Equity Issues When in Distress*

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Abstract

We investigate the role of financial distress in the market for seasoned equity. We find that distressed firms comprise about 30% of SEOs and these distressed issuers have better abnormal announcement returns than non-distressed issuers. Stock return volatility is an important determinant for announcement returns for non-distressed SEO issuers but not for distressed SEO issuers. Signals of firm quality are associated with better announcement returns, larger issues, increased investment, and improved operating performance for distressed SEO firms but less so for non-distressed SEO firms. Our findings suggest that financially distressed firms face less adverse selection when issuing equity.

Keywords: SEOs; Financial Distress; Adverse Selection

JEL codes: G31, G32

1. Introduction

Firms that are in, or near, financial distress face additional costs in obtaining finance. For distressed firms, raising debt capital may be more costly due to higher interest rates, or in more extreme circumstances, further credit may simply be unavailable due to prior debt covenants or unwillingness of lenders to extend further credit. New equity capital has its own additional costs for distressed firms. An equity issuance for a distressed firm should improve the firm's ability to repay debt thereby increasing the value of the firm's outstanding debt. Assuming that new securities are purchased in the market at fair price, the increase in wealth for the firm's debt holders necessarily comes from the pre-issuance shareholders, as described by Myers (1977). However, distressed equity issuers may face lower adverse selection costs. If debt is less attractive, or unavailable, the negative signal associated with the choice to issue equity rather than debt will be weaker (Myers and Majluf, 1984).

In this study, we provide further evidence on the role of equity finance for distressed firms. We do so by investigating firms that appear to be distressed and have made the choice to issue equity. We expect that firms that have made the choice to issue equity do so in the belief that the benefits of equity, such as relatively lower adverse selection costs, are greater than the costs associated with an equity issue such as a wealth transfer to the firm's debt holders. By implication, we are able to shed further light on the importance of adverse selection in the market for seasoned equity as well as better understanding the role of raising new equity for distressed firms.

Having less adverse selection does not necessarily mean that the firm's prospects are (or are not) bright and the newly raised capital will be used to maintain valuable operations or to invest in new valuable projects. Equity issues tend to be large events and thus the anticipated quality of the use of these funds is economically important. Our sample firms have an average issue size of 96%

(median of 65%) of the pre-issue book value of total assets. We expect that for firms with less adverse selection, indicators of the firm's prospects will be more meaningful as new information associated with the choice to raise capital for valuable projects is not confounded with the entangled choice to issue equity rather than debt. Firms with better prospects should be met more favorably by the market, raise more capital, and invest more.

We identify firms that have a higher probability of entering financial distress and choose to issue equity using both Altman (1968) and Campbell, Hilscher, and Szilagyi (2008). Equity issues by distressed firms are relatively common. Over our sample period, 1994-2012, 2,555 SEOs are conducted by industrial firms that meet our data requirements. Of these, 762 (30%) have Altman's Z-scores that categorize them as being financially distressed. Compared to our non-distressed firms, our distressed firms tend to have very poor operating performance, less working capital, more debt although not at extreme levels, but generally do have high valuations in terms of industry-adjusted market-to-book. These characteristics are broadly less attractive to creditors yet the high valuations indicate growth prospects that would seem to fit more for equity investors.

We find that abnormal announcement returns for distressed firms are on average better as compared to returns for non-distressed firms by 1.4%. This evidence is similar to Smith (1986) who finds that utility firms that face restrictions on debt issues due to regulatory requirements face less adverse selection in the equity market and have less negative abnormal announcement returns.

Adverse selection is problematic if investors are unable to ascertain the true value of the asset and thus are unable to accurately adjust prices in response to new information. Our expectation is that if adverse selection is an important, first-order effect in the seasoned equity market, information asymmetry should matter more for non-distressed firms that have more of a choice between debt and equity financing as compared to financially distressed firms. For distressed

firms, although information asymmetry may affect value generally, there is less new information regarding the value of the firm associated with the choice to issue equity since debt is less (or not) available. Our multivariate analysis bears this prediction out for SEOs. High prior stock return volatility is negatively related to abnormal announcement returns for non-distressed SEO firms, consistent with adverse selection being costly. This is not the case for distressed SEO firms indicating that information asymmetry matters less for distressed firms.

We continue our analysis by investigating how firm characteristics that proxy for the firm's quality of growth prospects are related to characteristics of the equity issue. Where adverse selection is less severe we expect that publically visible measures of firms' prospects will be more informative. We choose three variables as measures for the forward prospects for the firm. Our first two measures are direct measures of changing growth opportunities and our third measure is a more indirect proxy for forward prospects. The first variable is the growth in research and development expenses (ΔR&D) in the years leading to the SEO filing. The increase in R&D suggests that these firms have an increase in growth opportunities for which additional funds are required. Our second measure is Rhodes-Kropf, Robinson, and Viswanathan's (2005) measure of growth opportunities, which is a decomposed portion of a firm's market-to-book ratio used as a proxy for the long run value-to-book (LRVTB). We use the change of this measure (ΔLRVTB) to capture the change in growth opportunities. Our third measure is the change in institutional ownership. Institutions are generally more informed investors that tend to avoid low information stocks, avoid stocks that may not be seen as 'prudent', and are better able to process information

around corporate events.[1] Our conjecture is that institutional investors will tend to vote with their feet based on the changing prospects of the firm.

We find that the two direct measures, ΔR&D and ΔLRVTB are both associated with better abnormal announcement returns for distressed SEO firms but not so for non-distressed SEO firms. We also find evidence that abnormal returns are better for all firms that have experienced recent growth in institutional investment but such relation is stronger for distressed SEO firms. The size of the issue follows a similar pattern in that distressed SEO issuers have the strongest relations with our proxies. We find that although distressed firms in aggregate have smaller issues relative to the pre-issue asset base of the firm, the issue size is positively related to our proxies for firm prospects, especially for distressed SEOs.

Lastly, we investigate the ex post use of funds and ex post operating performance. If a firm has valuable growth prospects, we expect to observe increased investment associated with our proxies for valuable uses of the newly raised funds. In contrast, if a firm is simply issuing equity in an effort to exploit temporary equity overvaluation, the firm is more likely to 'park' the newly raised funds in cash, or more broadly, in working capital, or recapitalize the firm. We find that for distressed SEO issuing firms, increases in capital expenditures are significantly positively related to our three measures. These relations do not hold for non-distressed SEO firms. We find that our measures predict improvements in operating performance for distressed SEO firms but these measures do not predict better performance for non-distressed SEO firms.

The findings in this paper add to our understanding of equity issuances and, more broadly, to the capital structure literature. On issuing equity, we provide further evidence that adverse

[1] See Del Guercio (1996), Falkenstein (1996), Parrino, Sias, and Starks (2003), and Gibson, Safieddine, and Sonti (2004).

selection is an economically important factor in the equity market for many, but not all firms. On capital structure, our findings suggest that seasoned equity can play a role for somewhat more distressed firms in a manner as described by Myers (1984) in the modified pecking order. Our distressed firms appear to issue equity where internally generated funds are unavailable, debt is more costly (or unavailable), and the firm has valuable operations or growth opportunities that need funding.

In the next section, we discuss prior literature and make our predictions. In Section 3 we describe the data and provide univariate results associated with the event study. In Section 4 we report our multivariate results. We then discuss our results and conclude in Section 5.

