



Corporate governance and investor reactions to seasoned equity offerings

Seasoned equity offerings

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Abstract

Purpose – The purpose of this paper is to study the role of corporate governance in abnormal returns around announcements of seasoned equity offerings (SEOs) by publicly traded US firms from 2001 to 2004.

Design/methodology/approach – Cross-sectional regression analysis was used to determine which variables are important to the market's reaction to the SEO, with a particular focus on corporate governance variables.

Findings – It was found that investors react more positively for firms in which different people hold the CEO and board chairman positions. Limited evidence was found that investor reaction is more positive when the board has a greater representation of outside directors, the CEO has less ownership, and the board is not too large. These findings suggest that investors react more favorably to SEOs by firms with stronger corporate governance mechanisms that reduce adverse selection or agency problems.

Practical implications – This paper's findings are evidence that stronger boards can reduce a firm's cost of raising additional equity capital.

Originality/value – There is not believed to be any other published paper that examines the impact of corporate governance mechanisms on the reaction to SEOs with such a comprehensive sample or in post-Enron periods.

Keywords Equity capital, Corporate governance, Chief executives, Boards of Directors, Corporate finances

Paper type Research paper

1. Introduction

In this study we examine the market reaction to seasoned equity offering (SEO) announcements with a particular emphasis on the role of corporate governance. We make two primary contributions. First, we add to the existing literature on the efficacies of various corporate governance mechanisms; and second, we enrich SEO studies that heretofore have largely ignored the impact of CEO power and board effectiveness in issuing seasoned equity and/or have used databases that limit their samples to large firms.

On average, firms' stock prices react negatively to their announcements of SEOs [1]. Myers and Majluf (1984) attribute the average negative return to information asymmetry between corporate insiders and outside investors. Jung *et al.* (1996) argue that investors could also react unfavorably because a firm's equity issuance will destroy shareholder value if its executives misuse the proceeds. Good corporate governance mechanisms, such as an effective board, can potentially reduce both the adverse selection and agency problems. First, if strong governance structures are important in monitoring the decision

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to issue seasoned equity and the use of the proceeds, then the market reaction to unexpected SEOs should be more favorable for firms with stronger governance structures. Second, if strong governance structures help to monitor corporate managers more effectively, there could be fewer corporate frauds (Uzun *et al.*, 2004) or better disclosure of company information (Karpoff *et al.*, 2008), resulting in less severe adverse selection problems. Therefore, by analyzing the cross-sectional relationship between corporate governance variables and the SEO announcement effect, this study is not only important to understanding the value of corporate governance to shareholders of seasoned equity issuers, but is also important to assessing the monitoring and certification roles of strong corporate governance structures.

There are several streams of papers that provide evidence on the importance of various mechanisms to effectively monitor management. One forum for this research is to examine how market reactions to events vary according to CEO and board characteristics. Some examples of events that have been studied include firm acquisitions (Byrd and Hickman, 1992; Desai *et al.*, 2003; Masulis *et al.*, 2007), adoption of poison pills (Brickley *et al.*, 1994), CEO deaths (Borokhovich *et al.*, 2006), mutual fund mergers (Khorana *et al.*, 2007), and the departure of busy outside directors (Fich and Shivdasani, 2006).

Other studies relate CEO and board characteristics to some measure of performance. Examples of performance measures include incidences of corporate fraud (Uzun *et al.*, 2004), mutual fund expense ratios (Del Guercio *et al.*, 2003), lawsuits (Helland and Sykuta, 2005), Tobin's *Q* (McConnell and Servaes, 1990; Yermack, 1996), performance of family-controlled public firms (Braun and Sharma, 2007), and profitability (Yermack, 1996; Eisenberg *et al.*, 1998).

Other studies with implications of various governance mechanisms examine board decisions such as CEO compensation and the decision to fire a CEO. Examples of studies linking board structure with executive compensation include Yermack (1996), Core *et al.* (1999), Vafeas (2003), Grinstein and Hribar (2004), and Chhaochharia and Grinstein (2009). Studies relating board structure to CEO turnover include Weisbach (1988), Goyal and Park (2002), Desai *et al.* (2006), Faleye (2007), and Karpoff *et al.* (2008).

In short, whether the study analyzes a market reaction to an event, or relates a measure of performance to corporate governance structures, or examines a board decision, the evidence often supports the notion that CEO and board characteristics are important determinants of how successfully a board fulfills its monitoring role[2]. Our study adds to this body of literature by providing evidence that good governance practices are perceived as reducing the adverse selection and agency problems when companies issue seasoned equity.

Our study enriches the literature on investor reaction to SEOs in two ways. First, prior analyses of the cross-sectional variation in announcement effects largely ignore the potential monitoring and certification roles of strong corporate governance structures. Second, due to limitations in databases for managerial incentive and corporate governance variables, samples of prior studies using such databases do not include small firms. For our analysis, we hand-collect corporate governance data from proxy statements and SEO prospectuses for all of the SEOs meeting certain criteria during 2001-2004, regardless of issuer size. The availability of corporate governance variables and the presence of smaller firms in our sample allow us to conduct a more powerful study of the relative importance of various corporate governance mechanisms.

Investor reaction to SEO announcements provides an excellent opportunity to address the questions of whether investors are worried about potential adverse selection and agency problems, and if so, which mechanisms are effective to reduce

such problems. Corporate executives are often provided with equity incentives to align their objectives with those of shareholders. Using the Standard and Poor's Executive Compensation (ExecuComp) database, Datta *et al.* (2005) and Kim and Purnanandam (2006) study the relation between equity incentives and investor reactions to SEO announcements. Datta *et al.* use stock options awarded to issuers' managers as a measure for equity incentives and find a negative relation between investor reactions to SEO announcements and option grants. They conclude that managers with more stock options have an incentive to issue seasoned equity when the stock is overvalued. Kim and Purnanandam use all managerial holdings of both stocks and stock options to measure equity incentives. In contrast, they find that investors react more negatively when there is insufficient managerial ownership to deter potential misuses of SEO proceeds. Kim and Purnanandam also examine the role of external monitoring, as measured by stock ownership of public pension funds and blockholders, and an anti-takeover index from the Investor Responsibility Research Center's (IRRC) database. They find that investors are less worried about agency problems when a firm is subject to more extensive external monitoring. While both papers highlight the role of incentive compensation in reducing agency problems as they relate to corporate financing policies, neither paper examines the impact of CEO power and board effectiveness and related corporate governance variables.

Sample size and/or bias are also a potential problem with prior SEO event studies that rely on the ExecuComp database and/or the IRRC database. The ExecuComp database provides executive compensation information only for S&P 1,000 firms. Datta *et al.* (2005) find that only 444 out of the 2,398 SEOs during 1992-1999 are of firms in the ExecuComp database. The IRRC database provides detailed information on anti-takeover provisions for member firms of the S&P 500 index and the annual lists of the largest corporations published by *Fortune*, *Forbes*, and *BusinessWeek* (see Gompers *et al.* (2003) for details). We find that only a very small percentage of SEOs during 2001-2004 in our sample are conducted by firms in the IRRC database.

Our results support the notion that corporate governance "best practices" are important for the board to serve as effective monitors of management, and that a strong board structure reduces the adverse selection and agency problems of seasoned equity issuers. In particular, we find that investors react more positively for firms in which different people hold the CEO and board chairman positions. Economically, the three-day (-1, +1) abnormal return around the SEO announcement is about 2 percent higher if the CEO of an issuing firm is not also the chairman of its board of directors. We also find limited evidence that investors react more positively for firms in which the CEO has less ownership and the board is not too large. There is also limited evidence that investor reaction is more positive when the board has a greater representation of outside directors. Other CEO and board characteristics such as outside director ownership, director tenure, CEO and director equity incentives, and the existence of affiliated or unaffiliated blockholders are not significant. Finally, per prior SEO research, we find that a larger percentage of primary shares, a higher pre-file market-adjusted firm return, and higher financial leverage are associated with more favorable investor reactions to SEO announcements. We also find some evidence that investor reaction is more negative to firms with more free cash flow. Overall, our results suggest that a less powerful CEO and a more effective board are associated with less agency and adverse selection problems for seasoned equity issuers.

A contemporaneous paper by Becker-Blease and Irani (2008) finds that board independence, size of the audit committee, and officer and director ownership mitigate

negative investor reactions to SEO announcements. Our paper differs from theirs in several important regards. First, their sample only includes firms in the IRRC database and thus tilts towards large firms, as we discussed earlier. Second, they do not examine the effects of CEO-chairman duality and CEO ownership, which are two important proxies for CEO power. Third, our sample is about twice as large as theirs. Finally, the period of our sample is more recent when listing and regulatory requirements were becoming more demanding of superior corporate governance[3]. Our paper therefore makes an important contribution to updating the findings by Becker-Blease and Irani (BBI)[4].

