Erasmus School of Economics

Earnings Management in Initial Public Offering and Post-Issue Stock Performance

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Abstract

This paper examines the existence of accrual-based earnings management in post-SOX (Sarbanes–Oxley Act) period. The stringent monitoring standards for firms which go public after 2002 could limit the potential of earnings management. The results show that issuing firms still use discretional accruals to inflate earnings in the year when firm goes public but not in the year before. The evidence demonstrates that pre-IPO discretional accruals are positively related to underpricing. It also indicates that higher accruals in the IPO year predicts the poor long-term performance. The conclusion holds for both for 3-year and 1-year post-offering buy-and-hold abnormal returns. The underperformance of the aggressive firms is on average, above 20 percent. The results are robust for alternative measures of earnings management.

Key words: earnings management, discretional accruals, underpricing, long-term performance

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1.Introduction

Although there are accounting standards, information intermediaries and accounting enforcement to regulate and monitor the quality of accounting data, there is plenty of evidence that indicates earnings management has been pervasive. Starting with Teoh, Welch and Wong (1998a), researchers focus on the accrual-based earnings management around initial public offering (IPO). They find that on average, the issuers of IPO report inflated earnings in excess of cash flows by taking positive accruals. However, there's still on-going debate about the existence of accrual-based earnings management in IPO study. Ray and Shivakumar (2008) examine the IPO firms in UK and they find that the IPO firms report more conservatively. They attribute this to the higher monitoring standards and quality reporting of public firms demanded by financial statement users. Furthermore, there is research arguing that the firms shift away from the accruals management, since Sarbanes–Oxley (SOX) Act which was enacted in 2002 strengthens the oversight role of boards of directors and the independence of the outside auditors, which will result in more accuracy of corporate financial statements.

Following Jones (1991), I use cross-section model to estimate discretional accruals. Guenther (1994) points out long-term accruals are less subject to manipulation by managers, which leaves the discretional current accruals as the best measure to capture earnings management. I use discretional current accrual as the primary measure of earnings management in this study. The sample period is from 2002 to 2011. Evidence shows that positive discretional current accruals present in the year when firm goes public but not in the

year before, which indicates that accrual-based earnings management is still employed by public issuers during post-SOX period.

The impact of earnings management on subsequent performance is two-fold. Previous studies show that the underpricing of IPOs was on average 10%-15% in recent decades. Puranandam and Swaminathan (2004) state that firms with higher pre-IPO accruals are associated with higher underpricing, which suggests that IPOs are overvalued at the offer price considering the inflated earnings. Besides underpricing, accrual-based earnings management also affects long-term performance. Teoh et al. (1998a) and DuCharme, Malatesta and Sefcik (2004) report substantial underperformance of offer firms with higher discretional accruals three years after the offering. Their results demonstrate that issuers with unusually high accruals in the IPO year experience poor long-term stock return performance thereafter.

I investigate the relationship between the accrual-based earnings management and short-term performance (underpricing) as well as long-term performance. The results show that on average, the underpricing is 11.45 percent for the sample firms. Confirming with prior studies, the pre-IPO discretional accruals are positively related to underpricing. In long run, evidence demonstrates that higher discretional accruals in IPO year predict poor long-term performance. The conclusion holds for both 3-year and 1-year post-offering buy-and-hold abnormal returns. As a further test, I divide the sample firms into quartiles base on their discretional current accruals (DCA). The aggressive firms with higher DCA tend to underperform the conservative firms. The underperformance is above 20 percent on average. Investors overprice and overestimate the persistence of abnormal accruals stemming from

managerial discretion. When the accruals reverse in the long run ,it leads to underperformance.

This study deserves attention for several reasons. First, it focuses on the post-SOX period. The results show that the accrual-based earnings management still plays an import role in IPO reporting when managers try to inflate earnings to mislead investors. Second, I also employ discretional total accrual as the proxy for earnings management. It strengthens the findings that pre-IPO discretional accruals are positively associated with underpricing and discretional accruals in the IPO year are negatively associated with long-term performance. In addition, the results suggest that discretional total accruals are not as strong as discretional current accruals as the measure of earnings management. It's a less powerful indicator of post-offering long-term performance. Finally, the results also show other important findings. The growth stocks with lower book-to-market ratio tend to have higher underpricing and lower long-term performance. The reputation of intermediaries does matter, especially that of underwriters affects underpricing in a positive way. Firms listed in Nasdaq and high-tech firms are expected to have higher underpricing. But the former incline to underperform other firms in the long run and high-tech firms tend to outperform. The firms issuing in financial crisis outperform in the long-run.

The rest of this paper is arranged as follows. Section 2 derives hypotheses from the previous literature. Section 3 provides the proxy for earnings management and subsequent stock performance. Section 4 describes data availability and sample selection. Section 5 presents the empirical results. Section 6 concludes as a summary of interpretation of the empirical findings.

2. Literature review

This thesis relates to three strands of literatures: earnings management in IPO firms, the relationship between earnings management and underpricing as well as long-term performance.

2.1 Earnings management in IPOs

Healy and Wahlen (1999) defines earnings management as managers who use judgment in financial reporting and structure transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company, or to influence contractual outcomes that depend on reported accounting numbers. Research on earnings management suggests that it is a pervasive phenomenon in firms especially during initial public offering.

Teoh et al. (1998a) and Teoh, Wong and Rao (1998) and DuCharme et al. (2004) show evidence that firms in US market report income increasing accruals to boost earnings in the year of the offering. These offer firms are attempting to manage investor's perceptions with discretionary current accruals or total accruals. Recent studies also show that earnings management affects IPO firms' reporting by using data from European markets.

By examining the data of Dutch offers, Roosenboom, Goot, and Mertens (2003) conclude that their findings confirm the US findings. They find that managers inflate their company's earnings in the year when firm goes public but not in the year before. Miloud (2014) extends the research to French market. His research shows that firms report significant positive discretional current accruals in the offer year to increase the attractiveness of offered shares.

However, contrary to popular belief, Ray and Shivakumar (2008) examine the UK IPO firms and conclude IPO firms report more conservatively. They compare private-status financials with restated prospectus financials for the same firm in the same year and find insignificant discretional accruals around IPO. They attribute this to the higher quality reporting standards required by investors, intermediaries, and press. Cohen, Dey and Lys (2008) also argue that managers have shifted away from accruals management after the passage of SOX. Therefore, I want to examine my first hypothesis:

H1: There are still positive discretional accruals in the year when firms go public during post-SOX period.

2.2 Earnings management and underpricing

Underpricing has always been a hot topic in initial public offerings in recent decades. Academics use the terms underpricing and first-day returns interchangeably. The empirical studies by Ibbotson (1975),Ibbotson, Sindelar and Ritter (1994), and Ritter and Welch (2002) show that on average, the first day returns of IPOs are more than 10 percent . Ibbotson (1975) concludes that IPO is undervalued considering the first-day market is the indication of fair value.

However, scholars recently argue firms with higher accruals demonstrate higher underpricing which means that IPOs are overvalued at the offer price considering the inflated earnings. The stock price tends to run up in the short-run market and reverts to its fair value in the long-run. This is because of the initial overvaluation by the most optimistic and overconfident buyers [(See Miller(1977), and Danile, Hirshleifer and Subrahmanyam (1998)]. DuCharme, Malatesta and Sefcik (2001) confirm this theory by stating that pre-IPO abnormal

accruals (discretional current accruals and total accruals) are positively related to initial firm value and are negatively related to three-year post IPO stock returns. This is also consistent with the IPO long-run underperformance literature.

Furthermore, Puranandam and Swaminathan (2004) review first-day returns of more than 2000 samples of IPO from 1980 to 1997.They divide the samples into two groups: overvalued and undervalued firms based on pre-IPO accounting criteria. Overvalued firms are characterized by higher accruals, lower profitability, and higher earnings forecast compared to undervalued firms. They conclude that overvalued IPOs provide higher first day returns than the undervalued firms, but lower long run returns.

In a recent study, Chahine et al. 2012 show that firms with higher discretional current accruals before IPO date are related to higher underpricing using samples from 1996-2006 in U.S. and U.K. markets. Hereby, I raise the second hypothesis:

H2: The pre-IPO discretionary accruals and underpricing of IPOs are positively associated.

2.3 Earnings management and long-term performance

Mulford and Comiskey (2005) show that earnings are considered as the most vital indicators of financial information. Teoh et al. (1998a) indicate that IPO issuers can report unusually high earnings by adopting discretionary accounting accruals. Sloan (1996) show that the accrual components of earnings are less persistent than cash flow components in predicting the future performance due to estimation errors. If investors are fixated on earnings, they could pay a higher price than the intrinsic value. However, As the reversal of accruals and more information available, investors could recognize this and lose their optimism and

lower their evaluation, which brings about post-offering underperformance in the long run . Ibbotson et al. (1994) confirm this by stating that IPO long-term underperformance is related to much higher valuation of the optimistic investors who tend to buy the IPO shares.

Previous studies have documented poor stock long-run performance for firms conducting initial public offering. Ritter (1991) reports substantial underperformance of offer firms 3 years after the issuing year compared to matching firms. Teoh et al. (1998a) conclude that the greater earnings management at the time of the offering, the larger the ultimate price correction. They consider discretional current accruals in the IPO year as the proxy for earnings management. They ranked the discretionary current accruals of sample firms from highest to lowest. A firm in the highest quartile experiences on average 15 to 30 percent worse three-year performance than a firm in the lowest quartile.

Unlike Teoh et al. (1998a), Rangan (1998) focuses on the stock returns in the year following the offering year alone, because earnings declines related to discretionary accruals are concentrated in this year. Consistent with his prediction, the empirical results show that issuing firms which manage earnings experience relatively poor post-offering performance.

