

Supply and Demand for Independent Director Services: Major Board Decisions and Corporate Outcomes

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Abstract

Extensive research finds that shareholder and CEO preferences affect demand for director services. We find a large body of evidence showing that independent director reputation incentives influence the supply of director services. These reputation incentives vary across firms and over time, significantly influencing important board decisions and firm outcomes. When more independent directors rank a directorship highly, firms experience fewer actions that hurt shareholder wealth and director reputation and more actions that enhance shareholder wealth and director reputation. These results are invariant to alternative adjustments for potential endogeneity. We conclude that director reputation affects key board decisions and shareholder value by influencing director allocation of efforts across their multiple directorships.

JEL classification: G30, G32, G34

Key words: independent director reputations incentives, board decision making, option grants

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Supply and Demand for Independent Director Services: Major Board Decisions and Corporate Outcomes

Abstract

There is a large stream of research that finds various firm outcomes can affect the demand for a director's services. We find a large body of evidence showing that the reputation incentives of independent directors influence the supply of director services. In fact, these reputation incentives vary across firms and over time and significantly influence important board decisions and firm outcomes. When more independent directors rank the directorship highly, these firms are associated with fewer actions documented to hurt director reputation and more actions shown to benefit shareholder wealth and director reputation. These results are unchanged when accounting for potential endogeneity under multiple approaches. Our evidence supports the conclusion that director reputation affects key board decisions and shareholder value by influencing the allocation of director efforts across their multiple directorships.

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1. Introduction

Fama and Jensen (1983) argue that individual reputation incentives play a significant role in director monitoring incentives. Consistent with this view and with the theoretical link between firm and individual reputation (Tirole (1996)), as well as the evidence from a 2012 survey of corporate directors, which lists reputation as a director's top non-financial risk concern.¹ Since the early theoretical work on reputation and director incentives, numerous empirical studies have examined the demand for outside directors based on their reputation enhancing or detracting decisions. For example, when directors are associated with a decision or event that reduces shareholder wealth they are observed to lose directorships afterwards. Directors associated with a cash dividend reduction (Kaplan and Reishus (1990), a shareholder class-action lawsuits (Fich and Shivdasani (2007) and Brochet and Srinivasan (2014)), or option backdating (Ertimur, Ferri and Maber (2012)) see a reduction in their directorships after these events. It is now well known that these and other decisions that lead to decreases in shareholder wealth or reflect weak monitoring damage a director's reputation. This evidence indicates that the demand for these directors' services is reduced. However, it is not known whether directors with stronger reputation incentives work harder to avoid these negative outcomes so as to protect their more valuable reputations. We also do not know whether they supply greater effort pursuing actions that benefit shareholders so as to further build their reputation capital? In other words, do reputation incentives affect the supply of director services in areas important to shareholders? We examine these important questions in this study.

We address this gap in the literature by testing the hypothesis that independent directors on multiple boards prioritize their expenditure of effort across their directorships based on the relative visibility of these firms so as to maximize their reputation benefits. A key prediction of our hypothesis is that the supply of director services a firm receives is affected by the relative

¹ The survey is conducted by EisnerAmper LLP, and accounting and consulting firm. The 2012 survey polled 193 directors by web-based survey with assistance from the National Association of Corporate Directors. The survey can be found at <http://www.eisneramper.com/IT-Risk-Management-0512.aspx>. The 2012 survey is also discussed in an article by CFO.com, which can be found at http://www3.cfo.com/article/2012/8/risk-compliance_reputational-risk-cfo-eisneramper-board-of-directors.

reputation incentives a directorship offers to each individual director. We find that the varying quantity and quality of director services when aggregated to the board level is associated with significantly different likelihoods of an array of important board decisions and firm outcomes.

Masulis and Mobbs (2014) document that director reputation incentives significantly affect independent directors' board meeting attendance, their involvement on time intensive board committees and their likelihood of remaining on a firm's board during periods of poor firm performance. This evidence is consistent with reputation incentives significantly affecting an independent director's expenditures of effort on board duties. Lastly, they show that director reputation incentives are positively related to better firm performance and higher firm value. However, their analysis only investigates one channel to explain these firm performance results namely a board's decision to force CEO turnover. To better understand how individual director incentives influence firm value, we explore an array of major board decisions and firm outcomes, known to have significant consequences for firm operating performance, shareholder wealth and director reputation.

We argue that one important dimension of a board's absolute reputation is the firm's size, measured by equity capitalization, and that a director's board reputation incentives are relative to the firm reputations of the other boards that a director sits on.² Our focus is on independent directors because their primary role is to monitor and discipline senior management. Using a director dataset of S&P 1500 firms in years 1997-2012, we sort directors into those with one versus multiple independent directorships. For each director with multiple directorships, we rank each directorship based on a firm's market capitalization.

Prior empirical studies of corporate directors explicitly recognize the importance of reputation incentives. Adams and Ferreira (2008) control for firm size in their study of board meeting attendance and Yermack (2004) controls for firm visibility (being a Fortune 500 firm) when examining additional board appointments. Further, while both studies find that financial

² Several prior studies find evidence that relative firm size is a useful measure of a director's reputation incentives. For example, see Fahlenbrach, Low and Stulz (2010) and Knyazeva, Knyazeva and Masulis (2013) for evidence that independent directors prefer to serve on boards of larger firms.

compensation paid to outside directors fails to create strong incentive effects, neither study analyzes how director reputation incentives affect key board decisions or firm actions.

To measure director reputation incentives at the board level, we rely on alternative pairs of board reputation measures that separately aggregate the strong and weak reputation incentives of all the firm's independent directors. First, we calculate for each firm-year the fraction of independent directors who view this as one of their highest (lowest) ranked directorships (i.e. at least 10% larger (smaller) than their lowest (highest) ranked directorship), and label this fraction ID-High (ID-Low). Second, we create an indicator variable defined as one if a majority of independent directors rank this board as relatively high (low) and is zero otherwise, and label this indicator variable as Maj-ID-High (Maj-ID-Low).

These two high reputation incentive measures capture three important director characteristics embedded in board composition. First, they reflect the proportion of independent directors who rank this firm's directorship more highly, which raises their incentives to exert effort and to be viewed as careful monitors and valuable board advisors. Second, they capture the proportion of directors with multiple directorships, which reflects a higher demand for their services, generally signaling greater talent and ability. Third, they measure representation by directors likely to be more experienced, based on the arguments in Gabaix and Landier (2008).³ Thus, our overall analysis is based on the premise that boards with greater representation of talented and experienced independent directors with stronger reputation incentives at their more visible boards, should more carefully monitor and discipline CEOs to prevent adverse firm outcomes, and to promote better board decision-making and shareholder beneficial firm actions.

We expect directors with stronger reputation concerns to act more vigorously to avoid reputation damaging events. In the EisnerAmper survey discussed earlier, directors identify liability, integrity, fraud and ethics as important elements associated with reputation risk. However, the infrequent nature of the negative events that we examine makes difference-in-

³ While we separately examine the fraction of independent directors without other directorships, our primary measures of director incentives exclude them given the limited demand for their services in the external director labor market, which suggests that they are not as highly valued as directors. Nevertheless, these directors may have strong incentives to retain their positions, so we also control for their importance on the board in our analysis.

differences analysis difficult. Therefore, in examining each individual firm outcome, we rely on the Hermalin and Weisbach (2003) observation that “when examining particular tasks of directors, it is less likely that the endogeneity of board composition will affect the results” (p. 14). In other words, it is unlikely that factors influencing the supply of independent director monitoring services are also directly affecting specific board decisions or firm actions. This makes tests of this nature easier to interpret since endogeneity concerns about a potential unobservable factor affecting both board composition and individual firm decisions or actions are substantially reduced compared to tests of broad measures of firm performance or value. Furthermore, since directors with multiple board seats have different reputation incentives for each board they sit on, we can effectively control for most director specific effects, even time varying ones.

Importantly, when we individually examine a set of negative outcomes known to adversely affect director reputation, we find strong evidence supporting the power of director reputation incentives. Specifically, we find that boards with greater director reputation incentives are associated with a lower likelihood of exchange delisting, debt covenant violations, option backdating (Ertimur, Ferri and Maber (2012)), shareholder class-action lawsuits (Fich and Shivdasani (2007) and Brochet and Srinivasan (2014)) and cash dividend reductions (Kaplan and Reishsus (1990)). To address any remaining endogeneity concerns, we create an aggregate negative outcome variable that takes a value of one if any of these binary firm outcomes occur. We then study the effect of exogenous shocks to independent director board rankings on the frequency of negative outcomes using a difference-in-differences framework. We find that an exogenous rise in director reputation incentives leads to a significant drop in the likelihood of these negative outcomes. This represents further evidence against an endogenous relation driving our primary results. Our evidence is also consistent with Holmstrom (1999)’s argument that reputation concerns create incentives for directors to avoid risky actions that can have negative consequences for their future as directors.

A desire to protect and enhance an individual director’s reputation not only creates incentives to avoid adverse firm outcomes, but also to support shareholder friendly actions.

Consistent with the importance of director reputation incentive, we find evidence that greater representation by directors with strong reputation incentives is associated with a higher frequency of positive firm outcomes such as stock repurchases, dividend increases and stock splits. Treating these positive decisions as equally important, and aggregating these events, we find that their frequency rises after an exogenous increase to an independent director reputation incentives. In summary, our findings support the prediction that differences in independent director reputation incentives lead to clear differences in board behavior.

One potential concern with our primary findings is that firm size could be related to our board reputation measures and to the firm outcomes that we examine. Thus, we undertake several experiments to rule out firm size as the main cause for any observed associations we find between director reputation incentives and major board and firm actions. First, we include controls for firm size and its squared value in all our regression models. Second, we censor our analysis by annually excluding boards of the top and bottom 5% of firms based on equity market capitalization, although we continue to use these same firms to rank individual director incentives.

Next, we examine the results of each test using a matched sample based on firm size and industry, which also mitigates potential endogeneity concerns. Specifically, we match firms with very strong independent director reputation incentives in the aggregate to similar sized firms with similar representation by independent directors, but with very weak director reputation incentives in the aggregate.

Finally, we control for the firm size component in our reputation variables by adding a variable that captures only a firm's relative size. For this purpose, we use a randomization process to create pseudo-ranking variables for individual directors that are independent of actual director reputation incentives, but are still dependent on the firm's relative size. We aggregate these to the board level and include these randomized variables in our regression analysis to control for a relative firm size effect. Thus, any remaining variation captured by our primary reputation measures should reflect variation in directors' actual reputation incentives due to the relative rankings of their actual multiple directorships. A large majority of our tests are robust to

each of these alternative approaches. Thus, a wide range of evidence indicates that the reputation incentives of independent directors are an important board characteristic distinct from firm size.

In undocumented analysis, we address a potential reverse causality concern that in some firms with the negative outcomes we investigate, directors with strong reputations have greater incentives to avoid troubled firms by either resigning from the board or declining to join the board. For this analysis, we lag our key board measures by one or two years and then re-estimate the likelihoods of each of these firm actions. A large majority of our results continue to hold, giving further support to our primary hypothesis that director reputation incentives have a strong influence on major board decisions and firm actions.

For the purposes of robustness, we conduct a difference-in-difference analysis conditioned on an exogenous fall in an independent director's ranking of a firm's board so as to assess whether this evidence is consistent with our earlier tests based on exogenous increases in director rankings. We uncover strong evidence that an exogenous fall in directorship ranking increases the likelihood of the firm experiencing an array of negative outcomes that we study. This evidence is consistent with independent directors paying less attention to their board duties at firms where there is an exogenous fall in reputation ranking due to the growth of another firm on which they sit as independent directors. Lastly, we find evidence that an exogenous drop in an independent director's board ranking is associated with a fall in the likelihood of a major positive firm outcome occurring, specifically board approvals of cash dividend increases.

These findings make several important contributions to the literature. First, they extend the earlier reputation findings of Masulis and Mobbs (2014) by documenting a variety of channels through which directors with greater reputation incentives can affect firm performance and value. Specifically, our findings about the frequency of specific shareholder friendly (detrimental) firm actions are consistent with evidence of greater (lesser) director level involvement in firms where their reputation incentives are greater (weaker).

