & Thomas 1999; Beasley et al. 2000; Chang, Shen & Fang 2008; Eng & Nabar 2007; Hasan & Wall 2004; Shriyes & Dahl 1992; Yasuda, Okuda & Konishi 2004). For instance, Yasuda, Okuda & Konishi (2004) had conducted a study on the Japanese regional banks from the fiscal year 1990 to 1999. These periods were believed to be the most difficult period for the industry due to the severity in the high number defaulting loans faced by the Japanese banks. They empirically tested the relationship of bank risk with discretionary accruals. The findings indicated significant negative associations between the different types of risk and earnings management. This is more prevalent during pre-major bank failures, subsequently diminishing after the event (Yasuda, Osuda & Konishi 2004).

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However, Yasuda, Okuda & Konishi (2004), narrowed their research on Japanese banks which operate in a relatively insular environment when compared to Malaysia. Despite banking institutions in Malaysia being governed by Banking and Financial Institutions Act 1989 (BAFIA), Development Financial Institutions Act 2002 and Central Bank of Malaysia Act 2009, the government is tangibly more receptive to competition posed by the foreign banks’ entry. As such, the local banking fraternity finds itself competing, with impartiality, against foreign-based rivals such as Kuwait Finance House, Citibank and HSBC, to name a few. The presence of foreign competition has motivated the study to investigate the effect intense competition, domestically as well as internationally, have on the possibility of earnings management occurrence. This paper thus provides important findings to augment present literatures on the effects of risks, loan loss provision and dividend per share on the possibility of earnings management occurrence.

2. Earnings Management

Earnings management is defined in many literatures as a distortion to real reflections of economic events that has taken place in an organization through the use of managerial judgment (Healy & Wahlen 1999). Earnings management can also be defined as the “purposeful intervention by management in the earnings determination process usually to satisfy selfish objectives” (Schipper 1989). In both definitions, it is mutually satisfied that the premise of earnings management lies in the calculated misrepresentation of facts by the management driven by self-preservation motives.

There are typically two strategies to earnings management. These are creative accounting and income smoothing. Creative accounting strategy may involve increasing a reported income to portray a company more favorably (Bartov 1993) through loan loss provision(Ahmed, Takeda & Thomas 1999) and flexibility afforded to them under current minimum disclosure requirements (Lobo & Zhou 2001). Income smoothing strategy involves the deliberate omission of a portion of the company’s income from reported earnings in high-yield years through the creation of reserves or earnings “banks” and then reporting these earnings in non-performing years. For instance, Beasley et al. (2000) found evidence that fraud techniques centered on inappropriate revenue recognition and asset overstatements are the most common income smoothing techniques recorded. However, since the banking industry is highly regulated, incidences of earnings management are less perceivable. Notwithstanding this, concern over the issue of earnings management garnered widespread attention after the infamy of banking collapses during the year 2008.

In most research, the issues of earnings management are related to the structure of corporate governance on any institutions (Switzer 2007; White 2002; Xie, Davidson III & DaDalt 2003). There have also been many proxies for earnings management and most papers measures discretionary accruals as a proxy of earnings management (Abdul Rahman & Mohamed Ali 2006; Beasley 1996; Wilson & Wang 2010). Discretionary accruals are part of accounting accruals that comprise of items that represent managements’ expectations of uncertain future events. They also may be misleading when it is manipulated to misrepresent information to the shareholders and achieve private gain (Dechow & Dichev 2002;Wasan & Boone 2010). As there is a mismatch between the objective of shareholders and managers the issues of
agency cost emerged (Berle & Means 1932; Jensen & Meckling 1976). While bank shareholders have preferences for excessive risk, bank managers have reasons to prefer less risk (Pathan 2009).

