The Impact of Leverage on Real Earnings Management

Norhayati Zamria, Rahayu Abdul Rahma, Noor Saatila Mohd Isa

Faculty of Accountancy, Universiti Teknologi MARA, Seri Iskandar, 32610 Perak, Malaysia

Abstract

The primary aim of this study is to examine the association between leverage and Real Earnings Management (REM) activities. It analyses how leverage is able to reduce earnings management (EM). This study uses Abnormal Cash Flow from Operation, Abnormal Production Cost and Abnormal Discretionary Expenses model by Roychowdhury, 2006, as a proxy for REM. Using a sample of 3,745 firm-year observations for the period of 2006-2011, which listed on Bursa Malaysia, the study find that a significant negative association between leverage and REM. The finding reveals that leveraged firms have lower levels of REM. This supports the view that leverage limits the REM activities, which in turn, could affect the quality of accounting earnings.

Keywords: Real activities manipulation; earnings management; leverage; abnormal cash flow; abnormal production cost; abnormal discretionary expenses

1. Introduction

Schipper, 1989, argues that, earnings management (EM) has a purposeful intervention in the external financial reporting process, with the intent of obtaining some private gain. The issue of EM does not only exist in particular countries but also in Malaysia. Aini et al., 2006, find the evidence that, managers engage in EM to improve the financial picture portrayed by the financial statement in order to attract security brokers and investment trusts. According to prior studies (Yan, 2006 and Aini et al., 2006), opportunistic EM practice via accrual accounting may result in an inaccurate and misleading financial report. This, in turn reduces the quality of financial reporting and accounting number.

* Corresponding author.
Email address: norha266@perak.uitm.edu.my
A more recent study, Graham et al., 2005, suggests that managers prefer to manage earnings via real economic decisions rather than accounting accruals. They reported that 80 percent of survey participants in their study took economic actions such as reducing discretionary expenses on R&D, advertising and maintenance in order to meet an earnings target. According to Roychowdhury, 2006, although real earnings management (REM) might reduce a firm’s value, managers were more willing to manage earnings through real activities such as practices that are less likely to draw auditor or regulatory scrutiny.

In the Malaysian context, Salleh, 2009, provides similar findings. He found that a majority of survey participants who had experienced missing an earnings target preferred to make economic sacrifices rather than manipulate accounting figures. One of the participants in Salleh’s study said:

“We sit down in our third quarter meeting, look into the figures then try to reduce expenses like advertising, travelling and R&D. These actions are within our control” (p.166).

A review of literature on earnings management highlights that leverage limit EM (Jelinek, 2007 and Wasimullah et al., 2010). For example Jelinek, 2007, argues that ‘leverage increases’ reduce EM. ‘Leverage increases’ reduce opportunistich earnings management for some reasons: 1) leverage required debt repayment, thus reduces cash available to management for non-optimal spending (Jensen, 1986); 2) When a firm employs debt financing, it undergoes the scrutiny of lenders and is often subject to lender-induced spending restriction (Jensen, 1986).

However, prior studies (Wasimullah et al., 2010 and Jelinek, 2007) only examined the impact of leverage on Accrual Earnings Management (AEM). Therefore, this study extends prior studies by examining the impact of leverage on REM activities.

The main objective of this paper is to examine the impact of leverage on REM. This study uses Abnormal Cash Flow from Operation, Abnormal Production Cost and Abnormal Discretionary Expenses model by Roychowdhury, 2006, as a proxy for REM. Using a sample of 3,745 firm-year observations for the period of 2006-2011, listed on Bursa Malaysia, this study finds that a significant negative association between leverage and REM. The finding reveals that leveraged firms have lower levels of REM. This supports the view that leverage limits REM activities, which in turn, could affect the quality of accounting earnings.

The remainder of this paper is organized as follows. Section 2 gives the definition of REM and provides evidence from prior studies on the existence of REM. Development of the main hypothesis, based on the extensive literature review is presented in Section 3. Section 4 presents the data, sample selection and research methodology. Section 5 provides the analysis of results. Finally, the conclusion and suggestions for further research are presented in section 6.