Second, these findings extend the literature on inside directors. Masulis and Mobbs (2011) and Mobbs (2013) find that when inside directors hold independent directorships, this raises their reputation capital as directors, and this is associated with their boards making better

decisions and more closely monitoring CEOs. Again, our findings underscore the importance of determining the relative reputation value a director assigns to each directorship, rather than simply treating each directorship as equally important. It also suggests that this independent director effect should be stronger as the relative prestige of this outside firm rises relative to the firm where the director is also an executive officer.

Third, our findings reinforce the importance of taking into account varying reputation incentives of independent directors when pursuing corporate governance research. This issue is especially relevant for evaluating board incentives in the post-Sarbanes-Oxley era when firms typically have a majority of independent directors, but based on our evidence, have varying alignments of interest with shareholders due to their varying reputation incentives across boards.

2. Sample data and descriptive statistics

We draw our U.S. boards of director data from the RiskMetrics database for the years 1997-2012. RiskMetrics contains individual director information for each S&P 1500 firm. Using the “classification” variable in RiskMetrics to obtain independent directors, we exclude directors who are either firm employees, former employees or are otherwise affiliated with the firm or its management through family, financial or charitable ties.⁴ This leaves us with 158,182 independent outside directors for 24,179 firm-years. Table 1 panel A reports the distribution of independent directors and their directorships. Almost 40% of independent directors have at least one additional outside directorship in a second firm tracked by RiskMetrics, which means that a significant portion of independent directors can have varying reputation incentives across their multiple board seats and directors on the same board can have very different reputation incentives.^{5,6}

⁴ RiskMetrics considers a director as affiliated if they are a former employee; an employee of or is a service provider, supplier, customer; a recipient of charitable funds; are considered an interlocking or designated director; or are a family member of a firm’s senior executive team.

⁵ See Masulis and Mobbs (2014) for further director level descriptive statistics

⁶ Following the existing literature, we include all industries in our CEO turnover analysis, but exclude utility and financial firms in our analysis of infrequent firm outcomes, given their heavily regulated nature and atypical financial statements.

We draw firm financial and accounting data from Standard and Poor's Compustat, stock returns and delisting data from the Center for Research and Security Prices (CRSP) monthly stock database. Data on covenant violations are based on Nini, Smith and Sufi (2012) and are taken from Amir Sufi's database⁷ and data on class action lawsuits are from the Stanford University's corporate litigation database. Finally, we classify industries based on Fama-French 49 industry definitions. All variable definitions are in the Appendix.

While our primary measures of director reputation incentives are based on relative size rankings of firms, the largest firms in our sample are naturally more likely to have a larger proportion of independent directors who rank this firm relatively high. Likewise, the smallest firms in our sample are likely to have a larger proportion of independent directors who rank the firm relatively low. To reduce this pure size effect, in our primary tests we censor our sample on an annual basis by excluding the largest and smallest 5% of firms by market capitalization. This yields our primary sample of 21,746 firm-years. We include total assets as a separate control in all our regressions to further minimize any pure firm size effects. We implement several added procedures and sensitivity tests as explained later to insure that our director reputation measures are not acting purely as a proxy for relative firm size.

For our primary analysis, we exclude finance and utility firms and have 17,159 firm-year observations for the sample. Table 1 panel B presents firm level descriptive statistics. The average firm controls \$3.64 billion in total assets. Mean equity market capitalization for the sample is \$3.7 billion. In approximately 88% of firm-years, independent directors represent a majority of the board. This is more common in the post-SOX part of the sample period.

Following Masulis and Mobbs (2014), we measure the relative importance of a director's reputation incentives at a specific firm by examining the relative size of its equity market capitalization relative to the other firms in the full RiskMetrics sample where the same director sits on the board as an independent director. To capture the relative reputation benefits of directors with two or more independent directorships, we create an indicator variable HIGH

⁷ These data are only available through fiscal year 2007. <http://faculty.chicagobooth.edu/amir.sufi/data.html>

(LOW), denoting a directorship in a firm that is at least 10% larger (smaller) than the firm representing their least (most) prestigious directorship. Since a firm having a board with a larger fraction of strongly (weakly) motivated directors should improve board decision making, we aggregate individual director reputation rankings to the board level annually and calculate the percentage of independent directors who rank this directorship HIGH and LOW denoted by ID-HIGH and ID-LOW respectively. We also create indicator variables for firm-years where a majority of the independent directors rank this directorship HIGH or LOW, denoted by Maj-ID-HIGH and Maj-ID-LOW respectively.

Across the boards in our sample, the mean ID-LOW is 15.99%. Examining the frequency of firms where a majority of independent directors that rank the board low, Maj-ID-LOW, we find that this represents 13% of the firm-year sample. While the mean ID-HIGH is 12.03% and the frequency of firms-year where the board has a majority of independent directors who rank the board high, Maj-ID-HIGH, is 9%. We also consider the presence of directors with only a single directorship, since retaining a sole directorship may also create strong director incentives to retain the position. The average board has just over 29% independent directors for whom this is their sole directorship, while 40% of sample firm-years have boards where the majority of independent directors have no other additional directorships.

Table 1 panel C reports the percentage of independent directors on the board and ID-LOW and ID-HIGH for each firm size decile, based on market capitalization, where we first break the firm-years into pre-2005 and 2005 and after. The passage of Sarbanes-Oxley Act of 2002 and the subsequent new exchange listing requirements together represent an exogenous shock forcing many firms to increase the representation of independent directors on their boards. We split our sample period at 2005 to allow for many firms to become compliant to these new board requirements. Indeed, we find evidence across all firm size deciles that the percentage of independent directors is substantially greater in the year 2005 and later. Despite these sample period differences across time we still observe similar patterns in both periods across the size deciles. The percentage of independent directors increases with firm size rising from 60.88% in the pre-2005 period (74.13% post-2004) in the smallest decile to just over 66.5% (79.9% post-

2004) in the largest decile. The mean ID-LOW exhibits little variation across firm size deciles in both sample periods. However, a more striking change is visible in the distribution of ID-HIGH. In the smallest firms, where many independent directors have either no other directorships or if they have other directorships, then they are generally at larger firms; it is quite unlikely that this is a HIGH ranked directorship. Thus, for the smallest firm decile, the average ID-HIGH is under 2% in both sample periods. This measure steadily rises with firm size decile to 29.8% in the pre-2005 period (28.7% in the post-2004 period) in the largest decile.

We see a similar pattern in Table 1 Panel D for our indicator measures. In panel D, we also include our indicator for majority independent directors with only this one directorship. In both sample periods, the fraction of firms with a board dominated by directors with only one directorship decreases with firm size. For example, in the pre-2005 sample period, in the lowest firm size decile 50% of the firms (61% in the post-2004 period) have boards with a majority of sole directorship independent directors, whereas the largest firm size decile only 18% (15% in the post-2004 period) have such a board. This is consistent with larger firms having a greater demand for and being able to attract more talented directors.

Table 1 panel E reports descriptive statistics for the three sub-samples of boards that have a majority of independent directors for whom this directorship is ranked high, low or is the only directorship. Firms with a majority of independent directors who have no other independent directorships tend to be smaller. Thus, in the ensuing analysis we employ a wide range of methods to separate out firm size effects, which could otherwise cause selection biases.

3. Firm actions with reputation consequences

We begin by examining the likelihoods of a series of major negative firm outcomes, many of which are known to have significant reputation consequences for directors. We then examine several positive firm outcomes known to benefit shareholders.

3.1. Option Back Dating

Since options are generally granted at-the-money, a means of increasing CEO compensation is to time option grants, possibly retroactively, to coincide with the date of the

lowest stock price in the surrounding period so as to minimize the option strike price. However, this practice can be costly for directors. Ertimur, Ferri and Maber (2012) find that directors involved in option backdating scandals in 2006-2007 suffered higher turnover rates following the scandal and received a greater number of withheld proxy votes in director reelections. These findings indicate that if directors reward their CEO's egregiously by manipulating option grant dates to raise the option's market value, they put their own directorship at greater risk. Therefore, directors with greater reputation incentives for a particular board should be less likely to put their reputation and directorship at risk by allowing that firm to engage in options backdating.

While many firms have been investigated for such practices, option awards of numerous other firms suggest that many more firms have either engaged in option backdating or else have extremely "lucky" CEOs who received option grants when the stock price was near its minimum value in the grant period. Bebchuk, Grinstein and Peyer (2010) define a lucky CEO option grant as one in which the effective grant date coincides with the day of the month of the lowest stock price. We also employ this measure to see whether independent directors with greater reputation incentives are associated with a lower likelihood that their CEO received a lucky option grant.

In Table 3, we use probit regression models with year fixed effects to analyze the determinants of lucky CEO grants for the sample of firms with prior CEO option grants. For these tests, we use the full uncensored sample of firms, although in subsequent analysis we account for firm size using several different techniques. Following Bebchuk, Grinstein and Peyer (2010), we obtain option grant data from Thomson Financial's Insider Trading database and use a similar procedure to classify lucky grants. We find 32,957 CEO option grants for our sample CEOs and of these grants, 2,831 are categorized as lucky. In models 1 and 2, the dependent variable is one if the CEO received at least one lucky option grant during the year and zero otherwise. The standard errors are robust and clustered by firm. In model 1, ID-HIGH has a significant negative association with a lucky option grant, while ID-LOW has an insignificant association. The control variables indicate that the more grants issued during the year and the larger a firm's relative size, the greater is the likelihood of at least one lucky grant.

Model 2 employs indicator variables Maj-ID-HIGH and Maj-ID-LOW. Consistent with model 1, the results indicate that when Maj-ID-HIGH equals one, the board is less likely to issue the CEO a lucky option grant, although the estimate is insignificant. There is also no evidence that boards with a majority of independent directors for whom this is their sole directorship are more or less likely to engage in option backdating.

Models 3 and 4 repeat the annual analysis using the sample of firms with one or more CEO option grant observations as in Bebchuk et al. (2010). In model 3 the coefficient for ID-HIGH is negative and significant. The control variables have the expected signs reported in Bebchuk et al. (2010). There is no evidence that busy boards are more likely to award lucky grants. Model 4 use a linear probability model with industry fixed effects to avoid concerns over the incidental parameters problem (Angrist and Pischke (2009)). The results are similar to models 1 and 3. In summary, the results of Table 3 indicate that independent directors with greater reputation incentives are unlikely to engage in backdating options to benefit their CEO. Stronger director reputation incentives enhance the deterrent effect of the legal penalties and reputation damage associated with option backdating scandals, making board approval of “lucky” CEO option awards much less likely.

3.2. Covenant violations

Gilson (1990) finds directors of firms that file for bankruptcy are punished with fewer directorships in the future. Thus, the market for directorships provides strong incentives for directors to avoid the firm going into bankruptcy. Precursors to bankruptcy are covenant violations. Such covenant violations are an early signal to the directorship market as to which directors have poor supervisory skills. Thus, firms with boards of directors with stronger reputation incentives and better supervisory skills should exhibit better performance and a lower likelihood of covenant violations.

Table 4 provides evidence on the likelihood of covenant violations in a multivariate framework. The primary dependent variable is one if the firm violates a covenant during the fiscal year. Each probit regression incorporates robust standard errors that are clustered by firm and all models include year fixed effects to control for time trends. In model 1, ID-HIGH has a

significant negative relation to the likelihood of a covenant violation (or continued violation), whereas ID-LOW has a positive relation to the likelihood of a covenant violation (or continued violation). The dependent variable in model 2 equals one if the firm commits a new covenant violation during the fiscal year. The results are similar in that a greater portion of independent directors with stronger reputation incentives is associated with a lower incidence of a new covenant violation. Model 3, again examines any covenant violation, and uses the indicator measures Maj-ID-HIGH and Maj-ID-LOW and representation by directors for whom this is their only directorship. Firms with Maj-ID-HIGH equal to one have a lower likelihood of having a covenant violation. Again, firms with Maj-ID-LOW equal to one have a significantly higher incidence of covenant violations. In model 4 we estimate a linear probability model and we also include industry fixed effects.⁸ We find results that are consistent with our primary probit models.

