VALUATION AND UNDERPRICING OF INITIAL PUBLIC OFFERINGS: THE ROLE OF DISCRETIONARY ACCOUNTING ACCRUALS

Hsin-Hui Chiu *, Praveen Sinha **

* David Nazarian College of Business Administration, California State University, Northridge, California, USA
** *Corresponding author,* College of Business, California State University, Long Beach, California, USA
Contact details: College of Business, California State University, 1250 Bellflower Boulevard, Long Beach, California, USA

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Abstract

This study examines the role of pre-IPO (pre-initial public offering) discretionary accruals in the valuation and underpricing of IPOs. We find that the underwriter offer price is unaffected while the market closing price is positively associated with the levels of pre-IPO discretionary accruals for issuers with aggressively reported earnings. We also find that this relative over-valuation of managed earnings by the markets explains a portion of the initial return that is not explained by other known determinants. For issuers with conservatively reported pre-IPO earnings, there is no relation between discretionary accruals and the offer price or the market price, and the discretionary accruals do not explain any IPO underpricing. Our subsequent analysis shows that lower stock retention is a screen and a signal of entrepreneurs' credibility to the markets. There seems to be a higher degree of earnings scrutiny by both the markets and the underwriters for IPOs with low insider retention. However, markets tend to assign a higher weight to aggressively reported earnings of issuers with higher insider retention, presumably because of perceived incentive alignment. Underwriters, with relatively lesser information asymmetry than the markets, tend to see through the distortions caused by earnings manipulations in the valuation of IPOs, regardless of the levels of issuers' stock retention.

Keywords: IPO Underpricing, Accruals Mispricing, Information Asymmetry

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1. INTRODUCTION

The initial public offering (IPO) is a very unique event in the history of a company because it is valued by two distinct sets of external investors for the first time on this date. A well-documented and heavily researched anomaly associated with the valuation of IPOs is that IPOs are underpriced, as evidenced by the average positive difference between the first-day closing price (market

valuation) and the underwriter-determined offer price (Ibbotson, 1975). Loughran and Ritter (2004) document that the average initial return, the scaled difference in the first-day closing price and the offer price, was always non-negative for the 23 years examined and that the amount of underpricing has been as high as 71.7% (in 1999). This amounts to $86.2 million (in 2003 dollars) left on the table that the issuers could have used. Because the closing price and the offer price are determined by the markets and the underwriters respectively, on the same trading date, several studies have tried to identify potential sources of this valuation discrepancy, such as learning cycles (Lowry & Schwert, 2002), buying positive analyst coverage (Cliff & Denis, 2004), ownership structure (Ljungqvist & Wilhelm, 2003; Hill, 2006), and behavioral explanations such as investor sentiment (Ljungqvist et al., 2006) and prospect theory (Loughran & Ritter, 2002). Despite these explanations for this "money left on the table", the evidence of positive initial return remains a conundrum in the literature (Ljungqvist, 2007).

Though studies have examined the role of earnings in IPO valuation (Purnanandam & Swaminathan, 2004; Aggarwal et al., 2009), no prior study has examined the effect of pre-IPO earnings management on the initial return and valuation of IPOs by the underwriters or the markets. Some studies (Ball & Shivakumar, 2008) have questioned the possibility of earnings management prior to the IPOs and there is clear and convincing evidence of upward (also referred to as, aggressive) management of earnings prior to the IPO (Darrough & Rangan, 2005; Guo et al., 2006; Zheng & Stangeland, 2007). If the markets (underwriters) are "functionally fixated" on the reported earnings and the earnings growth number, they can over-pay (set a higher offer price) for the IPO stock if the pre-IPO earnings are managed upwards through discretionary current accruals (Sloan, 1996). Because the underwriters are privy to additional private information on the underwriting firm and engage in due diligence on behalf of investors, they face relatively less information asymmetry than the markets in general. We would, therefore, expect the underwriters to be less influenced by earnings and earnings management (through accruals) than the investors in general. The investors' higher reliance on reported earnings and the underwriters' ability to better see through the management of earnings could lead to an additional source of underpricing of the IPOs. If insider stock retention is also a measure of IPO quality (Brealey et al., 1977; Feltham et al., 1991) then we can expect management of earnings by entrepreneurs, that retain a higher proportion of stock and do not use IPO as an exit strategy, to have a more pronounced effect on firm valuation.

To address these issues, this study seeks to answer the following three research questions:

RQ1: Do the firms that engage in upward management of pre-IPO earnings have higher initial returns?

RQ2: Do the underwriters (markets), with lesser (more) information asymmetry, assign lower (higher) valuation to IPOs that report upwardly managed pre-IPO earnings? If so, does this aggressive pre-IPO earnings management explain IPO initial returns?

RQ3: Is high stock retention a sign of an entrepreneur's credibility and incentive alignment? If so, do the markets, as well as underwriters, assign a higher weight to upwardly managed pre-IPO earnings in their valuation models when the insider stock retention is high?

Our empirical results provide supporting evidence for all these research questions.

This study makes several contributions to the literature. It is the first study that examines the role of discretionary accruals in pre-IPO earnings in the valuation of IPOs — both by the underwriters and by the markets. No prior study has examined earnings management prior to the IPO and its effect on IPO valuation. Second, by documenting that the discretionary accruals in pre-IPO earnings impact the market valuation and not the underwriter valuation, this study identifies one additional source in the IPO underpricing anomaly. Finally, this study shows that insider stock retention has a role in the pricing of discretionary accruals in pre-IPO earnings. Markets tend to over-value firms with upwardly managed pre-IPO earnings, but only when the insider stock retention is high.

The remainder of the study is organized as follows. In Section 2, the literature is reviewed and hypotheses are developed. In Section 3, the research methodology is described in detail. In Section 4, empirical results and a discussion of the results are presented. In Section 5, the study's conclusions and limitations are discussed.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

It has been well documented in finance literature that IPO shares are, on average, underpriced relative to the first-day closing price (Ibbotson, 1975). Most of the underpricing theories are based on information asymmetry between the investors and the issuers. These models either assume that the issuer is more informed than the investors (Welch, 1989; Allen & Faulhauber, 1989; Booth & Smith, 1986), or that some investors are more informed than the issuers (Rock, 1986; Beatty & Ritter, 1986; Benveniste & Spindt, 1989). Welch (1989) presents a signaling model in which high-quality firms will underprice the IPO in order to obtain a higher price at the seasoned offering. A higher price at the seasoned offering eventually compensates for the underpricing in an IPO. Rock (1986) presents a model in which informed investors only participate in IPO activities when new issues are underpriced. Underpriced issues are more likely to be oversubscribed and rationed. Thus, uninformed investors systematically receive more overpriced IPOs and earn below-average returns. Therefore, new issues need to be underpriced to induce participation from uninformed investors and avoid the "winner's curse" problem. Benveniste and Spindt (1989) use the book-building process to illustrate partial price adjustment. They suggest that issuers underprice the issues to induce regular participants to reveal an indication of interest. This model predicts a partial adjustment of the offer price with respect to private information to compensate regulars for revealing positive information. Underwriters only partially incorporate positive information learned during the registration period into the final price. Benveniste and Spindt's model provides an explanation for IPO underpricing and the allocation pattern to repeated IPO participants.

