The effect of leverage increases on real earnings management

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Executive summary

Main subject of this paper is to understand whether there could be an incentive for managers to manipulate cash flow from operating activities (CFO) through the use of real earnings management (REM), in situations with increasing leverage. Based upon a study of Jelinek (2007) who researched the correlation between increasing levels of leverage and accrual earnings management, I developed my main hypothesis with respect to the effect of leverage increases on REM to influence CFO. Results indicate that in leverage increasing firms, the leverage results in REM, in order to affect CFO, when using the absolute value of long term debt in calculating leverage.

1.   Introduction

1.1   Historical perspective and actuality

The focus of external users on reported earnings as a central variable for making decisions and recent corporate scandals have caused earnings management (EM) to find itself in the center of public attention. Much quoted in this respect is Arthur Levitt, former Chairman of the Securities and Exchange Commission ("SEC"). In his speech of 1998, Levitt (1998) talked about the "the numbers game" with which he attacked practices where management abuses "big bath" restructuring charges, premature revenue recognition, "cookie jar" reserves, and write-offs of purchased in-process research and development (R&D) (Healy and Wahlen 1999). These practices are threatening the credibility of financial reporting, according to Levitt. Others followed Levitt when they expressed their views about EM. Frits Bolkestein, the former Dutch European Commissioner in charge of Internal Market and Taxation for example, raised his concerns regarding EM in his speech of July 2002. Bolkestein (2002) said: "We must have factual, not fictional, accounting." He also emphasized the importance of company accounts that are true and fair and stated that companies: "… must not distort, hide, fabricate and present, in whole or in part, a misleading web of lies and deceit."

Managers who want to influence accounting income can choose from a large set of methods. Some of the methods require real transactions and some are pure accounting decisions. In general, EM is classified into the two categories: EM achieved by fraudulent activities and EM achieved by non-fraudulent activities. EM while staying within the

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boundaries of generally accepted accounting principles (GAAP), may be accomplished through accruals, manipulations with no cash flow effects and through real earnings management (REM), manipulations which do have cash flow effects. In this paper EM achieved by fraudulent activities and EM achieved by non-fraudulent activities are seen as two different categories. So with EM I will only refer to non-fraudulent activities that stay within the boundaries of GAAP.

A significant portion of studies on EM have focused on EM through manipulation of accruals. However, Graham et al. (2005) find evidence that managers take real economic actions to maintain accounting appearances, and sometimes are more likely to use real actions than to use accruals to apply EM. It appears that managers are willing to burn "real" cash flows for the sake of reporting desired accounting numbers. There appears to be a constant tension between the short-term and long-term objectives of the firm.

In the current global economy, it seems that a company can only survive by joining forces through mergers and acquisitions. Acquisition prices are often structured through capital increases and external debt financing which often results in increasing interest charges. Next to the focus on reported income statement earnings, analysts and investors focusing more on cash flows rather than the income statement of a company as a result of corporate scandals analysts have lost faith in earnings-based metrics. This is also caused by high interest charges more and more companies seem to face, as a result increasing financial loans and increasing interest rates. Sufficient cash flows from operating activities are essential for these companies to remain profitable and viable in the future. Lack of cash flows could result in bankruptcy or a Company to turn into a takeover prey. Knowing that investors use the cash flow statement to make investment decisions, highly motivated and intelligent management teams could be involved in REM to create ways to influence the true picture of a company's cash flow from operations (CFO) and receive or maintain external debt financing.

Highly leveraged companies could favor cash flow from operations in favor of other financial support sources primarily because many analysts believe that cash flow from operations is a more transparent indicator of a company's performance. The results of the research performed by Nwaeze et al. (2005), suggest that leverage has positive and significant effect on the role of cash flow from operations.

The importance of reliable information on CFO for investors and the (adverse) economic consequences that manipulations of real activities might have, makes REM an interesting subject. In this paper for leverage increasing firms, the relationship between REM and leverage increases is researched to understand whether there could be an incentive for managers to manipulate CFO through the use of real REM.

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. The third section consists of three parts. In the first part, I develop the main hypothesis, based on this extensive literature overview. The second part presents the design of a conceptual model to identify REM that affects CFO, the model to analyze solvability. The sample period and sample selection presented in the third part. The interpretations of results are presented in section 4. Section 5, provides the analysis of results and gives the suggestions for further research. Finally, the summary and conclusion are presented in section 6.