Turning to the other controls, we see that directors with only one directorship show no significant relation with the likelihood of a covenant violation. In contrast, founding family-directors who have both larger ownership stakes and more operating knowledge of the firm appear to place tangible pressure on management to run a “tighter ship” and not violate bond covenants. Surprisingly, more anti-takeover provisions are associated with a lower probability of covenant violations. One possible explanation for this association is that CEOs concerned about loss of control from creditors are also concerned about a loss of control from hostile takeovers. Perhaps managers experiencing less pressure from the market for corporate control are less likely to use leverage to seek higher revenue, which reduces the likelihood of a covenant violation. The other controls are generally statistically significant and consistent with prior findings.

3.3. Shareholder Class Action Lawsuits

⁸ We can easily estimate the marginal effects for the linear probability models. Since the median board size is 9 and the median percentage of independent directors is 72.7, there are about 7 independent directors on the board. If one independent director changes to view this board as higher ranked, this is equivalent to a $1/7 = .1429 = 14.29\%$ higher level of our main dependent variable. Multiplying this amount by the coefficient estimate for model 4 is $(14.29\% \times (-.001)) = -0.0143$. If the predicted probability of a covenant violation is .0638 for the sample, this increase in representation by more motivated directors is associated with a predicted probability of 0.0495 $(.0638 - .0143)$ in the likelihood of a covenant violation, representing a 22.41% reduction in the probability of a violation $(-0.0143/.0638)$.

Fich and Shivdasani (2007) find that directors in firms targeted by shareholder class action lawsuits subsequently receive fewer directorships. Fahlenbrach, Lo and Stulz (2013) find directors have incentive to avoid being associated with such lawsuits as indicated by a greater likelihood of an outside director leaving the board just prior to the firm being subject to a shareholder class action lawsuit. Brochet and Srinivasan (2014) find that directors named in a class action suit, especially those on the audit committee, are more likely to receive negative recommendation for subsequent nominations and are more likely to leave the board. These empirical observations are consistent with such lawsuits causing a large negative effect on director reputation capital. Thus, in firms where directors have stronger reputation incentives, directors should take more concerted actions to avoid the firm and board becoming the target of a shareholder class action lawsuit.

Table 5 examines the occurrence of shareholder class action lawsuits for our sample firms. Unless otherwise noted, the models in Table 7 are probit models with year fixed effects and robust standard errors, clustered by firm. In model 1, ID-HIGH has a significant negative association with the probability of the firm being the subject of a class action lawsuit. Conversely, ID-LOW has no statistical association with the occurrence of a class action lawsuit. Model 2 uses our indicator variables for the reputation incentives of a majority of the independent directors and yields similar results. Since disclosure concerns can lead to subsequent lawsuits and since Brochet and Srinivasan (2014) find the negative reputation impact is especially harsh for audit committee members, in model 3, we focus on the reputation incentives of a majority of the independent directors on the audit committee and we find stronger results, both economically and statistically.

Model 4 reports estimates from a linear probability model that includes year and industry fixed effects. ID-HIGH continues to have a significantly negative association with the likelihood of facing a shareholder lawsuit in a given year. Turning to the control variables, we find that greater CEO tenure and board size are associated with a lower firm likelihood of a shareholder class action lawsuit, while firms with greater growth opportunities and higher growth rates of

assets have a higher likelihood of such a lawsuit. Each model also controls for industry litigation activity. As expected, this industry-wide control has a positive and significant coefficient.

3.4. Dividend reduction

Dividend cuts are another well-known firm action with negative repercussions for corporate directors. Kaplan and Reishus (1990) find that executives whose firms reduce dividends from the previous year are punished in the external market for directorships with fewer subsequent directorships. Table 8 examines this measure of poor firm performance to see whether stronger director reputation incentives are associated with a lower likelihood of dividend reductions of 10% or more for the sample of dividend paying firms. All models include year fixed effects and robust standard errors clustered by firm.

Model 1 of Table 6 reveals distinctly different relations for the likelihood of dividend cuts based on whether more independent directors have high or low reputation incentives. ID-HIGH is associated with a significantly lower likelihood of a dividend cut. On the other hand, ID-LOW is associated with a significantly higher likelihood of a dividend cut. Model 2 uses indicator variables for the reputation incentives of a majority of the independent directors and an indicator for firms with a majority of independent directors for whom this is their only directorship. We find similar results when a majority of independent directors have stronger (weaker) reputation incentives.

Since Kaplan and Reishus impose a stricter dividend reduction indicator of 25% or more, model 3 reports results for dividend reductions of 25% or more. Again, ID-HIGH (ID-LOW) is negatively (positively) and significantly related to the likelihood of a dividend reduction. Model 4 incorporates industry fixed effects and is estimated with a linear probability model. The coefficient estimates for the two measures of board reputation incentives are consistent with the primary probit models. These findings provide further insight into the Kaplan and Reishus findings by showing that directors with multiple directorships view dividend reductions differently depending on the relative rankings of their directorships. Thus, the market for directorships is a more effective mechanism for motivating directors to monitor managers when a directorship is more important to the director. Finally, poorly performing firm and firms with

greater leverage are more likely to reduce their dividends; whereas a dividend cut is less likely in firms listed on the NYSE and at firms with larger boards. The coefficient estimate for board independence is insignificant. The fact that board independence per se is not associated with dividend reductions highlights the importance of distinguishing independent directors by their reputation incentives.

3.5. Delisting

Table 7 reports on exchange initiated delistings due to a firm violating stock exchange listing rules. Such negative news can result in serious reputation damage to the firm's outside directors. Moreover, if firms are guided by talented directors with a strong motivation to avoid damaging their reputation capital, then the greater is the proportion of these independent directors on a firm's board, the less likely the firm is to experience an exchange delisting. To examine the likelihood of an exchange delisting due to a listing rule violation (excluding acquisitions), we estimate a probit regression where the dependent variable is one if the firm experiences an exchange-initiated delisting as reported in the CRSP database. All regressions report robust standard errors clustered at the firm level.

In Table 7, model 1 the propensity of a firm to be delisted is significantly negatively associated (at the 1% level) with ID-HIGH. In contrast, ID-LOW is positively and significantly associated with delisting. Other control variables reveal that greater board monitoring due to board independence and better firm performance measured by a higher Tobin's Q or ROA are also associated with a lower likelihood of delisting. However, CEO-Chair duality, greater leverage and return volatility are associated with a greater likelihood of delisting. The coefficient estimate for the firm's current ratio is negative, although it is not statistically significant.

Model 2 uses the indicator variables Maj-ID-HIGH and Maj-ID-LOW. The results are similar to model 1, although they are not as strong statistically. When a majority of independent directors have stronger (weaker) reputational incentives, delisting is significantly less likely (p-value=.04) (more likely (p-value=.38)). There is no evidence that a majority of independent directors with no other outside board seats is associated with a significantly greater or lesser likelihood of a firm being delisted. Thus, although such directors have strong reputation

incentives since this is their only directorship, their concern about being re-nominated or their limited experience as outside directors may undercut their incentives to perform a disciplining role. In model 3, we estimate a linear probability model and incorporate industry and year fixed effects. The coefficient estimates are consistent with our primary findings that greater ID-HIGH (ID-LOW) is associated with a significantly lower (greater) likelihood of an exchange initiated delisting.

3.6. Difference-in-Differences analysis of negative outcomes

In this section we construct a negative outcome variable that equals one if the firm experiences a dividend reduction, a covenant violation, a shareholder class action lawsuit, lucky CEO option grant or is exchange initiated delisted and equals zero otherwise. By creating a single variable for any of these negative outcomes, we eliminate interdependence across these negative outcomes from affecting our conclusions. We also obtain a much greater frequency of outcomes than we obtain by studying these individual rare events in isolation. This enables us to employ a difference-in-differences analysis following an exogenous shock to a director's ranking of the firm. This provides a stronger experimental design to address endogeneity concerns between director reputation incentives and the likelihood of negative firm outcomes.

Table 8 presents results based on this aggregate negative firm outcomes variable. Model 1 reports the results of a probit model predicting these negative firm outcomes and includes our primary reputation variables and the full sample. The controls are as in the previous models, but are not reported for brevity. Consistent with our previous findings, firms with independent directors who have greater reputation incentives are significantly less likely to experience negative outcomes, whereas firms with independent directors who have weaker reputation incentives are significantly more likely to experience negative outcomes. Models 2-4 present results for a difference-in-differences analysis between negative firm outcomes the penultimate year prior to the exogenous shock and the three years thereafter. In each model, the key coefficient estimate is the interaction term between the treatment firm and the post-shock (exogenous shock to independent director reputation incentives) indicator variables.

Model 2 presents results of a probit model which includes only the key variables and their interaction (the difference-in-differences estimate). The coefficient estimate for the treatment firm indicator is positive and significant, which suggests that prior to the exogenous rank shock, these firms are more likely to experience a negative outcome relative to matched control firms. The positive coefficient estimate for the post-shock indicator reveals a positive time trend in both treatment and control firms' likelihood of experiencing a negative event. More importantly, the coefficient on the interaction term is negative and significant, indicating that when a board has at least one director who experiences an exogenous increase to their relative ranking of the directorship, the firm is significantly less likely to experience a negative firm outcome than is a similar control firm. This evidence is consistent with our prior findings when examining each of these outcomes individually, and is free of obvious endogeneity around changes in board composition, which could otherwise drive our results.

In model 3, we introduce control variables and find similar results. Note that in this model the coefficient estimate for the treatment firm indicator is not significant, which indicates that prior to the shock; treatment firms did not significantly differ from control firms in their likelihood of experiencing a negative firm outcome. Finally, model 4 of Table 10 employs a linear probability model that includes year and industry fixed effects. We again find a significantly negative coefficient estimate for the interaction of the treatment firm and the post-shock indicator variables.⁹ In sum, these results provide stronger support for our primary analysis that reputation incentives of the independent directors have an important bearing on the monitoring effectiveness of the board.

3.7. Stock repurchases, dividend increases and stock splits

Previously, we presented evidence that independent directors with greater reputation concerns take actions that reduce the likelihood of dividend cuts. An obvious follow up question is do these actions raise the likelihood of cash payouts to shareholders? In this section, we explore the frequency that boards distribute cash to their shareholders in the form of stock

⁹ In unreported results, we further restrict the sample in models 3 and 4 by excluding firms that experience a rise in board independence and continue to find a significant negative coefficient for the interaction term in both models.

repurchases or higher dividends. We employ the same controls as in Table 8, for dividend reductions. We include year fixed effects to capture the rising popularity of stock repurchases. Standard errors are robust and clustered by firm.

The dependent variable in Table 9, models 1-4 is yearly stock repurchases as the percentage of end-of-year equity market capitalization, following the definition used by Grullon and Michaely (2002). Models 1-3 include industry fixed effects and model 4 includes firm fixed effects. Models 1 and 2 are based on the full sample, rather than just dividend paying firms, since firms not paying dividends can still engage in stock repurchases in any given year. In model 1, the coefficient estimate on ID-HIGH is positive and significant. In model 2, we find a positive coefficient estimate for Maj-ID-HIGH and a negative coefficient estimate for Maj-ID-LOW, although neither is significant. In model 3, we restrict the sample to dividend paying firms and find stronger results, similar to model 1. Model 4 incorporates firm fixed effects and finds results consistent with the prior models that stock repurchases are more likely as the fraction of independent directors with stronger reputation incentives rises.

We find no evidence across any of the models that representation by directors with weaker reputation incentives is associated with stock repurchases. The other control variables yield some evidence across these models that greater institutional holdings and founding family directors are associated with greater stock repurchases. We also find that busy boards are associated with less frequent stock repurchases. Finally, NYSE listed firms and firms with greater cash flow from operations are associated with greater stock repurchases in some models.

In Table 9, models 5-7, we explore the relation of independent director reputation incentives and the likelihood of a cash dividend increase among dividend paying firms. As a cash flow to shareholders, a rise in dividends is also indicative of greater board alignment of interests with shareholders and of stronger monitoring by independent directors. In model 5, the dependent variable is an indicator variable that equals one if a firm raises its dividend per share based on beginning of year shares by 5% or more.¹⁰ The coefficient estimate for ID-HIGH is

¹⁰ We find similar results when we consider any dividend increase.

positive and significant, whereas the coefficient estimate Maj-ID-LOW is negative and significant. In model 6, we find a negative and significant coefficient estimate for Maj-ID-LOW. In model 7, we estimate a linear probability model and include industry fixed effects and find similar results. Thus, greater representation by independent directors with strong reputation incentives is associated with a larger likelihood of a dividend increase. Conversely, greater representation by independent directors with weak reputation incentives is associated with a lower likelihood of a dividend increase. These results suggest that as independent directors place more weight on their reputations, the likelihood of firms retaining earnings, potentially for empire building or perquisite consumption, is reduced.