Lowry and Schwert (2002) empirically test IPO initial returns across firms and document that the offer price is only partially adjusted with respect to IPO underpricing. They also incorporate Loughran and Ritter's (2002) finding that price adjustment to publicly available information is also partial. Loughran and Ritter (2004) examine reasons behind underpricing changes over time, and they propose three non-mutually exclusive explanations: change in risk composition, realignment of incentives, and changing issuer objective function.

In the context of IPO valuation, the role of earnings and other accounting information has been extensively examined and found to be valuation-relevant in prior studies. Klein (1996) identifies that the pre-IPO earnings per share and the pre-IPO book value per share are positively related to the prices of the 193 IPOs examined. Purnanandam and Swaminathan (2004) also show that the level of earnings is positively associated with the valuation of the IPO firm. Sletten et al. (2018) examined quarterly earnings (instead of annual) and found evidence of earnings management prior to the lockup period expiration, but not before the IPO. Hand and Lev (2003), Bartov et al. (2002), and later Aggarwal et al. (2009) examine the valuation of IPOs during the Internet bubble and identify additional accounting variables — namely, cash flows, sales, and R&D — that are also relevant for IPO valuation. The analysis of cash flows, accruals, and transitory earnings components is important from a financial statement analysis and a valuation point of view. Removing transitory accruals/deferrals to arrive at permanent earnings ensures the predictability of future earnings from current earnings. The underlying reason for this separation is that these components of earnings have differential long-term persistence and, hence, not the same impact in forecasting future earnings. As argued and documented by Sloan (1996), this lack of understanding of the properties of the components of earnings can result in the mispricing of a firm's stock. Sloan (1996) documents that a firm with high current accruals will exhibit lower earnings persistence and these differences in persistence can be used to earn abnormal returns. A subsequent extension of this line of research has concluded that abnormal accruals are mispriced as well (Xie, 2001). Though questions have been raised if the accruals anomaly is the same as some other well-documented anomalies in the finance literature (glamour versus value), there is evidence of accruals mispricing above and beyond other anomalies (Desai et al., 2004; Cheng & Thomas, 2006).

The issue of earnings management through accruals to achieve strategic outcomes has been extensively examined in the accounting and finance literature. Most of these studies try to identify a motive, such as meeting dividend thresholds (Daniel et al., 2008) or achieving favorable valuations around important events such as acquisitions (Bergstresser et al., 2006; Louis, 2004) and open market repurchases (Gong et al., 2008) that earnings management helps achieve. In the context of IPOs, Aharony et al. (1993), using a small sample of 229 IPOs from 1995–1997, found no earnings management prior to the issuance of IPOs. The truly little evidence of earnings management they found was for small firms or for large firms with significant financial leverage. Friedlan (1994), using a sample of 211 IPOs from 1981–1984, finds evidence of earnings manipulation prior to the issuance of IPOs.

Teoh et al. (1998a), the most comprehensive study utilizing a much larger sample of IPOs, documents that IPO-year (not the pre-IPO) abnormal accruals are manipulated and that higher levels of discretionary accruals are systematically associated with lower levels of future abnormal returns. Recently, Ball and Shivakumar (2008) have raised concerns about the findings of this study and the use of accruals to earnings management in highly scrutinized environments such as that of IPOs. Armstrong et al. (2015) have also questioned the finding of this study on the grounds that there is neither incentive nor benefits to earnings management prior to the IPOs. Both studies argue that intensive scrutiny and litigation risk are strong deterrents to earnings management and document that the pre-IPO accruals are, on average, negative. Ball and Shivakumar (2008) also assert that Teoh et al.'s (1998a) approach to the measurement of discretionary accruals results in upward-biased discretionary accruals (Hribar & Collins, 2002), explaining their findings. One explanation for this bias is that firms use IPO proceeds to adjust their working capital quite frequently and that these adjustments can be quite drastic. Because Teoh et al. (1998a) estimate accruals from changes in working capital accounts reported on successive balance sheets, this can create a significant measurement problem that can bias towards finding a relation between discretionary accruals and future returns. Another concern with respect to Teoh et al.'s (1998a) finding is that it uses IPO year instead of pre-IPO discretionary accruals. Armstrong et al. (2015) examine a large sample of United States (US) firms with two to three years of pre-IPO data and show that the pre-IPO accruals are negative, consistent with earnings conservatism. Using a quite simple valuation model, they find that the IPO issue price is decreasing in accruals and discretionary accruals, and so is the executive compensation. They conclude this finding as a lack of motive for earnings management prior to the IPO. Both of these studies provide aggregate evidence of the lack of widespread earnings management prior to the IPOs. These findings are contrary to the incentive argument raised by Teoh et al. (1998a).

Some of the subsequent studies that examine specific industries, or a specific source of earnings manipulation provide evidence consistent with our assertion. For instance, Darrough and Rangan (2005) document the downward manipulation of R&D expenditures and discretionary current accruals in the year of the IPO by managers that sell the stock for an exceedingly small sample of technology firms in a period extending from 1986–1990. Guo et al. (2006) reach similar conclusions in the context of high-tech firms. Zheng and Stangeland (2007) examine IPO underpricing and firm quality. They find that IPO underpricing is positively related to post-IPO growth in sales and earnings before interest, taxes, depreciation and amortization (EBITDA), but not related to growth in earnings. This discrepancy could be explained by the reversal of accruals in future years. IPOs with greater underpricing are also found to be associated with

larger decreases in accruals after the first year. Zheng and Stangeland (2007) findings also support the notion of earnings management prior to the IPO.

Though earnings conservatism around highly scrutinized events such as IPOs is a very plausible argument, there is considerable evidence that litigation risk or public scrutiny alone is not sufficient to deter firms from earnings management. On the contrary, prior studies have documented pervasive earnings management in similar high-scrutiny settings, such as seasoned equity offerings (Teoh et al., 1998b; DuCharme et al., 2004; Bergstresser et al., 2006), acquisitions (Bergstresser et al., 2006; Erickson & Wong, 1999; Louis, 2004), and open market repurchases (Gong et al., 2008). These findings suggest that extant public scrutiny is not a sufficient deterrent to earnings management through the flexibility permissible under the US Generally Accepted Accounting Principles (GAAP). Further, the finding of average/median accruals being negative prior to the IPOs is consistent with earnings conservatism, but only on average. We argue that this evidence suggests that there are more firms that are potentially conservative than those that are aggressive in their financial reporting practices prior to the IPO. This is not consistent with a lack of earnings management because these results are not stationary over time. Ball and Shivakumar (2008) and Armstrong et al. (2015) both report that more than 40% of the firms have positive discretionary accruals in the year just prior to the IPO. Without a careful examination and understanding of these firms, it is not clear whether we can conclude that there is no earnings management prior to the IPOs.