2. Literature and Hypotheses

In this section, we briefly review the literature for equity issues with a focus on financial distress and adverse selection issues. Our focus is on firms that appear to be relatively more financially distressed but not necessarily economically distressed. Our intention is to capture firms that likely face a higher marginal cost of debt, which is not directly observable. We turn to models of bankruptcy prediction that allow us to capture firms that appear to have greater credit risk. First, we use Altman's (1968) Z-score. Z-score primarily utilizes accounting data rather than market data providing a measure of the current financial condition of the firm but not a measure of its growth prospects. Second, we use the estimated probability of firm failure in Campbell, Hilscher, and Szilagyi (2008) to test the robustness of our key findings. As our measure of information asymmetry, we use recent stock return volatility as in Drucker and Puri (2005) and Corwin (2003).

The role of adverse selection on firms' financing and investing decisions has been the topic of considerable debate dating at least to Myers and Majluf's (1984) seminal paper. Myers and Majluf

show that firms that are undervalued will choose not to issue equity, but rather use internal capital, if available, or debt. A variety of studies have shown negative abnormal announcement returns in the -2% to -4% range associated with the announcement of a firm's intention to issue seasoned equity in the public markets consistent with the implications of Myers and Majluf that equity issuing firms signal overvaluation.[2]

While equity might be attractive to financially distressed firms due to lower adverse selection costs, distressed firms face an additional cost in issuing equity as compared to non-distressed firms. This cost to the existing shareholders resulting from wealth transfer is increasing in the degree of distress. Therefore, the value associated with the use of the newly raised capital has to be sufficiently great to increase wealth of the existing equity holders after the wealth transfer. Kadapakkam, Meisami, and Wald (2016) show that firms with higher leverage and lower quality debt prefer to issue more debt to avoid the wealth transfer. Our sample should capture a subset of distressed firms in need of capital where the costs of the wealth transfer is less than perceived benefits from raising equity.

Equity issuance, especially SEOs, generates large, discretionary funds for the firm. The valuation impact, subsequent investment, and operating performance all should be positively related to the quality of projects available to the firm. Unfortunately, identifying ex ante measures of project quality for equity issuing firms is challenging. Several papers have investigated the relation between estimates of growth prospects and abnormal announcement returns associated with the SEOs finding mixed results.[3] An often used measure of growth opportunities is the firm's

[2] See Masulis and Korwar (1986), Denis (1994), Jung, Kim, and Stulz (1996), Walker and Yost (2008), Kim and Purnanandam (2014), Walker, Yost, and Zhao (2016), among many others.

[3] See Denis (1994), Jung, Kim, and Stulz (1996), and Walker and Yost (2008).

market-to-book ratio, which is problematic in the context of equity issuance. Market-to-book ratios may be related to mis-valuation that has its own predictions on security issuance and abnormal announcement returns. Additionally, since we are conditioning our sample on distress, it may be hazardous to interpret market-to-book ratios as a measure of growth opportunities as the firm's valuation also reflects the market's assessment of the likelihood that the growth opportunities will be lost, or transferred to the firm's debt holders. Firms can try to influence the market's perceptions on the quality of growth opportunities through disclosure (Walker and Yost, 2008) but are limited in their ability to credibly convey that they have valuable projects.[4]

We first use increases in research and development as a measure of growth options. Growth in R&D captures some new, valuable projects for the firm that will need to be funded.[5] This measure is imperfect as it does not capture non-R&D growth prospects. A more nuanced method of examining growth opportunities is to discern what portion of the firm's market-to-book ratio are growth opportunities relative to mis-valuation. This measure is described as LRVTB: long-run value-to-book. Rhodes-Kropf, Robinson, and Viswanathan (RKRV) (2005) decompose market-to-book into three components. One component measures growth options and the other two measure different types of mis-valuation. Hertzel and Li (2010) use RKRV components to examine post-issue long run returns in SEOs. They find evidence that poor long run stock returns are connected to a mis-valuation component. As with R&D, we use the change in LRVTB to capture new growth opportunities that need funding. RKRV components are, as all proxies, measured with error and the mis-valuation components have the alternate explanation of reflecting

[4] See Walker, Yost, and Zhao (2016) for a discussion on building credibility in equity issues.

[5] See Szewczyk, Tsetsekos, and Zantout (1996) and Eberhart, Maxwell, and Siddique (2004).

new growth opportunities (gained or lost) potentially confounding the growth opportunity measure.[6]

Our third measure for the forward prospects of the firm is change in institutional ownership. We want to capture institutions voting with their feet in a manner as described by Parrino, Sias, and Starks (2003). These votes are informative if institutions are able to process information more effectively and/or learn more information than the market as a whole. For the case of distressed firms, the need for institutions to avoid failures is important since many institutional investors are subject to 'prudent man' laws. These prudent man laws provide incentives for institutions to avoid firms that are more likely to go bankrupt.[7]

The institutional ownership literature is vast and there is much debate on the effectiveness of institutions' ability to identify firms that will be successful. Falkenstein (1996) shows that mutual funds prefer stocks that have more information available and have lower volatility. Wermers (2000) shows that mutual funds are able to successfully pick stocks to beat relevant benchmarks. Gibson, Safieddine, and Sonti (2004) provide evidence that institutional investors are able to identify more successful SEO firms. They argue that the period surrounding an SEO is one when the firm conveys extra information about its prospects as part of the process identifying investors for the offer. They find that institutional investors have an ability to identify higher quality issuers utilizing this new information predicting better performance. Following their interpretation, our expectation is that institutional investors are more informed about the quality of the firm's growth prospects and whether the firm is overvalued.

[6] Even though the mis-valuation components do not have clear predictions in our context, in unreported results we do estimate models including them and their interactions but do not find significant results in our key models.

[7] See Del Guercio (1996) on how 'prudent man' laws affect institutional investors' portfolios.

Our main argument is that those firms that are more financially distressed have less adverse selection. We predict that equity issuing firms with lower adverse selection should have better abnormal announcement returns and information asymmetry will be less important for these firms. Further, we predict that measures of firm prospects will be more meaningful when not confounded by the adverse selection problem. Therefore, our three measures of forward prospects will be related to abnormal announcement returns, larger issues, and the funds will be more likely to be deployed for investment purposes.

3. Our Sample and Univariate Statistics

In this section, we start by describing our sample and conduct an event study. We divide our sample of SEOs by whether the firm is financially distressed. We continue with more detailed univariate analysis to better understand the relation between signals of firm prospects and the market's reaction to the equity issuance announcements.

3.1. Our Sample

Our main analysis uses a sample of 2,555 SEOs by US firms obtained from Thomson Financials' Corporate New Issues database. The sample is formed as follows. We begin with 5,547 SEOs issued on NASDAQ, NYSE, and AMEX between January 1, 1994 and December 31, 2012. We exclude private placements and require an issue to be a primary offering or a combination of primary and secondary offerings as our interest is on the transactions that bring in new capital for the firm. These restrictions lead to 3,665 issues. We further require necessary CRSP data for stock returns to conduct our event study. We exclude the more regulated firms in utility and financial industries and firms with assets lower than $5 million prior to the SEO. We require COMPUSTAT data to calculate Z-scores as defined in Altman (1968) to identify whether

a firm is in financial distress.[8] We categorize firms with a Z-score below 1.81 as "distressed" and others as "non-distressed". These restrictions lead to our final sample of 2,555 SEOs, of which 762 are conducted by distressed firms, and 1,793 by non-distressed firms.

In Table 1 we present the distribution of sample SEOs by filing year and industry using the Fama-French 12-industry classification. The ratio of distressed SEOs varies through time peaking in 2009 (71.4%) during the financial crisis. Panel B shows that firms in the Telecommunication and Energy industries are most likely to conduct equity issues when in distress with their distressed firm SEO ratios of 69.4%. The Wholesale and Retail industry experiences the lowest ratio of distressed to total SEOs of 10.2% and distressed during the sample periods.