In Table 9, models 8-10, we examine stock splits as another shareholder wealth enhancing action. For this analysis, we create a stock split indicator variable that equals one if the firm experiences a stock split of 5 for 4 or greater in the current year. We include non-dividend paying firms in the analysis. Model 8 reports probit model estimates using our percentage measures of independent director reputation incentives. We find strong evidence that ID-HIGH is associated with a significantly higher likelihood of a stock split. Conversely, ID-LOW is associated with a significantly lower likelihood of a stock split. In model 9, we use our board reputation incentive indicators and in model 10 we estimate a linear probability model and include industry fixed effects. In both cases, we continue to find similar results. These findings are consistent with directors being more concerned with shareholder interests in firms that have greater effects on their reputation as independent directors.

Finally, in Table 9, models 11-13, we conduct a difference-in-differences analysis of these positive outcomes. Similar to the difference-in-differences analysis in Table 10 for the set of negative outcomes, we create a positive outcome variable that equals one if the firm undertakes a dividend increase, a share repurchase or a stock split during the year and zero otherwise. Treatment and control firm definitions are the same as in Table 10. Model 11 presents results of a probit model using the treatment firm and post-shock indicators and their interaction. The positive coefficient estimate on the interaction term indicates a significant rise in the likelihood of treatment firms experiencing one of the positive outcomes relative to control firms.

In model 12 we include all the other controls, including year fixed effects and in model 13 we estimate a linear probability model and incorporate year and industry fixed effects. In both cases, we find similar results. This difference-in-differences analysis provides further evidence that improved director incentives are associated with positive firm outcomes which benefit shareholders. It also reduces concerns of endogenous relations driving our primary findings.

4. Robustness

Alongside each of our primary results that are based on probit and tobit models, we also present results using a linear probability model to address concerns associated with the non-linear nature of the relationships and potential incidental parameter issues. These parallel tests provide us with greater confidence that particular model specifications we employ are not driving our primary findings. In this section, we address potential concerns about reverse causality, other endogenous relations due to missing variables and selection biases and possible correlations of our director reputation incentive measures with firm size.

4.1. Reverse causality

One possible explanation for our earlier results is that firms with powerful and well performing CEOs subsequently hire directors who are serving as independent directors at smaller firms since they are more easily recruited given the larger firm's greater visibility and strong performance. This could create a positive correlation between firms with good outcomes and boards having greater representation by directors for whom this is a relatively more prestigious directorship. In addition, if boards of firms with poorly performing CEOs, and thus a greater likelihood of experiencing the negative firm outcomes of the types that we examine, aggressively recruit directors with more skill and experience to the board so as to help improve the firm's performance and if directors serving at larger firms are viewed as more talented and experienced, then this board selection process would lead to firms with negative outcomes being positively associated with boards having greater representation by independent directors for whom this is a relatively less prestigious directorship. We address this endogeneity issue by reexamining our primary tests using one and two year lags of our director reputation measures. If these

possibilities are driving our results, then lagged measures of board reputation incentives should reduce any reverse causality problem.

In unreported results, we find the use of lagged measures of director reputation incentives yield qualitatively similar results for most of the firm outcomes we analyze. For covenant violations and lucky CEO option grants, the coefficient of the lagged ID-HIGH is significantly negative using either one or two year lags. For dividend reductions, the coefficient estimate for the one year lagged ID-HIGH is also significantly negative. For firm stock repurchases, the coefficients for one and two year lags of ID-HIGH are again significantly positive. Also, the coefficients of the one and two year lags of ID-LOW is significantly positive for an exchange initiated delisting and is significantly negative for dividend increases and stock splits. Thus, our evidence does not support the argument that poorly governed firms hire independent directors from larger firms to help them improve their performance.

Yet, another endogeneity story that could be told is that in firms experiencing poor outcomes or where directors anticipate poor firm outcomes, more talented directors are more likely to leave the board if this is one of their relatively less important directorships. This is consistent with the findings of Masulis and Mobbs (2014) and Fahlenbrach Low and Stulz (2010). In this case, we should find that of the remaining directors in this troubled firm, more of them rank this firm as one of their relatively more prestigious directorships. Then as further negative outcomes occur (which is highly likely if performance is serially correlated), we would subsequently expect to observe a positive association between negative firm outcomes and greater representation by directors who view this as a more prestigious directorship. This scenario is rejected by the data since just the opposite pattern is observed empirically. However, to the extent that such director behavior does occur, it downward biases the results we document.

4.2. Firm size adjustment factor

By design, our board measures of representation by independent directors with high and low reputation incentives are a function of both an individual director's specific multiple directorships and the size of each firm relative to the population of sample firms. Ideally, we want to filter out of our reputation measures the direct effect of firm size, so that we can more

cleanly analyze director reputation incentive effects. While the absolute firm size can be a partial proxy for director incentives, our focus is on each director's relative ranking of their directorships. In other words, a director's reputation incentives are affected by the relative size of the firm in question compared to that of the other firms where the same director also holds board seats and not simply by the absolute size of the firm. Moreover, the reputation incentives we are concerned with are specific to an individual director sitting on the board (and their other directorships), whereas the firm size effect embedded in our reputation measure is based solely on a firm's size relative to the size of other firms in the population and thus effects all directors on the board equally, regardless of their other directorships.

Since the absolute firm size effect is the same for all directors on the board, if we randomly assign a firm's directors to other boards, then the firm size effect should remain. However, because these pseudo board assignments are randomly selected, the calculation of a board's pseudo ranking measure should be devoid of actual director reputation incentives caused by specific multiple directorships. Therefore, when we add this control for the firm size effect in each of our previous tests, any remaining variation captured by our director reputation measures should reflect directors' specific board seats and their reputation incentives to differentially allocate their scarce time and energy across these boards..

We estimate this pseudo board ranking measure in the following way. For each year in our sample period, we randomly reassign each independent director to a sample firm (or firms for those with multiple directorships). Board size and independent director representation are held fixed. We then compute each director's pseudo-ranking measure in each firm-year for the sample based on these randomized director assignments and the resulting pseudo-board ranking measures. We repeat the process 100 times and average across the 100 pseudo-board ranking measures to derive the adjustment factors for each High and Low board prestige measure.¹¹

Table 10 reports results for the primary models in the prior tables. For brevity, only key explanatory variables are shown. Controls in each regression are the same as in the previous

¹¹ We thank Juhani Linnainmaa for this helpful suggestion.

tables. We also report results for the non-censored full sample, which have results similar to the censored sample that excludes the top and bottom 5% of firms. After controlling for the expected firm size adjustment in our primary director incentive measures, we find that in seven of the eight tests, at least one of the primary director reputation measures remains significant and with the predicted sign.¹² Despite the significant size effect captured by our director reputation measures, director reputation incentives remain a significant determinant of a large majority of key board actions and firm outcomes we examine, independent of firm size per se.

4.3. Matched sample

Finally, to further address endogenous relations arising from firm size, we repeat our analysis using the differences from a sized and industry matched sample of firms. We restrict firms in this sample to have a majority of independent directors and we match firms where a majority of the independent directors rank the directorship highly without replacement to up to four similarly sized firms where a majority of the independent directors rank the directorship low. We also require matches to be drawn from the same Fama-French 49 industry-year and firms with low director incentives are within seventy-five percent of the market capitalization of the firm with high director incentives. The firm size and industry requirements reduce the size of the matched sample, which makes finding significance more difficult for these infrequent firm outcomes, but it ensures that the firms are very similar on two commonly controlled for major dimensions, while having distinctly different board reputation incentives.¹³ With this matching procedure, we obtain a sharper picture of how differences in board reputation incentives affect the likelihoods of major firm outcomes by minimizing the possibility that these differences are due to a firm size effect or industry effects. The results are reported in Table 11 and for brevity we only report coefficient estimates for key board reputation metrics.

Using our primary reputation measures, we observe that firms with a higher percentage of independent directors who rank the directorship highly are less likely to face a shareholder

¹² Only covenant violations are insignificant for both reputation measures.

¹³ The restrictions we chose allow us to test ten of the eleven firm outcomes examined. We do not test the likelihood of a firm experiencing an exchange-initiated delisting since there are only six occurrences of these within the resulting matched sample.

lawsuit, approve a lucky CEO option grant and they are more likely to repurchase stock, increase cash dividends and split the stock. We also find that in firms having a board with a larger fraction of independent directors for whom this represents a relative low ranked board are more likely to cut dividends.

In summary, we find results consistent with our primary findings for nine of the ten testable outcomes when using this size and industry matched sample of firms. These findings underscore the robustness of our primary results across a wide range of firm outcomes, while mitigating concerns that firm size or other endogenous relations are causing the observed relations between board level director reputation incentives and firm outcomes.

4.4. Difference-in-differences analysis around an exogenous decrease in directorship ranking

In this section, we examine the opposite shock from that used in the primary analysis. Specifically, we consider whether an exogenous fall in a board's rank is associated with a greater likelihood of negative firm outcomes. We implement a difference-in-differences analysis around an exogenous rise in the size of another firm where an independent director also sits on the board, which results in a drop in rank of the board in question where this same independent director sits. Treatment firms are required to remain relatively stable in size (within 10% in our primary tests and within 5% in unreported robustness). Each treatment firm is matched to a control firm without a treatment director in the same Fama-French 49 industry and is the closest in size. We use this matched sample to examine relative changes in the likelihood of negative and positive firm outcomes around these exogenous declines in directorship rank.

Table 12 reports the results from this difference-in-differences analysis. For brevity, only the coefficient estimates for the key difference-in-differences estimates are reported. The control variables replicate the primary analysis of each dependent variable. In all models, standard errors are robust and clustered by firm. Models 1 and 2 examine the likelihood of a firm experiencing a negative outcome defined earlier in Table 8. Model 1 reports results using only difference-in-difference control variables and model 2 includes all the previous controls. In both models, the difference-in-difference estimate is positive and significant, indicating that treatment firms are

significantly more likely to experience a negative outcome relative to control firms following an exogenous decrease in an independent director's ranking of the board.

Overall, the evidence we find when a firm has an independent director, whose ranking of the directorship declines due to an exogenous shock, is consistent with our earlier findings. When a firm has an independent director whose attention shifts to another directorship, they correspondingly pay less attention to this firm, making negative outcomes more likely to occur. Thus, this evidence reinforces the importance of independent directors' allocation of their limited time, energy and attention, with reputation incentives leading them to allocate more of these scarce resources to their relatively more prestigious directorships at the expense of their less prestigious ones.

5. Conclusions

Director reputation creates strong incentives for independent directors to seek to be viewed externally as capable corporate monitors to raise the likelihood of retaining their most valuable directorships. We analyze directors with multiple independent directorships and document the effects of having differential reputation incentives across directorships. Boards comprised of a greater portion of independent directors for whom this directorship is one of their most prestigious are positively associated with firm actions known to enhance director reputations and negatively associated with firm actions known to hurt director reputations. Specifically, firms with stronger independent director reputation incentives have significantly lower likelihoods of covenant violations, shareholder class action lawsuits, backdating of CEO stock options, exchange initiated delisting, dividend reductions and higher likelihoods of dividend increases, stock repurchases and stock splits.

Our strongest evidence comes from an analysis of exogenous shocks to the relative ranking of one independent directorship due to a negative (positive) change in the size of another firm where the same director is also an independent director. Using a difference-in-differences analysis of firms experiencing such an exogenous shock, termed treatment firms, compared to other firms of similar size in the same industry not experiencing such an exogenous shock, we

find that as independent director reputation incentives become stronger, the probability of negative (positive) firm outcomes significantly falls (rises) relative to that of control firms.