2.1. Accruals mispricing and the initial returns hypotheses

If issuers use accruals and deferrals related to working capital accounts to inflate earnings and both the underwriters and the markets do not understand these manipulations, we expect their valuations to be higher for IPOs with higher discretionary accruals in pre-IPO earnings. However, if underwriters see through this earnings management because of access to additional information but the markets fail to do so, we expect the initial return to be positively associated with the levels of discretionary accruals in pre-IPO earnings. Stated in an alternate form, our first set of hypotheses is as follows:

H1: IPO initial return is higher for firms with higher levels of discretionary current accruals in pre-IPO earnings, ceteris paribus.

H2: IPO underwriter valuation is unaffected by the levels of discretionary current accruals in pre-IPO earnings, ceteris paribus.

H3: IPO market valuation is higher for firms with higher levels of discretionary current accruals in pre-IPO earnings, ceteris paribus.

Brealey et al. (1977) show that firm valuation is positively related to the levels of insider retention by the entrepreneur. An entrepreneur's decision to forgo the benefits of diversification with high stock retention comes from the signaling model that provides superior insider information about the expected future profits of the firm than what is available to the average investor. Furthermore, higher stock retention aligns the incentives of the principal (entrepreneur) and agent (investors), avoiding the moral hazard problem. Several studies (Feltham et al., 1991; Downes & Heinkel, 1982; Ritter, 1984) have empirically documented this relationship. A more simplistic explanation for the positive relationship between IPO valuation and insider retention comes from the downward-sloping demand curve for shares (Ofek & Richardson, 2003). Collectively, all these arguments point to higher insider stock retention as a positive signal for the quality of the IPO that results in a higher valuation of the stock. Ceteris paribus, this signal should be unaffected by the amount of additional information on the company because the association of higher stock retention with a low-quality IPO would be irrational under all these competing explanations.

Entrepreneurs (insiders) and general investing pubic (markets) are two parties with asymmetric information about a firm. If the insider stock retention rate signals the firm future prospects and is a measure of IPO quality, as argued in the prior research, then we can expect conservative or aggressive earnings reporting prior to the IPOs to be driven by the entrepreneur's perceived horizon. Entrepreneurs with long-term horizons, who retain higher proportions of firm stock, may be more conservative in reporting profits compared to those who use IPO as an exit strategy. If so, entrepreneurs with lower stock retention and myopic perspective may report more aggressive earnings, using positive discretionary accruals, to receive higher market valuation on the day of the IPO. On the other hand, entrepreneurs with higher stock retention may have a more hyperopic (long-term) perspective and may be more conservative in reporting earnings because of long-term reputation and wealth accumulation concerns. These entrepreneurs may be more conservative by building accrual reserves today to ensure higher and smoothed earnings in future periods.

2.2. Entrepreneur horizon and the IPO valuation hypotheses

Because underwriters face lesser information asymmetry than the markets, they may not rely so heavily on the issuer stock retention information as the markets to infer the quality of the financials and the valuation of the IPO. Insider stock retention could serve as a stronger signal of entrepreneurs' credibility to the markets, and markets will assign higher weights to the earnings when they are positively managed because of perceived incentive alignment. Stated in an alternate form, our second set of hypotheses is as follows:

H4: IPOs by entrepreneurs with high stock retention will have a higher market valuation than the underwriter valuation, ceteris paribus.

H5: IPOs by entrepreneurs with high stock retention and positive discretionary accruals in pre-IPO earnings will have a higher market valuation than the underwriter valuation, ceteris paribus.

3. RESEARCH METHODOLOGY

3.1. Sample formation and variable definition

We identify our initial sample of issuing firms by selecting all firms that completed an IPO between January 1990 and June 2002. IPOs prior to 1990

were eliminated because of the lack of statement of cash flow data available prior to 1989 and the concerns related to accruals measurement using the balance sheet approach (Hribar & Collins, 2002). The analysis is confined to the middle of 2002 because of the passage of the Sarbanes-Oxley Act (SOX) in July 2002. This act introduced a shift in the regulatory regime, imposing significantly larger penalties for managers, auditors, and underwriters for financial improprieties. Because SOX imposes a higher cost on earnings management, it is likely to deter earnings management. The discretionary accruals reported by Armstrong et al. (2015) will be negatively biased because of the inclusion of post-SOX data.

Offering details are obtained from the Thomson Financial Securities Data Company (SDC) Platinum database. Firm-specific financial statement information is obtained from the active and research files of Industrial Compustat. Market stock return information is obtained from the Center for Research and Securities Prices (CRSP) database. To be included in our sample, each IPO must satisfy the following sample selection criteria:

- The IPO should not be a unit offering, closed-end fund, real estate investment trust (REIT), American depository receipt (ADR), or penny stock (an IPO with an offer price below five dollars).
- The IPO should have information on cash flows from operations (items 308 and 124), net income (item 18), and total assets (item 6) — available in Compustat industrial files for the current year and the two prior fiscal years.

Following Lowry and Schwert (2002) and Cliff and Denis (2004), we construct several variables as control variables (price revision, underwriter rank, etc.) and discretionary accruals in our underpricing model. Following Aggarwal et al. (2009), we include several additional variables to specify the underwriter and market valuation model. The following variables are used in the various model specifications:

1) *IR*: Initial return or underpricing, equals the percentage change in offer price at the end of the first trading day.

2) *RANK*: Underwriter rank based on Carter et al. (1998) and updated in Loughran and Ritter (2004).

3) *BIG8*: Equals one if the issuing firm was audited by one of the big accounting firms.

4) *LogAST*: Log of the total assets of the firm at the end of the fiscal year prior to the fiscal year of issuance (Compustat item #6).

5) *VC*: Equals one if the issuing firm is venture-backed, zero otherwise.

6) *NYSE*: Equals one if the IPO is listed on the New York Stock Exchange, zero otherwise.

7) *NMS*: Equals one if the IPO is listed on the NASDAQ National Market System, zero otherwise.

8) *AMEX*: Equals one if the IPO is listed on the American Stock Exchange, zero otherwise.

9) *TECH*: Equals one if the IPO is in a high-tech industry, zero otherwise.

10) ΔP: The percentage change between the middle of the original file price range and the offer price.

11) ΔP^{+}: Equals ΔP when positive, zero otherwise.

12) *MKT*: The return to the CRSP equal-weighted portfolio NYSE-, AMEX-, and NASDAQ-listed stocks for the 21 trading days prior to the offer date.

13) MKT^{+}: Equals MKT when positive, zero otherwise.

14) *BOOM*: Equals one when issuing date is between January 1, 1997, and March 31, 2000, zero otherwise.