2. Earnings management

Healy and Wahlen, 1999, suggest that managers use judgment in financial reporting and in structuring transactions to alter financial reports in order to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers. Further, Roychowdhury, 2006, argues that manager exercises REM such as sales manipulation and overproduction in order to avoid reporting losses.

REM is the deviation of ordinary business operation practices in order to make at least some stakeholders believe that financial reporting goals have been met through the normal activities of business (Roychowdhury, 2006). Gunny, 2010, further explains that managers may undertake actions that may have changed the timing or structuring of an operation, investment and financial transaction. Other than that, Roychowdhury, 2006,
had examined the management of sales, reduction of discretionary expenses, overproduction and reduction of R&D expenses. He found that the sample firms are manipulating real activities to avoid reporting losses. According to Kim and Sohn, 2012, even though REM can have direct and indirect consequences on current and future cash flows of the business, REM activities are more difficult to be detected than AEM and are normally less subject to external monitoring and scrutiny. In fact, they are more difficult for average investors to understand that make them into believing that business has achieved the targeted normal business goals.

One of the ways to stay in operation of business is that a company may join another company by means of mergers and acquisition. Ghosh and Jain, 2000, claim that leverage increases significantly following mergers due to increase in debt capacity. However, companies with high debt are at risk of bankruptcy due to failure in settling their external financing which subsequently may put them in another future risk of not being able to find other new lenders. Therefore, if this company may want to apply for a new loan, the new lenders may impose several conditions to the company as to keep their debt level within reasonable boundaries.

Prior studies highlight that leverage affect EM activities. Most researchers have argued that leverage increases the potential for EM which responds to avoid debt covenant violations (Sweeney, 1994; Dichev and Skinner, 2002 and Beatty and Weber, 2003). For example, Sweeney, 1994, provides direct evidence to support a debt hypothesis that the larger a firm’s debt to equity ratio, the more likely the firm’s manager is to select income increasing accounting procedures. Jaggi and Lee, 2002 examine EM incentives among managers in financial distress firms. They argue that the use of discretionary accruals is to convince their creditors that the financial distress is a temporary nature and will able to recover soon.

Although the previous literature has provided arguments to the positive association between EM and leverage, there is some empirical evidence with the opposite view. Prior studies (Jensen, 1986; Denis and Denis, 1993; Jelinek, 2007 and Wasimullah et al., 2010) suggest that leverage limits EM. For example, in relation to the control hypothesis theory by Jensen, 1986, Jelinek’s, 2007, findings are consistent with the theory used as increased leverage is associated with a reduction of EM in low growth, high free cash flow firms. Jelinek, 2007, also makes an additional contribution to the EM literature: that the leverage changes and leverage levels have different impacts on EM.

3. Hypothesis Development

The impact of leverage on earnings management has two different views. On the first side, prior studies suggested that firms with high leverage are more interested in managing their earnings (Dichev and Skinner, 2002 and Beatty and Weber, 2003). For example, Beatty and Weber, 2003, found that managers use income increasing accruals to reduce the likelihood for the firms to violate debt covenant.

On the other side, Jensen, 1986, suggests that debt creation reduces managers’ opportunistic behaviours. This is due to the ‘control hypothesis’ for debt creation. Managers use their own discretion to control the firm’s cash flow; however the debt control role begins when managers have an obligation making interest and a principal payment. This implies that high leverage may restrict managers’ ability to manipulate income-increasing accruals. Hence, based on the above arguments, the hypothesis is developed as follows:

\[ H_1: \text{High leveraged firms are less likely to involve in REM than the lower leveraged firms} \]

4. Data and methodology

4.1. Sample Selection and Data Collection
The initial sample covers all industry firms in Data Stream Thompson Reuters, excluding financial and insurance firms during the period 2006-2011 listed on Bursa Malaysia. This database includes 4,916 firms. Consistent with Roychowdhury, 2006, in detecting the real activities manipulation, this study excludes the negative residual value of abnormal earnings. The suspect firm-years are those with a positive residual value of abnormal earnings which is 4,076 firms. Finally, any missing values and outliers determined in the sample firms were excluded and the final sample of 3,745, then, will be used to test the hypothesis developed in the current study.

