EARNINGS MANAGEMENT INTENSITY AND EARNINGS SURPRISES: PERSTISTENCE AND MARKET PRICING

By

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A Thesis Submitted to The Honors College

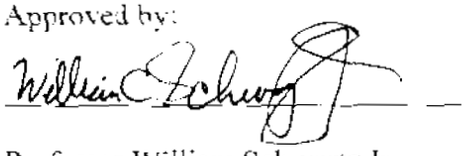
In Partial Fulfillment of the Bachelor's degree
With Honors in

Accounting

THE UNIVERSITY OF ARIZONA

May 2009

Approved by:



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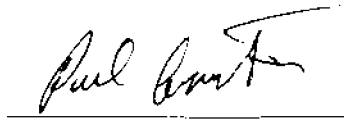
SIGNED: 

ABSTRACT:

I investigate the impact of earnings management intensity on the market pricing of earnings surprises. Using modified Jones (1991) model estimates of abnormal accruals I measure earnings management intensity as abnormal accruals scaled by net income. Intuitively, the higher values of this measure imply more intense the earnings management. . Following Sloan (1996) and Xie (2001) I test for the persistence of the different components of earnings. First, I examine the persistence of earnings and operating cash flows subject to the affects of earnings management intensity. I find that firms with higher levels of earnings management intensity, top 25% of sample distribution, have lower persistence of earnings and operating cash flows. Second, I test for the affects of earnings management intensity on forecast error and cumulative abnormal returns. I find that earnings management intensity is positively associated with forecast error and negatively associated with cumulative abnormal returns. My results add to the growing body of evidence that earnings management is primarily found in the discretionary component of accruals and that analysts fail to rationally price earnings management[1].

Key words: Earnings Management Intensity; Cumulative Abnormal Returns; Forecast Error

[1] I would like to thank Professor Bill Schwartz Jr. for providing the motivation and insight necessary to tackle research on earnings management. He has been instrumental in my intellectual development and has always been supportive in my goal towards finishing this paper. Throughout the honors thesis process, he has challenged my knowledge and understanding of key accounting relationships and ideas beyond the traditional accounting curriculum. In addition, I would like to thank the tireless efforts of John Campbell, who, despite my procrastination, helped me perform my regression tests and interpret the results.

EARNINGS MANAGEMENT INTENSITY AND EARNINGS SURPRISES: PERSTISTENCE AND MARKET PRICING

1. INTRODUCTION

This paper examines the impact of earnings management intensity on the market pricing of earnings surprises. Using modified Jones (1991) model estimates of abnormal accruals I measure earnings management intensity as abnormal accruals scaled by net income. Intuitively, the higher values of this measure imply more intense the earnings management.

This paper adds to the growing body of evidence that earnings management is primarily found in the discretionary component of accruals. One significant paper in this field shows that investors fail to differentiate between accruals and operating cash flows in determining security valuation (Sloan 1996). In addition, the persistence of earnings performance is negatively related the accrual component and positively related to the cash flow component. Studies of the persistence of earnings performance demonstrate investors systematically misprice earnings (Sloan 2001). The mispricing of earnings occurs because investors overestimate the persistence of the accrual component of earnings and underestimate the persistence of the operating cash flow component of earnings. By exploiting investors' inability to rationally distinguish between the accrual and operating cash flow components of earnings, abnormal stock returns can be earned. Sloan (1996) demonstrates this by taking a long position in firms reporting low levels of accruals relative to operating cash flows, and a short position in firms reporting high levels of accruals to operating cash flows.

Xie (2001) extends the literature by documenting that the market overestimates the persistence of accruals due to differences between discretionary (abnormal accruals) and nondiscretionary accruals (normal accruals). Specifically, the market overprices discretionary accruals and appropriately prices

nondiscretionary accruals. In a hedge portfolio test, the market assigns a larger valuation coefficient to abnormal accruals relative to its forecasted coefficient. Because of this, the stock price at firms with negative abnormal accruals is undervalued and the stock price for firms with positive abnormal accruals is overvalued.

The composition of earnings surprises also matters. Melendrez, Schwartz, and Trombley (2007), show the market acts more strongly to unexpected cash flows than to unexpected accruals. The market's reaction is due to the significantly greater persistence coefficient of unexpected cash flows (*UCF)* compared with the persistence of unexpected accruals (*UACC)*. This paper argues that earnings management is more likely accomplished through manipulation of accruals not cash flows because end of period earnings management is most likely to take place through accrual adjustments.

This paper examines four research questions regarding the relation between earnings management intensity and earnings surprises. First, does earnings management intensity affect the persistence of earnings? Second, does earnings management intensity affect the persistence of operating cash flows? Third, is earnings management intensity positively associated with forecast error? Fourth, does the market appropriately detect and price earnings management intensity?

Following Xie (2001), to measure earnings management intensity, I use the residuals from the modified Jones (1991) model as my proxy for abnormal accruals. Abnormal accruals capture earning management and are the more variable component of total accruals (Collins and Hribar, 2000). To measure earnings management intensity, I scale abnormal accruals by net income. The higher the measure becomes, the higher the earnings management intensity.

