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Firm's Short-term Growth Rate and Earnings Management

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ABSTRACT

This paper uses performance-matched income increasing discretionary accruals as earnings management measurement and shows a positive association between earnings management and short-term growth rate. Further test suggests there is a positive relationship between earnings management and variance of the growth rate. Since valuation models usually use the growth rate that is derived from analysts' forecast and existing literature suggests that analysts do not fully consider the impact of earnings management indication on the future earnings and growth rate, findings of this paper provide new insights into effect of earnings management on the growth when OJ formula is used.

KEYWORDS: Earnings growth rate, discretionary accruals, earnings management, firm valuation

INTRODUCTION

This paper explores the further understanding of firms' short-term earnings growth rate (as defined by Ohlson and Juettner-Nauroth (2005)). Derived from modern finance valuation theory (PVED) and assuming clean surplus relation, Ohlson and Juettner-Nauroth (2005) states that firm value is determined by next year's expected earnings level (X1), expected short-term earnings growth (g_i) for following periods and long-term growth (γ) (assuming the periods after which the firm reach a steady growth status). In the financial market, analysts usually forecast firms' next period earnings and following period short-term earnings growth, and then based on these forecasted numbers, get the value of the firm and give markets stock pick recommendations. Theoretically, in order to get a proper valuation of a firm's intrinsic value, we need to get a correct intrinsic short-term growth rate(s) to use in the formula. In reality, it is impossible for us to know this intrinsic economic growth rate(s). Rather, in practice, we usually use analysts' forecasted number instead (Easton (2004)). When analysts are capable enough to predict growth rate numbers that are close enough to the intrinsic ones, there is no lost of accuracy in determining the firm's market value by using the model. But when there are systematic errors in over or under prediction of the growth rate when analysts use available information, the predicted value of the firm and inferences from the model will be different from the correct one.

In order to analyze the connection between expected growth rate from analysts' forecasts and intrinsic growth rate from firms' economic performance, first step is to understand several possible factors that may cause the information about the firm's earnings and growth to be distorted. One of the most important ways for the firm to communicate its performance information with the investing public is through accounting reports by using accounting numbers such as earnings, earnings growth, sales, etc. Analysts use information from the reported accounting numbers and other non-financial information to analyze the firm and give their predicted numbers. Since reported numbers have information content for analysts, comparing

reported numbers to the intrinsic ones can serve as the link between intrinsic and predicted numbers. First factor that makes reported numbers different from intrinsic ones are errors in recording or reporting accounting numbers and may or may not detected by auditors. Errors not intentionally and undetected may cause the reported numbers different from intrinsic ones and cause the analysts' inference from these incorrect numbers leading to inaccurate predicted growth rate. But since these errors are random, they are not expected to cause systematic errors to the predicted numbers. Second factor that may cause the predicted numbers different from intrinsic ones can be random or non-random errors arise from analysts' estimation, which may be systematic as evidence shows as analysts' optimism. Third factor that makes reported numbers different from intrinsic ones is accounting conservatism. Accounting conservatism can be either defined as in Penman and Zhang (2002) as unconditional conservatism: biased application of historical cost accounting that leads to the value of firms' assets on book lower than market value, or defined as conditional conservatism: asymmetric treatment of good news versus bad news (Basu (1997)). Systematic accounting conservatism will lead to a distorted earnings number and growth rate as reported in GAAP standards comparing to its intrinsic ones. For examples, expensing R&D in current period and recognizing benefits for the later periods will reduce the current reported earnings numbers and increase the future numbers relative to the intrinsic earnings. If analysts cannot take the effect of accounting conservatism on reported numbers into consideration when making prediction based on these reported numbers, then expected numbers would be inevitably be distorted. Last but not least, the widely documented earnings management phenomena can also cause reported numbers be distorted from intrinsic ones and it is the issue this paper intends to address.