4.2. Measurement for Dependent Variable: Real Earnings Management

Following Roychowdhury, 2006, this study defines REM as actions managers take that deviate from normal business practices. Consistent with prior research (Roychowdhury, 2006 and Cohen and Zarowin, 2010), this study employ three metrics to examine REM, namely abnormal cash flow from operations (RES_CFO), abnormal production costs (RES_PROD) and abnormal discretionaray expenses (RES_DISEXP). Consistent with Roychowdhury, 2006, the study estimates RES_CFO, RES_PROD and RES_DISEXP as the residual from the following models, respectively.

4.2.1 Model for RES_CFO

\[
\frac{CFO_{it}}{A_{it-1}} = \beta_1 \left[1/A_{it-1}\right] + \beta_2 \left[\frac{Sales_{it}}{A_{it-1}}\right] + \beta_3 \left[\Delta Sales_{it}/A_{it-1}\right] + \varepsilon_{it}
\]

where,
- CFO_{it} \hspace{1cm} \text{Cash flow from operation of firm } i \text{ in period } t
- A_{it-1} \hspace{1cm} \text{Total assets of firm } i \text{ in year } t-1;
- Sales_{it} \hspace{1cm} \text{Sales of firm } i \text{ in year } t;
- \Delta Sales_{it} \hspace{1cm} \text{Sales of firm } i \text{ in year } t \text{ less sales of firm } i \text{ in year } t-1;
- \varepsilon_{it} \hspace{1cm} \text{A residual term that captures the level of abnormal cash flow of firm } i \text{ in year } t.

4.2.2 Model for RES_PROD

\[
\frac{PROD_{it}}{A_{it-1}} = \beta_1 \left[1/A_{it-1}\right] + \beta_2 \left[\frac{Sales_{it}}{A_{it-1}}\right] + \beta_3 \left[\Delta Sales_{it}/A_{it-1}\right] + \beta_4 \left[\Delta Sales_{it-1}/A_{it-1}\right] + \varepsilon_{it}
\]

where,
- PROD_{it} \hspace{1cm} \text{The sum of cost of goods sold and change in inventory of firm } i \text{ in year } t;
- \Delta Sales_{it-1} \hspace{1cm} \text{Sales of firm } i \text{ in year } t-1 \text{ less sales of firm } i \text{ in year } t-2; \text{ and all other variables are as previously defined.}

4.2.3 Model for RES_DISEXP

\[
\frac{DISEXP_{it}}{A_{it-1}} = \beta_1 \left[1/A_{it-1}\right] + \beta_2 \left[\frac{Sales_{it-1}}{A_{it-1}}\right] + \varepsilon_{it}
\]

where,
- DISEXP_{it} \hspace{1cm} \text{The sum of Research and Development (R&D) expenses and Selling, General & Administrative (SG&A) expenses of firm } i \text{ in year } t; \text{ and all other variables are as previously defined.}
According to Roychowdhury, 2006, and Cohen and Zarowin, 2010, firms that manage earnings upwards are likely to have one or all of these accounting effects: (i) unusually low cash flow from operations due to the increasing of price discounts or lenient credit terms in order to accelerate sales for the current period, (ii) unusually low discretionary expenses due to the aggressive reduction in R&D, advertising and SG&A expenses in order to improve earnings for the current period, and (iii) unusually high production costs in order to reduce Cost of Goods Sold (COGS), which in turn increase the operating margin for the current period.

4.3. Measurement for Independent Variable: Leverage

There are some arguments on the positive association between leverage and EM, and in contrast other arguments on the negative association between leverage and EM. Nevertheless, it is important to highlight the negative association between leverage and EM since the current study hypothesize that leverage limits REM. Leverage is measured based on the ratio of total liabilities to total assets which is consistent with Sweeney, 1994; Dichev and Skinner, 2002; Gu et al., 2005; Rashidah and Fairuzana Haneem, 2006.

