Review of Finance (2014) 18: pp. 1023–1057
doi:10.1093/rof/rft012
Advance Access publication: June 27, 2013

# Seasoned Equity Offerings, Corporate Governance, and Investments*

E. HAN KIM and AMIYATOSH PURNANANDAM



**Abstract.** We find weak governance is a primary reason investors react negatively to the announcement of seasoned equity offerings (SEOs). Using a difference-in-differences approach, we find investors worry about nonproductive use of SEO proceeds when external pressure for good governance lifts due to an external shock. Investors react negatively *only* when treated firms raise funds to increase capital investments. Market reaction is more negative when issuers have prior records of value-reducing acquisitions and weaker managerial wealth sensitivity to shareholder value. The magnitudes of these governance effects are surprisingly large, explaining most of the previously documented negative market reactions to primary SEOs.

*JEL Classification:* G32, G34

Why do investors react negatively to the announcement of seasoned equity offerings (SEOs)? Often proffered explanations are the negative signal as in Leland and Pyle (1977) and the adverse selection problem as in Myers and Majluf (1984).[1] Another explanation, which has received surprisingly little attention, is the strength of issuers' governance. Jung, Kim, and Stulz (1996) develop a theoretical argument that investors react negatively because they are worried about possible misuse of the proceeds. As supporting evidence, they document less negative market reaction when the issuing firm has higher growth opportunities, measured by the market-to-book-value (MB) ratio. Although high-growth firms are less likely to waste newly raised funds, the MB ratio reflects many other firm characteristics besides governance.

* Both are at Ross School of Business, University of Michigan. We thank an anonymous referee, Sugato Bhattacharya, Sudheer Chava, Amy Dittmar, Mara Faccio, Kose John, John McConnell, Paige Ouimet, Steve Kaplan, Anzhela Knyazeva (AFA discussant), Jaime Zender, Luigi Zingales, and participants at University of Michigan finance seminar and 2010 American Finance Association Meetings for helpful comments and suggestions. We also thank Zach Ward for excellent research assistantship.

[1] See, for example, Asquith and Mullins (1986), Masulis and Korwar (1986), Mikkelson and Partch (1986), Smith (1986), Korajczyk, Lucas, and McDonald (1991), Denis (1994), Eckbo and Masulis (1995), and Jiao and Chemmanur (2005), among others.

This article investigates how the strength of governance affects investors' reaction to SEOs. Our theoretical premise is similar to Jung, Kim, and Stulz (1996), but our focus is on governance instead of growth opportunities. We hypothesize that investors' concern about improper use of SEO proceeds is caused by weak governance. Even when a firm has low-growth opportunities, its SEO will not be met with negative investor reaction if it has strong governance that assures investors the proceeds will be used for productive purposes. Weak governance, in contrast, may raise investor concerns about the improper usage of the proceeds even when the issuer has high-growth opportunities. This governance effect is distinct from, but not mutually exclusive of, the signaling effect and the adverse selection problem.

Since firm-level governance is endogenous, our primary tests use the passage of the enactment of business combination statutes (BCS) by twenty-eight states during the period 1985–90 as an exogenous source of variation in the strength of governance. BCS had strong deterrent effects against hostile takeovers of firms incorporated in states with the law, weakening the disciplinary effect and reducing external pressure for good governance. To the extent some firms lobbied for BCS in their states of incorporation, the passage of BCS may not be completely exogenous. However, Romano (1987) argues that typically a large corporation under a hostile takeover threat lobbied for BCS rather than a coalition of economic players in the state (also see Bertrand and Mullainathan (2003)). Thus, to most of the SEO firms in our primary tests, the passage of BCS is exogenous. BCS passage was staggered over time across states, allowing a difference-in-differences analysis.

We find stock price reaction to SEO announcements by firms incorporated in states with BCS in effect (the treatment group) is significantly more negative than SEOs by firms in the control group, which are incorporated in states without the law. Investors seem to anticipate lower productivity of capital raised via SEOs by firms affected by the law changes and respond more negatively to their equity issuance.[2] Depending on the model specification, the difference between the treatment and control groups is $-1.70$ to $-2.11\%$ over a 5-day window surrounding the announcement. These differences are large, considering that the average unconditional price reaction during the sample period is $-1.92\%$, with a median of $-2.19\%$.

[2] Consistent with the above interpretation, Bertrand and Mullainathan (2003) document a significant decline in firms' productivity and profitability following the passage of BCS.

To identify a channel through which governance affects investor reaction, we estimate capital expenditure increases in the year of SEO and examine its interactive effects with BCS. We find investors do not necessarily react negatively to SEOs followed by increases in capital expenditures. For the control group, those unaffected by BCS, 1 SD increase in acquisition expenditure results in 0.54% higher returns over (−2, +2) days surrounding SEO announcements. In contrast, 1 SD increase in acquisition expenditure by issuers affected by BCS results in −1.06% lower returns over the same window. Similar results hold for investment measures including other capital expenditures. Only when an issuer's governance becomes weaker due to the external shock do investors worry about unproductive use of the proceeds and react negatively to SEO announcements. Weak governance seems to be the main culprit behind the negative market reaction to SEO announcements.

Our results are not driven by firms incorporated in Delaware, where a majority of our sample firms are incorporated. We find similar results for Delaware and non-Delaware firms. However, we find the BCS effects are concentrated among SEOs issued in years soon after the passage of the BCS. With the passage of time, firms can adopt other internal governance mechanisms to counteract the effect of BCS, such as increased reliance on stock price-based executive compensation. Indeed, CEO holdings of stocks and stock options and their pay for performance sensitivity have increased dramatically from the early 1980s to the 1990s (Yermack, 1995; Hall and Liebman, 1998; Murphy, 1999). In one of our supplemental tests, we find top executives' wealth-performance sensitivity has significant positive effects on investor reaction to SEO announcement returns.

Our supplemental tests relate SEO announcement returns to two other measures of governance at the firm level. The results provide corroborative evidence and normative implications unobtainable from our primary tests. The first supplemental test uses the profitability of recent corporate acquisitions as an ex post measure of the strength of governance (Masulis, Wang, and Xie, 2007). We compare issuers with an acquisition during the year prior to SEO announcements that met a market reaction of −2% or less against issuers with no such prior acquisitions. Based on a sample of 4,613 SEOs over the period 1982–2006, we find the average reaction to SEOs by issuers with a history of bad acquisitions is about 1.17% less than those without such prior records.

The second test uses the alignment of managerial incentives with shareholder value as a measure of the strength of internal governance. We proxy the alignment by Core and Guay's (1999) measure of top management's firm-related wealth sensitivity to changes in stock price (i.e., the delta) divided by their total compensation, a measure similar to the scaled wealth-performance sensitivity advocated by Edmans, Gabaix, and Landier (2009). Investor reaction to SEO announcements is positively related to the wealth sensitivity. Furthermore, investor reaction to *pure* primary SEOs is non-negative if issued by firms with high wealth sensitivity. These pure primary issues do not contain secondary offerings through which insiders and block holders sell their own shares, transmitting negative signals (Leland and Pyle, 1977). When the negative signal through secondary offerings is absent and managers are closely aligned with shareholder value, there is no hint of negative investor reaction. Our estimates indicate 1 SD increase in wealth sensitivity leads to an increase of about 0.81% in SEO announcement returns. Again, this is large, considering that the unconditional mean investor reaction to this sample of SEOs over the period of 1993–2006 is −1.15%, with a median of −0.98%. These results on wealth sensitivity are subject to endogeneity and selection bias. We address these concerns with a two-stage regression model and alternative specifications. The results are robust.

Due to data constraints, the primary and supplemental tests cover different subperiods from 1982 through 2006. Although each test has its own advantages and limitations, together they point to weak governance as the main reason for negative investor reaction to SEO announcements. Moreover, all tests reveal surprisingly large magnitudes of governance effects, suggesting that weak governance explains most of the unconditional negative stock price reaction to the SEO announcements.

Our findings have important normative implications for corporate financing decisions. They imply that when a firm seeks external financing, its governance affects investor confidence and the costs of raising external capital. Our estimates based on the primary tests using BCS indicate the weakened governance due to the external shock increases the costs of SEOs by 7.4–9.2% of the proceeds raised by the median firm. Estimates from the supplemental tests imply that negative investor reaction to SEOs should be of less concern to firms without a history of bad acquisitions, or to firms with a strong alignment of managerial self-interest with shareholder value. If such firms experience a negative reaction to SEO announcements, the cause is likely to be the negative signal transmitted by secondary offerings by insiders and blockholders attached to the SEOs.

The next section describes the data and sample construction. Results using the passage of BCS as an exogenous shock and the profitability of prior acquisitions are presented in Section 2. Section 3 provides results based on top executives' firm-related wealth sensitivity. Section 4 concludes.

## 1. Data, Sample Construction, and Summary Statistics

### 1.1 DATA AND SAMPLE CONSTRUCTION

We obtain data from multiple sources. SEO data are obtained from the Thompson Financials SDC database; executives' firm-related wealth and compensation data from the ExecuComp database; accounting and stock return data from Compustat and CRSP tapes; and corporate acquisitions data from SDC's M&A database.

Our total SEO sample spans 1982 through 2006. It starts from 1982 as SDC does not provide filing dates prior to 1982. From this set of SEOs, we exclude units; issues with offer prices less than $1; SEOs that have not issued any shares within a year following the filing date; and financial firms (SIC codes between 6000 and 6999) and utilities (SIC codes between 4910 and 4940) to conform to earlier studies.[3] When a firm makes multiple offerings in a year, we include only the 1st SEO.[4] Our initial sample also excludes pure secondary offerings[5] in which the entire issue is sold by existing shareholders without issuing any new primary shares. Later we separately examine pure secondary offerings. The remaining SEOs are intersected with CRSP and Compustat databases. These filters produce a final sample of 4,613 SEOs over the 25-year period. The samples used for specific tests are intersections of this sample with their data requirements.

Our primary tests employing BCS consider all SEOs from 1982, the 1st year for which we have SEO filing dates, through 1990. We obtain the state of incorporation from Compustat. If it is missing from Compustat, we take it from the SDC dataset. There are 1,066 SEOs for this test. Our choice of 1990 as the end of the sample period reflects a tradeoff between sample size and noise. Of the 30 states that enacted BCS (see Bertrand and Mullainathan, 2003), 28 passed BCS during or before 1990, including Delaware and New York, where the majority of firms are incorporated. Extending the sample beyond 1990 would add only two more treatment states (Nevada and Oklahoma) with a handful of SEOs. Figure 1 plots the

[3] These firms are removed as they often have specific reasons to issue SEOs. Banks often issue equity to meet regulatory capital requirements, whereas utilities may issue equity as a part of a bargaining process with regulators.

[4] Since several of our independent variables are yearly observations, we include only one offering when a firm has multiple offerings in the same year. The qualitative results do not change when we include multiple offerings.

[5] Many SEOs in the SDC database have missing values for the primary shares offered. We take these SEOs as having zero primary shares. Our reading of twenty-five randomly selected 10-Ks suggests that these missing codes should have been zero and they have been wrongly classified as missing by the SDC.

