

**EARNINGS MANAGEMENT AND POST-IPO RETURN PERFORMANCE IN THE
KOSDAQ STOCK MARKET**

By

Steven Namyoun Rhy

THESIS

Submitted to

KDI School of Public Policy and Management

in partial fulfillment of the requirements

for the degree of

MASTER OF PUBLIC POLICY

2012

**EARNINGS MANAGEMENT AND POST-IPO RETURN PERFORMANCE IN THE
KOSDAQ STOCK MARKET**

By

Steven Namyoun Rhy

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of

MASTER OF PUBLIC POLICY

2012

Professor Joongho HAN

**EARNINGS MANAGEMENT AND POST-IPO RETURN PERFORMANCE IN THE
KOSDAQ STOCK MARKET**

By

Steven Namyoun Rhy

THESIS

Submitted to
KDI School of Public Policy and Management
in partial fulfillment of the requirements
for the degree of


MASTER OF PUBLIC POLICY

Committee in charge:

Professor Joongho HAN, Supervisor



Professor Jinsoo LEE



Professor Tae Hee CHOI



Approval as of December, 2012

ABSTRACT

EARNINGS MANAGEMENT AND POST-IPO RETURN PERFORMANCE IN THE KOSDAQ STOCK MARKET

By

Steven Rhy

This paper examines the relationship between earnings management (specifically, discretionary accruals) before the firm's initial public offering (IPO) and the stock return performance after the issue. By replicating Ball and Shivakumar's (2008) non-linear modified-Jones model, we provide evidence that discretionary accruals in years before the company is listed are two or three times higher compared to the estimates post-IPO. We also discover that companies with higher discretionary accruals preceding the issue suffer worse stock return performances than firms who report more conservative accruals in the 36 months after the IPO. We support these other findings by running regressions to verify the robustness of our results and find that the magnitude of pre-IPO discretionary accruals are the only consistently statistically significant variable in determining the performance of stock returns after the IPO.

TABLE OF CONTENTS

1. Introduction	1
2. Prior Literature & Hypothesis Development	7
3. Research Design	12
3.1. Korean Capital Markets	12
3.2. Discretionary Accrual Model	13
3.3. Stock Return Performance Measures	15
3.3.1. Regression Analysis	16
4. Empirical Results	18
4.1. Discretionary Accrual Results	18
4.2. Stock Return Performance	19
4.2.1. Regression Results	22
5. Conclusion	25
Appendix	28
References	33

LIST OF TABLES

- Table 1.** Mean and median discretionary accruals (DAC) by event years ...**(page 28)**
- Table 2.** Event-time cross-sectional regressions using total accruals(TAC) as the proxy for earning management (Dep. var.: 36 month cumulative buy-and-hold return) ...**(page 28)**
- Table 3.** Event-time cross-sectional regression using discretionary total accruals as the proxy for earning management (Dep. var.: 36 month cumulative buy-and-hold return) ...**(page 29)**
- Table 4.** Robustness: Event-time median regression(Dep. var.: 36 month cumulative buy-and-hold return) ...**(page 30)**
- Table 5.** Robustness: Quantile regression
(Dep. var.: 36 month cumulative buy-and-hold return)**(page 31)**

LIST OF FIGURES

- Figure 1.** Mean and median cumulative buy-and-hold return net of KOSDAQ composite index return by event month, in percent(page 21)
- Figure 2.** Mean cumulative buy and hold return net of KOSDAQ composite index return by DAC terciles by event month, in percent(page 21)
- Figure 3.** Median cumulative buy and hold return net of KOSDAQ composite index return by DAC terciles by event month, in percent(page 22)

1. INTRODUCTION

Initiated by Ritter (1991), extensive studies in finance have offered empirical evidence of long-run Initial Public Offering (IPO) underperformance¹. Early literature that attempted to rationalize these results focused on asymmetric information, which implies that “managers take advantage of asymmetric information by issuing stock when it is overvalued, leading to negative abnormal returns as the market corrects the mispricing” (Cotten 2008 p.87). Teoh *et al.* (1998a) further try to justify the cause of negative returns by suggesting that it is the purposeful management of earnings that provokes mispricing around the IPO process. So what began as an insight into underperforming emergent growth firms (Ritter 1991) has evolved into the probing of companies (and overall financial markets) to examine the *raison d'être* behind companies and industries attempts to influence or manipulate their financial well-being.

This paper attempts to replicate the proposal by Teoh *et al.* (1998b) [hereafter TWW] that earnings management during the IPO induces short and long term stock underperformance in the Korean stock market. Beginning with Healy (1985), this appraisal of whether earnings management transpires has been usually gauged through the use of accrual accounting adjustments. However, while Healy used total accruals to estimate earnings management, the initial technique of attempting to separate the “managed” discretionary accruals and the “unmanaged” non-discretionary accruals was accomplished through the Jones model (Jones 1991); yet, it is the modified Jones-model (Dechow *et al.* 1995)², that has been the most commonly used method of determining whether or not the

¹ For example, Ritter (1991), Loughran and Ritter (1995), Fama (1998), Teoh *et al.* (1998a, 1998b), and Teoh, Wong, and Rao (1998) all find abnormal underperformance of stock returns after the IPO issue

² When changes in sales are modified for the changes in receivables, the original Jones model becomes the modified-Jones model

“managed” discretionary accruals have been manipulated¹. Still, the use of the modified-Jones model, and more generally, the notion that systematic earnings management occurs during the IPO process, is not without its detractors. In particular, Ball and Shivakumar (2008) [hereafter B&S] specifically probe TWW’s idea of rampant earnings management around the IPO, and more importantly, question the methodology, dataset, and timeline employed in their paper. Because of this, our paper attempts to apply both the TWW model (which is virtually the modified-Jones model) and the adapted B&S model (explained further below) to find discretionary accruals; based upon the results, we can distinguish which of the two models is a better fit for the data that is applied.

Thus, it is essential to not just investigate whether or not earnings management occurs, but whether they occur when a private company becomes part of the public financial market. This is essential, because the premise in much of the finance and/or accounting literature is that earnings are particularly managed during the IPO process. As Armstrong *et al.* (2009) suggests, “Earnings management requires ‘opportunity’ and ‘motive,’ both of which of which are thought to be especially strong around the IPO” (p1). The rationale behind this supposition is evident when considering the magnitude of information asymmetry between issuer and the investors, and also because executives of the firm commonly hold a significant amount of their own equity before the IPO (Armstrong *et al.* (2009) and Teoh *et al.* (1998b)). Furthermore, it is especially more meaningful because prior literature provides empirical support indicating that IPO firm stock returns have considerable negative abnormal returns with a matched sample of non-IPO firms in a 3 year period (Ritter (1991), Jain and Kini (1994) Teoh *et al.* (1998a)). Given these results, it can be surmised from the majority of the literature that the presence of high discretionary accruals around the IPO process can

¹ Discretionary accruals change as a direct result of a company’s managerial accounting adjustments while non-discretionary accruals can change because of a change in the company’s underlying performance

induce negative abnormal post-IPO returns. The extensive occurrence of this can give detailed insight into the managerial practices of growth firms and provide investors with market strategies that reassess high expectations of future earnings growth for IPO firms.

