Valuation, Earnings Management and the Underperformance of Loss Seasoned Equity Offerings

Fernando Comiran
University of San Francisco

Tatiana Fedyk
University of San Francisco

Joohyung Ha
University of San Francisco

The current literature on earnings management around seasoned equity offerings (SEOs) mainly concentrates on discretionary accruals, and considers all SEOs as a homogenous pool of firms. The uniqueness of this paper is in linking firms' valuation to their discretionary choices and by demonstrating that loss firms do not manage earnings during SEOs as earnings are not informative for their valuation. We find that loss firms overinvest in R&D around SEOs, because R&D expenditures are the main value-driver for loss SEOs. We further show that overinvestment in R&D is negatively associated with future operating performance for loss firms.

INTRODUCTION

In this paper, we examine earnings management among loss seasoned equity offerings (SEOs). While prior literature on earnings management around SEOs generally concludes that SEO firms manage earnings, we demonstrate that only profitable firms inflate their earnings, whereas loss firms do not manage earnings. Instead, they inflate research and development expenditures (R&D), a strategy that is actually decreasing bottom line earnings. Our finding is consistent with differential valuation for profit and loss firms, and highlights the importance of more detailed approach in earnings management research to study accounting choices for profit and loss firms.

Prior literature on managers' reporting behavior around SEOs mainly concentrates on two types of earnings management, accrual earnings management (Teoh et al., 1998; Rangan, 1998; Shivakumar, 2000; DuCharme et al., 2004) and real earnings management (e.g., Cohen and Zarowin, 2010). The general conclusion is that SEO firms overstate their earnings by using accrual-based or transaction-based earnings management. By mainly focusing on earnings, it's implicitly assumed that earnings are the main focus of managerial discretion during SEOs. While this assumption sounds reasonable for profitable firms as earnings are value-relevant for their valuation (e.g., Ohlson, 1995; Graham et al., 2005), earnings management among loss firms is reasonably questionable mainly because earnings are not that informative for these firms. For example, Hayn (1995) demonstrates that loss firms have lower earnings

response coefficient than profitable firms, explaining such differential perception of earnings for loss vs. profit firms by the existence of a liquidation option. Callen et al. (2008) suggest that for loss firms, traditional earnings-based valuation models do not allow for reliable market value estimates. On the other hand, Darrough and Ye (2007) find a positive association between loss firms' valuation and R&D expenditures. Furthermore, Franzen and Radhakrishnan (2009) present a formal R&D valuation model using the residual-income valuation model (Ohlson, 1995), and show that the valuation multiplier on R&D expenditures is different for profit and loss firms: it is negative for profit firms, but positive for loss firms.

Based on prior literature findings that earnings are not that value-relevant for loss firms (e.g., Hayn, 1995; Demers and Lev, 2001; Callen et al., 2008), we posit that managers of loss SEO firms do not engage in earnings management, but rather manage other accounting items that are important for their firms' valuation: R&D expenditures. To test our predictions, we first separate all SEO firms into two groups: profit and loss firms, and then consider whether earnings and R&D expenditures are managed differently by these two groups. We expect that only profitable firms manage earnings upward; whereas for loss firms we do not expect to find evidence of earnings management, but rather R&D management.

We start our analysis by examining the weight SEO investors put on different items in the financial statements (sales growth, R&D expenditures, and earnings) for all SEO firms, and separately for profit and loss firms. This analysis provides a benchmark to see what drives the market value for the two groups of firms, and where in turn, managers might be tempted to focus their efforts of discretion (assuming that firm valuation is a major incentive for managers during SEOs). The results show that profit and loss SEO firms have different accounting value drivers, consistent with our expectations and findings in prior literature. Thus, profit firms are mainly priced on earnings, whereas loss firms are not priced on earnings at all. On the other hand, loss firms are positively priced on R&D expenditures, whereas profit firms are not priced on R&D.

We also find that both profit and loss SEO firms are positively priced on sales growth, but the coefficient on sales growth is significantly lower than the coefficient on earnings (on R&D) for profit (loss) firms, and is insignificantly different between the two groups. Therefore, in our analysis we concentrate on the two accounting items that have the highest valuation multipliers and are valued differently for profit and loss firms: earnings and R&D.

Next, we estimate discretion over earnings and R&D for all SEO firms, and separately for profit and loss firms. Consistent with prior literature results that accruals are abnormally high around SEOs (Rangan, 1998; Teoh et al., 1998; Shivakumar, 2000; DuCharme et al., 2004), we also document significantly positive abnormal accruals for the full SEO sample. However, when we split all SEO firms into two groups, we find that discretionary accruals are abnormally high only for profit firms, while for loss firms discretionary accruals are actually significantly negative. This result demonstrates that loss SEO firms do not manage earnings upward during seasoned equity offerings. Moreover, we document that loss SEO firms overinvest in R&D (a strategy that actually reduces earnings) as R&D expenditures are positively valued by investors for these firms. This new finding highlights the importance of linking firms' valuation to their discretionary accounting choices instead of using a default assumption of prevailing incentives for earnings management.

Finally, we examine whether discretionary items during SEOs are associated with post-SEO operating underperformance, which would be consistent with opportunistic or myopic motives driving managerial reporting. Alternatively, if managers use discretion over accounting items to signal superior future performance (i.e., signaling hypothesis), discretionary items will be positively associated with future performance. Consistent with prior literature (Teoh et al., 1998, Cohen and Zarowin, 2010), we find that discretionary accruals are negatively related to future operating performance, but we document that this association holds only for profit firms. Next, we provide new evidence that discretionary R&D expenditures are also negatively related to future operating performance; but this relation is completely driven by loss SEO firms. Therefore, we do not find evidence in support of the signaling hypothesis. Our findings of negative association between discretionary items (accruals for profit firms, and R&D

expenditures for loss firms) are consistent with opportunistic or myopic managerial behavior. To sum, we present robust evidence that during the SEOs, firms mainly manage accounting items that are value-relevant for investors, and that loss firms do not manage earnings, but manage R&D instead.

Our paper makes important contributions to the SEO earnings management literature. First and foremost, we link SEO firms' valuation with the use of discretion over various accounting items. Our study is unique in that it identifies a setting where different firm types have the incentives to apply discretion over different accounting items, and find results consistent with the incentives. Next, we are the first to document that loss firms do not manage earnings during SEOs, but they do manage R&D, i.e., they overinvest in R&D as R&D expenditures are important value-driver in their valuation. Finally, we demonstrate that discretionary items are associated with future underperformance: discretionary accruals are negatively related to future performance for profit firms, whereas discretionary R&D expenditures are negatively related to future performance for loss firms. While prior literature finds a negative association between discretionary accruals and future performance for SEO firms in general, we show that this association is mainly driven by profit firms.

The remainder of this paper is organized as follows. Section 2 discusses the related literature and develops the hypotheses. Section 3 describes our methodology. Section 4 presents the sample data and reports the results. Section 5 concludes the paper.