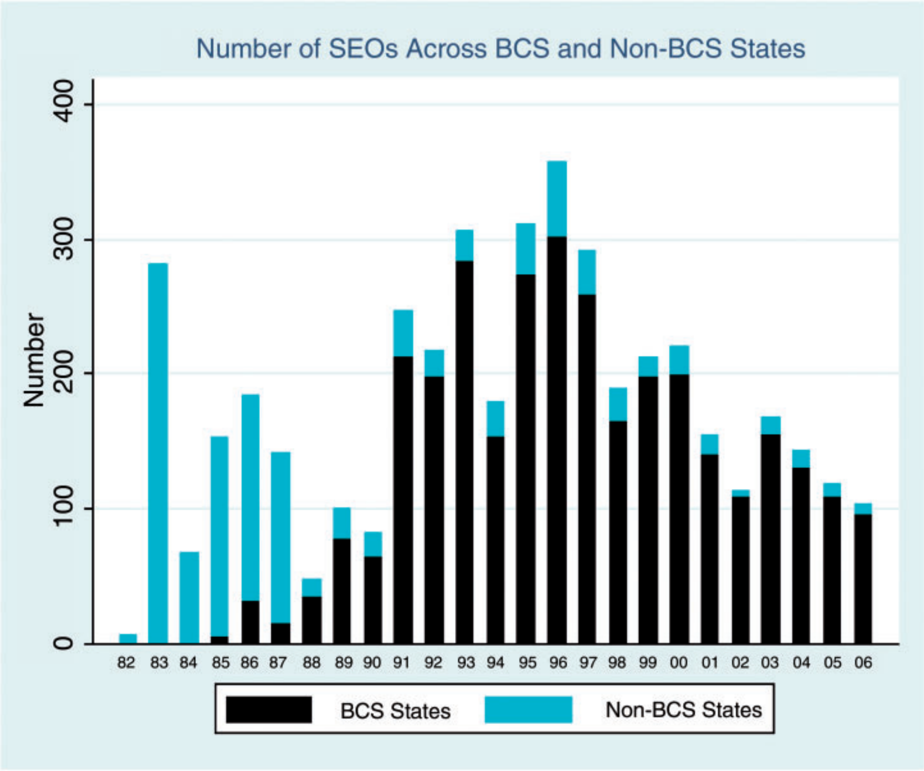


*Figure 1*. This graph plots the number of SEOs by year in the sample. For each year the sample is broken into two groups based on the passage of a BCS by the issuing firm's state of incorporation by that year.

number of SEOs in BCS and non-BCS states, by year, over 1982–2006. It shows that limiting the sample period to 1982 through 1990 allows us to focus on the transition period in which a number of states move from non-BCS to BCS states. Beyond 1990, less than 10% of SEO firms are from non-BCS states, providing limited data for the control group. It appears that the benefits of a longer sample period are likely to be overwhelmed by noise.

When we extend the sample period well beyond 1990 and reestimate regressions, we find most of the BCS effects come from years close to its passage and that BCS effects diminish over time. Extending the sample period beyond 1990 adds noise to SEO firms located in states that passed BCS well before 1989. The noise arises because the BCS effect should become weaker with the passage of time, as players in the market for corporate control rely on (develop) new devices to circumvent the regulation. For example, activist stockholders may rely more on proxy fights in lieu of hostile takeover bids, and institutional investors (e.g., CalPERS and other state pension funds) may actively demand stronger governance to make up for the loss of external pressure for good governance. Affected firms may also react to BCS by reducing takeover defenses and/or strengthening internal governance, such as greater reliance on stock price-based compensation, for example, stock options and restricted stocks. Proxy fights, institutional investor activism, and executive stock options became more prevalent in the early 1990s.

Furthermore, BCS is likely to have an important impact only in the presence of an active market for hostile takeovers. The collapse of the junk bond market in 1990 brought the level of hostile takeover activity almost to a halt for several years. Without active hostile takeovers, whether or not a firm is protected by BCS may not matter much as far as the disciplinary effect of takeover threats is concerned.

The remaining tests include more recent time periods. For tests using the profitability of prior acquisitions as an ex post proxy for the quality of governance, we rely on data from SDC's M&A database. This database is available for our entire sample period, allowing the test on the full sample of 4,613 firms. Tests involving wealth sensitivity of top managers require data on executive ownership of stocks and stock options, which are available from ExecuComp. The intersection of the total SEO sample with the ExecuComp database yields a sample of 501 firms over 1993–2006.

### 1.2 SUMMARY STATISTICS

Table I, Panel A, provides the mean and median of key variables for our sample of SEO firms during the entire sample period. The median (mean) firm raised about 24% (34%) of its prior year's market capitalization in the offering, demonstrating that the SEOs represent important events. The median sale is about \$95 million, whereas the mean is about \$565 million, illustrating sufficient heterogeneity in firm size. The mean (median) MB ratio is relatively high at 2.93 (1.92), which is not surprising because high-growth firms are more likely to raise external equity to make investments. SEO firms experience large price run-ups prior to the issuance; the stock price of the average firm almost doubled in the prior 12 months. Finally, about 41% of the SEOs contain secondary offerings.

Table I also shows the mean and median cumulative abnormal returns (CARs) during (0, +1) and (−2, +2) event windows surrounding the announcement date. CARs are obtained by subtracting the value-weighted CRSP market return from the raw return of the issuing firm. The shorter window has been used by previous studies focusing on the Leland and Pyle

*Table I.* Descriptive statistics

This table provides the descriptive statistics of SEOs in our sample. We provide the number of observations and mean and median statistics for key variables for three samples used in the study: (i) a full sample covering SEOs from 1982 to 2006 in Panel A; (ii) a BCS subsample covering SEOs from 1982 to 1990 in Panel B; and (iii) a wealth sensitivity subsample covering SEOs from 1993 to 2006 in Panel C. car01 (car22) measures cumulative abnormal return (relative to value-weighted market index) over (0, +1) and (−2, +2) day windows around the announcement date. Sale represents the prior fiscal year sales of the issuing firm measured in millions of dollars. Leverage is computed by taking the ratio of long- and short-term debt (item 9 + 34) divided by the total assets. Mtb is the MB ratio measured by (market value of the firm's equity + book value of assets − book value of equity)/(book value of assets). Book value of assets and equity are from COMPUSTAT items 6 and 60, respectively. Cash/ta measures the cash and marketable securities (item 1) as a percentage of the book value of assets. All accounting variables are measures of the previous fiscal year. Secondary is a dummy variable that equals one if the SEO includes some secondary shares in the offering, zero otherwise. Pastret measures log (1 + return of issuing firm over the past 1 year) measured until the beginning of the issuing month. Return data are obtained from the CRSP tapes. Pr/mv represents the proceeds raised in the SEO as a percentage of its market capitalization as of the previous fiscal year. Totalcomp denotes the total compensation of top executives in the prior fiscal year and includes salary, bonus, the value of restricted stock grant during the year, the Black–Scholes value of total options granted during the year, long-term incentive payments, and other miscellaneous items. All compensation numbers are in thousands of dollars. Delta represents the top management's firm-related wealth sensitivity. It represents the dollar (in '000) gain (loss) in manager's stock and stock option holdings for 1% increase (decrease) in the stock price of the firm. To compute delta, we take all stocks, including restricted stocks, held by the manager as of the end of prior fiscal year. Similarly, for this computation, we consider all options held by the manager as of the end of the prior fiscal year. Although stock's delta is simply given by 0.01*Stock Value, the option's delta is computed using the modified Black–Scholes formula for a dividend paying stock. Delta represents the sum of stock delta and option delta. Delta/total measures the ratio of delta to the total compensation of the managers. We add the compensation of all top managers reported in the Executive Compensation database and divide the summed delta of these managers with their summed total compensation. Percentage of shareholding measures the percentage of firm's common stock held by the top executives as of the last fiscal year end.

| Variable | Mean | Median |
|---|---|---|
| Panel A: Full sample, $N = 4{,}613$ | | |
| car01 | −1.97 | −1.87 |
| car22 | −1.68 | −2.03 |
| pr/mv | 0.34 | 0.24 |
| sale | 565.64 | 95.39 |
| mtb | 2.93 | 1.92 |
| pastret | 1.01 | 0.65 |
| secondary | 0.41 | 0.00 |
| leverage | 0.25 | 0.22 |
| cash/ta | 0.21 | 0.09 |

*(continued)*

*Table I.* Continued

| Variable | Mean | Median |
|---|---|---|
| Panel B: BCS subsample, $N = 1{,}066$ | | |
| car01 | −1.73 | −1.65 |
| car22 | −1.92 | −2.19 |
| pr/mv | 0.31 | 0.23 |
| sale | 602.90 | 72.66 |
| mtb | 2.26 | 1.65 |
| pastret | 0.90 | 0.66 |
| secondary | 0.39 | 0.00 |
| leverage | 0.26 | 0.26 |
| cash/ta | 0.14 | 0.07 |
| BCS | 0.21 | 0.00 |
| Panel C: Wealth sensitivity subsample, $N = 501$ | | |
| car01 | −1.69 | −1.48 |
| car22 | −1.15 | −0.98 |
| pr/mv | 0.19 | 0.15 |
| sale | 1815.70 | 530.71 |
| mtb | 2.63 | 1.77 |
| pastret | 0.87 | 0.53 |
| secondary | 0.23 | 0.00 |
| leverage | 0.27 | 0.27 |
| cash/ta | 0.15 | 0.05 |
| delta | 1396.15 | 421.75 |
| totalcomp | 8784.87 | 4620.08 |
| delta/total | 0.21 | 0.08 |
| %shareholding | 5.55 | 1.67 |

(1977) type signaling effect and/or the Myers and Majluf (1984) type adverse selection. However, our hypothesis deals with investors' concern about the intended use of SEO proceeds, for which the (0, +1) day window may be too short to capture the full effect. It may take several days for the market to reach consensus about the likely use of the proceeds. Predicting the likely use and its profitability may require time, and additional information not reported with the announcement may be revealed subsequently. For example, there was considerable uncertainty about Google's intended use of the proceeds when it first announced an SEO on August 18 2005.[6] For

[6] According to an article by D. Ng in Forbes.com (2005), "... Google said on Thursday that it has submitted a U.S. Securities and Exchange Commission filing to issue 14.1 million common shares. The total offering is valued at approximately $4 billion ... Merrill Lynch reiterated a 'neutral' rating on Google, saying the *stock will likely be range-bound until investors have more information regarding the use of the proceeds of the offering*." (Italics added for emphasis).

these reasons, we use the (−2, +2) window for our base case analysis. We also experiment with longer windows such as (−2, +3) and (−2, +5). The results are similar to those obtained with the (−2, +2) window.

The longer window starts with −2 days because, in keeping with prior work, we use the filing date as the announcement day. Although relatively rare, we identify a few cases in which the announcement date precedes the filing date, with most of the time gap not exceeding 2 days.[7] Panel A shows average CARs over (0, +1) and (−2, +2) windows of −1.97 and −1.68%, respectively. The corresponding median returns are −1.87 and −2.03%. These numbers are significantly different from zero.

Panel B provides the statistics for the BCS subsample from 1982 to 1990. There are 1,066 firms in this sample, and the key characteristics are similar to the full sample. Panel C provides descriptive statistics for the firm-related wealth sensitivity subsample. Firms in this subsample are larger because the executive compensation data are available only for S&P 1500 firms. The amount raised relative to the market cap is smaller, perhaps because this sample is overrepresented by large firms. These SEOs also contain fewer secondary offerings and show less negative announcement returns. Other characteristics, such as leverage and MB ratio, are similar.