4.4. Measurement of Control Variables

According to a literature review, this study includes some of the control variables: net interest expense (INTEXP); Return on Assets (ROA); firm size (SIZE); types of auditor (AUDITOR), types of industry (IND) and years (YR). Increase in the leverage may result in an increase in interest payment (INTEXP) which affects in lower net income (Jelinek, 2007). Jensen (1986) argued that higher interest expense is able to control opportunistic behaviour. Hence, this study also controls for INTEXP. Then, ROA is included in this study since Kothari et al. (2005) and Jiraporn et al. (2007) found a negative association between EM and ROA. The result indicates that the lower the performance of the firm, the higher the possibility for the firm’s incentive to engage in EM activity.

Next, the study controls for firm size. SIZE affects discretionary accruals (Gu et al., 2005 and Aini et al., 2006). However there are mixed arguments on the direction of its association. On one hand, Gu et al., 2005, argued that there is a negative association between size and discretionary accruals. On the other hand, Aini et al., 2006, claim that the larger the firm size, the more likely it will choose income decreasing accounting accruals to avoid political costs. Lastly, the study also controls for auditor. Big 6/5/4 has a good brand name and may provide higher quality of audit and is able to restrict discretionary accruals in management (Becker et al., 1998 and Chung et al., 2005). In addition, a dummy industry and year are also included in the study to control for industry and year effects.

4.5 Estimation model

Hypothesis 1 predicts that high leveraged firms are less likely to involve in REM than the lower leveraged firms, with LEV as the variable used for leverage. Thus, the test of hypothesis 1 is based on the coefficient of LEV, \( \beta_1 \), in the equation below. In supporting hypothesis 1, it is expected that \( \beta_1 \) is negative. The estimation model is presented as follows:

\[
RES\_REM = \beta_0 + \beta_1 \text{LEV} + \beta_2 \text{INTEXP} + \beta_3 \text{ROA}_{t-1} + \beta_4 \text{SIZE} + \beta_5 \text{AUDITOR} + \beta_6 \text{IND} + \beta_7 \text{YR} + \epsilon_{it}
\]

where,

RES\_REM RES\_CFO, RES\_PROD or RES\_DISEXP (all the variables are as previously defined and this model is separately tested);
LEV \quad \text{total debts scaled by total assets for firm } i \text{ in year } t; \\
INTEXP \quad \text{net interest expense on short and long-term debt (total debt) for firm } i \text{ in year } t; \\
ROA_{t-1} \quad \text{prior-year income before extraordinary items scaled by total assets of firm } i \text{ in year } t-1; \\
SIZE \quad \text{logarithm of assets of firm } i \text{ in year } t; \\
AUDITOR \quad \text{a dummy variable set, equal to 1 if firms } i \text{ is audited by a Big 4 auditor in year } t \text{ and 0 otherwise}; \\
IND \quad \text{dummy for industry of firm } i \text{ in year } t \text{ (1 if observation is in industry of the sample and 0 otherwise);} \\
YR \quad \text{dummy for year of firm } i \text{ in year } t \text{ (1 if observation is in year of the sample and 0 otherwise);} \\
\varepsilon_{it} \quad \text{a residual term of the model.}

5. Empirical Results

5.1. Descriptive Analysis

Table 1 shows the descriptive statistics for the full sample of observations. The mean for suspected firms which engage in REM activities for the three different proxies for REM is different. From the result, abnormal discretionary expenses show the highest mean, 36 per cent of suspected firms engage in REM, compared to the other two proxies for REM. The mean for leverage is 17 per cent that show the leverage among the Malaysian firms in the sample is quite low since their net interest expense on total debt is close to 0. These statistical results are consistent with Claessens \textit{et al.}, 1999, and Booth \textit{et al.}, 2001, claim that Malaysia is considered as a low-debt country.