**Bank Risks**

There appears a variety of factors that influences management risks taking. In a study by King & Wen (2011) strong bondholder governance manager pursue low-risk investments such as capital expenditure, with corresponding reduction in research and development expenditures (King & Wen 2011). Even though a general perspective suggests such a reaction impacts negatively to the long term growth of the companies, the managers have less incentive to indulge in risk taking activities when there exist strong governance structure in a particular companies. This is particularly consistent with market efficiency theory that stock prices appear to fairly reflect the implication of good governance indicating higher risks associated with companies with poor governance (Aman & Nguyen 2008). Markets or shareholders in particular react to information by reflecting their preference through shares prices. In regards to discretionary accruals, the rational investor hypothesis, explains that the level of discretionary accruals has no impact on the market valuation of bank risk. However, naive investor hypothesis claims naive investors would misinterpret high reported earnings as being favorable information about bank health, and undervalue bank risk. If this is true, the discretionary portion of accruals should be negatively associated with the level of bank risk (Yasuda, Okuda & Konishi 2004). Hence, the first alternate hypothesis is as follows:

**H1a:** There is a significant positive association between the risk faced by the banks and earnings management.

**Loan Loss Provision**

With regards to the issues of earnings management, Ahmed, Takeda & Thomas (1999) found that loan loss provision is used for capital management. This result indicates the tendency for banks to increase their capital by increasing the amount of loan loss provision to boost the reported capital under Basel regulation. In another study, Chang et al. (2008) studied the relationship between discretionary loan loss provisions (DLLP) and operating performance of banks listed in the Taiwan Stock Exchange. Based on the total number of 164 companies for 1999 – 2004, their findings showed positive relationships between DLLP and the earnings before loan loss provisions and between one year ahead earnings and non-performing loans. Thus, banks have the tendency to increase or decrease DLLP for the purpose of earnings management. Eng & Nabar (2007) examined the behavior of loan loss accounting disclosures and the association between the market valuation of the loan loss accounting disclosures and future bank cash flows of banks in Hong Kong, Malaysia, and Singapore. Using data from 1993 to 2000, they also examined the impact of the financial crisis of July 1997 – 1999 on the behavior and valuation of loan loss reserves. The findings of the study indicate a positive relationship between unexpected loan loss provisions and the banks’ stock returns and future cash flows. An examination on the impact of crisis reveals that during the crisis, the association between unexpected loan loss provisions and bank stock returns and future cash flows were less significant in comparison to other periods.
Hasan & Wall (2004) studied the determinants of banks’ loan loss allowance of US and non-US banks such as Canada and Japan. Two groups of determinants were analyzed: discretionary and non-discretionary. The results indicate similarities and differences in outcomes of the US bank and non-US banks. Pretax and pre-provision earnings ratios were significantly positive for all samples except for the Canadian sample. All samples showed significant relationship with the non-performing loan ratio. The loan charge-off ratio was significant for US banks, but insignificant for non-US banks. In another study, Ahmed, Takeda & Thomas (1999) failed to establish any relationship between LLP and earnings management in the banking industry but the possibilities of LLP to alleviate the pressure of high non-performing loans ratios and to write off bad debts increases the opportunities for LLP to be manipulated. Firms with uncertain future cash flows, hence higher risk, tend to increase their loan loss provisions, which will then be used to offset the loan loss. Firms with high earnings have the tendency to adjust loan loss provisions with an intention of managing earnings (Eng & Nabar 2007; Greenawalt & Sinkey 1998; Wahlen 1994). Therefore, it is expected that the higher the loan loss provision of the company, the higher the management of earnings. This leads to the second alternate hypothesis as follows:

$$H_{2A}: \text{There is a significant positive association between the loan loss provision of the bank and its earning management.}$$

### Dividend per Share

Dividend is an important indicator of the liquidity of the business. Some investors perceive dividend-paying firms as being stable. However, the determinant of dividend distribution does not rely on stability alone; it might be influenced by other factors such as type of business, type of investors and growth opportunities of the business (Kasanen, Kinnunen & Niskanen 1996). Firms tend to offer stable dividends if the owners’ preference is dividend. In a worst-case scenario, dividend-based target earnings were used to manage earnings. Previous study by Kasanen, Kinnunen & Niskanen (1996) indicated the exercise of earnings management in dividend contract. In other words, the smooth dividends stream expected by owners is an important driving force behind management (Baker & Wurgler 2004; Bulan, Subramanian, & Taulu 2004; Li & Lie 2005). This result is further supported by Baker & Wagler (2004), Bulan, Subramaniam & Taulu (2004) and Li & Lie (2005), who found that the decision to change dividend depends on the premium the capital market places on dividends.