## 2. BCS and Capital Expenditures

This section contains the primary tests of our hypothesis that weak governance is the main cause of negative investor reaction to SEO announcement. We use BCS as an external shock weakening the strength of governance and employ a difference-in-differences approach. First, we examine the impact of the enactment of BCS in the state of incorporation on investor reaction to SEO announcements. Second, we estimate the interactive effect of capital expenditure increases in the year of SEO with BCS. This second analysis identifies a channel through which governance affects investor reaction. Then, we take a specific form of capital expenditure, corporate acquisitions

[7] Studies of SEOs often use the filing date as the announcement day (e.g., Jegadeesh, Weinstein, and Welch, 1993; Denis, 1994; and Datta, Iskandar-Datta, and Raman, 2005). To check whether the filing date in the SDC database coincides with the announcement date, we manually search the announcement date over 1993–2006 through Factiva. If we find any mention of a firm's plan to raise equity in an SEO, we consider that day as the announcement day; otherwise, we consider the filing date as the announcement day. There are twenty-eight cases (about 5% of the sample) during the subsample period where the announcement date precedes the filing date. In sixteen of the twenty-eight cases, the announcement date does not precede the filing date by more than 2 days. For the remaining sample period of 1982–92, we use the filing date as the announcement date.

made prior to SEO announcements, and relate its profitability to investor reaction to SEOs.

### 2.1 THE IMPACT OF BCS

Most BCS were enacted in a staggered fashion at the state level during the period 1985–91. New York was the first state to pass it, in 1985. There are variations in BCS across states. In some states, a bidder has to wait 3–5 years to pursue the takeover if the target's board does not approve the takeover bid.[8] In other states, a freeze-out provision kicks in if a relatively small block (10% to 15%) of investors unaffiliated with management votes against a tender offer (Pinnell, 2000).[9] Either type of state law provides significant protection against the threat of hostile takeovers, substantially reducing the disciplinary effect and weakening the strength of governance of firms incorporated in those states.

To assess how the enactment of BCS affects investor confidence in SEOs, we use an indicator variable, $\mathrm{BCS}_{i,t}$, equal to one if by year $t$ the state of incorporation of firm $i$ has passed BCS, and zero otherwise. Since it is difficult to determine when the market first anticipated the law changes, we treat all SEOs conducted during the year of law change as post-BCS offerings.[10] With this definition, we estimate the following model:

$$\mathrm{car}_{ijst} = \alpha + \beta\mathrm{BCS}_{i,t} + \delta\mathrm{State}_s + \gamma\mathrm{Year}_t + \theta\mathrm{Industry}_j + \sum_k \zeta_k X_{ijst} + \varepsilon_{ijst}$$

The dependent variable $\mathrm{car}_{ijst}$ is the announcement day return over the $(-2, +2)$ day window for firm $i$ belonging to industry $j$ (two-digit SIC code), incorporated in state $s$ and issued in year $t$. $\beta$ is the coefficient of main interest.

$\mathrm{Year}_t$ is the year fixed effect, controlling for unobservable economy-wide time-specific effects, such as recessionary fears, that may affect all equity-issuing firms and investor confidence. Since states passed BCS in different years, this variable helps isolate time-specific effects from the effects of law change. For example, consider year 1986. New York passed its law in 1985, but Delaware passed its in 1988. In 1986 the BCS indicator variable is one

[8] AZ, CT, ID, IN, KY, ME, MD, MI, MN, NE, NV, NJ, NY, OH, RI, SC, TN, VA, WA, WI and WY have such state laws.

[9] DE, GA, IL, IA, KS, MA, OK, PA, SD, and TX have such state laws. WY first passed this type of law in 1989, and then passed the first type law in 1990, superseding the earlier law.

[10] As a robustness check, we treat all SEOs conducted during the 1st 6 months of the year of the BCS enactment as pre-BCS SEOs. The qualitative results are similar.

for firms incorporated in New York and zero for firms incorporated in Delaware. To the extent that economy-wide effects are similar for these two sets of firms in year 1986, the year fixed-effects isolate the unobservable time-specific effects from the effect of BCS.

The model also includes the state fixed effect, $\mathrm{State}_s$, to isolate state-specific factors (e.g., unionization rates) and other laws affecting business environment that remain time-invariant over our sample period. Thus, we have a specification that allows an examination of investor confidence in SEOs in a difference-in-differences approach; namely, we compare the announcement day return of SEOs issued by all firms in a given state before and after the passage of BCS and use the announcement day return of all SEO firms in non-BCS states in the same calendar year to control for time-specific trends.

We also control for the industry fixed effects.[11] Investor confidence and market reaction may vary across industries for reasons such as industry-specific growth characteristics and competitiveness in the product and the labor market. Finally, $X$ represents a set of control variables that will be described shortly.

To illustrate our difference-in-differences test, consider Figure 2, which plots the yearly median of SEO announcement day returns over (−2, +2) day window for all firms incorporated in Delaware during 1986–89. There is a sharp drop in the announcement day returns for Delaware firms in 1988, the year Delaware enacted BCS. The difference in median returns between the 1988 and 1989 period and the earlier years is significant ($p = 0.06$). However, one might attribute the drop to reasons such as an aggregate economy-wide decline in firm profitability in 1988 and 1989 rather than passage of BCS. To control for this possibility, we also plot the yearly median of SEO announcement day returns for all firms incorporated in states that have not yet adopted BCS. We do not find a similar drop in the announcement day returns for these firms. The median returns over 1988–89 and the earlier years are not significantly different ($p = 0.73$). Also notice that during 1986 and 1987, Delaware and other states show similar market reactions to SEO announcements. It is only after Delaware adopted BCS in 1988 that we see a big drop for Delaware-incorporated firms.

The regression is designed to test whether such difference-in-differences is statistically significant when we control for other relevant variables. Control variables include a deal characteristic and several firm-level covariates which may affect investor reaction to SEOs. The deal-specific variable is an

[11] If there are less than three firms in an industry, we bundle them into a miscellaneous industry group to allow for proper industry-level control. Results are unchanged if we do not make such modifications in industry assignment.

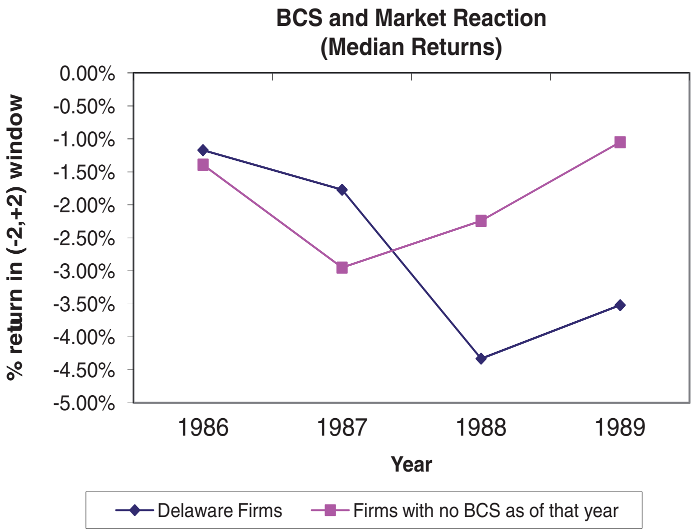


*Figure 2.* This graph plots the median investor reaction over the 5-day window surrounding the announcement of seasoned equity offerings for Delaware firms around the passage of BCSs in 1988. The figure also plots the median investor reaction for the sample of SEOs issued by firms incorporated in states without BCS in effect.

indicator variable for secondary offerings, that is, sales by insiders and block holders included in SEOs. This variable is included to account for the signaling effect described by Leland and Pyle (1977).[12] Firm-level control variables include proxies for asymmetric information that give rise to the Myers and Majluf (1984) adverse selection problem and proxies for firm characteristics related to agency problems.

To proxy for the adverse selection problem, we follow earlier studies and include firm size, measured by log (sales) of the firm, and the standard deviation of market model regression residuals.[13] We also include cash and cash

[12] Sellers in a secondary offering can be either insiders and/or outside blockholders, and the strength of the negative signals is likely to be weaker when the sellers are outside blockholders; hence, a single dummy variable is rather crude for capturing negative insider signals about firm value. However, to the extent outside blockholders have more at stake and more cost-effective means to gather relevant information to assess the firm value than the average minority shareholder, they may be better informed and their block sales may also transmit a negative signal of overvaluation.

[13] Firm size has been used as a proxy for asymmetric information, because larger firms are under greater scrutiny by investors and analysts. The residual volatility has been used as a proxy for firm-specific information asymmetry (e.g., Bhagat, Marr, and Thompson, 1985). To compute this measure, daily stock returns are regressed on the value-weighted market return for a 1-year period ending 30 days before the SEO announcement. We take the standard deviation of the residuals as an information asymmetry proxy.

equivalents normalized by total assets, because Myers and Majluf (1984) argue that financial slack helps relieve the adverse selection problem. This variable may also proxy for the agency problem associated with free cash flows, which offers an opposing prediction (e.g., Dittmar and Mahrt-Smith (2007)).

Proxies for investment opportunities and agency problems include the MB ratio, past returns, and financial leverage. Jung, Kim, and Stulz (1996) argue that firms with high-growth opportunities are less likely to waste SEO proceeds in negative NPV projects and use MB ratio as a proxy for growth opportunities. Lucas and McDonald (1990) and Jung *et al.* use firms' past returns as a proxy for the availability of good projects. Past returns are measured by log (1 + buy and hold return) over the 12 months prior to the SEO filing. Financial leverage is the sum of long- and short-term debt divided by total assets. Jensen (1986) and Stulz (1990) argue that leverage restricts management's discretion and reduces agency problems, implying that investors will be less concerned about misuse of SEO proceeds when firms are highly leveraged.

Regression estimates are presented in Table II under Models 1 and 2. In Model 1, all standard errors are clustered at the firm level to account for correlations in the error term for SEOs issued by the same firm. In Model 2, we cluster standard errors at the firm and year level. Since clustered standard errors are consistent only in large number of clusters, a caveat is in order for the double clustering because we have only a limited number of clusters at the year level. The results show that following the enactment of BCS, investors react more negatively by −1.70% with a significant *t*-statistic of 1.88 or 2.06, depending on how standard errors are clustered.

Models 3 and 4 restrict observations to 2 years after the passage of BCS. The shorter post-BCS sample period allows for a sharper identification of BCS effects by avoiding the weakening impact of BCS over time. The coefficient of the BCS indicator variable is −2.11% and significant with either clustering approach. When we experiment with longer windows with (−2, +3) or (−2, +5) days, the estimated coefficients are more negative (−2.25% and −2.41%, respectively). The exogenous law change weakening external pressure for good governance seems to substantially weaken investor confidence in SEOs.

The economic magnitude of the costs associated with the governance shock on investor confidence is large. Estimates in Table II imply that the median firm loses 7.4% (1.6962/0.23) to 9.2% (2.1096/0.23) of the proceeds raised through SEOs due to poor governance.