Xie (2001) suggests that market overprices and overestimates the persistence of abnormal accruals stemming from managerial discretion, which implies one-year-ahead abnormal accruals are negatively correlated with subsequent one-year buy-and-hold returns.

Confirming earlier studies, DuCharme et al. (2004) find that earnings reported in the IPO offer year on average contain positive abnormal current accrual components. The abnormal accruals are negatively related to post 3-year stock returns. Roosenboom et al. (2003) and Miloud (2014) also find inverse relationship between discretional current accrual in the offer

year and post 3-year stock returns. Not surprisingly, Ducharme et al. (2001) also show that pre-IPO discretionary current accruals are negatively related to long-term buy-and-hold returns. Based on the historical relationship between discretional accruals and long-term stock performance, I develop the third hypothesis as blow:

H3: The discretionary accruals in the IPO year and the year before are negatively associated with long-term performance.

3. Methodology

3.1 Proxy for earnings management

3.1.1 Discretional current accruals

Based on prior research, earnings management can be captured by discretionary total accruals [(Teoh et al.(1998a), and DuCharme et al. (2001)). Discretional total accruals can be further divided into discretional long-term accruals and discretional current accruals. Previous research by Guenther 1994, Teoh et al. (1998a), and Teoh, Welch and Wong (1998b) find managers have more flexibility and control over the discretional current accruals. They are more likely to be managed by the company. Therefore, discretional current accrual (DCA) is the primary proxy for earnings management. Discretional and non-discretional current accrual (NDCA) are components of current accruals. Following Teoh et al.(1998a) , I first compute current accruals (CA) as following:

$$CA = \Delta(Accounts\ Receivalbe + Inventory + Other\ Current\ Assents) - \Delta(Accounts\ Payable + Tax\ Payable + Other\ Currents\ Liabilities) \quad (1)$$

Non-discretionary current accruals (NDCA) are estimated by Jones (1991) cross-section model. I estimate accruals of each fiscal year for every industry classified by its 2-digit SIC

code. Expected current accruals are estimated using OLS regression as:

$$CA_{i,t}/TA_{i,t\text{-}1} = a_0\left(1/TA_{i,t\text{-}1}\right) + a_1\left(\Delta Sales_{i,t}/TA_{i,t\text{-}1}\right) + \varepsilon_{i,t} \quad (2)$$

where i refers to the matching industry samples, ΔSales is the difference between sales in year t and that in year t-1. Dechow, Sloan and Sweeney (1995) conclude that the modified Jones model offers the best results of non-discretional accruals, in which $\mathrm{NDCA}_{j,t}$ for IPO firm j in year t is calculated as:

$$NDCA_{j,t} = a_0\left(1/TA_{j,t\text{-}1}\right) + a_1\left(\Delta Sales_{j,t}\text{-}\Delta TR_{j,t}\right)/TA_{j,t\text{-}1} \quad (3)$$

where $\Delta TR_{j,t}$ is the difference between trades receivable in year t and that in year t-1. The difference between Jones model and modified Jones model is the latter treats the credit sales as the discretional accruals. This is line with the expectation that managers manipulate the sales around the initial public offering.

DCA is the residual by subtracting NDCA from current accruals:

$$DCA_{j,t} = CA_{j,t}/TA_{j,t\text{-}1} - NDCA_{j,t} \quad (4)$$

3.1.2 Discretional total accruals

Discretionary total accrual is the secondary measure of earnings management in this study. Discretionary total accruals (DTAC) and non-discretionary total accruals (NDTAC) constitute the total accruals (AC). Similar as the way to obtain DCA, I first calculate AC by using cash flow information and expected total accruals by Jones (1991) model:

$$AC = Net\ Income\text{-}Cash\ Flows\ from\ Operations \quad (5)$$

$$AC_{i,t}/TA_{i,t\text{-}1} = b_0\left(1/TA_{i,t\text{-}1}\right) + b_1\left(\Delta Sales_{i,t}/TA_{i,t\text{-}1}\right) + b_2\left(PPE_{i,t}/TA_{i,t\text{-}1}\right) + \varepsilon_{i,t} \quad (6)$$

$\mathrm{NDTAC}_{j,t}$ for IPO firm j in year t is computed as:

$$NDTAC_{j,t} = b_0\left(1/TA_{j,t\text{-}1}\right) + b_1\left(\Delta Sales_{j,t}\text{-}\Delta TR_{j,t}\right)/TA_{j,t\text{-}1} + b_2\left(PPE_{j,t}/TA_{j,t\text{-}1}\right) \quad (7)$$

Discretionary total accruals (DTAC) are the residuals, calculated in an analogous way as DCA:

$$DTAC_{j,t} = AC_{j,t}/TA_{j,t\text{-}1} - NDTAC_{j,t} \quad (8)$$

We can also get the discretional long-term accruals (DLA) by subtracting DCA from discretional total accruals as well as non-discretional long-term accruals (NDLA) by subtracting NDCA from non-discretional total accruals.

$$DLA_{j,t} = DTAC_{j,t}\text{-}DCA_{j,t} \quad (9)$$

$$NDLA_{j,t} = NDTAC_{j,t}\text{-}NDCA_{j,t} \quad (10)$$

3.2 Measurement of underpricing

According to Ritter and Welch (2002), the IPO underpricing is defined as the first-day stock return, which is calculated as:

$$UP_{j,1} = \left(P_{j,1}/P_{j,0}\text{-}1\right)*100\% \quad (11)$$

where $P_{j,1}$ is the close price on the first trading day and $P_{j,0}$ is the offer price.

To capture the effect of pre-IPO discretional accruals on the first-day returns, I regress underpricing on the pre-IPO accrual variables and control variables. DCA is the measurement of earnings management. Auditor and underwriter variables are involved to capture the influence of intermediaries. Nasdaq (NDQ) dummy is to control for the market difference as Nasdaq is perceived to have more volatile and growth oriented companies than NYSE and AMEX. High-tech (HTC) dummy is to control for the industry difference since the high-tech firms present the highest IPO frequency during sample period. The Financial Crisis (FNC) and Market Return (MrkRet) dummies aim to capture the effects of the economic condition. Offer Price (OFP) and proceeds (PRD) controls for the size effect. Age and book-to-market

ratio (B/M) variables target at the growth potential difference among firms. Following DuCharme et al. (2001), I also include cash flow from operations (CFO) as the control variable. Therefore, the underpricing model is:

$$UP_j = \alpha_0 + \beta_1 DCA_j + \beta_2 NDCA_j + +\beta_3 NLA_j + \beta_4 NDLA_j + \gamma_1 \mathrm{AUD}_j + \gamma_2 \mathrm{UDW}_j + \gamma_3 NDQ + \gamma_4 HTC_j + \gamma_5 OFP + \gamma_6 \mathrm{MrtRet}_j + \gamma_7 \mathrm{CFO}_j + \gamma_8 \mathrm{FNC}_j + \gamma_9 PRD + \gamma_{10} AGE_j + \gamma_{11} \mathrm{B/M}_j + \varepsilon_{j,t} \quad (12)$$

where DCA and NDCA refer to the discretional current accruals and non-discretional current accrual. DLA and NDLA are the discretional long-term accruals and non-discretional long-term accruals. Auditor equals one if the auditor is a "Big 4" and zero otherwise. Underwriter equals one if the leading underwriter is listed among the top 30 reputational firms in Loughran and Ritter (2004)'s Underwriter Ranks and zero otherwise. NDQ equals 1 if the company is listed in Nasdaq and zero otherwise. HTC equals 1 if the company is in high-tech industry. OFP refers to the offer price in initial public offering. MrkRet is the S&P 500 index return on the contemporaneous day. CFO is the cash flow operation scaled by total assets of last year. FNC equals 1 if the company goes public during financial crisis. PRD is the proceeds scaled by total assets of last year. Age is the company's existing years when it goes public. B/M is the book-to-market ratio in the offer year.

3.3 Measurement of long-term performance

Many studies use buy-and-hold abnormal returns (BHAR) as measurement of long-run performance since they are designed to detect long-term abnormal stock returns for investors [Barber and Lyon (1997), Teoh et al. (1998a), and DuCharme et al. (2004)]. I use buy-and-hold returns on issue firm shares for 36 months beginning the month after the offering fiscal year end. In the meantime, I also employ buy-and-hold returns for 1 year

following the offering year, since Rangan (1998) argues that earnings decline related to discretionary accruals concentrates only in this year. I divide the contemporaneous buy-and-hold return by market index return to obtain the abnormal return. BHAR with a 3-year and 1-year holding period is calculated as:

$$BHAR_j = \left[\prod_{t=1}^{T}(1 + r_{j,t})\right] \div \left[\prod_{t=1}^{T}(1 + r_{m,t})\right] \text{-1} \quad \textbf{(13)}$$

Where $r_{j,t}$=monthly return for IPO firm j; $r_{m,t}$= monthly return of the S&P 500 index ; T=36 months for 3-year return and T=12 for 1-year return.

