The effect of real earnings management on the value-relevance of cash flows from operations

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ABSTRACT

This study investigates whether the use of real earnings management (REM) affects the value-relevance of cash flows from operations (CFO). Prior literature provides evidence that accrual-based earnings management leads to lower quality earnings and that the value relevance of CFO increases as earnings quality decreases. Unlike accruals-based earnings management, however, REM has actual cash effects. So, while accruals-based earnings management affects the quality of earnings, REM should also affect the quality of CFO. Results indicate that higher levels of REM are associated with decreases in the value-relevance of CFO. This study helps to extend the understanding of how REM affects the valuation usefulness of CFO and documents a specific circumstance under which the information quality of CFO is eroded.

Keywords: Real Earnings Management, Cash Flows from Operations

INTRODUCTION

This study examines whether the information content of cash flows from operations (CFO) are impacted by real earnings management (REM) activity. This potential impact is analyzed by examining the relation between CFO and stock returns for firms with high levels of REM versus those with lower levels of REM. REM has been defined by prior research as, "the use of managerial discretion over operational choices with the intent to influence reported accounting numbers" (Wilson 2013), and prior studies have documented an increase in the use of REM in recent years (Cohen et al., 2008; Wilson, 2013). REM, unlike accruals-based earnings management, has real cash flow implications since managers make actual operational decisions that affect cash flows in order to alter reported earnings. The extant literature has documented capital market effects exist for firms that engage in REM (Bhojraj et al., 2009; Cohen and Zarowin, 2010; Wilson, 2015; Jiao, 2020), and prior studies have documented a significant measurable relation between cash flows from operations and firm value (Cheng et al., 1997; Kumar and Krishnan, 2008). This study extends both of these streams of literature by documenting whether and how the relation between stock returns and cash flows from operations (CFO) is affected for firms with relatively higher levels of REM.

Wilson (2015) investigates whether REM enhances the information content of earnings, via a signaling effect, or whether REM diminishes the information content of earnings by introducing noise into the firms' set of valuation information. That study finds that firms with higher levels of REM are associated with a diminished level of earnings information content. Despite evidence that REM has a diminishing effect on the information content of reported earnings, the question of whether REM impacts the information content of CFO does not have an immediate answer. REM has an actual impact on cash flows since managers are deviating from optimal operations in order to influence reported earnings. Roychowdhury (2006) states, "These departures do not necessarily contribute to firm value even though they enable managers to meet reporting goals." One possibility is that these deviations produced by REM may diminish the informational content of CFO by introducing noise that has little to no value for investors. Prior research has documented that interventions in financial reporting can degrade the informational content of reported data (Demski and Frimor,1999). An alternate possibility exists where the information content of CFO could be enhanced when managers engage in REM. Gunny (2010) does find some limited evidence that firms engaging in REM have higher future performance based on certain metrics. This suggests that the CFO deviations produced by REM have to potential to serve as an informational signal to investors about the current and future performance of the firm.

This study tests whether REM affects the information content of CFO by examining the association between CFO and change in CFO and stock returns for firms with high levels of REM versus those with lower levels of REM. Significantly higher coefficients are interpreted as a sign of higher informational content for investors while lower coefficients are interpreted as a sign of diminished informational content for investors. Higher coefficients would be consistent with REM affecting CFO in a way that signals true current and future performance, while lower coefficients are interpreted as an indication that REM introduces useless noise into the informational content of CFO.

The results, similar to the earnings information content results in Wilson (2015), indicate firms which engage in REM, specifically in overproduction and discretionary expense manipulations, diminish the information content of their CFO. These results add to the growing body of documented capital market implications of engaging in REM. It extends prior studies by focusing on CFO rather than earnings and demonstrates the broad impact that REM has on the value relevance of reported accounting information. These results should be of interest to capital market participants as they seek to make accurate valuation decisions.

HYPOTHESIS AND METHODOLOGY

Prior studies have documented numerous negative impacts for firms that engage in REM. Bhojraj et al. (2009) find that long-term firm value suffers when firms engage in certain types of REM. Cohen and Zarowin (2010) document that firms who engage in REM show lower future performance. Wilson (2015) find that the informational content of earnings is negatively affected for firms which display relatively higher levels of REM activity, and Jiao (2020) documents that any premium for beating earnings benchmarks disappears for firms that habitually use REM. In contrast to these studies that document negative implications of engaging in REM, Gunny (2010) finds that firms which engage in REM to beat the zero earnings and earnings growth benchmarks having higher one-year to three-year ROA. Prior literature has focused on the earnings aspects of REM and given little attention to the CFO aspects of REM. The prior literature is silent on REM has any impact on the information content of CFO. Further, there is a lack of evidence whether any effect serves to diminish that informational content, consistent with the negative impacts found in many studies, or enhance informational content, consistent with the notion of managers using REM to signal true performance. The question of whether REM affects the information content of CFO and how it affects that information content is formalized in Hypothesis 1 (H1):