Using alternative approaches to extract out firm size effects potentially embedded in our director reputation measures, including using a matched sample based on firm size and controlling for the expected size factor in our director reputation measures by randomizing director-board assignments, shows that a firm's relative size in the sample population is not the primary driver of our findings. Our results are consistent with directors being more concerned with their reputation at their most prestigious and visible directorships.

In summary, our findings underscore the importance of considering individual reputation concerns and the corresponding consequences this can have for the amount of time and energy that directors devote to their duties across the various firms where they serve. In conclusion, the findings of this study highlight the importance of understanding the effects of independent director reputation incentives for researchers, boards of directors and policy makers, because they can significantly affect the supply of time and effort that busy directors are willing to allocate to their board duties, consistent with the evidence found in Masulis and Mobbs (2014), and they highlight the key board decisions and firm actions through which reputation incentives manifest themselves.

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Table 1. Firm Level Descriptive Statistics

This table reports means and medians for various firm-year level variables from fiscal years 1997 to 2012. Panel A reports the director level distribution of the number of directorships held by independent directors in the RiskMetrics universe. Panel B reports firm level characteristics for the censored sample, which excludes finance and utility firms. Panel C reports the percentage of independent directors by firm market capitalization deciles. Panel D reports results for the three sub-samples of firms with a (1) majority of independent directors for whom this is a high ranked directorship, (2) majority of independent directors for whom this is a low ranked directorship and (3) majority of independent directors for whom this is their only directorship.

Panel A

Number of Directorships for 158182

Independent Directors	Number	Percent
1	96311	61%
2	36419	23%
3	16471	10%
4	5976	4%
5	1945	1%
6	623	0.39%
7	251	0.16%
8	134	0.08%
9	31	0.02%
10	21	0.01%

Panel B

Firm Characteristics

	N	Mean	Median
Total Assets (\$ million)	17159	3641.97	1310.8
Market Capitalization (\$ million)	17159	3676	1474
Percent Outside Directors	17131	80.11	83.3
Percent Independent Directors	17131	69.27	71.4
Independent Board	17159	0.88	1.0
Percent Independent Directors-Low Ranked	17159	15.99	12.5
Majority of Independent Directors-Low Ranked	17159	0.13	0.0
Percent Independent Directors-High Ranked	17159	12.03	9.1
Majority of Indep.-Directors High Ranked	17159	0.09	0.0
Per. Indep. Directors (Only): Sole directorship	17159	29.45	28.6
Maj. Indep. Directors (Only): Sole directorship	17159	0.40	0.0
Busy board	17131	0.04	0.0

Table 1. (continued)

<i>Panel C</i>								
Size Decile	Mean		Mean		Mean			
	Percent Independent		Percent Independent		Percent Independent			
	Directors		Directors Low Ranked		Directors High Ranked			
	Pre-2005	Post-2004	Pre-2005	Post-2004	Pre-2005	Post-2004	Pre-2005	Post-2004
Smallest	60.88	74.13	16.16	15.07			1.06	1.39
2	61.23	75.13	15.50	16.54			2.70	2.74
3	62.09	75.37	15.99	15.94			4.50	4.34
4	59.97	76.58	15.46	16.20			5.83	6.85
5	62.77	77.55	16.62	16.12			8.68	9.64
6	63.66	77.30	17.03	16.90			11.28	12.11
7	64.12	77.81	16.58	15.40			14.60	15.43
8	63.58	78.57	16.98	14.56			18.17	17.63
9	63.80	78.68	17.60	15.06			21.79	24.07
Largest	66.54	79.90	16.20	12.89			29.83	28.70

<i>Panel D</i>								
Size Decile	Mean		Mean		Mean		Mean	
	Majority Independent		Majority Independent		Majority Independent		Majority Independent	
	Directors		Directors Low Ranked		Directors High Ranked		Sole Directorship	
	Pre-2005	Post-2004	Pre-2005	Post-2004	Pre-2005	Post-2004	Pre-2005	Post-2004
Smallest	0.79	0.98	0.19	0.09	0.00	0.00	0.50	0.61
2	0.79	0.98	0.15	0.11	0.02	0.01	0.52	0.51
3	0.78	0.98	0.15	0.09	0.02	0.01	0.49	0.54
4	0.77	0.98	0.16	0.09	0.03	0.02	0.49	0.51
5	0.80	0.99	0.16	0.08	0.05	0.03	0.42	0.46
6	0.82	0.99	0.19	0.08	0.07	0.02	0.40	0.37
7	0.81	0.99	0.17	0.07	0.11	0.06	0.39	0.32
8	0.79	0.99	0.19	0.05	0.17	0.09	0.30	0.34
9	0.80	0.97	0.21	0.06	0.26	0.19	0.26	0.23
Largest	0.86	0.98	0.14	0.03	0.44	0.22	0.18	0.15

Table 1. (continued)

<i>Panel E</i>	Majority of Independent Directors-High Ranked			Majority of Independent Directors-Low Ranked			Majority of Independent Directors (Only): Solo		
	<i>Firm Characteristics</i>	N	Mean	Median	N	Mean	Median	N	Mean
Total Assets (\$ million)	1568	8755.42	4925.5	2154	3961.21	1489.2	7058	2017.32	886.1
Market Capitalization (\$ million)	1568	8979.66	6571.0	2154	2786.62	1267.9	7058	2343.86	1040.7
Percent Outside Directors	1568	81.81	85.7	2154	81.47	84.6	7058	78.00	80.0
Percent Independent Directors	1568	68.76	75.0	2154	68.57	72.7	7058	66.39	70.0
Independent Board	1568	0.85	1.0	2154	0.87	1.0	7058	0.85	1.0
Busy board	1568	0.23	0.0	2154	0.21	0.0	7058	0.00	0.0

Table 3. Lucky CEO Option Grants and Independent Director Reputation Incentives

This table presents results from multivariate probit regression analysis of board representation based on the portion of independent outside directors for which this board represents one of their largest or smallest boards and the CEO receiving a lucky option grant as in Bebchuk, Grinstein and Peyer (2010). The data are all the CEO option grants for option granting firms from fiscal years 1997 to 2012 and in the non-censored sample. A lucky grant is defined to be an option grant issued on the day with the lowest stock price for the month. There are 32,957 CEO option grants with 2,831 being identified as lucky. Models 1 and 2 report results from an analysis of annual observations. Models 3 and 4 report results from analysis of all CEO option grant observations. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. Majority of Independent Directors-High (Low) is an indicator variable that equals one if for more than 50% of the outside directors this board seat is for a High (Low) ranked firm (by market capitalization) relative to the size of the firms of the other boards on which they sit as a director. Relative Size is the natural logarithm of the ratio of year end market capitalization to the median market capitalization for the sample year. New Economy is an indicator if the firm is in one of the following SIC industries, as in Murphy (2003), 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, 7372 and 7373. Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2	Model 3	Model 4
Dependent Variable: Lucky CEO Option Grant Indicator	Probit	Probit	Probit	Linear Probability Model
Percent Independent Directors-High Ranked	-0.003** (0.04)		-0.003** (0.02)	-0.0004** (0.02)
Percent Independent Directors-Low Ranked	-0.001 (0.33)		-0.0005 (0.62)	-0.00008 (0.63)
Majority Independent Directors-High Ranked		-0.058 (0.35)		
Majority Independent Directors-Low Ranked		0.022 (0.73)		
Majority Independent Directors (Sole)		0.054 (0.18)		
Independent Board	0.03 (0.67)	-0.001 (0.99)	-0.027 (0.63)	-0.006 (0.55)
Busy Board	-0.068 (0.48)	-0.111 (0.24)	-0.034 (0.63)	-0.0048 (0.63)
Number of Grants	0.143*** (<.01)	0.143*** (<.01)		
Relative Size	0.056** (0.03)	0.053** (0.04)	0.03 (0.14)	0.005 (0.14)
Ln(Assets)	-0.041 (0.11)	-0.047* (0.06)	-0.033 (0.1)	-0.0052* (0.1)
New Economy	-0.05 (0.63)	-0.044 (0.67)	-0.044 (0.56)	-0.0062 (0.62)
CEO Board Tenure	0.001 (0.68)	0.001 (0.6)	0.002 (0.41)	0.0003 (0.45)
CEO Ownership	-0.002 (0.65)	-0.002 (0.64)	-0.002 (0.47)	-0.0004 (0.49)
SOX	-0.15 (0.14)	-0.141 (0.17)	-0.11 (0.28)	-0.012 (0.470)
Number of Observations	8540	8540	20425	20441
Fixed Effects	Year	Year	Year/Industry	Year/Industry
Pseudo-R ² / Adjusted-R ²	11.79%	11.75%	1.04%	0.26%

Table 4. Covenant Violations and Independent Director Reputation Incentives

This table presents results from multivariate probit analysis of board representation based on the portion of independent directors for which this board represents one of their largest or smallest boards and covenant violations. The data are from fiscal years 1997 to 2007 and exclude finance and utility firms. Covenant violations are from Nini, Smith and Sufi (2012). There are 755 covenant violations and 572 new covenant violations. New covenant violations are ones where there was not violation in the prior four quarters. Lowest (Highest) for Majority of Independent is an indicator variable that equals one if for more than 50% of the independent directors this board seat is for the smallest (highest) ranked firm (by market capitalization) relative to the size of the firms of the other boards on which they sit as a director. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. All models include year fixed effects and model 4 includes industry fixed effects. Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5% and 1% levels respectively.

	Model 1	Model 2	Model 3	Model 4
<i>Dependent Variable: Covenant Violation Indicator</i>	Probit Covenant Violation	Probit New Covenant Violation	Probit Covenant Violation	Linear Probability Model Covenant Violation
% Indep. Directors-High Ranked	-0.009*** (<i><.01</i>)	-0.006*** (<i><.01</i>)		-0.0010** (<i>0.02</i>)
% Indep. Directors-Low Ranked	0.003* (<i>0.1</i>)	0.002 (<i>0.25</i>)		0.0003 (<i>0.25</i>)
Maj. Indep. Directors-High Ranked			-0.257*** (<i><.01</i>)	
Maj. Indep. Directors-Low Ranked			0.156** (<i>0.04</i>)	
Majority Independent Directors (Sole)			0.012 (<i>0.84</i>)	
Independent Board	0.026 (<i>0.74</i>)	0.018 (<i>0.82</i>)	0 (<i>1</i>)	0.004 (<i>0.64</i>)
Busy Board	0.079 (<i>0.56</i>)	0.011 (<i>0.93</i>)	0.013 (<i>0.92</i>)	0.007 (<i>0.62</i>)
CEO Chair	0.033 (<i>0.55</i>)	0.03 (<i>0.57</i>)	0.032 (<i>0.57</i>)	0.003 (<i>0.68</i>)
Ln(Board Size)	-0.034 (<i>0.79</i>)	-0.024 (<i>0.83</i>)	-0.036 (<i>0.78</i>)	-0.0076 (<i>0.63</i>)
Institutional Holdings	0 (<i>0.94</i>)	0.001 (<i>0.49</i>)	0 (<i>0.97</i>)	-0.00013 (<i>0.45</i>)
Founder Family Director	-0.202* (<i>0.07</i>)	-0.155 (<i>0.1</i>)	-0.197* (<i>0.08</i>)	-0.018* (<i>0.07</i>)
GIM Index	-0.028** (<i>0.01</i>)	-0.024** (<i>0.01</i>)	-0.029*** (<i><.01</i>)	-0.003** (<i>0.04</i>)
Ln(Assets)	-0.0313 (<i>0.37</i>)	-0.029 (<i>0.33</i>)	-0.061* (<i>0.070</i>)	-0.01** (<i>0.02</i>)
ROA	-0.889*** (<i><.01</i>)	-0.643*** (<i><.01</i>)	-0.949*** (<i><.01</i>)	-0.121*** (<i><.01</i>)
Industry Adjusted Leverage	0.845*** (<i><.01</i>)	0.468*** (<i><.01</i>)	0.867*** (<i><.01</i>)	0.144*** (<i><.01</i>)
Growth Rate of Assets	0 (<i>0.58</i>)	0.0001 (<i>0.87</i>)	0 (<i>0.55</i>)	0 (<i>0.84</i>)
Volatility	1.688*** (<i><.01</i>)	1.447*** (<i><.01</i>)	1.626*** (<i><.01</i>)	0.385*** (<i><.01</i>)
Number of Business Segments	0.054*** (<i><.01</i>)	0.03** (<i>0.02</i>)	0.054*** (<i><.01</i>)	0.006*** (<i><.01</i>)
Number of Observations	8674	8674	8674	8691
Fixed Effects	Year	Year	Year	Year/Industry
Pseudo-R ² / Adjusted-R ²	6.82%	4.39%	6.64%	4.60%