To measure the relation between earnings management and post-issue performance, OLS regression is used. I follow Teoh et al. (1998a) regression model and add five control variables. I include first-day returns (underpricing) as the control variable. Based on market efficiency theory, the market price is the fair value of the firm in efficient market. As the first day trading return implies the initial market value, underpricing presumably indicates some long-term market performance in the traditional underpricing model [See Puranandam and Swaminathan (2004)]. The Nasdaq dummy, the financial crisis dummy, auditor and underwriter dummy, are involved as the reasons described above. Therefore, the regression model is:

$$BHAR_j = \alpha_0 + \beta_1 DCA_j + \beta_2 NDCA_j + \beta_3 NLA_j + \beta_4 NDLA_{j+} \gamma_1 B/M_j + \gamma_2 AGE_j + \gamma_3 UP_j + \gamma_4 NDQ_j + \gamma_5 HTC_j + \gamma_6 \text{AUD}_j + \gamma_7 \text{UWT}_j + \gamma_8 \text{FNC}_j + \varepsilon_{j,t} \quad \textbf{(14)}$$

4.Data

The sample period is from year 2002 to 2011 focusing on the post-SOX period. The original IPO firms are obtained from Securities Data Co. (SDC). The details of the offers such as firm auditors and underwriters, the proceeds, SIC code, the issue dates and trading dates are included in this data set. Following Shivakumar (2000), I exclude the financial and utility firms from the samples since the reporting requirements for these firms are different from other industry firms. I also exclude the firms with IPO price less than $1 and this gives me the initial sample size of 970 firms. The corresponding accounting data and monthly stock returns are extracted from Compustat and Center for Research in Security Prices (CRSP), respectively.

I define the financial year in which the company goes public as Year 0 and the year after as Year 1 and so on. Following Teoh et al. (1998a), I use accrual data from the financial statement of Year 0, which includes both pre- and post-IPO months, to measure the earnings management. I calculate discretional current accruals (DCA) for 5 years from Year -1 to Year 3.I include the firms with (1) sufficient accounting data to calculate DCA in year 0;(2) monthly stock return in CRSP; (3) at least 10 observations in 2-digit SIC industries after excluding the firms conducting IPO or seasonal equity offerings in the same year to estimate the expected accruals, because Kim and Park (2005) indicate that the seasonal equity insurers make aggressive accounting decisions to increase earnings around offerings. This generates the final sample size of 656 IPO firms.

5.Empirical results

5.1 Earnings management

Table 1 reports the summary statistics of the sample firms. Panel A demonstrates the industry distribution of samples selected. There're 656 firms with 45 different two-digit SIC codes falling into more than 12 different industries. This indicates the industry diversity of sample selection. Table 1 shows all the industries more than 1 percent. Not surprisingly, the IPO firms cluster in industries. Computer hardware and software industry has the highest frequency (25.3%) of sample firms. With the commercial growth of internet, the high-tech industry still represents the biggest part of the initial public offerings although the dot-com bubbles diminished in year 2000.

Panel B provides the year distribution of sample firms. The volume of different years has large variation. Year 2004-2007 has larger volume than other years. It's worth noting that the volume dropped significantly after the global financial crisis in 2007-2008.

Panel C reports the pre-offering characteristics of sample firms, which are used as the control variables in underpricing analysis. The total assets have a mean of 722.11 million and a median of 89.65 million. The mean is approximately 8 times of the median. This suggests that there are some extreme large values or small values which could affect the discretional accruals in Year 0 since they are scaled by assets of prior year . The mean and median of the book equity value are 116.68 million and 24.88 million, respectively. The cash flow from operation is scaled by last year's total assets and has a mean of -0.09 and median of 0.07. The mean and median of proceeds are 188.67 million and 95.31 million, respectively. The mean

and median of offer price are quite close, which are around 14 dollars per share.

Panel D reports the post-offering firm characteristics of sample firms, of which are used as the control variables in regression analysis of post-offering long-term performance. The mean and median of the book equity value are 245.07 million and 104.38 million, respectively. The mean and median of the market value are 974.98 million and 423.87 million ,which represents nearly 4 times of book values. The mean of total assets is 820.30 million and the median is 188.53 million. The sales growth rate witnesses the substantial increase of IPO firms after listing. The mean is nearly 60 percent and median is 29.20 percent. The B/M ratio has similar mean and median of 33.06 percent and 27.67 percent, respectively. The price-to-earnings ratio has the same mean and median of 11.16. Sample firms have an average age of 19.37 years, which is as twice as the median age. It suggests that most of them are young firms but there are a few mature firms. The mean and median of underpricing is 11.45 percent and 6.31 percent, respectively. In general, my sample firm is reprehensive of the firms which went public during 2002-2011.

Table 1

Summary statistics

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. The sample firms should also have monthly stock returns data in CRSP as well as at least 10 industry observations in its two-digit SIC code. Panel A reports the industry distribution of IPO firms indicated by their two-digit SIC code. Panel B reports the fiscal year distribution of IPO firms. The company went public in calendar year 2002 and 2011, but could have fiscal year as 2012. Panel C reports the characteristics of sample firms in year -1. TA is the total assets. BV is book value of equity. CFO is the cash flow from operation scaled by total assets in prior year. PRD is the proceeds scaled by total assets of last year. OFP refers to the offer price in initial public offering. Panel D reports the company

characteristics in year 0 .MV is the market capitalization. ΔSales is the sales change from year -1 to year 0 . B/M and PE refer to the book-to-market ratio and price-to-earnings ratio, respectively. Age is the company's existing years when it goes public. UP refers to the underpricing, which is defined as the close price of the first trading day divided by its offer price minus 1.

Panel A :Industry Distribution

Industry	Two-Digit SIC Code	Frequency	Percentage
Computer hardware& Software	35,73	166	25.3%
Manufacturing	10-12,23-28,30-31,33	140	21.3%
Retail	53-59	58	8.8%
Scientific Instruments	38	58	8.8%
Electronic Equipment	36	53	8.1%
Oil & Gas	13,29	46	7.0%
Transportation	37,39,42,44,45	37	5.6%
Wholesale	50-51	21	3.2%
Other services	47,70,78-79	18	2.7%
Engineering & Management Services	87	16	2.4%
Health Services	80	16	2.4%
Educatioanal Services	82	11	1.7%
All others	35,73	16	2.4%
Grand Total		656	100%

Panel B:Year Distribution

Fiscal Year-End	Frequency	%	Cum.Freq.	%
2002	38	5.8%	38	5.8%
2003	31	4.7%	69	10.5%
2004	103	15.7%	172	26.2%
2005	83	12.7%	255	38.9%
2006	111	16.9%	366	55.8%
2007	110	16.8%	476	72.6%
2008	13	2.0%	489	74.5%
2009	34	5.2%	523	79.7%
2010	63	9.6%	586	89.3%
2011	68	10.4%	654	99.7%
2012	2	0.3%	656	100.0%
Grand Total	656	100%		

Panel C:Pre-Offering Sample Firm Characteristics

Items	TA($m)	BV($m)	CFO(%)	PRD($m)	OFP($)
Mean	722.11	116.68	-0.09	188.67	14.00
Median	89.65	24.88	0.07	95.31	13.50

Panel D:Post-Offering Sample Firm Characteristics

Item	BV($m)	MV($m)	TA($m)	ΔSales(%)	B/M(%)	P/E	Age	UP(%)
Mean	245.07	974.98	820.30	59.40	33.06	11.16	19.37	11.45
Median	104.38	423.87	188.53	29.20	27.67	11.16	10.00	6.31

Table 2

Discretional current accruals of IPOs

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. The sample firms should also have stock returns in CRSP as well as at least 10 industry observations in its two-digit SIC code. It reports the discretional current accruals (DCA) for sample firms from Year -1 to Year 3. The current accruals (CA) are captured by the movement of working capital from year t-1 to year t (scaled by total assets of year t-1). The expected non-discretional current accruals (NDCA) are estimated by Jones (1991) model. DCA is the residual of subtracting NDCA from CA.

Discretional Current Accruals					
(as percentage of total assets in the prior year)					
Year	-1	0	1	2	3
Mean	-3.92	7.96	0.39	-0.11	0.35
t-stat	(-4.83)	(2.17)	(1.11)	(-0.17)	(0.47)
N	577	656	637	600	540

Table 2 reports the time series distribution of discretional current accruals (DCA), which is the key measure of earnings management in this study. The mean of the discretional current accruals of year -1 is -3.92 percent, significant at 1 percent. The mean in Year 0 increase to 7.96 percent and it's significant at 5 percent (p-value:0.03). The discretional current accruals decline from year 0 to year 3. The DCA dives to 0.39 percent in Year 1, turns negative in Year 2 and climes a little bit to slightly positive in Year 3, although they're all not significant different from zero in these three years. The time series pattern of discretional current accruals indicates there's earnings management in the fiscal year when firm goes public but not in the year before. Roosenboom et al. (2003) argue that it's because the uncertain timing of the IPO could limit firm's ability and need to make income increasing accruals preceding the IPO. Moreover, I winsorize DCA at 1% and 99% level, mean DCA in year -1 and year 0 is -8.48 and 2.89 percent, both significant at 1 percent level. The results are robust after

transforming the extreme values.

5.2 Underpricing

The mean of first-day returns is 11.45 percent for the sample firms, which confirms the prior findings that the underpricing is on average above 10 percent [(see Ibbotson et al. (1994), and Ritter and Welch (2002)]. To measure the the relationship between earnings management and underpricing, I regress first-day returns on pre-IPO discretional current accruals (DCA) only, since the current accruals are more susceptible to manipulation based on previous research. It's the key measurement of earnings management in my study. Table 3 reports the regression results on discretional current accruals. In addition, I also regress the first-day returns on discretional total accruals and obtain similar results as a robustness check.

Table 3, Panel A reports the collinearity matrix of the control variables for regression analysis. The coefficient between non-discretional long-term accruals (NDLA) and proceeds is 0.656 , which indicates there could be collinearity problem. Except for these two variables, other control variables don't show any substantial collinearity.