The wave of colossal accounting frauds in the earlier part of the 21st century (Enron, WorldCom, Arthur Anderson) not only heightened public and regulatory outrage, but heightened academic attention towards the possibility of financial earnings manipulation. Yet, although recent literature increasingly devotes more research into the *incentives* to manage earnings (i.e. increase IPO price, insider trading, internal compensation, etc.) during the IPO,¹ the methodology to determine the criteria in measuring earnings management is by no means universally established; generally, recent literature concurs that finding discretionary accruals are the most preferred choice in forecasting earnings management because it encapsulates the shrewd techniques used by insiders to adjust income and avoid detection (DuCharme *et al.* 2000). This is because discretionary accruals are considered to be more easily influenced than the underlying cash flows of an IPO firm.

Nevertheless, actually obtaining discretionary accrual estimates is a contentious issue that is pervasive in most of the literary environment that surrounds this issue. As noted previously, though the modified-Jones is the most widely used, it is not without its detractors: B&S believe that the modified-Jones model is rife with mechanical problems. Dechow and Dichev (2002) observe that *all* cash flows should have added variables in calculating discretionary accrual models. Furthermore, Kothari *et al.* (2005) advocates for performance-adjusted discretionary accruals because the modified-Jones model may involuntarily produce positive discretionary accruals (and becomes empirically biased).

¹ Armstrong *et al.* (2008) and Y.S. Cheon *et al.* (2011) both try to examine whether possible insider trading profits affect discretionary accruals during the IPO process; Y.S. Cheon *et al.* (2011) find that there is a correlation, while Armstrong *et al.* (2008) find no relationship. Darrough and Rangan (2005) find that evidence managers who plan to sell their IPO shares boost discretionary accruals and reduce R&D spending to manipulate the issue price.

This study attempts to enhance the existing literature in several ways. We use the preliminary method of using the modified-Jones model to calculate discretionary accruals. Specifically, we attempt to replicate the findings of Teoh *et al.* (1998a, 1998b) by using data from the KOSDAQ (Korean Securities Dealers Automated Quotations) market. It is vital to start with the modified-Jones model since it has been largely cited to be the most fundamental method of discovering discretionary accruals. Yet, given their critical assessment regarding TWW's model, we investigate whether discretionary accruals are still largely positive after adjusting for the mechanical issues broached by B&S; the B&S model makes certain modifications to the existing modified-Jones model, but the foundation will stay the same. Then, after appraising the modified B&S model, our subsequent mission is to probe whether pre-IPO earnings management can be a proxy for subsequent IPO firm performance.

Our research makes certain modifications to the existing empirical evidence from both TWW and B&S. Firstly, we use pre-IPO financial statements to calculate discretionary accruals, whereas TWW obtains accruals from the first statement *after* the firm has gone public. Although this includes financials for firms a couple of months before the IPO, this wouldn't affect the discretionary accrual measures because it doesn't affect the available information at the time of the IPO. This is a key difference; TWW challenge that incentives to manage earnings are highest after the event (i.e. the IPO) because of the "lockup" period which prohibits insiders (i.e. managers) from selling their shares immediately after the offering. But as TWW themselves suggest (and B&S also question), IPO firms face heightened legal, regulatory, and market scrutiny after the issue. As B&S determine, because of this, evidence implies that firms would be more inclined to have higher quality and more conservative financial statements after the fact.

Given this, it seems unlikely that earnings management would take place *after* the IPO, especially on an enhanced scale relative to pre-IPO earnings management. With this

concern, in addition to the fact that pre-IPO is available for the KOSDAQ market, our first motivation is to investigate whether management of *pre-IPO earnings* show large discretionary accrual adjustments in firms that anticipate going public.

Our second motivation is to then ascertain whether or not pre-IPO income-increasing adjustments will lead investors to overvalue the IPO's prospects, thus resulting in negative returns over the short and long terms. Although B&S exhaustingly challenge TWW's modified-Jones calculations, they do not determine whether or not the IPO's in question exhibit unusual negative stock returns. Yet, B&S still find large discretionary accrual calculations even after modifying the methodological issues that they believe is present in TWW's model.

For this reason, it is important to establish whether the presence of discretionary accruals during the pre-IPO stage signals predictive abilities about subsequent stock returns after the issue. Thus, this study attempts to re-examine the notion that earnings management is an IPO-year occurrence and identifies whether our slightly modified method of extrapolating information arrives at a similar conclusion to the hypothesis: Does the presence of earnings management variables in pre-IPO financial reporting dictate negative abnormal post-IPO stock returns?

Our findings are as follows. First, by replicating the B&S model of estimating discretionary accruals for pre-IPO data, we discover that pre-IPO discretionary accruals are significantly higher than accruals after the issue. Though IPO-year discretionary accruals are quite sizeable, the presence of significant "noise" in the estimates renders them unreliable in our analysis. Second, we find that pre-IPO discretionary accruals are the only variable that *consistently* influences the long-run abnormal underperformance of stock returns for KOSDAQ IPO's. These results of the study and our ensuing analysis seem to suggest a fundamental pattern that is meaningful for both analyst and investor. It further validates and

contributes to the presence of earnings management and its effect on returns extensively published in previous literature.

The organization of this paper proceeds as follows. Section 2 discusses the relevant prior literature that pertains to our study and consequently, we develop our research hypothesis. Section 3 provides a brief overview of the South Korean capital markets, and also provides our research design. Section 4 is the empirical results and subsequent analysis. We conclude our paper in Section 5.

2. PRIOR LITERATURE & HYPOTHESIS DEVELOPMENT

This profusion of research regarding earnings management is evident of interest about the advantageous measures taken to adjust financial reports. Prior literature overwhelmingly attempts to illustrate that earnings management measures are a common occurrence.¹ The broad implication that underlines many of these papers is that earnings are influenced around the time of the IPO; whether these techniques are a product of purposeful manipulation to enhance earnings (and raise the IPO issue price) or usual operating and financing decisions by the firm about to go public is a matter of debate and cannot be truly verified unless a thorough and exclusive investigation of each individual firm in the research is undertaken.

Yet, what the majority of these studies do indicate is that the degree of positive discretionary accruals substantiates the claim of persistent earnings management. TWW's seminal research on this subject reveals sizeable positive discretionary accrual estimates (in other words, earnings are positively adjusted compared to the stated cash flows) using the modified-Jones model; this is essential since it excludes non-discretionary accruals (which are subject to the firm's overall condition and prior sales growth, thus uncontrollable by management).