The direct effect of earnings management is to cause the reported earnings numbers and earnings growth rate be different from intrinsic ones. But it is not necessary for earnings management to also cause the predicted numbers to be distorted from intrinsic ones. When using the information implied in the reported earnings for prediction, if analysts are capable of anticipating earnings management and their aim is to produce unmanaged numbers, the expected numbers are not distorted and evaluation process is fine. On the other side, if analysts are either incapable of identifying managed part of earnings or they want to minimize the forecast error considering their prediction accuracy and disregard the effect of earnings management, then expected numbers may be distorted from the intrinsic ones through the connection of reported numbers in the middle. Existing literature shows that analysts do not fully incorporate the effect of earnings management in their forecasts and do not fully account for the implications of these forecasts in making their stock recommendations. For example, by using eventual restatement, Ettredge, Shane and Smith (1995) find that analysts only partially discount overstated earnings in revising their earnings expectations. Abarbanell and lehavy (2003a) find that firms with buy (sell) stock recommendations are more (less) engaged in earnings management yet this tendency is not fully incorporated in analysts' earnings forecasts. Hanna and Orpurt (2006) document an association between special items reported on the income statement and analysts' forecast errors, which is consistent with analysts being either unable or unwilling to adjust their forecasts for earning management. A working paper by Givoly, Hayn and Yoder examines whether analysts' earnings forecasts incorporate or exclude the managed earnings component by using restatement group and earnings managed up group. Their finding is that the managed earnings component appears to influence analysts' subsequent earnings forecasts and lead to upward forecast revisions. These evidences suggest that reported distorted numbers by earnings management have an effect on expected numbers and thus on the firms' evaluation. Since the intrinsic earnings growth rate is not available for direct investigation of the distortion effect of earnings management on the growth rate, we have to find an alternative way to study this issue. Investigation of the relationship between reported

short-term growth rate and earnings management can serve this purpose since earnings management can be used as a proxy of the degree of distortion effect that is supposed to be. If we find a positive relationship between earnings management and short-term growth rate, we can lead to conclusion that using expected growth rate that is inferred from reported ones will be biased since analysts do not fully compound the effect of earnings management in their projection.

On the one hand, up-ward earnings management directly distorts a firm's reported earnings number and its short-term growth rate, resulting in a distorted and different earnings path from intrinsic one. Up-ward earnings management reports higher growth rate than intrinsic one. On the other hand, there are limitations on the side of GAAP and accounting practices to prohibit manager from optimistically biasing earnings forever. In fact the bias has to be reversed after several periods or even sooner (Barton and Simko (2002)). These two factors together lead to a positive association between earning management and standard deviation of short-term growth rate.

Using a sample of firm-annual observations from 1987 to 2006 from Compustat and IBES analysts forecasts data, this study performs a test on the difference of the firm specific short-term growth rate of those observations that MBE by one-penny verse those observations that Missing expectations by less than one-penny. The results of tests show a weak difference, that is, short-term growth rate of MBE one-penny group is weakly bigger than those of Missing one-penny group.

A second test is done by using samples from same period from Compustat and income increasing performance-matched discretionary accruals as proxy of earnings management. Further, I examine the association between the standard deviation of short-term growth rate of firm's accounting earnings and mean (median) of the income increasing performance-matched discretionary accruals. I find that there are positive correlation between earnings management and short-term growth rate, and between earnings management and the standard deviation of growth rate.

This paper contributes to the literature in several aspects. Firm's short-term growth rate is one of the crucial parts in the fundamental accounting valuation models. It is important to understand possible factors that will affect the short-term growth rate and take them into consideration when forecast earnings or earnings growth rates are used for valuation purpose. Since analysts' forecasts have been shown by prior literature not fully considering the impact of earnings management on the effect of future earnings number and growth rate, analyzing the relationship between earnings management and firms short-term growth rate helps understanding the implication of some factors we needs to consider when using OJ model.

Secondly, this study enhances our understanding of effects of firm's earnings management on distribution of the firm's short-term growth rate. Not only earnings management can distort the firm's earnings path but also its standard deviation. It may be considered as a negative effect of earnings management brings to the firm value.

The remainder of this paper is organized as follows: First, I provide hypotheses development and reviews prior research related to this study. Next section describes research design and empirical proxies. Then I introduce the sample and provide descriptive statistics. The results of testing two hypotheses are presented after that. The last Section provides a brief summary and conclusions.