In another study on dividend, Bhattacharyya (1979) explained that due to inside information that managers possess regarding a firm’s performance (or asymmetric information), dividends are used to signal future firm profitability. The signaling arguments developed by (Bhattacharyya 1979) and later (John & Williams 1985; Miller & Modigliani 1961) provide the basis for the arguments of asymmetric information between managers and shareholders with regards to dividends as ‘signaling devices’. They revealed that management has the incentive to signal positive firm-specific private information to shareholders and negative information would be withheld until the financial constraints force the release of such information. This idea proved to be true in the infamous Enron fiasco where negative information about the prospects of the company were withheld and no signal was channeled through the dividend decision about the impending problems until the federal
authorities officially initiated investigation on Enron. Therefore dividend per share is an important indicator of firm performance to both shareholders and managers, and managers may be inclined to manipulate earnings if the dividend per share is considered to be unfavorable.

Based on the majority of the findings, the third alternate hypothesis is as follows:

$H_3$: There is a significant positive association between the dividend per share of banks and its earning management.

3. The Methodology and the Model

Sample selection and data

24 local banks (9 commercial banks and 15 investment banks) were considered during the period of 2000 to 2009. The data were collected from the Data Stream Advance International Database but there were only 10 local banks with complete data for the period under consideration. This constitutes a balanced panel study of the data sets that combines time series ($T$) and cross section ($N$) analyses and has a total number of firm-year observations of 100 (as depicted in Table 1). The period 2000-2009 was chosen as this period includes the imposition of Malaysia Code on Corporate Governance (2001) and banking crisis in the year 2008. The crisis had severely affected the economies of several countries including Malaysia.

Three main variables were chosen as independent or explanatory variables; (i) risk (ii) loan loss provision and iii) dividend per share. These variables were examined and hypotheses were then developed for each of the independent variables.

In this study, risk is measured by three indicators, which are systematic risk, firm risk and operational risk. In measuring the systematic risk, the Capital Asset Pricing Model (CAPM) is chosen as it is the most widely recognized explanation of stock prices and expected return. This model assumes that systematic risk affects the expected return of investments. The CAPM model is as below:

$$ R_{it} = \alpha + \beta_1 R_{mt} + \beta_2 R_{bt} + e_{it} $$

where $R_{it}$ is the monthly stock returns for each bank $i$, for $i = 1, \ldots, 10$; $R_{mt}$ is the monthly returns of the Kuala Lumpur Composite Index (KLCI); and $R_{bt}$ is the monthly 10-year Malaysian government bond yield. In line with the previous work of Yasuda, Okuda & Konishi (2004), the annual standard deviation of the residuals, $e_{it}$, over the 12 months represents the firm-specific risk (FIRM) faced by the bank. The total risk faced by the bank is calculated as the annual standard deviation of the 12 months' stock returns. In this way, each bank’s annual firm-specific and total risks are obtained. The difference between the total risk and the firm-specific risk results in the systematic risk (SYSTEM) faced by the banks. However since strong correlation exists between total risk and the other types of risk (FIRM and SYSTEM), total risk is excluded from the equation (Baltagi, 2005).

Aside from these risks, we also considered the revenue volatility or operational risk (OPER) faced by the bank. DeYoung & Roland (2001) measured revenue volatility as the standard deviation of the percentage change in a bank’s quarter-to-quarter
We also define the non discretionary portion as

\[ \text{NDAC} = \alpha_0 (1/TA_{i,t-1}) + \alpha_2 (\Delta OI_{i,t}/TA_{i,t-1}) . \]

The non discretionary accruals represent the portion of total accruals dictated by changes in bank business conditions (\( \Delta OI \)). Since the non discretionary accruals are independent of earnings management, we define the residual between ACCR and NDAC as discretionary accruals (DA).