Furthermore, TWW discern that there is a substantial negative relationship between these discretionary accrual calculations and prospective returns within a three year interval following an IPO. Their results are validated by Ritter (1991), who also finds that returns for IPO firms are significantly less than non-IPO firms during a similar time frame, and also DuCharme *et al.* (2001), who attain similar results to the two previous studies.

¹ Such as Dechow *et al.* (1995), Teoh *et al.* (1998a, 1998b), Teoh, Wong, and Rao (1998), DuCharme *et al.* (2000).

These studies seem to corroborate the notion that earnings increasing accounting adjustments are occurring; empirical evidence in much of the literature verifies positive discretionary accruals around the IPO has a negative relation with stock returns after the IPO. However, as Armstrong *et al.* (2009) suggests, “Much of the literature takes the incentive to inflate earnings for granted and instead focuses on the magnitude of discretionary accruals during the year of the IPO” (p7). Surely, the underlying and/or direct premise in most of the related literature is that increasing the IPO issue price is the reason for accrual adjustments. Still, this seems to associate high accruals with low returns by default without actually considering the reasons behind the perception.

More recently, research has been endeavored to determine causalities in the relationship between discretionary accruals and post-IPO stock returns. Armstrong *et al.* (2009) argues that although studies have shown that the correlation between the two variables demonstrate that IPO equity shares can be *temporarily* increased through discretionary accruals, there are only a limited number of studies explaining the catalysts for doing so. This leads them to reason that earnings management might occur when managers (who have a vested interest in the firm) or people with substantial equity stakes want to liquidate their holdings when the company becomes public (i.e. insider trading); this only possible if they “cash out” during a certain point, so the idea is that accrual adjustments will occur sometime before this happens.

Nevertheless, using U.S. data, after testing the relationship between discretionary accrual adjustments and what they term “trade profitability,” Armstrong *et al.* (2009) find that managers at IPO companies with high discretionary accruals do not receive higher profits than at IPO companies with low discretionary accruals; this rejects their hypothesis that managers engage in earnings management for insider trading intentions. This evidence, however, contrasts with other studies that have shown that managers do try to inflate earnings.

For instance, Darrough and Rangan (2005) imply that managers engage in insider trading by amplifying discretionary accruals and decreasing R&D. In the case of the Korean IPO firms (and more specifically in the case of the KOSDAQ market), Y.S. Cheon *et al* (2011) surmise that insider trading does exist in the Korean IPO environment because discretionary accruals in their research were found to have been enhanced in the year prior to the end of the lockup period; furthermore, they find that this relationship is more marked when “information asymmetry” is more distinct. In the end, whether or not insider trading emerges as motivation for earnings management (considering the contrasting studies) can only be truly known if taken on a case by case basis. What’s more, even the vast literature confirming positive discretionary accruals has been debated by a small group of academics.

A finite number of studies dispute the findings that offer empirical evidence of discretionary accrual adjustments. Most notably, B&S probe the premise of rampant earnings management in IPO firms and also question the conventional discretionary accrual approach (the modified-Jones Model) of TWW’s paper. Both B&S and Venkataraman *et al.* (2008) argue that firms tend to report earnings more conservatively because of greater scrutiny in the anticipation of going public (they also state postmortem problems such as litigation, regulatory changes, and increased cost of capital since “earnings can only be ‘borrowed’ from other periods;”). B&S empirically confirm that firms in the UK report more conservatively in the years closest to the IPO, as opposed to the years preceding it (a direct contrast to TWW’s argument).

Further still, market analysts will pay extra attention if the firm is anticipated to go public; naturally then, the idea that earnings management takes place after issue is seemingly an extremely precarious proposition. Moreover, B&S contend that earnings are manipulated upwards through mechanical problems pervasive in previous literature regarding earnings management:

- 1) B&S argue that taking operating cash flows from the balance sheet rather than the cash flow statement will consequentially produce abnormal positive discretionary accruals (Ball and Shivakumar 2005, 2006)
- 2) They also offer the idea that when IPO proceeds are chiefly provided for working capital items such as receivables and inventory, it reduces operating cash flow in comparison to earnings, thus producing positive discretionary accruals
- 3) B&S also mention a small denominator problem (Y.S. Cheon *et al.* (2011), Armstrong *et al.* (2008)). It is apparent that total assets before the issue will be prohibitively smaller than post issue; the use of pre-IPO total assets as a “deflator,” then, can cause upward estimates of discretionary accruals. By “modifying” the modified-Jones model, they believe that median discretionary accrual estimates will be smaller than those estimated by the original modified-Jones model

For these reasons, B&S contend that estimates of TWW’s research are unreliable. Still, though their reasoning is sound, the fact that B&S use U.K financial data and TWW uses U.S. data is quite significant considering the differences in financial reporting and regulatory practices of the two countries; however, in the case of the Korean market, we find that B&S’s model provides a more accurate reflection of accounting adjustments before the issue. Also, B&S make no mention of whether or not post-IPO stock return performance is indicative of their discretionary accrual findings. Because investors expect earnings growth from pre-IPO financials to be maintained, a lack of earnings growth after the IPO will devalue the shares of the firm from its overestimated issue price. Since earnings management can only be detected *by comparing the discretionary accrual results in relation to the firms’ performances*, B&S’s analysis can only give us a revised calculation of accruals but not a reason why adjustments are necessary in the first place.

So, the area in which the empirical evidence is limited and what this paper attempts to accomplish is looking at discretionary accrual adjustments and hereafter performance in the medium and long run. Generally, empirical evidence in prior literature attempts to establish either the most accurate form of accrual adjustments or causality as to why earnings management occurs. Yet, most of the prior research takes into account only whether adjustments transpire either after the IPO occurs or whether accrual adjustments in the IPO year financial statements affect the IPO issue price. Armstrong *et al.* (2009), Teoh *et al.* (1998a), and Y.S. Cheon *et al.* (2011) all use financial statements *in the year of the IPO* without taking into consideration pre-IPO data (the reasons for this are varied: TWW cite a lack of pre-IPO availability, while CKH allude to the lockup period as the reason for pre-IPO data exclusion). As mentioned, while B&S use pre-IPO data to find discretionary accruals (and find no evidence that positive discretionary accruals are heightened before the IPO), they provide no statistics of how stocks perform *after* the IPO issue. Thus, a more substantial glimpse into the affects of discretionary accrual adjustments and the proceeding returns are necessary.

The arguments above can then be transformed into the following hypotheses:

H1: Abnormal positive discretionary accrual adjustments will be more enhanced using pre-IPO financials than post issue based upon the model suggested by Ball and Shivakumar (2008)

H2: Pre-IPO discretionary accrual adjustments will influence post-IPO stock returns in the long run

3. RESEARCH DESIGN

3.1 Korean Capital Markets

Securities Dealers Automated Quotations) is a trading board of the KRX (Korean Stock Exchange) that was established in July 1, 1996. Similar to its American equivalent, NASDAQ (National Association of Securities Dealers Automated Quotations), KOSDAQ is an electronic stock market. The number of listed companies is 1,016 (as of September 2012) and it has a market capitalization of 2,982,620,000,000 won.