In Table 2 we report statistics describing our SEO firms dividing the sample into distressed and non-distressed. The relative issue sizes are smaller for distressed SEOs relative to non-distressed SEOs. SEOs from distressed firms are less likely to have a secondary component to the issue providing some indirect evidence that these distressed SEOs are less likely to be associated with market timing. Consistent with this, we find distressed SEO firms associated with lower recent stock returns (runup) than their non-distressed SEO firms. Several results follow the Z-score calculation separating the relatively more healthy equity issuing firms from those in a relatively worse financial state. For example, distressed firms have significantly higher leverage ratios, worse operating performance (industry-adjusted ROA), and less working capital as compared to non-distressed issuing firms.

[8] Z-score is calculated as (1.2×working capital+1.4×retained earnings +3.3×EBIT+0.999×sales)/total assets+0.6×(market value of equity/book value of debt). A Z-score below 1.81 indicates that the firm is in poor financial health and has a higher probability to default on debt obligations.

We also report univariate statistics for the other variables that we use in our multivariate tests. Our three variables that we use as our proxies for forward prospects are change in R&D-to-assets (ΔR&D), change in LRVTB (ΔLRVTB), and change in institutional ownership (ΔInst.Own). We report the static amount in year -1 and the change variables (from year -2 to year -1). We also report the change in institutional ownership from year -2 to +1 as we use this version in our analyses of subsequent investment and performance.

Non-distressed firms have higher long-run value-to-book ratios and these ratios are growing faster as compared to the distressed firms. The same pattern holds for institutional ownership. Distressed firms have less institutional ownership in the quarter preceding the equity issue, smaller growth in institutional ownership in the quarters immediately prior to the filing [-2,-1] and surrounding the issue [-2,+1]. In contrast, distressed firms have larger R&D programs as compared to non-distressed firms. Finally, we also include board independence in our models (BoardIndep). Distressed firms tend to have a higher proportion of independent directors.

In total, the univariate statistics suggest that distressed firms have valuable growth opportunities per their research and development budgets and possibly by their valuations. However, these firms also appear to have less financial room to operate. Their operating cash flows are poor, working capital is relatively low, and their leverage ratios are significantly higher than non-distressed firms. The financial characteristics for these distressed firms are associated with more risk from the lenders' point of view.

We are unable to know for sure what terms are available for extending credit for these distressed firms. We do observe some further corroborating evidence that suggests some degree of financial constraint. First, prior studies show that associated with SEO, firms also tend to increase their absolute amount of debt but their leverage ratios are relatively stable (Walker and

Yost, 2008). The leverage ratios for non-distressed firms in our sample actually increase by 1.6% on average from the year prior the SEO to the year subsequent reflecting a large increase in total debt concurrent with the increase in equity capital associated with the SEO. In contrast, distressed firms exhibit an average decline in their leverage ratios of 6.5%. This 8.1% difference in the changes in leverage ratios is significant at the 1% confidence level. The median difference in the changes of the leverage ratios is 2.7% that is also significant at the 1% confidence level. We are unable to observe the marginal cost of debt but we can make a crude estimate of the firm's cost of debt. We estimate an average interest rate for the firm by taking interest expense divided by total debt in the year prior to the SEO. The distressed firms have a 1.6% higher cost of debt, on average, and 1.7% higher cost of debt by the median, both statistically significant at the 1% confidence level. We conclude that financing decisions for distressed firms relative to non-distressed firms are rather different.

3.2. The Event Study

Following Kim and Purnanandam (2014) and others, we use the SEO filing date as the announcement date. As Kim and Purnanandam (2014) note, the announcement of the firm's intention to issue equity is generally on the filing date. In some cases the announcement precedes the filing date only by one or two days. For this reason we conduct our analysis using a seven day window [-3,+3] centered on the filing date and use standard event study methodology. The broader window adds some noise to our findings but is also more likely to capture the impact of the SEO announcement. We use standard event study methodology with the CRSP equally-weighted index as our proxy for market returns and an estimation window from days -300 to -46.

We report the results of the event study in Table 3. The full SEO sample has a mean abnormal announcement return of -3.44% for the seven-day window with a similar result for the median,

both statistically distinct from 0 at the 1% confidence level. Our results here are generally in line with studies. The market appears to react rather differently to our two subgroups, distressed and non-distressed. The average abnormal announcement return for distressed SEOs is 1.4% higher than the average for non-distressed SEOs. This difference is statistically significant and economically important and this finding does not appear to be driven by outliers as the medians provide a similar inference. The univariate results from the event study provide our first evidence that the information associated with the equity announcements for distressed firms are more positive than for non-distressed firms.

In Panel B, we continue our univariate analysis by dividing our groups further into subgroups by the medians of pre-issue stock return volatility. We use stock return volatility as a measure of information asymmetry, calculated as the standard deviation of stock returns over the window of [-126,-4] prior to the announcement. For the distressed SEO firm subsample, high stock return volatility firms actually do better than their low volatility SEO counterparts, although the difference is not significant at conventional levels. We find the opposite for non-distressed SEO firms. High volatility firms suffer -5.14% abnormal announcement returns as compared to -2.56% for the low volatility firms, which is statistically significant at the 1% level. These results in Panel B are consistent with distressed SEO firms facing less adverse selection compared to their non-distressed peers.

In panels C, D, and E, we further compare distressed SEO firms with non-distressed firms by dividing each group by the SEO sample medians of our variables of firm quality, i.e. changes in R&D, LRVTB, and institutional ownership prior to the announcement. Our results broadly follow the predicted pattern for the SEO issuers. As indicated in Panel C, High R&D growth distressed firms have abnormal announcement returns that are 1.8% better than for low R&D growth

distressed firms, a difference that is statistically significant. The equivalent differences in mean for non-distressed firms are 0.5% with the difference being statistically insignificant. In Panel D, we do not observe any significant differences in announcement returns across the changes in long-run value-to-book, regardless of the financial status of the SEO firm. In Panel E, growth in institutional ownership provides a similar pattern to that observed for R&D growth. The average announcement return for distressed SEO firms with high growth is higher by 1.8% than for the low growth group and the difference being statistically distinct. In contrast, the differences in ownership do not appear to have any relation to abnormal announcement returns for non-distressed firms as the difference between two groups in returns are nearly identical. In total, we find some suggestive evidence that measures of firm quality are more important for distressed SEO firms than for non-distressed firms. Conversely, we find that stock return volatility, a measure of information asymmetry, matters for our non-distressed SEO firms but not for distressed firms. This evidence is consistent with the view that adverse selection is more important for non-distressed SEO firms.

4. Multivariate Results

We continue our analysis of abnormal announcement returns in multivariate models and then examine the determinants of the issue size. We then turn to what happens following the equity issue.

4.1. The Abnormal Announcement Returns

In Table 4, we estimate OLS models to investigate the determinants for the abnormal announcement returns. Our dependent variable is the cumulative abnormal return over the seven-

day window. Our first independent variable is an indicator for those firms with a Z-score less than 1.81 (Distress). We include various control variables that previous studies indicate as important in equity issues. Agency theory suggests that the growth options available to the firm should matter as well as board-level governance (since SEOs are typically a board level decision). Thus, we include an indicator variable for a more independent board (BoardIndep).[9] We include several variables that have been previously used to proxy for a firm's growth options such as size (TA), current investment (CAPX/TA), and industry-adjusted operating performance (ROA). We also include asset tangibility (PPE/TA) and pre-announcement price runup (Runup), calculated as the buy and hold abnormal return adjusted by CRSP equal-weighted index over six months prior to the announcement. Secondary is an indicator variable for the presence of secondary shares being sold by insiders, which could provide negative information regarding the quality of a SEO. Relative issue size (RelIssueSize) is the issue size scaled by pre-issue book value of assets. Finally, we include an indicator variable 'NearIPO', equal to one if the announcement of the issue is within 18 months of the firm's IPO date. We do so to control for the well-documented effects of poor stock performance for firms that have recently completed their IPOs. All variables are winsorized at the 1st and 99th percentiles except the indicator variables. Finally, we include year and industry fixed effects in all of our models.