RELATED LITERATURE AND HYPOTHESES DEVELOPMENT

Recognizing that incentives are an essential condition for earnings management (see Schipper 1989, and Healy and Wahlen 1999), early studies find that firms manage reported earnings during SEOs in order to increase SEO offer price and SEO proceeds. Rangan (1998) and Teoh et al. (1998) document abnormal accruals around SEOs and present evidence that earnings management around SEOs is associated with poor long-run operating performance following the equity offering (originally documented by Loughran and Ritter, 1995; and Spiess and Affleck-Graves, 1995). Shivakumar (2000) also finds evidence of accruals earnings management during SEOs, but in contrast to Rangan (1998) and Teoh et al. (1998), he shows that there is no abnormal stock returns associated with such opportunistic behaviour. He concludes that investors rationally undo earnings management and set an efficient market price in equilibrium (Stein, 1989). As additional support for the earnings management hypothesis, DuCharme et al. (2004) show that accruals are abnormally high for SEO firms, especially for those subsequently sued by shareholders. Furthermore, Cohen and Zarowin (2010) demonstrate that SEO firms are also involved in real earnings management, and that the decline in post-SEO performance documented by prior literature is more severe for real earnings management than for accrual-based earnings management.

One common feature of all prior SEO studies is that they solely concentrate on earnings, implicitly assuming that earnings are the main value-driver and, therefore, the key focus for managerial opportunism. In this paper, we attempt to provide a more comprehensive analysis than prior researchers by relaxing these implicit assumptions from prior work. Specifically, we demonstrate that if firms have different value-drivers, they manage different accounting items during SEOs, and those items are not always earnings.

Two large groups of SEO firms that differ naturally in terms of their operating and valuation models are profit and loss firms. While both of these groups have a common objective to increase share value when issuing equity, they are quite different in terms of how investors value their earnings. Hayn (1995) is among the first to explicitly discuss the differences in the relevance of earnings, and hence in financial reporting objectives, between profit and loss firms. She demonstrates that loss firms have lower earnings response coefficients than profitable firms, explaining such differential perception of earnings for loss vs. profit firms by the existence of a liquidation/abandonment option. In fact, Collins et al. (1997) document that the value relevance of earnings, in general, has declined over time due to the increasing frequency of losses. The overall argument by most prior studies (Hayn, 1995; Berger et al., 1996; Collins et al., 1999; Core and Schrand, 1999) is that because a loss firm is more likely to go insolvent and its operating

recourses are more likely to get reorganized, there should be little relationship between its current earnings (i.e., current loss) and its market value.

If earnings are not priced for loss firms, what are other accounting items valued by investors for loss firms? One such an accounting item is R&D expenditures. For example, Darrough and Ye (2007) find a positive association between loss firms' valuation and R&D expenditures. Their argument is that loss firms can be financially healthy firms on their growth stage with heavy investments in projects with future benefits. One type of such investment is R&D expenditure. Under the current GAAP requirements, investments in R&D should be expensed (Lev and Sougiannis, 1996; Penman and Zhang, 2002; Lev et al., 2007). Consequently, substantial R&D investment will undermine current earnings, but can bring significant profits in the future. Franzen and Radhakrishnan (2009) further demonstrate that positive valuation of R&D expenditures for loss firms does not extend to profit firms. Using the residual-income valuation model (Ohlson, 1995), they show that the valuation multiplier on R&D expenditure is positive for loss firms, but negative for profit firms.

Therefore, the overall conclusion from prior studies is that the valuation of loss firms is substantially different from that of profit firms. Consequently, we predict that profit and loss SEO firms will be priced differently, based on their unique characteristics. This leads to our first hypothesis:

> *H1: During SEOs, the equity market weighs earnings and R&D differently for profit and loss firms: earnings are value-relevant for profit firms, but not for loss firms; R&D expenditures are value-relevant for loss firms, but not for profit firms.*

Given our conjecture that SEO profit firms are valued based on their earnings and SEO loss firms are valued based on their R&D, we further predict that SEO firms will manage accounting items that are the focal point in investors' valuation. Since earnings are an important value-driver only for profit firms, we expect to find evidence of earnings management among profit firms, but not among loss firms. In the same vein, since R&D expenditures are positively perceived by investors only for loss firms, we expect to find evidence of R&D management among loss firms, but not among profit firms. This leads to our second set of hypotheses:

> *H2a: During SEOs, profit firms manage earnings upward.*

> *H2b: During SEOs, loss firms overinvest in R&D expenditures.*

Our next objective is to examine the association between discretionary accounting items and future operating performance. A negative association between discretionary accruals or discretionary R&D and future performance supports prior research suggesting that managers are opportunistic, using their operational discretion to extract personal wealth benefits (Teoh et al., 1998; Gunny, 2010; Cohen and Zarowin, 2010). A negative association is also consistent with a second explanation, suggesting that managers are myopic and have difficulty estimating the normal (optimal) level of R&D investment due to the nature of the business or to their own managerial ability.

Alternatively, managers can increase accruals or R&D spending as a way of signaling future firm value (Leland and Pyle, 1977; Fan, 2007). A positive association between discretionary accounting items and future firm value suggests that managers increase accruals or R&D spending in an effort to attain benefits that will allow a firm to perform better in the future. We argue that opportunistic or myopic motives outweigh signaling, and state our last set of hypotheses in the directional form:

> *H3a: The magnitude of discretionary earnings is negatively associated with post-offering operating performance for profit SEO firms.*

> *H3b: The magnitude of discretionary R&D is negatively associated with post-offering operating performance for loss SEO firms.*

METHODOLOGY

Valuation of SEO Profit and Loss Firms

To test our first hypothesis, we examine how different accounting items are priced by investors across profit and loss firms. We estimate the model first for all SEO firms and then for profit and loss firms separately. We follow prior literature and run a model similar to models used in DuCharme et al. (2001), Li and McConomy (2004), Guo et al. (2005), Fan (2007), Aggarwal et al. (2009). The model includes accounting, non-accounting, and control variables as follows:

$$MV_{i,t} = \beta_0 + \beta_1 PEBXI\_noRD_{i,t} + \beta_2 NEBXI\_noRD_{i,t} + \beta_3 RD_{i,t} + \beta_4 LOGSGR_{i,t} + \beta_5 LOGAGE_{i,t} + \beta_6 LEV_{i,t} + \beta_7 IND\_PE_{i,t} + \varepsilon_{i,t} \quad (1)$$

The dependent variable MV (PRCC_F*CSHO) is the market value of the firm i at the end of the reporting month of its first annual financial statements after the seasoned equity offering. We include accounting explanatory variables that are shown to be associated with valuation for profit and loss firms. The significant coefficients on our variables of interest will imply that investors (efficiently or inefficiently) price those items. PEBXI_noRD (NEBXI_noRD) is equal to income before extraordinary items with R&D expenses being added back if income before extraordinary items is positive (negative) and is equal to zero otherwise. We use earnings before R&D expenditures because R&D is explicitly included in model (1); otherwise, the coefficient on R&D in model (1) would represent how investors value R&D *relative* to earnings, but not how investors value R&D *per se.* Because we are especially interested in the valuation of R&D, the specification that separates earnings and R&D expenditures seems more appropriate for our study. The separate inclusion of positive and negative earnings allows for different coefficients on earnings for profitable and unprofitable firms (Hayn, 1995; Berger et al., 1996; Collins et al., 1999; Core and Schrand, 1999). RD is R&D expenditures, and is included in the model based on the findings that the valuation of loss firms is positively associated with R&D expenditures (Darrough and Ye, 2007; and Franzen and Radhakrishnan, 2009). Other control variables include: the natural logarithm of sales growth rate ((SALEt-SALEt-1)/SALEt-1), LOGSGR; the firm's leverage, LEV, (measured as the ratio of total liabilities (DLC+DLTT) to average total assets (AT)); the natural logarithm of the firm's age, LOGAGE; and the industry's price-to-earnings ratio, IND_PE. MV, PEBXI_noRD, NEBXI_noRD, and RD are scaled by average total assets. We also include year fixed effects in the model. We winsorize all continuous variables at the top and bottom one percentiles, and report robust t-statistics clustered at industry and year levels (Petersen, 2009).