2. Real earnings management and prior literature

Introduction

Based on recent literature a definition for REM is given. Next, an overview of relevant literature in the field of REM is presented. Recent studies are categorized in groups and provide strong evidence on the existing of REM and show methods on how REM can be measured.

2.1 Real earnings management

For the purpose of the paper I define REM as a purposeful action by management of a company to alter reported earnings in a particular direction, which is achieved by changing the timing and/or structuring of an operation, investment and/or financial transaction with cash flow effects and has sub-optimal business consequences.

This definition is based on definitions given by Healy and Wahlen (1999) and Zang (2007). From the definition we learn that there should be managerial intent in order to influence earnings by structuring transactions. This is the key to the definition of REM. The way a firm accounts for a transaction depends on the form of the transaction. Consequently, if a firm can design a transaction to give it a specific form, it will be able to record this transaction in a desired way; this is what Healy and Wahlen (1999) call "structuring transaction" (Stolowy and Breton 2004). Also there is a difficulty in parsing out which effect is due to normal business activities and which is due to real management activities. In this paper the focus will be on manipulation through real activities. The reason for this is twofold. First the negative value implications of manipulating real activities are thought to be the one of the most serious forms of earnings management (Ewert and Wagenhofer 2005; Chen et al. 2008). The second reason, is that by definition, accruals management does not directly affect cash flows, but merely changes the timing of revenue and expense recognition. However, REM can adversely affect cash flows both in the short in the long term by, for example by cutting discretionary expenditures.

2.2 Prior studies

The possibility that managers manipulate real activities is discussed in the academic literature. In general, most of the existing work focuses on R&D expenditures (Baber et al. 1991; Dechow and Sloan 1991; Bushee 1998; Cheng 2004).

Baber et al. (1991) found that relative R&D spending is significantly less when spending jeopardizes the ability to report positive or increasing income in the current period. In most instances, choices among accounting practices have no direct cash flow consequences, but changes in R&D spending to satisfy current-period income objectives do alter cash flow.

Dechow and Sloan (1991) investigate the hypothesis that chief executive officers (CEOs) in their final years of office manage discretionary investment expenditures to improve short-term earnings performance. The authors examine the behaviour of R&D expenditures for a sample of firms in industries that have significant ongoing R&D activities. The results suggest that CEOs spend less on R&D during their final years in office.

Next to Dechow and Sloan, Bushee (1998) examines firms trying to meet previous year's earnings and finds that they reduce R&D more if they have lower institutional ownership.

He found evidence that R&D reductions by firms trying to meet earnings thresholds are potentially value-destroying and are prevented by the presence of sophisticated investors. Also evidence exists on firms engaging in a whole range of activities in addition to just R&D expense reduction.

Cheng (2004) provides evidence that compensation committees establish a greater positive association between changes in R&D spending and changes in CEOs options in order to prevent opportunistic reductions in R&D spending. He defines the horizon problem as the CEOs that are 63 or older, and myopia as a firm facing a small earnings decline or a small loss.

There are few studies about how managers use specific transactions, other than cutting R&D expenditures, to influence earnings. Some of the studies focus on stock repurchases (Hribar et al. 2006; Bens et al. 2003), examine the sales of fixed assets (Herrmann et al. 2003; Bartov 1993), sale price reductions (Jackson and Wilcox 2000), overproduction, managing of sales, advertising, SG&A expenses and effect of REM (Roychowdhury 2006; Gunny 2005) and trade off between accrual and REM (Zang 2007).

I briefly review the remaining studies.

Stock repurchases

Hribar et al. (2006) extend Bens et al. (2003) in several ways. They identify the conditions under which a stock repurchase increase earnings per share (EPS) and document the frequency of accretive (i.e., EPS increasing) repurchases. Second, they examine whether accretive stock repurchases are disproportionately more frequent among firms whose reported quarterly EPS would have otherwise fallen short of analysts' forecasts. The study provides evidence on whether stock repurchases are used to manage reported EPS. Third, they investigate how investors price the repurchase-induced accretive component of reported EPS when the extent of repurchase in first disclosed.

Bens, Nagar and Wong (2003) investigate the use of stock repurchases to offset earnings per share (EPS) dilution caused by employee stock options. They report that managers of firms increase the level of their firms' stock repurchases in years when options-related EPS dilution increases and when annual earnings are below the level required to sustain past EPS growth rates. Managers partially finance these repurchasing by reducing R&D.