In Table 4, we start in models 1 and 2 with our measure of information asymmetry: stock return volatility over days -126 to day -4. For our SEO firms in model 1, we find the predicted negative and significant relation between abnormal return and volatility, consistent with the view that

[9] We note that governance characteristics are endogenous and difficult to measure so interpreting a governance variable such as this is hazardous. We further note that it is not clear whether more independent boards are necessarily correlated with fewer agency problems.

information asymmetry matters for equity issues. However, the interaction term Distress*Volatility has a positive and significant coefficient. For distressed SEO firms, the sum of the two coefficients is almost 0 indicating that information asymmetry (as measured by stock return volatility) does not matter for their abnormal announcement returns. In contrast, for non-distressed SEO firms, information asymmetry matters consistent with the presence of the adverse selection problem.

We continue by including our proxies for the quality of the firm's prospects: ΔR&D, ΔLRVTB and ΔInstOwn, and their interactions with Distress. In models 3 and 4, we include growth in R&D expenditure. R&D growth is not significant but the interaction term in model 4 for our distressed SEO firms is positive and significant. Prior research has not found a positive relation between R&D and abnormal announcement returns where agency theory predicts we should find one.[10] Our conjecture is that these signals are confounded by the adverse selection problem as part of the choice to issue equity. Consistent with this view, we find the predicted, positive relation for our distressed SEO firms.

In models 5 and 6, ΔLRVTB is included as our second measure of growth prospects. Consistent with what we find for R&D growth, the interaction term in model 6 for SEO firms is significantly positive. In models 7 and 8 we include growth in institutional ownership. We find the relation is positive for all SEO firms, and more so for distressed SEO firms as shown by the interactive variable (Distress*ΔInstOwn). The coefficient for the interaction term is about four times of the coefficient for ΔInstOwn indicating that increasing levels of institutional ownership matters much more for distressed SEO firms than for non-distressed SEO firms. This is again consistent with the view that signals of firm quality have greater precision for the case of distressed firms.

[10] See Denis (1994), Walker and Yost (2008), and Walker, Yost, and Zhao (2016).

The other variables that are consistently significant in our SEO models are Secondary, ROA and Runup. The coefficients for ROA are positive and significant in seven out of eight models, suggesting that current strong operating performance indicates quality future projects. The indicator variable Secondary has negative and significant coefficients in all eight models indicating that the negative signal from managerial selling matters in the context of SEOs. Negative coefficients for runup in all eight models are consistent with market timing or an increasing market recognition of growth prospects.

In total, we find that increases in R&D, long-term value-to-book, and institutional ownership are associated with better abnormal announcement returns for the decision to raise equity capital for distressed SEO firms. In contrast, stock return volatility as a measure of information asymmetry matters for non-distressed SEO firms only.

4.2. Issue Size

In this section, we examine the determinants of issue size and report our results in Table 5. Issue size is co-determined by the firm and their underwriter. An underwriter will potentially demand higher fees or a smaller issue size for firms that have greater information asymmetry (Lee and Masulis, 2009). As in Table 4, we include the same set of control variables and employ the same types of models. Our variables of interest are Distress and its interactions with our three measures of quality: R&D growth, long-run value-to-book growth and growth in institutional ownership. The dependent variable is the log of proceeds from a SEO.

In models 1 and 2, we examine change in R&D. In model 1, the coefficient for ΔR&D is insignificant but the interaction term Distress*ΔR&D is positive and significant in model 2 suggesting that increasing R&D is associated with larger issues for distressed SEO firms. In

models 3 and 4, we find that growth in long-run value-to-book is associated with larger issues for SEOs and the correlation is especially prominent for distressed SEO firms.

In models 5 and 6 we include growth in institutional ownership. We might expect that the firms showing an increase in institutional holdings are the same firms where an underwriter might expect to be able to find more subscribers for the seasoned issue. We find a positive, although not statistically significant, coefficient for ΔInstOwn for all SEO firms. This signal appears to have more power in the case of our distressed SEO firms as the interactive coefficient for Distress*ΔInstOwn is positive and significant. We conclude that our three measures of quality matter in determining issue size, most particularly for distressed SEO firms.

4.3. Use of Proceeds

We now turn to the use of proceeds subsequent to the equity issue. Specifically, we are interested in whether equity-issuing firms invest their proceeds in fixed assets consistent with management's beliefs that the firm has valuable growth opportunities. If the firm's motivation to issue equity is centered on timing considerations, the firm might 'park' the funds in working capital or pay down debt rather than investing in fixed assets. In contrast, we expect those firms with good prospects to deploy capital in investments in real assets. We report our findings in Table 6.

The dependent variable is the change in the sum of capital expenditures from the fiscal year preceding the filing date to the fiscal year after the issue date, scaled by pre-issue book value of assets. The models mirror those from Table 5. We also adjust ΔInstOwn to follow Gibson et al. (2004) where the time-period now runs from quarters -2 to +1.[11] In Tables 4 and 5 we only used

[11] The time-period is actually somewhat longer for SEO firms as the -2 represents two quarters prior to the filing date and +1 represents one quarter beyond the issue date.

information from the period prior to the issue since in those models we are interested in characteristics of the issue and the reaction to the issue. Here, we are examining firm behavior in the year following the issue. We now capture not just the movement of institutional investors leading up to the filing but we also are able to identify changes in ownership due to allocations and trading in the period immediately surrounding the issue, yet before the deployment of capital in year +1.

The coefficients for Distress are consistently negative in all models indicating that distressed firms increase their investment programs less than their non-distressed issuers all else the same. This finding does not seem surprising as these firms tend to have negative operating cash flows and low working capital prior to the issue. However, we observe relatively larger increases in investment programs for distressed SEO firms with good quality prospects as signaled by our three measures. The interaction terms between Distress and growth in R&D, long run value-to-book, and institutional ownership all are positive and significant.

4.4. Post-SEO Performance

There is a large literature examining post-SEO performance particularly using market-based measures such as long run stock returns. A difficulty in interpreting these results is the confounding, non-mutually exclusive explanations. Long run abnormal stock returns are possibly due to correcting mis-valuations, due to actions taken by the firm subsequent to the issue (such as investing in negative NPV projects), or are in fact illusory due to inappropriate asset pricing models.[12] This literature dates back to at least Loughran and Ritter (1995) and notably includes

[12] See Brav, Geczy, and Gompers (2000) for evidence of model mis-specification regarding poor performance subsequent to equity issues.

Baker and Wurgler (2000).[13] Baker and Wurgler (2002) provide evidence that these valuation effects associated with equity issuances have long lasting impacts on a firms' capital structure. Autore, Bray, and Peterson (2009) show that this poor performance is confined to firms that do not provide information to the market regarding the use of proceeds. Carlson, Fisher, and Giammarino (2006) provide evidence that the seemingly poor long run performance is consistent with firms raising equity capital to exercise their real options. Therefore, observing poor long run performance might not indicate over-valuation (and market under-reaction) at the time of the SEO announcement. These are but a sampling of the large literature in this area.