HYPOTHESES DEVELOPMENT AND PRIOR RESEARCH

Hypotheses development

Under the condition that analysts' forecasts do not fully consider the implication of earnings management effect on the earning and earnings growth, and realized earnings and earnings growth rate have information intent for the forecast purposes, I propose that up-ward earnings management has a positive correlation with the firms short-term growth rate. In order to test if there is a positive relationship between earnings management and firm's reported short-term growth rate, a possible way is to pick a sample with firm observations that reported earnings number is most likely to be managed up and compare these growth rate to those observations that is not likely to be managed up. Existing literature shows meeting or beating expectation by one-penny group (MBE one-penny group) can be a potential candidate for such purpose. Degeorge et al. (1999) exams the distribution of reported earnings numbers and proposes three thresholds for earnings management to achieve. Their paper shows the existence of kinks around these three thresholds and states it is the proof of earnings management. Specifically one of the thresholds is to meet analysts' consensus forecast numbers. They find out that there is a kink just before zero forecast error and an extra pileup of observations at the zero point. Another study about the MBE one-penny group is Burgstahler and Eames (2003) and they provide evidence that both cash flow and discretionary accruals components of earnings are managed upward while forecasts are managed downward for MBE one-penny group. These researches provide justification for focusing on one particular group as proxy for earnings management—meeting or just beating analysts' forecasts by small amount. If earnings management in order to meet or beat expectations leads to distortion of the short-term growth rate, as for MBE one-penny group, we will expect the mean of the short-term growth rate for these firm specific observations be greater than the mean of the short-term growth rate for these same firm's observations when missing expectations by less than one penny.

H1: there is a significant difference in the mean short-term growth rate between these observations when MBE by one-penny and those when missing expectation by one penny for the same firm.

Another way to detect earnings management is by using discretionary accruals. Various accruals models are used in literature as a measurement of the degree of the earnings management. For example, Dechow et al. (1995) evaluates several accrual-based models for detecting earnings management, namely, the Healy Model, the Jones Model, the Modified Jones Model and the Industry Model, and finds out all models are well specified but with lower power to detect earnings management of economically plausible magnitudes. Dechow et al. (2003) further provides three additional modified models based on Jones Model to estimate the discretionary accruals. But discretionary accrual from these models may not be the correct measurement of the level of earnings management due to the mechanical relationship between performances and estimated discretionary accruals. In order to use discretionary accruals as the measurement to test the effect of earnings management on the short-term growth rate, we must separate the effect of firm's performance on the discretionary accruals and make these accruals a real measurement for earnings management. Kothari et al. (2005) uses a performance matched discretionary accruals approach to adjust for the effect of firm's performance on the calculated discretionary accruals from modified Jones model. By matching firms based on ROA, performance-matched discretionary accruals are obtained as the difference of discretionary accruals calculated from modified Jones model between matched pairs. The matching process controls the effect of mechanic relationship between performance

and discretionary accruals when discretionary accruals are calculated from those accrual models and can serve as a more accurate measurement for earnings management. In order to test the relationship between realized short-term growth rate and earnings management in this paper, second approach is done by using performance matched discretionary accruals as proxy of earnings management and the correlation between performance matched discretionary accruals and short-term growth rate is investigated. Additionally, following Ashbaugh et al. (2003), I use income-increasing discretionary accruals as proxy of the degree of earnings management since this paper specifically exams the effect of managing earnings up on the firm's short-term growth rate.

H2: there is a positive correlation between performance-matched income increasing discretionary accruals and firm's reported short-term growth rate.

Tests above concern with the effect of earnings management on the level of reported or expected short-term growth rate. Yet another effect of earnings management on reported earnings that can be expected is on the distribution of growth rate. From earnings management hypothesis, a bad firm can manage earnings to mimic good firms as if it is in same line with good firms with respect to current earnings level expectation. But GAAP and accounting practices prohibit manager from optimistically biasing earnings forever. In fact the bias has to be reversed after several periods or even sooner (Barton and Simko (2002)). The effect of this reversion implies a comparably inconstant g_i (low persistence in short term earnings growth) for firms managing earnings for short periods comparing to those by genuine earnings performance. As a result, earnings management implies a different earnings path from the assumed original ones.