Panel B reports the coefficients of underpricing regression models. Column 1 reports coefficients when removing non-discretional long-term accruals (NDLA) to resolve the potential collinearity problem. After removing it, the variance inflation factors (VIF) of all the variables become less than 2. The rule of thumb is that VIF is 10 indicating a high level of multicollinearity. Therefore, the collinearity problem of this regression models is solved after removing NDLA. The F statistic for the whole model is significant at 0.1 percent level and the R^2 is 18.7 percent. It shows the strong significance and appropriateness of this regression model. The coefficient of DCA is 0.072, significant at 10 percent level. The

coefficient for NDCA is 0.244, significant at 1 percent level. DLA also has a positive coefficient of 0.029, although not significant. This indicates the positive relationship between pre-IPO discretional accruals and underpricing of IPO firms.

Except for the accrual variables, some control variables also have significant results. The coefficients of the auditor and underwriter dummy are both positive, which are 0.034 and 0.050, respectively. The underwriter dummy coefficient is significant at 5 percent level. This implies that the reputation of intermediaries has positive effect on underpricing, especially the underwriter. Both Nasdaq and high-tech dummy have significant positive coefficients, which suggests the firms listed in Nasdaq and those high-tech firms tend to have higher underpricing. Both the Offer price and proceeds variable have a significant but small positive coefficient, 0.011 and 0.006, respectively. The coefficient of age is negative, -0.001, significant at 1 percent level. Market return and CFO have positive coefficients, although not significant. The financial crisis dummy also has an insignificant negative coefficient.

Column 2 reports the coefficients when further controlling the growth potential. The results are similar to those in column 1. The coefficient of DCA increases slightly to 0.089, significant at 5 percent level. The coefficient of NDCA decreases and that of DLA increases, which are 0.227 and 0.035, respectively. The coefficient of DLA becomes significant at 10 percent level. The coefficients of auditor and underwriter remain positive. Both Nasdaq dummy and high-tech dummy still have significant positive coefficients although smaller than in column 1. Offer price, proceeds and age variables results in column 1. The coefficient of new added variable, book-to-market ratio, is -0.117, significant at 1 percent. Fama and French (1992) point out that the stocks with higher book-to-market ratio are perceived as value stocks

and those with lower book-to-market ratio are considered as growth stocks. My results indicate that growth stocks tend to have higher underpricing. The other control variables remain insignificant.

Instead of only controlling for the financial crisis, column 3 reports the results when controlling the year dummy. This is necessary because the sample shows large variation in issue volumes across different years. The coefficients of year dummy are not reported here. The coefficient of DCA slightly decreases to 0.078, only significant at 10 percent level. The coefficient of DLA becomes insignificant and that of NDCA remains significant. Despite of the less significance, the positive relationship between discretional accruals and underpricing remain unchanged. The coefficients of control variables are similar to column 2.

In the spirit of DuCharme et al. (2001), I also include book equity and sales growth rate in the regression models as a supplementary and sensitivity test. The additional variables have negligent coefficients and both are insignificant. The results obtained from these tests are very similar to the results reported in table 3. The coefficient for the discretional current accruals is positive, which indicates that the IPO firms with higher pre-IPO discretional current accruals expect to have higher level of underpricing.

Table 3

Underpricing regression analysis

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. The year -1 is the financial year before year 0. DCA is the key earnings management measure. To capture the relationship between earnings management and post-offering short-term performance, the underpricing model is employed,

$$UP_j = \alpha_0 + \beta_1 DCA_j + \beta_2 NDCA_j + +\beta_3 NLA_j + \beta_4 NDLA_j + \gamma_1 \mathrm{AUD}_j + \gamma_2 \mathrm{UDW}_j + \gamma_3 NDQ +$$

$$\gamma_4 HTC_j + \gamma_5 OFP + \gamma_6 \mathrm{MrtRet}_j + \gamma_7 \mathrm{CFO}_j + \gamma_8 \mathrm{FNC}_j + \gamma_9 PRD + \gamma_{10} AGE_j + \gamma_{11} \mathrm{B/M}_j + \varepsilon_{j,t}$$

where DCA and NDCA refer to the discretional current accruals and non-discretional current accrual of year -1. DLA and NDLA are the discretional long-term accruals and non-discretional long-term accruals of year -1. Auditor equals one if the auditor is a "Big 4"and zero otherwise. Underwriter equals one if the leading underwriter is listed among the top 30 reputational firms in Loughran and Ritter (2004)'s Underwriter Ranks and zero otherwise. NDQ equals 1 if the company is listed in Nasdaq and zero otherwise. HTC equals 1 if the company is in high-tech industry. OFP refers to the offer price in initial public offering. MrkRet is the index return on the contemporaneous day. CFO is the cash flow operation scaled by total assets of last year. FNC equals 1 if the company goes public during financial crisis. PRD is the proceeds scaled by total assets of prior year. Age is the company's existing years when it goes public. B/M is the book-to-market ratio. Panel A reports the collinearity of all variables and Panel B presents the regression results. P-values in parentheses are for two- tailed tests of the hypothesis that the mean of the variable equals zero.

Panel A:Collinearity Matrix of Variables

Variables	DCA	NDCA	DLA	NDLA	AUD	UWT	NDQ	HTC	OFP	MrtRet	CFO	FNC	PRD	AGE	B/M
DCA	1														
NDCA	0.036	1													
DLA	0.101	-0.145	1												
NDLA	-0.061	0.003	0.273	1											
AUD	0.032	-0.046	-0.005	-0.069	1										
UDW	0.010	0.044	0.082	-0.015	-0.255	1									
NDQ	0.007	-0.088	0.009	-0.049	-0.126	0.173	1								
HTC	0.031	0.108	-0.127	-0.104	0.036	-0.075	-0.021	1							
OFP	-0.059	-0.056	-0.136	-0.075	-0.060	-0.160	0.192	0.077	1						
MrkRet	0.050	0.081	0.017	0.021	-0.069	0.081	0.049	-0.005	-0.019	1					
CFO	0.163	-0.070	0.292	0.004	0.092	0.038	0.075	-0.197	-0.228	-0.019	1				
FNC	0.001	0.038	-0.022	0.009	-0.058	-0.051	0.066	-0.046	0.027	0.021	-0.054	1			
PRD	0.125	0.275	0.369	0.656	0.030	0.084	-0.080	-0.090	-0.151	0.037	0.332	0.006	1		
AGE	-0.079	0.082	-0.070	-0.044	-0.029	0.021	0.203	0.076	-0.148	0.035	-0.065	-0.050	0.039	1	
B/M	-0.094	0.051	-0.077	-0.023	0.056	0.114	0.121	0.063	0.085	0.011	-0.034	-0.024	0.047	0.099	1

Panel B:Regression Analysis of Underpricing			
DCA Regression Model			
Variables	1	2	3
DCA	0.072*	0.089**	0.078*
	(0.084)	(0.033)	(0.066)
NDCA	0.244***	0.227***	0.229***
	(0.003)	(0.005)	(0.005)
DLA	0.029	0.035*	0.033
	(0.158)	(0.084)	(0.105)
AUD	0.034	0.029	0.026
	(0.143)	(0.206)	(0.261)
UWT	0.050**	0.041*	0.038*
	(0.017)	(0.052)	(0.074)
NDQ	0.046**	0.037*	0.034*
	(0.016)	(0.052)	(0.079)
HTC	0.101***	0.096***	0.100***
	(0.000)	(0.000)	(0.000)
OFP	0.011***	0.011***	0.011***
	(0.000)	(0.000)	(0.000)
MrkRet	0.185	0.149	0.016
	(0.816)	(0.850)	(0.985)
CFO	0.018	0.019	0.018
	(0.212)	(0.160)	(0.200)
FNC	-0.023	-0.019	
	(0.511)	(0.568)	
PRD	0.006***	0.006***	0.005***
	(0.000)	(0.001)	(0.001)
AGE	-0.001***	-0.001**	-0.001**
	(0.000)	(0.014)	(0.010)
B/M		-0.117***	-0.114***
		(0.000)	(0.000)
Year Dummy	No	No	Yes
Intercept	-0.162	-0.092	-0.127
	(0.000)	(0.018)	(0.013)
Sample Size	577	577	577
R-squared	0.187	0.211	0.217
F-stat	(0.000)	(0.000)	(0.000)

*The symbols *, **, and *** denote statistical significance at the 10 percent, 5 percent and 1 percent level, respectively.*

5.3 Long-term performance

To capture the long-term abnormal stock returns, buy-and-hold abnormal returns (BHAR) is employed in this study since it's most investor oriented. I use buy-and-hold returns of issue firms for both 3-year and 1-year beginning the fiscal year after the offering year. The 3-year and 1-year buy-and- hold returns are regressed on accrual variables, respectively. As predicted by the hypothesis, the estimated coefficients of discretional current accruals are negative.

Table 4, Panel A reports the collinearity matrix of all variables. The coefficient between non-discretional long-term accruals (NDLA) and non-discretional current accruals is -0.888, which indicates high level of collinearity. Except for these two variables, other variables don't show any significant collinearity.

Panel B reports the regression results on discretional accruals of year 0. The F statistic shows good fitness of the regression model and R^2 is 5.7 percent. Column 1-3 reports the coefficients of 3-year buy-and-hold returns. Column 1 reports the coefficients when excluding NDLA regarding the collinearity problem. The primary variable, DCA, has a coefficient is -0.242, significantly at 1 percent. This indicates that the more the earnings management, the lower the long-term performance. The coefficient for DLA is also significantly negative, -0.224 with a significance of 5 percent. The coefficient of NDCA is -0.363, significant at 5 percent.