Sales of fixed assets

Herrmann et al. (2003) examine the usage of income from the sale of fixed assets and marketable securities to manage earnings. They found a negative relation between income from asset sales and management forecast error. When current reported operating income is below (above) management's forecast of operating income, firms increase (decrease) earnings through the sale of fixed assets and marketable securities.

Bartov (1993) examines sales of fixed assets and shows that the profit from sales of assets is negatively correlated with earnings changes. He uses this to argue that firms facing earnings declines boost profits through increased asset sales.

Sale price reductions

Jackson and Wilcox (2000) in their study, made an investigation whether managers grant sales price reductions in the fourth quarter to accelerate customer purchases and, as a result, avoid losses and declines in earnings and sales. Consistent with expectations, the results of univariate and multivariate tests indicate that firm managers grant sales price reductions in the fourth quarter to meet annual financial reporting targets.

Overproduction, managing of sales, advertising, SG&A expenses and effect of real manipulation

Management of sales, reduction of discretionary expenses, overproduction are examined by Roychowdhury (2006). In his study he develops the empirical methods to detect real activities manipulation other that reduction of R&D expenses. The results suggest that drawing inferences on earnings management by analyzing only accruals may be inappropriate, because suspect firm-years manipulate real activities to avoid reporting losses. Additionally, firms appear to be managing real activities to a greater extent if they have a higher proportion of current liabilities.

Next to Roychowdhury, Gunny (2005) examines the extent to which REM affects subsequent operating performance (as measured by both earnings and cash flow) and whether investors anticipate the performance consequences of real management. The results provide evidence that REM has an economically significant impact on future performance.

Trade off between accrual and real earnings management

Zang (2007) studies whether managers use real manipulation and accrual manipulation as substitutes in managing earnings and studies the order in which managers make these decisions. The author follows the prior literature on REM (Roychowdhury 2006; Gunny 2005). She found that managers determine real manipulation before accrual manipulation. Based on this result, she used an empirical model that captures the sequentially of real and accrual manipulations to test the tradeoffs between the two.

Cohen et al. (2007) document that following the passage of SOX accrual-based earnings management declined significantly, while REM increased significantly. Consistent with the results of a recent survey by Graham et al. (2005), this suggests that firms switched to managing earnings using real methods, possibly because these techniques, while more costly, are likely to be harder to detect.

Ewert and Wagenhofer (2004) found factors that determine the intensity of the substitution of accounting by REM and the welfare effects, such as substitution rates between accounting and REM by manager, the real cost of earnings management, and the precision of the market knowledge about the manager's incentives.

The most important evidence on REM is provided by Graham et al. (2005). The authors found strong evidence that managers take real economic actions to maintain accounting appearances. In particular, 80% of survey participants report that they would decrease discretionary spending on R&D, advertising, and maintenance to meet an earnings target. More than the half (55.3%) state that they would delay starting a new project to meet an earnings target, even if such a delay entailed a small sacrifice in value.

3.   Hypothesis development, research design and sample

Introduction

In this section, I present my hypotheses with respect to the effect of leverage increases on REM and more specific on REM to influence CFO. I also discuss REM in relation to CFO. Next the focus is on external financing and more specific on solvability or leverage. Then the definition of solvability and relevance for REM is given. Based upon these discussions, the hypotheses for this study are presented.

3.1   Hypothesis development

<u>CFO</u>

The majority of investors are now keenly aware of the concept of quality of earnings. As a result, certain investors ignore reported earnings and use the operating activities section of cash flow statement as a "reality check" on reliability of the revenues and expenses reported in the income statement. The cash flow statement (CFS) is one of three statements required for financial statements to be in accordance with US GAAP.

The definition of CFO is specified in Statement of Financial Accounting Standards (SFAS) No. 95, Cash Flows and is defined as follows: "Operating cash flows are those that are related to the corporation's operating activities (i.e., those activities reflected in the corporation's income statement).

From the definition we learn that the CFO section reports the corporation's ongoing cash-generating activities that provide cash for dividend and other payments.

Prior studies provide evidence the existence of REM (Section 2). The effects on CFO had significantly less focus of researchers. Because REM is thought to be the one of the most serious forms of EM and is an issue that concerns the investment community, it is important to better understand the factors that could be behind this phenomenon.

There are some studies that assume that cash flows are free from manipulation (Givoly and Hayn 2000; Barth, Cram and Nielson 2001). However, recent academic studies indicate that managers may engage in and benefit from managing cash flow (Melendrez et al. 2005; Graham et al.2005).