These results are not driven by firms incorporated in Delaware. We reestimate Models 3 and 4 with a slight modification to separately assess the impact of BCS enactment for Delaware and non-Delaware firms. In this

*Table II.* Effects of BCS

This table presents estimation results of the following model:

$$\text{car}_{i,t} = \alpha + \beta \text{BCS}_{i,t} + \gamma y_t + \theta \text{sic}_i + \xi s_i + \sum \zeta X_i + \epsilon_{i,t}$$

car measures cumulative abnormal return relative to value-weighted market index over (−2, +2) day window around the announcement date. BCS is an indicator variable that takes a value of one for SEOs issued by a firm after its state of incorporation has passed the BCS, zero otherwise. $y$, sic, and $s$ are indicator variables corresponding to the calendar year, two-digit SIC code, and the state of incorporation of the issuing firm. $X$ represents the set of control variables. logsale represents the log of prior fiscal year sales of the issuing firm measured in millions of dollars. Secondary is a dummy variable that equals one if the SEO includes some secondary shares in the offering, zero otherwise. Mtb is the MB ratio of the firm, which is measured by (market value of the firm's equity + book value of assets − book value of equity)/(book value of assets). Book value of assets and equity are from COMPUSTAT items 6 and 60, respectively. Leverage is computed by taking the ratio of long- and short-term debt (item 9 + 34) divided by the total assets. Cash/ta measures the cash and marketable securities (item 1) as a percentage of the book value of assets. All accounting variables are measured as of the previous fiscal year. Pastret measures log (1 + return of issuing firm over the past one year), measured until the beginning of the issuing month. Resstd represents the log of standard deviation of residual from the market model regression using one year's daily return observations. Models 1 and 2 are estimated with all SEOs during 1982–90 period. In Models 3 and 4, we restrict the sample to SEOs issued within 2 years of the passage of the law. All $t$-statistics are based on robust standard errors clustered at the firm or at firm and year level.

| | Model 1<br>Estimate ($t$-stat) | Model 2<br>Estimate ($t$-stat) | Model 3<br>Estimate ($t$-stat) | Model 4<br>Estimate ($t$-stat) |
|---|---|---|---|---|
| BCS | −1.6962 (−1.88) | −1.6962 (−2.06) | −2.1096 (−2.30) | −2.1096 (−2.79) |
| logsale | −0.0733 (−0.50) | −0.0733 (−0.45) | −0.0417 (−0.27) | −0.0417 (−0.27) |
| secondary | −0.1398 (−0.31) | −0.1398 (−0.28) | −0.0517 (−0.11) | −0.0517 (−0.10) |
| mtb | 0.1616 (0.96) | 0.1616 (1.22) | 0.1851 (1.10) | 0.1851 (1.85) |
| cash/ta | −3.8125 (−2.19) | −3.8125 (−2.13) | −4.9616 (−2.86) | −4.9616 (−2.74) |
| lev | −0.3703 (−0.27) | −0.3703 (−0.59) | −0.8103 (−0.55) | −0.8103 (−1.38) |
| pastret | 0.1373 (0.21) | 0.1373 (0.21) | 0.2480 (0.39) | 0.2480 (0.35) |
| resstd | −0.1051 (−0.14) | −0.1051 (−0.11) | −0.1908 (−0.25) | −0.1908 (−0.20) |
| $R^2$ | 0.084 | 0.084 | 0.094 | 0.094 |
| $N$ | 1,066 | 1,066 | 992 | 992 |
| Cluster unit | Firm | Firm and year | Firm | Firm and year |

specification, we create two indicator variables: (i) "Delaware" and (ii) "NonDelaware." "Delaware" equals one for firms incorporated in Delaware issuing an SEO after the passage of BCS by Delaware, and zero otherwise. "NonDelaware" equals one for all non-Delaware firms issuing an SEO after their respective states have passed BCS, and zero otherwise. These two indicator variables pick up the effect of BCS separately for Delaware and non-Delaware states. Results are reported in Appendix Table AI under Models 1 and 2. The estimated coefficients are negative and significant for Delaware and non-Delaware firms; the average investor reaction to SEOs after the passage of BCS is −2.83 and −1.73%, respectively.

Of all the control variables, the only significant variable is cash, our proxy for financial slack. However, the coefficient is negative, an opposite sign to the prediction of the Myers and Majluf (1984) adverse selection model. Instead, it is consistent with the agency cost of free cash flow hypothesis. No other proxies for adverse selection are significant.

In unreported analyses, we also control for (i) the amount raised as a fraction of the preissue market value of the firm, (ii) an indicator for firms issuing equity immediately after its earnings release, (iii) accruals defined as the net income minus cash flow from operations scaled by the total assets, and (iv) analysts' consensus growth forecasts in place of MB ratios as a proxy for growth opportunities.[14] These additional controls do not affect our main results.

In sum, the results indicate weak governance is the main cause of the market's negative reaction to SEO announcements. When an external shock weakens firm governance, investors become more concerned with unproductive use of SEO proceeds, causing the negative reaction.

### 2.2 INTERACTIVE EFFECTS OF CAPITAL EXPENDITURE AND BCS

If the negative market reaction is due to investor concerns about unproductive use of SEO proceeds by a firm under weak governance, then the reaction should depend on how the proceeds are used (Jung, Kim, and Stulz, 1996). DeAngelo, DeAngelo, and Stulz (2010) provide evidence that a near-term cash need is the primary motive for SEOs. However, they also state that even if issuers' "capital expenditures remained flat in the year of and the year after the SEO, without the SEO proceeds 40.3% of issuers would still run out of cash and 59.6% would have suboptimal cash balances in the year after the SEO" (p. 277). Notice that these percentages also indicate that for 40.4% of their sample, issuers' primary motive may not be a near-term cash need,

[14] We control for these additional variables because (i) Masulis and Korwar (1986) find that the SEO as a fraction of the pre-issue market value of the firm affects SEO announcement day returns, (ii) Korajczyk, Lucas, and McDonald (1991) show whether a firm issues equity before or after the earnings announcement may serve as a time-varying proxy for adverse selection, and (iii) Teoh, Welch, and Wong (1998) find that equity-issuing firms tend to raise reported earnings by increasing accruals in the preissue period and high-accrual issuers underperform low-accrual issuers in the long run.

suggesting substantial variation in the likelihood of how the proceeds will be used. In this section, we exploit this heterogeneity by adding changes in capital expenditures to our difference-in-differences analysis.

Following DeAngelo *et al.*, we treat the level of capital investments in the fiscal year before the SEO announcement as the base level and subtract it from capital investments during the year of SEO to compute changes in capital expenditures. Two measures of capital expenditures are used. First, we use dollar amount of acquisitions (Compustat data item 129). The profitability of M&A varies widely with a substantial portion of the distribution falling in the value-destroying category (e.g., Bradley, Desai, and Kim, 1988; Moeller, Schlingemann, and Stulz, 2004). This variation facilitates identification. The second measure adds all other capital expenditures (Compustat data item 128) to acquisitions to get the overall capital expenditures.

For the median firm in our sample, the 1-year change in capital expenditure (as a percentage of the beginning book value of total assets) is about 3.6% with a large cross-sectional variation (10th and 90th percentiles at −14.3 and 55.25%). The corresponding change in acquisitions is zero, but there is a big cross-sectional difference in the change of acquisitions made by issuing firms: −5% for the firms on the 10th percentile to 13.8% for firms in the 90th percentile. All data are winsorized at 1 and 99% to ensure our results are not driven by outliers.

The following regression exploits the cross-sectional changes in capital expenditures during the SEO year and relates it to market reaction:[15]

$$\begin{aligned}\mathrm{car}_{ijst} &= \alpha + \beta \mathrm{BCS}_{i,t} + \phi \Delta \mathrm{capex}_i + \chi \mathrm{BCS}_{i,t}.\Delta \mathrm{capex}_i + \delta \mathrm{State}_s \\ &\quad + \gamma \mathrm{Year}_t + \theta \mathrm{Industry}_j + \sum_k \zeta_k X_{ijst} + \varepsilon_{ijst}\end{aligned}$$

where BCS is the BCS dummy; Δcapex, changes in capital expenditures; BCS*Δcapex, the interaction of the two. As before, we include state, year, and industry fixed effects.

The variable of main interest is the interaction term, BCS*Δcapex. It estimates the effect of capital expenditure increases by firms whose governance is weakened by the adoption of BCS in their states of incorporation. Since passage of this law was staggered, year fixed effects control for economy-wide shifts on investment opportunities. State-specific differences and industry effects also are isolated using the fixed effect model.

Estimation results are reported in Table III. Models 1 and 2 are estimated with acquisitions only, and Models 3 and 4 use total capital expenditures.

[15] We drop forty-three firms for this estimation because of the unavailability of data for the prior fiscal years.

*Table III.* Interactive effects of BCS and capital expenditure

This table presents estimation results of the following model:

$$\text{car}_{i,t} = \alpha + \beta\Delta\text{acq}_i + \theta\text{BCS}_{i,t} + \gamma\Delta\text{acq}_i.\text{BCS}_{i,t} + a.y_t + b.\text{sic}_i + c.s_i + \sum \zeta X_i + \epsilon_{i,t}$$

car measures cumulative abnormal return relative to value-weighted market index over (−2, +2) day window around the announcement date. BCS is an indicator variable that takes a value of one for SEOs issued by a firm after its state of incorporation has passed the BCS, zero otherwise. Δacq represents changes in dollar amount of acquisition (COMPUSTAT data item 129) in the year of SEO minus the corresponding number for the prior fiscal year, scaled by total assets at the beginning of the prior fiscal year. Δcapex is constructed similarly with capital expenditure (COMPUSTAT data item 128) and acquisitions included in the definition of capex. $y$, sic, and $s$ are indicator variables corresponding to the calendar year, two-digit SIC code, and the state of incorporation of the issuing firm. logsale represents the log of prior fiscal year sales of the issuing firm measured in millions of dollars. Secondary is a dummy variable that equals one if the SEO includes some secondary shares in the offering, zero otherwise. Mtb is the MB ratio of the firm, which is measured by (market value of the firm's equity + book value of assets − book value of equity)/(book value of assets). Book value of assets and equity are from COMPUSTAT items 6 and 60 respectively. Leverage is computed by taking the ratio of long term and short term debt (item 9 + 34) divided by the total assets. Cash/ta measures the cash and marketable securities (item 1) as a percentage of the book value of assets. All accounting variables are measures as of the previous fiscal year. Pastret measures log (1 + return of issuing firm over the past 1 year) measured until the beginning of the issuing month. Resstd represents the log of standard deviation of residual from the market model regression using 1 year's daily return observations. All $t$-statistics are based on robust standard errors clustered at the firm or at firm and year level.

| | Model 1 Estimate ($t$-stat) | Model 2 Estimate ($t$-stat) | Model 3 Estimate($t$-stat) | Model 4 Estimate ($t$-stat) |
|---|---|---|---|---|
| BCS | −1.5512 (−1.68) | −1.5512 (−1.89) | −1.4844 (−1.62) | −1.4844 (−1.84) |
| Δacq | 1.6063 (2.52) | 1.6063 (2.78) | | |
| Δacq.BCS | −3.1223 (−3.42) | −3.1223 (−3.60) | | |
| Δcapex | | | 1.0430 (2.42) | 1.0430 (1.64) |
| Δcapex.BCS | | | −1.8597 (−2.80) | −1.8597 (−2.43) |
| logsale | −0.0551 (−0.37) | −0.0551 (−0.30) | −0.0449 (−0.30) | −0.0449 (−0.24) |
| secondary | −0.1924 (−0.42) | −0.1924 (−0.40) | −0.2101 (−0.46) | −0.2101 (−0.45) |
| mtb | 0.1314 (0.70) | 0.1314 (0.63) | 0.0984 (0.51) | 0.0984 (0.48) |
| cash/ta | −3.5604 (−1.96) | −3.5604 (−1.64) | −3.6571 (−1.99) | −3.6571 (−1.67) |
| lev | −0.7878 (−0.55) | −0.7878 (−1.12) | −0.7729 (−0.54) | −0.7729 (−1.13) |
| pastret | 0.3118 (0.48) | 0.3118 (0.44) | 0.2114 (0.32) | 0.2114 (0.27) |
| resstd | 0.0036 (0.00) | 0.0036 (0.00) | 0.0435 (0.06) | 0.0435 (0.04) |
| $R^2$ | 0.093 | 0.093 | 0.093 | 0.093 |
| $N$ | 1,023 | 1,023 | 1,023 | 1,023 |
| Cluster unit | Firm | Firm and year | Firm | Firm and year |

Regardless of the model specification, the estimation results show a positive and significant coefficient on Δcapex, and a negative and significant coefficient on Δcapex.BCS. The results for acquisitions (Models 1 and 2) imply that investors react positively to SEO announcements when the control group (firms unaffected by BCS) increases acquisitions during the year of SEO. However, the same increases in acquisitions by the treatment group (firms whose governance is weakened by BCS) raise investors' concern about their profitability, leading to significantly negative reactions to SEO announcements. In economic terms, the estimates of Model 1 imply a firm in the 90th percentile of changes in acquisition investments earns about 0.26% higher returns than its counterpart in the 10th percentile of the distribution if it is unaffected by BCS; however, a firm with weakened governance due to BCS earns about −0.56% lower return than its counterpart.