15) *CRASH*: Equals one when the issuing date is between April 1, 2000, and June 30, 2002, zero otherwise.

16) *INCOME* refers to income before extraordinary items.

17) *BV* refers to the book value of equity one year prior to the offering.

18) *SALES* and *R&D* one year prior to the offering.

19) *L*(Variable): Equals log (1 + Variable) when Variable is greater or equal to zero, and log (1 – Variable) when variable is less than zero.

20) *MEAN P/S*: The mean of price to sales ratio of the IPO firms' industry.

21) *INSIDER*: Equals (shares outstanding after offering – total shares issued) / shares outstanding after offering. Measures insider stock retention.

22) *HR* (LR): Equals 1 when the *INSIDER* is larger (smaller) than the period sample median, zero otherwise.

23) *DCA*: Discretionary current accruals.

24) *POS_DCA (NEG_DCA)*: Equals *DCA* when *DCA* is positive (negative), zero otherwise.

As done in earlier studies, we use the modified Jones (1991) model to estimate discretionary accruals. Current accruals are computed as the difference between net income and cash flows from operations and adjusted for size using the average of total assets. Expected (non-discretionary) current accruals are computed using the weights derived from the regression of current accruals on the change in revenue and net property, plant, and equipment (with all variables scaled by total assets) in the estimation sample of industry peers for the year preceding the IPO. Discretionary current accruals are the difference between current accruals and the non-discretionary current accruals. We use data two years prior to the IPO year to estimate discretionary current accruals for the year prior to the IPO.

We create two variables, *POS_DCA* and *NEG_DCA*, based on the sign of discretionary current accruals. *POS_DCA (NEG_DCA)* equals *DCA* when *DCA* is positive (negative) and zero otherwise. These variables allow for asymmetric responses to earnings management on IPO underpricing and valuation. In the context of audit quality, Ashbaugh et al. (2003) show that this separation of positive and negative discretionary accruals better captures the potential asymmetric relation between the variable of interest (in their case, auditor independence) and earnings management. This is a unique contribution of this study because by not separating in this way prior studies failed to capture the differential incentives associated with upward and downward earnings management.

3.2. Accruals mispricing and initial return test

We test *H1* on the relation between initial returns and discretionary accruals by estimating an ordinary least square (OLS) regression model at the firm level with initial returns as the dependent variable. Our model specification is as follows.

$$IR_{i,t} = \alpha + \beta_1 DCA_{i,t-1} + \beta_2 Rank_{i,t} + \beta_3 Big8_{i,t} + \beta_4 VC_{i,t} + \beta_5 LogAst_{i,t-1} + \beta_6 NYSE_{i,t} + \beta_7 NMS_{i,t} + \beta_8 AMEX_{i,t} + \beta_9 TECH_{i,t} + \beta_{10}\Delta P_{i,t-1} + \beta_{11}\Delta P^{+}_{i,t-1} + \beta_{12} MKT_{i,t-1} + \beta_{13} MKT^{+}_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

The main variable of interest is *DCA*, the discretionary current accruals in the fiscal year prior to the IPO fiscal year. This variable measures a firm's aggressiveness in inflating its profits *vis-à-vis* cash flows. When *DCA* is greater than zero, the firms' current accruals exceed the "normal" levels based on the industry benchmarks. These firms can be viewed as aggressive in recognizing income and have accruals that exceed their "normal" levels by the amount of the *DCA*. Conversely, firms with negative *DCA* are conservative in reporting their earnings and have accruals below "normal" levels, based on industry norms. *LOGAST*, the firm's total assets, provides a control for firm size (IPO proceeds is another measure to control for firm size; our results do not change with this alternate measure of firm size) as a proxy of uncertainty (Habib & Ljungqvist, 1998; Lowry & Schwert, 2002). *NYSE*, *NMS*, and *AMEX* are dummy variables that control for the exchange effect. Lowry and Schwert (2002) and Cliff and Denis (2004) suggest that listing exchange affects IPO initial return. *TECH* is a dummy variable that equals one when a firm is involved in a high-tech industry and zero otherwise. IPOs are assigned this classification by the SDC Platinum Database, which is based on the standard industry classification (SIC) of the issuer (computer equipment, electrical machinery, etc.). This separation was created because prior studies have found significant differences in IR across tech versus non-tech industries (Lowry & Schwert, 2002; Cliff & Denis, 2004). Prior studies have documented that the initial return also varies by the change in the original file price and the offer price. Hanley (1993), Lowry and Schwert (2002), and Cliff and Denis (2004) show that the higher the percentage change in file price, the higher the initial return. In other words, these studies document that initial returns are significantly larger for positive revisions. Therefore, we include two variables *ΔP* and *ΔP+* to control for the price revision effect. Underwriter reputation is a known factor that affects the *IR*, and we control for this effect by introducing the variable, *RANK*, the same as the one used in Carter et al. (1998). The underwriter rankings range from a rank of one, which is the worst, to nine, which is the best. Lesser-known underwriters who were not covered by Carter et al. (1998) or Loughran and Ritter (2002) are assigned a rank of zero.

Loughran and Ritter (2002) find that price adjustment to publicly available information is also partial. Market activity prior to the issuance of the IPO, a measure of public information, is captured by computing the return on *CRSP* equal-weighted portfolio of NYSE-, AMEX-, and NASDAQ-listed stocks for the 21 trading days preceding the offer date. Again, to allow for asymmetric effects on initial returns associated with negative and positive market returns, both *MKT* and *MKT+* are included in the regression specification. Lee et al. (2012) argue that auditors and venture capitalists (*VC*) can also play different roles in restraining earnings management in the IPO process. Auditors check the accuracy of financial statement information, and venture capitalists play a monitoring and advising role through the IPO. For these reasons, we also control for these variables in our specification. We pool the data on all IPOs over the 13-year period prior to estimating the model. We consider year dummies as well as dummies for three different periods: 1990–1998, 1999–2000, and 2000–mid-2002 to control for differences across periods. The results, not reported here, are qualitatively similar.