There are indications that managers take real actions to report positive or to improve CFO (Zhang 2006). Taking into account the importance of reliable information about CFO for investors and the (adverse) economic consequences that manipulations of real activities might have (Gunny 2006) the question arises whether companies are, in a certain situation, for example, companies with relatively high or increasing debt, more likely to take real actions with positive cash flow consequences.

<u>Leverage</u>

In the current global economy, as already noted in section 1, it seems that a company can only survive by joining forces through mergers and acquisitions. Companies that have high leverage may be at risk of bankruptcy if they are unable to make payments on their external debt financing; they could also be unable to find new lenders in the future. So, if a company wishes to take out a new loan, lenders will scrutinize several measures of

whether the company is borrowing too much and will demand that it keeps its debt within reasonable boundaries.

Previous literature suggests that leveraged firms engage in EM to avoid debt covenant default (Beatty and Weber 2003; Dichev and Skinner 2002; DeFond and Jiambalvo 1994). However, these studies measure EM using accrual based measures.

Jelinek (2007) studies the effect of leverage increase on accrual EM. Jelinek suggests that leverage changes and leverage levels have a different impact on EM and concludes that increased leverage is associated with reduced accrual EM. Moreover results suggest that there is a beneficial consequence of debt because the increased debt reduces manager's discretionary spending, and in turn, reduces accrual EM.

The conclusion has been drawn by Jelinek could be incorrect. As there could be another explanation of why increased leverage is associated with reduced accrual EM. For example companies with increasing debt could be involved in the REM. However, increased leverage could give an incentive for managers to switch from accrual earnings management to REM. Moreover, reducing of discretionary expenses is one of the REM activities that could provide evidence that the company engage in REM.

One relevant research on management of CFO is performed by Zhang (2006) and comes close to consider the effect of the level of leverage on REM; he investigates the possibility that debt covenants, amongst others, could be a one of the incentives for management to manipulate cash flow through real activities. The result of his research suggests that coefficients on debt covenants are positive but not significant, because the proxy to capture incentives is too crude. Unlike this paper, Zhang considers the incentives to avoid default of debt covenants, amongst which debt-to-equity-ratio, rather than researching whether changes in the level of leverage are positively correlated to REM.

The purpose of this thesis is to develop a model to investigate whether increases of leverage of a company are an incentive for management to manipulate earnings through real activities in order to affect CFO. Based on the study of Jelinek (2007) that distinguishes between leverage increasing firms and highly leveraged firms the main hypothesis is as follows:

H1: Leverage results in real earnings manipulation by management.

Based on study Jelinek (2007) and based on the primary purpose of this paper, I distinguish between high leverage and leverage-increasing firms. To investigate whether *leverage changes* and *leverage levels* have different impact on *REM,* I present the following hypothesis:

H2: Real earnings management in order to positively affect cash flow from operating activities, in leverage-increasing firms, is positively correlated with the level of leverage.

Based upon my study of recent literature, I was unable to identify other previous research that focuses on researching these hypotheses. This is most likely caused by the focus of earnings management on accruals management, and less on REM. Researchers that focus on REM most commonly research the effects on earnings rather than effects on CFO. As such, and to my best knowledge, this is the first time a hypotheses is developed to identify

the positive correlation of the level of leverage and the changes in leverage with REM used to positively effect operating cash flows. In the next section I develop a model to test these hypotheses and identify data samples.

3.2   Research design
Models to measure real activities manipulation

In general, in literature two models are indentified to measure real activities manipulation.

- Investigating firm's *total level* of REM. As a proxy for REM researchers (Chen et al. 2007) use *abnormal* level of cash flows from operations. To determine *normal* level of CFO they use the model developed by Dechow et al. (1998) which was implemented in research by Roychowdhury (2006).

- Examine abnormal level of cash flows from operations and also abnormal discretionary expenses and abnormal production costs, and the sum of standardized three REM proxies, to capture the effects of real actions presumably better (Roychowdhury 2006).[12]

Roychowdhury focuses on the following three manipulation methods: manipulation of sales, overproduction, decrease of discretionary expenses . In general, some of three activities would increase operating cash flows, but some would decrease them.

The primary purpose of this thesis is to develop a model, that will more precisely measure whether *the increasing level of solvability (leverage)* of a company is an incentive for management to manipulate earnings *through real activities* and not the existence of a higher or lower level of REM. Therefore, I use abnormal CFO based on Roychowdhury [2006], as a proxy for REM. The reason is twofold. First, I am primarily interested in investigating a firm's *total level* of REM in order to identify increasing effects of REM on cash flow from operating activities rather than a mixture of positive and negative effects of REM on cash flow from operating activities, and abnormal cash flow from operation is one such aggregate measure. Second, not one model is deemed to have prevalence above the other model. The explanation could be that studies concerning REM are only in development.