Table 5. Shareholder Class Action Lawsuits and Independent Director Reputation Incentives

This table presents results from multivariate regression analysis of board representation based on the portion of independent directors for which this board represents one of their largest or smallest boards and the propensity of being sued. The data are from fiscal years 1997 to 2012. There are 511 class action lawsuits for the sample excluding financial and utility firms. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. Majority of Independent Directors-High (Low) is an indicator variable that equals one if for more than 50% of the outside directors this board seat is for a High (Low) ranked firm (by market capitalization) relative to the size of the firms of the other boards on which they sit as a director. All models include year fixed effects. Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2	Model 3	Model 4
<i>Dependent Variable: Class Action Lawsuit Indicator</i>	Probit	Probit	Probit	Linear Probability
Percent Independent Directors-High Ranked	-0.0043** (0.03)			-0.0003** (0.02)
Percent Independent Directors-Low Ranked	-0.0022 (0.17)			-0.00007 (0.38)
Majority Independent Directors-High Ranked		-0.152* (0.08)		
Majority Independent Directors-Low Ranked		-0.058 (0.47)		
Majority Independent Directors-High Ranked (Audit)			-0.232** (0.02)	
Majority Independent Directors-Low Ranked (Audit)			-0.108 (0.22)	
Majority Independent Directors (Sole)		0.039 (0.44)	0.035 (0.49)	
Independent Board	0.1512* (0.07)	0.1 (0.22)	0.116 (0.15)	0.008* (0.05)
Busy Board	-0.0028 (0.98)	-0.017 (0.9)	-0.031 (0.8)	0.0003 (0.97)
CEO Chair	-0.029 (0.56)	-0.0372 (0.44)	-0.0391 (0.42)	0 (0.9)
CEO Board Tenure	-0.0054** (0.05)	-0.005* (0.08)	-0.005* (0.08)	-0.00023** (0.05)
Ln(Board Size)	-0.154 (0.16)	-0.184* (0.09)	-0.179 (0.1)	-0.003 (0.61)
Institutional Holdings	0.001 (0.24)	0.001 (0.25)	0.001 (0.26)	0 (0.33)
Founding Family Director	-0.081 (0.51)	-0.078 (0.53)	-0.075 (0.55)	0 (0.94)
Ln(Q)	0.3865*** (<i><.01</i>)	0.3784*** (<i><.01</i>)	0.3763*** (<i><.01</i>)	0.0206*** (<i><.01</i>)
Ln(Assets)	-0.2263* (0.1)	-0.2355* (0.08)	-0.2507* (0.07)	-0.0132 (0.21)
Ln(Assets) ²	0.0233*** (<i><.01</i>)	0.0232*** (<i><.01</i>)	0.0242*** (<i><.01</i>)	0.0014** (0.05)
Leverage	0.1853 (0.13)	0.1894 (0.12)	0.1985 (0.11)	-0.0031 (0.71)
ROA	-0.1822 (0.23)	-0.1821 (0.23)	-0.179 (0.22)	-0.0218 (0.22)
Growth Rate of Assets	0.0006** (0.03)	0.0006** (0.03)	0.0006** (0.02)	0.0001** (0.01)
Industry Litigation Activity	24.17*** (<i><.01</i>)	24.18*** (<i><.01</i>)	24.2*** (<i><.01</i>)	2.98*** (<i><.01</i>)
Number of Observations	16624	16624	16624	16624
Fixed Effect	Year	Year	Year	Year/Industry
Pseudo-R ² / Adjusted-R ²	12.97%	12.92%	13.04%	5.49%

Table 6. Dividend Reductions and Independent Director Reputation Incentives

This table presents results from multivariate regression analysis of board representation based on the portion of independent directors for which this board represents one of their largest or smallest boards and the propensity of dividend paying firms to reduce its dividend by 10% or more. There are 2,463 instances of dividend reductions in the sample excluding financial and utility firms from fiscal years 1997 to 2012 and 875 are by 10% or more. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. Majority of Independent Directors-High (Low) is an indicator variable that equals one if for more than 50% of the outside directors this board seat is for a High (Low) ranked firm (by market capitalization) relative to the size of the firms of the other boards on which they sit as a director. The dependent variable in model 3 is one if the firm reduced its dividend by 25% or more from the prior year (650 instances). Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2	Model 3	Model 4
Dependent Variable: Dividend Reduction of $\geq 10\%$ or $\geq 25\%$	Probit -10%	Probit -10%	Probit -25%	Linear Probability -10%
Percent Independent Directors-High Ranked	-0.004** (0.01)		-0.004** (0.03)	-0.0005* (0.08)
Percent Independent Directors-Low Ranked	0.005*** ($<.01$)		0.004** (0.01)	0.0010*** ($<.01$)
Majority Independent Directors-High Ranked		-0.134* (0.09)		
Majority Independent Directors-Low Ranked		0.131** (0.03)		
Majority Independent Directors (Sole)		-0.037 (0.46)		
Independent Board	0.026 (0.74)	0.053 (0.48)	-0.0061 (0.94)	0.003 (0.78)
Busy Board	-0.009 (0.93)	0.011 (0.91)	-0.048 (0.68)	-0.001 (0.95)
CEO Chair	-0.049 (0.32)	-0.043 (0.38)	-0.048 (0.37)	-0.009 (0.25)
CEO Board Tenure	-0.004 (0.16)	-0.004 (0.13)	-0.004 (0.19)	-0.0004 (0.29)
Ln(Board Size)	-0.3995*** ($<.01$)	-0.379*** ($<.01$)	-0.433*** ($<.01$)	-0.053*** ($<.01$)
Institutional Holdings	-0.0011 (0.31)	-0.0009 (0.41)	-0.002 (0.12)	-0.0003* (0.08)
Founding Family Director	-0.09 (0.23)	-0.084 (0.26)	-0.143* (0.07)	-0.012 (0.28)
Ln(Assets)	-0.18 (0.28)	-0.1897 (0.25)	-0.188 (0.29)	-0.029 (0.28)
Ln(Assets) ²	0.01 (0.26)	0.011 (0.3)	0.0119 (0.28)	0.002 (0.33)
Ind. Adj. ROA	-1.71*** ($<.01$)	-1.8107*** ($<.01$)	-1.919*** ($<.01$)	-0.3142*** ($<.01$)
Leverage	1.08*** ($<.01$)	1.119*** ($<.01$)	0.9815*** ($<.01$)	0.216*** ($<.01$)
NYSE	-0.17*** ($<.01$)	-0.1633*** ($<.01$)	-0.205*** ($<.01$)	-0.0235** (0.03)
Number of Observations	8952	8952	8952	8949
Fixed Effects	Year	Year	Year	Year/Industry
Pseudo-R ² / Adjusted-R ²	9.13%	8.92%	9.91%	6.12%

Table 7. Exchange Initiated Delistings and Independent Director Reputation Incentives

This table presents results from multivariate regression analysis of board representation based on the portion of independent directors for which this board represents one of their largest or smallest boards and firm delisting. Delisting is defined as the exchange dropping the firm. Delisting due to mergers are not included. Finance and utility firms are excluded. There are 209 delistings from fiscal years 1997 to 2012. The dependent variable is one if the firm is delisted due to an exchange-initiated delisting as indicated in the CRSP delisting codes. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. Majority of Independent Directors-High (Low) is an indicator variable that equals one if for more than 50% of the outside directors this board seat is for a High (Low) ranked firm (by market capitalization) relative to the size of the firms of the other boards on which they sit as a director. *p*-values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2	Model 3
<i>Dependent Variable: Delisted Indicator</i>			Linear
	Probit	Probit	Probability Model
Percent Independent Directors-High Ranked	-0.020*** (<i><.01</i>)		-0.0002*** (<i><.01</i>)
Percent Independent Directors-Low Ranked	0.007** (<i>0.01</i>)		0.0001* (<i>0.05</i>)
Majority Independent Directors-High Ranked		-0.665** (<i>0.04</i>)	
Majority Independent Directors-Low Ranked		0.11 (<i>0.38</i>)	
Majority Independent Directors (Sole)		-0.028 (<i>0.77</i>)	
Independent Board	-0.277* (<i>0.06</i>)	-0.265* (<i>0.05</i>)	-0.004 (<i>0.28</i>)
Busy Board	-0.268 (<i>0.36</i>)	-0.219 (<i>0.45</i>)	-0.004 (<i>0.31</i>)
CEO Chair	0.186** (<i>0.04</i>)	0.185** (<i>0.04</i>)	0.002* (<i>0.06</i>)
Ln(Board Size)	-0.151 (<i>0.44</i>)	-0.167 (<i>0.39</i>)	-0.004 (<i>0.32</i>)
Institutional Holdings	-0.002 (<i>0.19</i>)	-0.0022 (<i>0.25</i>)	-0.00003 (<i>0.37</i>)
Outside Director Ownership	0.006 (<i>0.3</i>)	0.006 (<i>0.28</i>)	0.0001 (<i>0.63</i>)
Founder Present	0.01 (<i>0.92</i>)	0.013 (<i>0.92</i>)	-0.003 (<i>0.26</i>)
GIM Index	-0.007 (<i>0.82</i>)	-0.004 (<i>0.89</i>)	0.0001 (<i>0.93</i>)
Ln(Assets)	-0.13 (<i>0.72</i>)	-0.153 (<i>0.66</i>)	-0.0014 (<i>0.81</i>)
Ln(Assets) ²	0.01 (<i>0.75</i>)	0.0047 (<i>0.83</i>)	0.0001 (<i>0.77</i>)
ROA	-2.44*** (<i><.01</i>)	-2.61*** (<i><.01</i>)	-0.0441*** (<i><.01</i>)
Leverage	0.94*** (<i><.01</i>)	1.033*** (<i><.01</i>)	0.018*** (<i><.01</i>)
Current Ratio	-0.05 (<i>0.21</i>)	-0.055 (<i>0.18</i>)	-0.0005 (<i>0.22</i>)
Volatility	1.77** (<i>0.02</i>)	1.814** (<i>0.03</i>)	0.079*** (<i><.01</i>)
Tobin's Q	-0.37*** (<i><.01</i>)	-0.436*** (<i><.01</i>)	0.0001 (<i>0.86</i>)
Number of Observations	14496	14496	14496
Fixed Effect	none	none	Year/Industry
Pseudo-R ² / Adjusted-R ²	20.77%	19.62%	2.15%

Table 8. Occurrence of Negative Firm Outcomes: Difference-In-Differences Analysis around Exogenous Directorship Ranking Changes

This table presents results from multivariate difference-in-differences regression analysis of board representation based on the portion of independent directors for which this board represents one of their largest or smallest boards and the propensity of the firm experiencing a negative outcome. The dependent variable equals one if the firm experiences a covenant violation, a dividend reduction, a class action lawsuit, a lucky CEO option grant or an exchange initiated delisting and zero otherwise. Control variables are the same as in the previous tables, but are not reported for brevity. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. The data are for fiscal years 1997 to 2012 and exclude financial and utility firms. A treatment firm has at least one treatment director. A treatment director is an independent director with multiple directorships for whom the firm of another one of their directorships decreased in size and this resulted in a ranking increase for the current directorship. Control firms are in the same Fama and French industry, with the nearest market capitalization to the treatment firm, but have no treatment directors. The estimated model is

$$\text{Negative Firm Outcome}_{i,t} = \beta_0 + \beta_1 \text{Treatment}_i + \beta_2 \text{Post-Treatment}_t + \beta_3 \text{Treatment}_i * \text{Post-Treatment}_t + \text{Controls}_{i,t} + \varepsilon_{i,t}.$$