Cheon *et al.* (2008) [hereafter CKH] provides a detailed outlook at the institutional features of IPO's in the South Korean stock market (and more specifically, the KOSDAQ) that is relevant to our paper. The first describe the "IPO lockup" stipulation, which is a certain span of time where insiders (managers, executives, employees with stock options, etc.) are prohibited from selling any equity shares they possess; this is done to prevent deluding the market during the initial. Both CKH and Teoh *et al.* (1998a) state that the lockup period in the USA is usually 180 days after the IPO (although this isn't a fixed statute). However, CKH state that the listing rules of KOSDAQ forbid the major shareholders of the IPO firm from releasing their shares for 2 years after the issue (although this was changed to one year after March 2005). Now, as CKH suggests, this regulation of KOSDAQ might compel managers (or rather insiders in this case) to manage earnings the year *before* the lockup period (at year +1 before March 2005 and year 0 after March 2005).

However, a spike in discretionary accrual adjustments prior to the issuing of shares would seemingly be especially perceptible (to regulatory bodies and external auditors), so a more extensive outlook starting at pre-IPO data is still worthwhile and crucial in determining

earnings management variables. In the case of Korean firms, pre-IPO information is a legal and regulatory requirement of all firms. Using the TS2000 database, we use company financial reports beginning two years prior to the issue.

3.2 Discretionary Accrual Model

The foundation for the discretionary accrual estimates we calculated lies in the modified-Jones model, the most predominant model used in estimating discretionary accruals during the IPO process. However, as previously noted, B&S identify three large methodological problems in the previous modified-Jones model used by TWW. Because of this, they use a modified version of the cross-section modified-Jones model (Ball and Shivakumar 2008) used by TWW and a piecewise linear variant that they have suggested in their previous works (Ball and Shivakumar 2005, 2006). We reaffirm use modifications to the modified-Jones model that Ball and Shivakumar (2008) suggest:

- 1) Take operating cash flows from cash flow statements to calculate total accruals
- 2) Take into account equity from IPO proceeds on working capital figures
- 3) Correct the “small denominator” problem

The process of estimating discretionary accruals then is as follows. First, after eliminating our KOSDAQ sample to 349 firms, we calculate totals accruals for each year in our study by subtracting operating cash flows from net income. With the mechanical biases corrected and utilized not only by Ball and Shivakumar (2008) but also Armstrong *et al.* (2009), we then estimate normal accruals:

$$ACCT = \alpha_0 + \alpha_1 * \Delta Salest + \alpha_2 * FASSET_{t-1} + \alpha_3 * CFOt + \alpha_4 * DCFOt + \alpha_5 * DCFOt * CFOt + \epsilon_t$$

ACCT = total accruals concerning IPO firm in year t.

CFOt = cash flow from operations from cash flow statements concerning IPO firm

in year t.

$\Delta SALES_t$ = change in sales concerning IPO firm in year t.

$FASSET_t$ = book value of fixed assets standardized by beginning total assets concerning IPO firm in year t-1.

$DCFO_t$ = a dummy indicator concerning negative cash flows that takes the value 1 if $CFO_t < 0$ and 0 otherwise.

Non-discretionary accruals first have to be estimated using firm-specific parameters. In regards to the regression, both data of non-IPO firms and IPO firms in the same industry two digit Korean Standard Industry Code (KSIC) code will be pooled in year t. For our regression, we decided that only benchmark firms with more than 10 observations will be taken in consideration for our analysis.

Then, by combining the estimates, discretionary accruals will be calculated to measure the level of earnings management:

$$DA_t = ACC_t - (\alpha_0 + \alpha_1 * \Delta Sales_t + \alpha_2 * FASSET_t + \alpha_3 * CFO_t + \alpha_4 * DCFO_t + \alpha_5 * DCFO_t * CFO_t)$$

DA_t = Discretionary Accruals in year t

Abnormal (discretionary) accruals are estimated for event years -2,-1, 0, 1, 2. Though our analysis is to see whether pre-IPO discretionary accruals affect post-IPO returns, a comparative look into whether pre-IPO accruals are significantly and positively abnormal from post-IPO accruals can suggest whether or not earnings management is more significant before the IPO issue occurs. Also, as Ball and Shivakumar (2008) suggest, years -1 and -2 are the most likely event years that affect IPO pricing, so our model concentrates on these two years as the most likely to have high discretionary accrual estimates.

For the final part of the first analysis, we estimate both mean and median discretionary accruals for all 5 event years. Finding the mean, naturally, can give us a broad average of how large discretionary accruals are in any given year. However, most applicable data is not a normal distribution; with the presence of outliers in our dataset, the average can be significantly altered because of the presence of skewed distributions. So, estimating the median can give us somewhat of a clearer illustration in determining how significant the discretionary accruals are in our event years.

3.3 Stock Return Performance Measures

The second part of our analysis, then, is to see whether pre-IPO discretionary accrual measures induce long-term abnormally negative post-IPO stock returns. Buy-and hold abnormal returns (BHAR) are the most useful model in examining performance because it is a long-term passive investment strategy that is the most relevant from an investor standpoint. Using the Buy-and-Hold model given to us by TWW, we find BHAR returns for the all 349 firms in our study. For BHAR returns, we again estimate both the means and medians because of the probability of skewed distributions in the research.

However, basing our analysis on broad results of all firms' BHAR means and medians may not accurately reflect the post-IPO returns; some firms may manage earnings more forcefully, while others may take a more moderate approach. Because of this, we separate firms into tercile classifications, and analyze their BHAR's according to the magnitude of their pre-IPO discretionary accrual measurements. We imitate Teoh *et al.* (1998a) classification of firms to "avoid the linear parameterization of regressions" (p.1948). Starting with the 349 firms in our sample size, the firms with low discretionary accruals are labelled conservative (Tercile 1), and firms with high discretionary accruals are aggressive (Tercile 3). The firms in between low and high discretionary accruals, then, are just the

norm (Tercile 2). With this analysis, we expect that the aggressive tercile will have more significantly negatively abnormal returns in the long-run, compared to the other two terciles.

3.3.1 Regression Analysis

Next, to analyze the effect of accruals on post-IPO stock return underperformance, we follow TWW and Ritter (1991) in adding accrual variables for the years -1 and 1 to our event-time cross-sectional regressions. As TWW also mention, we add certain control variables for other potential predictors in our cross-sectional regression:

MktRet:	36 month BHAR from KOSDAQ IPO firm
MV:	logged capitalization of IPO firm
BV/MV:	logged book-to-market ratio
1+AGE:	one plus the logged firm's age
Δ CapExp:	change in asset-scaled capital expenditures
Δ NetIncome:	change in asset-scaled income growth

We do this for both total accruals *and* discretionary accruals because while discretionary accruals are the “managed” portion, using total accruals as a proxy for earnings management does have precedence and also illustrates that if discretionary accruals are large enough, total accruals will also be significantly affected.