H3: higher degree of earnings management as measured by performance-matched discretionary accruals leads to a lower persistence in reported short-term earnings growth rate as measured by standard deviation of g.

Prior research about earnings management

Existing earnings management literature states that firms either manage reported earnings numbers or dampen earnings expectations prior to the earnings announcement in order to meet or beat current analysts' earnings expectations. One school of research in this field focuses on methods of detecting earnings management by using alternative accrual-based models or by examining the distribution of reported earnings numbers and studying the explanation of documented "kink". For example, Dechow et al. (1995) evaluates several accrual-based models for detecting earnings management, namely, the Healy Model, the Jones Model, the Modified Jones Model and the Industry Model, and finds out all models are well specified but with lower power to detect earnings management of economically plausible magnitudes. Dechow et al. (2003) further provides three additional modified models based on Jones Model to estimate the discretionary accruals. Degeorge et al. (1999) exams the distribution of reported earnings numbers and proposes three thresholds for earnings management to achieve. Their paper shows the existence of kinks around these three thresholds and states it is the proof of earnings management. Specifically one of the thresholds is to meet analysts' consensus forecast numbers. They find out that there is a kink just before zero forecast error and an extra pileup of observations at the zero point (MBE one-penny group). Another recent study about the MBE one-penny group is Burgstahler and Eames (2006) and they provide evidence that both cash flow and discretionary accruals components of earnings are managed upward while forecasts are managed downward for MBE one-penny group. These researches provide justification for

focusing on one particular group as proxy for earnings management—meeting or just beating analysts' forecasts. Dechow et al. (2003) extends the literature by trying to explain the kink due to boosting of discretionary accruals but with no confirmative answer. Another line of research exams the effect of meeting or beating earnings expectations (or other thresholds) on the stock price and tries to differentiate the group of firms that meet or beat analysts' forecast (MBE) by genuine earnings numbers from other MBE firms by earnings management method. This line of research finds out that there is a market premium awarded to MBE firms upon the meet or beat earnings expectation announcement after controlling the information content of announced earning number or analyst's forecast error (see Lopez and Rees (2001), Kasznik and Mcnichols (2002), and Bartov et al. (2001)). In addition, these researches find out the market seems able to distinguish to a certain degree the firms achieve MBE through genuine earnings performance from those by earnings management.

RESEARCH DESIGN AND EMPIRICAL PROXIES

First part of the empirical test is on the MBE by one-penny VS. Missing by one-penny observations for the same firm. After observations that are MBE by one-penny and Missing by one-penny for a firm are identified, the mean of short-term growth rate of these observations that MBE one-penny and those missing one-penny are separately calculated by using the definition following Ohlson and Juettner-Nauroth (2005). The equation for g calculation is: $g = (X_t + d_{t-1} * r) / X_{t-1} - 1$, where X_t is income before extraordinary items for current period (Compustat annual data123), d_{t-1} is the cash dividends last period (Compustat data127), X_{t-1} is income before extraordinary items for last period and r is the risk free rate. For all the firms that both have MBE by one-penny observations and Missing by one-penny observations, an empirical test is done to see whether there is a significant larger growth rate for MBE one-penny than for Missing one-penny observations.

Second part of the empirical test is done by using the income increasing and performance-matched discretionary accruals as the proxies of earnings management. To establish a relationship between earnings management and its effect on the firm's short-term growth rate and the standard deviation of firm's short-term earnings growth rate, I use the income increasing and performance matched discretionary accruals to serve as an indicator of earnings management (Dechow et al. (1995), Dechow et al. (2003), and Kothari et al. (2004), etc). First, discretionary accruals are calculated following Dechow et al. (2003), by using annually observations and by regressions for each year and two-digit SIC group. Following Ashbaugh et al. (2003), I use specific income-increasing discretionary accruals as proxy of the degree of earnings management for following reasons: first, firm specific discretionary accruals are calculated from industry regression and it is the value of residuals from regression. By construction, the mean of the residuals (discretionary accruals) are zero, so using mean of discretionary accruals will not be a good measurement for the degree of earnings management since it mixes the effect of negative discretionary accruals. Second, assuming accrual models are well specified, which numerous researches already testified, income increasing discretionary accruals is the direct effect of trying to management accrual earnings up and naturally serves as the proxy of earnings management. Then I try to match the entire firm observations based on ROA for each year and two-digit SIC group following Kothari et al. (2004). Firms' performance-matched discretionary accruals are calculated as the difference of the matched firms' income increasing discretionary accruals and observations with positive value are kept. On the mean level test, variance of the firms' short-term growth rate is calculated by using the firms' all observations since it measures the distribution of the entire growth rate. I expect there is a positive correlation between income increasing performance-matched