Post-treatment_t is an indicator variable that equals zero in the two years prior to the ranking change and one in the second and third years following the ranking change event. Treatment_i equals one for treatment firm-years and zero for control firm-years. The coefficient estimate of the interaction term, β_3 , is the difference-in-differences estimate. Standard errors are robust, clustered by firm and p -values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2	Model 3	Model 4
Dependent Variable:	Probit Negative Outcome	Probit Negative Outcome	Probit Negative Outcome	Linear Probability Model Negative Outcome
Per. Indep. Directors-High Ranked	-0.0026** (0.02)			
Per. Indep. Directors-Low Ranked	0.0034*** (<.01)			
Treatment		0.129 (0.11)	0.054 (0.54)	0.019 (0.49)
Post-Shock		0.004 (0.96)	0.131 (0.18)	0.04 (0.19)
Treatment X Post-Shock		-0.224** (0.05)	-0.205* (0.09)	-0.067* (0.07)
Number of Observations	16864	2387	2176	2176
Controls	Yes	No	Yes	Yes
Pseudo-R ² / Adjusted-R ²	3.26%	0.32%	4.68%	3.48%

Table 9. Stock Repurchases, Dividend Increases and Stock Splits and Independent Director Reputation Incentives

This table presents results from multivariate regression analysis of the percentage of stock repurchases, dividend increases and stock splits. Share repurchase (%) is the expense on repurchasing common and preferred stock less the reduction in value of the net preferred shares outstanding all scaled by the end of year market capitalization. Dividend increase is an indicator variable that equals one if the current year dividend is higher than the prior year dividend by 5% or more. Stock Split is an indicator variable that equals one if the firm conducts a split of 5 for 4 or better during the year and zero otherwise. The sample excludes financial and utility firms and is from fiscal years 1997 to 2012. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm. Majority of Independent Directors-High (Low) is an indicator variable that equals one if for more than 50% of the outside directors this board seat is for a High (Low) ranked firm. For stock repurchases, we use OLS and models 1, 2 and 3 include industry fixed effects and model 4 incorporates firm fixed effects. We use probit models to examine the dividend increases, stock splits and the positive firm outcome indicator variables. Models 7, 10 and 13 are linear probability models that include industry fixed effects. All models include year fixed effects. Models 11 through 13 report results from difference-in-differences tests using treatment and control firms for dividend paying firms. A treatment firm has at least one treatment director. A treatment director is an independent director with multiple directorships for whom the firm of another one of their directorships decreased in size and this resulted in a ranking increase for the current directorship. Control firms are in the same Fama and French industry, with the nearest market capitalization to the treatment firm, but have no treatment directors. The dependent variable, positive outcome, equals one if the firm experiences a dividend increase, repurchases a portion of the shares outstanding during the year, or conducts a stock split of 5 for 4 or better and zero otherwise. The estimated model is

$$Positive\ Firm\ Outcome_{i,t} = \beta_0 + \beta_1 Treatment_t + \beta_2 Post-Treatment_t + \beta_3 Treatment_t * Post-Treatment_t + Controls_{i,t} + \varepsilon_{i,t}.$$

Post-treatment_t is an indicator variable that equals zero in the year prior to the ranking change and one in the two years following the ranking change. *Treatment_t* equals one for treatment firm-years and zero for control firm-years. The coefficient estimate of the interaction term, β_3 , is the difference-in-differences estimate. Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

Table 9. (continued)

<i>Dependent Variable:</i>	Share Repurchases				Dividend Increase Indicator			Stock Split Indicator			Positive Outcome Indicator		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13
	Full Sample	Full Sample	Dividend Payers	Dividend Payers	Probit	Probit	Linear Probability Model	Probit	Probit	Linear Probability Model	Probit	Probit	Linear Probability Model
Percent Independent Directors-High Ranked	0.032*** (<.01)		0.045*** (<.01)	0.038*** (<.01)	0.004*** (<.01)		0.001*** (<.01)	0.008*** (<.01)		0.001*** (<.01)			
Percent Independent Directors-Low Ranked	0.009 (0.12)		0.012 (0.22)	0.013 (0.19)	-0.006*** (<.01)		-0.002*** (<.01)	-0.008*** (<.01)		-0.001*** (<.01)			
Majority Independent Directors-High Ranked		0.341 (0.23)					0.077 (0.15)			0.255*** (<.01)			
Majority Independent Directors-Low Ranked		-0.239 (0.49)					-0.151*** (<.01)			-0.297*** (<.01)			
Majority Independent Directors (Sole)		-0.179 (0.4)					0.048 (0.23)			0.082** (0.04)			
Treatment											-0.127 (0.19)	-0.08 (0.44)	-0.029 (0.35)
Post-Shock											-0.019 (0.79)	0.093 (0.29)	0.02 (0.44)
Treatment X Post-Shock											0.274*** (<.01)	0.209* (0.06)	0.068** (0.04)
Independent Board	0.036 (0.91)	0.293 (0.35)	0.1798 (0.73)	-0.403 (0.24)	-0.019 (0.76)	-0.058 (0.31)	0.0003 (0.99)	0.074 (0.21)	0.057 (0.32)	0.01 (0.29)		-0.041 (0.77)	0.0136 (0.72)
Busy Board	-1.378 (0.1)	-0.816 (0.33)	-1.668* (0.1)	-0.963 (0.29)	0.062 (0.39)	0.047 (0.52)	0.019 (0.47)	-0.079 (0.38)	-0.068 (0.46)	-0.018 (0.12)		0.02 (0.87)	0.023 (0.54)
CEO Chair	-0.098 (0.61)	-0.037 (0.85)	-0.328 (0.24)	0.167 (0.52)	0.001 (0.99)	-0.009 (0.83)	0.004 (0.77)	0.018 (0.65)	0.0159 (0.69)	0 (0.92)		0.022 (0.79)	0 (0.99)
CEO Board Tenure	0.008 (0.44)	0.004 (0.72)	0.021 (0.16)	-0.003 (0.85)	0.0060*** (<.01)	0.0060*** (<.01)	0.002** (0.02)	0.004* (0.06)	0.004* (0.07)	0.0004 (0.17)		0.004 (0.35)	0.0015 (0.20)
Ln(Board Size)	0.2628 (0.63)	0.41 (0.45)	0.992 (0.3)	0.294 (0.72)	0.1968** (0.03)	0.161* (0.08)	0.028 (0.4)	-0.189** (0.03)	-0.217** (0.01)	-0.035*** (<.01)		0.278 (0.14)	0.0566 (0.27)
Institutional Holdings	0.0119** (0.02)	0.0122** (0.02)	0.019** (0.03)	0.0069 (0.51)	-0.002** (0.02)	-0.0022** (0.01)	-0.0008*** (<.01)	-0.012*** (<.01)	-0.012*** (<.01)	-0.002*** (<.01)		-0.0029 (0.12)	-0.0008 (0.13)
Founding Family Director	0.521** (0.04)	0.467* (0.06)	1.0240*** (<.01)	0.776* (0.07)	0.024 (0.69)	0.021 (0.73)	0.006 (0.76)	0.075 (0.25)	0.062 (0.35)	0.008 (0.39)		-0.212 (0.13)	-0.074 (0.11)
Ln(Assets)	-0.6 (0.42)	-0.6038 (0.41)	-2.428* (0.09)	-2.17 (0.31)	0.5*** (<.01)	0.5111*** (<.01)	0.163*** (<.01)	0.81*** (<.01)	0.83*** (<.01)	0.097*** (<.01)		0.227 (0.37)	0.086 (0.23)
Ln(Assets) ²	0.03 (0.49)	0.045 (0.36)	0.1445 (0.11)	0.098 (0.43)	-0.03*** (<.01)	-0.026*** (<.01)	-0.0082** (0.01)	-0.053*** (<.01)	-0.052*** (<.01)	-0.0061*** (<.01)		-0.009 (0.55)	-0.0031 (0.49)
Ind. Adj. ROA	4.32*** (<.01)	4.5367*** (<.01)	9.606*** (<.01)	2.297 (0.29)	1.96*** (<.01)	2.0987*** (<.01)	0.692*** (<.01)	0.53*** (<.01)	0.537*** (<.01)	0.105*** (<.01)		2.3929*** (<.01)	0.606*** (<.01)
Leverage	0.29 (0.76)	0.21 (0.83)	-1.0755 (0.57)	1.242 (0.6)	-0.53*** (<.01)	-0.575*** (<.01)	-0.1954*** (<.01)	-0.933*** (<.01)	-0.993*** (<.01)	-0.095*** (<.01)		-1*** (<.01)	-0.3*** (<.01)
NYSE	0.33 (0.26)	0.3651 (0.21)	1.243* (0.07)		-0.04 (0.46)	-0.0425 (0.39)	-0.023 (0.21)	-0.007 (0.86)	-0.009 (0.83)	-0.002 (0.66)		0.0433 (0.67)	0.008 (0.79)
Number of Observations	15601	15601	8691	8691	8952	8952	8949	16637	16637	16634	2719	2681	2681
Fixed Effect	Year/Industry	Year/Industry	Year/Industry	Year/Firm	Year	Year	Year/Industry	Year	Year	Year/Industry	none	Year	Year/Industry
Adjusted-R ²	5.86%	5.68%	9.61%	53.46%	7.48%	7.21%	10.29%	19.83%	19.64%	12.63%	0.39%	7.76%	11.77%

Table 10. Robustness Analysis Using Randomized Size Adjustment Factors

This table presents results of the primary models in each prior table while controlling for randomized size factors that correspond to our primary measures of representation of independent directors who view the directorship as relatively High or Low in its prestige. The randomized factors are created by randomly assigning all of the directors in a year to the sample firms and then computing our primary measures. This process is repeated 100 times and the average measures are computed as the size adjustment factors, both large and small. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. Majority Independent Directors-Highest (Lowest) Ranked is an indicator variable that equals one if for a majority of the independent directors this firm is the largest (smallest) firm of all their directorships. The controls in each model are the same as in the prior tables. Just the primary reputation measures and the randomized size adjustment factors are reported here for brevity. The results are for the full uncensored sample. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 6	Model 8
<i>Dependent Variable:</i>	Probit Lucky Option Grants	Probit Covenant Violation	Probit Shareholder Lawsuit	Probit Delisting	Probit Dividend Reduction	OLS Stock Repurchase	Probit Dividend Increase	Probit Stock Split
Per. Indep. Directors-High Ranked	-0.003** (0.05)	0.001 (0.72)	-0.005** (0.02)	-0.012** (0.04)	-0.002 (0.27)	0.016** (0.04)	0.003** (0.03)	-0.001 (0.77)
Per. Indep. Directors-Low Ranked	-0.0014 (0.34)	0.00005 (0.98)	-0.003* (0.05)	0.005** (0.05)	0.004*** (<i><.01</i>)	0.011* (0.1)	-0.001 (0.35)	-0.005*** (<i><.01</i>)
Adjustment Factor High	0.005 (0.35)	-0.04*** (<i><.01</i>)	0.003 (0.65)	0.05560*** (<i><.01</i>)	-0.018*** (<i><.01</i>)	0.126*** (<i><.01</i>)	0.009** (0.03)	0.04*** (<i><.01</i>)
Adjustment Factor Low	-0.008 (0.2)	0.023*** (<i><.01</i>)	0.009 (0.22)	0.03460*** (<i><.01</i>)	0.007 (0.2)	-0.01 (0.7)	-0.009** (0.05)	-0.034*** (<i><.01</i>)
Independent Board	0.056 (0.51)	0.054 (0.6)	0.05 (0.66)	-0.5510*** (<i><.01</i>)	0.094 (0.34)	-0.457 (0.340)	-0.013 (0.86)	0.046 (0.58)
Busy Board	-0.077 (0.43)	0.102 (0.48)	0.052 (0.7)	-0.2710 (0.26)	0.056 (0.57)	-1.292 (0.19)	0.011 (0.88)	-0.155 (0.14)
Number of Observations	8029	8004	14840	15146	8849	13927	16533	14837
Adjusted or Psuedo-R ² or Prob > χ^2	11.64%	9.31%	13.38%	26.99%	8.80%	5.36%	11.99%	22.92%