Normal level of CFO

To determine normal level of cash flow from operating activities for every firm and year, I use the model developed by Dechow et al. (1998) and implemented in research by Roychowdhury (2006).

Roychowdhury (2006) explains normal CFO as linear function of sales (S_{it}) and change in sales in the current period (ΔS_{it}). All variables in the model are scaled by lagged total assets ($A_{i,t-1}$).

$$(CFO_{it} / TA_{i,\,t-1} = \alpha_{0t} + \alpha_{1t} [1/TA_{it-1}] + \alpha_{2t} [S_{it}/TA_{i,\,t-1}] + \alpha_{3t} [\Delta S_{it}/TA_{i,\,t-1}] + \varepsilon_{it} \qquad (1)$$

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[12] This proxy for REM has been used and verified to be valid in subsequent studies by Gunny (2006), Cohen (2007), Zhang (2006), Zang (2007).

54

Abnormal CFO

Next, for every firm and year, I calculate abnormal level of cash flow from operation (RE). Abnormal CFO is equal to actual cash flow from operation minus the "normal" cash flow from operation computed using estimated coefficients from the above equation (1).

Model to measure level of leverage

In general, two widely used methods exist to measure the level of leverage. Measurement based on the use of book value debt and equity (i.e., accounting) or market value of debt and equity. There is no law or regulation stating how the level of leverage should be measured. For example, in case of leased assets accountants try to estimate the present value of the lease commitments. In the case of long term debt they simply show the face value. This can sometimes be very different from present value. To be consistent with previously studies (i.e., Nwaeze et al. 2005; Jelinek 2007), first I measure leverage (LEVERAGE) as the ratio of long term debt to the total of book value of equity and long term debt. Although more commonly a ratio of long term debt to book value of equity is used, I use this method as it is preferable in situations where a sample includes companies with a negative book value of equity. A negative book value of equity would otherwise result in a low leverage level (negative) despite the absolute value of long term debt. Therefore the first formula to calculate LEVERAGE can be shown as follows:

$$(LEVERAGE) = \text{long-term debt} / \text{book value of equity} + \text{long term debt}. \qquad (2)$$

Furthermore, I also measure the level of leverage using market values as valuation models in the finance literature that use leverage ratios as inputs are generally based on the market value of debt and equity (White et al. 2003). Market values of both debt and equity are available or can readily be estimated, and their use can make the ratio a more useful analytical tool. The use of market values, however, may produce contradictory results. The debt of a firm whose credit rating declines may have a market value well below face amount. A debt ratio based on market values may show an "acceptable" level of leverage. A ratio that would control for this phenomenon and can be used in conjunction with book- or market-based debt ratios is one that compares debt measured at book value to equity measured at market:

The formula for calculation this leverage ratio is as follows:

$$(LEVERAGE) = \text{long-term debt at book value} / \text{market value of equity}. \qquad (3)$$

In addition, I also use the actual book value of long term debt as a measure for solvability. The main reason for this is the assumption that a company with a high absolute amount of long term debt could be closely monitored by the issuers of debt irrespective of the relative value of long term debt in comparison to equity. Therefore, I want to measure whether the total amount of long-term debt is correlated to the level of REM. To determine the LEVERAGE based upon this measure, leverage is calculated as shown below:

$$(LEVERAGE) = \text{long-term debt}. \qquad (4)$$

Model to measure hypotheses

Since I have chosen to calculate leverage in three separate ways in order to determine whether one or more of these models individually affect the level of REM, the hypothesis H2 is subdivided into three sub-hypotheses. I estimate three distinct models by using ordinary least squares regression to separately test the three hypotheses.

In order to reflect the first book value approach to calculating the leverage ratio, I have developed the following hypothesis:

H2.A: Real earning management in order to positively affect cash flow from operating activities, in leverage-increasing firms, is positively correlated with based on the equation (2) measured level of leverage.

To test hypothesis I estimate the following regression:

$$(RE) = \alpha_0 + \alpha_1 (LEV\_INC) + \alpha_2 (SIZE) + \alpha_3 (CAPIN) + \varepsilon_{it} \tag{5}$$

In order to reflect the market value approach to calculating the leverage ratio, I have developed the following hypothesis:

H2.B: Real earning management in order to positively affect cash flow from operating activities, in leverage-increasing firms, is positively correlated with based on the equation (3) measured level of leverage.