Finally, to ensure the robustness of our results and the hypothesis (managed earnings = lower stock returns), we employ both an event-time median regression and a quantile regression for both total discretionary accruals (DTA) and non-discretionary accruals (NDTA) in relation to our 36 month BHAR. With these two regressions, we aim to ensure that pre-

IPO discretionary accruals (instead of non-discretionary accruals) are more statistically significant in the event year -1 rather than the IPO year and to confirm whether more aggressive earnings management in the pre-IPO stage is a more significant indicator of post-IPO abnormally negative stock returns.

4. EMPIRICAL RESULTS

4.1 Discretionary Accrual Results

Initial results illustrate the mean and median for every starting from two years before the IPO issue until two 2 years after. By comparing the discretionary results before and after the IPO in **Table 1**, we discover that our conjecture that pre-IPO discretionary accruals will be substantially more enhanced holds. The mean and median discretionary accruals for both event years -2 (6.41%, 4.22%) and -1 (5.61%, 6.61%) are considerably larger than the accruals for years 1 (2.31%, 2.98%), and 2 (1.27%, 1.86%). This suggests a noticeable amount of earnings management that occurs before the issue, perhaps due to the heightened regulatory and legal scrutiny mentioned by Ball and Shivakumar (2008); though the financial environment varies between countries, the probability that accruals are managed when companies are still private is more than likely, given the greater autonomy enjoyed by unlisted firms in capital markets. As previously mentioned, though the mean can be distorted by the presence of outliers in the sample, both the mean and median nevertheless signal that managed earnings are more than doubled or tripled (in percentage terms) in pre-IPO financials compared to post-IPO accounting measures.

It is also important to analyze the high discretionary accrual estimates in the year of the IPO (8.31% mean, 7.46% median). At first glance, it seems as though the numbers confirm TWW's hypothesis that the incentive to manage earnings is highest immediately after the offering. However, as B&S indicate, firms with IPO proceeds undertake abnormal levels of growth in both production and sales, causing working capital levels to be significantly raised; furthermore, they point out that firms before the issue usually possess subpar working capital levels because of financial constraints (the very reason they pursue the IPO); unless all proceeds of the issue were "kept in cash, invested in long term assets, or

used to repay long term liabilities” (p326), this would automatically produce excessive levels of accruals. It can therefore be assumed that discretionary accrual estimates are unreliable given the “noise” in IPO-year estimations.

4.2 Stock Return Performance

Though estimating discretionary accruals is invariably important because erroneous calculations can result in vast changes to our results and interpretations, the key objective and the second part of our hypothesis is to see whether these managed accruals affect stock return performance. Not only is this a vital issue in previous financial asset pricing literature, but it is also significant from an investment standpoint in finding systemic patterns in the IPO market.

We find stock return performances after the IPO for the firms in our sample using the KOSDAQ composite index. **Figure 1** represents the BHAR general stock averages for both the mean and the median. In this case, the presence of outliers in the data produces a skewed distribution of the BHAR, based upon the empirical evidence and the related increasingly positive mean the returns in our sample convey. Because of this, the median is the more preferable method of analyzing the evidence of our sample. As the table suggests, beginning in the third month after the issue, the median steadily decreases until the thirty-ninth month, when median BHAR for the sample dips below negative 10%. Our general premise, that the presence of discretionary accruals in pre-IPO financials give post issue lower stock returns, is routinely accurate.

However, since our objective is to determine whether enhanced discretionary accruals will lead to additional abnormal return underperformance, we split our sample firms into terciles (aggressive, normal, and conservative) based upon discretionary accruals estimates and establish a more specified outlook to support our analysis of **Figure 1**.

Figure 2 is the mean cumulative BHAR in percentages, while **Figure 3** represents the median BHAR. Yet again, the presence of skew in our data distribution denotes that **Figure 2** is undependable for analysis purposes; there seems to be no clearly established pattern which makes our analysis incomplete. **Figure 3**, however, precisely reflects our presumptions that the greater the presence of earnings management, the lower the return performance becomes. Both the normal and conservative terciles are approximately -7.5% less their issue price after our 39-month sample (though the price fluctuations in the normal tercile are much more volatile); this signifies that even the seemingly insignificant mere presence of accruals during the pre-IPO stage can result in negative returns throughout the long run.

Furthermore, the median BHAR for the most aggressive tercile of firms (the highest discretionary accrual estimates pre-IPO) registers a more extensive -35% decrease from its issue price after the 39-month period. This substantiates the notion that aggressive earnings management prior to the issue has considerable negative effects on the return performance of IPO firms; it suggests a more than 25% differential in return performance based upon the extent of earnings management prior to the issue. This differential between aggressive and conservative firms is substantial. However, accurately examining how accruals predict return performances must be further tested through specific regressions that can illustrate how statistically significant our estimates are.

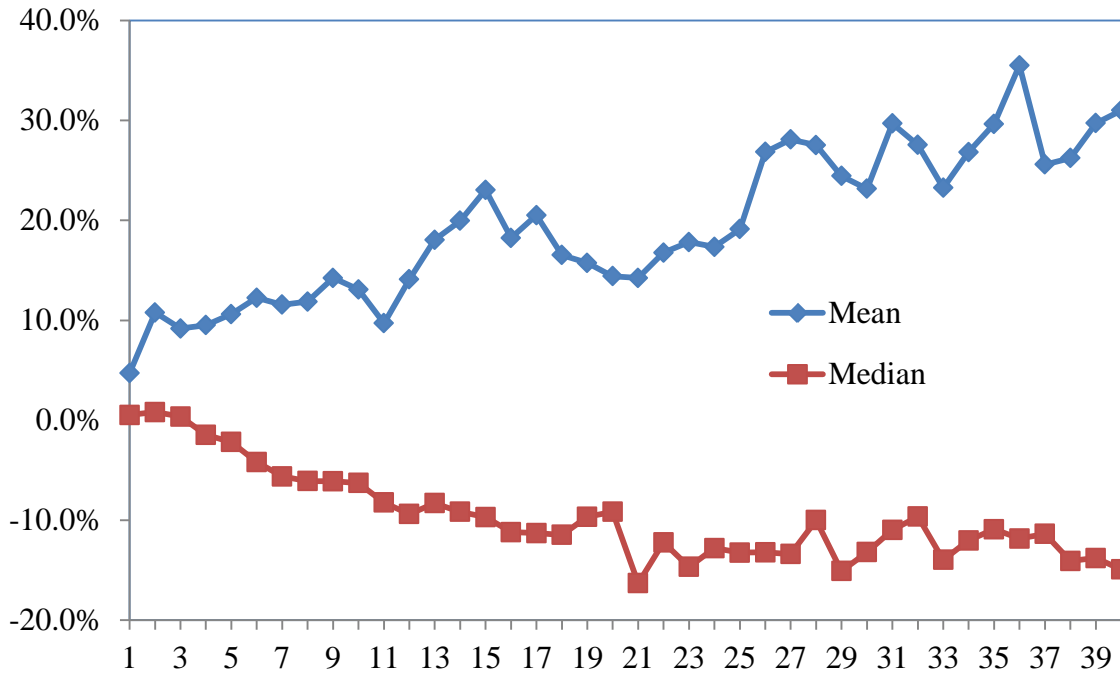


Figure 4. Mean and median cumulative buy-and-hold return net of KOSDAQ composite index return by event month, in percent