As before, we reestimate Models 1 and 2 separately for Delaware firms and non-Delaware firms and report the results in Appendix Table AI under Models 3 and 4, respectively. The coefficients on the interaction term with Δacq are negative and significant for Delaware and non-Delaware firms. The economic magnitude is similar across these two subgroups, indicating that the effect of BCS is not driven by Delaware-incorporated firms. The same is true for Δcapex (data unreported).

These results identify the channel through which governance affects investor confidence in SEOs. Investors do not necessarily interpret using SEO proceeds to increase capital expenditures as bad news; in fact, raising funds through SEOs to increase capital investments are met with a positive reaction if announced by firms unaffected by the external shock. Only when firms affected by the shock raise funds to finance capital expenditures do investors worry about the productivity of the use of proceeds and react negatively to the SEO announcements.

### 2.3 YEAR OF PASSAGE AND THE DIMINISHING IMPACT OF BCS OVER TIME

So far, we estimate the average effect of BCS for all years after passage of the law. In this section, we separate the effect of the year of passage from that of subsequent years by reestimating the regressions with two indicator variables: (i) "PassageYear," which equals one for the year of BCS passage, zero otherwise; and (ii) "SubsequentYears," which equals one for all years after the year of BCS passage, zero otherwise. We do so for two reasons. First, it allows us to pin down the intertemporal dynamics of the BCS effect. Second, not all states pass their BCS early in the year. This test allows us to ensure that our results are not driven by any misclassification of the passage year into a BCS dummy variable. Delaware adopted its BCS on

February 2 1988, which justifies the use of the passage year into the BCS dummy.

The reestimation results are provided in Table IV. Models 1 and 2 estimate the unconditional effects of BCS. Models 3 and 4 estimate the interactive effects of acquisition expenditure and BCS passage to SEO announcement returns. The results paint a clear picture: the effect of BCS passage on SEO announcement returns comes from the year of passage and subsequent years. But the passage year effect is stronger; the coefficients of $\Delta$acq.PassageYear in Models 3 and 4 are significantly more negative with a magnitude more than twice the coefficients of $\Delta$acq.SubsequentYear. Models 1 and 2 also show that PassageYear coefficients are more negative than those of SubsequentYear. These results are consistent with our assertion that the BCS effect should be sharper immediately after its passage.

To examine whether the impact of BCS diminishes over time, we reestimate Models 1 and 2 of Table III while extending the sample period well beyond 1990: (i) 1982–94 that is symmetric in terms of number of years around the passage of BCS by Delaware, which has more than 50% of sample firms; and (ii) 1982–2000 that is symmetric around 1991, the last year of passage of BCS by any state during the 2nd-generation antitakeover law adoption. The reestimation results are reported under Models 1 and 3 of Appendix Table AII. $\Delta$acq.BCS is negative but not significant for either of the sample periods.

We attribute the lack of significance to the noise introduced by the diminishing impact of BCS over time. To test this conjecture, we create an indicator variable "BCS5yr" that equals one if an SEO firm's state passed BCS in any of the 5 years prior to the SEO, zero otherwise. This variable allows us to restrict the estimated effect on SEO announcement returns to a 5-year period following BCS passage. Results are provided under Models 2 and 4 of Appendix Table AII. Unlike Models 1 and 3, $\Delta$acq.BCS5yr is significant for 1982–94 and 1982–2000 sample periods. The results remain similar if we limit the number of years to 4 or 6 years after the BCS. The overall results suggest that the effect of BCS on investor confidence is highly significant soon after the passage of law, but the impact diminishes over time as firms and markets adopt other governance mechanisms to counter the effect of BCS.

What are the alternative governance mechanisms? Hall and Liebman (1998) document a large increase in CEO holdings of stock and stock options between 1980 and 1994. They also show that the level of CEO compensation and the pay for performance sensitivity increased dramatically over this time period: "Between 1980 and 1994 the direct compensation (salary, bonus, and the value of annual stock option grants) of CEOs

*Table IV*. Separate effects of the year of BCS passage and subsequent years

This table presents estimation results of regression models that separately estimate the effect of the year of passage of BCS from the subsequent years. The dependent variable is the cumulative abnormal return relative to value-weighted market index over (−2, +2) day window around the announcement date. PassageYear equals one for the year in which the state passes BCS, zero otherwise. SubsequentYear takes a value of one for SEOs issued by a firm after its state of incorporation has passed the BCS excluding the year of passage, zero otherwise. All other variables are as defined in the previous tables. Models 1 and 2 estimate the unconditional effect of BCS passage on SEO announcement returns. Models 3 and 4 estimate the interactive effect of BCS and corporate acquisition made by the issuing company in the prior year. All models include fixed effects for the calendar year, state of incorporation, and two-digit SIC code of the issuing firm. The sample period is from 1982 to 90. All *t*-statistics are based on robust standard errors clustered at the firm or at the firm and year level as indicated in the last row.

| | Model 1<br>Estimate (*t*-stat) | Model 2<br>Estimate (*t*-stat) | Model 3<br>Estimate (*t*-stat) | Model 4<br>Estimate (*t*-stat) |
|---|---|---|---|---|
| PassageYear | −1.8175 (−1.80) | −1.8175 (−1.81) | −1.6407 (−1.59) | −1.6407 (−1.71) |
| SubsequentYear | −1.6114 (−1.52) | −1.6114 (−1.98) | −1.5137 (−1.41) | −1.5137 (−1.77) |
| logsale | −0.0737 (−0.50) | −0.0737 (−0.45) | −0.0505 (−0.34) | −0.0505 (−0.28) |
| secondary | −0.1430 (−0.32) | −0.1430 (−0.29) | −0.1960 (−0.43) | −0.1960 (−0.41) |
| mtb | 0.1620 (0.96) | 0.1620 (1.22) | 0.1404 (0.74) | 0.1404 (0.69) |
| cash/ta | −3.8254 (−2.20) | −3.8254 (−2.13) | −3.6003 (−1.97) | −3.6003 (−1.64) |
| lev | −0.3818 (−0.28) | −0.3818 (−0.61) | −0.8263 (−0.58) | −0.8263 (−1.16) |
| pastret | 0.1381 (0.21) | 0.1381 (0.21) | 0.3180 (0.49) | 0.3180 (0.45) |
| resstd | −0.1008 (−0.14) | −0.1008 (−0.11) | 0.0052 (0.01) | 0.0052 (0.01) |
| Δacq | | | 1.5991 (2.51) | 1.5991 (2.77) |
| Δacq.PassageYear | | | −4.2724 (−4.61) | −4.2724 (−5.96) |
| Δacq.SubsequentYear | | | −2.0009 (−1.86) | −2.0009 (−2.35) |
| $R^2$ | 0.084 | 0.084 | 0.094 | 0.094 |
| *N* | 1,066 | 1,066 | 1,023 | 1,023 |
| Cluster unit | Firm | Firm and year | Firm | Firm and year |

increased by 136 percent at the median and 209 percent at the mean in real terms. Moreover, because most of this pay increase was in the form of stock options, the relationship between CEO pay and firm performance has increased substantially" (p. 655). In their sample, the mean CEO's stock option grants increased by 682.5% from 1980 to 1994. Although only 30% of CEOs received option grants in 1980, nearly 70% received them in 1994. Similarly, in a sample of large US firms, Yermack (1995) shows stock option awards represented approximately one-third of CEO compensation in 1991 as compared to one-fifth in 1984. He further shows that other forms of incentive contracts also increased during this time period. Murphy (1999) documents a similar increase over these periods. Overall, the evidence indicates a remarkable increase in incentive component of CEO pay around this period, an internal governance mechanism that may counteract the effect of the passage of BCS. In Section 3, we exploit the cross-sectional variation in top executives' wealth-performance sensitivity of SEO issuers to estimate the relation between this internal governance mechanism and SEO announcement returns.

### 2.4 PROFITABILITY OF CORPORATE ACQUISITIONS

If capital expenditures by poorly governed firms cause negative investor reactions, investors are also likely to react negatively to an SEO by a firm with a record of unprofitable capital expenditures. To test this hypothesis, we examine SEO issuers' prior corporate acquisitions, which have more clearly identifiable announcement dates than other capital investments. We infer acquisition profitability by abnormal returns surrounding acquisition announcement days. We use the full sample of 4,613 SEO firms over 1982–2006 and relate SEO announcement returns to an indicator for bad acquisitions made during the 12 months prior to the announcement of an SEO.

For each SEO, we check the SDC US domestic M&A database to determine whether the issuer makes an acquisition during the 1 year prior to the SEO announcement day. The definition of acquisitions follows the standard approach used in M&A literature (e.g., Moeller, Schlingemann, and Stulz, 2004). We require that: (i) the deal is completed; (ii) the target is a domestic US firm; (iii) the acquiring firm has less than 50% of the target's outstanding shares before the deal and acquires the entire shares outstanding; and (d) the deal value is more than $1 million. We also require that the deal value is at least 5% of the acquirer's size (measured by the book value of its assets). About 22% (1,045 of 4,613) of sample firms made such acquisitions during the year before their equity issuances. We compute the acquisition announcement returns as the market-adjusted cumulative returns over the (−2, +2) day window surrounding the announcement of acquisitions.[16] There are 232 (183) firms showing acquisition announcement returns lower than −2% (−3%). These firms are assigned an indicator variable "badmerger."

We relate SEO announcement day returns to the "badmerger" indicator variable along with all the control variables used in earlier regressions. Results are reported in Table V. In Models 1 and 2, a merger is classified

[16] When there is more than one M&A deal in the past year, we take the acquisition that is closest to the SEO issue.

*Table V*. Profitability of prior acquisitions and investor reaction to SEOs

This table provides regression results for the effect of acquisitions made by SEO firms on stock returns surrounding the SEO announcement date. The dependent variable is the cumulative abnormal return relative to value-weighted market index over (−2, +2) day window around the announcement date. In Models 1 and 2 badmerger is an indicator variable that equals one for firms that have made an acquisition in the past 1 year with acquisition announcement returns less than −2%. Models 3 and 4 use a cutoff at −3% for this indicator variable. Logsale represents the log of prior fiscal year sales of the issuing firm measured in millions of dollars. Secondary is a dummy variable that equals one if the SEO includes some secondary shares in the offering, zero otherwise. Mtb is the MB ratio measured by (market value of the firm's equity + book value of assets − book value of equity)/(book value of assets). Book value of assets and equity are from COMPUSTAT items 6 and 60, respectively. Leverage is computed by taking the ratio of long- and short-term debt (item 9 + 34) divided by the total assets. Cash/ta measures the cash and marketable securities (item 1) as a percentage of the book value of assets. All accounting variables are measures as of the previous fiscal year. Pastret measures log (1 + return of issuing firm over the past one year), measured until the beginning of the issuing month. Resstd represents the log of standard deviation of residual from the market model regression using 1 year's daily return observations. All *t*-statistics are based on robust standard errors clustered at the firm or at firm and year level. All models include industry and year fixed effects.

| | Model 1<br>Estimate (*t-stat*) | Model 2<br>Estimate (*t-stat*) | Model 3<br>Estimate (*t-stat*) | Model 4<br>Estimate (*t-stat*) |
|---|---|---|---|---|
| badmerger | −1.1749 (−2.43) | −1.1749 (−2.30) | −1.2531 (−2.19) | −1.2531 (−2.10) |
| logsale | −0.0642 (−0.74) | −0.0642 (−0.53) | −0.0645 (−0.74) | −0.0645 (−0.53) |
| secondary | −0.8333 (−3.25) | −0.8333 (−3.58) | −0.8358 (−3.26) | −0.8358 (−3.60) |
| mtb | −0.0125 (−0.18) | −0.0125 (−0.22) | −0.0123 (−0.18) | −0.0123 (−0.21) |
| cash/ta | 0.2166 (0.26) | 0.2166 (0.23) | 0.2130 (0.26) | 0.2130 (0.22) |
| lev | 0.7460 (1.08) | 0.7460 (1.47) | 0.7413 (1.07) | 0.7413 (1.47) |
| pastret | 0.4483 (1.49) | 0.4483 (1.81) | 0.4494 (1.49) | 0.4494 (1.82) |
| resstd | −0.6489 (−1.60) | −0.6489 (−1.64) | −0.6356 (−1.56) | −0.6356 (−1.62) |
| $R^2$ | 0.028 | 0.028 | 0.028 | 0.028 |
| $N$ | 4,613 | 4,613 | 4,613 | 4,613 |
| Cluster unit | Firm | Firm and year | Firm | Firm and year |

as a bad merger if its announcement return is less than −2%. Models 3 and 4 use a cutoff point of −3%.