My motivation for this study is as follows. First, investors and the market dislike and accordingly discount earnings management into stock prices. By gauging a variable for earnings management intensity, I can determine if the market rationally prices earnings surprises in the presence of earnings management intensity. Second, if reliable relation between earnings management intensity and earnings

surprise is found and/or not priced correctly, than an investor can earn abnormal returns by exploiting other investors' irrational pricing. Third, researchers in academia have an interest in earnings management intensity and its effect on earnings. Although many argue that earnings management is captured in abnormal accruals, abnormal accruals may also capture additional information (Bernard and Skinner, 1996). Fourth, research on earnings management intensity and earnings surprises furthers the understanding and scope of earnings management literature.

Following Sloan (1996), I test whether earnings management intensity affects the persistence of earnings surprises. To test persistence I perform an ordinary least squares regression of future earnings performance on the components of current earnings performance. I can test persistence due to the serial correlation of future earnings performance on the components of current earnings performance. Following Sloan (1996), to capture earning management intensity, I use modified Jones model estimates for total accruals. Predicted values of the modified Jones model indicate normal accruals and the residuals from the model capture abnormal accruals.

Lastly, I test for the affect of earnings management intensity on analyst's forecasts. Analyst's forecasts of earnings are critical components of the market value of equity because pricing takes into account the present value of all present and expected future cash flows of a firm. Any forecast error due to earnings management intensity may create additional volatility between actual and expected returns (cumulative abnormal returns). Therefore, I test for cumulative abnormal returns as well.

The remainder of the paper is organized as follows. Section 2 provides background and hypothesis development. Section 3 discusses my research design. Section 4 presents my research results. Lastly, Section 5 offers my conclusions.

2. BACKGROUND AND HYPOTHESIS DEVELOPEMENT

2.1 Earnings Management

Earnings management has become a common topic in many financial reporting news sources and in public discussion. Academia began research on earnings management in the early 1950's and 1960's when studies by Gordon (1963) and Hepworth (1954) analyzed "income smoothing" and the implications for financial reporting. Gordon was the catalyst for modern hypothesis testing in academic literature when in 1964; he proposed a theory of motivation for income smoothing. Following Gordon, there were a series of empirical studies on income smoothing. Accounting researchers such as Smith (1976), Komin and Ronen (1978) and Koch (1981), analyzed incoming smoothing in the context of management discretion. The study of "income smoothing" eventually evolved into the modern study of earnings management.

For the past few decades the earnings management literature has focused on the detection of earnings management in financial statements (Healy and Wahlen, 1999). More recently, studies have examined earnings management using the accruals component of earnings and whether the market detects and prices earnings management. This research on earnings management and stock returns has shown that investors overestimate, and thus, overprice the persistence of accruals. Xie (2001) finds that both normal and abnormal accruals are overpriced and that the market overprices abnormal accruals to a greater extent. This indicates that investors irrationally price earnings management in earnings announcements.

2.2 Persistence of Accruals

Sloan (1996) presents evidence that investors fail to rationally price accruals and operating cash flows when valuing securities. Further evidence show the persistence of accruals for future earnings are less than the persistence of operating cash flows. Sloan also shows that investors do not rationally price these components. Specifically, Sloan's evidence suggests that investors overprice accruals and underprice operating cash flows. This is due to investors incorrectly treating the accrual component of earnings as more persistent than the operating cash flow component. Sloan argues the lower persistence

of accruals is partially due to earnings management. This is consistent with Dechow (1994) where earnings management is attributable to accruals that are mean reverting in the following year or years.

In another finding, Xie (2001) extends the research on accrual pricing by Subramanyam (1996) and tests the market pricing of Jones model estimated abnormal accruals for future earnings. Following Sloan (1996), Xie (2001) shows that the market misprices total accruals and this is primarily due to the lower persistence of abnormal accruals. Abnormal accruals (discretionary accruals), as labeled by the earnings management literature, are non-obligatory expenses or revenues that may cause more severe mispricing.

The market mispricing of accruals is due to both normal accruals (nondiscretionary accruals) and abnormal accruals (discretionary), but the market misprices abnormal accruals more severely. Lastly, Xie (2001) uses the residuals of modified Jones model estimates as a proxy for earnings management.

Melendrez et. al (2007) also test persistence of earnings by comparing unexpected cash flows and unexpected accruals. Following evidence by Guay, Kothari, and Watts (1996), Melendrez et. al (2007), use an analyst forecasts approach to model earnings management instead of a statistical model by comparing analyst forecasted earnings with actual earnings. Specifically, they use analysts forecasts of earnings and forecasts of cash flows to decompose earnings surprises into an accrual surprise component and a cash flow component. They argue that earnings management is more likely to occur in accruals rather than cash flows because managing cash flows has "real economic" costs to the firm. Melendrez et. al, find the market acts more strongly to unexpected cash flows than unexpected accruals due to the significantly greater persistence coefficient of unexpected cash flows. They find the composition of the earnings surprise does matter. Consistent with Sloan (1996), they provide evidence that suggest investors fixate on earnings. Lastly, period-end earnings management takes place through accrual adjustments and the earnings surprise is affected by earnings management.