Since prior literature suggests that interpreting long-run stock returns following SEOs is a rather challenging endeavor with a variety of explanations, our choice to measure post issue performance is industry-adjusted operating performance (ROA). Prior findings, such as by Loughran and Ritter (1997), show that in addition to poor stock returns, firms also suffer poor operating performance subsequent to SEOs. By focusing on operating performance we are able to remove valuation issues from our analysis. Our conjecture is that if the firm does have valuable growth prospects (and/or valuable assets-in-place), then we expect to see better operating performance subsequent to receiving additional capital to fund these activities. Moreover, if our measures provide valuable signals regarding the quality of these growth prospects, we expect to see a relation between our measures and subsequent changes in operating performance. In Table 7, we start by comparing the distressed SEO firms relative to the non-distressed SEO firms in models that mirror those in Tables 5 and 6. In Table 8, we compare the distressed SEO firms to similar non-issuing firms.

[13] See Bayless and Jay (2003) for further evidence and discussion.

Our dependent variable in Table 7 is the SEO firm's year +1 industry-adjusted ROA. We include the same set of control variables, which notably includes year -1 industry-adjusted ROA. The coefficient on the variable Distress is negative and significant in all six of our models. The predicted relation for R&D has two opposing forces. On one hand, a negative relation may not be surprising since R&D is an expense and R&D spending is likely serially correlated. On the other hand, R&D expenditures should eventually translate into positive cash flow if the research program is in fact valuable. In models 1 and 2, we find that increases in R&D expenses are negatively related to post-issue operating performance but the interaction term between change in R&D and Distress is positive and significant in model 2.

We might expect to see better operating performance in the short run from those firms that previously had an expanding R&D program if those firms systematically cut their R&D programs reducing expenses. We examine the pattern of R&D spending for distressed and non-distressed firms. The mean R&D-to-assets ratio for non-distressed firms goes from 0.13 to 0.12 from year -1 to year +1. For distressed firms, the change is from 0.24 to 0.23. It is important to note, that even though the ratios remain roughly equivalent through these years, the increase in R&D in absolute terms is large given the increases in the firms' asset base. The evidence suggests that the relatively better improvement in operating performance is not due to cutting R&D expenses but rather from other sources. This evidence does support the idea that R&D investments made by the distressed SEO firms are valuable and are more mature than the R&D programs for the non-distressed SEO firms.

In models 3 and 4, we do not find a difference in significant relation in either coefficient for ΔLRVTB or the interaction variable although the coefficient for the interaction variable is positive as predicted. In models 5 and 6, the coefficient for ΔInstOwn is positive and significant. For

distressed firms the relation is stronger as the coefficient for the interaction term with Distress is significantly positive in model 6.

In total, we find evidence that among SEO issuers, two out of our three measures have predictive power for the distressed firms relative to non-distressed firms. These findings add to the overall picture that these publically available measures are more important for distressed SEO firms relative to non-distressed SEO firms.

We now compare our distressed SEO firms to peer firms that choose not to issue. Our tests of the cross-sectional relations showed in Table 7 the relative predictive power of our measures of quality comparing distressed and non-distressed SEO firms. These measures should also predict positive performance for those firms that have chosen to bear the cost to raise equity relative to similar firms that chose not to do so. In order to identify a non-SEO peer firm from the COMPUSTAT universe, we use a propensity score matching method as described in Dehejia and Wahba (2002). We use the logit model in Equation (1) to estimate a firm's propensity to issue seasoned equity in a given year, based on firm characteristics in the year prior. For each distressed SEO firm, we identify a control firm in the same year and same industry, that has the closest propensity score, and not in our sample of SEOs.

$$\begin{aligned}&\text{Prob}(=1 \text{ if firm issues SEO in year}_t)\\&= f\,(\log TA_{t-1}, CAPX/TA_{t-1}, PPE/TA_{t-1}, ROA_{t-1}, Z\text{-score}_{t-1}).\end{aligned} \quad (1)$$

In Table 8, we compute a difference-in-differences measure of operating performance. We compare the year +1 minus year -1 industry-adjusted ROA between the distressed SEO firms and peer firms. In aggregate, we find that distressed SEO firms have significantly better improvement in operating performance than their matched peers. The mean and median of the difference-in-

differences are 0.11 and 0.05 (untabulated), which are both statistically significant. We further partition the sample of pairs of distressed SEO firms and control firms by the median of ΔR&D, ΔLRVTB and ΔInstOwn as we did in Table 3. The outperformance of distressed SEO firms over their control peers are more pronounced in the subsamples with stronger signals for firm quality. In all cases, the above the median subsets for ΔR&D, ΔLRVTB and ΔInstOwn exhibit greater improvements relative to their matched peers for both means and medians. In five of the six cases, the differences are statistically significant. This additional evidence is consistent with the idea that the distressed firms use newly raised capital in valuable ways.

4.5. Robustness

Our primary identification of financially distressed firms is based on Z-score from Altman (1968). Z-score is a measure widely used by researchers and practitioners. In our context, Z-scores are useful since it primarily uses firms' accounting multiples allowing us to focus on the financial condition of the firm while mitigating valuation issues that have their own predictions on security issuance and abnormal announcement returns. The univariate statistics in Table 2 provide evidence that the firms identified by Z-score as being financially distressed do have characteristics that appear to be less credit worthy yet also indicate growth opportunities. However, we want to assure ourselves of the robustness of our results by using an alternate measure.

Previous studies involving financial distress or credit risk have used alternatives including several revised version of Z-score models: Z'-Score, Z"-Score and ZETA score (Altman, 2000) as well as O-score (Ohlson, 1980). However, these measures are subject to the concern regarding our intent to separate financial and economic distress. For robustness, we turn to a model proposed by Campbell, Hilscher and Szilagyi (2008). For our purpose here, the sample is expanded to all

COMPUSTAT firm/years. We calculate the probability of a firm filing bankruptcy in a given year, using the estimated parameters from their hazard model of corporate failure. Following Campbell et al.'s method, we identify the firms in the top quintile of the estimated bankruptcy probability as distressed. Our findings with this alternative metric are similar providing the same inferences as Z-score does.

We use thresholds for our measures of financial distress based on the premise that healthy firms face adverse selection problems not varying based on the degree of health. For example, those firms that have no debt likely face the same adverse selection problem as compared to a firm with a low debt level. In order to confirm our conjecture, we utilize Z-score as a continuous variable. When we replace the indicator variable Distress by the continuous Z-score, the results largely hold but are generally weaker, consistent with the view that a threshold is more informative in this context.

Our tests are not without interpretation issues. First, there could be a time-horizon problem. Even if the firm has valuable growth options they might not translate into cash flows in the near periods following the issue. Even investment might be delayed by value-maximizing managers. If we examine longer time horizons, causality becomes more difficult to attribute. A time horizon mis-match with our tests should reduce the power of our tests. Despite this issue, we find significant results for both investment and operating performance changes in the year following issue. Second, our tests explicitly use endogenous variables as explanatory variables. Our contention is that growth in R&D, growth in long-term value-to-book, and growth in institutional ownership are signaling the quality of the firm's growth prospects, and those signals are more precise for the case of distressed firms since the debt market is a less attractive alternative. Thus, the underlying variable of interest is the difficult to measure ex ante quality of growth prospects.

Proxies for the quality of the firm and the firm's growth prospects are routinely used as explanatory variables.

5. Discussion and Conclusions

We find that value declines associated with SEO announcements are less pronounced for distressed than for non-distressed SEO firms. Financially distressed firms experience a 1% to 2% better market reaction to equity issue announcements as compared to non-distressed issuers. Our evidence indicates that SEO announcements by distressed firms do not signal as negative news as those by SEO firms more broadly, despite a potential wealth transfer from the firms' shareholders to debt holders for distressed SEO firms. We attribute this difference to less severe adverse selection problem for these firms since debt is likely less available or more costly.