discretionary accruals and firm's short-term growth rate. While the mean (median) of the discretionary accruals is calculated by using those observations with income increasing performance-matched discretionary accruals available, I expect there is a positive relationship between average firm-level income increasing performance-matched discretionary accruals and firm's standard deviation of short-term earnings growth (g_i).

I use modified cross-sectional Jones model (Defond and Subramanyam (1998)) to calculate the discretionary accruals. Modified Jones model is specified as below: (estimated for each two-digit SIC-year grouping)

$$\text{Total Accruals} = \alpha + \beta_1*(\Delta\text{Sales}-\Delta\text{Rec}) + \beta_2*\text{PPE} + \varepsilon$$

Residuals from the above estimated equations are discretionary accruals. Values of those discretionary accruals that are greater than zero are income increasing discretionary accruals. Matched based on ROA, difference of matched pairs income increasing discretionary accruals serves as proxy of earnings management.

All empirical tests are based on the entire samples from Compustat data from 1987 to 2006. For the first part of test, I perform the univariate test for the difference of the growth rates of specific firm between MBE one-penny and Missing one-penny observations to see if one is significant bigger than the other. As for the second test, besides the univariate test, I perform a multivariate level test by using regression analysis by regressing standard deviation of short-term growth rate on the mean income increasing performance matched discretionary accruals (standard deviation of all firm specific discretionary accruals). To control the size effect, I put mean of firm's total assets (natural log transformed) as independent control variable in the equation. Also prior literature and my test shows there is a significant correlation between growth rate and the standard deviation of the growth rate, so I put the mean of the growth rate as a control variable in my equation. I expect in the regression analysis that the coefficient for the mean of income increasing performance-matched discretionary accruals is positive and significant. Regression models are specified as below:

$$\text{sttd}_{g_i} = \beta_0 + \beta_1* \text{mda}_i + \beta_2 *\text{mg}_i + \beta 4* \text{mta}_i + \varepsilon_I$$

Where:

sttd_{g_i} = firm i's standard deviation of short-term earnings growth rate
mda_i = firm i's mean(or median) income increasing PM discretionary accruals
mg_i = firm i's mean(or median) short-term earnings growth rate
mta_i = firm i's mean(or median) total assets

SAMPLE AND DESCRIPTIVE STATISTICS

I gather data for calculation of the discretionary accruals and growth rate from Compustat database between 1987 and 2006. Firm observations with fiscal year ended December are chosen. Risk free rate are one-year bond returns from US Treasury and Inflation file from CRSP database. Firms with SICs between 6000 and 6999 are excluded. To control the outlier issue when perform tests, firm-annual with total accruals or any of the independent variables in the extreme 1% tails of their respective distributions are deleted when calculate firms' discretionary accruals, and same control applies to the firms' short-term growth rate. Firm observations with zero or negative book value are deleted from sample.

For the first part of test concerning MBE one-penny VS Missing one-penny, growth rates are calculated from Compustat data according to the formula. As for the analysts' forecast value, following previous literature, I limit observations to those forecasted in 30 days before the releasing of the real earnings number and define the mean earning forecast number for each year as the mean of consensus forecasting numbers. Firm observations of meeting or beating by one-penny sample group are defined as: $0<=reported quarterly earnings – mean earnings forecast < $0.015. Firm observations of missing by one-penny group are defined as: $-0.015<reported quarterly earnings – mean earnings forecast < $0. There are 89,723 observations with growth rate that are not missing from Compustat and 32,262 observations that are either MBE one-penny or Missing one-penny from IBES database. After merging two database, 5,482 observations that are either MBE one-penny or Missing one-penny and also have short-term growth rate available are left for final test. After taking the mean (or median) of these firm observations' growth rate according to their firm specific growth rate, there are 3,298 observations. Since the final test compares the same firm's MBE one-penny observations' mean (median) growth rate to that of Missing One-penny, the requirement of availability of both MBE one-penny observation and Missing one-penny observation for a firm further reduces the total observation to 710 firms. After control outliers, part one test has a final sample size of 694 firms. Table 1 gives descriptive statistics for the part one test about MBE one-penny VS. Missing one-penny.