2.3 Hypothesis Development

Firms manage earnings for a variety of reasons. Such as the prospect of meeting or beating earnings expectations, "income smoothing" or decreasing earnings volatility, managerial reward, and reduced firm borrowing costs (Matsumoto 2002). All of these reasons have a substantive impact on the quality of earnings results. Accordingly, I hypothesize the following in regards to research my first question 1:

> H1: Firms with higher (lower) levels of earnings management intensity will have lower (higher) persistence of earnings.

I predict that firms with higher levels of earnings management intensity will have a lower persistence of earnings. I believe this for two reasons: First, firms have an incentive to manage earnings in order to meet or beat earnings expectations (Hayn 1995). Manager's job security and compensation is often tied to earnings performance. Therefore, meeting or beating expectations, although not necessarily indicative of actual performance, is often in the short-term interest of managers. Second, although firms perform "income smoothing" to reduce the projected volatility in earnings results, unforeseeable market swings could force managers to make more visible or flagrant earnings manipulations in order to comparatively outperform competitors during loss years.

As Sloan (1996) concludes the proportion or relative magnitude of the cash and accrual component of earnings matters. Specifically, Sloan finds that the operating cash flow component of earnings will be more indicative of future earnings than will accruals. Because I believe that earnings manipulations occur in the accrual component of earnings, as accruals diminish, so too must earnings management intensity. Therefore, I hypothesize the following in with respect to my second research question:

> H2: Firms with higher (lower) levels of earnings management intensity will have lower (higher) persistence of operating cash flows.

The persistence of earnings is lower due to the accrual component of earnings versus the operating cash flows component of earnings (Sloan, 1996). Likewise, contemporary earnings management research

emphasizes the information content of accruals, specifically abnormal (discretionary accruals), as the primary source of earnings manipulations (Xie, 2001). As the level of earnings management intensity increases, this could manifest in an increase in the proportion of accruals to operating cash flows.

In addition to the persistence of earning and cash flows, earnings management intensity affects analysts valuations used in forecasting earnings. Forecast error, which is the difference between actual earnings and forecasted earnings, must take into account earnings manipulations by management. Therefore, I hypothesize the following with my third research question:

H3a: Earnings management intensity is positively associated with forecast error.

The reason why I believe that earnings management intensity is positively associated with forecast error is because the risks or rewards of meeting or beating earnings (MBE) expectations are asymmetric. According to Skinner and Sloan (2001), the markets price response to negative surprises is significantly more severe than for positive surprises. In order to curtail this economic phenomenon, managers have an added incentive to manage earnings upward. In conjunction with this finding, Bartov, Givoly and Hayn (2002) find that earnings of firms that manage earnings and beat earnings expectations, although inferior to firms that don't, perform better than firms that do not meet earnings expectations. Because of the downside of missing earnings forecasts, firms will have an incentive to manage earnings and this could cause additional forecast error beyond normal trends. Although Lin and Shih (2006) find that analysts discount earnings management into earnings forecast, I believe that the latter considerations discussed make systemic adjustments for EMI almost impossible.

In addition to Forecast Error, the direction of the forecast error also matters. Therefore, I also hypothesize the following with respect to my third research question:

H3b: The direction of the forecast error due to earnings management intensity is negative.

I believe that the forecast error will cause the direction of the forecast error to be more negative because, according to Sloan (1996), earnings management is not rationally priced by the market. The market prices both current and future earnings and most earnings management diminishes future earnings.

Earnings management literature that focuses on returns and accrual management is studied in two distinct time frames; long-window designs (Sloan 1996; Subramanyam 1996; Xie 2001) and short-window designs (Defond and Park, 2001; Balsam et al 2002). The long window design applied by Sloan (1996) finds that the market misprices accruals and fixates on the earnings number. Xie (2001) similarly finds that the mispricing of accruals is primarily due to discretionary accruals where earnings management is most likely to occur. Similarly, in the short window design, Defond and Park (2001) conclude that the market does not adequately price or make adjustments for earnings management on earnings announcement dates. Because I believe there is a positive association between earnings management intensity and forecast error and the market tends to fixate on earnings (Sloan 1996), it seems that the market has a difficult time pricing EMI. Therefore, I hypothesize the following in regard to research question #4:

H4: The market detects earnings management intensity; however the market fails to rationally price it.

Gavious (2007) finds that during the first ten days following financial statement disclosure investors "fixate" on earnings due to the time lag between earnings results and investor analysis. However, after thirty days, investors distinguish between normal and abnormal accruals and will use this information to reassess reported earnings. Gavious then concludes that a negative analyst reaction to a firms inflated earning via earnings management will be followed by an even stronger reaction by the market pricing of the firms. Therefore, although I believe analysts can detect earnings management and are cognizant that accruals reverse in forthcoming periods (Dechow 1994), I don't believe that the market appropriately prices EMI. By the time the market eventually prices EMI, it may irrationally over-punish firms compared with firms that missed their expected earnings figures but did not manage earnings.