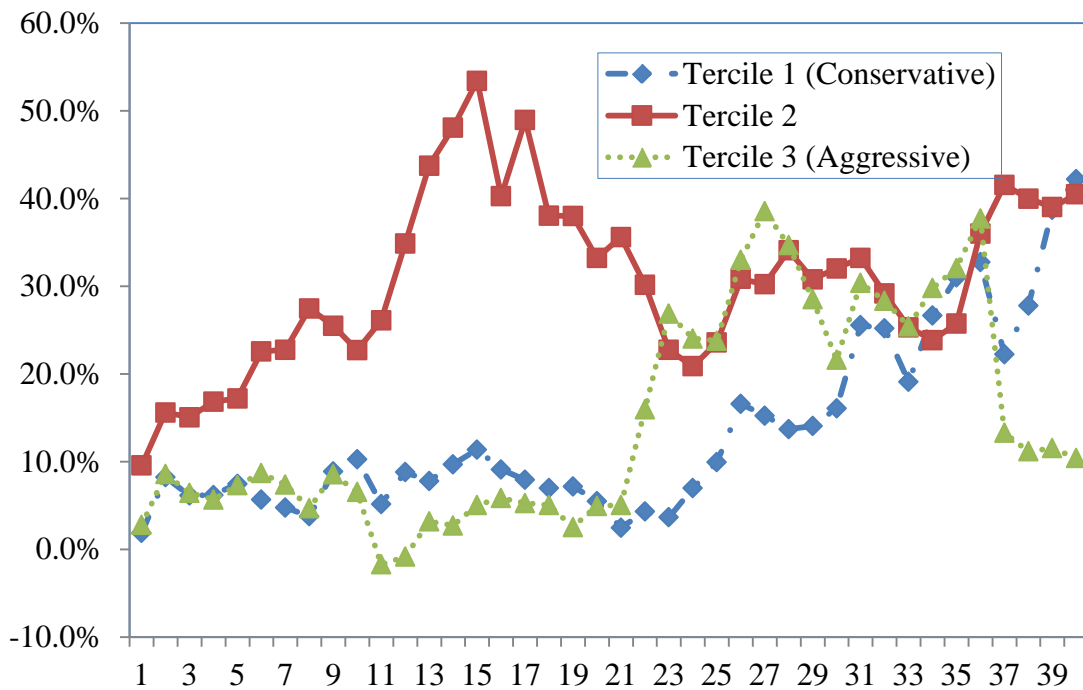


Figure 5. Mean cumulative buy and hold return net of KOSDAQ composite index return by DAC tertiles by event month, in percent

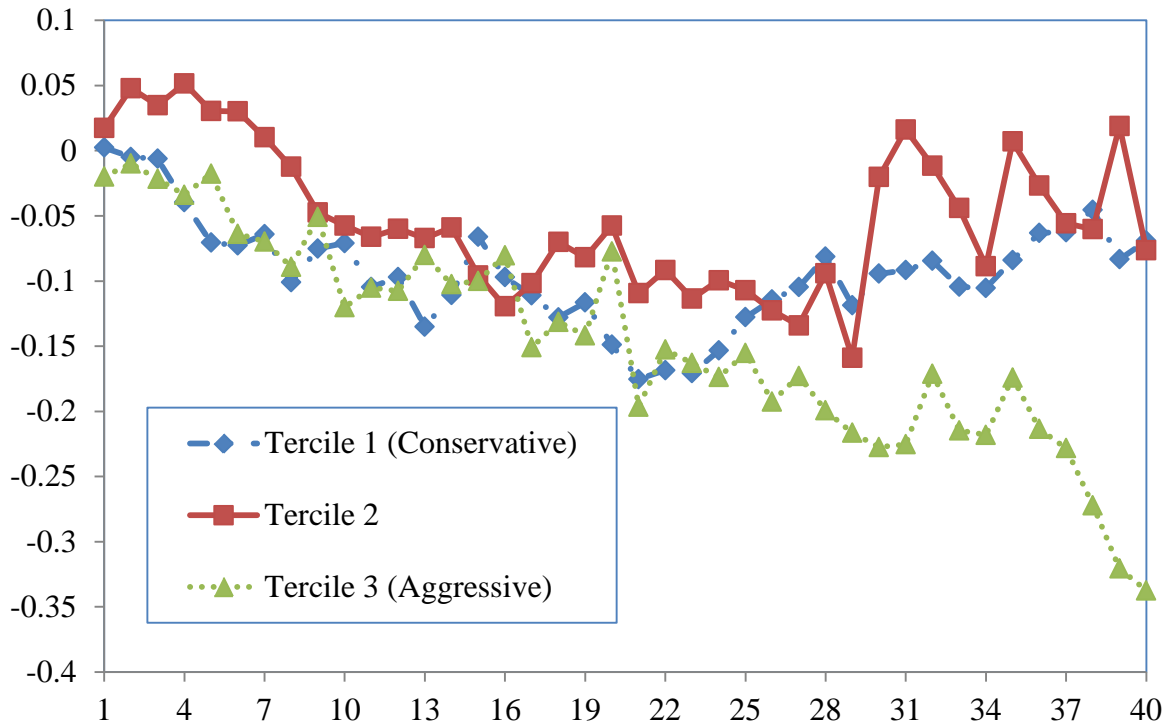


Figure 6. Median cumulative buy and hold return net of KOSDAQ composite index return by DAC tertiles by event month, in percent

4.2.1 Regression Results

Table 2 uses total accruals in the year prior to the IPO and the year of the IPO; the BHAR's are then regressed against these two variables and other control variables (mentioned previously). The crucial variable here is total accruals in the year prior to the IPO, illustrated in the second column¹, which is statistically significant at the 0.01 level with a negative estimated coefficient of -0.0344 , which indicates that firms that have high total accruals in the event year -1 subsequently have greater abnormally negative stock returns after the issue. It is also interesting to note that total accruals in the IPO year are also statistically significant at the 0.01 level with a coefficient of -1.111 , which indicates that larger total accruals in the IPO year will have an even larger effect on return underperformance. Even further, the combined regression of both event years still produces

¹ For both **Figures 2, 3, and 4**, the first column is the regression for the year prior to the IPO, the second column is for the year of the IPO, and the third column is when both years are combined into the same regression

statistically significant negative coefficients for both, -.907 and -.300 respectively, and the combined effects of both years total accruals in predicting subsequent 36-month stock underperformance is statistically significant at the one percent level with a coefficient of -1.207.