Except for the accrual variables, the Nasdaq dummy is significantly negative at 5 percent level, which indicates that firms listed in Nasdaq incline to have poor long-term performance. It is reasonable considering the majority of the firms in Nasdaq are growth oriented firms. According to Skinner and Sloan (2002), evidence shows that growth stocks have historically underperformed other stocks in terms of realized stock returns. Besides this, the coefficient for high-tech dummy is significantly positive, which suggests the high-tech firms are likely to outperform other firms in long run. The financial crisis dummy also has a significant positive coefficient of 0.511 at 10 percent level. This implies that the firms going public during the financial crisis period tend to outperform the other firms. The potential explanation is that only the firms with superior quality can go public during the financial crisis. Consequently,

they show strong performance in subsequent periods. Other control variables are insignificant.

Column 2 reports the coefficients of a simplified regression model based on column 1. This model excludes age, underpricing and intermediary variables considering their influence on long-term return is trivial and insignificant. The magnitude of coefficient for the primary variable, DCA, increases more than 1 percent to -0.258, significant at 1 percent level. The coefficients of DLA and NDCA remain significantly negative although shrink to some extent. It suggests the strong negative relationship between the discretional accruals in the IPO year and 3-year post-offering stock performance. The coefficients for Nasdaq dummy, High-tech dummy and financial crisis dummy remain significant as those in column 1.

Column 3 reports the results when controlling for year dummy instead of financial crisis only. The coefficients of year dummy are not reported here. Compared to column 2, the coefficients of DCA and DLA are still significantly negative, -0.246 and -0.159, respectively, although the magnitude is slightly less than those in column 2. The coefficient for NDCA remains significantly negative. By controlling for the volume difference in each year, the R^2 increases from 5.5 percent to 8.9 percent. The regression model has larger explanation power and the results are more robust, which strengthens the strong negative relationship between discretional current accruals in IPO year and 3-year post-offering stock performance.

Column 4-6 reports the coefficients of post-offering 1-year buy-and-hold returns. The coefficients of accrual variables demonstrate similar pattern as the 3-year's. In a analogous manner, column 4 reports the coefficients when omitting NDLA. The coefficients for both DCA and DLA are significantly negative, -0.211 and -0.455, respectively. The NDCA also has

a significant coefficient of -0.551. In both column 5 and column 6, the absolute value of coefficient for DCA increases to above 25 percent, which is 4 percent higher than that in column 4. Both the 3-year and the 1-year stock returns are negatively correlated with discretional current accruals, strongly indicating that the degree of earnings management in IPO year predicts the cross-sectional variation of long-term performance.

Besides the main finding, the B/M variable also has a positive coefficient of 0.223 in column 4, significant at 5 percent level. Firms with high B/M ratio are considered as value stocks and firms with low B/M ratio are treated as growth stocks. This result echoes the finding of Chan and Lakonishok (2004), on average, value stock outperforms growth stock in the long-run. The coefficients for underpricing, age and intermediaries remain insignificant. The coefficients of Nasdaq dummy and financial crisis dummy have the same sign as the 3-year model but insignificant. The high-tech dummy has a negative coefficient in 1-year model, however, not significant.

Table 4, panel C reports the relationship between discretional current accruals of year -1 and long-term post-offering returns. Column 1-3 reports the coefficients of 3-year buy-and-hold returns on DCA of year -1. Column 1 reports the results when NDLA is removed to solve the potential collinearity problem. The coefficient of DCA, the primary earnings management measure, is close to zero and insignificant. Neither of the coefficient of DLA or NDCA is significant. Column 2 reports the results of simplified regression model and column 3 reports the results when controlling the year dummy as in panel B. Similarly, none of the coefficients of accruals is significant. In a same way, column 4-6 reports the coefficients of 1-year return on discretional current accruals of year -1. None of the accruals has a significant coefficient,

which indicates that there's no relationship between discretional current accruals of year -1 and long-term performance for IPO firms. The most possible interpretation is that there's no earnings management in year -1 as suggested by the negative discretional current accruals.

Table 4

Long-term performance regression analysis

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. The year -1 is the financial year before year 0.DCA is the key earnings management measure. To capture the relation between earnings management and post-offering long-term performance, both 3-year and 1-year buy-and-hold abnormal returns are employed,

$$BHAR_j = \alpha_0 + \beta_1 DCA_j + \beta_2 NDCA_j + \beta_3 NLA_j + \beta_4 NDLA_j + \gamma_1 B/M_j + \gamma_2 AGE_j + \gamma_3 UP_j + \gamma_4 NDQ_j + \gamma_5 HTC_j + \gamma_6 \mathrm{AUD}_j + \gamma_7 \mathrm{UWT}_j + \gamma_8 \mathrm{FNC}_j + \varepsilon_{j,t}$$

where DCA and NDCA refer to the discretional current accruals and non-discretional current accrual. DLA and NDLA are the discretional long-term accruals and non-discretional long-term accruals. B/M is the book-to-market ratio. Age is the company's existing years when it goes public. UP is the first trading day return. NDQ equals 1 if the company is listed in Nasdaq. HTC equals 1 if the company is in high-tech industry. Auditor equals one if the auditor is a "Big 4"and zero otherwise. Underwriter equals one if the leading underwriter is listed among the top 30 reputational firms in Loughran and Ritter (2004)'s Underwriter Ranks and zero otherwise. FNC equals 1 if the company goes public in financial crisis. Panel A reports the collinearity of all variables and Panel B presents the regression results on DCA of Year 0. Panel C reports regression results on DCA of Year -1. The P-values in parentheses are for two-tailed tests of the hypothesis that the mean of the variable equals zero.

Panel A :Collinearity Matrix of Variables

Variables	DCA	NDCA	DLA	NDLA	BM	AGE	UP	NDQ	HTC	AUD	UWT	FNC
DCA	1											
NDCA	0.145	1										
DLA	0.319	0.089	1									
NDLA	0.109	-0.888	0.245	1								
B/M	-0.012	-0.007	-0.048	0.016	1							
AGE	-0.040	0.109	-0.142	-0.187	0.092	1						
UP	-0.045	-0.131	-0.073	0.091	0.195	0.000	1					
NDQ	0.018	-0.015	0.023	0.003	0.138	0.233	-0.038	1				
HTC	0.060	0.089	0.004	-0.085	0.010	0.058	-0.209	0.041	1			
AUD	0.012	0.038	-0.019	-0.040	0.004	-0.053	-0.074	-0.086	0.037	1		
UWT	0.041	0.125	-0.064	-0.138	0.065	0.047	-0.104	0.230	-0.024	-0.266	1	
FNC	-0.021	0.036	-0.007	-0.043	-0.074	0.002	-0.016	0.001	-0.010	0.020	-0.072	1

Panel B:Regression Analysis of Post-Offering Long-term Stock Performance

DCA of Year 0 Model

	3-year			1-year		
Variables	1	2	3	4	5	6
DCA	-0.242***	-0.258***	-0.246***	-0.211***	-0.251***	-0.253***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NDCA	-0.363**	-0.329***	-0.321***	-0.551***	-0.378***	-0.395***
	(0.010)	0.009	(0.010)	(0.000)	(0.000)	(0.000)
DLA	-0.224**	-0.175***	-0.159***	-0.455***	-0.262***	-0.271***
	(0.014)	(0.006)	(0.011)	(0.000)	(0.000)	(0.000)
B/M	0.118	0.125	0.087	0.223**	0.178*	0.172*
	(0.378)	(0.325)	(0.494)	(0.021)	(0.055)	(0.063)
AGE	-0.008			0.041		
	(0.849)			(0.195)		
UP	-0.050			0.154		
	(0.805)			(0.292)		
NDQ	-0.197**	-0.229***	-0.249***	-0.085	-0.085	-0.102*
	(0.028)	(0.006)	(0.003)	(0.190)	(0.159)	(0.094)
HTC	0.204**	0.211**	0.188**	-0.030	-0.035	0.011
	(0.023)	(0.015)	(0.031)	(0.646)	(0.578)	(0.861)
AUD	-0.013			0.004		
	(0.902)			(0.958)		
UWT	0.145			-0.042		
	(0.146)			(0.56)		
FNC	0.511*	0.534**		0.179	0.184	
	(0.059)	(0.047)		(0.362)	(0.347)	
Year Dummy	No	No	Yes	No	No	Yes
Intercept	0.057	0.160	0.674	-0.110	0.016	0.314
	(0.768)	(0.071)	(0.000)	(0.434)	(0.800)	(0.015)
Sample Size	641	656	656	641	656	656
R-squared	0.057	0.055	0.089	0.090	0.064	0.101
F-stat	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

*The symbols *, **, and *** denote statistical significance at the 10 percent, 5 percent and 1 percent level, respectively.*

Panel C:Regression Analysis of Post-Offering Long-term Stock Performance						
DCA of Year -1 Model						
	3-year			1-year		
Variables	1	2	3	4	5	6
DCA	0.000	0.001	0.001	0.008	0.007	0.004
	(0.983)	(0.939)	(0.970)	(0.471)	(0.510)	(0.730)
NDCA	0.000	0.003	-0.003	0.011	0.014	0.005
	(0.996)	(0.947)	(0.959)	(0.731)	(0.667)	(0.870)
DLA	0.025	0.024	0.020	0.000	0.001	0.004
	(0.326)	(0.342)	(0.409)	(0.975)	(0.961)	(0.806)
B/M	0.187	0.188	0.138	0.274***	0.225**	0.206**
	(0.220)	(0.195)	(0.339)	(0.004)	(0.012)	(0.020)
AGE	-0.037			0.058		
	(0.441)			(0.048)		
UP	-0.099			0.131		
	(0.634)			(0.307)		
NDQ	-0.237**	-0.248***	-0.271***	-0.087	-0.113**	-0.136**
	(0.013)	(0.005)	(0.002)	(0.137)	(0.038)	(0.013)
HTC	0.241**	0.238***	0.206**	0.029	0.036	0.076
	(0.010)	(0.009)	(0.024)	(0.613)	(0.521)	(0.176)
AUD	0.013			0.048		
	(0.913)			(0.509)		
UWT	0.122			-0.026		
	(0.254)			(0.688)		
FNC	0.474*	0.496*		0.169	0.171	
	(0.084)	(0.068)		(0.316)	(0.306)	
Year Dummy	No	No	Yes	No	No	Yes
Intercept	0.149	0.159	0.704	-0.218	-0.002	0.372
	(0.776)	(0.481)	(0.093)	(0.094)	(0.970)	(0.001)
Sample Size	576	584	584	576	584	584
R-squared	0.044	0.041	0.081	0.034	0.025	0.081
F-stat	(0.007)	(0.001)	(0.000)	(0.034)	(0.042)	(0.000)

*The symbols *, **, and *** denote statistical significance at the 10 percent, 5 percent and 1 percent level, respectively.*

As a further test following Teoh et al. (1998a), I divide the sample firms into quartiles based on discretional current accruals. I rank them from lowest to highest with each quartile containing 164 firms. The first quartile which has the lowest discretional current accruals is considered as conservative firms. In contrast, the fourth quartile which is characterized by the highest discretional current accruals is classified as aggressive firms.