To separate aggressive and conservative issuers, we create variables *POS_DCA* and *NEG_DCA* as interactions of DCA with a dummy variable for the sign of *DCA*. These two variables capture the possibility of the asymmetric impact of aggressive and conservative reporting on the initial return and are estimated through the following OLS specification.

$$IR_{i,t} = \alpha + \beta_1 POS_{DCA_{i,\boldsymbol{t-1}}} + \beta_2 Neg_{DCA_{i,t-1}} + \beta_3 Rank_{i,t} + \beta_4 Big8_{i,t} + \beta_5 VC_{i,t} + \beta_6 LogAst_{i,t-1} + \beta_7 NYSE_{i,t} + \beta_8 NMS_{i,t} + \beta_9 AMEX_{i,t} + \beta_{10} TECH_{i,t} + \beta_{11}\Delta P_{i,t-1} + \beta_{12}\Delta P^{+}_{i,t-1} + \beta_{13} MKT_{i,t-1} + \beta_{14} MKT^{+}_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

3.3. Underwriter and market differential pricing of accruals test

To test *H2* and *H3*, we follow Aggarwal et al. (2009) for a specification of the IPO valuation model for the underwriters and the market participants. Because underpricing results from a disagreement on corporate value by these two parties, we estimate the following two equations.

$$L(Offer\ price)_{i,t} = \alpha_o + \beta_{1o} POS_{DCA_{io,t-1}} + \beta_{2o} Neg_{DCA_{io,t-1}} + \beta_{3o} Boom_{io,t} + \beta_{4o} Crash_{io,t} + \beta_{5o} L(Income)_{io,t-1} + \beta_{6o} L(BV)_{io,t-1} + \beta_{7o} L(Sales)_{io,t-1} + \beta_{8o} L(R\&D)_{io,t-1} + \beta_{9o} MeanP/S + \beta_{10o} Insider_{io,t} + \beta_{11o} Rank_{i,t} + \varepsilon_{io,t} \quad (3)$$

$$L(Market\ price)_{im,t} = \alpha_m + \beta_{1m} POS_{DCA_{im,t-1}} + \beta_{2m} Neg_{DCA_{im,t-1}} + \beta_{3m} Boom_{im,t} + \beta_{4m} Crash_{im,t} + \beta_{5m} L(Income)_{im,t-1} + \beta_{6m} L(BV)_{im,t-1} + \beta_{7m} L(Sales)_{im,t-1} + \beta_{8m} L(R\&D)_{im,t-1} + \beta_{9m} MeanP/S + \beta_{10m} Insider_{im,t} + \beta_{11m} Rank_{im,t} + \varepsilon_{im,t} \quad (4)$$

Both equations involve the same independent variables, and they result in a vector of T x 1 random error terms, each with a mean of zero, but different variances.

$$\varepsilon_{iot} \sim N\left(0, \sigma_{io}^2\right) \quad (5)$$

$$\varepsilon_{imt} \sim N(0, \sigma_{im}^2) \quad (6)$$

Because both equations involve the valuation of the same IPO, the error terms in these two equations will be correlated. These equations fit into the seemingly unrelated regressions (SUR) framework proposed by Zellner (1962). When estimated as SUR model, the stacked disturbances have a variance-covariance matrix as follows:

$$\Omega = \Sigma \otimes I_T \quad (7)$$

where, $\Sigma = \begin{bmatrix} \sigma_{io}^2 & 0 \\ 0 & \sigma_{im}^2 \end{bmatrix}$ and $\otimes$ refers to the Kronecker product.

This structure results in more efficient estimates of covariance across equations; and provides us with a means to test for the significance of differences in the magnitude of coefficients across equations (Greene, 2008).

3.4. Entrepreneur horizon and differential pricing of accruals test

We create an indicator variable, *HR*, to separate firms with high insider stock retention from firms for which the insider stock retention is low on the basis of the median insider stock retention rate amongst all IPOs in the sample. *LR* is the complement of *HR*. Because IPOs with high insider retention tend to have relatively more negative discretionary accruals, we created interaction variables for the low and high-retention IPOs and for *POS_DCA* and *NEG_DCA* to isolate these effects *POS * HR* (*POS * LR*) and *NEG * HR* (*NEG * LR*) are the interaction of *POS_DCA* and *NEG_DCA* with *HR*(*LR*) respectively, and they represent aggressive and conservative IPOs that have high (low) insider retention. We include these four variables in our valuation model along with all other variables previously found to be associated with underpricing and reported in equations 1 and 2.

4. RESEARCH RESULTS

4.1. Data description

We construct samples based on the availability of firm-specific financial data from Compustat to estimate the reported and discretionary current accruals. Our initial sample consists of 711 IPOs between January 1990 and June 2002 that meet the stated sample selection criteria. As done in other prior studies (Armstrong et al., 2015), we trim the sample of outliers to obtain more consistent and compelling evidence on the impact of accruals. We remove the highest 1% influential observations (outliers) to obtain a sample of 704 IPOs. Table 1 presents a breakdown of our sample by the two-digit SIC codes with the most IPOs. The computer hardware and software industry (SIC codes 35 and 73) has the highest number of IPOs (215), representing 30.54% of our IPO sample. Sixteen industries with very low frequencies of IPOs are classified into the all others category, representing 10.65% of all IPOs. The remaining IPOs are assigned to the remaining industries. Because of the extensive level of IPO activity in the technology industry and its association with the IPO bubble years, we identify and control for these 215 IPOs as technology IPOs in our subsequent analysis.

Table 1. SIC distribution

Industry	*Two-digit SIC codes*	*Freq.*	*%*
Oil and gas	13, 29	16	2.27
Food products	20	17	2.41
Paper and paper products	24–27	17	2.41
Chemical products	28	57	8.10
Manufacturing	30–34	26	3.69
Computer hardware and software	35, 73	215	30.54
Electronic equipment	36	59	8.38
Transportation	37, 39, 40, 42, 44, 45	33	4.69
Scientific instruments	38	57	8.10
Communications	48	34	4.83
Electric and gas services	49	6	0.85
Durable goods	50	9	1.28
Retail	53, 56, 57, 59	21	2.98
Eating and drinking establishments	58	11	1.56
Financial services	61, 62, 64, 65	28	3.98
Entertainment services	70, 78, 79	7	0.99
Health	80	16	2.27
All others	1, 15, 16, 17, 22, 23, 47, 51, 52, 55, 63, 67, 72, 82, 87, 99	75	10.65
Total		704	100.00

Tables 2 and 3 present the descriptive statistics on the key variables of interest by year distribution. The highest level of IPO activity was in the year 1997 (167 IPOs), whereas the lowest was in 1991 (5 IPOs), consistent with the idea of hot IPO markets. The average first-day returns are positive for all years, with the highest average first-day initial returns (57.94%) in the midst of the internet market bubble in 1999 and the lowest average first-day initial returns (4.18%) in 1991. The gross average proceeds from IPOs were the highest in 2001 ($304.3 million) and the lowest in 1990 ($48.27 million). The net income of the issuers ranged from $33.16 million in 1994 to $109.81 million in 2001. Cash flows from operations ranged from $2.01 million in 1994 to $124.44 million in 2001. From our descriptive summary, IPOs that take place in down markets (mainly years 2000–2002) are for larger firms (larger in total assets, on average) that are also profitable (higher net income cash flows from operations). Firms issued in the boom period (mainly 1997–1999) seem to have opposite firm characteristics.