Two other working papers also explore governance structures and the market's reaction to SEO announcements. Kim and Purnanandam (2009) conduct four tests or measures to examine the impact of governance on the market's reaction to SEO announcements. These tests/measures include the passage of anti-takeover laws among states, the sensitivity of managerial wealth to a change in stock price, the GIM index compiled by Gompers *et al.* (2003) capturing a firm's level of anti-takeover provisions and other governance variables, and the classification of SEO firms making value creating vs value destroying corporate acquisitions. This paper addresses the same research questions and comes to the same conclusion as we do, but with a very different approach. The most important difference, which is not a criticism, is that we focus on specific governance variables that are firm specific as opposed to their GIM index that collapses this information. This allows us for example to infer that CEO-chairman duality appears to be more important to the market when issuing new equity than the percentage of outside directors.

Another working paper that is similar to ours in its approach is by Ferreira and Laux (2008). Like us, they also find that good governance structures improve the market's reaction to SEO announcements. Their sample covers firms that are also included in the IRRC database from 1990 to 2005. Whereas their results are driven by the percentage of independent directors, unlike us they do not find CEO-chairman duality to be significant. We speculate that the different results on duality are perhaps because our sample includes smaller firms than theirs and covers a different period. Chhaochharia and Grinstein (2007) document that smaller firms are more likely to split CEO and chair positions. Furthermore, there has been a growing concern on duality since the Enron scandal. An anecdotal example of the market's increasing concern for duality can also be seen in the recent vote by Bank of America shareholders who forced CEO Ken Lewis to step down as chair (Eckblad and Fitzpatrick, 2009). Consistent with the above speculations, 77 percent of firms in the sample of Ferreira and Laux (FL) combine the CEO/chair positions in contrast to only 61 percent in our sample.

The rest of the paper is organized as follows. Section 2 discusses related literature and hypotheses. Section 3 describes the data and summary statistics. Section 4 presents empirical results. Section 5 concludes.

2. Related literature, variables and hypotheses

2.1 Corporate governance variables

2.1.1 *CEO-chairman duality.* There are two primary hypotheses concerning CEO-chairman duality. Brickley *et al.* (1997) posit that when the two positions are separated there are incremental costs associated with sharing information between the CEO and chair. In addition, if a CEO also wishes to serve as the chair, then there may be incentive costs if the position is separated as a matter of policy. In contrast, agency theory predicts that shareholders are better served when the positions of CEO and chairman

of the board are held by different people because of the associated monitoring advantages. Both the incentive and agency hypotheses are relevant to how the market might react to raising new equity capital and predict opposite variable coefficient signs. Since there is no ex-ante reason to believe why one hypothesis should dominate over the other, it is not surprising that research addressing the question of duality is mixed. For example, Brickley *et al.* find no difference in performance between firms that combine the two positions and those that do not. In contrast, examples of studies that are consistent with agency theory include Core *et al.* (1999) who find that a CEO who is also board chairman receives higher CEO compensation. Goyal and Park (2002) find that CEO-chairman duality results in reduced sensitivity of CEO turnover to firm performance. Grinstein and Hribar (2004) find that CEOs who also serve as board chairs receive significantly larger bonuses for acquiring other firms and tend to engage in larger deals relative to the size of their own firms, and the market responds more negatively to their acquisition announcements. Karpoff *et al.* (2008) find that firms in which the CEO is also the board chair move more slowly to oust managers who misreport earnings. Finally, Masulis *et al.* (2007) find that acquirers separating the positions of CEO and chairman of the board experience higher abnormal returns. On the basis of the above discussions, the impact of the separation of CEO and chairman positions on SEO announcement returns is an empirical question.

2.1.2 CEO ownership. We choose to classify CEO ownership as a governance variable because like CEO-chairman duality, this variable helps capture the degree of CEO power. The effect of CEO ownership on the announcement return is ambiguous. If a CEO owns a large percentage of his or her company, then it is likely that the interests of the CEO and the other shareholders are aligned, resulting in a more positive announcement effect. However, larger ownership also means more CEO power. A more powerful CEO could be harder to remove for squandering shareholder funds or mis-reporting, resulting in a more negative announcement effect. Morck *et al.* (1988) contend that it is not possible to predict which force will dominate at different levels of inside ownership: managerial incentive alignment, or the tendency for an entrenched CEO to squander shareholder resources. In Stulz's (1988) hostile bidder model, firm value at first increases with inside ownership since the hostile bidder must increase the premium on the bid, but when inside ownership gets too high, the probability that the bid will succeed declines. He therefore predicts a curvilinear relation between firm value and insider ownership. McConnell and Servaes (1990) find empirical evidence supporting Stulz's model. However, the ambiguity reasoned by Morck *et al.* is consistent with the mixed evidence found on the impact of CEO ownership. For example, Boone *et al.* (2007) and Linck *et al.* (2008) provide evidence that CEO ownership is positively related to CEO power. But Masulis *et al.* (2007) find that none of their CEO incentive measures has significant marginal explanatory power in explaining bidder returns. The impact of CEO ownership on SEO announcement returns depends on the relative importance of CEO incentive alignment and entrenchment, both of which are related to agency theory.

2.1.3 Percent of outside directors. In our sample, we classify board members as being inside, grey, or outside directors. We obtain this information from proxy statements and define inside directors as being currently employed by the firm. Grey directors are those who do not currently work for the firm but have an existing or prior professional (for example supplier, ex-employee, or consultant), or personal (for example spouse of the CEO), relation to the firm. Outside directors are those who are neither inside nor gray directors. Our goal in classifying outside directors is that

they have no existing or past affiliation with the company other than that as a director or stockowner.

Hermalin and Weisbach (2003) state: "probably the most important factor determining a board's effectiveness is its independence from the CEO". In an earlier paper (1998) they model board independence as being a function of the relative bargaining power between the CEO and the board. Related to the ability of the board to monitor the CEO, it is reasonable to hypothesize that board power increases with the percentage of outside directors. Research supporting this hypothesis includes Weisbach (1988) who finds that firms with a higher percentage of outside directors are more likely to replace the CEO following poor performance. Similarly, Uzun *et al.* (2004) find that firms with a higher percentage of outside directors experience fewer incidences of corporate fraud. Helland and Sykuta (2005) find that firms with more inside directors are more likely to be sued. Bhagat and Black (2002), however, find no evidence that board independence is related to increased performance. This can be considered a "neutral" finding since they do not find that board independence decreases a firm's performance. The existing evidence therefore predicts a positive correlation between the percentage of independent directors and the market's reaction to SEO announcements.

2.1.4 Outside director ownership and director incentive compensation. If the incentives of directors are aligned with shareholders they are more likely to act in the best interests of shareholders and less likely to allow a "cozy" relationship with the CEO to motivate their decisions. Evidence supporting this view is shown by Perry (1999) who finds that directors are more likely to fire an underperforming CEO as they have higher incentive compensation. However, the key issue as argued by Hermalin and Weisbach (2003) is board independence. They suggest that a board which strives to be independent will organize themselves in a manner that provides optimal oversight of management, which includes being paid with incentives as well as having an optimal board size and composition. If higher director ownership and incentive compensation were important to board independence, then this would predict a positive relation between these variables and the market reaction to SEOs. From proxy statements we identify the percentage of stock ownership of each director as well as whether a component of their pay includes director incentive compensation.

2.1.5 Director and CEO tenure. There is little research that addresses the relationship between director and CEO tenure and the effectiveness of the board as a monitoring agent. Vafeas (2003) views the issue as two competing hypotheses. His expertise hypothesis suggests that long director tenure is associated with positive qualities such as commitment, experience, and competence. His management-friendliness hypothesis suggests that extended board service allows for the board and the CEO to become too friendly and results in less effective monitoring of the CEO by the board. He finds evidence supporting the management-friendliness hypothesis, as directors with over 20 years of tenure are more likely to staff the compensation committees and pay higher CEO compensation. For the management-friendliness hypothesis to be relevant however, it is important to consider an interactive variable that includes both the tenure of outside directors and the CEO to consider the overlapping time the board and the CEO have spent. We define overlapping tenure as the minimum of the average tenure of outside directors and CEO tenure. Agency theory would predict a negative relation between overlapping tenure and the market reaction to SEOs.

The bargaining model by Hermalin and Weisbach (1998) is also potentially relevant to CEO and director tenure. It is not difficult to imagine that a board with outside directors who have on average more tenure than the CEO may enjoy a stronger

bargaining position. We define the ratio of the average outside director tenure to CEO tenure as relative director-CEO tenure. A high ratio implies that directors have a stronger bargaining position than the CEO. Agency theory therefore predicts a positive relation between this variable and the market reaction to SEOs.