Table 5 reports the summary statistics of discretional current accruals by quartiles. The conservative firms have a mean of -21.89 percent of discretional current accruals, with a significance of 1 percent (p-value:0.00). The average of discretional current accruals for

aggressive firms is 52.60 percent, significant at 1 percent (p-value:0.00). The difference of mean between conservative firms and aggressive firms is -74.49 percent (p-value:0.00). This indicates the significant difference of two groups in discretional current accruals. Besides this, the aggressive firms tend to be small firms (smaller market capitalization) and growth stocks (smaller B/M ratio) compared to conservative firms.

Considering that the coefficient of DCA in 3-year buy-and-hold regression model is -0.246 and the DCA spread between aggressive firms and conservative firms is 74.49 percent, the underperformance of aggressive firms is expected to be 18.32 percent compared to the conservative firms. Similarly, the coefficient of DCA in 1-year buy-and-hold regression model is -0.253, which implies an 18.85 percent return difference between aggressive firms and conservative firms.

Table 6 reports the post-offering returns of sample firms according to DCA quartiles. The average 3-year raw return for all sample firms is 22.37 percent (p-value:0.00). The mean of raw returns for conservative firms is 41.83 percent(p-value:0.00) and that of aggressive firms is -3.68 percent, which is not significant. The aggressive firms underperform the conservative firms by 45.51 percent based on raw returns. On a market adjusted return measure, the 3-year buy-and hold-return is, on average, 10.40 percent. The conservative firms have an average return of 24.61 percent compared to -6.69 percent of aggressive firms. The underperformance of aggressive firms is 31.30 percent, although less in magnitude than raw returns, significant at 1 percent level. This underperformance confirms the return difference of 18.25 percent estimated by the regression model although the actual is larger. However, the return differences obtained from both methods between these two quartiles are significant.

The 1-year raw returns and market adjusted returns demonstrate a slightly different pattern compared to 3-year returns. The underperformance of aggressive firms is 21.03 percent regarding the raw returns. Opposite to the the 3-year return pattern, the underperformance of aggressive firms is 21.85 percent, larger than that of raw returns. The difference is very similar to what computed from the regression analysis, which is 18.85 percent. In addition, figure 1 captures the cumulative buy-and-hold abnormal returns by event quarter. The conservative firms outperform the aggressive firms for the entire 3 years after the initial public offering.

To summarize, both the 3-year and 1-year buy-and-hold returns show the obvious underperformance of the aggressive firms, which indicate that larger discretional current accruals predict the lower future long-term returns.

Table 5

Quartiles of discretional current accruals

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. The sample firms should also have stock data in CRSP as well as at least 10 industry observations in its two-digit SIC code. The sample firms are divided in to quartiles according to discretional current accruals in year 0. It's ranked from lowest DCA to highest. It also reports the mean of market capitalization (MV), book-to-market ratio (B/M) and age according to the DCA quartiles. N indicates the sample size.

Quartiles of Discretional Current Accruals							
(as percentage of total assets in the prior year)					MV($m)	B/M	Age
Quantile	Range	N	Mean	Std.Dev.	Mean	Mean	Mean
Q1	DCA<-5.94	164	-21.89	0.30	1017.04	34.81	14.51
Q2	-5.94<DCA<0.31	164	-2.36	0.02	959.02	36.86	21.27
Q3	0.31<DCA<7.94	164	3.50	0.02	1334.49	33.34	26.10
Q4	DCA>7.94	164	52.60	1.77	589.38	27.26	15.57
Conservative-Aggressive			-74.49				
(t-stat)			(-5.30)				

Table 6

Post-offering long-term returns by quartiles

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. The DCA is the key measure of earnings management in this study. The sample firms are divided in to quartiles according to discretional current accruals in year 0. They are ranking from lowest to highest with each quartile containing 164 firms. The first quartile is considered as conservative firms and the fourth quartile is aggressive firms. Buy-and-Hold raw returns are calculated as below:

$$\text{RawRet}_j = \left[\prod_{t=1}^{T}(1 + r_{j,t})\right] - 1$$

where $r_{j,t}$ is the monthly stock return for firm j in month t. T is the post-offering period, which is 12 months and 36 months beginning the month after year 0,respectively. Buy-and-hold market adjusted return are computed based on index return,

$$\text{BHAR}_j = \left[\prod_{t=1}^{T}(1 + r_{j,t})\right] \div \left[\prod_{t=1}^{T}(1 + r_{m,t})\right] - 1$$

where $r_{m,t}$ is the monthly index return of month t. The difference and t-statistics of market adjusted returns between conservative and aggressive firms are computed. N indicates the sample size.

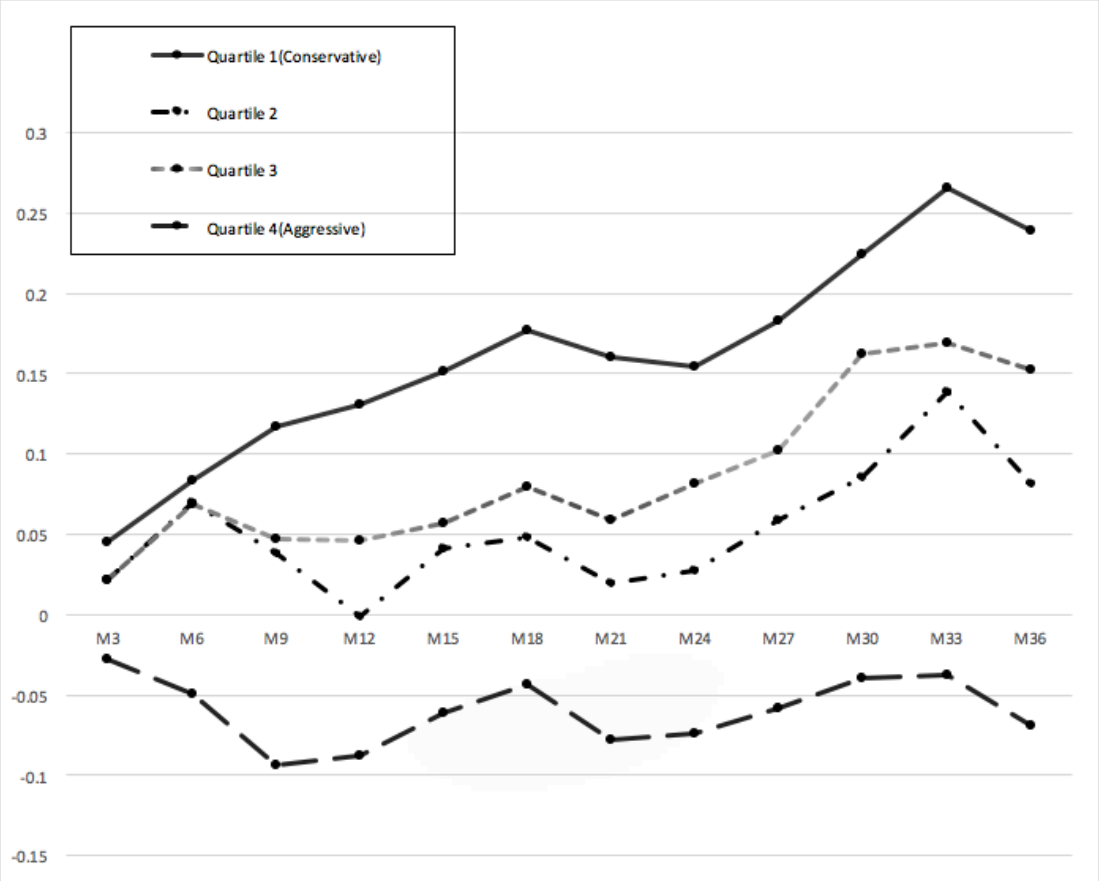
Post-offering returns by quartiles

Buy-and-Hold(%)							
3-year	N	All	Q1	Q2	Q3	Q4	Q1-Q4
Raw Returns	656	22.37	41.83	26.31	25.04	-3.68	45.51
	(t-stat)	(4.85)	(3.42)	(3.08)	(3.04)	(-0.55)	(3.26)
Market Adjusted	656	10.40	24.61	8.40	15.17	-6.69	31.30
	(t-stat)	(2.72)	(2.52)	(1.26)	(2.16)	(-1.04)	(2.68)
1-year							
Raw Returns	656	5.08	14.69	5.43	6.54	-6.35	21.03
	(t-stat)	(1.67)	(1.94)	(1.25)	(1.27)	(-0.96)	(2.09)
Market Adjusted	656	2.15	13.07	-0.16	4.46	-8.78	21.85
	(t-stat)	(0.77)	(1.87)	(0.04)	(0.95)	(-1.41)	(2.34)

Figure 1

Buy-and-hold abnormal returns by event quarter

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. (Details are elaborated in Table 6). The sample firms are divided into quartiles according to discretional current accruals in year 0. The first quartile is considered as conservative firms and the fourth quartile as aggressive firms.M3 refers to the third month after year 0, M6 means the sixth month after year 0 and so on.