Table 1: Descriptive statistics of One-penny group

Number of total observations (firm years)			2,805	Number of total observations (firms)			694
Variables	Mean	Std. Dev	Min	25%	Median	75%	Max
Income before extraordinary items(MM$)	416.21	1274.55	-17625.00	17.47	83.31	323.08	17853.00
Total assets(MM$)	14259.75	62301.73	15.57	442.62	1894.58	8236.06	1484101.00
Cash dividends(MM$)	168.35	540.50	0.00	0.00	0.00	101.26	8375.00
Growth rate (%)	0.10	1.93	-15.63	-0.13	0.15	0.38	21.04

Second empirical test is done by using the income increasing performance matched discretionary accruals. The modified Jones model is estimated for each two-digit SIC-year grouping (SICs between 6000 and 6999 are excluded and at least 10 annual observations are required for each SIC-year grouping). The total number of final observations for the discretionary accruals calculation is 45,824 firm years with 7,412 firms' data for modified Jones model. As for the distribution of the same SIC two-digit group, observations are not equally distributed and the numbers of firm-years range from 10 to 741 with lower quartile of 33, median of 66 and upper quartile of 129. Table 2 reports the descriptive statistic for the discretionary accruals calculation for the entire samples from different discretionary accruals models.

Table 2: Descriptive statistics of accrual model

Number of total observations (firm years)			45,824	Number of total observations (firms)			7,412
Variables	Mean	Std. Dev	Min	25%	Median	75%	Max
Operating cash flow(MM$)	161.55	624.02	-25658.00	0.428	12.313	86.025	25138.00
Income before extraordinary items(MM$)	69.529	368.41	-13355.95	-1.402	4.686	38.126	12436.05
Sales(MM$)	1227.46	3662.01	-6.677	37.296	172.05	782.55	152172.00
Accounts receivable(MM$)	296.32	2436.08	0	5.617	27.936	130.49	287791.00
PPE(MM$)	1188.40	4105.72	0.007	13.848	74.538	487.324	102803.30
Total assets(MM$)	2028.32	9897.96	0.421	49.117	207.186	1021.87	853370.00
Cash dividends(MM$)	31.824	142.753	0.000	-5.308	0.000	6.49	4742.10
Growth rate (%)*	-0.351	27.984	-2241.00	-0.702	0.026	0.449	1600.67
No. of observations in Same SIC two-digit group	113	143	10	33	66	129	741

Descriptive statistics for Growth rate is for 37,961 observations that used to calculate the discretionary accruals by modified Jones model. The outlier treatment is not applied for these two variables at this point. Instead, 1% up-tail and lower-tail deletion is done when calculate the mean discretionary accruals, mean growth rate and mean market to book rations. After delete the outliers, for growth rate, mean is -0.12, median is 0.028, standard deviation is 2.59, lower quartile is -0.67, upper quartile is 0.43, minimum is -19.57 and maximum is 18.95; for mtb, mean is 2.77, median is 1.89, standard deviation is 2.75, lower quartile is 1.18, upper quartile is 3.26, minimum is 0.24 and maximum is 21.51.

Table 3 reports the mean coefficient estimates for the parameters for modified Jones discretionary accruals models. The final column reports the mean explanatory power (adjusted R^2) for the model. Comparing to Dechow et al. (2003), the result of mean coefficient estimates from modified Jones model has the same sign and are all significant.