2.1.6 Board size. The literature on board size includes three main reasons why a board that is too large is suboptimal. First, a larger board is likely to have more communication problems than smaller boards. Second, as the board becomes larger, Jensen (1993) suggests that directors are prone to be less candid in their discussions on CEO performance and are therefore less effective in monitoring the CEO. In addition, it is easier for directors to “free-ride” on large boards and for boards to slip into a passive mode as opposed to effective and active monitors of management. Harris and Raviv (2008), for example, develop a theoretical model of this behavior. Finally, a larger board is likely to be more risk averse as discussed by Eisenberg *et al.* (1998). They reason that larger boards will on average have more outside directors who have limited stock ownership and hence limited upside rewards when taking risks, even if the risks are in the best interests of the shareholders.

There is also emerging literature suggesting that the optimal board size is a function of firm-specific benefits and the costs of monitoring. Boone *et al.* (2007) use a ten-year dataset to measure the evolution of board changes a firm goes through beginning with its IPO. They find evidence that a firm will add a board member depending on the trade-off on how much monitoring is needed and how costly it is to monitor management. For example, they reason that a firm with access to high free cash flows is in more need of monitoring. However, a firm with high R&D expenses is more complex and therefore more costly to monitor.

While there is some mixed evidence, most of the research supports the notion that larger boards are a detriment to firm value and/or effective monitoring of the CEO. Yermack (1996) finds an inverse relation between board size and Tobin's *Q* in a sample of large firms. Eisenberg *et al.* (1998) find a negative relation between board size and profitability in a sample of small and midsize Finnish firms. Gertner and Kaplan (1996) argue that firms engaged in reverse-leveraged buyouts are more likely to choose an optimal board size and find such firms with smaller boards compared to a control sample of similar firms. Wu (2000) finds evidence that firms decrease their board size in response to a call by activist investors such as CalPers. Helland and Sykuta (2005) find that firms with smaller boards are less likely to be sued. In our empirical examination of SEO issues, the agency cost explanation predicts that the market will react more favorably to the issue when the board is not too large. We define a board with more than 13 directors as being too large, although we try different cutoff points in unreported analysis.

2.1.7 Audit committee size. Becker-Blease and Irani (2008) find that size of the board's audit committee is positively related to investor reactions to SEO announcements, and suggest that this variable is an important proxy for the strength of corporate governance. Therefore, we also include this variable as an explanatory variable. Unlike BBI, we do not include audit committee independence as an explanatory variable, since our entire sample period is after 1999 after which listing requirements (and later SEC regulations) were mandating that audit committee directors should all be independent.

2.2. Financial variables

2.2.1 Market capitalization. Large firms often have more analyst-following and are thus likely to be more informationally transparent. Some examples of studies that have

used size to proxy for information effects include Ikenberry *et al.* (1995), Datta *et al.* (2005), and Kim and Purnanandam (2006). If information asymmetry were the primary reason for the negative investor reaction to SEOs, then we would expect large firms to be associated with less negative announcement returns. The literature also finds that firm size is correlated with corporate governance variables. Boone *et al.* (2007) document that the percentage of CEO ownership is on average higher for small as opposed to large firms. Linck *et al.* (2008) find that small firms have smaller boards with more insiders and are more likely to split the job of CEO and chairman than large firms. Therefore, it is important to control for market capitalization when examining the role of corporate governance variables.

2.2.2 Expected relative size. We include as a control variable the expected relative size, defined as the number of shares filed as a percentage of the total number of shares outstanding on the day prior to the file date[5]. A large relative issue size brings in relatively more cash, resulting in a more severe free cash flow problem. One could also argue that overvalued firms sell relatively more shares. Thus we expect a more negative investor reaction to a relatively larger SEO. Consistent with this prediction, Bayless and Chaplinsky (1996) find a significantly negative relation between a firm's issue size, as measured by gross proceeds, and investor reaction to its SEO announcement[6].

2.2.3 Percent of primary shares. Insiders of a firm sometimes sell secondary shares when the firm sells primary shares. Insiders could know more about their firm than outside investors. Although insiders could sell their shares for reasons such as portfolio diversification or simply because they need the funds, it is also possible that they will sell their shares when they think their stock is overvalued. Consistent with this logic, Kim and Purnanandam (2006) find that investors react less negatively when the percentage of primary shares is larger. We similarly hypothesize a positive relation between the number of primary shares filed as a percentage of the total number of shares filed and the abnormal return around the announcement.

2.2.4 Exchange listing. To the extent that the degree of disclosure is different across exchanges and stock markets, we include the NYSE/Amex dummy as a control variable. Corwin (2003) documents that SEOs of NYSE firms incur smaller underpricing or discounting. Assuming a firm listed on the NYSE or Amex is more transparent, we would similarly expect a more favorable reaction for firms thus listed; however, the SEO announcement may also be less of a surprise and therefore insignificant.

2.2.5 Pre-file firm price run-up. Firms are more likely to issue equity following stock price run-ups (see Loughran and Ritter (1995), Jung *et al.* (1996), Hovakimian *et al.* (2001), and Huang and Ritter (2009), among others). This could reflect the attempt of corporate executives to take advantage of newly arriving growth opportunities or the attempt to time the market when they perceive their valuation as favorable. Since these two arguments would predict opposite market reactions, we have no *ex ante* reason to suggest which effect would dominate. Indeed, prior research has mixed results. For example, Jung *et al.* (1996) find a positive relation between a firm's pre-issue stock price run-up and investor reaction to its SEO announcement, while Datta *et al.* (2005) find a negative relation. Although we cannot predict a specific relation, we nevertheless do include the pre-file firm price run-up to control for the potential difference in either growth or valuation. We measure pre-file-adjusted return (percent) as the difference between the firm's raw return and the Center for Research in Security Prices (CRSP) value-weighted market return during the 200 days ending 11 days prior to the file date.

2.2.6 Return volatility. Return volatility helps capture either uncertainty or information asymmetry. The existing literature finds that firms with more volatile

stock returns have to underprice their SEO shares by more (Altinkiliç and Hansen, 2003; Corwin, 2003; Mola and Loughran, 2004; Huang and Zhang, 2007). We therefore expect the announcement returns to be more negative for firms with more volatile stock returns. Following the literature, we measure return volatility as the standard deviation of daily returns over the 30 trading days ending 11 days prior to the file date.

2.2.7 Tobin's Q. Tobin's Q is defined as the market value of a firm's financial claims to the replacement of its assets. A high Tobin's Q could reflect higher growth opportunities, which help justify the decision to raise external equity capital. This predicts a positive relation between the announcement return and Tobin's Q . Bayless and Chaplinsky (1996) and Jung *et al.* (1996) present evidence consistent with this prediction. A high Tobin's Q could also reflect overvaluation, which predicts a negative relation between the announcement return and Tobin's Q . Using more recent data, Datta *et al.* (2005) provide evidence consistent with this alternative prediction. Hence, similar to the pre-file stock price run-up variable, there is no clear prediction on which effect would dominate. Our estimate of Tobin's Q is calculated as the sum of the market value of equity (Compustat items 25 \times 199) and the book value of debt (items 181 + 10-35) scaled by the book value of total assets (item 6) at the fiscal year end prior to the file date, (see, for example, Fama and French (2002), among others)[7].

2.2.8 Total debt ratio. A high debt ratio imposes disciplines on corporate executives by reducing the amount of cash that is available to them (e.g. Jensen, 1986; Stulz, 1990). A high debt ratio also provides an important incentive for corporate executives to improve the performance of their company so that creditors do not take control at the time of financial distress. Since the debt ratio can be positively related to financial stress, the decision to issue equity can also be more easily justified for a firm with a higher debt ratio. We therefore include total debt ratio as a control variable and expect it to be positively related to the announcement returns. Prior research however has mixed results. For example, Jung *et al.* (1996) find an insignificantly negative relation between leverage and investor reaction to SEOs, while Kim and Purnanandam (2006) find an insignificantly positive relation. We define total debt ratio as the book value of long-term and short-term debt (Compustat item 9 + item 34) scaled by total assets (item 6) at the fiscal year end prior to the file date.

2.2.9 Free cash flow. Firms with more free cash flow provide their executives with more resources to squander (Jensen, 1986). Yet free cash flows could also be the result of successful past performance, which is due partially to the efforts of good executives. The expected sign of free cash flow depends on which effect dominates. For example, Bayless and Chaplinsky (1996) find no significant relation between free cash flow and investor reaction to SEO announcements. Following Masulis *et al.* (2007) we define free cash flow as operating income before depreciation (Compustat item 13) – interest expenses (item 15) – income taxes (item 16) – capital expenditures (item 128), scaled by total assets (item 6) at the fiscal year end prior to the file date.