H1: Firms with higher levels of REM do not display lower information content for their CFO than firms with relatively lower levels of REM

A large sample of firms from 1989-2016 is gathered to analyze the relation between REM and CFO informational content. Following Roychowdhury (2006), Gunny (2010), and Wilson (2013), REM is operationalized using two measures, overproduction and discretionary expense manipulation. While some costs are outside of the control of managers in the short-term, other costs can be at least partially influenced by managerial decisions in the current period. This study defines those discretionary expenses as R&D expenses, advertising expenses, and SG&A expenses. Changes in these discretionary expenses lead directly to changes CFO. Following prior studies investigating REM (Roychowdhury, 2006; Wilson, 2013), the following model is used to estimate expected discretionary expenses:

$$DISEXP_t/A_{t-1} = \alpha_0 + \alpha_1*(1/A_{t-1}) + \beta_1*(S_{t-1}/A_{t-1}) + \varepsilon_t \quad \text{(M1)}$$

Where:

$DISEXP_t$ = discretionary expenses for period t,

A_{t-1} = total assets at the end of period t-1, and

S_{t-1} = sales revenue for time period t-1.

The difference between $DISEXP_t$ and a firm's actual discretionary expenses (SG&A) represent a firm's abnormal discretionary expenses. This is the first operationalized measure of REM.

The second way REM is measured is through abnormal production levels. Because increases in production spread fixed costs across more units, managers can drive down average production cost per unit and thus drive down cost of goods sold by producing excess units. These reductions in unit product cost filter through a firm's income statement resulting in lower COGS, higher gross margin, and higher operating and net incomes. Unlike reported income, overproduction has an inverse effect on CFO. Any overproduction causes decreases in CFO due to higher production costs and additional holding costs. Firms engaging in overproduction are expected to display lower CFO and higher production costs than would be expected for their level of sales. Expected production costs also follow Roychowdhury (2006) and Wilson (2013) and are modeled as:

$$PROD_t / A_{t-1} = \alpha_0 + \alpha_1 * (1/A_{t-1}) + \beta_1 * (S_t / A_{t-1}) + \beta_2 * (\Delta S_t / A_{t-1}) + \beta_3 * (\Delta S_{t-1} / A_{t-1}) + \varepsilon_t \quad \text{(M2)}$$

Where:

$PROD_t$ = total production costs for period t, and

A_{t-1} = total assets at the end of period t-1, and

S_t = sales revenue for period t, and

ΔS_t = change in sales from period t-1 to period t, and

ΔS_{t-1} = lagged change in sales revenue.

The difference between $PROD_t$ and a firm's actual production costs represent abnormal production costs. This is the second operationalized measure of REM.

Following Wilson (2015), firms are ranked based on abnormal discretionary expenses and again on abnormal production costs. Deciles are then created based on each measure. An indicator variable, *High*, is used to designated firms which display firms with relatively higher levels of REM activity. Specifically, it indicates for firm years in the lowest two deciles of abnormal discretionary expenses and/or the highest two deciles of abnormal production expenses. Normal/Low REM firms are defined as firms in decile 5 through decile 10 for abnormal discretionary expenses and decile 1 through decile 6 for abnormal production costs. Removing the two deciles closest to the high REM firms creates a higher contrast between high and low REM firms. Model 3 is a base model designed to provide validation of the value relevance for earnings ($Earn_t$), CFO (CFO_t), change in earnings ($\Delta Earn_t$), and change in CFO (ΔCFO_t). An indicator

variable ($High_t$) is added in model 4 and interacted with CFO_t and ΔCFO_t in order to test hypothesis 1 (H1).

$$R_t = a_0 + a_1 Earn_t + a_2 CFO_t + a_3 \Delta Earn_t + a_4 \Delta CFO_t + \varepsilon_t \quad \text{(M3)}$$

$$R_t = a_0 + a_1 Earn_t + a_2 CFO_t + a_3 \Delta Earn_t + a_4 \Delta CFO_t + a_5 High_t + a6 High_t * CFO_t + a7 High_t * \Delta CFO_t + \varepsilon_t \quad \text{(M4)}$$

Where:
R_t = stock return (excluding dividends) for period *t*,
$Earn_t$ = earnings before extraordinary items for period *t*,
CFO_t = cash flows from operations for period *t*,
$\Delta Earn_t$ = change in earnings from period *t-1* to period *t*
$\Delta CFO_{t=}$ change in cash flows from operations from fiscal year *t-1* to year *t*,
$High_t$ = indicator variable for firm year observations in the highest two deciles of abnormal production costs or lowest two deciles of abnormal discretionary expenses.

The coefficients of interests regarding H1 are a_6 and a_7 from M4. Significant positive coefficients on these variables would support the notion that engaging in relatively high level of REM provides an information rich signal to markets. Insignificant coefficients would support H1 that there is no reliable relation between REM and CFO. Significant negative coefficients would support the notion that firms with high levels of REM add noise to their information environment and diminish the information content of their CFO.