3. RESEARCH DESIGN

3.1 Sample

For my empirical tests I obtain data from the 2007 Compustat Annual Industrial, Research and Full Coverage files, as well as from the 2007 CRSP monthly return files. My sample covers a ten-year period from 1996 to 2007. Compared with prior earnings management research by Sloan (1996) and Xie (2001), my research sample has several advantages. First, I do not have to exclude data for firms that do not follow SFAS 95: *Statement of Cash Flows*. Prior to SFAS 95, firms produced a *Statement of Changes in Financial Position*, which made accounting for accruals problematic. Both Sloan and Xie had to account for this is in their respective research samples. Secondly, I do not have to control for a survivorship bias or unavailable information on funds from operations for firms prior to 1962. Third, as found in Xie's research sample, I do not have to delete observations from NASDAQ before 1982 in order to ensure comparability.

3.2 Variable Measurement

In order to test for the persistence of earnings surprises and earnings management intensity, I need a variable or proxy measurement for earnings management. Following Xie, I first use Subramanyam's (1996) definitions for earnings, accruals, and operating cash flows. To find these values, I use information from the balance sheet and income statement.

In order to compute the accrual component of earnings I use a format common in earnings management literature (Dechow, Sloan, and Sweeney, 1995).

Accordingly, operating cash flows are defined as follows:

$$CFO_t = FFO_t - \Delta CA_t + \Delta CASH_t + \Delta CL_t - \Delta STDEBT_t$$

where:

FFO_t= Funds from Operations

ΔCA_t= Change in Current Assets

$\Delta CASH_t$= Change in Cash and Short-Term Investments

ΔCL_t= Change in Current Liabilities

$\Delta STDEBT_t$= Change in Short-Term Debt

Total Accruals are the difference between earnings and operating cash flows. Total Accruals are estimated as follows:

$$ACCR_t = EARN_t - CFO_t$$

Lastly, earnings, accruals, and operating cash flows are scaled (deflated) by beginning-of year total assets.

3.2 Modified Jones Model

In order to measure a variable for earnings management intensity, I follow Xie (2001) by using the modified Jones Model to estimate normal accruals and abnormal accruals. This is a common procedure for estimating accruals in the earnings management literature. Abnormal accruals capture earnings management intensity and are the residual values of the modified Jones model. The modified Jones model employed by Xie, is necessary because according to Bernard and Skinner (1996), Jones (1991) model-estimated abnormal accruals capture major unusual accruals and non-articulation events. These may include but are not limited to mergers, acquisitions and divestitures.

The modified Jones model to estimate normal and abnormal accruals is the following:

$$\frac{ACCR_t}{TA_t} = \propto_1 \left[\frac{1}{TA_{t-1}}\right] + \propto_2 \left[\frac{\Delta REV_t}{TA_{t-1}}\right] + \propto_3 \left[\frac{PPE_t}{TA_{t-1}}\right] + \varepsilon_t$$

where:

ΔREV_t= Change in Sales Revenue in Year *t*

PPE_t= Gross Property, Plant and Equipment in Year *t*

Following Subramanyam (1996) and Xie (2001), I estimate the modified Jones model in cross-section for each year combination found for NYSE/AMEX firms as well as NASDAQ firms. The modified Jones Model estimated by Xie (2001) predicts the values of normal accruals (NAC_t) and abnormal accruals ($ABNAC_t$).

where:

NAC_t= Predicted Values of the Jones Model Estimate

$ABNAC_t$= Residual Values of the Jones Model Estimate

Therefore, abnormal accruals (predicted residuals) as estimated by modified Jones, are used as a proxy for earnings management.

3.3 Measurement of Earnings Management Intensity

Xie (2001) argues abnormal accruals capture earnings management. Following Xie (2001), I use the modified Jones model to capture earnings management. To measure earnings management intensity I use the residual values from modified Jones (abnormal accruals) and scale them by net income. I scale abnormal accruals by net income in order to gauge earnings management by firm performance. Because firms have an incentive to meet or beat earnings expectations, firms on the cusp of earnings will have much higher EMI compared with firms that perform better than break even. Thus, the higher the ratio of abnormal accruals to operating cash flows is, the more intense the earnings management. Lastly, the ratio of abnormal accruals scaled by earnings, both already scaled by average total assets, creates a firm size proportional means to gauge earnings performance. The following is my measure for earnings management intensity:

$$\frac{ABNACC_t}{NetIncome_t}$$

3.4 Test of Persistence

To test the persistence of earnings surprises and level of earnings management intensity I follow the regression tests performed by Sloan (1996). I perform an ordinary least squares regression of future earnings performance on the components of current earnings performance. I am able to test for persistence due to the serial correlation of current earnings performance for future earnings. Freeman, Ohlson, and Penman (1983) define the serial correlation as the following:

$$Earnings_{t+1} = \alpha_0 + \alpha_1 Earnings_t + v_{t+1}$$

Accordingly, Sloan (1996) recognizes that future earnings are misspecified. Specifically, future earnings are misspecified due to the coefficients of the cash and accrual component are constrained and assumed to be equal. Sloan (1996) further defines the serial correlation of current earnings performance for future earnings as the following:

$$Earnings_{t+1} = \gamma_0 + \gamma_1 Accruals_t + \gamma_2 Cash\ Flows_t + v_{t+1}$$