What these results suggest is that the magnitude of total accruals in both the year of the IPO (with respect to the “noise” mentioned earlier) and the year prior to the IPO has a profound effect on indicating how the stocks of IPO firms will perform in the long run; this is true not only when they analyzed individually, but even more so when empirically testing the combined effects of both event years. Furthermore, the reasons for assessing total accruals are numerous. First, there is precedence for doing so in prior literature (Ritter 1991, Loughran and Ritter 1995). Additionally, this seems to indicate that the “managed” discretionary portion of accruals heavily influences total accruals, since non-discretionary accruals are not “manageable,” but rather a product of business conditions; therefore, in the event that economic and industry conditions are stabilized, discretionary accruals would ostensibly heavily impact total accruals. However, this is abject conjecture until we can empirically prove otherwise.

Table 3, though, does evidently seem to confirm our previous statement. Though both non-discretionary (NDTA) and discretionary accruals (DA) are significant at a 0.05 level (-.955, -1.253), the “noise” mentioned earlier is indicative of why the first and third column may not be reliable in interpreting the results. Though this theory can also hold firm in **Table 2**, the second column shows no significance of NDTA in the year prior to the IPO, a vast difference with the results of the IPO-year NDTA. On the other hand, as we presumed, discretionary accruals are still significant at the 0.05 level with a coefficient of -.0228 in the

second column and similarly significant in the combined regression at -0.195, reaffirming our hypothesis that it is the DA's which are affecting the long-run underperformance of the IPO stock returns.

To support the results and subsequent analysis of our research, we then execute an event-time median regression in **Table 4** to ensure the robustness of our results. Again, our results ensure us that it is *only* the discretionary accrual variable that is *consistently vigorous* throughout numerous other regression specifications. Furthermore, although it is significant at the 0.10 level in the year of the issue (-.717), it is the prior year where the DA's are the most robust (-0.226 in column 2, and -0.227 in the combined regression of column 3). What this exemplifies is that, confirming our prior claim, discretionary accruals are more significant in predicting subsequent lower post-IPO stock returns.

Finally, our final investigation is to use a Quantile regression to augment our hypothesis and the preceding results. In **Table 5**, both the 25th and 50th percentile, discretionary total accruals are statistically very significant (-0.169 at the 0.01 level and -0.226 at the 0.05 level respectively). What we can affirm from this regression is that it is DA's in the top 25th percent that can strongly predict lower returns; while less significant, the 50th percentile still has predictive abilities in underperforming stock returns after the issue. Only at the 75 percentile are there no significant predictive abilities of DA's to predict subsequent stock returns. Then, it can be inferred and corroborated that the higher the amount of DA's, the more likely stock returns will underperform after the issue.

5. CONCLUSION

Our study replicates Teoh *et al* (1998b) research in investigating the relationship between the magnitude of discretionary accruals in IPO firms and post-IPO return underperformance. We make several adjustments to fine-tune and update their methodology and results. First, we use the model proposed by Ball and Shivakumar (2008) to find our discretionary accrual estimates using pre-IPO financial statements instead of starting with the financials *after* the IPO. Then, we use those pre-IPO estimates to investigate whether it influences the stock-return performance of the firms after the issue.

Our results confirm prior earnings management literature and our hypothesis. We find a significant difference in pre-IPO discretionary accruals compared to the estimates of the post-IPO accruals. Because of “noise” in IPO-year estimates, we consider those discretionary accrual results unreliable. This paper also discovers that firms with higher pre-IPO discretionary accruals perform worse in the 36 month period after the issue than firms that report their discretionary accruals more conservatively. Finally, we find that discretionary accruals are the only consistent variable which affects the performance of stock returns after the issue.

Taken together, our empirical results suggest a pattern of earnings management that occurs prior to a firm’s IPO in the KOSDAQ stock market that may have adverse effects on the stock return of the company after its issue. The findings in the paper are significant in the context of investing and trading. Investors fixated on high earnings around the time of the IPO may not be fully informed of the company’s accounting practices and subsequently, be disappointed in the long-run. Since pre-IPO information is legal requirement for firms

trying to get listed in on KOSDAQ, potential investors may want to thoroughly investigate pre-offering discretionary accruals to categorize their investment portfolios. A comprehensive analysis of accounting adjustments when the company is unlisted may provide an altered range of investment choices.

APPENDIX

APPENDIX

Table 6. Mean and median discretionary accruals(DAC) by event years

Years after (or before) IPO event	Discretionary Accrual (DAC)	
	Mean	Median
-2	6.41(%)	4.22(%)
-1	5.61	6.61
0	8.31	7.46
1	2.31	2.98
2	1.27	1.86
Total	4.78	4.39
Observations	2,055	

Table 7. Event-time cross-sectional regressions using total accruals(TAC) as the proxy for earning management (Dep. var.: 36 month cumulative buy-and-hold return)

	(1)	(2)	(3)
Total Accrual(t=IPO year)	-1.111 ^{***} (0.01)		-0.907 ^{***} (0.00)
Total Accrual(t=IPO year-1)		-0.344 ^{***} (0.01)	-0.300 ^{**} (0.01)
MktRet	0.502 (0.28)	0.977 ^{**} (0.03)	0.577 (0.19)
log(MV)	-0.016 (0.96)	0.007 (0.98)	-0.022 (0.94)
log(BV/MV)	1.757 [*] (0.06)	1.855 ^{**} (0.05)	1.826 ^{**} (0.05)
log(1+AGE)	0.243 (0.20)	0.254 (0.17)	0.236 (0.21)
Δ CapExp	-0.000 (0.21)	-0.000 ^{**} (0.03)	-0.000 [*] (0.09)
Δ NetIncome	0.000 (0.95)	0.000 (0.92)	0.000 (0.80)
Constant	-2.012 (0.82)	-2.669 (0.76)	-1.886 (0.82)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
$\sum \beta_{TAC_t}$			-1.207 ^{***} (0.00)
Adjusted R^2	0.176	0.179	0.181
Observations	349	349	349

p-values in parentheses

^{*} *p* < 0.10, ^{**} *p* < 0.05, ^{***} *p* < 0.01

Table 8. Event-time cross-sectional regression using discretionary total accruals as the proxy for earning management (Dep. var.: 36 month cumulative buy-and-hold return)