Table 1. Summary Statistics for the Full Sample

<table>
<thead>
<tr>
<th></th>
<th>RES_CFO</th>
<th>RES_PROD</th>
<th>RES_DISEXP</th>
<th>LEV</th>
<th>INTEXP</th>
<th>ROA_{t-1}</th>
<th>SIZE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.083</td>
<td>0.223</td>
<td>0.363</td>
<td>0.166</td>
<td>0.010</td>
<td>5.748</td>
<td>5.403</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>-137.320</td>
<td>4.070</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.850</td>
<td>2.800</td>
<td>3.410</td>
<td>0.990</td>
<td>0.070</td>
<td>56.960</td>
<td>7.870</td>
</tr>
<tr>
<td>Standard Deviation</td>
<td>0.960</td>
<td>0.359</td>
<td>0.458</td>
<td>0.167</td>
<td>0.012</td>
<td>10.148</td>
<td>0.608</td>
</tr>
</tbody>
</table>

Notes: Full sample consists of 3,745 firm-year observations over the period 2006-2011. LEV is measured by total debts scaled by total assets; INTEXP is the net interest expense on short and long-term debt; ROA_{t-1} is the ratio of prior year income before extraordinary items to total assets and SIZE is the logarithm of assets.

5.2. Findings

This section reports the testing of the hypothesis developed in Section 3. This study is separately regressed the variables using each estimation model as presented in Section 4.5 where each model represents a different proxy for REM (RES_CFO, RES_PROD and RES_DISEXP). The results are presented in the table below. The $F$-statistics for all of the three models is significance at 1 per cent level. With respect to the hypothesis of this study, the leverage was negatively associated with REM and significant at the 5 per cent level which coefficient of -0.035 is only supported by the first model (RES_CFO). The results were consistent with Wasimullah \textit{et al.}, 2010 and Jelinek, 2007, that leverage limits the EM.
Table 2. Regression results of Abnormal Cash Flow, Abnormal Production Cost and Abnormal Discretionary Expenses

<table>
<thead>
<tr>
<th>Variables</th>
<th>Abnormal Cash Flow from Operations (RES_CFO)</th>
<th>Abnormal Production Cost (RES_PROD)</th>
<th>Abnormal Discretionary Expenses (RES_DISEXP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.186</td>
<td>0.174</td>
<td>0.559</td>
</tr>
<tr>
<td></td>
<td>(11.39)***</td>
<td>(2.306)**</td>
<td>(7.803)***</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.035</td>
<td>0.098</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>(-2.363)**</td>
<td>(1.949)*</td>
<td>(0.942)</td>
</tr>
<tr>
<td>INTEXP</td>
<td>-0.008</td>
<td>-1.104</td>
<td>-0.057</td>
</tr>
<tr>
<td></td>
<td>(-0.039)</td>
<td>(-1.699)*</td>
<td>(-0.533)</td>
</tr>
<tr>
<td>ROA_{t-1}</td>
<td>0.001</td>
<td>0.000</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(3.749)***</td>
<td>(0.685)</td>
<td>(2.275)**</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.023</td>
<td>0.018</td>
<td>-0.041</td>
</tr>
<tr>
<td></td>
<td>(-9.153)**</td>
<td>(1.620)</td>
<td>(-3.866)***</td>
</tr>
<tr>
<td>AUDITOR</td>
<td>-0.001</td>
<td>-0.005</td>
<td>0.023</td>
</tr>
<tr>
<td></td>
<td>(-0.301)</td>
<td>(-0.449)</td>
<td>(2.266)**</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.108</td>
<td>0.046</td>
<td>0.088</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.098</td>
<td>0.032</td>
<td>0.072</td>
</tr>
<tr>
<td>$F$-statistics</td>
<td>10.936***</td>
<td>3.357***</td>
<td>5.565***</td>
</tr>
<tr>
<td>$N$</td>
<td>1,547</td>
<td>1,202</td>
<td>996</td>
</tr>
</tbody>
</table>

Notes: The sample consists of three different observations (each model represents an observation) made over the period 2006-2011. LEV is measured by total debts scaled by total assets; INTEXP is the net interest expense on short and long-term debt; ROA_{t-1} is the ratio of prior year income before extraordinary items to total assets; SIZE is the logarithm of assets and AUDITOR is coded as 1 if the firm is audited by a big 4 auditor and 0 otherwise.