Table 2. Time distribution

Year	No. IPOs	Mean							Median						
		First-day return	Proceeds	Money on the table	Total assets	Net income	Cash flow operation	DCA	First-day return	Proceeds	Money on the table	Total assets	Net income	Cash flow operation	DCA
1990	11	9.10	48.27	2.29	108.09	3.96	9.20	1.29	3.80	28.50	0.95	28.10	1.92	1.71	0.09
1991	5	4.18	74.34	1.67	241.40	-1.38	24.19	-0.11	0.00	40.80	0.00	216.10	-0.71	21.34	-0.06
1992	23	9.35	89.62	8.71	262.83	7.82	24.14	-0.01	7.24	48.50	2.78	130.21	1.06	10.20	-0.01
1993	27	5.70	91.53	5.88	1021.43	20.11	32.17	-0.04	2.71	67.60	1.14	201.33	3.03	16.52	-0.02
1994	16	5.64	69.69	1.88	568.75	-33.16	-2.01	-0.04	3.40	28.75	0.38	70.02	-0.83	5.22	0.00
1995	8	7.07	181.50	13.80	1884.48	-1.17	90.25	-0.02	6.01	58.90	2.03	204.82	-2.07	19.00	-0.01
1996	24	9.49	61.48	3.99	221.48	1.08	8.48	-0.29	9.08	42.00	1.69	48.38	1.49	3.88	0.02
1997	167	14.91	59.48	8.21	326.16	10.99	31.76	-0.03	10.00	33.10	3.01	22.93	1.07	1.52	-0.03
1998	111	24.48	85.17	14.71	232.64	0.31	8.17	-0.14	11.06	36.00	2.65	31.24	0.51	0.53	0.00
1999	91	57.94	114.49	41.04	212.40	-3.75	12.23	0.02	30.00	60.00	13.50	26.64	-3.33	-0.34	-0.04
2000	159	47.15	107.45	44.03	232.75	-7.09	7.94	-0.67	26.58	67.50	17.26	25.90	-7.92	-4.42	-0.07
2001	43	14.35	304.30	15.92	2018.39	109.81	124.44	-0.31	6.63	72.70	5.22	161.99	0.24	3.52	-0.02
2002	19	7.62	264.63	18.03	652.75	29.45	57.62	-0.01	9.82	115.20	9.01	162.02	1.54	4.85	0.03
Total	704	27.84	105.80	21.92	428.03	8.42	24.96	-0.19	11.92	51.00	4.87	32.38	-0.17	0.76	-0.03

Consistent with the findings of Ball and Shivakumar (2008) and Armstrong et al. (2015), the average discretionary current accruals (*DCA*), estimated using the modified Jones model, are largely negative. A firm with negative (positive) *DCA* is more conservative (aggressive) in using its discretionary current accruals to report lower (higher) earnings. More often than not, IPO firms report negative average discretionary accruals. Except for the years 1990 and 1999, the average *DCA* are negative in 11 out of 13 years reported. The mean *DCA* pooled all years is -0.19. Table 3 presents the magnitude of the average *DCA* and the count of firms with positive and negative *DCA*. Overall, less than half the firms (41.6%) report positive discretionary current accruals. These results are similar to the descriptive results reported by Ball and Shivakumar (2008) and Armstrong et al. (2015). However, the year-to-year variations in this ratio are quite striking. In five out of 13 years, at least half or more than half of the firms report positive discretionary accruals. These proportions indicate that positive earnings management is more pervasive than what the averages would suggest. Furthermore, this non-stationary proportion of negative *DCA* firms also suggests that earnings manipulation prior to IPOs varies by the period examined.

Table 3. Descriptive statistics on positive and negative DCA

Year of the IPO	Number of IPOs	IPOs with positive DCA	IPOs with negative IPOs	Percentage of IPOs with positive DCA	Percentage of IPOs with negative DCA
1990	11	6	5	54.55%	45.45%
1991	5	0	5	0.00%	100.00%
1992	23	10	13	43.48%	56.52%
1993	27	9	18	33.33%	66.67%
1994	16	8	8	50.00%	50.00%
1995	8	2	6	25.00%	75.00%
1996	24	13	11	54.17%	45.83%
1997	167	68	99	40.72%	59.28%
1998	111	56	55	50.45%	49.55%
1999	91	40	51	43.96%	56.04%
2000	159	54	105	33.96%	66.04%
2001	43	18	25	41.86%	58.14%
2002	19	10	9	52.63%	47.37%
Total	704	294	410	41.76%	58.24%

4.2. Accruals mispricing and initial return test results

Table 4 presents the results from the estimation of accruals mispricing Models 1 and 2 in the two columns. The model fit for both the models is very similar (adjusted $R^2 \sim 39\%$) and so are the magnitudes and significance of most of the variables. $\Delta P+$ and *MKT+* are significant at 0.01 and 0.05 (one-tailed test) levels for both models, consistent with the findings of Cliff and Denis (2004) and Lowry and Schwert (2002). In model (1), the coefficient for *DCA* is positive but not significantly different from zero at conventional levels of significance (0.05 or better). These results seem to indicate no association between IR and the levels of discretionary current accruals in pre-IPO earnings. In the estimation of specification (2) when *DCA* is separated by its sign, the coefficient for *POS_DCA*, 4.7665 is positive and significantly greater than zero. These results suggest that the firms that manage pre-IPO earnings upwards through discretionary current accruals tend to have higher initial returns. For these firms, a unit increase in the level of discretionary accruals translates into a one basis point increase in return on assets (ROA) above and beyond the industry average through management of accruals. Thus, a one-basis point improvement in *ROA* through discretionary accruals results in a 4.77% increase in initial returns. These results indicate significant payoffs to entrepreneurs from upward management of earnings and provide strong support for our *H1*. The coefficient for *NEG_DCA* is not significantly different from zero.

These results suggest that for conservative issuers there is no significant difference in the valuation of discretionary accruals. Both the underwriters and the markets do not assign any significant weight to discretionary accruals, or they both assign weights that are not significantly different.

Table 4. Initial returns and discretionary current accruals

Variable	*Initial return (1) coefficient*	*Initial return (2) coefficient*
Intercept	2.1366 (0.23)	-0.0903 (-0.01)
DCA	0.1769 (0.14)	
POS_DCA		4.7665* (2.06)
NEG_DCA		-2.2579 (-1.37)
RANK	-0.0027 (-0.00)	0.0980 (0.15)
BIG8	-3.2732 (-0.52)	-3.8049 (-0.61)
VC	3.3669 (0.97)	2.8588 (0.83)
LOGAST	-1.2333 (-1.12)	-1.1257 (-1.03)
NYSE	4.9075 (0.60)	5.2887 (0.65)
NMS	10.6003 (1.50)	10.9370 (1.56)
AMEX	-1.9067 (-0.17)	-1.2767 (-0.11)
TECH	4.9504 (1.37)	4.5479 (1.26)
ΔP	0.1519 (1.06)	0.1437 (1.01)
ΔP^{+}	1.6438** (7.97)	1.6447** (8.01)
MKT	-16.1993 (-1.36)	-15.7630 (-1.33)
MKT^{+}	31.7208* (1.79)	32.6823* (1.85)
Number of IPOs	704	704
Adjusted R^2	0.3913	0.3954