	(1)	(2)	(3)
NDTA(t=IPO year)	-0.955** (0.04)		-1.295*** (0.01)
DTA(t=IPO year)	-1.253** (0.03)		-0.940*** (0.01)
NDTA(t=IPO year-1)		0.108 (0.66)	0.256 (0.38)
DTA(t=IPO year-1)		-0.228** (0.03)	-0.195** (0.04)
MktRet	0.455 (0.41)	0.936** (0.04)	0.470 (0.17)
log(MV)	-0.026 (0.93)	-0.015 (0.96)	-0.089 (0.74)
log(BV/MV)	1.753* (0.06)	1.819* (0.06)	1.752* (0.05)
log(1+AGE)	0.257 (0.18)	0.290 (0.12)	0.241** (0.04)
Δ CapExp	-0.000 (0.25)	-0.000** (0.05)	-0.000* (0.08)
Δ NetIncome	0.000 (0.89)	0.000 (0.84)	0.000 (0.54)
Constant	-1.785 (0.84)	-2.246 (0.80)	-0.034 (1.00)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Adjusted R^2	0.175	0.180	0.193
Observations	349	349	349

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 9. Robustness: Event-time median regression(Dep. var.: 36 month cumulative buy-and-hold return)

	(1)	(2)	(3)
NDTA(t=IPO year)	-0.617 (0.11)		-0.883** (0.03)
DTA(t=IPO year)	-0.717* (0.06)		-0.426 (0.31)
NDTA(t=IPO year-1)		0.029 (0.90)	0.167 (0.50)
DTA(t=IPO year-1)		-0.226** (0.04)	-0.227* (0.06)
MktRet	-0.626 (0.58)	0.187 (0.86)	-0.418 (0.72)
log(MV)	-0.044 (0.65)	-0.072 (0.45)	-0.053 (0.60)
log(BV/MV)	0.735*** (0.00)	0.880*** (0.00)	0.681*** (0.01)
log(1+AGE)	0.004 (0.98)	0.033 (0.79)	0.001 (1.00)
Δ CapExp	-0.000 (0.57)	-0.000 (0.33)	-0.000 (0.49)
Δ NetIncome	0.000 (0.87)	-0.000 (0.98)	0.000 (0.97)
Constant	-0.177 (0.94)	0.532 (0.83)	0.170 (0.95)
Industry fixed effect	Yes	Yes	Yes
Year fixed effect	Yes	Yes	Yes
Pseudo R ²	0.174	0.183	0.190
Observations	349	349	349

p-values in parentheses

* *p* < 0.10, ** *p* < 0.05, *** *p* < 0.01

Table 10. Robustness: Quantile regression
(Dep. var.: 36 month cumulative buy-and-hold return)

	25 th percentile	50 th percentile	75 th percentile
NDTA(t=IPO year-1)	0.140 (0.20)	0.029 (0.90)	-0.138 (0.79)
DTA(t=IPO year-1)	-0.169 ^{***} (0.00)	-0.226 ^{**} (0.04)	-0.287 (0.24)
MktRet	-0.436 (0.41)	0.187 (0.86)	0.780 (0.75)
log(MV)	-0.036 (0.44)	-0.072 (0.45)	0.094 (0.66)
log(BV/MV)	0.479 ^{***} (0.00)	0.880 ^{***} (0.00)	1.615 ^{***} (0.00)
log(1+AGE)	0.015 (0.80)	0.033 (0.79)	0.051 (0.86)
Δ CapExp	-0.000 (0.42)	-0.000 (0.33)	-0.000 (0.36)
Δ NetIncome	0.000 (0.87)	-0.000 (0.98)	0.000 (0.54)
Constant	-0.374 (0.75)	0.532 (0.83)	-3.851 (0.49)
Observations	349	349	349
Pseudo R^2	0.175	0.183	0.188

p-values in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

REFERENCES

References

- Armstrong, C., Foster, G., Taylor, D.J. 2009. Earnings management around initial public offerings: A re-examination. Working Paper, University of Pennsylvania, Philadelphia, PA.
- Ball, R., Shivakumar, L. 2005. Earnings quality in UK private firms: comparative loss recognition timeliness, *Journal of Accounting and Economics* 39: 83-128.
- Ball, R., Shivakumar, L. 2006. The role of accruals in asymmetrically timely gain and loss recognition, *Journal of Accounting and Economics* 44: 207-242.
- Ball, R., Shivakumar, L. 2008. Earnings quality at initial public offerings, *Journal of Accounting and Economics* 45: 324-349.
- Cheon, Y.S., Kim, M., Hwang, M. 2011. Post-initial public offering earnings management driven by insider selling motives: using KOSDAQ initial public offerings, *Asia-Pacific Journal of Financial Studies* 40: 627-657.
- Cotten, B.D. 2008. Earnings management prior to initial public offerings: Evidence from secondary share data, *Quarterly Journal of Finance and Accounting* 47: 87-107.
- Darrrough, M., Rangan, S. 2005. Do insiders manipulate earnings when they sell their shares in an initial public offering?, *Journal of Accounting Research* 43: 1-33.
- Dechow, P.M., Dichev, I.D. 2002. The quality of accruals and earnings: The role of accruals estimation errors, *The Accounting Review* 77: 35-59.
- Dechow, P.M., Sloan, R.G., Sweeney, A.P. 1995. Detecting earnings management, *The Accounting Review* 70: 193-225.
- Ducharme, L.L., Malatesta, P.H., Sefcik, S.E. 2001. Earnings management: IPO valuation and subsequent performance, *Journal of Accounting, Auditing, and Finance* 16: 369-396.
- Fama, E.F. 1998. Market efficiency, long-term returns, and behavioral finance, *Journal of Financial Economics* 49: 283-306.
- Healy, P.M. 1985. The effect of bonus schemes on accounting decisions, *Journal of Accounting and Economics* 7: 85-107.
- Jain, B., Kini, O. 1994. The post-issue operating performance of IPO firms, *Journal of Finance* 49: 1699-1726.
- Kothari, S.P., Leone, A.J., Wesley, C.E. 2005. Performance matched discretionary accrual measures, *Journal of Accounting and Economics* 39: 163-197.
- Loughran, T., Ritter, J. 1995. The new issues puzzle, *Journal of Finance* 50-1: 23-51.
- Ritter, J.R. 1991. The long-run performance of initial public offerings, *The Journal of Finance* 46: 3-27.

Teoh, S., Welch, I., Wong, T. 1998a. Earnings management and the long run underperformance of seasoned equity offerings, *Journal of Financial Economics* 50: 53-100.

Teoh, S., Welch, I., Wong, T. 1998b. Earnings management and the subsequent market performance of initial public offerings, *Journal of Finance* 53: 1935-1974.

Teoh, S., Wong, T., Rao, G. 1998. Are earnings during initial public offerings opportunistic?, *Review of Accounting Studies* 3(1-2): 175-208.

Venkataraman, R., Weber, J.P., Willenborg, M. 2008. Litigation risk, audit quality, and audit fees: Evidence from initial public offerings, *The Accounting Review* 83: 1315-1345.