The Costs of a (Nearly) Fully Independent Board

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Abstract

A significant and growing percentage of U.S. firms now have boards where the CEO is the only employee director (i.e., fully independent boards). This paper studies whether and how this practice impacts board effectiveness. I find that fully independent boards are associated with a significant reduction in operating profitability. Further tests suggest two channels for this result. First, full independence deprives the board of spontaneous and regular access to the firm-specific information of senior executives. Second, full independence eliminates the first-hand exposure of future CEOs to board-level discussions of strategy, which steepens the learning curve for eventually promoted candidates.

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1. Introduction

Corporate boards in the U.S. have undergone significant changes in recent times, with a trend toward smaller and more independent boards. According to the 2012 Spencer Stuart Board Index,[1] 86% of the boards of Standard and Poor's (S&P) 500 companies had 12 or fewer directors in 2012, compared with 68% in 2002. Similarly, the percentage of independent directors increased from 79% in 2002 to 84% in 2012 while the proportion of chief executive officers (CEOs) who also chaired their boards declined from 75% to 57% during the same period. Perhaps the most significant of these trends is the exclusion of all employees but the CEO from serving on the board of directors. In 1998, only 36% of S&P 1500 firms had no other employee directors besides the CEO. The proportion of such firms has increased steadily each year since then, reaching 70% in 2011. In this paper, I study whether and how excluding non-CEO executives from the board impacts board effectiveness and firm performance.

The primary benefit of excluding employees other than the CEO from the board is that doing so allows the firm to increase the number of independent directors without enlarging the board. This can enhance board effectiveness since a smaller size allows the board to avoid the communication and coordination costs associated with larger boards and also reduces the potential for free-rider problems (Jensen, 1993; Yermack, 1996). More importantly, the substitution of independent directors for insiders increases board independence, which can lower agency problems because independent directors are less beholden to top management. In addition, recent regulatory mandates (Sarbanes-Oxley Act of 2002 as well as New York Stock Exchange and NASDAQ listing requirements) have significantly increased the monitoring duties of independent directors. As shown by

[1] Available on the internet at http://www.spencerstuart.com/research/bi.

Faleye, Hoitash, and Hoitash (2011), this intense focus on board monitoring hinders overall board effectiveness but the negative impact is attenuated when the board reduces the involvement of individual independent directors in oversight duties by increasing the number of such directors. Thus, substituting employee directors with independent directors allows the board more freedom in allocating oversight duties, which enhances the effectiveness of board monitoring.

Resource dependence theory (see, e.g., Pfeffer (1972)) views the corporate board as a provider of resources to the firm. According to Hillman and Dalziel (2003), these resources include human capital (experience, expertise, and reputation) as well as relational capital (connections to other firms and external contingencies). Thus, increasing the number of independent directors can enhance board effectiveness by increasing the firm's access to essential external resources that complement the skills and competencies of corporate insiders. Moreover, an increase in the number of independent directors is likely to shift the balance of power on the board away from the CEO, which increases his willingness to seek and utilize board counsel (Golden and Zajac, 2001) and potentially improves board effectiveness.

Nevertheless, the exclusion of other top executives from the board can hurt overall board effectiveness and firm performance in several ways. First, it reduces the proximity between the board and the sub-CEO layer of corporate leadership. This denies the board of spontaneous access to the firm- and position-specific information of these executives. Since such information is costly to transmit through others (Fama and Jensen, 1983), excluding non-CEO executives from the board can negatively impact the formulation and execution of corporate strategies and weaken the effectiveness of board

monitoring. At the same time, this lack of proximity to independent directors can hinder the CEO succession process by diminishing the board's ability to evaluate internal candidates before promoting them. Finally, internally promoted CEOs without prior board service are likely to face a steeper learning curve than those who served as directors prior to promotion because such service provides valuable learning opportunities via regular exposure to board-level discussions of corporate strategy.