2.2.10 Industry dummies. Similar to Datta *et al.* (2005) and other SEO studies, we include industry dummy variables. In this paper we control for utility and technology industries. The definitions are the same as in Loughran and Ritter (2004), except that we combine internet, tech, and biotech firms. Utility firms are likely to routinely issue equity and thus their announcements of SEOs contain less element of surprise. We therefore expect their announcement returns to be less negative.

In Table I we summarize predicted variable coefficient signs relating each hypothesis to the market's SEO announcement reaction.

<i>Governance variables</i>	
<i>CEO-chairman duality</i>	(+) Higher incentive for CEO if also chair (-) Relative power/agency
<i>CEO ownership (%)</i>	(+) Incentive alignment with shareholder/agency (-) Relative power/agency
<i>% of outside directors</i>	(+) Relative power/agency
<i>Outside director ownership (%)</i>	(+) Incentive alignment with shareholder/agency
<i>Director incentive pay</i>	(+) Incentive alignment with shareholder/agency
<i>CEO tenure</i>	(-) Relative power/agency
<i>Outside director tenure</i>	(+) Relative power/agency
<i>Overlapping tenure</i>	(-) Management-friendliness/agency
<i>Relative director-CEO tenure</i>	(+) Relative power/agency
<i>Number of directors</i>	(-) Effective monitoring
<i>Audit committee size</i>	(+) Effective monitoring (Becker-Blease and Irani, 2008)
<i>Financial variables</i>	
<i>Market cap.</i>	(+) Transparency
<i>Expected relative size (%)</i>	(-) Free cash flow, signaling
<i>% primary shares</i>	(+) Signaling
<i>NYSE/Amex</i>	(+) Transparency
<i>Pre-file adjusted return (%)</i>	(+) Growth opportunities (-) Signaling
<i>Return volatility (%)</i>	(-) Information asymmetry
<i>Tobin's Q</i>	(+) Growth opportunities (-) Signaling
<i>Total debt ratio</i>	(+) Agency (+) Financial distress
<i>Free cash flow</i>	(-) Agency (+) Strong prior performance

Notes: This table presents expected coefficient signs for hypotheses that relate to the market's reaction to an SEO announcement. *Market cap.* (in constant 2,004 \$millions) is the price multiplied by the total number of shares outstanding at the market close on the day prior to the file date. *Expected relative size (percent)* is the number of shares filed to the total number of shares outstanding on the day prior to the file date. For dual-class companies, the total number of shares from Compustat (item 25) at the fiscal year end prior to the file date is used instead to calculate *Market cap.* and *Expected relative size.* *percent primary shares* is the number of primary shares filed as a percentage of the total number of shares filed. *NYSE/Amex* equals one if the issuer is listed on the NYSE or Amex, and zero otherwise. *Pre-file-adjusted return (percent)* is the difference between the firm's buy-and-hold raw return and the CRSP buy-and-hold value-weighted market return during the 200 days ending 11 days prior to the file date. *Return volatility (percent)* is the standard deviation of daily close-to-close returns over the 30 trading days ending 11 days prior to the file date. *Tobin's Q* is the sum of the market value of equity (items 25 × 199) and the book value of debt (items 181 + 10-35) scaled by the book value of total assets (item 6) at the fiscal year end prior to the file date. When the liquidating value of preferred stock (item 10) is missing, we use the redemption value of preferred stock (56). When the redemption value is also missing, we use the carrying value of preferred stock (130). *Total debt ratio* is the book value of long-term and short-term debt (item 9 + item 34) scaled by total assets (item 6) at the fiscal year end prior to the file date. *Free cash flow* is defined as operating income before depreciation (item 13) – interest expenses (item 15) – income taxes (item 16) – capital expenditures (item 128), scaled by total assets (item 6) at the fiscal year end prior to the file date. *CEO-chairman duality* equals one if the CEO is also the chairman, and zero otherwise. *CEO ownership (percent)* is the CEO's percentage ownership prior to the offer. *percent of outside directors* is the percentage of outside directors on the board. *Outside director ownership (percent)* is the percentage ownership of all outside directors prior to the offer. *Director incentive pay* equals one if a component of director pay includes incentive compensation. *Outside director tenure* is the average tenure of outside directors. *Overlapping tenure* is the minimum of average outside director tenure and CEO tenure. *Relative director-CEO tenure* is the ratio of $(1 + \text{average outside director tenure})$ to $(1 + \text{CEO tenure})$. *Number of directors* is the number of board directors. *Audit committee size* is the number of members of the audit committee

Table I.
Expected coefficient
signs of key variables

3. Data and summary statistics

3.1 Sample selection

After extracting all US SEOs from 2001 to 2004 from the Thomson Reuters' SDC New Issues database, we follow the existing literature to exclude rights, Real Estate Investment Trusts, units, limited partnerships, mutual conversions, spin-offs, American Depository Receipts, closed-end funds, pure secondary offers, shelf-registered offers, offers by finance companies, and offers by firms that we are unable to link to the CRSP database. We also exclude offers with a missing value of file date and price, number of shares filed, or pre-file stock return[8]. These filters result in a sample of 412 offers, of which we are able to find both prospectus and proxy statement data that are electronically available at the SEC's website for 364 offers. Requiring necessary Compustat data further reduces the sample to 299 offers. Finally, we exclude offers by firms with missing governance variables from the proxy statements, resulting in a final sample of 287 SEOs from 2001 to 2004 by publicly traded US firms.

3.2 Summary statistics

In Table II, we report sample distribution by year and industry. Our sample is relatively evenly distributed across years. A small percentage of issuers are utilities. Tech firms account for almost 43 percent of sample SEOs, perhaps because this industry is tilted toward growth. With each industry, we do not see an obvious trend in the number of SEOs across years.

Table III reports summary statistics of key variables. Our sample covers a large range of firms based on market capitalization. The minimum market capitalization is about 23 \$million and the maximum is about 16 \$billion. The number of shares filed relative to the number of shares outstanding at the announcement varies substantially from as low as 1.89 percent to as high as 75.98 percent. The percent of primary shares offered has a mean of 82.7 percent, suggesting that secondary shares from insiders only account for a small percentage of all shares offered in our sample. About 32 percent of SEOs are by firms listed on NYSE/Amex. Consistent with the existing literature, SEO firms experience stock price run-ups prior to SEO announcements. The mean three-month market-adjusted return ending 11 days prior to the SEO file date is 73.37 percent and the median is 61.48 percent. The standard deviation of daily stock returns prior to the file date has a mean of 3.86 percent and a median of 3.49 percent, which are higher than the historical average return volatility of about 1 percent for a typical US

Year	Industry							
	Utility		Tech		Other		All industries	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
2001	6	2.09	35	12.20	43	14.98	84	29.27
2002	8	2.79	23	8.01	38	13.24	69	24.04
2003	4	1.39	39	13.59	29	10.10	72	25.09
2004	4	1.39	26	9.06	32	11.15	62	21.60
All years	22	7.67	123	42.86	142	49.48	287	100

Notes: This table reports the sample distribution by year and industry. A utility firm is a firm with a two-digit SIC code of 49. Technology firms are defined as those with a four-digit SIC code of 2833-2836, 3570-3572, 3575, 3577-3578, 3660-3661, 3663, 3669-3672, 3674-3675, 3677-3679, 3810, 3812, 3820, 3823, 3825-3827, 3829, 3840-3841, 3845, 4812-4813, 4899, 7370-7375, 7378-7379, 8731, or those defined as an internet firm by Thomson Reuters

Table II.
Sample distribution
by year and industry

Variable	<i>n</i>	Mean	Median	Std	Min.	Max.
<i>Financial variables</i>						
<i>Market cap.</i>	287	824.86	445.77	1,488.03	23.45	16,200.37
<i>Expected relative size (%)</i>	287	21.36	19.86	11.81	1.89	75.98
<i>% primary shares</i>	287	82.70	100.00	25.06	1.70	100.00
<i>NYSE/Amex</i>	287	0.32	0.00	0.47	0.00	1.00
<i>Pre-file-adjusted return (%)</i>	287	73.37	61.48	61.61	-32.32	373.06
<i>Return volatility (%)</i>	287	3.86	3.49	2.03	0.82	17.02
<i>Tobin's Q</i>	287	2.50	1.66	2.12	0.26	13.76
<i>Total debt ratio</i>	287	0.26	0.25	0.22	0.00	1.00
<i>Free cash flow</i>	287	-0.08	0.01	0.24	-1.25	0.52
<i>Governance variables</i>						
<i>CEO-chairman duality</i>	287	0.61	1.00	0.49	0.00	1.00
<i>CEO ownership (%)</i>	287	8.67	2.81	15.98	0.00	100.00
<i>% of outside directors</i>	287	57.85	57.14	19.06	12.50	91.67
<i>Outside director ownership (%)</i>	287	8.49	0.91	20.00	0.00	100.00
<i>Director incentive pay</i>	287	0.92	1.00	0.27	0.00	1.00
<i>CEO tenure</i>	287	7.51	5.00	7.04	0.00	40.00
<i>Outside director tenure</i>	287	5.40	4.50	3.64	0.00	21.00
<i>Overlapping tenure</i>	287	4.01	3.00	3.18	0.00	19.00
<i>Relative director-CEO tenure</i>	287	1.22	0.78	1.30	0.08	11.00
<i>Number of directors</i>	287	7.72	7.00	2.13	4.00	16.00
<i>Audit committee size</i>	287	3.33	3.00	0.83	0.00	8.00
<i>CAR (-1, +1) (%)</i>	287	-3.02	-3.12	7.08	-26.00	30.73