Lastly, Xie (2001) furthers Sloan's (1996) correlation of current earnings performance for future earnings by expanding the accrual component of earnings. The accrual component is defined as total accruals and is a combination of normal accruals and abnormal accruals. Abnormal accruals are considered to be the variable component of accruals. The following is the specification made by Xie:

$$Earnings_{t+1} = \gamma_0 + \gamma_1 Cash\ Flows_t + \gamma_2 Normal\ Accruals_t + \gamma_3 Abnormal\ Accruals_t + v_{t+1}$$

For my purposes, I the relation between earnings and the components of future earnings used by Sloan (1996) and Xie (2001) in order to measure the impact of earnings management intensity on future earnings. However, my proxy for earnings is "Earnings Before Extraordinary Items" (EBEI). EBEI is simply Net Income (Net Earnings) plus the net of extraordinary gains (-) or losses (+). To test for the persistence of earnings I perform an ordinary least squares regression of the persistence of earnings subject to earnings management intensity. Equation one (1) is estimated as follows:

$$(1) EBEI_{i,t} = \beta_0 + \underset{(-)}{\beta_1} * D + \underset{(+)}{\beta_2} * EBEI_{t+1} + e_{i,t}$$

In this model, the independent variable *D* is a dummy variable representing 0 for firms with low EMI and 1 for firms with high EMI. For my research sample, a firm is considered to have low EMI if it falls in the bottom 75% of my research sample (lower EMI ratio) and 1 if a firm falls in the top 25% of my research sample (higher EMI ratio). Consistent with H1, β_1 is predicted to be negative and β_2 is predicted to be positive.

Similar to my test for the persistence of future earnings, I also test for the persistence of future operating cash flows. I perform an ordinary least square regression of the persistence of each component of earnings subject to EMI. Equation two (2) is specified as the following:

$$(2) CFO_{i,t} = \beta_0 + \underset{(-)}{\beta_1} * D + \underset{(+)}{\beta_2} * CFO_{t+1} + \varepsilon_{i,t}$$

3.5 Test(s) of Forecast error

Xie (2001) finds that firms do not rationally price abnormal accruals. Because investors do not rationally price abnormal accruals, analyst may be more likely to misprice earnings. The mispricing of earnings could affect future forecasted earning and lead to forecast error (FE). Therefore, in order to

measure the impact of earnings management intensity on FE I use a simple forecast error model. The following is equation three (3):

$$(3)\left|FE\right| = \beta_0 + \underset{(+)}{\beta_1} D$$

FE is simply the difference between actual earnings per share and earnings per share divided by predicted earnings per share. To estimate the effect of EMI on FE, I use a dummy variable *D* that is an estimate of earnings management intensity for each firm in my research sample. The independent variable *D* is simply 0 if EMI is in the bottom 75% of my distribution or 1 if in the top 25% of my sample. This particular measure of Forecast error measures the absolute variation caused by a firms relative high (1) or low (0) EMI.

A less restrictive test for forecast error looks at the direction, either positive or negative. The following is equation four (4):

$$(4)FE = \beta_0 + \underset{(-)}{\beta_1} D$$

Both simple models for estimating forecast error capture the affect of EMI on analyst forecasts and introduce the analyst perspective to the pricing of earnings management.

3.6 Unexpected Returns Using the Market Model

If the market appropriately detected and priced earnings management intensity, then there would not be additional abnormal returns as a result of EMI. To test this, I use a market model used by Campbell, Dhaliwal, and Schwartz (2008). The following is the estimate for expected returns specified by the market model, also known as the Capital Asset Pricing Model (CAPM):

$$R_{i,t} = \alpha_1 + \beta_i R_{m,t} + \varepsilon_{it}$$

where:

$R_{i,t}$ =Return for Firm *i* on Day *t*

α_i =Intercept

β_i =beta for firm *i*

$R_{m,t}$ = Return on Value-Weighted CRSP Universe index (VWRETD) on day *t*

ε_{it} = Error Term

Cumulative abnormal returns are simply the actual returns (earnings) minus the forecasted returns or expected returns (earnings). The following is an estimate of cumulative abnormal returns:

$$CAR_{i,t} = \exp\left\{\sum_{t=1}^{T} \ln(1 + R_{i,t)}\right\} - \exp\left\{\sum_{t=1}^{T} \ln(1 + \hat{R}_{i,t}\right\} \quad \text{(II)}$$

For purposes of performing an ordinary least squares regression for the dependent variable CAR and the affect of earnings management intensity, the following is equation five (5):

$$(5) CAR = \beta_0 + \underset{(-)}{\beta_1} D + \underset{(+)}{\beta_2} FE + \underset{(-)}{\beta_3} FE * D + e$$

In this model, I take into account the dummy variable *D* used in my previous tests to account for earnings management intensity as well as forecast error. If analysts do not rationally discount earnings management intensity then this may lead to additional forecast error and in turn augment the difference between expected and actual returns.

4. EMPIRICAL RESULTS

The empirical analysis begins with descriptive statistics of the operating cash flow and accrual components of earnings. For my sample taken from CRSP files from 1996 to 2007, I obtain 50,245 firm-year observations. TABLE 1 provides statistics on the components of earnings, Jones Model estimates of abnormal accruals (ABDACC), as well as my variable EMI. For description of these variables and data values on CRSP, reference TABLE 1.