Table 11. Robustness Analysis Using a Matched Sample

This table presents results from multivariate regressions using a matched sample. The sample is constructed by matching firms with a Majority of Independent Directors with High reputation incentives (treatment) to firms with a Majority of Independent Directors with Low reputation incentives (control). Both treatment and control firms must have at least 50% independent directors. For each year we match each treatment firm with up to four control firms in the same Fama-French 49 Industry classification that are closet in size (market capitalization) to the treatment firm. We discard treatment firms that we are not able to find at least one match that is within 75% of its size. We report the regression coefficient estimate for our primary measures of board reputation incentives from each of the firm outcomes we examine. Percent Independent Directors-High (Low) Ranked is the percentage of independent directors for whom the firm of this board is a high (low) ranked firm (by market capitalization) relative to all the firms for which the individual also serves as director. All models include year fixed effects. The controls in each model are the same as in the prior tables and are suppressed here for brevity. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
<i>Dependent Variable:</i>	Probit Lucky Option Grants	Probit Covenant Violation	Probit Shareholder Lawsuit	Probit Dividend Reduction	OLS Stock Repurchase	Probit Dividend Increase	Probit Stock Split
Regression Coefficients							
Per. Indep. Directors-High Ranked	-0.010** (0.05)	-0.002 (0.75)	-0.017** (0.03)	-0.001 (0.9)	0.030* (0.06)	0.008** (0.03)	0.009** (0.04)
Per. Indep. Directors-Low Ranked	-0.007 (0.15)	-0.002 (0.77)	0.0004 (0.95)	0.009** (0.02)	0.029 (0.13)	-0.002 (0.54)	-0.006 (0.19)
Busy Board	0.336* (0.07)	-0.037 (0.89)	0.286 (0.33)	-0.11 (0.49)	0.319 (0.560)	-0.013 (0.93)	0.052 (0.75)
Number of Observations	521	609	872	734	1032	1079	887
Adjusted or Psuedo-R ² or Prob > χ^2	18.94%	19.39%	31.22%	10.05%	6.89%	15.22%	18.03%

Table 12. Difference-In-Differences Analysis around Exogenous Directorship Ranking Decrease

This table presents results from multivariate difference-in-differences regression analysis of various firm outcomes and the decrease in ranking of at least one independent director on a firm’s board arising from an increase in size of another firm where the director also sits on the board. The dependent variable in models 1 and 2 is a binary variable that equals one if the firm experiences a negative outcome as defined in Table 8 and zero otherwise. The data are for fiscal years 1997 to 2012 and exclude financial and utility firms. A treatment firm has at least one independent director with multiple directorships for whom the firm of another one of their directorships increased in size and this resulted in a ranking decrease for the current directorship. The treatment firm also did not decrease in size by more than 10%. Control firms are in the same Fama and French industry, with the nearest market capitalization to the treatment firm, but have no treatment directors. The estimated model is

$$Firm\ Outcome_{i,t} = \beta_0 + \beta_1 Treatment_i + \beta_2 Post-Treatment_t + \beta_3 Treatment_i * Post-Treatment_t + Controls_{i,t} + \varepsilon_{i,t}.$$

Post-treatment_t is an indicator variable that equals zero in the two years prior to the ranking change and one in the two years following the ranking change event. *Treatment_i* equals one for treatment firm-years and zero for control firm-years. The coefficient estimate of the interaction term, β_3 , is the difference-in-differences estimate. Models 5 and 6 are restricted to firms that paid a dividend in the prior year. Control variables are the same as in previous Tables but are not reported here for brevity. Standard errors are robust, clustered by firm and *p*-values are in parentheses beneath the coefficients. *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

	Model 1	Model 2
Dependent Variable:	Probit Negative Outcome	Probit Negative Outcome
Treatment	0.132* (0.06)	0.0570 (0.46)
Post-Shock	-0.162** (0.03)	-0.139* (0.1)
Treatment X Post-Shock	0.23** (0.02)	0.219** (0.05)
Number of Observations	3075	2806
Controls	No	Yes
Pseudo-R ²	0.82%	6.28%

Appendix: Variable Definitions

Variable	Definition and Data Source
<i>Director Characteristics</i>	
High Ranked Directorship	Indicator variable: equals 1 if the directorship is 10% larger than the director's smallest directorship measured by the market capitalization of the firm. Source: RiskMetrics.
Low Ranked Directorship	Indicator variable: equals 1 if the directorship is 10% smaller than the director's largest directorship measured by the market capitalization of the firm. Source: RiskMetrics.
Sole Directorship	Indicator variable: equals 1 if the directorship is the director's only directorship. Source: RiskMetrics.
Number of Directorships	Number of additional directorship identified within the RiskMetrics data set. Source: RiskMetrics.
<i>Board Characteristics</i>	
Independent Board	Indicator variable: equals 1 if the percent independent outside directors is greater than 50% and is 0 otherwise. Source: RiskMetrics.
Percent Independent Directors Low Ranked (ID-LOW)	Percentage of board members who are independent outside directors and this directorship is 10% smaller than their largest directorship measured by the market capitalization of the firm. Source: RiskMetrics
Percent Independent Directors High Ranked (ID-HIGH)	Percentage of board members who are independent outside directors and this directorship is 10% larger than their smallest directorship measured by the market capitalization of the firm. Source: RiskMetrics.
Majority Independent Directors Low Ranked (Maj-ID-LOW)	Indicator variable: equals 1 if the percent of independent outside directors for whom this is directorship is 10% smaller than their largest directorship by market capitalization of the firm is greater than 50% and is 0 otherwise. Source: RiskMetrics.
Majority Independent Directors High Ranked (Maj-ID-HIGH)	Indicator variable: equals 1 if the percent of independent outside directors for whom this is directorship is 10% larger than their smallest directorship by market capitalization of the firm is greater than 50% and is 0 otherwise. Source: RiskMetrics.
Percent Independent Directors (Sole)	Percentage of board members for whom this directorship is their only directorship. Source: RiskMetrics.
Majority Independent Directors (Sole)	Indicator variable: equals 1 if for more than 50% of the independent outside directors, this directorship is their only directorship. Source: RiskMetrics.
Majority Independent Directors High Ranked (Audit) (Comp)	Indicator variable: equals 1 if the percent of directors on the audit (compensation) committee are independent and this directorship is 10% larger than their smallest directorship by market capitalization of the firm is greater than 50% and is 0 otherwise. Source: RiskMetrics.
Majority Independent Directors Low Ranked (Audit) (Comp)	Indicator variable: equals 1 if the percent of directors on the audit (compensation) committee are independent and this directorship is 10% smaller than their largest directorship by market capitalization of the firm is greater than 50% and is 0 otherwise. Source: RiskMetrics.

Board Size	Number of directors on the board at year-end. Source: RiskMetrics.
Busy Board	Indicator variable: equals 1 if a majority of the independent outside directors each hold 3 or more additional directorships. Source: RiskMetrics.
Founding Family Director	Indicator variable: equals 1 if one of the directors is a member of the founding family. Source: Hand collected.
Founder Present	Indicator variable: equals 1 if one of the directors is the founder. Source: Hand collected.
Outside Director Ownership	Percent of common shares outstanding held by all outside directors of the board at year-end, including stock options. Source: RiskMetrics.
Percent Independent Directors	Percentage of the board who are independent outside directors. Source: RiskMetrics.
<u>CEO Characteristics</u>	
CEO Chair	Indicator variable: equals 1 if the CEO is also the chairperson and is 0 otherwise. Source: RiskMetrics
CEO Ownership	Percent of common shares outstanding held by the CEO at year-end, including stock options. Source: RiskMetrics.
CEO Tenure	The number of years the CEO has served on the board. Source: RiskMetrics
“Lucky” CEO Option Grant	Indicator variable: equals 1 if the CEO received an option grant issued on the day with the lowest stock price for the month as in Bebchuk, Grinstein and Peyer (2010) Source: Thomson’s Financial’s Insider Trading database.
Founder CEO	Indicator variable: equals 1 if the CEO is also the founder. Source: Hand collected.
<u>Firm Characteristics</u>	
Annual Stock Return	Twelve month monthly compounded return during the fiscal year. Source: CRSP.
Total Assets (\$ millions)	Year-end assets. Source: Compustat database.
Capital Expenditure /Sales	Capital Expense/Sales: Year-end Capital Expenditure/ year-end Total Assets: Source: Compustat database.
Covenant Violation	Indicator variable: equals 1 if the firm violated a covenant during the year. Source: Nini, Smith and Sufi (2012).
Current Ratio	Current Assets / Current Ratio. Source: Compustat database
Delisting	Indicator variable: equals 1 if the firm is delisted due to the exchange dropping the firm. Delistings due to mergers are not included. Source: CRSP.
Depreciation Expense/Sales	Year-end Depreciation Expense/ year-end Total Sales: Source: Compustat database.
Dividend Increase	Indicator variable: equals 1 if the firm increased its dividends from the prior year. Source: Compustat database.
Dividend Reduction	Indicator variable: equals 1 if the firm reduced its dividends from the prior year by 10% (or 25%) or more. Source: Compustat database.
Firm Age	Number of years a firm is listed in CRSP.

G-Index	Number of anti-takeover provision from the RiskMetrics governance database as in Gompers et al. (2003). We use the most recent G-Index for missing years, unless otherwise noted.
Growth Rate of Assets	Growth rate in total assets from prior year to current year. Source: Compustat database.
Herfindahl Index	Calculated using all available firms for each of the SIC 2-digit industry definitions as $\sum_i(\text{sales}_i/\text{sales}_{ind})^2$, where i is the number of firms in the industry.
Industry Litigation Activity	Number of lawsuits filed in an Fama-French defined industry during the year, scaled by the number of firms in the industry.
Industry Relative Settlement Value	The total dollar amount of the settlements of all claims in the Fama French defined industry during the year, scaled by the market capitalization of all the firms in the industry.
Institutional Holdings	Percent ownership from institutions. Source: RiskMetrics and Thompson Financial.
Leverage	$(\text{Year-ending Long-term Debt plus Debt in Current Liabilities}) / \text{year-end Total Assets}$. Source: Compustat database.
Market Capitalization (\$millions)	Market value of equity at year end. Source: Compustat database.
New Covenant Violation	Indicator variable: equals 1 if the firm violated a covenant during the year and there was not a violation in the prior four quarters. Source: Nini, Smith and Sufi (2011).
New Economy	An indicator variable that equals one if the firm is in one of the following SIC industries: 3570, 3571, 3572, 3576, 3577, 3661, 3674, 4812, 4813, 5045, 5961, 7370, 7371, 7372 and 7373.
Number of Business Segments	The number of business segments listed in Compustat.
NYSE	Indicator variable: equals one if the firm's stock is listed on the New York Stock Exchange.
Operating Cash Flow (CF)	$(\text{Annual Cash Flow from Operations}) / \text{Beginning-year Total Assets}$. Source: Compustat.
Recent M&A	Indicator variable: equals 1 if the firm engaged in M&A activity within the current or previous year from the SDC M&A database.
Relative Size	The natural logarithm of the ratio of year end market capitalization to the median market capitalization for the sample year. Used in Option Grant Analysis. Source: Compustat database.
ROA	$(\text{EBITDA}) / \text{Beginning-year Total Assets}$. Source: Compustat.
R&D/Assets	$\text{R\&D/Assets: Max}(\text{year-end R\&D expense}, 0) / \text{year-end Total Assets}$. Source: Compustat database.
Sales	Year-end sales. Source: Compustat database.
SOX	Indicator variable: equals one for fiscal years 2001 and greater and zero otherwise.
Stock Repurchases (Repo)	Percent repurchases is the expenditure on repurchasing common stock and preferred stock less the reduction in value of the net preferred shares outstanding all scaled by end of year market capitalization. Source: Compustat database

Stock Split	Indicator variable: equals one if the firm conducts a stock split of 5 for 4 or greater during the year and zero otherwise. Source: CRSP database
Sued (Class Action Lawsuit)	Indicator variable: equals 1 if the firm is the target of a class action lawsuit. Source: Stanford Law School Securities Litigation database.
Tangible Assets	Percentage of year-end total assets that are tangible: $(1 - (\text{Intangible Assets} / \text{Assets}) * 100\%)$. Source: Compustat database.
Tobin's Q	$(\text{Total Assets} - \text{Book Equity} + \text{Market Value of Equity}) / \text{Total Assets}$. All year end values. Source: Compustat
Volatility	Standard deviation of most recent 3 years of monthly stock returns from CRSP.