*, **, *** significant at the 0.1, 0.05 and 0.01 levels respectively. T-statistics are in parentheses.

The finding is also in line with the ‘control hypothesis’ for debt creation (Jensen, 1986). According to the theory, debt can be used to reduce agency cost where managers may have the power to control the firm’s cash flow at their own discretion. The control role begins when managers have an obligation to make interest and principal payments, which otherwise, will bring the firm into the bankruptcy court. In addition, Jensen (1986) claims that debt is an effective control for managers’ discretionary accruals at the point where the firm value is maximized, which means that a marginal cost of debt just offsets its marginal benefit within large cash flows and low growth firms.

However, in contrast, the second model (RES_PROD) as a proxy for REM shows a significant positive association (with a coefficient of 0.098) with REM at 10 per cent significance level. In describing the positive association between REM and leverage, the findings support with Sweeney (1994) on debt hypothesis. The larger a firm’s debt to equity ratio, the more likely the firm’s manager is to select income increasing accounting procedures. In addition, the positive association between leverage and EM is also supported by the reason of financial distress theory (Jaggi and Lee, 2002 and Fung and Goodwin, 2013) and to avoid debt covenant violations reasons (Dichev and Skinner, 2002 and Beatty and Weber, 2003).
The third model also shows a positive association between leverage and REM, but, is not significant. In addition, the control variables show a significant result with some of the models as the proxy for REM. First, INTEXP (with a coefficient of -1.104) has a significant negative association with REM at 10 per cent significance level. The result supports Jensen’s, 1986, study which claims that there is an obligation among managers to settle both the interest and principal payment. A higher interest payment will constraint managers from exercising their own discretion, thus, indirectly reduce the possibility for EM. Second, ROA_{t-1} is significantly positive at 1 per cent and 5 per cent levels respectively with REM in the first and third model. This result was consistent with Gunny, 2010. Managers tend to exercise operational discretion, hence, to portray a better future performance or to signal future firm value.

Next, the result of negative significant at the 1 per cent level between SIZE and REM in the first model (with a coefficient of -0.023) and third model (with a coefficient of -0.041) is in line with Gu et al., 2005 and Norman et al., 2005. The large firms enjoy more of the benefits of economy of scale and economy of scope, thus making them satisfied with their position and restraining them from exercising EM. Lastly, AUDITOR is significantly positive with REM which coefficient of 0.023 at the 5 per cent level in the third model. This positive association with REM support by Cohen et al., 2008 suggesting that firms shifted from using accrual-based to REM after SOX. Hence, the study assumes that firms audited by Big 4 auditor that just achieved important earnings benchmarks used less AEM and more REM.

6. Conclusions

In general, the extant empirical evidence is mixed with both of positive and negative association between leverage and EM. Due to the debt hypothesis (Sweeney, 1994), financial distress theory (Jaggi and Lee, 2002 and Fung and Goodwin, 2013) and to avoid debt covenant violations reasons (Dichev and Skinner, 2002 and Beatty and Weber, 2003), researchers have argued that leverage increases the potential for EM. Although the previous literature has provided arguments to the positive association between EM and leverage, there is some empirical evidence with the opposite view (Jensen, 1986; Denis and Denis, 1993; Jelinek, 2007; and Wasimullah et al., 2010).

Reviews of literature highlight that leverage affect EM activities. Consistent with the argument, this study shows that the leverage has a significant negative association with residual cash flow from operations, one of the proxies for REM. The result supports the review that leverage is one of the controlling and monitoring system which limits REM. Thus, it can specifically shed more light on the factor affecting REM, in order to give adequate response to the recent failure firms affected by the exploitation of opportunistic EM, which in turn, could affect the quality of accounting earnings. Although this study argues that leverage limits REM, the findings only document an association rather than a causal relationship between leverage and REM. Therefore, the causality of leverage leading to lower REM requires further theoretical and empirical examination.

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References