Over the ten-year period from 1996-2007, the average-total-assets for each firm was $2,761 million with a standard deviation of $14,289 million. The third quartile (75% Q3) of average total assets was $964 million. This indicates that firms encompassing the top 25% of average total assets were significantly larger than the bottom 3 quartiles. The average Earnings Before Extraordinary Items (EBEI) was $-.84 million, however most firms had positive earnings (indicated by the median earnings of $.02096 million). Sloan (1996) finds that the operating cash flow component of earnings is more persistent than the accrual component. This is reflected in the fact that the standard deviation of cash flow from operations (CFO) is $25.26 million while for Total Accruals (TotAcc) is $32.48 million. Lastly, Jones model estimates of abnormal accruals (ABDACC) have an average of $.06546 million and a standard deviation of $4.37684 million. Both of these values are intuitive in that average abnormal accruals would be estimated to be positive since most earnings management is upward to meet or beat earnings expectations. Secondly, because abnormal accruals represent a small portion of overall accruals, they will be less volatile.

Test of HI

For my test of the persistence of future earnings subject to earnings management intensity, I make two predictions in H1. In equation one (1) I predict that firms with higher levels of earnings management intensity will have lower persistence of earnings. Second, that there is a serial correlation between current earnings and future earnings. TABLE 2 presents the results from the ordinary least square regression of the persistence of earnings subject to earnings management intensity:

The results are consistent with these predictions. Specifically, both β_1 (-1.13566, *t*-statistic=-2.23) and β_2 (.11852. *t*-statistic=2.03) are statistically significant. Since β_1 is less than zero, the results suggest that earnings management intensity affects the persistence of earnings downward. Second, since β_2 is greater than zero, the results suggest that current earnings are a good indicator of future earnings. The reasoning behind both of these predictions is that EMI, represented by a "1" for the dummy variable, would seem to reduce the persistence of earnings because most earnings management is upward in nature

and less likely to be recurring. In addition, I predicted a positive association between current earnings performance on future earnings. Sloan (1996) assumes the same serial relationship in his hedge-portfolio tests. My results are consistent with both Sloan (1996) and Xie (2001).

Test of H2

In addition to testing for the persistence of earnings, I also test the persistence of operating cash flows. In H2 and equation two (2) I predict that firms with higher levels of earnings management intensity will have lower persistence of earnings. Second, that there is a serial correlation between current operating cash flows and future operating cash flows. TABLE 3 presents ordinary least squares regression of the persistence of cash flows from operations subject to earnings management intensity:

Similar to my predictions for earnings, the results of the test for the persistence of cash flows subject to earnings management intensity is consistent with prior research (Sloan 1996) in which the coefficient for the cash flow component was smaller than the earnings component tested in H1. As TABLE 3 indicates, the coefficients from equation two, β_1 and β_2,are -.25954 (*t*-statistic=-1.37) and .030369 (*t*-statistic=1.93) respectively. Only operating cash flows,β_2 is marginally significant at the 10% level. Therefore, I cannot reject the null hypothesis that the dependent variable, operating cash flows, vary with earnings management intensity. Nonetheless, the coefficient on β_2 confirms the serial correlation between current earnings on future earnings.

Test of H3a and H3b

The fourth prediction, H3a, is that earnings management intensity is positively associated with forecast error. This is indicated in equation three (3). I also predict in H3 that the direction of the forecast error is positively associated with earnings management intensity. This is indicated in equation four (4). TABLE 4 provides the regression analysis for the dependent variable forecast error.

From a sample of 9,254 observations, the results document a positive relationship between earnings management intensity and forecast error. Specifically, the estimate of $\beta_1$is 0.012113 (*t*-

statistic=4.19). Since β_1 is greater than zero, the results suggest that earnings management intensity is positively associated with forecast error. As firms manage earnings, the difference between predicted and actual earnings will increase.

In addition to testing for the absolute value or difference between actual earnings and forecasted earnings, it is also of interest to know the direction of earnings management intensity on forecast error. H3b predicts that the direction will be negative, or in other words, that analysts will discount earnings management. TABLE 6 provides a regression analysis for the dependent variable forecast error (non-absolute value):

Drawing from the same sample in H3a, I sample from the same 9,254 firms for H3b. The results indicate that $\beta_1$is -0.01024 (*t*-statistic=-3.43). Since$\beta_1 < 0$, or statistically significant, I can infer that the direction of the forecast error, in terms of the affect of earnings management intensity, is negative. This makes sense because analysts will tend to forecast earnings downward if a firm is suspected of managing earnings. Of course, this assumes that the majority of earnings management occurs where managers are attempting to meet or beat earnings expectations rather than to damper earnings to "smooth" earning volatility. Overall, both tests of the absolute value of forecasted error as well as the direction of forecast error indicate that analysts somehow price EMI into their forecasts.