*Note: ** and * denote significance at 1% and 5% levels, respectively.*

4.3. Underwriter and market differential pricing of accruals test results

Table 5 presents results from the joint estimation of the underwriter and the market valuation models (equations 1 and 2). The results from the underwriter (market) valuation model, with the log of offer price (market price) as the dependent variable, appear in the first (second) column. The underwriter model fit is much better than the market valuation model (adjusted R^2 of 24.4% versus 13.7%), suggesting that fundamental variables play a larger role in explaining the variability in offer prices than the market closing prices. Both the underwriter and the market valuation models assign significant weights to the fundamental variables such as *SALES* and *R&D*, which is consistent with the findings of prior studies. As observed by Aggarwal et al. (2009), the sign of *INCOME* is negative and significant at 0.05 levels (one-tailed test). Underwriter reputation *RANK* and the *BOOM* markets both positively affect the offer and the market prices. The discretionary accruals, regardless of the sign, have no effect on the underwriter's offer price because the coefficients for both *POS_DCA* and *NEG_DCA* are not significantly different from zero. In the market valuation model, however, the coefficient of *POS_DCA* is positive and significant; the coefficient for *NEG_DCA* is not significantly different from zero. In the tests of the significance of the difference in coefficients across equations, the magnitude of *POS_DCA* is significantly larger in the market valuation. These results provide strong support for *H2* and *H3* that underwriters see through the impact of discretionary accruals enabled aggressively reported earnings on valuation, whereas markets fail to do so.

Table 5. Discretional current accruals on offer and market prices (Part 1)

Variable	*Log (offer price) coefficient*	*Log (market price) coefficient*	*Difference*
Intercept	1.9136** (25.53)	1.9074** (16.84)	
POS_DCA	0.0231 (1.57)	0.0518* (2.33)	0.0286* (5.76)
NEG_DCA	-0.0114 (-1.13)	-0.0269 (-1.76)	-0.0155 (3.52)
CRASH	-0.0013 (-0.04)	0.1031 (1.92)	0.1044** (13.06)
BOOM	0.1062* (2.57)	0.2639** (4.22)	0.1577** (21.98)

Table 5. Discretional current accruals on offer and market prices (Part 2)

Variable	*Log (offer price) coefficient*	*Log (market price) coefficient*	*Difference*
L(INCOME)	-0.0122 (-1.76)	-0.0223* (-2.13)	-0.0101 (3.22)
L(BV)	0.0034 (0.73)	-0.0011 (-0.16)	-0.0045 (1.41)
L(SALES)	0.0913** (10.51)	0.0797** (6.07)	-0.0116 (2.70)
L(R&D)	0.0578** (4.93)	0.0815** (4.60)	0.0237* (6.16)
MEAN P/S	0.0001 (0.60)	-0.0002 (-0.95)	-0.0003* (6.29)
INSIDER	-0.0438 (-0.69)	0.0650 (0.68)	0.1088* (4.45)
RANK	0.0301** (5.44)	0.0372** (4.44)	0.0071 (2.46)
Number of IPOs	704	704	
Adjusted R^2	0.2443	0.1372	

*Note: ** and * denote significance at 1% and 5% levels, respectively.*

We further test for the difference in coefficients on these joint models to understand other sources of underpricing. Based on the differences test, *BOOM* and *CRASH* periods, *R&D, MEAN P/S*, and *INSIDER* retention rate also play a significantly different role in valuation by the markets and the underwriters.

4.4. Entrepreneur stock retention and differential pricing of accruals test results

The results from the estimation of seemingly unrelated regression equations 1 and 2 with stock retention and additional market-related variables in the specification appear in Table 6. Columns one and two of the table present results with *POS_DCA*, *NEG_DCA* and *HR*, after controlling for all other factors affecting IPO valuation. The inclusion of these additional control variables improves the overall fit of both models, with a significant improvement in R^2 (from 24% and 13% to 65% and 68%, respectively). The coefficients of *POS_DCA*, *NEG_DCA* and *HR* are not significantly different from zero in the underwriter valuation model (column 1); and only the coefficient of *HR* is significant in the market valuation model (column 2). Results from the test of differences in the magnitude of coefficients in the two models appear in column 3. The coefficients of both *POS_DCA* and HR are significantly larger for the market valuation model than the underwriter valuation model at the conventional levels of significance (0.05 or better). These results provide strong support for our *H4* that higher stock retention is associated with higher market valuation at the absolute level and relative to the underwriter valuation.

Table 6. Complete valuation model (Part 1)

Variable	*Ln (offer price)*	*Ln (market price)*	*Difference*	*Ln (offer price)*	*Ln (market price)*	*Difference*
Intercept	1.9220** (24.34)	1.9418** (18.28)		1.9214** (24.28)	1.9612** (18.35)	
POS_DCA	0.0016 (0.16)	0.0243 (1.75)	0.0227* (6.13)			
NEG_DCA	0.0001 (0.02)	-0.0022 (-0.23)	-0.0023 (0.13)			
HR	0.0191 (0.94)	0.0687* (2.50)	0.0496** (7.49)			
*POS_DCA*HR*				0.0005 (0.04)	0.0324* (2.06)	0.0319** (9.55)
*POS_DCA*LR*				0.0086 (0.41)	0.0052 (0.18)	(0.0035) (0.03)
*NEG_DCA*HR*				0.0014 (0.19)	(0.0048) (-0.48)	(0.0062) (0.90)
*NEG_DCA*LR*				-0.0123 (-0.67)	0.0036 (0.15)	0.0159 (0.96)
L(INCOME)	0.0036 (0.70)	0.0038 (0.55)	0.0002 (0.00)	0.0035 (0.69)	0.0035 (0.51)	0.0000 (0.00)
L(BV)	0.0032 (0.96)	0.0034 (0.76)	0.0002 (0.01)	0.0035 (1.03)	0.0043 (0.94)	0.0008 (0.07)
L(SALES)	0.0082 (0.78)	0.0016 (0.11)	-0.0066 (0.51)	0.0074 (0.71)	-0.0005 (-0.04)	-0.0079 (0.73)
L(R&D)	0.0254** (2.84)	0.0281* (2.33)	0.0027 (0.11)	0.0273** (3.09)	0.0330** (2.76)	0.0057 (0.52)
MEAN P/S	0.0001 (1.32)	0.0000 (-0.05)	-0.0001 (2.43)	0.0001 (1.30)	0.0000 (0.01)	-0.0001 (2.13)
RANK	0.0112** (2.83)	0.0108* (2.02)	-0.0004 (0.02)	0.0111** (2.79)	0.0111* (2.07)	0.0000 (0.00)
BIG8	0.1569** (4.22)	0.1538** (3.08)	-0.0031 (0.01)	0.1542** (4.14)	0.1468** (2.92)	-0.0074 (0.05)
VC	0.0040 (0.17)	0.0086 (0.28)	0.0046 (0.05)	0.0070 (0.30)	0.0131 (0.42)	0.0061 (0.09)
LOGAST	0.0908** (8.62)	0.0867** (6.12)	-0.0041 (0.19)	0.0921** (8.73)	0.0890** (6.25)	-0.0031 (0.11)