Discretionary Items Measures

Consistent with vast majority of prior SEO studies (Teoh et al., 1998; Rangan, 1998; Cohen and Zarowin 2010), we use the following procedure to calculate each discretionary item. We begin by regressing the level of the item (e.g. current accruals for the calculation of discretionary earnings, and current R&D for the calculation of discretionary R&D expenditures) on variables that have been shown to explain the normal level of the item, for all non-SEO firms, by year and industry. Next, using the coefficients from the model, we calculate the item's expected level for SEO firms. We then subtract the expected level from the actual level in order to find the abnormal level of the item for the SEO firms.

Discretionary Accruals (DACC)

To calculate discretionary earnings for each firm i, we rely on modified Jones (1991) model widely used in prior earnings management research. Specifically, we estimate model (2) cross-sectionally by industry and year for all non-SEO firms available on COMPUSTAT for which we have the data required to estimate this regression.

$$\frac{TACC_{i,j,t}}{TA_{i,j,t-1}} = \beta_{0,j,t} + \beta_{1,j,t}\frac{1}{TA_{i,j,t-1}} + \beta_{2,j,t}\frac{\left(\Delta SALE_{i,j,t} - \Delta AR_{i,j,t}\right)}{TA_{i,j,t-1}} + \beta_{3,j,t}\frac{PPE_{i,j,t}}{TA_{i,j,t-1}} + \varepsilon_{i,j,t} \quad (2)$$

Industry, j, is defined by the three-digit Standard Industrial Classification (SIC) code. If for a particular year t the three-digit SIC industry has fewer than 15 observations, then regression (2) is estimated for the two-digit SIC industry-group.

In equation (2) current accruals, TACC are total accruals, measured for each firm from the statement of cash flows as income before extraordinary items (IBC) minus cash flow from operations (OANCF) and plus extraordinary items and discontinued operations (XIDOC). Following Collins and Hribar (2002), to estimate accruals, we use cash flows from operations obtained from the Statement of Cash Flows reported under the Statement of Financial Accounting Standards no. 95 (SFAS no. 95, FASB 1987). ΔSALE is the change in sales from the previous year; ΔAR is the change in accounts receivable (RECCH); and PPE is the gross property, plant and equipment (GT) at the end of period t. All variables are deflated by beginning total assets, TA. All variables used in accruals and R&D estimation regressions (2) and (3) are winsorized at top and bottom 1% to reduce influence of extreme observations. Nondiscretionary accruals for a firm i in year t, $NDACC_{i,t,j}$ are defined as:

$$NDACC_{i,t,j} = \hat{\beta}_{0,t} + \hat{\beta}_{1,t,j}\frac{1}{TA_{i,t-1,j}} + \hat{\beta}_{2,t,j}\frac{\left(\Delta SALE_{i,t,j} - \Delta AR_{i,t,j}\right)}{TA_{i,t-1,j}} + \hat{\beta}_{3,t,j}\frac{PPE_{i,t,j}}{TA_{i,t-1,j}} \quad (2')$$

where $\hat{\beta}_{0,t,j}, \hat{\beta}_{1,t,j}, \hat{\beta}_{2,t,j}$, and $\hat{\beta}_{3,t,j}$ are estimated coefficients from the regression (2). Finally, discretionary accruals, $DACC_{i,t,j}$, are calculated as the difference between total accruals and nondiscretionary accruals:

$$DACC_{i,t,j} = TACC_{i,t,j} - NDACC_{i,t,j} \quad (2'')$$

Discretionary R&D (DRD)

To calculate discretionary R&D, we use model (4) which is similar to Berger (1993) and Gunny (2010). First, we estimate model (4) cross-sectionally by industry, j, and year, t, for all non-SEO firms available on COMPUSTAT for which we have the data required to estimate this regression:

$$\frac{RD_{i,j,t}}{TA_{i,j,t-1}} = \beta_{0,j,t} + \beta_{1,j,t}\frac{1}{TA_{i,j,t-1}} + \beta_{2,j,t}\frac{RD_{i,j,t-1}}{TA_{i,j,t-1}} + \beta_{3,j,t}\frac{CASH_{i,j,t}}{TA_{i,j,t-1}} + \beta_{4,j,t}Q_{i,j,t} + \varepsilon_{i,t} \quad (3)$$

The dependent variable, RD, is current-year R&D expenditures. Lagged R&D expenditures, RDt-1, are included to capture the persistence of R&D activities, as R&D expenditures are long-term investments in nature. Average cash on hand during the year, CASH, proxies for internal resources available for investment in R&D, and is measured as the average of cash on hand (CHE) at the beginning and at the end of the year. We use the variable Q, which is Tobin's Q (Tobin, 1969), to capture growth opportunities available to the firm. Q is calculated as the market's estimate of the average benefit from an additional unit of investment made by the firm ((AT+PRCC_F*CSHO-BKVLPS*CSHO)/AT). All variables except for Tobin's Q are scaled by beginning total assets, TA. Nondiscretionary R&D for a firm i in year t, $NDRD_{i,t}$, are defined as:

$$NDRD_{i,t,j} = \hat{\beta}_{0,t,j} + \hat{\beta}_{1,t,j}\frac{1}{TA_{i,t-1,j}} + \hat{\beta}_{2,t,j}\frac{RD_{i,t-1,j}}{TA_{i,t-1,j}} + \hat{\beta}_{3,t,j}\frac{CASH_{i,t,j}}{TA_{i,t-1,j}} + \hat{\beta}_{4,t,j}Q_{i,t,j} \quad (3')$$

where $\hat{\beta}_{0,t,j}$, $\hat{\beta}_{1,t,j}$, $\hat{\beta}_{2,t,j}$, $\hat{\beta}_{3,t,j}$ and $\hat{\beta}_{4,t,j}$ are estimated coefficients from regression (3). Finally, discretionary R&D, $DRD_{i,t,j}$, is calculated as the difference between total R&D for firm i in year t and nondiscretionary R&D for that firm in that year:

$$DRD_{i,t,j} = RD_{i,t,j} - NDRD_{i,t,j} \quad (3'')$$

Association Between the Discretionary Items and Future Operating Performance

To examine our third hypothesis that the magnitude of discretionary items predicts future underperformance, we follow procedures used in Rangan (1998) and Cohen and Zarowin (2010) and control for performance reversals (Barber and Lyon, 1996). Specifically, we control for the normal amount of mean reversion in return-on-assets by subtracting the change in ROA (defined as income before extraordinary items, divided by total assets) of a matched nonissuing firm from the change in ROA of each issuing firm. Because SEO firms are growth firms and this, in turn, might affect their accrual and investment processes (Dechow et al., 2003; Ball and Shivakumar 2008), we match each profit (loss) SEO firm with a profit (loss) non-SEO firm on size (assets of a matched non-SEO firm being within 75 percent to 125 percent of a SEO firm's assets at the end of the fiscal year before the offering), book-to-market ratio (we choose a matching firm whose one year lagged book-to-market ratio is closest to that of a SEO firm), industry, and year. Specifically, we estimate the following annual cross-sectional regressions for all SEO firms and by group:

$$\Delta ROA_{t-1,t+1} = \beta_0 + \beta_1 DACC_{i,t} + \beta_2 SGR_{i,t} + \beta_4 CAPEX\_GR_{i,t} + \varepsilon_i \quad (4)$$

$$\Delta ROA_{t-1,t+1} = \beta_0 + \beta_1 DRD_{i,t} + \beta_2 SGR_{i,t} + \beta_4 CAPEX\_GR_{i,t} + \varepsilon_i \quad (5)$$

We run regressions (4) and (5) twice. First, change in ROA is measured for every SEO firms as: $\Delta ROA_{t-1,t+1} = (IB_{i,t+1}/AT_{i,t} - IB_{i,t-1}/AT_{i,t-2})$, i.e., change in return-on-assets from one year before the SEO (i.e., year -1) to one year after the SEO (i.e., year +1). Second, change in ROA is measured as the difference between the SEO firm's change in return-on-assets and a matched non-SEO firm's change in return-on-assets: $\Delta ROA_{t-1,t+1} = (IB_{i,t+1}/AT_{i,t} - IB_{i,t-1}/AT_{i,t-2}) - (IB_{m,t+1}/AT_{m,t} - IB_{m,t-1}/AT_{m,t-2})$, where m stands for a matched firm. Change in ROA is computed as the post-offering ROA relative to the pre-offering year ROA to avoid counterfeit correlations that may arise if changes in ROAs are measured relative to the offering year (Shivakumar, 2000). We include the two discretionary items, the offering year DACC and DRD, as their association with future operating performances is the focus of H3. Finally, the regressions include as control variables sales growth (defined as percentage change in sales), SGR, and growth in capital expenditures (defined as percentage change in capital expenditures), CAPEX_GR, known to be associated with future firm performance (Loughran and Ritter, 1997, show that issuers that are growing rapidly in terms of sales and capital expenditures in the year of the equity offering tend to experience larger post-offerings declines in earnings than those issuers who are growing more slowly). As in equation (1), we winsorize all continuous variables in equations (4) and (5) at the top and bottom one percentiles, include year fixed effects in the models, and report robust t-statistics clustered at industry and year levels.

RESULTS

Sample Data

Our sample of domestic U.S. seasoned equity offerings runs from 1989 to 2013. Following Collins and Hribar (2002), we use cash flows from operations obtained from the Statement of Cash Flows reported under the Statement of Financial Accounting Standards no. 95 fully adopted in 1989. The sample

period of 1989–2013 permits us to use statement of cash flow data to estimate accruals, rather than using a balance sheet approach. The list of SEO firms is obtained from the Securities Data Corporation Global New Issues Database by Thompson Financials. Financial accounting data comes from the COMPUSTAT annual industrial database. The Center for Research Securities Prices (CRSP) monthly files were used to obtain information about prices, stock returns, and shares outstanding. We follow the SEO literature and exclude from the sample spin-offs; reverse LBOs; closed-end funds, unit investment trusts, REITS and limited partnerships; rights and standby issues; unit offerings; nondomestic and simultaneous domestic-international offers. Finally, we restrict our sample to all nonfinancial firms with non-missing COMPUSTAT annual financial statement data for one year prior to the SEO filing date and the offer year. Our full SEO sample consists of 3,328 SEO firms, with 2,491 profit SEOs and 837 loss SEOs. Loss SEO firms are SEO firms with negative income before extraordinary items during the offering year.

Panel A of Table 1 reports the distribution of SEOs by group and year. Consistent with previous studies (Teoh et al., 1998; Rangan, 1998; Cohen and Zarowin, 2010), the number of SEOs peaked in 1996. Although SEO activity subsided slightly after 1996, it stayed at a high level until 2000. Following the collapse of the Internet bubble, the SEO market shrank in the years 2001-2003, but showed signs of recovery from year 2004 until the financial crisis in 2007, which caused the SEO market to cool down in 2008, and then resumed again in 2009. Interestingly, the composition of profit and loss firms changed dramatically over time (last column in Table 1). In particular, the percentage of loss firms steadily increased over the sample time period. For years 1989-1997, an average ratio of loss SEOs to all SEOs was around 13 percent; for years 1998-2006 it increased to 23 percent, and for recent years 2007-2013, the ratio of loss SEOs to all SEOs reached 42 percent (the highest two years are 2009 and 2012, with loss SEOs representing 53 percent and 47 percent of all SEOs, respectively). The increasing level of loss SEOs in recent years (2008-2013) supports the importance of our research, which focuses on financial statement management among loss SEO firms.

Panel B of Table 1 provides descriptive statistics of profit and loss SEO firms. There are substantial differences across the groups, supporting the notions that issuing profit and loss firms are quite heterogeneous. Thus, profit firms have significantly higher mean total assets than loss firms (1,570 million vs. 1,252 million, respectively); mean ROA is positive 12 percent for profit firms, and negative 34 percent for loss firms. Mean sales levels are significantly higher for profit firms than for loss firms (1,362 million vs. 718 million), but sales growth is lower for profit firms than for loss firms (44 percent vs. 80 percent, respectively). R&D expenditures scaled by total assets are only 8 percent for profit firms, but reach 23 percent for loss firms. Firm age, leverage, and BM are very similar for the two groups.

TABLE 1
DESCRIPTIVE STATISTICS

Panel A: Distribution of SEOs by Year and Group (numbers and percentages).