Regardless of whether we cutoff at −2 or −3%, the results indicate that investors react negatively to SEO announcements by firms that have previously engaged in value-destroying acquisitions. On average, investors react −1.17 and −1.25% more negatively to SEO announcements made by firms previously engaged in bad acquisitions. Apparently, investors punish issuers that have engaged in shareholder value-reducing acquisitions prior to SEO announcements.[17]

## 3. Managerial Firm-related Wealth Sensitivity

Although the market for corporate control imposes external pressure for good governance, a firm also may have built-in internal mechanisms making its governance more shareholder-friendly. One such mechanism is the alignment of managerial incentives to shareholder value. We measure the incentive alignment by top management's firm-related wealth sensitivity to shareholder value. We hypothesize that the greater the wealth sensitivity, the more confident investors feel about the productive use of SEO proceeds, reacting more favorably to the announcement of SEOs. In this section, we examine the relation between the market reaction and the wealth sensitivity. We also address endogeneity issues in managerial incentive and large-firm bias.

### 3.1 FIRM-RELATED WEALTH SENSITIVITY AND SEO ANNOUNCEMENT RETURNS

Wealth sensitivity is measured by the *delta* of a firm's top managers, as in Core and Guay (1999), divided by their total compensation. This yields the Edmans, Gabaix, and Landier's (2009) scaled wealth-performance sensitivity. Delta measures the sensitivity of the value of the managers' stocks and stock options to a 1% change in the firm's stock price. The delta of stocks is simply 1% of the value of manager's stockholdings. Stock option delta is computed using the Black–Scholes model as modified by Core and Guay. These delta measures are based on the most recent fiscal year-end data prior to the SEO announcement. This lag makes the independent variable known ahead of the dependent variable, reducing the potential simultaneity bias. Since SEO decisions may involve a team of top managers, we include the wealth sensitivity of all top managers reported in ExecuComp.[18] We also use the wealth sensitivity of only the top three managers and obtain similar results (data unreported).

[17] To the extent the firms with bad acquisitions are also subject to the disciplinary effect of takeover threats, the SEO announcement returns to these firms are also likely to differ depending on whether the firms are affected by the passage of BCS. However, data limitations do not allow us to conduct a difference-in-differences test using BCS. For example, there are only nine SEOs in the 2 years following the passage of BCS that meet all the criteria to be included as "badmerger".

[18] The ExecuComp database usually provides compensation details for the top five managers, but in some cases, it covers fewer or more than five executives.

The last four rows in Table I, Panel C, present the descriptive statistics for top management's delta, compensation, and percentage share ownership. Since they all exhibit considerable skewness, we use the log of these variables. The median delta is \$421,750, which is the amount the top managers stand to lose if the stock price falls by 1%. The median top managers' combined total annual compensation is \$4.6 million, which includes salaries, bonuses, value of new grants of restricted stocks and stock options, and miscellaneous items. Total compensation does not include the gains executives realize from exercising existing options or proceeds from selling preexisting stocks.

For each firm, we first sum the deltas of the top managers and then divide it by the sum of their total compensation to obtain the delta or total ratio. The median delta or total ratio is 8%, which means if the stock price falls by 1%, the top five managers lose about 8% of their yearly income. Our analysis uses the log delta or total ratio as the key explanatory variable.[19]

We start with a univariate analysis. Every year starting in 1993, we break SEOs into four groups based on the log (delta/total) and compute their CARs. We classify the top one-fourth as "high wealth sensitivity" and the bottom one-fourth as "low wealth sensitivity." The remaining firms are grouped into "medium wealth sensitivity." Table VI, Panel A, reports average CARs for each group over the (−2, +2) or (0, +1) day window. Regardless of whether the market reaction is measured over the long- or short window, the negative market reaction is concentrated in firms with low- and medium wealth sensitivity, with almost monotonic returns across the three groups. Firms with the highest wealth sensitivity outperform the lowest sensitivity firms by an economically meaningful margin of 1.14–1.33%.

Some SEOs in the above sample contain secondary offerings by insiders and blockholders, the proceeds of which do not go to the firms and, hence, are not subject to mismanagement. Secondary offerings also add confounding effects. The sales by insiders may signal that informed investors believe shares are overpriced. They also lower manager's wealth sensitivity if they participate in secondary offerings. To isolate the governance effect from these confounding effects, Panel B excludes SEOs with secondary offerings. The resulting subsample of pure primary offerings provides a cleaner test of

[19] We also use two alternative definitions of wealth sensitivity: (i) the (log) average of delta/total compensation of the five managers, instead of a ratio of summed delta and summed total compensation and (ii) delta divided by only the sum of salary and bonus instead of the total compensation. The results (unreported) are robust. In addition, we check for possible confounding effects caused by earnings announcements around SEOs. About fifty firms in the wealth sensitivity sample released earnings in the (−2, +2) window of SEO announcements. Our results do not change if these firms are excluded from the sample.

*Table VI.* Managerial firm-related wealth sensitivity and investor reaction to SEOs

This table provides the SEO announcement period returns across various wealth sensitivity groups. Each year, we break all SEOs into four groups based on delta/total compensation ratio of the top managers of the firm. Low delta represents the firms in the bottom quarter of wealth sensitivity distribution, and High delta the top quarter. The remaining firms are grouped into the middle group. For each of these groups, we compute the return over (−2, +2) and (0, +1) days of the announcement date. All returns are adjusted for the value-weighted return on CRSP index for the same days. We report mean return of all groups and the difference between the high- and low-sensitivity groups. The *p*-value is for the null hypothesis that the return difference between high- and low-sensitivity firms is zero. Panel A is based on mixed offerings of 501 SEOs, Panel B is based on 384 pure primary offerings (i.e., offerings that do not include any sale of shares by existing shareholders of the firm), and Panel C is based on 189 pure secondary offerings.

| Event window | (−2,+2) | (0,+1) |
|---|---|---|
| Panel A: Mixed offerings | | |
| Low delta ($N=131$) | −1.67 (−2.90) | −2.10 (−5.19) |
| Medium delta ($N=250$) | −1.26 (−2.99) | −1.82 (−6.21) |
| High delta ($N=120$) | −0.34 (−0.55) | −0.96 (−2.12) |
| Difference | −1.33 (−1.58) | −1.14 (−1.89) |
| Panel B: Pure primary offerings | | |
| Low delta ($N=101$) | −1.72 (−2.59) | −2.21 (−5.01) |
| Medium delta ($N=192$) | −0.79 (−1.68) | −1.66 (−4.91) |
| High delta ($N=91$) | 0.46 (0.65) | −0.37 (−0.74) |
| Difference | −2.18 (−2.26) | −1.85 (−2.79) |
| Panel C: Pure secondary offerings | | |
| Low delta ($N=43$) | −1.37 (−1.58) | −1.02 (−1.58) |
| Medium delta ($N=101$) | −0.95 (−1.71) | −1.71 (−3.86) |
| High delta ($N=45$) | −2.24 (−3.17) | −2.14 (−4.24) |
| Difference | 0.87 (0.78) | 1.12 (1.38) |

the effect of wealth sensitivity on investor confidence in the use of SEO proceeds. The results are more striking. The high wealth sensitivity group outperforms the low wealth sensitivity group by a significant 1.85–2.18%. Moreover, the market reaction for the top wealth sensitivity group is statistically zero for both windows.

These results sharply contrast with those of pure secondary issues containing no primary issues. There are 189 such issues. All proceeds of these issues go to the selling shareholders, providing no funds that can be misused by management. Hence, investor confidence about the use of proceeds is not an issue, and we expect pre-SEO managerial wealth sensitivity to be unrelated to the investor reaction. The results, reported in Panel C, confirm our prior. CARs are negative for all three groups, exhibiting no correlation with wealth sensitivity. In contrast to the primary offerings, investors' main concerns with secondary offerings seem to be the negative signal of overvaluation transmitted by sales of shares by better informed investors (Leland and Pyle, 1977).[20]

These univariate analyses do not control for deal and firm characteristics. Table VII relates the CARs during the (−2, +2) day window to wealth sensitivity with the set of control variables used in the earlier section, along with year- and industry fixed effects. Estimates for Model 1 show only two variables with coefficients significantly different from zero: wealth sensitivity of the top managers and the presence of a secondary offering. These are consistent with the univariate results. The market discriminates between firms with high- and low-managerial wealth sensitivity, and reacts negatively if an SEO contains secondary offerings. A standard deviation increase in the managerial wealth sensitivity leads to an increase of about 0.81% in the average announcement return. The presence of secondary offerings leads to about 2.24% lower return in comparison to pure primary issues.[21]

The wealth sensitivity measure is an estimated variable using option-pricing formulas and, hence, contains measurement errors. As a robustness check, in Model 2 we rank firms into ten groups based on their wealth sensitivity and use the deciles ranking in place of wealth sensitivity. The results are similar. As yet another robustness check, in Model 3 we use the log of percentage shares owned by top managers as the measure of managerial wealth sensitivity. This measure avoids the need to value stock options and has been used to study the impact of managerial share ownership on firm valuation (e.g., Himmelberg, Hubbard, and Palia, 1999; Kim and Lu, 2011). Again, the results are robust.

### 3.2 ROBUSTNESS TESTS

These results on wealth sensitivity are subject to endogeneity issues and large-firm bias. Our first concern is omitted variables. The decision to issue equity, as well as its timing and the level of top executives'

[20] Sellers in secondary offering are insiders and/or outside blockholders. If managers participate in secondary offerings, the negative reaction may also reflect a reduction in management's firm-related wealth sensitivity.

[21] We estimate our model with the fraction of secondary shares instead of an indicator variable, and obtain similar results. Furthermore, we collect data on insider sales of shares from the firms' prospectus. Controlling for insider sales produces similar results.