To test hypothesis I estimate the following regression:

$$(RE) = \alpha_0 + \alpha_1 (LEV\_INC) + \alpha_2 (SIZE) + \alpha_3 (CAPIN) + \varepsilon_{it} \tag{6}$$

In order to reflect the absolute value of long term debt as the leverage ratio, I have developed the following hypothesis:

H2.C : Real earning management in order to positively affect cash flow from operating activities, in leverage-increasing firms, is positively correlated with based on the equation (4) measured level of long term debt .

The hypothesis H2.C represents that REM is positively correlated to leverage for leverage-increasing firms, when using the absolute value of long term debt in calculating leverage. To test hypothesis I estimate the following regression:

$$(RE) = \alpha_0 + \alpha_1 (LTD\_INC) + \alpha_2 (SIZE) + \alpha_3 (CAPIN) + \varepsilon_{it} \tag{7}$$

Control variables

This study controls for size. Large firms are more widely followed by the analyst's community and have a different information environment than smaller firms. To control for this I include variable (SIZE) in the regression. Also, I include variable (CAPIN) to

56

control for capital intensity. Zhang (2006) suggests that cash flow information is relatively more important for capital intensive firms than for non-capital intensive firms.

3.3   Sample period and sample selection

Similar to Roychowdhury (2006), I require that cash flow from operating activities is available on Compustat from the Statement of Cash Flows. This restricts my sample to the post-1986 period. As stated previously, I strive to examine changes in REM across leverage increasing firms and highly leveraged firms. For identifying the sample period I use results of previous studies. The studies by Graham et al. (2005); Cohen et al. (2007) documented that the level of REM activities declines prior to The Sarbanes Oxley Act (SOX) in 2002 and increased significantly after the passage of SOX. As a result my sample is further restricted to the post-2002 period. The effects of SOX are expected to be presented earlier in financial information of US based companies compared to foreign private issuers (foreign companies listed on the US stock exchanges) who were not required to comply with SOX until 2005. As such, my study will collect data for U.S. firms in Compustat rather than non-U.S. companies. To determine the sample and firm classification, I carry out a similar sample selection method as previously presented by Jelinek (2007) in her study. As a result the total number of companies in my data set equals to 1.287 firms (7.722 observations). Next, I divided my total sample of 1.287 firms into the following three potential samples: Samples 1 year 2002-2004, Sample 2 year 2003-2005 and Sample 3 year 2004-2006. Then, based on Jelinek (2007), I classified each firm in each of three samples as Leverage-Increase firm or Constantly Highly-Leveraged.

Figure 1. Determination of leverage-increasing firms and control firms
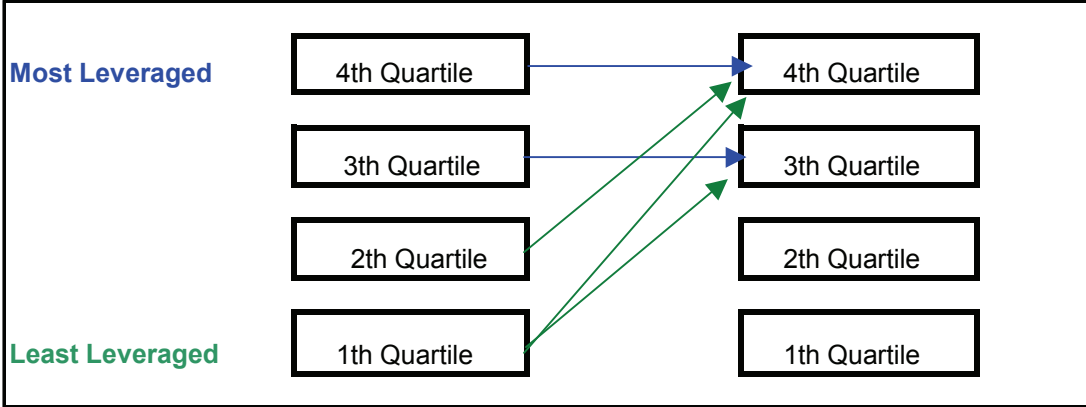
A firm is classified as a Leverage-Increasing firms if: the firm is initially in the first (bottom) or second quartile of the sample leverage distribution at the beginning of a sample period and moves up at last 2 quartiles by end of the sample period. A firm is classified as a Constantly Highly-Leveraged if it is in the third quartile of the leverage distribution at both the beginning and the end of a sample period, or in the fourth quartile of the leverage distribution at both the beginning and the end of a sample period. I excluded all firms without classification from each of the three samples.