	All SEOs		Profit SEOs		Loss SEOs		% of Profit	% of Loss
issue year	count	%	count	%	count	%	SEOs	SEOs
1989	63	1.89%	56	1.68%	7	0.21%	89%	11%
1990	42	1.26%	38	1.14%	4	0.12%	90%	10%
1991	133	4.00%	117	3.52%	16	0.48%	88%	12%
1992	121	3.64%	104	3.13%	17	0.51%	86%	14%
1993	172	5.17%	153	4.60%	19	0.57%	89%	11%
1994	129	3.88%	110	3.31%	19	0.57%	85%	15%
1995	184	5.53%	155	4.66%	29	0.87%	84%	16%
1996	196	5.89%	166	4.99%	30	0.90%	85%	15%
1997	188	5.65%	157	4.72%	31	0.93%	84%	16%
1998	137	4.12%	104	3.13%	33	0.99%	76%	24%
1999	155	4.66%	120	3.61%	35	1.05%	77%	23%
2000	156	4.69%	97	2.91%	59	1.77%	62%	38%
2001	90	2.70%	73	2.19%	17	0.51%	81%	19%
2002	110	3.31%	86	2.58%	24	0.72%	78%	22%
2003	120	3.61%	92	2.76%	28	0.84%	77%	23%
2004	163	4.90%	136	4.09%	27	0.81%	83%	17%
2005	109	3.28%	89	2.67%	20	0.60%	82%	18%
2006	130	3.91%	104	3.13%	26	0.78%	80%	20%
2007	141	4.24%	96	2.88%	45	1.35%	68%	32%
2008	53	1.59%	32	0.96%	21	0.63%	60%	40%
2009	164	4.93%	77	2.31%	87	2.61%	47%	53%
2010	131	3.94%	80	2.40%	51	1.53%	61%	39%
2011	117	3.52%	75	2.25%	42	1.26%	64%	36%
2012	137	4.12%	72	2.16%	65	1.95%	53%	47%
2013	187	5.62%	102	3.06%	85	2.55%	55%	45%
Total	3328	100%	2491	74.85%	837	25.15%		

Panel B: Descriptive Statistics of SEO Firms by Group.

	ALL SEOs		Profit SEOs		Loss SEOs	
Variable	Mean	Median	Mean	Median	Mean	Median
AGE	18.68	15.00	18.29	14.00	19.84	16.00
LEV	0.32	0.23	0.31	0.23	0.35	0.20
TA	1490.32	320.75	1570.31	359.02	1252.27	215.82
RD	40.54	8.70	38.45	6.71	45.88	13.43
RD/TA	0.12	0.05	0.08	0.03	0.23	0.16
BM	0.54	0.52	0.54	0.53	0.55	0.48
SALE	1199.76	260.69	1361.78	342.73	717.58	103.61
SGR	0.53	0.28	0.44	0.28	0.80	0.27
MV	1878.84	546.93	2119.33	595.88	1163.13	382.08
PM	0.35	0.39	0.42	0.39	0.14	0.40
EBXI	37.74	11.35	84.95	21.35	-102.76	-22.98
ROA	0.00	0.06	0.12	0.09	-0.34	-0.15

Variables are defined as follows:
AGE = The time in years from the firm's incorporation until the SEO.
LEV = The ratio of total liabilities to average total assets ((DLC+DLTT)/AT).
TA = The average of the beginning and ending of the year's total assets (AT), in millions.
RD = R&D expenses (XRD), in millions.
RD/TA = R&D expenses divided by average total assets (XRD/AT).
BM = Book value per share, divided by market price per share (BKVLPS/PRCC_F).
SALE = Annual sales (SALE), in millions.
SGR = The percentage change in sales $((SALE_t-SALE_{t-1})/SALE_{t-1})$.
MV = Total number of shares outstanding, multiplied by the stock price at the end of the month of the first annual financial statement after the offering, in millions.
PM = Profit margin, defined as income before extraordinary items, divided by sales (IB/SALE).
EBXI = Income before extraordinary items, in millions.
ROA = Return-on-assets, defined as income before extraordinary items, divided by total assets (IB/AT).

Valuation of SEO Firms – A Test of Hypothesis 1

Table 2, Panel A reports results from estimating valuation equation (1). For a pooled sample of all SEO firms, all three accounting variables – positive earnings, R&D expenditures, and sales growth – are highly valued by investors (regression coefficients of 5.97, 6.8, and 1.83, respectively, and all strongly significant). However, when we look separately at the valuation of profit and loss SEOs, the picture is strikingly different. Profit SEOs are mainly valued on earnings (strongly significant valuation coefficient of 10.65), and to a smaller extent on sales growth (strongly significant valuation coefficient of 2.66), while R&D expenditures for profit SEOs are not perceived at all (insignificant valuation coefficient of -1.00). Valuation of loss SEOs, on the other hand, is mainly driven by R&D expenditures (strongly significant coefficient of 6.12), and to a lesser extent by sales growth (strongly significant valuation coefficient of 1.13); while earnings are not priced for loss SEOs (insignificant coefficient of 0.66), consistent with lower information content of losses, first documented in Hayn, 1995. As R&D is an accounting expense, and, therefore, is a negative number, in regression (1), we flip the sign of R&D expenditures, so that a positive valuation coefficient is consistent with positive valuation for R&D, and a negative valuation coefficient is consistent with negative R&D valuation. As for other control variable, LOGAGE (natural logarithm of age) and LEV (leverage) are priced negatively for all groups, but IND_PE (industry price-to-earnings ratio) is significantly negative for all SEOs and for profit SEOs, but is only weakly significant for loss SEOs. This finding is consistent with a lack of informativeness in earnings for loss firms, and as a result, in reduced informativeness of price-to-earnings ratios for loss SEOs (Berger et al., 1996; Pincus and Xie, 1999; Core and Schrand, 1999).

In addition to the regression analysis, in Panel B of Table 2 we report the elasticity of each of the explanatory variables. While the regression analysis shows the effect of one-dollar change in any explanatory variable on market value of equity, the elasticity shows how the SEO firms' values change with a one standard deviation change in each explanatory variable. The elasticity results reported in Table 2, Panel B are consistent with regression results reported in Panel A. Thus, all three accounting variables: earnings, R&D, and sales growth have strong effects on all SEO firms' market value: one standard deviation change in earnings corresponds to a 21.18 percent change in market value, one standard deviation change in R&D is associated with a 25.05 percent change in market value, and one standard deviation change in sales growth corresponds to a 26.65 percent change in market value. When we decompose all SEOs into profit and loss groups, we find that for profit SEOs, one standard deviation change in earnings is associated with a 39.42 percent change in market value, while one standard deviation change in R&D corresponds to a 2.16 percent reduction in the firm's market value. For loss SEOs, results are the opposite: one standard deviation change in R&D expenditures has the strongest effect on market value (31.27 percent), while one standard deviation change in earnings has the lowest effect (5.29 percent). Therefore, elasticity analysis reported in Panel B demonstrates that earnings (R&D)

are not only statistically significant for profit (loss) firms, but are also economically significant in profit (loss) valuation.

TABLE 2
PRICING OF SEO FIRMS

Panel A: Coefficient estimates from regression (1) of the market value of equity, *MV*, at the end of the month after the first annual financial statements of the SEO firms are reported, on positive and negative earnings, *PEBXI_noRD* and *NEBXI_noRD*, adjusted for R&D expenditures, *RD*, the natural logarithm of sales growth, *LOGSGR*, the natural logarithm of the firm's age, *LOGAGE*, the ratio of total liabilities to average total assets, *LEV*, and industry price-to-earnings ratio, *IND_PE*. *MVE*, *PEBXI_noRD*, *NEBXI_RD,* and *RD* are scaled by average total assets, *TA,* t-statistic is reported in parenthesis.