Table 3: Discretionary Accruals using modified Jones accrual models (1987-2006): Mean coefficient estimation for accrual models based two-digit Sic-year regression (total 349 regressions for Modified model):

	Independent variables		Mean Adj. R^2
Model	Δsales-Δrec	PPE	
Modified	0.017 (3.43)	-0.046 (-13.58)	0.080

Modified Jones model: (estimated for each two-digit SIC-year grouping)

Total Accruals= $\alpha + \beta_1*(\Delta Sales-\Delta Rec) + \beta_2*PPE + \varepsilon$

After getting the discretionary accruals for firm observations, observations with positive discretionary accruals are kept as income increasing discretionary accruals. There are total 24,935 observations with income increasing discretionary accruals unevenly distributed in 21

SIC codes. Then match-pair design is performed based on ROA per SIC code and year and performance-matched income increasing discretionary accruals are defined as the difference between the pair's income increasing discretionary accruals. After controlling the outlier issue, there are 12,046 observations with performance-matched income increasing discretionary accruals.

Part three of the empirical test tests the relationship between mean level of discretionary accruals and standard deviation of the growth rate. Mean (median) level of discretionary accruals are calculated as the mean or median of specific firm's performance-matched income-increasing discretionary accruals while the standard deviation of the growth rate is calculated as the firm specific entire period standard deviation of the growth rate. The above 12,046 firm observations leads to 2,616 observations for firms' mean (median) level (as indicated by mean or median of income increasing performance-matched discretionary accruals, and standard deviation of the growth rate of short term earnings, and as a requirement for calculating the standard deviation of short-term growth rate, I require at least 4 observations per firm are available from data.)

EMPIRICAL RESULTS

Test of difference between mean of growth rate as for MBE one-penny vs. Missing one-penny observations (same firm)

From the first hypothesis, MBE one-penny observations have a higher possibility to management earnings up comparing to Missing one-penny observations for the same firm. At mean (median) level, the growth rate for those observations of MBE one-penny group is expected to be greater than that for those of Missing one-penny group. I take the difference of two mean (median) growth rate for the same firm and perform a univariate test to see if the mean value is different from zero. Table 4 presents the results of the test. The mean (median) of the difference of the growth rate (across firms) is positive but t-stat is not significant at 10% level. But since the test is comparing paired numbers from same firm, the non-parametric sign test is more appropriate here. The P-value of 0.0528 from sign test shows that mean (median) of growth rate for MBE one-penny observations is greater than Missing one-penny observations for same company.

Table 4: tests for MBE one-penny Vs. Missing one-penny observations growth rate (694 samples)

	Mean	Student t	P-value of student t	Sign M	P-value of sign M
Mean level	0.060	0.775	0.439	26	0.053
Median level	0.032	0.436	0.663	26	0.053

Test of correlation between short-term growth rate and discretionary accruals

Using income-increasing performance-matched discretionary accruals as the proxy of degree of earnings management, a univariate level correlation test is performed for discretionary accruals and growth rate. For the entire sample, there is no significant correlation found. When I divide the whole sample into 10 tiers according to value of growth rate equally, I find a significant positive correlation from 60%-70%, 70%-80%, 80%-90%, a significant and negative correlation from 20%-30%, 30-40%, while the first two group and middle two and upper tier is not significant. This result is consistent to the earnings management hypothesis and prior literature.

For those firms performed really bad or good, there is no statistically significant earnings management. When firms' growth rate is above zero, there is a positive correlation between earnings management and short-term growth rate. Comparing to the non-performance matched but income increasing discretionary accruals, the difference is the insignificance of upper tier correlation, showing that performance-matched income increasing accruals do controls the mechanical correlation between firms' performance and discretionary accruals when using discretionary accruals models.

Table 5a: Growth rate and performance matched Income Increasing Discretionary Accruals correlations matrix

	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%
Mean of g	-3.6234	-1.1709	-0.6627	-0.3114	-0.0612	0.0866	0.2204	0.4252	0.8725	4.0651
Mean of DA	0.0564	0.0572	0.0521	0.0492	0.0404	0.0352	0.0403	0.0481	0.0529	0.0574
Correlation between g and DA	0.0166 (0.5652)	0.0146 (0.6141)	-0.0816 (0.0047)	-0.0770 (0.0077)	-0.0409 (0.1569)	-0.0293 (0.3098)	0.0994 (0.0006)	0.0932 (0.0012)	0.0478 (0.0976)	0.0302 (0.2870)