Notes: This table presents the summary statistics for SEOs from 2001 to 2004. *Market cap.* (in constant 2004 \$millions) is the price multiplied by the total number of shares outstanding at the market close on the day prior to the file date. *Expected relative size (percent)* is the number of shares filed to the total number of shares outstanding on the day prior to the file date. For dual-class companies, the total number of shares from Compustat (item 25) at the fiscal year end prior to the file date is used instead to calculate *Market cap.* and *Expected relative size.* *percent primary shares* is the number of primary shares filed as a percentage of the total number of shares filed. *NYSE/Amex* equals one if the issuer is listed on the NYSE or Amex, and zero otherwise. *Pre-file-adjusted return (percent)* is the difference between the firm's buy-and-hold raw return and the CRSP buy-and-hold value-weighted market return during the 200 days ending 11 days prior to the file date. *Return volatility (percent)* is the standard deviation of daily close-to-close returns over the 30 trading days ending 11 days prior to the file date. *Tobin's Q* is the sum of the market value of equity (items 25 × 199) and the book value of debt (items 181 + 10-35) scaled by the book value of total assets (item 6) at the fiscal year end prior to the file date. When the liquidating value of preferred stock (item 10) is missing, we use the redemption value of preferred stock (56). When the redemption value is also missing, we use the carrying value of preferred stock (130). *Total debt ratio* is the book value of long-term and short-term debt (item 9 + item 34) scaled by total assets (item 6) at the fiscal year end prior to the file date. *Free cash flow* is defined as operating income before depreciation (item 13) – interest expenses (item 15) – income taxes (item 16) – capital expenditures (item 128), scaled by total assets (item 6) at the fiscal year end prior to the file date. *CEO-chairman duality* equals one if the CEO is also the chairman, and zero otherwise. *CEO ownership (percent)* is the CEO's percentage ownership prior to the offer. *Percent of outside directors* is the percentage of outside directors on the board. *Outside director ownership (percent)* is the percentage ownership of all outside directors prior to the offer. *Director incentive pay* equals one if a component of director pay includes incentive compensation. *Outside director tenure* is the average tenure of outside directors. *Overlapping tenure* is the minimum of average outside director tenure and CEO tenure. *Relative director-CEO tenure* is the ratio of $(1 + \text{average outside director tenure})$ to $(1 + \text{CEO tenure})$. *Number of directors* is the number of board directors. *Audit committee size* is the number of members of the audit committee. *CAR(-1, +1)* is the three-day (-1, +1) market-adjusted cumulative abnormal returns using the value weighted CRSP index

Table III.
Summary statistics
of key variables

firm. Not surprisingly, the mean and median Tobin's Q for SEO firms are both above one, possibly suggesting that the market views the SEO firms as having substantial growth opportunities. The mean total debt ratio of SEO firms is 26 percent and the median is 25 percent. The mean free cash flow is negative, suggesting that at least some SEO firms are losing money.

About 61 percent of SEOs are by firms with CEO-chairman duality. Mean CEO ownership is 8.67 percent, which is less than the median of 2.81 percent, suggesting left skewness. Outside director ownership is also left-skewed, with a mean of 8.49 percent and a median of 0.91 percent, and 92 percent of directors are on boards that include incentive pay as part of their compensation. Mean outside director tenure is 5.4 years, and on average this includes about four years that overlaps with the CEO. The mean number of directors on the board directors is 7.72 of which about 58 percent are outside directors. On average there are 3.33 directors on a board's audit committee. In untabulated analysis, we find that about 72 percent of our sample SEOs have an audit committee of three members, and only about 3 percent have less than three members.

It is interesting to compare some of our governance statistics to those reported in the BBI and FL papers. The percentage of independent directors reported by BBI and FL is 57 and 65 percent, respectively, and our 58 percent is within this range. The average number of directors on each board is 8.6 and 9.5 in the BBI and FL studies, respectively, which compare with 7.7 in our study perhaps reflecting the fact that we include more smaller firms in our sample. Finally, as previously discussed, in FL's sample 77 percent of SEOs are by firms in which the CEO is also the chair as contrasted to our 61 percent perhaps because our sample includes SEOs by smaller firms and excludes SEOs during the 1990s.

In addition to the financial and governance variables, Table III also reports the summary statistics of $CAR(-1, +1)$, defined as the cumulative return on the stock minus the cumulative return on the CRSP value-weighted index from the day before to the day after the SEO announcement. For our sample of SEOs, the mean (median) $CAR(-1, +1)$ is -3.02 percent (-3.12 percent). In contrast, FL report a mean (median) $CAR(-1, +1)$ of -1.62 percent (-1.20 percent) for a sample of 540 SEOs during 1990-2005 by firms in the IRR database, and Datta *et al.* (2005) report a mean (median) of -1.70 percent (-1.26 percent) for a sample of 444 SEOs by firms in the SEOs during 1992-1999 by firms in the ExecuComp database.

Various corporate governance mechanisms can be complements or substitutes in solving adverse selection or agency problems. Corporate governance variables are also likely to be correlated with financial variables. We thus report the correlation matrix of key financial and corporate governance variables in Table IV. To examine how these variables are related to investor reactions to SEO announcements, in the correlation matrix we also include $CAR(-1, +1)$. For brevity, below we only selectively discuss some statistically significant correlation coefficients that are the most relevant to the focus of this paper.

Firm size, as measured by $\ln(\text{Market cap.})$, is significantly correlated with several variables that are related to adverse selection or agency problems. Specifically, firm size is positively correlated with *NYSE/Amex dummy*, *Total debt ratio*, *Utility dummy*, *Large board dummy*, and $\ln(1 + \text{Audit committee size})$, and negatively correlated with *Expected relative size*, *Pre-file-adjusted return*, and *CEO equity ownership*. Boone *et al.* (2007) also find that firm size is negatively correlated with *CEO equity ownership*. The positive correlation between firm size and *Total debt ratio* is consistent with the capital structure literature (see Frank and Goyal (2008) for a recent survey). These results