Variable	All SEOs	Profit SEOs	Loss SEOs
Intercept	4.18	3.1	5.34
	(16.98)	(10.54)	(10.66)
PEBXI_noRD	5.97	10.65	-
	(9.58)	(11.20)	-
NEBXI_noRD	-0.134	-	0.666
	(-0.31)	-	(1.27)
RD	6.8	-1.00	6.12
	(11.73)	(-0.63)	(7.65)
LOGSGR	1.83	2.66	1.13
	(12.27)	(12.12)	(4.97)
LOGAGE	-0.62	-0.48	-0.874
	(-8.18)	(-5.97)	(-4.64)
LEV	-2.055	-1.958	-1.903
	(-9.81)	(-7.81)	(-4.87)
IND_PE	-0.053	-0.049	-0.035
	(-5.39)	(-4.41)	(-1.61)
Year dummies	Yes	Yes	Yes
Adjusted R^2	22.52%	26.32%	17.92%
N (obs.)	3,130	2,369	761

Panel B: Marginal effects of different accounting items on SEO firms' values. Percentage change in firm value for one standard deviation change in each explanatory variable, while holding all other variables constant at their mean values.

Variable	All SEOs	Profit SEOs	Loss SEOs
PEBXI_noRD	21.18%	39.42%	0.00%
NEBXI_noRD	-0.66%	0.00%	5.29%
RD	25.05%	-2.16%	31.27%
LOGSGR	26.65%	30.20%	21.77%

Overall, we find strong support for our first hypothesis that earnings and R&D are priced differently for profit and loss seasoned equity offerings: earnings are priced only for profit SEOs, and R&D are positively perceived only for loss SEOs.

Discretionary Items – A Test of Hypothesis 2

In Table 3, we report time-series profile of discretionary earnings (Panel A), and discretionary R&D expenditures (Panel B) for all SEOs and separately for profit and loss SEOs. Consistent with prior literature (Teoh et al., 1998; Shivakumar, 2000), in Panel A, we document that positive discretionary accruals for a sample of all SEOs are the highest during the offering year (a strongly significant mean (median) discretionary accruals of 1.80 percent (2.13 percent)). However, when we separate all seasoned equity offerings into profit and loss groups, results for these groups are dramatically different. For profit firms, mean (median) discretionary accruals scaled by assets are positive and significant around the offering, reaching their maximum of 4.64 percent (3.05 percent) in the offering year. However, for loss firms, mean and median discretionary accruals are actually significantly negative during the SEO year: -6.63 percent and -1.57 percent, respectively. Therefore, we find that only profit firms manage upward accruals, consistent with positive valuation for their earnings (reported in Table 2). We did not find evidence of upward earnings management for loss firms.

In Panel B we report that mean discretionary R&D expenditures for all SEOs are positive and significant during the offering year (0.35 percent), while median discretionary R&D are not different from zeros. However, a more detailed look at the two groups of firms reveals that discretionary R&D are positive and significant (both, mean and median) during the offering year only for loss firms: their mean (median) discretionary R&D are 2.17 percent (0.05 percent), both strongly significant. For profit firms, mean (median) discretionary R&D are actually significantly negative: 0.35 percent (zero) during the offering year. Therefore, we find that, consistent with valuation results reported in Table 2, only loss firms overinvest in R&D, as R&D expenditures are positively perceived by SEO investors for unprofitable companies. Profit firms, for whom earnings are positively priced, but not R&D, actually underinvest in R&D – consistent with real earnings management documented by Cohen and Zarowin (2010).

As a robustness check, we also further separate all loss SEOs into two subsamples: "permanent" losses (loss SEO firms with at least three years of losses over a five-year period: four years before the SEO and the SEO year), and "transitory" losses (loss SEO firms with only one or two years of losses over a five-year period: four years before the SEO and the SEO year). We find that firms with permanent losses have significantly larger discretionary R&D in pre-SEO and SEO years: their mean discretionary R&D are 1.6 percent and 1.7 percent for years -1 and 0, respectively; while mean discretionary R&D for transitory losses are 0.2 percent and 1 percent for years -1 and 0, respectively.

Overall, our findings in Table 3 provide strong support for our second hypothesis that SEO companies selectively apply discretion over items that matter most to investors.

TABLE 3
TIME-SERIES PROFILE OF DISCRETIONARY ACCRUALS AND DISCRETIONARY R&D

Panel A: Mean and median discretionary accruals scaled by assets, in percent, for all SEO firms and by group, from year -1 to +3 relative to the seasonal equity offering (year 0). Discretionary accruals are defined as the difference between the scaled current accruals and fitted values from the estimation regression (2).

	All SEOs		Profit SEOs		Loss SEOs	
Year	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
-1	-0.00	0.99***	1.19***	1.36***	-3.64***	-0.68***
0	1.80***	2.13***	4.64***	3.05***	-6.63***	-1.57***
+1	0.57*	1.47***	1.58***	1.85***	-2.63***	-0.32
+2	0.25	1.09***	0.69***	1.13***	-1.29*	0.75
+3	0.23	0.89***	0.27	0.88***	0.13	0.92

Panel B: Mean and median discretionary R&D scaled by assets, in percent, for all SEO firms and by group, from year -1 to +3 relative to the seasonal equity offering (year 0). Discretionary R&D expenditures are defined as the difference between the scaled R&D and fitted values from the estimation regression (3).

	All SEOs		Profit SEOs		Loss SEOs	
Year	**Mean**	**Median**	**Mean**	**Median**	**Mean**	**Median**
-1	1.15***	0.00***	0.89***	0.00**	1.81***	0.09***
0	0.35**	0.00	-0.35***	0.00***	2.17***	0.05***
+1	0.19	0.00**	0.25*	0.00	0.04	-0.12***
+2	-0.14	-0.00***	0.05	0.00*	-0.72*	-0.30***
+3	-0.18	-0.00***	-0.16	0.00*	-0.25	-0.19*

***, **, * Denotes significance at the < .01, < .05, and < .10 levels, respectively.

Future Operating Performance – A Test of Hypothesis 3

We test the association between discretionary items and change in operating performance in order to differentiate between the signalling and opportunistic hypotheses (H3). We report multivariate regression results in Table 4. Panel A of Table 4 reports the association between discretionary accruals and change in ROA (Model I), and between discretionary accruals and change in performance-adjusted ROA (Model II). Using both models, for a pooled sample of all SEOs, we first document that discretionary accruals are negatively associated with post-offering operating performance (negative and significant coefficients of -0.0927 and -0.0656, for raw and performance-adjusted ROA, respectively). But when we decompose the pooled SEOs sample into profit and loss firms, we find that profit firms drive this negative relationship between discretionary accruals and future underperformance: change in raw ROA from the pre-offering year to one year after the SEO is -0.1652, and change in performance-adjusted ROA is -0.1709. The relationship between discretionary accruals and post-SEO performance for loss firms is actually positive but insignificant. Therefore, we demonstrate that the negative relationship between discretionary accruals and post-SEO operating performance documented by prior literature is entirely driven by profit firms.