SAMPLE AND RESULTS

A total sample of 32,211 firm year observations spanning from 1989-2016. Of these observations, a total of 10,218 are categorized as displaying high REM activity. 21,993 observations fall into the deciles of normal/low REM activity. Table 1 displays the descriptive statistics for both the high REM and normal/Low REM subsamples. These two sample groupings show no significant differences for returns (R_t), earnings ($Earn_t$), or change in earnings ($\Delta Earn_t$). There is a marginally significant difference (-0.002, p=0.094) for cash flows from operations (CFO_t) for the high REM firms versus the normal/low REM firms. Change in CFO (ΔCFO_t) is significantly lower for the high REM sub-sample (-.009, p=0.019).

Results of the OLS regressions to test H1 are presented in table 2. Earnings ($Earn_t$), change in earnings ($\Delta Earn_t$), and cash flows from operations (CFO_t) all show the expected signs and significance at the p<.01 level in both model 3 and model 4. Change in cash flows from operations (ΔCFO_t) did not display the expected sign but was also insignificant in both models. Model 4 contains the REM indicator variable, $High_t$, along with interaction variables, $High_t * CFO_t$ and $High_t * \Delta CFO_t$. This coefficients on these interaction variables are the main variables of interest. Results indicate that high REM firms have diminished informational content for their CFO ($High_t * CFO_t$ = -0.242, p=0.033). These results indicate that firms engaging in REM create noise in their CFO

that garble information used by investors for valuation decisions. Results for $High_t$* ΔCFO_t were insignificant (0.034, p = .21). The summed coefficients (CFO_t + $High_t$* CFO_t) indicate a significant diminishing of CFO information content (.101, p =.046). These results lead me to reject H1 and conclude that firms with high levels of REM activity diminish the information content of their CFO.

CONCLUSIONS

The extant literature has documented the CFO have value relevance for capital markets (Cheng et al., 1997; Kumar and Krishnan, 2008). There is also a large body of extant literature that documents REM activity leads to various types of capital markets effects (Roychowdhury, 2006; Bhojraj et al., 2009; Cohen and Zarowin, 2010; Jiao, 2020). Wilson (2015) documents that engaging in REM diminishes the value relevance of their earning, but the literature is silent as to whether engaging in REM diminishes the value relevance of CFO. Results indicate, as with earnings, that REM diminishes the informational content of CFO.

Whether REM activity has a relation to the value relevance of CFO is particularly salient given that REM, using operational decisions to affect reported earnings, naturally impacts CFO. This question is important to investors because they depend on reported accounting numbers to make decisions, and managerial actions that degrades the quality of those reported accounting numbers can lead to sub-optimal decisions by investors. Conversely, if managers use REM to signal private information about true performance, reported accounting information could have enhanced usefulness for capital market participants.

This study documents that firms engaging in REM affect the information content of their CFO. A total of 32,211 observations are analyzed. Firm-year observations with relatively high abnormal production costs or relatively low abnormal discretionary expenses are classified as displaying high REM activity. An indicator variable is created based on the high REM classification. That indicator variable is then placed into a regression model to determine whether REM activity has an effect on the relation between CFO and stock returns. Results indicate that CFO for those firms classified as having high REM activity have weaker informational content versus those with low/normal levels of REM activity. This is consistent with the effect of REM on the information content of earnings (Wilson, 2015) and suggest that REM introduces value-irrelevant noise into reported CFO data.

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Table 1
Descriptive statistics

	Normal/Low REM (Deciles 1 – 6)				*High REM (Deciles 9 – 10)*			
Variable	Mean	Median	Standard Deviation		Mean	Median	Standard Deviation	Diff. in Means
R_t	.047	.017	.276		.041	.015	.306	-.006
$EARN_t$	.005	.018	.062		.008	.018	.060	.003
CFO_t	.011	.035	.103		.009	.034	.082	-.002*
$\Delta EARN_t$	.002	.008	.034		-0.001	.002	.020	-0.003
ΔCFO_t	.007	.024	.078		-0.002	.010	.041	-.009**
N	21,993				10,218			

***ten percent significance, **five percent significance**

Table 2

OLS regression testing Hypothesis 1

Variable	Predicted Sign	Model 3	Model 4
Intercept	?	-0.102***	-0.102***
$Earn_t$	+	0.151***	0.148***
CFO_t	+	0.360***	0.369***
$\Delta Earn_t$	+	0.341***	0.343***
ΔCFO_t	+	-0.040	-0.044
$High_t$	?		-0.059**
$High_t * CFO_t$	?		-0.242**
$High_t * \Delta CFO_t$	?		0.034
Summed Coefficients			
$CFO_t + High_t * CFO_t$	?		0.101**
$\Delta CFO_t + High_t * \Delta CFO_t$	?		-0.010
N		32,211	32,211
ADJ RSq		.054	.079

***ten percent significance, **five percent significance, ***one percent significance**