Test of H4

The final prediction is that although analysts detect earnings management intensity or earnings management (Gavios, 2007), they do not rationally incorporate the effects into the price. In order to price a firm, analysts must take into account the present value of all current and future expected cash flows, and, in this case, the earnings of the firm. Therefore, if a firm was priced correctly, analysts would be able to predict or estimate returns. To test for the returns necessary to price returns I perform an ordinary least squares regression for the dependent variable CAR (cumulative abnormal returns). Cumulative abnormal returns are the excess earnings above expected earnings. Using the market model in equation

four (4) I predicted that earnings management intensity would be negatively related to cumulative abnormal returns, that forecast error would be positively associated, and that the combination of the two would be negatively associated. TABLE 7 provides the regression results:

The results of the regression indicate that β_1, β_2, and β_3 are -1.25196(*t*-statistic=-2.67), 7.714506 (*t*-statistic=2.89) , and -9.44658 (*t*-statistic=-1.54) respectively. The t-statistics indicate that only β_1 and β_2 are statistically significant, or that $\beta_1 < 0$, $\beta_2 > 0$, and $\beta_3 = 0$. This suggest that earnings management intensity, β_1, is negatively associated with cumulative abnormal returns. In addition, the results suggest that Forecast Error, β_2, is positively associated with cumulative abnormal returns. Lastly, the two together do not account for any change in cumulative abnormal returns. The results make sense being that earnings management intensity is predicted to lessen actual earnings and forecast error will exacerbate the difference. The two variables are statistically not related as indicated by β_3.

5. CONCLUSIONS

This research examined the impact of earnings management intensity on the market pricing of earnings surprises. Using modified Jones (1991) model estimates of abnormal accruals I measure earnings management intensity as abnormal accruals scaled by net income. Intuitively, the higher values of this measure imply more intense the earnings management. This research adds to the growing body of evidence that earnings management is primarily found in the discretionary component of accruals. Studies of the persistence of earnings performance demonstrate investors systematically misprice earnings (Sloan 2001). The mispricing of earnings occurs because investors overestimate the persistence of the accrual component of earnings and underestimate the persistence of the operating cash flow component of earnings. By exploiting investors' inability to rationally distinguish between the accrual and operating cash flow components of earnings, abnormal stock returns can be earned.

Following Sloan (1996), Xie (2001) I use the different components of earnings to infer and test for the persistence of the different components of earnings. I find that earnings management intensity is negatively associated with the persistence of both earnings and operating cash flows. I also find that earnings management intensity is positively associated with forecast error. Similarly, I find that earnings management intensity is negatively associated with the direction of forecast error. Lastly, I find that earnings management intensity is negatively associated with cumulative abnormal returns and forecast error is positively associated with cumulative abnormal returns.

Further research may consider the effect of earnings management intensity on the persistence of accruals. Similar research on earnings management may look at the relationship between earnings management intensity and a firm's investment decisions. If earnings management is discretionary, then I would expect that firms that manage earnings will proactively cut investment in order to meet or beat

earnings expectations. Finally, research on a general theory for earnings management would be an aid to gauge statistical testing and predict or estimate more effectively when a firm is managing earnings.

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TABLE 1

Descriptive Statistics

Variables	N	Mean	Standard Deviation	75% Q3	Median	25%Q1
Total Assets	50,245	2761.42	1,489.690	964.8790	172.084	31.5140
CFO	50,245	-0.30319	25.26041	0.1313	0.06319	-0.0385
EBEI	50,245	-0.847259	46.7568096	-0.0736	0.02096	-0.0121
TotAcc	50,245	-0.544064	32.4865528	-0.0154	-0.06259	-0.1329
ABDACC	60,245	0.06546	4.37684	0.1087	0.00433	-0.0841
EMI	50,245	-0.016943	1.966766004	0.0147	0.00038	-0.0030

The following table shows the descriptive statistics from the research sample spanning ten years from 1996 to 2007. All variables are taken from Compustat Annual Industrial files or are derived from their accounting relationship with one another. The variable "Total Assets" (Data 6) is the sum of current and long-term assets. The variable "CFO" (Data 308/Data 6-lag 1), Cash Flows from Operations, is the cash generated from the normal operations of a firm. The earnings variable, "EBEI" (Data 18/ Data 6-lag 1), is Earnings before Extraordinary Items. EBEI is simply the net gain or loss from extraordinary items subtracted from net income. "TotAcc" (EBEI-CFO) or Total Accruals is the change in non-cash current assets, minus the change in current liabilities, minus depreciation expense for the year, and then all scaled by total assets. The variable "ABDACC" (TotAcc-PredAcc) is total accruals less normal accruals. In order to predict accruals, I use the Jones model (1991) as used in the earnings management literature. The Jones Model is estimated cross sectionally and adjusted at the 2 digit SIC level by industry. The difference or residuals between predicted and actual are referred to as abnormal accruals. Lastly, EMI (ABDACC/Data 18), or Earnings Management Intensity, is the proportion of abnormal accruals to net income for a firm. EMI is a proxy measure for firm level earnings management.