4. Results

Introduction

This section presents the test of hypotheses, the results and interpretation of results.

4.1 Test and Results

Test 1 Hypothesis H2.A

Consistent with hypothesis H2.A, leverage-increasing firms, where leverage is measured based on book value of equity, should have increased abnormal CFO at the end of a sample period.

I run regressions (5) for each Box separately. Then, I also re-estimate the regression (5) for all three samples together. The results of this test are presented in Table 2.

Table 2:

Leverage calculated based on book value of equity:

			After elimination			Test results		
		Sample N	Leverage increasing N	Control N	Total Sample	Hypo-thesis	Coefficient	Significance
Sample	Period							
Box 1	2002-2004	1287	75	348	423	H.2A	positive	not significant
Box 2	2003-2005	1287	86	413	499	H.2A	positive	not significant
Box 3	2004-2006	1287	84	453	537	H.2A	**negative**	**significant**
Total			245	1214	1459	H.2A	negative	not significant

The output shows that the coefficient of LEV_INC is positive, but not significant in two first regressions for sample-box 1 and box 2 (p-value equals .194 and .437). In the regression of sample-box 3 the coefficient is reported as a negative (-.114) and significant (p-value is 0.006). This result indicates that increased leverage, relative to constantly high levels of leverage, is associated with negative REM, suggesting reduced operating cash flow manipulation. However, average prediction accuracy (Adjusted R-square) equals to 8%. Therefore the results of sample-box 3 require further investigation in future research using a larger sample and a longer post-SOX sample period.

Test 2 Hypothesis H2.B

Consistent with hypothesis H2.B, leverage-increasing firms, where leverage measured based on market value of equity, should have increased abnormal CFO at the end of a sample period. I run regressions (6) for each Box separately. Then, I also re-estimate the regression (6) for all three samples-boxes together. The results of this test are presented in Table 3.

Table 3:

Leverage calculated based on market value of equity:

			After elimination				Test results	
Sample	Period	Sample N	Leverage increasing N	Control N	Total Sample	Hypo-thesis	Coefficient	Significance
Box 1	2002-2004	1287	70	252	322	H.2B	negative	not significant
Box 2	2003-2005	1287	76	304	380	H.2B	positive	Significant
Box 3	2004-2006	1287	86	348	434	H.2B	positive	not significant
Total			232	904	1136	H.2B	positive	not significant

The output produced by SPSS reports that only in Box 2 coefficient of LEV_INC positive (.194) and significant at 5% level (p-value 0.040), suggesting that leveraged–increasing companies in sample box 2 are more likely to manipulate cash flows. The coefficient on leverage in two other boxes is not significant. Average prediction accuracy (Adjusted R-square) is equal to 7%. The re-estimating of the regression (6) for all three samples together does not present significant result on increased leverage.

Test 3 Hypothesis H2.C

Similar to the hypotheses H2.A and H2.B I test the hypothesis H2.C.The results of this test are presented in Table 4.

Table 4:

The actual book value of Long Term Debt is used:

			After elimination				Test results	
Sample	Period	Sample N	Leverage increasing N	Control N	Total Sample	Hypo-thesis	Coefficient	Significance
Box 1	2002-2004	1287	8	107	115	H.2C	positive	significant
Box 2	2003-2005	1287	10	120	130	H.2C	positive	significant
Box 3	2004-2006	1287	9	124	133	H.2C	positive	significant
Total			27	351	378	H.2C	positive	significant

The results show that the coefficient on long term debt (LTD_INC) is positive and significant at 1% level in all three boxes (Box 1: 0.117, Box 2: 0.142, Box 3: 0.095) which is consistent with H2.C. In other words the results of this test suggests, that firms with increased long term debt are more likely to manipulate CFO, which support H2.C hypothesis; management appears to be managing cash flows more in these firms than in other firms. Also by re-estimating of the regression (7) for all three samples together the

coefficient on long term debt is positive and significant at 1% level. The average adjusted R square is 30%.

5.   Analysis of results and suggestions for further research

5.1   Analysis

In summery, I examine the impact of increased leverage on REM, paying particular attention to distinguish between highly leveraged and leveraged increasing firms. The main hypothesis states that increased leverage results in real earnings manipulation by management in order to affect cash flow from operating activities.