Panel B of Table 4 reports regression results for the association between discretionary R&D and raw change in ROA (Model I), and between discretionary R&D and performance-adjusted change in ROA (Model II). For a pooled sample of all SEOs, we find that both, change in raw ROA and change in performance-adjusted ROA, are negatively associated with discretionary R&D. Looking separately at profit and loss firms, we find that discretionary R&D are not related to future underperformance for profit firms (insignificant coefficients of -0.0759 and 0.0527 for Models I and II, respectively). However, for loss SEO firms, we find negative and significant association between discretionary R&D and both, change in raw ROA and change in performance-adjusted ROA (significant coefficients of -0.7369 and -0.7971, respectively). Therefore, we provide new evidence of a negative association between discretionary R&D during the offering year and post-SEO operating performance, and we further demonstrate that this negative relation is completely driven by loss firms overinvesting in R&D.

As an additional analysis, we also check how discretionary R&D are related to future innovation performance. Specifically, we regress two measures of innovation: 1) patents granted over five years after the SEO scaled by R&D capital (Hirshleifer et al., 2013); and 2) adjusted patent citations for patents granted over five years after the SEO on discretionary R&D during the SEO year. We find that discretionary R&D are negatively related to future innovation performance of SEO firms (the higher is R&D overinvestment the lower are future patent count and quality), and this negative association is completely driven by loss SEOs. Therefore, we find that R&D overinvestment is negatively related not only to future operating performance, but also to future innovation performance.

To sum, Table 4 provides strong support for our third hypothesis that the magnitude of discretionary accruals during the SEO predicts post-offering operating underperformance for profit firms, while the

magnitude of discretionary R&D during the SEO predicts post-offering operating underperformance for loss firms.

TABLE 4
FUTURE OPERATING PERFORMANCE AND DISCRETIONARY ITEMS FOR SEO FIRMS BY GROUP

Panel A: Regression analysis (4) of the association between the change in return on assets, Δ*ROA*, from pre-SEO year (year -1) to one year after the SEO (year +1) and discretionary accruals, *DACC,* for all SEO firms and by group.
In Model I, Δ*ROA* is raw change in return on assets; t-statistic is reported in parenthesis.
In Model II, Δ*ROA* is matched-firm adjusted change in return on assets. Matched-firm adjusted change in return on assets is defined as the difference between a SEO firm's change in return on assets and a matched firm's change in return on assets. Profit (loss) SEO firms are matched with profit (loss) non-SEO firms on size (assets of the matched non-SEO firm being within 75 percent to 125 percent of the SEO firm's assets at the end of the fiscal year before the offering), book-to-market ratio (we choose the matching firm whose one year lagged book-to-market ratio is closest to that of the SEO firm), industry, and year; t-statistic is reported in parenthesis.

	Model I raw ΔROA			**Model II performance-adjusted ΔROA**		
Variable	**All SEOs**	**Profit SEOs**	**Loss SEOs**	**All SEOs**	**Profit SEOs**	**Loss SEOs**
Intercept	0.0009	-0.0062*	0.0623***	0.0023	0.0139	0.0129
	(0.15)	(-1.66)	(4.07)	(0.31)	(1.83)	(0.64)
DACC	-0.0927***	-0.1652***	0.0551	-0.0656**	-0.1709**	0.0702
	(-2.35)	(-4.12)	(0.81)	(-2.29)	(-2.18)	(0.54)
SGR	0.0185*	0.0077**	0.0229	0.0127**	0.0226	0.0159
	(1.83)	(2.28)	(1.33)	(2.29)	(1.50)	(1.34)
CAPEX_GR	0.0000***	-0.0026	-0.000***	0.0000	0.0050	0.0000
	(2.64)	(-0.97)	(-3.61)	(0.46)	(0.78)	(1.61)
Adjusted R^2	2.24%	1.88%	2.94%	0.51%	1.25%	0.94%
N (obs.)	3,113	2,364	609	2,553	1,989	564

***, **, * Denotes significance at the < .01, < .05, and < .10 levels, respectively.

Panel B: Regression analysis (5) of the association between the change in return on assets, Δ*ROA,* from pre-SEO year (year -1) to one year after the SEO (year +1) and discretionary R&D, *DRD,* for all SEO firms and by group.
In Model I, Δ*ROA* is raw change in return on assets.
In Model II, Δ*ROA* is matched-firm adjusted change in return on assets. Matched-firm adjusted change in return on assets is defined as the difference between a SEO firm's change in return on assets and a matched firm's change in return on assets. Profit (loss) SEO firms are matched with profit (loss) non-SEO firms on size (assets of the matched non-SEO firm being within 75 percent to 125 percent of the SEO firm's assets at the end of the fiscal year before the offering), book-to-market ratio (we choose the matching firm whose one year lagged book-to-market ratio is closest to that of the SEO firm), industry, and year.

	Model I raw ΔROA			Model II performance-adjusted ΔROA		
Variable	**All SEOs**	**Profit SEOs**	**Loss SEOs**	**All SEOs**	**Profit SEOs**	**Loss SEOs**
Intercept	0.0061	0.0308***	-0.1356***	0.0069	0.0093	-0.0051
	(0.58)	(3.62)	(-4.75)	(0.61)	(0.87)	(-0.21)
DRD	-0.6866**	-0.0759	-0.7369*	-0.6706***	0.0527	-0.7971***
	(-2.07)	(-0.21)	(-1.71)	(-2.68)	(0.15)	(-3.35)
SGR	-0.0064	0.0155	-0.0140	0.0228	0.0231	0.1434***
	(-0.61)	(0.82)	(-1.05)	(1.40)	(1.27)	(6.59)
CAPEX_GR	-0.0217***	0.0095	-0.0319***	-0.0094	0.0046	-0.0086*
	(-3.91)	(1.22)	(-3.45)	(-1.60)	(0.59)	(-1.65)
Adjusted R^2	3.58%	0.60%	7.21%	2.07%	0.83%	11.94%
N (obs.)	2,051	1,475	576	1,594	1,188	406

***, **, * Denotes significance at the < .01, < .05, and < .10 levels, respectively.

CONCLUSION

In this paper, we demonstrate that prior literature findings that firms manage earnings during seasoned-equity offerings and that discretionary accruals during the offering year are associated with future operating underperformance are entirely driven by profit SEO firms. Furthermore, we provide novel evidence that loss seasoned equity offering firms do not manage earnings. Instead, they use discretion over another accounting item: R&D expenditures.

We start our analysis by linking SEO firms' valuation to various accounting items, and find that investors price accounting items (earnings, sales growth, and R&D expenses) differently for profit and loss firms. The main two accounting items on which the two groups of SEO firms differ are earnings and R&D expenditures. We find that earnings are priced positively for profit firms, but not for loss firms. On the other hand, we find that investors price R&D expenditures positively only for loss firms, but not for profit firms. Next, we conjecture and find that SEO firms manage the accounting items that are most strongly associated with their valuations. For example, the value of profit firms is mostly sensitive to their earnings, and we find aggressive reporting of earnings by those companies. The value of loss firms is mostly sensitive to their R&D expenditures, and we document that those firms actually overinvest in R&D. Finally, we find that the magnitude of discretion by SEO firms is negatively associated with future operating performance: the magnitude of discretionary accruals predicts post-offering operating underperformance for profit firms, while the magnitude of discretionary R&D predicts post-offering operating underperformance for loss firms.