We investigate the relation between stock return volatility and announcement returns, and find that volatility matters in explaining negative abnormal announcement returns for non-distressed SEO firms but does not explain returns for distressed SEO firms. This evidence supports the conjecture that adverse selection is important for non-distressed SEO firms but much less so for distressed SEO firms.

We next examine the relationship between announcement abnormal returns and three proxies for the firm prospects: growth in R&D, growth in long run value-to-book, and growth in institutional ownership. Distressed SEO firms with high growth in these measures broadly have better abnormal announcement returns, issue more stock, invest more following the SEO, and then improve their operating performance in the year following the SEO. This evidence collectively suggests that the market uses these measures as indications of firm quality. These measures can

be viewed as costly signals that are hard to mimic. However, for non-distressed SEO firms these positive signals are confounded by the choice to issue equity.

The findings in this paper shed new light on our understanding of equity issuances in particular, and on capital structure issues in general. We complement prior literature on equity issues by focusing our study on a set of firms where the equity-debt conflicts are relatively more severe and the decision to issue equity potentially has less adverse selection. A corollary to our findings is that adverse selection matters for non-distressed firms. Our evidence is suggestive that the market appears to be concerned that non-distressed firms are attempting to sell over-valued equity consistent with earlier work by Loughran and Ritter (1997) and Baker and Wurgler (2000).

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Table 1
SEO Activities: 1994-2012

This table presents the distribution of sample SEOs by the filing year and by the firm's industry. All 2,555 SEOs are filed between 1994 and 2012, reported in the Corporate New Issues database maintained by Thomson Financial. 762 SEOs are conducted by distressed firms, defined by Z-score below 1.81 (Altman, 1968). Firm's industry is defined by the Fama-French 12-industry classifications. Financial and utility firms are excluded (industries 11 and 8).

Panel A: The distribution of SEO activity by year

File Year	Total SEOs	# of SEOs by Distressed Firms	% of SEOs by Distressed Firms
1994	109	11	10.1%
1995	220	30	13.6%
1996	245	41	16.7%
1997	193	20	10.4%
1998	117	17	14.5%
1999	158	43	27.2%
2000	197	27	13.7%
2001	115	28	24.3%
2002	74	22	29.7%
2003	120	50	41.7%
2004	116	36	31.0%
2005	97	30	30.9%
2006	102	21	20.6%
2007	101	30	29.7%
2008	67	29	43.3%
2009	185	132	71.4%
2010	132	79	59.8%
2011	128	65	50.8%
2012	79	51	64.6%
Sum	2555	762	29.8%

Panel B: The distribution of SEO activity by industry

Industry	Total SEOs	# of SEOs by Distressed Firms	% of SEOs by Distressed Firms
1. NonDurables	54	11	20.4%
2. Durables	38	14	36.8%
3. Manufacturing	170	45	26.5%
4. Energy	115	47	40.9%
5. Chemicals & Allied	25	9	36.0%
6. Business Equipment	665	128	19.2%
7. Telecommunication	124	86	69.4%
9. Wholesale, Retail	245	25	10.2%
10. Health	816	314	38.5%
12. Other	303	83	27.4%
Sum	2555	762	29.8%

Table 2
Summary Statistics of Firm and SEO Characteristics

This table presents summary statistics of firm and SEO characteristics of 2,555 issues filed between 1994 and 2012. All firm characteristics are for the year immediately preceding the equity issue and are winsorized at 1st and 99th percentile. Issue Size and Book Asset (total assets) are both reported in millions. Relative Issue Size (RelIssueSize) is issue size denominated by total assets. Secondary is an indicator variable equal to one if there are secondary shares sold as part of the SEO. ROA and M/B are return on assets and market-to-book ratio, net of the industry median, respectively. M/B is calculated as the market value of equity plus the book value of assets minus the book value of equity, all denominated by book value of assets. Runup is the buy and hold abnormal return adjusted by CRSP equal-weighted index over six months prior to the announcement of an issue. Leverage is the book value of debt denominated by book value of assets. Z-score is calculated as (1.2×working capital+1.4×retained earnings +3.3×EBIT+0.999×sales)/total assets+0.6×(market value of equity/book value of debt), as in Altman (1968). Property, Plant and Equipment (PPE/TA), Capital Expenditure (CAPX/TA), Working Capital (WC/TA) and R&D Expense (R&D/TA) are COMPUSTAT variables denominated by total assets. LRVTB is the component of long term value-to-book from the decomposition of market-to-book following Rhodes-Kropf, Robinson, and Viswanathan (2005) and Hertzel and Li (2010). Volatility is the standard deviation of stock return over [-126,-4]. Institutional Ownership (InstOwn) is obtained from Thomson Reuters Ownership Data. Board Independence (BoardIndep) is calculated as the percent of outside directors on the board, obtained from BoardEx. ΔR&D is the change in asset-adjusted R&D expenditure from two fiscal years prior to the filing date to one year prior. ΔLRVTB is the change in long-run value-to-book from two fiscal years prior to the filing date to one year prior. ΔInstOwn [-2, -1] and ΔInstOwn [-2, +1] are the changes in institutional ownership calculated from two quarters prior to the filing date to one quarter prior to the filing date, or to one quarter after the issue date, respectively. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels.

(Continued)

Table 2—*Continued*

	Mean			Median		
	Non-Distress	Distress		Non-Distress	Distress	
N	1793	762		1793	762	
Issue size	102.25	101.33		66.53	56.63	***
RelIssueSize	1.05	0.71	***	0.77	0.37	***
Secondary	0.45	0.14	***	0.00	0.00	***
Book Asset	176.13	300.47	***	82.68	87.39	
M/B	3.39	4.34	***	1.55	0.77	***
ROA	-0.16	-0.31	***	0.04	-0.19	***
Runup	0.59	0.44	***	0.39	0.21	***
Leverage	0.12	0.35	***	0.05	0.30	***
Z-score	12.69	-2.43	***	6.92	-0.53	***
PPE/TA	0.20	0.25	***	0.12	0.14	***
CAPX/TA	0.07	0.06	**	0.04	0.03	***
WC/TA	0.44	0.26	***	0.44	0.22	***
R&D/TA	0.13	0.24	***	0.05	0.14	***
LRVTB	1.12	1.01	***	1.18	1.14	
InstOwn	49.6%	43.4%	***	48.5%	40.6%	***
Volatility	0.04	0.05	***	0.04	0.05	***
ΔR&D	0.02	0.00	***	0	0	***
ΔLRVTB	0.09	0.04	**	0.10	0.05	*
ΔInstOwn [-2, -1]	0.08	0.04	***	0.06	0.01	***
ΔInstOwn [-2, +1]	0.16	0.10	***	0.15	0.08	***
BoardIndep	44.8%	55.8%	***	50.0%	62.5%	***

Table 3
Summary Statistics of Cumulative Abnormal Returns around SEO Filing Date

This table presents summary statistics of cumulative abnormal returns (CARs) around SEO filing date. CAR is the cumulative abnormal return over the seven-day event period. Abnormal returns are net of expected returns, which are calculated using a market model where the parameters are estimated from days -300 to -46 using the CRSP equally weighted index as a proxy for the market. 762 SEOs are conducted by distressed firms, defined by Z-score below 1.81 (Altman, 1968), and are compared with 1,793 SEOs by non-distressed firms in Panel A. In Panel B, C, D, and E, we partition the sample into subsamples of distressed SEOs and non-distressed SEOs, and compare the CARs across different firm characteristics in each subsample separately. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

Panel A: Full sample, NonDistress vs. Distress

	Mean			Median			Full Sample	
	Non-Distress	Distress		Non-Distress	Distress		Mean	Median
N	1793	762		1793	762		2555	2555
CAR	-3.85%	-2.46%	***	-3.91%	-2.75%	***	-3.44%	-3.63%