Table IV.
Correlation matrix of
key variables and
CAR(-1, +1)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) <i>Ln(Market cap.)</i>	1.00										
(2) <i>Expected relative size (%)</i>	-0.60 ^a	1.00									
(3) <i>% primary shares</i>	0.00	-0.18 ^a	1.00								
(4) <i>NYSE/Amex dummy</i>	0.31 ^a	0.15 ^b	0.19 ^a	1.00							
(5) <i>Pre-file-adjusted return (%)</i>	-0.13 ^b	-0.12 ^b	-0.08	-0.22 ^a	1.00						
(6) <i>Return volatility (%)</i>	-0.02	0.01	-0.10 ^c	-0.34 ^a	0.22 ^a	1.00					
(7) <i>Tobin's Q</i>	0.09	-0.15 ^a	0.05	-0.23 ^a	0.00	0.28 ^a	1.00				
(8) <i>Total debt ratio</i>	0.17 ^a	0.07	0.02	0.35 ^a	-0.13 ^b	-0.19 ^a	-0.39 ^a	1.00			
(9) <i>Free cash flow</i>	0.04	0.08	-0.19 ^a	0.18 ^a	-0.10	-0.14 ^b	-0.41 ^a	0.20 ^a	1.00		
(10) <i>Utility dummy</i>	0.23 ^a	-0.25 ^a	0.19 ^a	0.31 ^a	-0.15 ^b	-0.33 ^a	-0.19 ^a	0.22 ^a	0.06	1.00	
(11) <i>Tech dummy</i>	-0.05	-0.06	0.05	-0.35 ^a	0.20 ^a	0.35 ^a	0.41 ^a	-0.38 ^a	-0.28 ^a	-0.25 ^a	1.00
(12) <i>CEO-chairman duality</i>	0.08	-0.03	0.01	0.11 ^c	-0.01	-0.09	-0.14 ^b	0.20 ^a	0.14 ^b	0.02	-0.15 ^a
(13) <i>CEO ownership (%)</i>	-0.18 ^a	0.16 ^a	-0.10 ^c	-0.16 ^a	0.15 ^b	0.18 ^a	-0.01	-0.03	0.04	-0.15 ^b	0.01
(14) <i>% of outside directors</i>	0.07	-0.16 ^a	0.22 ^a	0.18 ^a	0.02	-0.18 ^a	-0.02	0.00	-0.02	0.21 ^a	-0.04
(15) <i>Outside director ownership (%)</i>	0.02	0.05	-0.26 ^a	-0.06	0.04	0.17 ^a	0.01	0.01	-0.10	-0.11 ^c	0.05
(16) <i>Director incentive pay dummy</i>	0.07	-0.05	0.10 ^c	0.04	0.03	0.02	-0.02	0.03	0.00	-0.11 ^c	0.05
(17) <i>Ln(1 + Overlapping tenure)</i>	0.01	-0.10 ^c	0.07	-0.04	0.07	-0.06	-0.07	0.00	0.12 ^b	0.03	-0.11 ^c
(18) <i>Ln(Relative director-CEO tenure)</i>	0.04	-0.04	0.08	0.09	0.00	-0.07	-0.01	0.09	-0.04	0.17 ^a	-0.04
(19) <i>Large board dummy</i>	0.18 ^a	-0.08	0.08	0.17 ^a	-0.02	0.00	-0.04	0.05	0.04	0.19 ^a	-0.10 ^c
(20) <i>Ln(1 + Audit committee size)</i>	0.27 ^a	-0.10 ^c	0.12 ^b	0.27 ^a	-0.06	-0.16 ^a	-0.18 ^a	0.20 ^a	0.12 ^b	0.37 ^a	-0.15 ^b
(21) <i>Post-SOX year dummy</i>	-0.29 ^a	0.09	0.04	-0.06	0.15 ^b	-0.14 ^b	-0.09	-0.15 ^b	-0.12 ^b	-0.06	0.11 ^c
(22) <i>CAR(-1, +1)</i>	0.04	-0.08	0.18 ^a	0.07	0.06	-0.10 ^c	0.03	0.10 ^c	-0.16 ^a	0.07	-0.05

(continued)

Variable	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)
CEO-chairman duality	1.00										
CEO ownership (%)	0.22 ^a	1.00									
% of outside directors	0.07	-0.13 ^b	1.00								
Outside director ownership (%)	-0.07	-0.06	0.18 ^a	1.00							
Director incentive pay dummy	0.05	-0.07	0.06	-0.08	1.00						
Ln(1 + Overlapping tenure)	0.17 ^a	0.13 ^b	0.07	-0.07	-0.03	1.00					
Ln(Relative director-CEO tenure)	-0.33 ^a	-0.25 ^a	0.17 ^a	0.09	-0.09	-0.20	1.00				
Large board dummy	0.04	-0.06	0.03	-0.05	0.04	0.03	0.04	1.00			
Ln(1 + Audit committee size)	0.17 ^a	-0.13 ^b	0.26 ^a	-0.04	0.01	0.02	0.08	0.12 ^b	1.00		
Post-SOX year dummy	-0.06	-0.07	0.16 ^a	0.06	-0.03	-0.08	-0.05	-0.05	-0.04	1.00	
CAR(-1, +1)	-0.14 ^b	-0.16 ^a	0.17 ^a	0.08	0.04	-0.02	0.13 ^b	-0.11 ^b	0.01	0.02	1.00

Notes: This table presents the correlation matrix of key variables and $CAR(-1, +1)$, defined as the three-day $(-1, +1)$ market-adjusted cumulative abnormal returns using the value weighted CRSP index. *Market cap.* (in constant 2004 \$millions) is the price multiplied by the total number of shares outstanding at the market close on the day prior to the file date. *Expected relative size (percent)* is the number of shares filed to the total number of shares outstanding on the day prior to the file date. For dual-class companies, the total number of shares from Compustat (item 25) at the fiscal year end prior to the file date is used instead to calculate *Market cap* and *Expected relative size*. *Percent primary shares* is the number of primary shares as a percentage of the number of shares filed. *NYSE/Amex* equals one if the issuer is listed on the NYSE or Amex, and zero otherwise. *Pre-file-adjusted return (percent)* is the difference between the firm's buy-and-hold raw return and the buy-and-hold CRSP value-weighted market return during the 200 days ending 11 days prior to the file date. *Return volatility (percent)* is the standard deviation of daily close-to-close returns over the 30 trading days ending 11 days prior to the file date. *Tobin's Q* is the sum of the market value of equity (items 25 × 199) and the book value of debt (items 181 + 10-35) scaled by the book value of total assets (item 6) at the fiscal year end prior to the file date. When the liquidating value of preferred stock (item 10) is missing, we use the redemption value of preferred stock (56). When the redemption value is also missing, we use the carrying value of preferred stock (130). *Total debt ratio* is the book value of long-term and short-term debt (item 9 + item 34) scaled by total assets (item 6) at the fiscal year end prior to the file date. *Free cash flow* is defined as operating income before depreciation (item 13) - interest expenses (item 15) - income taxes (item 16) - capital expenditures (item 128), scaled by total assets (item 6) at the fiscal year end prior to the file date. *CEO-chairman duality* equals one if the CEO is also the chairman, and zero otherwise. *CEO ownership (percent)* is the CEO's percentage ownership prior to the offer. *percent of outside directors* is the percentage of outside directors on the board. *Outside director ownership (percent)* is the percentage ownership of all outside directors prior to the offer. *Director incentive pay dummy* equals one if outside directors receive equity incentive, and zero otherwise. *Overlapping tenure* is the minimum of average outside director tenure and CEO tenure. *Relative director-CEO tenure* is the ratio of $(1 + \text{average outside director tenure})$ to $(1 + \text{CEO tenure})$. *Large board* equals one if the number of board directors is greater than 13 and zero otherwise. *Audit committee size* is the number of members of the audit committee. *Post-SOX year dummy* equals zero for an SEO taking place in 2001 or 2002 (pre-SOX time period) and 1 if the SEO took place in 2003 or 2004 (post SOX time period). $Ln(x)$ denotes the natural logarithm of x . Superscripts a, b, and c denote statistical significance at the 1, 5, and 10 percent levels, respectively

Table IV.

show the importance of including small firms when studying the roles of various mechanisms for reducing agency and adverse selection problems.

The correlations among the corporate governance variables are generally consistent with findings in the existing literature. *CEO-chairman duality* is positively related with *CEO ownership* (see Booth *et al.*, 2002). Consistent with the findings by Linck *et al.* (2008), *percent of outside directors* is negatively correlated with *CEO-chairman duality*, and positively correlated with *Outside director ownership*. Like Becker-Blease and Irani (2008), we document a positive correlation between $\ln(1 + \text{Audit committee size})$ and *percent of outside directors*.

$CAR(-1, +1)$ is significantly correlated with four financial variables and five corporate governance variables. Specifically, $CAR(-1, +1)$ is negatively correlated with *Return volatility*, *Free cash flow*, *CEO-chairman duality*, *CEO ownership*, and *Large board dummy*, and positively correlated with *percent of primary shares*, *Total debt ratio*, *percent of outside directors*, and $\ln(\text{Relative director-CEO tenure})$. It remains interesting to examine whether these relationships survive in a multivariate analysis.

Overall, we do not find any two variables to be highly correlated, except that $\ln(\text{Market cap.})$ and *Expected relative size* have a correlation of -0.60 . For all our multivariate regressions to be discussed in the next section we run variance inflation factor tests and find no problems with multicollinearity.

4. Empirical results

To obtain the marginal contribution of each variable to the cumulative abnormal return, we conduct a multivariate regression analysis in this section. Specifically, we estimate several variants of the following equation:

$$\begin{aligned}
 CAR = f(\ln(\text{Market cap.}), \\
 \text{Expected relative size, \% Primary shares, NYSE/Amex dummy,} \\
 \text{Pre-file adjusted return (\%), Return volatility (\%), Tobin's Q,} \\
 \text{Total debt ratio, Free cash flow, Industry dummies,} \\
 \text{CEO - chairman duality, CEO ownership (\%), \% of outside directors,} \\
 \text{Outside director ownership (\%), Director incentive pay dummy,} \\
 \ln(1 + \text{Overlapping tenure}), \ln(\text{Relative director - CEO tenure}), \\
 \text{Large board dummy, Audit committee size, Post - SOX year dummy})
 \end{aligned} \quad (1)$$

The dependent variable is the three-day $(-1, +1)$ market-adjusted cumulative abnormal return, where the return on the CRSP value-weighted index is used as the market return. All the independent variables are either self-explanatory or have been defined earlier.