5.4 Robustness check

Discretional total accruals (DTAC) is the second measure of earnings management in this study. I employ it as the robustness check.

5.4.1 Earnings Management

Table 7, Panel A reports the time series distribution of discretional total accruals (DTAC) from the financial year before firm goes public and four years after. The mean of the

discretional total accruals of year -1 is -9.44 percent, significant at 1 percent level. It indicates no earnings management before the IPO year. The mean of year 0 increases to -3.79 percent, but it's not significant from zero (p-value:0.31). However, the mean of DTAC becomes significantly negative from year 1 to year 3. The DTAC in year 1 to year 3 is -3.36 percent, -4.41 percent and -7.98 percent, respectively. It's noteworthy that the absolute value of discretional total accruals is decreasing from year -1 to year 0 and increasing through year 1 to year 3, which implies the earnings management in year 0 although it's not significant positive. It echoes the finding that there is accrual-based earnings management in year 0 for IPOs but not in year -1.

Panel B reports reports the summary statistics of discretional total accruals by quartiles. The average discretional total accruals for conservative firms is -49.55 percent and it is 43.09 percent for aggressive firms. The difference is -92.63 percent, significant at 1 percent level. This indicates the substantial difference of two groups in earnings management.

Table 7

Discretional total accruals

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. The sample firms should also have stock returns in CRSP as well as at least 10 industry observations in its two-digit SIC code. Discretional total accruals (DTAC) is the secondary measure for earnings management. Panel A reports DTAC for sample firms from Year -1 to Year 3. The difference between net income and cash flow captures the total accruals (scaled by last year's total assets). The expected non-discretional total accruals (NDTAC) are estimated by Jones (1991) model. DTAC is calculated by subtracting NDTAC from the total accruals. Panel B reports the sample firms' statistics by quartiles according to discretional total accruals. It's ranked from lowest DTAC to highest.

Panel A:Discretional Total Accruals					
(as percentage of total assets in the prior year)					
Year	-1	0	1	2	3
Mean	-9.44	-3.79	-3.36	-4.41	-7.98
t-stat	(-4.99)	(-1.02)	(-5.17)	(-4.24)	(-5.75)
N	577	656	637	600	540

Panel B:Quartiles of Discretional Total Accruals				
(as percentage of total assets in the prior year)				
Quantile	Range	N	Mean	Std.Dev.
Q1	DTAC<-14.94	164	-49.55	0.665
Q2	-14.94<DTAC<-4.06	164	-8.66	0.030
Q3	-4.06<DTAC<4.64	164	-0.02	0.023
Q4	DTAC>4.64	164	43.09	1.665
Q1-Q4			-92.63	
t-stat			(-6.62)	

5.4.2 Underpricing

To comprehensively analyze the impact of earnings management on the posting-offering performance of IPO firms, I also involve the discretional total accruals (DTAC) as the measure of earnings management. Table 8 reports the regression results of underpricing by using discretional total accrual as the key variable.

Column 1 reports coefficients when all variables are included. The VIF of all variables is less than 2.5 showing no collinearity problem. The regression results demonstrate the similar pattern as the discretional current accruals model. The coefficient of DTAC is 0.049, significant at 5 percent level. The coefficient for NDTAC is 0.122, significant at 1 percent. This reflects the positive relationship between pre-IPO discretional accruals and underpricing of IPO firms.

Not surprisingly, other control variables also impact the underpricing in the same way as in the DCA regression model. The positive coefficients of the auditor and underwriter dummy indicate that the reputation of intermediaries has positive effect on underpricing, especially that of underwriter matters. Both Nasdaq and high-tech dummy suggest the firms listed in

Nasdaq and those high-tech firms tend to have higher underpricing. The Offer price and proceeds variable have a significant positive effect on underpricing, but the coefficient is very small. Age has a smaller significant negative coefficient. Other variables have insignificant coefficient.

Column 2 reports the coefficients when further controlling the growth potential. The results are similar to those in column 1. The coefficient of DTAC increases slightly to 0.057, significant at 1 percent level. The variable controlling for the growth potential, which is B/M ratio, has a negative coefficient of -0.119, significant at 1 percent. This echoes the finding that growth stocks tend to have higher underpricing. Column 3 reports the results when adding the year dummy. The coefficient of DTAC and NDTAC remains positively significant, which further confirms that the higher pre-IPO discretional accruals leads to higher level of underpricing.

Table 8

Underpricing regression analysis (DTAC)

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year -1 is the financial year before firm goes public. DTAC is the secondary earnings management measure. To capture the relationship between earnings management and post-offering short-term performance, underpricing regression model is employed,

$$UP_j = \alpha_0 + \beta_1 DCA_j + \beta_2 NDCA_j + +\beta_3 NLA_j + \beta_4 NDLA_j + \gamma_1 \mathrm{AUD}_j + \gamma_2 \mathrm{UDW}_j + \gamma_3 NDQ +$$
$$\gamma_4 HTC_j + \gamma_5 OFP + \gamma_6 \mathrm{MrtRet}_j + \gamma_7 \mathrm{CFO}_j + \gamma_8 \mathrm{FNC}_j + \gamma_9 PRD + \gamma_{10} AGE_j + \gamma_{11} \mathrm{B/M}_j + \varepsilon_{j,t}$$

where DTAC and NDTAC refer to the discretional total accruals and non-discretional total accruals of year -1. Auditor equals one if the auditor is a “Big 4”and zero otherwise. Underwriter equals one if the leading underwriter is listed among the top 30 reputational firms in Loughran and Ritter (2004)’s Underwriter Ranks and zero otherwise. NDQ equals 1 if the company is listed in Nasdaq and zero otherwise. HTC equals 1 if the company is in high-tech industry. OFP refers to the offer price in initial public offering. MrkRet is the index return on the contemporaneous day. CFO is the cash flow

operation scaled by total assets of last year. FNC equals 1 if the company goes public during financial crisis. PRD is the proceeds scaled by total assets of last year. Age is the company's existing years when it goes public. B/M is the book-to-market ratio. P-values in parentheses are for two- tailed tests of the hypothesis that the mean of the variable equals zero.

Regression Analysis of Underpricing			
DTAC regression Model			
Variables	1	2	3
DTAC	0.049**	0.057***	0.053***
	(0.011)	(0.003)	(0.006)
NDTAC	0.122***	0.121***	0.122***
	(0.008)	(0.008)	(0.008)
AUD	0.032	0.027	0.023
	(0.169)	(0.249)	(0.325)
UWT	0.049**	0.039*	0.037*
	(0.021)	(0.060)	(0.082)
NDQ	0.047**	0.037**	0.034*
	(0.015)	(0.052)	(0.078)
HTC	0.093***	0.089***	0.093***
	(0.000)	(0.000)	(0.000)
OFP	0.011***	0.011***	0.011***
	(0.000)	(0.000)	(0.000)
MrkRet	0.116	0.085	-0.012
	(0.884)	(0.914)	(0.988)
CFO	0.019	0.021	0.019
	(0.177)	(0.136)	(0.173)
FNC	-0.024	-0.021	
	(0.484)	(0.544)	
PRD	0.009***	0.008***	0.008***
	(0.000)	(0.000)	(0.000)
AGE	-0.001**	-0.001***	-0.001***
	(0.026)	(0.009)	(0.006)
B/M		-0.119***	-0.118***
		(0.000)	(0.000)
Year Dummy	No	No	Yes
Intercept	-0.145	-0.073	-0.100
	(0.000)	(0.062)	(0.053)
Sample Size	577	577	577
R-squared	0.184	0.209	0.216
F-stat	(0.000)	(0.000)	(0.000)

*The symbols *, **, and *** denote statistical significance at the 10 percent, 5 percent and 1 percent level, respectively.*

5.4.3 Long-term performance

Table 9 reports the long-term performance regression results on discretional total accruals

of year 0. Column 1-3 reports the coefficients of 3-year buy-and-hold returns. The coefficients mirror the pattern of discretional current accruals model. Column 1 reports the coefficients when all variables are included. The primary variable, DTAC, has a coefficient of -0.241, significantly at 1 percent. Considering the DTAC spread between aggressive firms and conservative firms is 92.63 percent, the underperformance of aggressive firms is expected to be 22.32 percent compared to the conservative firms. This indicates that the more the earnings management, the lower the long-term performance. The coefficient for NDTAC is also significantly negative, -0.128 with a significance of 1 percent. Similarly, the Nasdaq dummy is significantly negative at 5 percent level which indicates that Nasdaq listed firms incline to have poor long-term performance. The positive coefficient for high-tech dummy suggests the high-tech firms are likely to outperform other firms. The positive financial crisis coefficient implies that the firms going public during financial crisis period tend to have superior performance. Other control variables are insignificant.