*Table VII.* Wealth sensitivity regression results

This table presents estimation results of the following model:

$$\text{car}_{i,t} = \alpha + \beta \text{delta}_{i,t} + \gamma y_t + \theta \text{sic}_i + \sum \zeta X_i + \epsilon_{i,t}$$

car measures cumulative abnormal return relative to value-weighted market index over (−2, +2) day window around the announcement date. Delta measures the firm-related wealth sensitivity of the top managers. $y$ and sic are indicator variables corresponding to the calendar year and two-digit SIC code of the issuing firm. $X$ represents the set of control variables. Logsale represents the log of prior fiscal year sales of the issuing firm measured in millions of dollars. Secondary is a dummy variable that equals one if the SEO includes some secondary shares in the offering, zero otherwise. Mtb is the MB ratio measured by (market value of the firm's equity + book value of assets − book value of equity)/(book value of assets). Book value of assets and equity are from COMPUSTAT items 6 and 60, respectively. Leverage is computed by taking the ratio of long term and short term debt (item 9 + 34) divided by the total assets. Cash/ta measures the cash and marketable securities (item 1) as a percentage of the book value of assets. All accounting variables are measures as of the previous fiscal year. Pastret measures log (1 + return of issuing firm over the past one year), measured until the beginning of the issuing month. Resstd represents the log of standard deviation of residual from the market model regression using 1 year's daily return observations. delta/total measures the log(delta/total compensation) of top managers. deltarank takes a value between 1 to 10 depending on the decile ranking assignment of the firm based on its delta. logpctshare is the log of percentage share holdings by the top managers measured as of prior fiscal year. All $t$-statistics are based on robust standard errors clustered at the firm level.

| | Model 1<br>Estimate ($t$-stat) | Model 2<br>Estimate ($t$-stat) | Model 3<br>Estimate ($t$-stat) |
|---|---|---|---|
| delta/total | 0.6754 (2.10) | | |
| deltarank | | 0.3255 (2.46) | |
| logpctshare | | | 0.3261 (1.90) |
| logsale | 0.3755 (1.37) | 0.3685 (1.36) | 0.4853 (1.76) |
| secondary | −2.2371 (−2.93) | −2.3270 (−3.03) | −2.1720 (−2.84) |
| mtb | −0.0917 (−0.41) | −0.1048 (−0.47) | 0.0306 (0.14) |
| cash/ta | 2.2907 (0.92) | 2.4127 (0.96) | 2.3279 (0.93) |
| lev | 1.7294 (0.92) | 1.8320 (0.98) | 1.5478 (0.82) |
| pastret | −0.4207 (−0.51) | −0.4705 (−0.57) | −0.2834 (−0.34) |
| resstd | −0.7163 (−0.61) | −0.7028 (−0.60) | −1.0470 (−0.88) |
| $R^2$ | 0.119 | 0.123 | 0.116 |
| $N$ | 501 | 501 | 501 |

firm-related wealth sensitivity, may be driven by some firm-specific factors not controlled for in the regressions. We address this concern by using an instrumental variable regression following Coles, Daniel, and Naveen (2006). We model the market's reaction to SEO announcements and wealth sensitivity as endogenous variables and estimate a two-stage regression model.

In the 1st stage, we regress wealth sensitivity on firm size (log sales); secondary offering indicator; MB ratio; cash and marketable securities as a percentage of the book value of assets; leverage; run-up in stock returns prior to SEOs; issuing firm's stock return volatility; and the lag wealth sensitivity as of two fiscal years prior to the equity issuance date as the key instrument as advocated by Coles, Daniel, and Naveen (2006).[22] In the 2nd stage, the predicted values of wealth sensitivity are used as the key explanatory variable. We control for industry- and year fixed effects.

The results for 1st-and 2nd-stage regressions are reported under Model IV in Table VIII. Consistent with the earlier results, the 2nd-stage results show a positive and significant coefficient on the predicted value of wealth sensitivity.

Another related source of endogeneity is that our measure of wealth sensitivity may reflect the accumulation of past equity-based compensations designed to mitigate agency problems. As such, one may argue that firms with higher wealth sensitivity may have more, not fewer, agency problems. To address this issue, we estimate a target level of wealth sensitivity for each firm and then take the deviation from the target level as the explanatory variable. Following Core and Guay (1999) and Coles, Daniel, and Naveen (2006), we model the target wealth sensitivity as a function of all the variables in the IV regression, except the lag wealth sensitivity. We also include a dividend constraint indicator, equal to one if the firm's dividend payout is more than twice its retained earnings and zero otherwise; R&D to total asset ratio; net operating loss carry-forwards scaled by total assets; and operating cash flows scaled by total assets. We also control for industry- and year fixed effects.

The results for the deviation model are also presented in Table VIII. The key independent variable in the 2nd stage is the difference between actual wealth sensitivity at the end of prior fiscal year and the predicted wealth sensitivity based on the target model. Again, the results are robust, indicating greater investor confidence when managerial self-interests are more closely aligned with shareholder value than customary, given a firm's characteristics.

Our wealth sensitivity analysis also contains a large-firm bias because the ExecuComp database covers only S&P 1500 firms. It is unlikely that this bias is driving our results, because our test based on BCS is not subject to large-firm bias. Nevertheless, we repeat our base wealth sensitivity regression

[22] The instrument in the IV regression is the wealth sensitivity two fiscal years prior because we use wealth sensitivity from the most recent fiscal year *prior* to the SEO announcement.

*Table VIII.* Reexamination of managerial firm-related wealth sensitivity results with IV and deviation model

In the 1st-stage regression of the IV model, we regress *delta* on all exogenous variables and its lagged value. In the 2nd stage, we use the predicted value of wealth sensitivity as the explanatory variable. The dependent variable in the 2nd stage is the market-adjusted return around (−2, +2) event window. Logsale represents the log of prior fiscal year sales of the issuing firm measured in millions of dollars. Secondary is a dummy variable that equals one if the SEO includes some secondary shares in the offering, zero otherwise. Mtb is the MB ratio measured by (market value of the firm's equity + book value of assets – book value of equity)/(book value of assets). Book value of assets and equity are from COMPUSTAT items 6 and 60, respectively. Leverage is computed by taking the ratio of long- and short-term debt (item 9 + 34) divided by the total assets. Cash/ta measures the cash and marketable securities (item 1) as a percentage of the book value of assets. Pastret measures log (1 + return of issuing firm over the past 1 year), measured until the beginning of the issuing month. Resstd represents the log of standard deviation of residual from the market model regression using 1 year's daily return observations. In the 1st-stage regression of deviation model, we regress delta on firm-level explanatory variables with industry- and year fixed effects. We take the residual from this estimate and call the residual delta-residual. In the 2nd stage, we use this residual as the measure of managerial wealth sensitivity. Divconstrained equals one if the firm's dividend payout (item 21) is more than twice its retained earnings for the year (item 36). Rnd/ta represents research and developmental expenses (item 46) as a fraction of total assets. Nol/ta is net-operating losses carry-forward (item 52) divided by total assets. Cf/ta measures firms' cash flow from operations (item 308) scaled by total assets. All *t*-statistics are based on robust standard errors clustered at the firm level. All models include year- and industry fixed effects.

| | IV model | | Deviation model | |
|---|---|---|---|---|
| | 1st stage Estimate (*t*-stat) | 2nd stage Estimate (*t*-stat) | 1st stage Estimate (*t*-stat) | 2nd stage Estimate (*t*-stat) |
| delta | | 1.0321 (2.26) | | |
| delta-residual | | | | 0.7402 (2.22) |
| logsale | −0.0181 (−0.49) | 0.4307 (1.54) | −0.0360 (−0.73) | 0.3637 (1.33) |
| secondary | 0.1531 (1.72) | −2.3848 (−2.91) | 0.3947 (3.31) | −1.9419 (−2.62) |
| mtb | 0.1143 (3.50) | −0.2221 (−0.83) | 0.2282 (5.99) | 0.0586 (0.28) |
| cash/ta | −0.2994 (−1.01) | 1.8496 (0.70) | −0.4095 (−0.91) | 1.5011 (0.61) |
| lev | 0.0156 (0.06) | 1.2230 (0.66) | 0.2706 (0.83) | 1.6376 (0.86) |
| pastret | 0.3516 (3.80) | −0.3937 (−0.47) | 0.1998 (2.11) | −0.2883 (−0.35) |
| resstd | −0.4840 (−4.19) | 0.1636 (0.14) | −0.1197 (−0.64) | −1.0054 (−0.85) |
| lagdelta | 0.6625 (13.23) | | | |
| divconstrained | | | −0.8181 (−5.25) | |
| rnd/ta | | | −1.0875 (−1.30) | |
| nol/ta | | | −0.2421 (−2.32) | |
| cf/ta | | | −0.8525 (−1.46) | |
| $R^2$ | 0.652 | 0.116 | 0.387 | 0.120 |
| $N$ | 429 | 429 | 501 | 501 |

(corresponding to Model 1 of Table VII) using the Heckman (1979) two-step selection model. We find virtually no change in the magnitude or the significance of the coefficients and therefore conclude that the results are robust to the sample selection problem.[23]

## 4. Conclusions

This article assesses how the strength of governance affects investor confidence about management's intended uses of the proceeds from SEOs. Our primary tests are conducted using difference-in-differences approaches using the staggered enactments of BCS as an exogenous shock weakening external pressure for good governance from the market for corporate control. These tests are supplemented by two additional analyses, one relying on shareholder-value-reducing acquisitions as an ex post proxy for weak governance; the other relying on top management's firm-related wealth sensitivity to shareholder value as a proxy for the strength of internal governance. These empirical analyses cover different sample periods spanning 1982 through 2006. Investor reaction to SEOs is positively and significantly related to the strength of governance regardless of which empirical strategy we use and which time period we examine.

The economic magnitudes of governance impacts are surprisingly large, explaining much of the negative stock price reactions to the announcement of SEOs. Absent secondary offerings, investors' main concern with SEOs is whether management will use the proceeds productively or wastefully. Good governance enhances investor confidence, helping firms raise external equity at lower costs.

These results challenge the notion that the general stock price reaction to SEOs is negative. We identify important subsets of SEOs that receive positive or clearly non-negative investor reaction: SEOs followed by increases in capital expenditures by firms unaffected by the enactment of

[23] In the selection-bias model, we first estimate a probit model for the likelihood of a firm's inclusion into the S&P 1500 index. To do so, we collect data on all SEOs by non-S&P 1500 firms during the sample period (1993–2006) and add them to the sample. We use firm size (log (sales)) and the number of analysts following the stock as explanatory variables in the probit model. We choose these variables for the selection model because larger firms and firms with more analyst coverage are more likely to be included in the S&P 1,500 index. We obtain the inverse mill's ratio from this model and use it in the 2nd-stage OLS model (with market return as the dependent variable) to correct for the sample selection bias as suggested by Heckman (1979). We find a positive and significant coefficient on the wealth sensitivity variable (delta) in the OLS model. All other results are qualitatively similar to the results for Model 1 in Table VII.

BCS, and pure primary offerings by issuers with management incentives closely aligned to shareholder value. These empirical regularities cannot be explained by information-based explanations usually invoked to explain negative market reactions to SEO announcements. Instead, they highlight the important role governance plays in altering investor perception of seemingly identical managerial decisions.

Our results have several normative implications for firms in need of external equity financing. These firms can avoid negative investor reaction and lower costs of external equity by (i) more closely aligning managerial incentives to shareholder value; (ii) avoiding value reducing acquisitions prior to SEOs; and (iii) excluding secondary offerings from SEOs. The benefits of these shareholder friendly actions may require reduction in private benefits for those in control. As such, our study underscores the benefit side of the tradeoff facing firms in need of external equity financing.

## References

Asquith, P. and Mullins, D., Jr. (1986) Equity issues and offering dilution, *Journal of Financial Economics* **15**, 31–60.

Bertrand, M. and Mullainathan, S. (2003) Enjoying the quiet life? Corporate governance and managerial preferences, *Journal of Political Economy* **111**, 1043–1075.