Table V presents the estimation results. As stated earlier, for all regressions we run variance inflation factor tests and find no problems with multicollinearity. In regression (1) we include only the financial variables and this model results in an adjusted R^2 of 5.15 percent. We find that the larger the number of primary shares filed as a percentage of the total number of shares filed, the more positive the abnormal market reaction to the offering, consistent with Kim and Purnanandam (2006). The coefficient for *Pre-file-adjusted return* is positive and statistically significant at the 10 percent level in a two-tailed test. This result suggests that the announcement effect is

	(1)	(2)	(3)	(4)	(5)	(6)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
	t-stat.	t-stat.	t-stat.	t-stat.	t-stat.	t-stat.
<i>Financial variables</i>						
<i>Ln(Market cap.)</i>	-0.10	-0.04	-0.21	-0.06	-0.07	0.03
<i>Expected relative size (%)</i>	-0.05	-0.05	-0.04	-0.04	-0.04	-0.03
<i>% primary shares</i>	0.04	0.04	0.04	0.03	0.03	0.04
<i>NYSE/Amex dummy</i>	0.08	0.08	-0.08	-0.15	-0.26	0.02
<i>Pre-file-adjusted return (%)</i>	0.00	0.00	0.00	0.00	0.00	0.01
<i>Return volatility (%)</i>	-0.37	-0.39	-0.29	-0.32	-0.29	0.32
<i>Tobin's Q</i>	0.17	0.15	0.17	0.16	0.14	0.12
<i>Total debt ratio</i>	3.83	4.62	3.96	4.04	4.84	4.27
<i>Free cash flow</i>	-4.62	-4.20	-4.37	-4.62	-4.07	-3.69
<i>Utility dummy</i>	-0.28	-0.64	-0.45	-0.66	-1.12	-0.03
<i>Tech dummy</i>	-0.95	-1.12	-1.10	-0.96	-1.22	-1.18
<i>Governance variables</i>						
<i>CEO-chairman duality</i>		-2.42	-2.79***		-2.22	-2.50**
<i>CEO ownership (%)</i>			-0.06		-0.04	-1.79**
<i>% of outside directors</i>				0.04	0.05	1.46†
<i>Outside director ownership (%)</i>						0.03
<i>Director incentive pay dummy</i>						0.73
<i>Ln(1 + Overlapping tenure)</i>						-0.07
<i>Ln(Relative director-CEO tenure)</i>						0.09

(continued)

Seasoned equity offerings

Table V.
Multivariate regressions
of announcement returns

Table V.

	(1)	(2)	(3)	(4)	(5)	(6)
	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.	Coeff.
	<i>t</i> -stat.	<i>t</i> -stat.	<i>t</i> -stat.	<i>t</i> -stat.	<i>t</i> -stat.	<i>t</i> -stat.
<i>Large board dummy</i>						-8.13
<i>Ln(1 + Audit committee size)</i>						-1.60
<i>Post-SOX year dummy</i>						-0.54
Constant	-4.95	-3.90	-3.99	-7.61	-6.11	-5.29
	-1.28 [†]	-1.00	-1.00	-1.88*	-1.46 [†]	-1.03
Adjusted R ² (%)	5.15	7.54	6.64	6.06	9.17	9.50
<i>n</i>	287	287	287	287	287	287

Notes: This table presents multivariate regression results of three-day (-1, +1) market-adjusted cumulative abnormal returns (in percent) using the value weighted CRSP index. *Market cap.* (in constant 2,004 \$millions) is the price multiplied by the total number of shares outstanding at the market close on the day prior to the file date. *Expected relative size (percent)* is the number of shares filed to the total number of shares outstanding on the day prior to the file date. For dual-class companies, the total number of shares from Compustat (item 25) at the fiscal year end prior to the file date is used instead to calculate *Market cap.* and *Expected relative size.* *Percent primary shares* is the number of primary shares as a percentage of the number of shares filed. *NYSE/Amex* equals one if the issuer is listed on the NYSE or Amex, and zero otherwise. *Pre-file-adjusted return (percent)* is the difference between the firm's buy-and-hold raw return and the buy-and-hold CRSP value-weighted market return during the 200 days ending 11 days prior to the file date. *Return volatility (percent)* is the standard deviation of daily close-to-close returns over the 30 trading days ending 11 days prior to the file date. *Tobin's Q* is the sum of the market value of equity (items 25 × 199) and the book value of debt (items 181 + 10-35) scaled by the book value of total assets (item 6) at the fiscal year end prior to the file date. When the liquidating value of preferred stock (item 10) is missing, we use the redemption value of preferred stock (56). When the redemption value is also missing, we use the carrying value of preferred stock (130). *Total debt ratio* is the book value of long-term and short-term debt (item 9 + item 34) scaled by total assets (item 6) at the fiscal year end prior to the file date. *Free cash flow* is defined as operating income before depreciation (item 13) - interest expenses (item 15) - income taxes (item 16) - capital expenditures (item 128), scaled by total assets (item 6) at the fiscal year end prior to the file date. *CEO-chairman duality* equals one if the CEO is also the chairman, and zero otherwise. *CEO ownership (percent)* is the CEO's percentage ownership prior to the offer. *Percent of outside directors* is the percentage of outside directors on the board. *Outside director ownership (percent)* is the percentage ownership of all outside directors prior to the offer. *Director incentive pay dummy* equals one if outside directors receive equity incentive, and zero otherwise. *Overlapping tenure* is the minimum of average outside director tenure and CEO tenure. *Relative director-CEO tenure* is the ratio of (1 + average outside director tenure) to (1 + CEO tenure). *Large board* equals one if the number of board directors is greater than 13 and zero otherwise. *Audit committee size* is the number of members of the audit committee. *Post-SOX year dummy* equals zero for an SEO taking place in 2001 or 2002 (pre-SOX time period) and 1 if the SEO took place in 2003 or 2004 (post SOX time period). *Ln(x)* denotes the natural logarithm of *x*. The *t*-statistics are adjusted for heteroscedasticity and clustering at the firm level (White, 1980; Rogers, 1993). Superscripts ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels in a two-tailed test, respectively. Superscript † denotes statistical significance at the 10 percent level in a one-tailed test

more positive following stock price run-ups, consistent with Bayless and Chaplinsky (1996). The coefficient for *Return volatility* is negative and statistically significant at the 10 percent level in a one-tailed test, suggesting that investors react more negatively to SEO announcements by firms with higher information asymmetry. The coefficient for financial leverage is positive and statistically significant. This result is perhaps because a higher debt ratio imposes disciplines on corporate executives by reducing the amount of cash that is available to them (e.g. Jensen, 1986; Stulz, 1990). The coefficient for *Free cash flow* is negative and statistically significant at the 10 percent level in a two-tailed test, suggesting that it is more challenging for a firm with more free cash flow to convince the market on the need of additional equity capital.

In regression (2)-(6), we include one or more corporate governance variables as independent variables, in addition to the financial variables. Regressions (2)-(3) include only one of the three variables: *CEO-chairman duality*, *CEO ownership*, and *percent of outside directors*, while regression (5) include all of the three variables. Regression (6) includes several additional governance variables. With the financial variables, results in regressions (2)-(3) are qualitatively similar to those in regression (1). We thus focus our discussions on the corporate governance variables.

In regression (2), the coefficient for *CEO-chairman duality* is highly statistically significant. Economically, *ceteris paribus*, the market punishes firms that combine the CEO and chair positions by additional -2.42 percent. This is quite substantial given that the average reaction to SEOs in our sample is -3.02 percent. This result suggests that a board with the CEO as its chair performs less adequate monitoring and certification roles in SEOs. In regression (3), the coefficient for *CEO ownership* is negative and statistically significant. Economically, a one standard deviation increase in *CEO ownership* results in an average change of -0.96 percent in the abnormal return. This is perhaps because a CEO with higher ownership may have more power. In regression (4), the coefficient on *percent of outside directors* is positive and statistically significant at the 5 percent level in a one-tailed test, perhaps because outside directors help monitor corporate executives and/or play a certification role. This result is consistent with Becker-Blease and Irani (2008). Economically, a one standard deviation increase in *percent of outside directors* results in an average change of 0.76 percent in the abnormal return. When *CEO-chairman duality*, *CEO ownership*, and *percent of outside directors* are included together as independent variables in regression (5), their coefficients are qualitatively similar to those in regressions (2)-(4). This finding suggests that each of the three variables has a unique effect on investor reactions.