This paper differs from prior research along two dimensions. First, we examine two major subgroups within the SEO population that have distinct characteristics (i.e., profit and loss firms), rather than pooling heterogeneous firms together. Second, we do not limit our analysis to the management of earnings, but instead examine a use of discretion over various accounting items that are highly valued by investors. By moving beyond the management of bottom-line earnings, we demonstrate that loss SEO firms do not manage earnings, but they overinvest in R&D around the offerings, and such overinvestment is a suboptimal behavior as it deters future operating performance.

Our methodology can be useful in other settings where firms have incentive to manage their accounting numbers in order to increase their stock price (in studies of stock-based compensation), or valuation (e.g., IPOs and M&A). Our findings suggest that two major groups of firms, i.e., profit and loss firms, should be studied separately as pooling these firms together can lead to incomplete results.

REFERENCES

Aggarwal, R., S. Bhagat, and S. Rangan (2009). The impact of fundamentals and signalling on IPO valuation. *Financial Management* 38(2), 253-284.

Ball, R., and L. Shivakumar. (2008). Earnings quality at initial public offerings. *Journal of Accounting and Economics* 45(2-3), 324-349.

Barber, B., and J. Lyon. (1996). Detecting abnormal operating performance: The empirical power and specification of test statistics. *Journal of Financial Economics 41*(3), 359-399.

Berger, P. (1993). Explicit and implicit tax effects of the R&D tax credit. *Journal of Accounting Research* 31(2), 131–171.

Bernard, V., and D. Skinner. (1996). What motivates managers' choice of discretionary accruals? *Journal of Accounting and Economics* 22, 313-325.

Berger, P., Ofek, E., and I. Swary. (1996). Investor valuation of the abandonment option. *Journal of Financial Economics 42*(2), 257-287.

Callen, J., S. Robb, and D. Segal. (2008). Revenue manipulations and restatements by loss firms. *Auditing: A Journal of Practice and Theory* 27(2), 1-29.

Cohen, D., and P. Zarowin. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics* 50, 1-33.

Collins, D., Maydew, E., and I. Weiss. (1997). Changes in the value-relevance of earnings and book values over the past forty years. *Journal of Accounting and Economics 24*(1), 39-67.

Collins, D., Pincus, M., and H. Xie. (1999). Equity valuation and negative earnings: The role of book value of equity. *The Accounting Review 74*(1), 29-61.

Collins, D., and P. Hribar. (2002). Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research* 40, 105–134.

Core, J., and C. Schrand. (1999). The effect of accounting-based debt covenants on equity valuation. *Journal of Accounting and Economics 27*(1), 1-34.

Darrough, M., and J. Ye. (2007). Valuation of loss firms in knowledge-based economy. *Review of Accounting Studies* 12, 61-93.

Dechow, P., S. Richardson, and I. Tuna. (2003). Why are earnings kinky? An examination of the earnings management explanation. *Review of Accounting Studies* 8, 355-384.

Demers, E., and B. Lev. (2001). A rude awakening: Internet shakeout in 2000. *Review of Accounting Studies* 6(2-3), 331–359.

DuCharme, L., P. Malatesta, and S. Sefcik. (2001). Earnings management: IPO valuation and subsequent performance. *Journal of Accounting, Auditing and Finance* 16(4), 369–396.

DuCharme, L., P. Malatesta, and S. Sefcik. (2004). Earnings management, stock issues, and shareholder lawsuits. *Journal of Financial Economics* 71, 27–49.

Fan, Q. (2007). Earnings management and ownership retention for initial public offering firms: theory and evidence. *The Accounting Review* 82(1), 27–64.

Franzen, L., and S. Radhakrishnan. (2009). The value relevance of R&D across profit and loss firms. *Journal of Accounting and Public Policy* 28(1), 16-32.

Graham J., C. Harvey, and S. Rajgopal. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics* 40, 3-73.

Gunny, K. (2010). The relation between earnings management using real activities manipulation and future performance: Evidence from meeting earnings benchmarks. *Contemporary Accounting Research* 27(3), 855-888.

Guo, R., B. Lev, and N. Zhou. (2005). The valuation of biotech IPOs. *Journal of Accounting, Auditing and Finance* 20(4), 423-459.

Hayn, C. (1995). The information content of losses. *Journal of Accounting and Economics* 20: 125–153.

Healy, P. M. and J. M. Whalen. (1999). A review of the earnings management literature and its implications for standard setting, *Accounting Horizons* 13, 365-383.

Hirshleifer, D., P. Hsu, and D. Li. (2013). Innovative efficiency and stock returns. *Journal of Financial Economics* 107(3), 632-654.
Jones, J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research* 29, 193–228.
Leland, H., and D. Pyle. (1977). Information asymmetries, financial structure, and financial intermediation. *Journal of Finance* 32, 371–387.
Lev, B., D. Nissim and J. Thomas. (2007). "On the Informational Usefulness of R&D Capitalization and Amortization." in Stefano Zambon and Giuseppe Marzo (eds.), Visualising Intangibles: Measuring and Reporting in the Knowledge Economy. Ashgate Publishing.
Lev, B., and T. Sougiannis. (1996). The capitalization, amortization, and value-relevance of R&D. *Journal of Accounting and Economics 21*(1), 107-138.
Li, Y., and B. McConomy. (2004). Simultaneous signalling in IPOs via management earnings forecasts and retained ownership: An empirical analysis of the substitution effect. *Journal of Accounting, Auditing, and Finance* 19(1), 1–28.
Loughran, T., and J. R. Ritter. (1995). The new issues puzzle. *The Journal of finance* 50(1): 23-51.
Ohlson, J. 1995. Earnings, book values, and dividends in equity valuation. Contemporary Accounting Research 11(2), 661-687.
Penman, S., and X. Zhang. (2002). Accounting conservatism, the quality of earnings, and stock returns. *The Accounting Review 77*(2), 237-264.
Petersen, M. (2009). Estimating standard errors in financial panel data sets: Comparing approaches. *Review of Financial Studies* 22(1), 435-480.
Rangan, S. (1998). Earnings before seasoned equity offerings: Are they overstated? *Journal of Financial Economics* 50, 101–122.
Shivakumar, L. (2000). Do firms mislead investors by overstating earnings before seasoned equity offerings? *Journal of Accounting and Economics* 29, 339-371.
Schipper, K. (1989). Commentary on earnings management, *Accounting Horizons* 3: 91-102.
Spiess, K., and J. Affleck-Graves. (1995). Underperformance in long-run stock returns following seasoned equity offerings. *Journal of Financial Economics* 38 (3), 243-267.
Teoh, S., I. Welch, and T. Wong. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics* 50, 63-99.
Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking* 1, 15–19.