Table 6. Complete valuation model (Part 2)

Variable	*Ln (offer price)*	*Ln (market price)*	*Difference*	*Ln (offer price)*	*Ln (market price)*	*Difference*
NYSE	0.1977** (4.06)	0.2302** (3.52)	0.0325 (0.57)	0.2044** (4.19)	0.2412** (3.66)	0.0369 (0.72)
NMS	0.1459** (3.48)	0.1925** (3.41)	0.0466 (1.57)	0.1543** (3.67)	0.2046** (3.60)	0.0503 (1.81)
AMEX	0.0305 (0.46)	0.0005 (0.01)	-0.0300 (0.26)	0.0375 (0.57)	0.0082 (0.09)	-0.0294 (0.25)
TECH	0.0022 (0.09)	-0.0032 (-0.10)	-0.0054 (0.06)	0.0030 (0.12)	0.0017 (0.05)	-0.0013 (0.00)
DR	0.0132** (15.79)**	0.0154** (13.74)	0.0022** (9.23)	0.0131** (15.72)	0.0153** (13.56)	0.0022** (8.54)
DR+	-0.0074 (-6.14)	0.0004 (0.25)	0.0078** (53.36)	-0.0073** (-6.05)	0.0007 (0.44)	0.0080** (56.03)
MKT	-0.0856 (-1.16)	-0.1158 (-1.17)	-0.0302 (0.21)	-0.0908 (-1.23)	-0.1215 (-1.22)	-0.0307 (0.22)
MKT+	0.0911 (0.84)	0.2282 (1.56)	0.1371 (2.02)	0.0954 (0.87)	0.2265 (1.54)	0.1311 (1.83)
Year dummy	Yes	Yes		Yes	Yes	
F-value	3.06	4.81**		3.28**	5.55**	
Number of IPOs	704	704		704	704	
Adj. R-square	0.6520	0.6852		0.6513	0.6821	

*Note: ** and * denote significance at 1% and 5% levels, respectively, based on a one-tailed test.*

Our descriptive tests (not reported) indicate a significant negative correlation between insider stock retention and the *DCA* variables. IPOs with high insider retention tend to have relatively more negative discretionary accruals. To further disentangle this relationship, we estimate the model with the interaction of signed *DCA* and signed *HR* to test *H5*. Columns four and five of Table 6 present results from re-estimations of the two valuation models. For the underwriter valuation model (column 5), none of the coefficients for the four interaction variables (*POS_DCA * HR, POS_DCA * LR, NEG_DCA * HR* and *NEG_DCA * LR*) are significantly different from zero, consistent with underwriters having sufficient additional information to not rely on insider stock retention information and that they could see through the management of earnings through discretionary accruals. For the market valuation model, the coefficient for *POS_DCA * HR* (positive discretionary accruals in pre-IPO earnings with high insider stock retention) is positive and significant; the coefficients for the remaining three interaction variables are not significantly different from zero. A test of the significance of the difference in the magnitude of the coefficient of *POS_DCA * HR* for the two models shows that the magnitude is significantly larger for the market valuation model. The finding suggests that market participants take a firm's insider stock retention as a signal of the credibility of management's reported earnings and assign a significantly higher weight to their IPO valuation even when the earnings are managed upwards. These findings provide strong support for *H5*.

In this expanded specification, the only additional variables that seem to differ significantly across market and underwriter valuation models are price revisions (Δ*P*) and when these price revisions are positive (Δ*P+*). All other valuation-relevant variables receive weights that are not significantly different across the two models. The result that both the underwriters and the markets price all these fundamental and market-related factors in exactly the same way is an important finding. No prior studies examining IPO valuation and IPO underpricing have documented this result. Identifying scenarios where these variables could potentially be valued differently, say in certain industries or for certain IPOs, could be a direction of some future research in this area.

5. CONCLUSION

Prior studies have examined and found evidence of earnings management to achieve certain strategic outcomes. However, in the context of IPOs, the evidence of some recent studies has been mixed, concluding that aggressive earnings management prior to the IPO does not exist. We find that the result of mean pre-IPO discretionary accruals being negative is non-stationary when examined over time and that the proportion of firms engaging in aggressive earnings management is not that small in any given year, with the mean accruals even being positive in certain years. Our examination of the advantages of earnings management separates firms that manage earnings upwards from those that do not. We find that firms that aggressively manage earnings upwards receive a significantly higher initial return on the day of the IPO. On average, a one basis point improvement in ROA from upward manipulation of discretionary accruals results in a 4.75% improvement in first-day initial returns. This study makes an important contribution to the literature on IPO underpricing because the magnitude of this initial return is substantial when compared to other identified sources of initial returns in the prior literature.

We also show that this earnings management through accruals is only helpful in achieving favorable valuations only from the markets and not from the underwriters and that too not on all occasions. When we use insider stock retention as a proxy for IPO quality, we find discretionary accruals are negatively associated with insider stock retention. Longer-horizon entrepreneurs who retain higher proportions of firm stock tend to report conservative earnings and discretionary accruals serve as an additional proxy for the quality of the IPO. Our subsequent results show that markets assign higher weights to discretionary current accruals in valuation, but only when insider stock

retention is high. No weight is assigned to discretionary accruals when insider stock retention is low. These results suggest that markets use IPO quality as a screen for determining the role of earnings in valuation. In other words, earnings are taken more at face value when the market and entrepreneurs' incentives are aligned as evidenced by high insider stock retention. When insider stock retention is low, earnings are more carefully examined, presumably because of a lack of trust, and no weight is assigned to discretionary accruals by the markets. Under no circumstances do the underwriters assign any weight to discretionary accruals in their valuation of the IPOs. This is consistent with underwriters being able to see through earnings management and the impact of accruals on current and future earnings. This differential valuation of discretional accruals could also be driven by the difference in information asymmetry faced by the markets and underwriters. Underwriters who are privy to additional information are better able to see through earnings management or rely on other factors (or both) than the markets.

Our study results are quite robust, and the study makes several important contributions to the accounting and finance literature. However, like any empirical study, it has limitations. The study is based on a sample of 704 IPOs. If this sample is not representative of the population, the results will not be generalizable to other IPOs. More research on IPO samples from different time periods is needed to test the robustness of these findings. Also, some of the variables used in our specifications are derived from prior established studies, like Jones (1991) for estimation of discretionary accruals; Aggarwal et al. (2009) for estimation of differences in two SUR models. To the extent that these models fail to capture what they propose to measure or test, the findings of our study will require additional scrutiny to corroborate. Because these models have stood the test of time (so far), this limitation is potentially innocuous.

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