Total sample size: 12046 observations

Table 5b: Growth rate and not performance matched Income Increasing Discretionary Accruals correlations matrix

	0-10%	10-20%	20-30%	30-40%	40-50%	50-60%	60-70%	70-80%	80-90%	90-100%
Mean of g	-3.5301	-1.0839	-0.5645	-0.2328	-0.0229	0.1049	0.2296	0.4272	0.8707	3.7945
Mean of DA	0.0630	0.0663	0.0573	0.0511	0.0430	0.0399	0.0454	0.0527	0.0605	0.0651
Correlation between g and DA	0.0083 (0.6852)	0.0416 (0.0415)	-0.0270 (0.1865)	-0.0668 (0.0011)	-0.0135 (0.5080)	-0.0086 (0.6744)	0.0481 (0.0184)	0.0647 (0.0015)	0.0413 (0.0430)	0.0465 (0.0241)

Total sample size: 23948 observations

<u>Univariate and regression analyses of correlation between standard deviation of earnings growth rate and mean discretionary accruals (entire samples)</u>

Table 6 presents the univariate correlation results for the discretionary accruals and distribution of growth rate on mean level. We can see that there is a positive correlation between mean (median) of discretionary accruals and firm's standard deviation of the growth rate. The correlation between mean (median) discretionary accruals and standard deviation of the g is 16.25% (13.90%) and is significant at 1% level. The result of this correlation suggests earnings management is positively related to the standard deviation of the growth rate.

Table 6: Correlation Matrix between standard deviation of the firms' short-term growth rate and mean (median) performance-matched income increasing discretionary accruals

	stdd	meanaba	medianaba
stdd	1.000	0.1625 <0.0001	0.139 <0.0001
meanaba		1.000	0.946 <0.0001
medianaba			1.000

I also perform regression analyses of the correlation between these variables on mean level. To control the size effect, I include firms' total asset (natural log transformed) in the regression. Panel A and Panel B is the regression results both for mean or median level of Performance-matched income-increasing discretionary accruals, and the standard deviation of the growth rate. The coefficient of the mean and median level of discretionary accruals is positive and significant at 1% level, which indicates the positive relationship between earnings management and standard deviation of the g. I include in the regression mean of g and mean of total assets as control variables. The negative and significant coefficient for the mean total assets indicates small firms usually have lower persistence in the short-term growth rate.

Table 7: regressions of mean level firm performance-matched income increasing discretionary accruals and standard deviation of growth rate:

Panel A:	Model (firm mean level): $sttd_{g_i} = \beta_0 + \beta_1 * mda_i + \beta_2 * mg_i + \beta_3 * mta_i + \varepsilon_i$			
Intercept	mda	mg	mta	Adj. R^2
1.831 (16.85)***	4.549 (4.92)***	0.072 (3.60)***	-0.086 (-6.06)***	0.04
Panel B:	Model (firm median level): $sttd_{g_i} = \beta_0 + \beta_1 * mda_i + \beta_2 * mg_i + \beta 4 * mta_i + \varepsilon_i$			
Intercept	mda	mg	mta	Adj. R^2
1.939 (18.90)***	3.431 (3.90)***	0.027 (1.16)	-0.095 (-6.75)***	0.04

SUMMY AND CONCLUSIONS

This paper examines the relationship between earnings management and short-term growth rate and tries to explore factors that affect the distribution of short-term growth rate as defined in the valuation model of Ohlson and Juettner-Nauroth (2005). Firm's short-term earnings growth rate is critical in evaluating firm's market value and may be affected by potential earnings management problem. By using MBE one-penny Vs. Missing one-penny observations and performance-matched income-increasing discretionary accruals as proxy for earnings management, I test the hypothesis that earnings management intend to increase reported earnings leads to a higher reported short-term growth rate. Further, I test the hypothesis that higher earnings management leads to a lower persistence in the short-term growth rate. Since prior literature shows that analysts' forecast do not fully consider the impact of earnings management to the future predicted numbers, and reported numbers have an information content for the analysts' prediction, an examination of factors that may affect the distribution of short-term growth rate points out the potential problem when using analysts' forecast as proxy of future expected short-term growth rate when using OJ model.

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