Column 2 reports the coefficients of a simplified regression model based on column 1 and Column 3 shows the results when controlling for year dummy. The results in both column 2 and column 3 show similar pattern as in column 1. The coefficient for the primary variable, DTAC, still have a significant coefficient of -0.226 and -0.212. It strengthens my finding of strong negative relationship between the discretional accruals of IPO year and 3-year post offering stock performance.

Column 4-6 reports the coefficients of post-offering 1-year buy-and-hold returns. The 1-year post-offering return coefficients of accrual variables show similar pattern as the 3-year's. The coefficients for DTAC in column 4-6 remain significantly negative, -0.287,

-0.272 and -0.280, respectively. So is the case with NDTAC. Both the 3-year and the 1-year stock return are negatively correlated with the discretional total accruals, strongly indicating that the degree of earnings management in year 0 predicts the cross-sectional difference of long-term performance.

I also regress the long-term stock performance on discretional total accruals of year -1. The results are not reported here. None of the accruals has a significant coefficient. It confirms there's no relationship between pre-IPO discretional accruals and long-term performance of IPO firms.

As a further test, table 10 reports the long-term post-offering returns of sample firms according to DTAC quartiles. On a market adjusted buy-and-hold return measure, the conservative firms have an average 3-year return of 16.73 percent compared to -2.63 percent of aggressive firms. The underperformance of the aggressive firms is 19.36 percent, significant at 10% level. This underperformance is close to the return difference of 22.32 percent estimated by the regression model. However, the 1-year underperformance of aggressive firms is 10.76 percent, which is not significant.

In sum, both the 3-year and 1-year buy-and-hold returns show the underperformance of the aggressive firms, which indicate that larger discretional accruals predict the future lower long-term stock returns. However, the 3-year underperformance of aggressive firms is less in magnitude and significance than that based on DCA quartiles. Furthermore, the 1-year underperformance of aggressive firms is insignificant. It suggests that discretional total accrual is not as strong as discretional current accrual as an indicator of post-offering long-term performance because the latter is more subject to manager's manipulation.

Table 9

Long-term performance analysis(DTAC)

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals (DCA) in year 0. The year 0 is the financial year in which the company goes public. DTAC is the secondary earnings management measure. To capture the relation between earnings management and post-offering long-term performance, both 3-year and 1-year buy-and-hold returns are employed,

$$BHAR_j = \alpha_0 + \beta_1 DTAC_j + \beta_2 NDTAC_j + \gamma_1 B/M_j + \gamma_2 AGE_j + \gamma_3 UP_j + \gamma_4 NDQ_j + \gamma_5 HTC_j + \gamma_6 \mathrm{AUD}_j + \gamma_7 \mathrm{UWT}_j + \gamma_8 \mathrm{FNC}_j + \varepsilon_{j,t}$$

where DTAC and NDTAC refer to the discretional total accruals and non-discretional total accruals of year 0. B/M is the book-to-market ratio. Age is the company's existing years when it goes public. UP is the first trading day return. HTC equals 1 if the company is in high-tech industry. Auditor equals one if the auditor is a "Big 4"and zero otherwise. Underwriter equals one if the leading underwriter is listed among the top 30 reputational firms in Loughran and Ritter (2004)'s Underwriter Ranks and zero otherwise. FNC equals 1 if the company goes public in financial crisis. The P-values in parentheses are for two- tailed tests of the hypothesis that the mean of the variable equals zero.

Regression Analysis of Post-Offering Long-term Stock Performance						
DTAC of Year 0 Model						
Variables	3-year			1-year		
	1	2	3	4	5	6
DTAC	-0.241***	-0.226***	-0.212***	-0.287***	-0.272***	-0.280***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NDTAC	-0.128***	-0.121***	-0.117***	-0.156***	-0.145***	-0.154***
	(0.005)	(0.007)	(0.009)	(0.000)	(0.000)	(0.000)
B/M	0.117	0.111	0.073	0.206**	0.175*	0.170*
	(0.381)	(0.383)	(0.566)	(0.034)	(0.058)	(0.064)
AGE	-0.002			0.039		
	(0.966)			(0.223)		
UP	-0.067			0.102		
	(0.740)			(0.485)		
NDQ	-0.198**	-0.235***	-0.252***	-0.083	-0.095	-0.113*
	(0.027)	(0.005)	(0.003)	(0.204)	(0.113)	(0.063)
HTC	0.211**	0.210**	0.188**	-0.028	-0.030	0.017
	(0.019)	(0.015)	(0.031)	(0.671)	(0.628)	(0.793)
AUD	-0.010			0.002		
	(0.930)			(0.975)		
UWT	0.157			-0.047		
	(0.114)			(0.517)		
FNC	0.520*	0.546*		0.202	0.196	
	(0.055)	(0.042)		(0.308)	(0.317)	
Intercept	0.008	0.143	0.656***	-0.096	0.003	0.293**
	(0.969)	(0.108)	(0.000)	(0.500)	(0.960)	(0.023)
Year Dummy	No	No	Yes	No	No	Yes
Sample Size	641	656	656	641	656	656
R-squared	0.057	0.051	0.084	0.073	0.067	0.105
F-stat	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)

Table 10

Post-offering long-term returns by quartiles(DTAC)

The sample consists of 656 IPO firms issued from 2002-2011 with offer price at least $1. The sample firms are non-financial and non-utility firms with sufficient data to calculate discretional current accruals(DCA) in year 0. The year 0 is the financial year in which the company goes public. The DTAC is the secondary measure of earnings management. The sample firms are divided in to quartiles according to discretional total accruals in year 0. They are ranking from lowest to highest with each quartile containing 164 firms. The first quartile is considered as the conservative firms and the fourth is aggressive firms. Buy-and-hold market adjusted return are computed based on the benchmark return of market index,

$$BHAR_j = \left[\prod_{t=1}^{T}(1 + r_{j,t})\right] \div \left[\prod_{t=1}^{T}(1 + r_{m,t})\right] - 1$$

where $r_{m,t}$ is the monthly index return of month t. The difference and t-statistics of market adjusted returns between conservative and aggressive firms are computed. N indicates the sample size.

Post-offering Returns by DTAC Quartiles							
Buy-and-Hold(%)							
3-year	N	All	Q1	Q2	Q3	Q4	Q1-Q4
Market Adjusted	656	10.4	16.73	7.22	20.17	-2.63	19.36
	(t-stat)	(2.72)	(1.89)	(0.94)	(2.65)	(-0.43)	(1.81)
1-year							
Market Adjusted	656	2.15	3.01	0.94	12.40	-7.76	10.76
	(t-stat)	(0.77)	(0.44)	(0.23)	(1.94)	(-1.70)	(1.32)

6. Conclusion

Previous studies confirm the pervasive presence of earnings management, notoriously during initial public offering. Managers use their judgement, especially accounting accruals to inflate earnings in financial statements, which results in biased perception of underlying financial and operational performance of firms. Richardson et al. (2005) point out, investors are fixated on the earnings and can be misled by the accruals. The accrual components of earnings are less reliable and less persistent in presenting and predicting the future performance of companies due to measurement errors. It implies there's high likelihood that

IPO firms with inflated earnings will have higher underpricing and suffer inferior long-term performance.

I employ modified Jones (1991) model to develop the proxy for earnings management. Discretional current accrual (DCA) is the major measure of earnings management in this study. By using data from 2002 to 2011, I instigate whether there is still accrual-based earnings management for IPO firms in post-SOX period. The DCA is significantly positive in the IPO year but negative in the year before. This finding suggests that there's earnings management in the fiscal year when firm goes public but not in the year before. It echoes the finding of Roosenboom et al. (2003).

In this study, the evidence shows that on average, the underpricing is 11.45 percent of the IPO firms. To investigate the impact of earnings management, I regress underpricing on pre-IPO discretional current accruals. The significant positive coefficient of DCA indicates the discretionary current accruals and underpricing of IPOs are positively associated. The higher the pre-IPO discretional current accruals, the higher the underpricing.

In the long run, evidence demonstrates that higher discretional accruals of IPO year predict poor long-term performance. The conclusion holds for both for 1-year and 3-year post-offering buy-and-hold abnormal returns. As a further test, I divide the sample firms into quartiles base on their DCA. The aggressive firms with higher DCA tends to underperform the conservative firms. The underperformance is on average, above 20 percent. The substantial underperformance is due to that market overreacts to the information and correct it in the long run as the reversal of the accruals. The market overreaction model derived by DeBondt and Thaler (1985) confirms this explanation. However, the pre-IPO discretional

accruals are not related to the subsequent performance.

As a robustness check, I also employ discretional total accruals as the measure for earnings management. It confirms the prior findings of positive relationship between pre-IPO discretional accruals and underpricing and negative relationship between discretional accruals in IPO year and long-term performance. There's only one exception. The underperformance of the aggressive firms is not significant for 1-year buy-and-hold returns. The magnitude and significance of 3-year underperformance is less than that based on DCA quartiles. It suggests that discretional total accrual is not as strong as discretional current accrual as an indicator of post-offering long-term performance.

Besides the main findings, the empirical results also show that growth stocks with lower book-market ratio tend to have higher underpricing and lower long-term performance. Nasdaq-listed and high-tech firms tend to have higher underpricing. But the former tend to underperform other firms in the long-run and high-tech firms tend to outperform. The reputation of intermediaries does matter, especially that of underwriters plays a positive role in the underpricing. The firms issuing in financial crisis outperform, which echoes the finding of Ibbotson et al. (1994). They find out firms issuing in low volume year don't show underperformance in the long-run.

This study also gives insights on the future research trend. My sample period focuses on the post-SOX period and confirms the existence of accrual-based earnings management in IPO year. It also raises the question that whether the earnings management is less in magnitude compared to pre-SOX period? It encourages further research to investigate the difference.

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