Bhagat, S., Marr, M. W., and Thompson, G. R. (1985) The rule 415 experiment: Equity markets, *Journal of Finance* **40**, 1385–1401.

Bradley, M., Desai, A., and Kim, E. H. (1988) Synergistic gains from corporate acquisitions and their division between the stockholders of target and acquiring firms, *Journal of Financial Economics* **21**, 3–40.

Coles, J., Daniel, N., and Naveen, L. (2006) Managerial incentives and risk-taking, *Journal of Financial Economics* **79**, 431–468.

Core, J. E. and Guay, W. R. (1999) The use of equity grants to manage optimal wealth sensitivity levels, *Journal of Accounting and Economics* **28**, 151–184.

Datta, S., Iskandar-Datta, M., and Raman, I. (2005) Executive compensation structure and corporate equity financing decisions, *Journal of Business* **78**, 1859–1889.

DeAngelo, H., DeAngelo, L., and Stulz, R. M. (2010) Seasoned equity offerings, market timing, and the corporate life cycle, *Journal of Financial Economics* **95**, 275–295.

Denis, D. J. (1994) Investment opportunities and the market reaction to equity offerings, *Journal of Financial and Quantitative Analysis* **29**, 159–177.

Dittmar, A. and Mahrt-Smith, J. (2007) Corporate governance and the value of cash holdings, *Journal of Financial Economics* **83**, 599–634.

Eckbo, B. E. and Masulis, R. (1995) Seasoned equity offerings: A survey, in: R. A. Jarrow, V. Maksimovic, and W. T. Ziemba (eds), *Handbooks in Operations Research and Management Science, Finance*, **Vol. 9**, North-Holland, Amsterdam, pp. 1017–1072.

Edmans, A., Gabaix, X., and Landier, A. (2009) A multiplicative model of optimal CEO incentives in market equilibrium, *Review of Financial Studies* **22**, 4881–4917.

Hall, B. J. and Liebman, J. B. (1998) Are CEOs really paid like bureaucrats? *Quarterly Journal of Economics* **113**, 653–691.

Heckman, J. J. (1979) Sample selection bias as a specification error, *Econometrica* **47**, 153–161.
Himmelberg, C., Hubbard, G., and Palia, D. (1999) Understanding the determinants of managerial ownership and the link between ownership and performance, *Journal of Financial Economics* **53**, 353–384.
Jegadeesh, N., Weinstein, M., and Welch, I. (1993) An empirical investigation of IPO returns and subsequent equity offerings, *Journal of Financial Economics* **34**, 153–175.
Jensen, M. (1986) Agency costs of free cash flow, corporate finance and takeovers, *American Economic Review* **76**, 323–329.
Jiao, Y. and Chemmanur, T. (2005) Seasoned equity issues with "soft" information: Theory and empirical evidence, SSRN Working Paper SeriesS, SRN.com/abstract#674102.
Jung, K., Kim, Y-C., and Stulz, R. M. (1996) Timing, investment opportunities, managerial discretion, and the security issue decision, *Journal of Financial Economics* **42**, 159–185.
Kim, E. H. and Lu, Y. (2011) CEO ownership, external governance, and risk-taking, *Journal of Financial Economics* **102**, 272–292.
Korajczyk, R. A., Lucas, D. J., and McDonald, R. K. (1991) The effect of information releases on the pricing and timing of security issues, *Review of Financial Studies* **4**, 685–708.
Leland, H. E. and Pyle, D. H. (1977) Informational asymmetries, financial structure, and financial intermediation, *Journal of Finance* **32**, 371–387.
Lucas, D. J. and McDonald, R. L. (1990) Equity issues and stock price dynamics, *Journal of Finance* **45**, 1019–1043.
Masulis, R. W. and Korwar, A. N. (1986) Seasoned equity offerings: An empirical investigation, *Journal of Financial Economics* **15**, 91–118.
Masulis, R. W., Wang, C., and Xie, F. (2007) Corporate governance and acquirer returns, *Journal of Finance* **62**, 1851–1890.
Mikkelson, W. and Partch, M. (1986) Valuation effects of security offering and the issuance process, *Journal of Financial Economics* **15**, 31–60.
Moeller, S. B., Schlingemann, F. P., and Stulz, R. M. (2004) Firm size and the gains from acquisitions, *Journal of Financial Economics* **73**, 201–228.
Murphy, K. (1999) Executive compensation, in: O. Ashenfelter and D. Card (eds), *Handbook of Labor Economics*, **Vol. 3b**, Elsevier Science, North Holland, pp. 2485–2563.
Myers, S. C. and Majluf, N. S. (1984) Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics* **13**, 187–221.
Ng, D. (2005) Google likely range-bound post-offering, http://www.forbes.com/markets/2005/08/19/google-microsoft-hp-cx_dn_0819techroundup.html.
Pinnell, M. (2000) *State Takeover Laws*, Investor Responsibility Research Center, Washington DC.
Romano, R. (1987) The political economy of takeover statutes, *Virginia Law Review* **73**, 111–199.
Smith, C. W., Jr. (1986) Investment banking and the capital acquisition process, *Journal of Financial Economics* **15**, 3–29.
Stulz, R. M. (1990) Managerial discretion and optimal financing policies, *Journal of Financial Economics* **26**, 3–27.
Teoh, S-H., Welch, I., and Wong, T-J. (1998) Earnings management and post-issue underperformance in seasoned equity offerings, *Journal of Financial Economics* **50**, 63–99.
Yermack, D. (1995) Do corporations award CEO stock options effectively? *Journal of Financial Economics* **39**, 237–269.

## Appendix

*Table AI.* Delaware and non-Delaware subsample results

Models 1 and 2 present estimation results of the following specification:

$$\text{car}_{i,t} = \alpha + \beta_1 \text{Delaware}_{i,t} + \beta_2 \text{Non-Delaware}_{i,t} + a.y_t + b.\text{sic}_i + c.s_i + \sum \zeta X_i + \epsilon_{i,t}$$

Models 3 and 4 present results for the following specification:

$$\begin{aligned}\text{car}_{i,t} = {} & \alpha + \beta \Delta\text{acq}_i + \theta_1 \text{Delaware}_{i,t} + \theta_2 \text{Non-Delaware}_{i,t} + \gamma_1 \Delta\text{acq}_i.\text{Delaware}_{i,t} \\ & + \gamma_2 \Delta\text{acq}_i.\text{Non-Delaware}_{i,t} + a.y_t + b.\text{sic}_i + c.s_i + \sum \zeta X_i + \epsilon_{i,t}\end{aligned}$$

car measures cumulative abnormal return relative to value-weighted market index over (−2, +2) day window around SEO announcement date. Delaware is an indicator variable that takes a value of one for SEOs issued by a Delaware firm after the passage of BCS by Delaware, zero otherwise. Non-Delaware equals one for all non-Delaware SEO firms after the passage of BCS by the state of incorporation of the issuing firm, zero otherwise. All other variables are as described in the earlier tables. All *t*-statistics are based on robust standard errors clustered at the firm or at firm and year level as indicated in the last row.

| | Model 1<br>Estimate (*t*-stat) | Model 2<br>Estimate (*t*-stat) | Model 3<br>Estimate (*t*-stat) | Model 4<br>Estimate (*t*-stat) |
|---|---|---|---|---|
| Delaware | −2.8348 (−2.36) | −2.8348 (−3.44) | −3.0208 (−2.43) | −3.0208 (−3.52) |
| Non-Delaware | −1.7383 (−1.71) | −1.7383 (−2.37) | −1.5388 (−1.49) | −1.5388 (−2.24) |
| logsale | −0.0427 (−0.28) | −0.0427 (−0.28) | −0.0327 (−0.21) | −0.0327 (−0.18) |
| secondary | −0.0423 (−0.09) | −0.0423 (−0.08) | −0.0909 (−0.19) | −0.0909 (−0.19) |
| mtb | 0.1842 (1.09) | 0.1842 (1.85) | 0.1725 (0.89) | 0.1725 (1.12) |
| cash/ta | −4.8886 (−2.82) | −4.8886 (−2.70) | −4.8607 (−2.66) | −4.8607 (−2.34) |
| lev | −0.7620 (−0.52) | −0.7620 (−1.25) | −1.1590 (−0.76) | −1.1590 (−1.83) |
| pastret | 0.2376 (0.38) | 0.2376 (0.33) | 0.4297 (0.67) | 0.4297 (0.54) |
| resstd | −0.1997 (−0.26) | −0.1997 (−0.21) | −0.1521 (−0.19) | −0.1521 (−0.15) |
| Δacq | | | 1.5855 (2.53) | 1.5855 (3.07) |
| Δacq.Delaware | | | −3.5666 (−2.76) | −3.5666 (−2.87) |
| Δacq.Non-Delaware | | | −3.9011 (−3.58) | −3.9011 (−4.66) |
| $R^2$ | 0.095 | 0.095 | 0.102 | 0.102 |
| *N* | 992 | 992 | 950 | 950 |
| Cluster unit | Firm | Firm and year | Firm | Firm and year |

*Table AII.* Estimation results with longer sample period

This table presents estimation results for longer sample periods. Models 1 and 2 are estimated with data from 1982 to 1994, Models 3 and 4 are estimated with data from 1982 to 2000. BCS equals one for years after the passage of BCS by the issuing firm's state. BCS5yr equals one if the issuing company's state of incorporation has passed BCS in the past 5 years, zero otherwise. The dependent variable is the cumulative abnormal return relative to value-weighted market index over (−2, +2) day window around SEO announcement date. All other variables are as defined in the previous tables. All models include fixed effects for the calendar year, state of incorporation, and two-digit SIC code of the issuing firm. All *t*-statistics are based on robust standard errors clustered at the firm level. The sample period is indicated in the bottom row.

| | Model 1<br>Estimate (*t*-stat) | Model 2<br>Estimate (*t*-stat) | Model 3<br>Estimate (*t*-stat) | Model 4<br>Estimate (*t*-stat) |
|---|---|---|---|---|
| Δacq | 0.6093 (1.08) | 1.1671 (2.04) | 0.7126 (1.03) | 0.2832 (0.89) |
| BCS | 0.3243 (0.42) | | 0.1046 (0.15) | |
| Δacq.BCS | −0.8249 (−0.83) | | −0.7775 (−1.03) | |
| BCS5yr | | −0.2691 (−0.48) | | 0.1665 (0.31) |
| Δacq.BCS5yr | | −2.8612 (−3.52) | | −1.9459 (−2.93) |
| logsale | −0.1392 (−1.07) | −0.1416 (−1.09) | −0.1095 (−1.03) | −0.1084 (−1.02) |
| secondary | −0.5085 (−1.39) | −0.5045 (−1.39) | −0.8193 (−2.78) | −0.8054 (−2.73) |
| mtb | −0.0626 (−0.54) | −0.0630 (−0.54) | −0.0329 (−0.42) | −0.0329 (−0.42) |
| cash/ta | −0.6327 (−0.48) | −0.6293 (−0.48) | 0.3698 (0.37) | 0.4388 (0.44) |
| lev | 0.3944 (0.39) | 0.3116 (0.31) | 1.0406 (1.27) | 1.0052 (1.23) |
| pastret | 0.3953 (0.87) | 0.3897 (0.86) | 0.6806 (1.99) | 0.7059 (2.06) |
| resstd | −0.2448 (−0.42) | −0.2095 (−0.36) | −0.5906 (−1.21) | −0.5833 (−1.20) |
| $R^2$ | 0.050 | 0.055 | 0.042 | 0.043 |
| $N$ | 1,956 | 1,956 | 3,494 | 3,494 |
| SamplePeriod | 1982–94 | 1982–94 | 1982–2000 | 1982–2000 |