TABLE 2

Ordinary Least Square regression of the persistence of earnings (EBEI) subject to earnings management intensity. Heteroscedastic-robust standard errors (SE's)

Model: $EBEI_{i,t} = \beta_0 + \beta_1 * D + \beta_2 * EBEI_{t+1} + e_{i,t}$

Number of Observations 50,245

R-square 0.0035

Estimated Regression Coefficients

Parameter	Predict	Estimate	t Value
Intercept		0.147502	1.41
D	(-)	-1.13566	-2.23**
$EBEI_{t+1}$	(+)	0.11852	2.03**

This table shows the results from an ordinary least squares regression on the dependent variable $EBEI_{t+1}$. Current earnings before extraordinary items can be found on Compustat, Data 18, and is used to predict future earnings. The parameter "D" is a dummy variable equal to 1 if in the higher EMI bracket (an EMI ratio higher than at least 75% of the other firms) and equal to 0 otherwise. The other parameter, $EBEI_{t+1}$, is simply earnings less the net of extraordinary items one year ahead. $EBEI_{t+1}$ is considered to be statistically significant at the 5% level. T-statistics are calculated in accordance with MacKinlay (1997). Significance levels at the 10%, 5% and 1% levels are denoted by *, ** and *** respectively.

TABLE 3

Ordinary Least Square regression of the persistence of cash flows from operations (CFO) subject to earnings management intensity. Heteroscedastic-robust standard errors (SE's)

Model: $CFO_{i,t} = \beta_0 + \beta_1 * D + \beta_2 * CFO_{t+1} + \varepsilon_{i,t}$

Number of Observations 50,245

R-square 0.0002

Estimated Regression Coefficients

Parameter	Predict	Estimate	t Value
Intercept		0.028062	.65
D	(-)	-0.26954	-1.37
CFO_{t+1}	(+)	0.030369	1.93*

This table shows the results from an ordinary least squares regression on the dependent variable CFO_{t+1}. Current operating cash flows can be found on Compustat, Data 308, and is used to predict future operating cash flows. The parameter "D" is a dummy variable equal to 1 if in the higher EMI bracket (an EMI ratio higher than at least 75% of the other firms) and equal to 0 otherwise. EMI measures the earnings management intensity of a firm relative to other firms. CFO_{t+1}, is simply the year ahead predicted operating cash flows generated by a firm. CFO_{t+1} is considered to be statistically significant at the 10% level. T-statistics are calculated in accordance with MacKinlay (1997). Significance levels at the 10%, 5% and 1% levels are denoted by *, ** and *** respectively.

TABLE 4

Regression Analysis for Dependent Variable fcsterror

Model: $|FE| = \beta_0 + \beta_1 D$

Number of Observations 9254

R-square 0.01632

Estimated Regression Coefficients

Parameter	Predict	Estimate	t Value
Intercept		0.015253	7.74***
D	(+)	0.012113	4.19***

This table shows the results from an ordinary least squares regression on the dependent variable "fcsterror" or forecast error. Forecast error is defined as the difference between actual earnings per share and forecasted earnings all scaled by predicted earnings *t*-2(days). This regression is measuring the absolute difference. The parameter "D" is a dummy variable equal to 1 if in the higher EMI bracket (an EMI ratio higher than at least 75% of the other firms) and equal to 0 otherwise. EMI measures the earnings management intensity of a firm relative to other firms. T-statistics are calculated in accordance with MacKinlay (1997). Significance levels at the 10%, 5% and 1% levels are denoted by *, ** and *** respectively.

TABLE 5

Regression Analysis for Dependent Variable fcsterror

Model: $FE = \beta_0 + \beta_1 D$

Number of Observations 9254

R-square 0.008844

Estimated Regression Coefficients

Parameter	Predict	Estimate	t Value
Intercept		-0.00827	-4.09**
D	(-)	-0.01024	-3.43**

This table shows the results from an ordinary least squares regression on the dependent variable "fcsterror" or forecast error. Forecast error is defined as the difference between actual earnings per share and forecasted earnings all scaled by predicted earnings *t*-2(days). This regression is measuring the direction of the forecast error. The parameter "D" is a dummy variable equal to 1 if in the higher EMI bracket (an EMI ratio higher than at least 75% of the other firms) and equal to 0 otherwise. EMI measures the earnings management intensity of a firm relative to other firms. T-statistics are calculated in accordance with MacKinlay (1997). Significance levels at the 10%, 5% and 1% levels are denoted by *, ** and *** respectively.

TABLE 6

Regression Analysis for Dependent Variable CAR

Model: $CAR = \beta_0 + \beta_1 D + \beta_2 FE + \beta_3 FE * D + e$

Number of Observations 9254

R-square 0.006065

Estimated Regression Coefficients

Parameter	Predict	Estimate	t Value
Intercept		.845629	2.28**
D	(-)	-1.25196	-2.67
FE	(+)	7.714506	2.89***
$FE * D$	(-)	-9.44658	-1.54

This table shows the results of an ordinary least square regression on the dependent variable "CAR" which is cumulative abnormal returns. Cumulative abnormal returns are the sum of the difference between the expected returns and actual returns (earnings). The parameter "D" is a dummy variable equal to 1 if in the higher EMI bracket (an EMI ratio higher than at least 75% of the other firms) and equal to 0 otherwise. EMI measures the earnings management intensity of a firm relative to other firms. Forecast error, FE, is defined as the difference between actual earnings per share and forecasted earnings all scaled by predicted earnings *t*-2(days). Lastly, $FE * D$, is a joint variable combining the dual affect of Forecast Error and Earnings Management Intensity. T-statistics are calculated in accordance with MacKinlay (1997). Significance levels at the 10%, 5% and 1% levels are denoted by *, ** and *** respectively.