In regression (6), we add several additional corporate governance variables, resulting in an adjusted R^2 of 9.50 percent. The increase of the adjusted R^2 from 5.15 percent when only the financial variables are included suggests that the corporate governance variables greatly helps explain the cross-section variations in abnormal returns around SEO announcements. The coefficients for *CEO-chairman duality* and *CEO ownership* in regression (6) remain qualitatively the same as those in regressions (2)-(5). Economically, the announcement of an SEO by a firm with the CEO and chairman positions being held by the same person is on average associated with additional -1.99 percent in the abnormal return. The coefficient for *percent of outside directors* remains positive but is only statistically significant at the 10 percent level in a one-tailed test. The reduced statistical significance is perhaps partly because this variable is correlated with *Outside director ownership* and *Director incentive pay dummy* (see Table IV). Other corporate governance variables are not statistically

significant. We also find that the market punishes firms in its reaction to their offerings if the board is excessively large, which we define as greater than 13 directors. Per our discussion on board size, this result is consistent with prior research that argues that excessively large boards are less likely to be effective monitors of management. It is also possible that excessively large boards are less able to credibly certify the quality of information disclosure. Other corporate governance variables are statistically insignificant.

4.1 Robustness checks

4.1.1 Two-day abnormal returns. In unreported analysis, we also calculate a two-day $(-1, 0)$ cumulative abnormal returns around SEO announcements and estimate similar regressions. Our major results are robust to this different event window.

4.1.2 Market model abnormal returns. We use market-adjusted returns as a measure for abnormal returns. In unreported analysis, we also use the market model based on the Capital Asset Pricing Model to calculate abnormal returns. Since firms often experience large stock price run-ups prior to their SEO announcements, using an event window immediately prior to the announcement to estimate the beta could pick up the effect of unusual price run-ups (Thompson, 1985; Cowan *et al.*, 1990). Thus we try both an event window from 250 days before to 100 days before the announcement date and an event window from 10 days to 210 days after the announcement date to estimate the beta. The results using market model abnormal returns are qualitatively similar to the results using market-adjusted abnormal returns.

4.1.3 Logarithm of abnormal returns. Datta *et al.* (2005) use $\ln(1 + \text{three-day CAR})$ as the dependent variable to ameliorate the skewness and reduce the influence of outliers. Our unreported results are essentially the same with and without a logarithmic transformation of our dependent variable.

4.1.4 Additional variables. Several papers suggest that granting stock options to CEOs could help to align the interests of CEOs and other shareholders (e.g. Datta *et al.*, 2005; Kim and Purnanandam, 2006). In unreported analysis, we include in our regressions of abnormal returns a dummy variable that equals one if there is an equity incentive for the CEO, and zero otherwise. This variable is not statistically significant.

Blockholders could help monitor powerful CEOs. In unreported analysis, we include stock ownership by both affiliated and unaffiliated blockholders in our regressions of abnormal returns, but neither variable is statistically significant. This result is consistent with Masulis *et al.* (2007) who find that blockholders do not have a significant effect on acquirer announcement returns.

Our result for board size is not significant if we treat it as a continuous variable. This is consistent with prior literature (e.g. Yermack, 1996) who does not find a linear relation between board size and firm value. Our results are also not robust to other specifications of defining a large board as including 13 or fewer directors.

Bayless and Chaplinsky (1996) use return on assets as a proxy for firm performance and find mixed evidence for its relation with investor reaction to SEOs. In unreported analyses, we also try return on assets or return on equity as an additional proxy for firm performance. Neither variable is significantly related to investor reaction to SEO announcements.

One could argue that there is a nonlinear relationship between the announcement effect and *CEO ownership*. In unreported analysis, we include $(\text{CEO ownership})^2$ as an additional independent variable. The coefficient for *CEO ownership* is positive and the coefficient for $(\text{CEO ownership})^2$ is negative, although neither coefficient is statistically

significant. We choose not to report the results of this regression because the correlation between *CEO ownership* and $(CEO\ ownership)^2$ is over 0.92, suggesting potential multicollinearity when both variables are included.

We use $Ln(\text{Relative director-CEO tenure})$, defined as $Ln((1 + \text{average outside director tenure}) / (1 + \text{CEO tenure}))$, to measure the relative power of the board and the CEO. We do not find this variable to be related to the announcement effect in regression (6) of Table V. In unreported analysis, we replace it with an alternative proxy, the fraction of outside directors with a longer tenure than the CEO. The correlation between this alternative proxy and $Ln(\text{Relative director-CEO tenure})$ is 0.81, suggesting that they capture similar effects. We do not find this alternative proxy to be statistically significant either.

In the IRR database, an index is available as a proxy for the level of shareholder rights at relatively large firms (see Gompers *et al.* (2003) for details on the construction of the governance index). In unreported analysis, we find that only 57 of our sample SEOs are conducted by firms included in the IRR database. We find that the governance index is statistically insignificant in explaining the market reaction to SEO announcements.

The frequency of board meetings could help capture the quality of corporate governance. In unreported analysis, we also examine the number of board meetings and do not find that this variable helps explain SEO announcement effects. All unreported results are available upon request.

5. Summary and conclusion

Previous research has found that the market reacts negatively when companies issue seasoned equity. An explanation based on information asymmetry between insiders and outside investors is that the SEO sends a negative signal to outside investors. An agency explanation is that the market believes management will likely misuse the proceeds of the SEO. A gap in prior research of SEO announcement effects is that studies have not comprehensively controlled for CEO and board characteristics. We study the role of corporate governance in the market reaction to announcements of US SEOs from 2001 to 2004.

The average three-day cumulative abnormal return for our sample is -3.02 percent. In a multivariate regression analysis, we find that it is important to control for governance variables when interpreting the market reaction to SEOs. When we include only financial variables per other studies, the adjusted R^2 is 5.15 percent. However, when we add our governance variables, the adjusted R^2 increases to 9.50 percent. We find that investors react more positively for firms in which different people hold the CEO and board chairman positions. Economically, the three-day $(-1, +1)$ abnormal return around the SEO announcement is about 2 percent higher if the CEO of an issuing firm is not also the board chairman. We also find limited evidence that investor reaction is more positive when the board has a greater representation of outside directors, the CEO has less ownership, and the board is not too large. These results suggest that SEO firms with less powerful CEOs and more effective boards are less likely to surprise the market with bad news. A practical implication of these results is that stronger corporate governance mechanisms can reduce a firm's cost of raising additional equity capital (Ferreira and Laux, 2008). If the market's announcement reaction to issuing additional equity capital is less negative for firms with less powerful CEOs and more effective boards, then it becomes less costly for these firms to raise such new capital.

While we do not address whether our results are more driven by agency or adverse selection issues, this may be an interesting avenue of future research. Irrespective of the cause however, consistent with the explosion of the importance of sound governance in business news, our research supports the relevance of strong governance mechanisms within the corporate entity.

Notes

1. See for example Asquith and Mullins (1986), Masulis and Korwar (1986), Korajczyk *et al.* (1991), Choe *et al.* (1993), Denis (1994), Bayless and Chaplinsky (1996), Heron and Lie (2004), Datta *et al.* (2005), and Kim and Purnanandam (2006), among others.
2. We note, however, that most areas of study relating corporate governance structures to firm-related events have some degree of mixed results. For example, Weisbach (1988) finds that boards with more outside directors are more likely to fire underperforming CEOs. In contrast, Denis and Denis (1995) find in their study on CEO turnover and firm performance that most forced CEO resignations are not due to normal board monitoring but rather to external factors.
3. For example, in 1999, while there were some loopholes, the NYSE and NASDAQ made it a listing requirement for the audit committee to consist of at least three directors, all of whom had to be independent. In addition, the Securities and Exchange Commission (SEC) made audit committee independence mandatory for all listed firms post the Sarbanes-Oxley Act (SOX). Hence, both the audit committee independence and size variables would unlikely play any role as a differentiating governance characteristic among firms during our sample period of 2001-2004.
4. For example, while Becker-Blease and Irani (2008) find audit committee size is significantly related to SEO announcement returns in their sample period from 1996-2001, as expected, we find no significance with this variable for our 2001-2004 period.
5. The actual relative size, defined as the number of shares actually offered as a percentage of the total number of shares outstanding immediately prior to the offer, would be endogenous, because an issuer could revise the number of shares to be offered, based on investor reactions to the announcement.
6. For dual-class companies, the total number of shares from Compustat (item 25) at the fiscal year end prior to the file date is used instead to calculate *Market cap* and *Expected relative size*. We thank Andrew Matrick for providing data that allow us to identify dual-class companies.
7. When the liquidating value of preferred stock (item 10) is missing, we use the redemption value of preferred stock (56). When the redemption value is also missing, we use the carrying value of preferred stock (130).
8. We follow previous studies in using the file date from the SDC database as a proxy for the announcement date (Jegadeesh *et al.*, 1993; Denis, 1994; Clarke *et al.*, 2001; Datta *et al.*, 2005; Autore *et al.*, 2008). We corrected the file dates for ten SEOs using the SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. For nine of them, the amendment dates are erroneously reported as the file dates in the SDC database. We thank Jay Ritter for providing data to help verify the file dates.

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