Panel B: CARs and Stock Volatility

	Non-Distress						Distress			
	Mean			Median			Mean		Median	
	Low Volatility	High Volatility		Low Volatility	High Volatility		Low Volatility	High Volatility	Low Volatility	High Volatility
N	897	896		897	896		381	380	381	380
CAR	-2.56%	-5.14%	***	-2.91%	-4.86%	***	-2.68%	-2.24%	-2.28%	-2.95%

Panel C: CARs and R&D

	Non-Distress				Distress					
	Mean		Median		Mean			Median		
	Low ΔR&D	High ΔR&D	Low ΔR&D	High ΔR&D	Low ΔR&D	High ΔR&D		Low ΔR&D	High ΔR&D	
N	906	869	906	869	477	281		477	281	
CAR	-3.64%	-4.15%	-3.77%	-4.01%	-3.10%	-1.33%	*	-3.08%	-1.76%	*

Panel D: CARs and Long Run Value-to-Book

	Non-Distress				Distress			
	Mean		Median		Mean		Median	
	Low ΔLRVTB	High ΔLRVTB	Low ΔLRVTB	High ΔLRVTB	Low ΔLRVTB	High ΔLRVTB	Low ΔLRVTB	High ΔLRVTB
N	634	634	634	634	268	268	268	268
CAR	-2.93%	-3.71%	-3.45%	-3.98%	-1.96%	-3.03%	-2.04%	-2.96%

Panel E: CARs and Institutional Ownership

	Non-Distress				Distress					
	Mean		Median		Mean			Median		
	Low ΔInstOwn	High ΔInstOwn	Low ΔInstOwn	High ΔInstOwn	Low ΔInstOwn	High ΔInstOwn		Low ΔInstOwn	High ΔInstOwn	
N	891	890	891	890	376	375		376	375	
CAR	-3.81%	-3.85%	-3.99%	-3.79%	-3.39%	-1.63%	**	-3.41%	-1.94%	**

Table 4
OLS Regressions on Abnormal Returns

This table presents estimates from OLS regression models where the dependent variable is the seven-day cumulative abnormal return around the SEO filing date. All independent variables are for the year immediately preceding the SEO. Distress is an indicator variable equal to one if the firm is in financial distress, defined by Z-score below 1.81 (Altman, 1968). Volatility is the standard deviation of stock return over [-126,-4]. ΔR&D is the increase in the asset-adjusted R&D expenditure from two fiscal years prior to the filing date to one year prior. ΔLRVTB is the change in long-run value-to-book from two fiscal years prior to the filing date to one year prior. ΔInstOwn is the increase in institutional ownership from two quarters prior to the filing date to one quarter prior to the filing date. Other control variables are defined in the description of Table 2. P-values are reported in parentheses. Year and industry fixed effects are included for all regressions. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Distress	0.008	0.002	0.007	0.005	0.004	0.002	0.007	-0.006
	(0.213)	(0.770)	(0.275)	(0.447)	(0.640)	(0.792)	(0.298)	(0.444)
Volatility	-0.015*	-0.026***						
	(0.060)	(0.006)						
Distress*Volatility		0.030**						
		(0.038)						
ΔR&D			0.001	0.000				
			(0.758)	(0.842)				
Distress*ΔR&D				0.082***				
				(0.001)				
ΔLRVTB					-0.002	-0.012		
					(0.711)	(0.130)		
Distress*ΔLRVTB						0.024**		
						(0.045)		
ΔInstOwn							0.114***	0.059**
							(0.000)	(0.040)
Distress*ΔInstOwn								0.236***
								(0.000)

(Continued)

Table 4—*Continued*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BoardIndep	0.006	0.006	0.006	0.005	0.006	0.006	0.006	0.006
	(0.347)	(0.332)	(0.334)	(0.450)	(0.417)	(0.404)	(0.358)	(0.325)
TA	0.002	0.003	0.003	0.003	0.005*	0.005*	0.004	0.004
	(0.357)	(0.286)	(0.261)	(0.292)	(0.080)	(0.080)	(0.140)	(0.174)
Runup	-0.009***	-0.009***	-0.010***	-0.009***	-0.012***	-0.012***	-0.011***	-0.012***
	(0.003)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)	(0.000)	(0.000)
CAPX/TA	0.020	0.016	0.022	0.014	0.018	0.017	0.021	0.017
	(0.632)	(0.701)	(0.602)	(0.739)	(0.706)	(0.727)	(0.605)	(0.673)
PPE/TA	-0.020	-0.020	-0.021	-0.017	-0.027	-0.026	-0.022	-0.022
	(0.308)	(0.299)	(0.279)	(0.373)	(0.205)	(0.223)	(0.252)	(0.252)
ROA	0.008**	0.008**	0.009**	0.011***	0.009	0.010	0.009**	0.009**
	(0.034)	(0.049)	(0.022)	(0.006)	(0.398)	(0.344)	(0.023)	(0.021)
NearIPO	-0.006	-0.005	-0.007	-0.006	0.039*	0.038*	-0.010	-0.009
	(0.415)	(0.494)	(0.327)	(0.384)	(0.088)	(0.094)	(0.177)	(0.219)
RelIssueSize	0.001	0.001	0.001	0.001	0.007**	0.007*	0.001	0.001
	(0.682)	(0.598)	(0.706)	(0.804)	(0.047)	(0.054)	(0.645)	(0.702)
Secondary	-0.019***	-0.019***	-0.018***	-0.018***	-0.015**	-0.015**	-0.024***	-0.022***
	(0.002)	(0.003)	(0.004)	(0.003)	(0.038)	(0.043)	(0.000)	(0.000)
Adjusted R^2	0.018	0.020	0.017	0.022	0.015	0.017	0.027	0.035
No. of obs.	1,927	1,927	1,928	1,928	1,401	1,401	1,914	1,914

Table 5
OLS Regressions on Issue Size

This table presents estimates from OLS regression models where the dependent variable is the log of proceeds from the SEO. All independent variables are for the year immediately preceding the SEO. Distress is an indicator variable equal to one if the firm is in financial distress, defined by Z-score below 1.81 (Altman, 1968). ΔR&D is the increase in the asset-adjusted R&D expenditure from two fiscal years prior to the filing date to one year prior. ΔLRVTB is the change in long-run value-to-book from two fiscal years prior to the filing date to one year prior. ΔInstOwn is the increase in institutional ownership from two quarters prior to the filing date to one quarter prior to the filing date. Other variables are defined in the descriptions of Tables 2 and 4. P-values are reported in parentheses. Year and industry fixed effects are included for all regressions. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

(Continued)

Table 5—*Continued*

	(1)	(2)	(3)	(4)	(5)	(6)
Distress	-0.311***	-0.321***	-0.341***	-0.348***	-0.309***	-0.356***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ΔR&D	0.009	0.008				
	(0.393)	(0.443)				
Distress*ΔR&D		0.396***				
		(0.005)				
ΔLRVTB			0.139***	0.091**		
			(0.000)	(0.047)		
Distress*ΔLRVTB				0.122*		
				(0.090)		
ΔInstOwn					0.437***	0.234
					(0.004)	(0.171)
Distress*ΔInstOwn						0.875***
						(0.010)
BoardIndep	0.042	0.035	0.030	0.031	0.043	0.045
	(0.274)	(0.358)	(0.478)	(0.468)	(0.257)	(0.241)
TA	0.616***	0.615***	0.643***	0.644***	0.619***	0.618***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Runup	0.138***	0.140***	0.145***	0.144***	0.131***	0.129***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CAPX/TA	1.430***	1.391***	1.476***	1.468***	1.425***	1.410***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PPE/TA	-0.923***	-0.904***	-0.926***	-0.920***	-0.924***	-0.924***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	-0.044*	-0.035~	-0.116*	-0.110*	-0.051**	-0.050**
	(0.058)	(0.134)	(0.059)	(0.073)	(0.024)	(0.025)
NearIPO	0.226***	0.230***	0.263*	0.259*	0.207***	0.211***
	(0.000)	(0.000)	(0.052)	(0.055)	(0.000)	(0.000)
Secondary	0.240***	0.239***	0.182***	0.184***	0.218***	0.225***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Adjusted R^2	0.617	0.618	0.632	0.633	0.616	0.617
No. of obs.	1,928	1,928	1,401	1,401	1,914	1,914