Thus, the model used to study the relationship between earnings management and risk is as follows:

\[ DA_{it} = \alpha_0 + \alpha_1 \text{DPS}_{it} + \alpha_2 \text{LLP}_{it} + \alpha_3 \text{OPER}_{it} + \alpha_4 \text{FIRM}_{it} + \alpha_5 \text{SYSTEM}_{it} + \varepsilon_{it} \]

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Independent Variable</td>
<td></td>
</tr>
<tr>
<td>DA_{it}</td>
<td>Discretionary accruals (DA) based on Modified Jones model (Jones, 1991) for bank i at time t.</td>
</tr>
<tr>
<td>Dependent Variables</td>
<td></td>
</tr>
<tr>
<td>DPS_{it}</td>
<td>Dividend per share of bank i at time t</td>
</tr>
<tr>
<td>LLP_{it}</td>
<td>Loan loss provision of bank i at time t</td>
</tr>
<tr>
<td>OPER_{it}</td>
<td>Operating risk for bank i at time t</td>
</tr>
<tr>
<td>FIRM_{it}</td>
<td>Firm-specific risk for bank i at time t</td>
</tr>
<tr>
<td>SYSTEM_{it}</td>
<td>Systematic risk faced by bank i at time t</td>
</tr>
</tbody>
</table>

We estimated the regression model using Random effects and Feasible Generalized techniques of panel data.
4. The Findings

Table 1: Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>DA</td>
<td>100</td>
<td>0.0055</td>
<td>0.0692</td>
<td>-0.2879</td>
<td>0.0747</td>
</tr>
<tr>
<td>DPS</td>
<td>100</td>
<td>0.1226</td>
<td>0.1510</td>
<td>0.0000</td>
<td>0.7000</td>
</tr>
<tr>
<td>LLP</td>
<td>100</td>
<td>0.0093</td>
<td>0.0110</td>
<td>-0.0030</td>
<td>0.0708</td>
</tr>
<tr>
<td>OPER</td>
<td>100</td>
<td>676263.2</td>
<td>704218.1</td>
<td>34838.65</td>
<td>2877724</td>
</tr>
<tr>
<td>SYSTEM</td>
<td>100</td>
<td>0.0175</td>
<td>0.0187</td>
<td>-0.0133</td>
<td>0.0848</td>
</tr>
<tr>
<td>FIRM</td>
<td>100</td>
<td>0.0627</td>
<td>0.0350</td>
<td>0.0189</td>
<td>0.2079</td>
</tr>
</tbody>
</table>

In Table 1, it is observed that DA has a mean value 0.0055. The maximum value of 0.0747, which indicates positive abnormal accruals among the sample firms, may suggest that working capital accruals are being managed upwards, possibly an effort to avoid earnings loss (Peasnell, Pope, & Young 2005). Conversely, the minimum negative value (-0.2879) of discretionary accruals may suggest that working capital accruals is being managed downwards to avoid earning increases.

Hausman Test (Prob>chi2 = 0.9825) reveals that the Random effects model is a better model (Gujarati 2003) for the relationship to be tested. The Random effects (RE) model assumes consistent parameter estimates suggesting that there are no individual fixed effects. The results of the Random effects model are as shown in Table 2 below.