I estimate three distinct models by using ordinary least squares regression to separately test three sub-hypotheses. The sub-hypotheses are based on three different methods to measure level of leverage.

The overall test results indicate that from three above mentioned hypotheses: H2.A, H2.B and H2.C only the last hypothesis supports the main hypothesis H1. This hypothesis states that the leverage results in real earnings manipulation by management in order to affect CFO firms, when using the absolute value of long term debt in calculating leverage. The results of testing of the hypotheses H2.A and H2.B are ambiguous and as such no evidence has been found to support these hypotheses by my research. H2.C however does provide an unambiguous support to the main hypotheses.

 Furthermore, it is worth noting the relation between real earnings measure proxy and two control variables SIZE and CAPIN. The coefficient on capital intensity (CAPIN) is significant at 1% level and positive across all regressions, consistent with Zhang (2006), finding that CFO is relatively more important for capital intensity firms. In contrast to Zhang (2006), the coefficient on SIZE is positive and significant across all regressions. The explanatory power of last model is quite high compared to other models.

5.2   Suggestions for further research

This study consists of some data limitations and different assumptions in the models. First, Jelinek (2007) distinguishes between firms with leverage increases and the firms with leverage that is consistently high at the both the beginning and the end of a six consecutive five-year sample periods (from 1992 to 2002). The main reason for this is to avoid capturing temporary changes in debt, which may not meaningfully impact managerial behaviour. As indicated in previously chapters, the level of REM activities declines prior to The Sarbanes Oxley Act (SOX) in 2002 and increased significantly after the passage of SOX. As a result my sample is restricted to the post-2002 period and consists of only a five-year period (from 2002 to 2006) – I use three consecutive three-year sample periods with the assumption that the expected results are not affected. Therefore the recommendation for further investigation in the future research is to use a larger sample and a longer post-SOX sample period.

Second, this study collects the data for U.S. firms in Compustat rather than non-U.S. companies. In future years I recommend that this study is also carried out for non-U.S. companies listed on U.S. stock exchanges or more widely on listed stock exchanges in varies countries.

Third, I measure the level of leverage using market values as valuation models in the finance literature that use leverage ratios as inputs are generally based on the market value of debt and equity. A debt ratio based on market values may show an "acceptable" level of leverage. I use the ratio that would control for this phenomenon and that compares debt measured at book value to equity measured at market.

Also, other causes may play a role that have not yet been addressed. One of these causes is the method of measurement of abnormal cash flows from operating activities. Abnormal CFO is measured on the basis of the figures from the previous period (assets etc). For example, if business activities are suddenly increased in the current year through acquisitions, increased CFO that would be justified by this increase, would be incorrectly marked as abnormal. Use of the pro forma financial information could control for this phenomena.

6. Summary and conclusion

6.1 Summary

As my main subject of this paper is to understand whether there could be an incentive for managers to manipulate cash flow from operating activities through the use of real earnings management, in situations with increasing leverage, external financing in relation to earnings management was discussed. I found several studies that linked the level of external financing to the use of real earnings management. However, no studies were found that specifically linked increasing levels of external financing or leverage to the use of real earnings management. Based upon a study of Jelinek (2007) who researched the correlation between increasing levels of leverage and accrual earnings management, I developed my main hypothesis with respect to the effect of leverage increases on real earnings management and more specific on real earnings management to influence cash flows from operating activities. My results indicate that by the distinguishing between highly leveraged and leveraged increasing firms, the leverage results in real earnings manipulation by management, in order to affect CFO, when using the absolute value of long term debt in calculating leverage.

6.2 Conclusion

This study is motivated by business press and recent researches that firms engage in manipulation of operating cash flows. The results make the following main contribution to existing literature. First, this study is the first that measures the impact of leverage levels and leverage changes based on Jelinek (2007) on abnormal CFO. My results indicate that by the distinguishing between highly leveraged and leveraged increasing firms, the leverage results in real earnings manipulation by management, in order to affect CFO, when using the absolute value of long term debt in calculating leverage. In other words the results suggest that firms with increased long term debt are more likely to manipulate cash flow from operation. Second, my result is significant in light of previous recent literature on leverage/REM where the researches do not find evidence of a significant association between leverage and real activities manipulation as incentive for managers to manage the operating cash flows. (Roychowdhury 2006, 35; Zhang 2006, 26). This is primarily because

previous research focused on constant leverage (high, low or scaled) and not on leverage increases. It is however important to keep in mind certain limitations in my research which are discussed in section 5.

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