Table 6
OLS Regressions on Use of Proceeds

This table presents estimates from OLS regression models where the dependent variable is the increase in capital expenditure from the fiscal year immediately preceding the SEO to the fiscal year following the SEO, divided by pre-SEO total assets. All independent variables are for the year immediately preceding the SEO. Distress is an indicator variable equal to one if the firm is in financial distress, defined by Z-score below 1.81 (Altman, 1968). ΔR&D is the increase in the asset-adjusted R&D expenditure from two fiscal years prior to the filing date to one year prior. ΔLRVTB is the change in long-run value-to-book from two fiscal years prior to the filing date to one year prior. ΔInstOwn is the increase in institutional ownership from two quarters prior to the filing date to one quarter prior to the filing date. Other variables are defined in the descriptions of Tables 2 and 4. P-values are reported in parentheses. Year and industry fixed effects are included for all regressions. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

(Continued)

Table 6—*Continued*

	(1)	(2)	(3)	(4)	(5)	(6)
Distress	-0.051***	-0.054***	-0.050***	-0.053***	-0.048***	-0.077***
	(0.000)	(0.000)	(0.002)	(0.001)	(0.001)	(0.000)
ΔR&D	0.004	0.004				
	(0.257)	(0.273)				
Distress*ΔR&D		0.089*				
		(0.080)				
ΔLRVTB			0.006	-0.012		
			(0.656)	(0.447)		
Distress*ΔLRVTB				0.045*		
				(0.070)		
ΔInstOwn					0.126***	0.051
					(0.001)	(0.273)
Distress*ΔInstOwn						0.224***
						(0.004)
BoardIndep	-0.009	-0.010	0.009	0.009	-0.003	-0.003
	(0.488)	(0.435)	(0.540)	(0.549)	(0.802)	(0.837)
TA	-0.020***	-0.020***	-0.019***	-0.019***	-0.018***	-0.020***
	(0.000)	(0.000)	(0.002)	(0.003)	(0.001)	(0.000)
Runup	0.012*	0.012**	0.005	0.005	0.009	0.008
	(0.059)	(0.047)	(0.501)	(0.492)	(0.161)	(0.179)
PPE/TA	0.235***	0.236***	0.233***	0.234***	0.242***	0.241***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.009	0.011	0.010	0.012	0.003	0.004
	(0.286)	(0.188)	(0.640)	(0.577)	(0.722)	(0.628)
NearIPO	0.015	0.016	-0.024	-0.025	0.008	0.011
	(0.302)	(0.269)	(0.601)	(0.581)	(0.610)	(0.455)
RelIssueSize	0.045***	0.044***	0.054***	0.053***	0.043***	0.042***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Secondary	-0.028**	-0.029**	-0.006	-0.006	-0.033**	-0.029**
	(0.026)	(0.024)	(0.662)	(0.677)	(0.012)	(0.025)
Adjusted R^2	0.227	0.228	0.219	0.221	0.228	0.231
No. of obs.	1,783	1,783	1,310	1,310	1,750	1,750

Table 7
OLS Regressions on Long-run Firm Performance

This table presents estimates from OLS regression models where the dependent variable is the industry-adjusted ROA of the SEO firm in the fiscal year after the issue. All independent variables are for the year immediately preceding the SEO. Distress is an indicator variable equal to one if the firm is in financial distress, defined by Z-score below 1.81 (Altman, 1968). ΔR&D is the increase in the asset-adjusted R&D expenditure from two fiscal years prior to the filing date to one year prior. ΔLRVTB is the change in long-run value-to-book from two fiscal years prior to the filing date to one year prior. ΔInstOwn is the increase in institutional ownership from two quarters prior to the filing date to one quarter prior to the filing date. Other variables are defined in the descriptions of Tables 2 and 4. P-values are reported in parentheses. Year and industry fixed effects are included for all regressions. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

(Continued)

Table 7—*Continued*

	(1)	(2)	(3)	(4)	(5)	(6)
Distress	-0.068***	-0.072***	-0.048***	-0.050***	-0.065***	-0.081***
	(0.000)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
ΔR&D	-0.112***	-0.243***				
	(0.002)	(0.000)				
Distress*ΔR&D		0.180**				
		(0.021)				
ΔLRVTB			-0.011	-0.021		
			(0.311)	(0.138)		
Distress*ΔLRVTB				0.025		
				(0.266)		
ΔInstOwn					0.242***	0.199***
					(0.000)	(0.000)
Distress*ΔInstOwn						0.127 *
						(0.083)
BoardIndep	0.023*	0.022*	0.027**	0.027**	0.025*	0.025**
	(0.072)	(0.078)	(0.042)	(0.043)	(0.052)	(0.048)
TA	0.069***	0.069***	0.054***	0.054***	0.070***	0.069***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Runup	0.013**	0.013**	0.022***	0.022***	0.007	0.007
	(0.035)	(0.030)	(0.001)	(0.001)	(0.243)	(0.259)
CAPX/TA	0.013	0.013	-0.005	-0.005	-0.002	-0.008
	(0.870)	(0.876)	(0.960)	(0.956)	(0.978)	(0.919)
PPE/TA	0.062	0.062	0.043	0.044	0.063*	0.064*
	(0.103)	(0.102)	(0.282)	(0.274)	(0.095)	(0.089)
ROA	0.110***	0.110***	0.329***	0.330***	0.120***	0.120***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
NearIPO	-0.008	-0.007	-0.071*	-0.072*	-0.027*	-0.025*
	(0.579)	(0.641)	(0.092)	(0.088)	(0.057)	(0.079)
RelIssueSize	0.015***	0.015***	0.019***	0.018***	0.013**	0.012**
	(0.003)	(0.003)	(0.007)	(0.008)	(0.012)	(0.016)
Secondary	0.063***	0.062***	0.037***	0.038***	0.046***	0.048***
	(0.000)	(0.000)	(0.005)	(0.005)	(0.000)	(0.000)
Adjusted R^2	0.382	0.384	0.446	0.446	0.395	0.396
No. of obs.	1,868	1,868	1,366	1,366	1,830	1,830

Table 8

Differences of the Changes in Operating Performance

This table presents the differences of changes in ROA between distressed SEO firms and control firms. For each distressed SEO firm, we identify a control firm in the same year and same industry using propensity score matching method. The propensity scores are estimated based on firm characteristics, including TA, CAPX/TA, PPE/TA, ROA and Z-score. The change in ROA is measured by the difference in the industry-adjusted ROA from the fiscal years prior to the filing date to the fiscal years after the issue date. As in Table 3, we partition the sample of distressed SEOs into subsamples of high and low ΔR&D, ΔLRVTB and ΔInstOwn. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

	Mean			Median		
	Low	High		Low	High	
ΔR&D	0.09	0.18	*	0.05	0.09	
ΔLRVTB	0.00	0.07	*	0.02	0.06	*
ΔInstOwn	0.05	0.18	***	0.02	0.08	***