Table 2: Results from Random effects model estimation of discretionary accruals

| Variables | Coefficient | Standard Error | P > |z| |
|-----------|-------------|----------------|-----|---|
| DPS       | 0.0318876   | 0.019876       | 0.109 |
| LLP       | -1.263239   | 0.481812       | 0.009*** |
| OPER      | 1.65E-08    | 3.97E-09       | 0.000*** |
| SYSTEM    | -0.883264   | 0.167364       | 0.598 |
| FIRM      | 0.4607083   | 0.146694       | 0.002*** |
| Constant  | 0.0555501   | 0.105316       | 0.000*** |

Notes:*** Significant at the 1%; ** Significant at the 5%; Significant at the 10%

Discussions

The results from the Random Effects model shows that dividend per share (DPS) is an insignificant tool in the earnings management of the banks under consideration. Similarly, systematic risk (SYSTEM) is not significant in determining earnings management of the banks. At 1% significance level, the loan loss provisions (LLP), operating risk and systematic risk are all significant. We find a negative relationship between LLP and earnings management. LLP was adjusted to manage unexpected future cash flows, hence risk of the loan. Increasing LLP lowered down the profit, which is perceived as income decreasing earnings management. Both operating and firm-specific risks positively influence earnings management. This means that
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an increase in these risks will result in a higher tendency by banks to manage their earnings.

However, since the results revealed that heteroskedasticity is present (Modified Wald test, Prob>chi2 = 0.000), and there is no auto correlation (Wooldridge test, Prob > F = 0.1552), the feasible generalized least square (FGLS) method is used for the estimation (Baltagi 2005; Baltagi et al. 2007). FGLS estimates correct for both cross-section heteroskedasticity and contemporaneous correlation (Beck & Katz 1995; Magalhaes & Africano 2007). The test for contemporaneous correlation or cross-sectional dependence in large-N small-T (N > T) are namely Pesaran and Friedman (Baum 2006) and the results suggest that there is no contemporaneous correlation between the samples under the study. The results of the FGLS estimation are as shown below in Table 3.

Table 3: Results from FLGS model estimation of discretionary accruals

| Variables | Coefficient | Standard Error | P > |z|
|-----------|-------------|----------------|-----|
| DPS       | -0.04317    | 0.03464        | 0.213 |
| LLP       | -1.64496    | 0.314038       | 0.000*** |
| OPER      | 1.59E-08    | 8.15E-09       | 0.051* |
| SYSTEM    | -0.12427    | 0.193767       | 0.521 |
| FIRM      | -0.24177    | 0.120531       | 0.045** |
| Constant  | 0.03265     | 0.016539       | 0.048** |

Notes:** Significant at the 1%; ** Significant at the 5%; Significant at the 10%

In Table 3, dividend per share (DPS) is again shown to be insignificant in influencing earnings management by banks. As in the random effects model, systematic risk is again not significant. LLP still remains as significant at 1% level but here it is the most significant variable in influencing earnings management. Operating and firm-specific risk, which were highly significant in the random effects model are now only significant at 5% level, due to heteroskedasticity, with operating only marginally so. Again, operating risk or revenue volatility is positively related to earnings management. This means that the more volatile a bank’s revenue, the higher the tendency for banks to manipulate their earnings. Firm-specific risk (FIRM) is significantly positively related to earnings management in the random effects model but negatively related in the FGLS model. The negative relationship is consistent with the findings of Yasuda, Okuda & Konishi (2004) where discretionary accruals are negatively related with the level of bank risk. This result indicates that the global crisis, which is part of systematic risk, does not affect potential earnings management activities.

5. Summary and Conclusion

This paper examined the relationship between discretionary accruals and dividends per share, loan loss provision and three different types of risk. The data collected were from 9 commercial banks and 1 investment bank in Malaysia from the fiscal year 2000 to the year 2009. The findings of the study revealed that three variables tested, i.e. loan loss provision, operating risk and firm-specific risk are significantly associated with earnings management. In this particular study, the loan loss
provision is negatively associated with discretionary accruals indicating the possible existence of income decreasing earnings management. On the other hand, operating risk is positively associated with discretionary accruals indicating that potential earnings management exists when operational risk is high. With regards to firm-specific risk, there is a negative association with discretionary accruals, consistent with previous studies. The insignificance of the systematic risk implies that the crisis faced by the financial system does not have any effect on the earnings management of banks.

Reference


Baum, CF 2006, An Introduction to Modern Econometrics Using Stata, Stata Press, Texas.