I study these issues using the sample of all firms covered in the Riskmetrics directors' database over 1998–2011. I find that firms where the CEO is the only employee director earn significantly lower operating profits than other firms. Particularly, return on assets (ROA) is lower by 78 basis points at these firms. Further tests including a quasi-natural experiment based on the 2002–2003 regulatory changes, firm fixed effect regressions, lagged explanatory variable, and instrumental variable regressions indicate that the relation is robust to reverse causality and other endogeneity issues.

Next, I examine potential channels for this effect by focusing on two complementary explanations. First, I investigate the hypothesis that firms where the CEO is the only employee director underperform because their boards are denied regular and unfiltered access to the firm-specific information of other executives. Prior research on board composition (e.g., Raheja, 2005; Boone et al., 2007; Linck, Netter, and Yang, 2008) suggests that employee directors are more valuable when a firm's projects are costly for outsiders to evaluate and monitor. This literature also suggests that the skills and expertise of independent directors are less valuable when the firm's need for board advising is low. Therefore I construct an index that measures project verification costs and advising needs based on firm size, scope of operations, asset characteristics, and

dependence on external financing. Since their need for employee directors is higher and their need for independent directors is lower, the information hypothesis predicts that firms with higher project verification costs and low advising requirements will experience more negative performance effects if such firms limit employee board membership to their CEOs. Consistent with this, I find that fully independent boards are associated with a reduction of 91 basis points in operating profitabilty among these firms, compared with a reduction of 51 basis points among other firms.

Next, I examine the hypothesis that the poorer performance of firms where the CEO is the only employee director is explained by the loss of board-level experience for their future CEOs. Here, I distinguish between two alternative though not necessarily mutually exclusive channels. First, lack of board experience for top executives can diminish directors' ability to select the best CEO candidate since the board lacks direct observation of and continuous interactions with potential successors (Fama and Jensen, 1983). Second, eventual CEO appointees with no prior experience on the firm's board may experience initial missteps due to a steeper learning curve. Empirically, these two can be separated from each other in that the former predicts sustained inferior performance when an internally promoted CEO lacks pre-appointment experience on his firm's board because such CEOs are more likely to be poorer fits. In contrast, the latter predicts that such performance differentials will be temporary, lasting only for as long as it takes the CEO without prior board service to bridge his experience and/or learning gap. Consistent with the latter, I find that internally promoted CEOs with prior board service perform better than those without such experience only in the first two years following promotion; thereafter, the two groups perform equally.

These results fill an important gap in the literature. Prior research has long demonstrated the importance of independent directors as arm's length monitors and valuable advisors. Yet recent mandates requiring increased board independence raise the question of whether independent directors can fully substitute for employee directors. By focusing on what is plausibly the limit of such substitution, this paper demonstrates the potential costs of an (almost) fully independent board. In particular, firm performance diminishes when the board does away with the skills and idiosyncratic information of employee directors, especially when the firm's projects are difficult for outsiders to monitor and its advising needs are lower.

The rest of the paper is organized as follows. The next section describes my sample, data, and main variables. Section 3 contains results and discussions of my analysis of the impact of fully independent boards on firm performance together with associated robustness checks. Section 4 examines potential channels for these effects while the last section concludes with a brief summary.

2. Sample and variables

My sample consists of all firms covered in the Riskmetrics directors database between 1998 and 2011, for a sample of 20,086 observations on 2,900 unique firms. Riskmetrics provides detailed information on directors of these firms, covering such items as age, gender, primary occupation, independence status, service on other corporate boards, and committee memberships. I use these data to construct my main variable of interest, an indicator variable that equals one if the CEO is the only employee director (i.e., fully independent boards), zero otherwise. I also construct two variables that

measure basic board attributes to provide context. These are board size (number of directors) and board independence (proportion of directors who are unaffiliated with the firm or its employee directors). Table 1 provides annual summary statistics for these variables. As the table shows, average board size is quite stable over the sample period, ranging from a low of 9.3 directors in 2001 to a high of 9.7 in 1999; the median board has nine directors in each year during the period (not tabulated). In contrast, the percentage of independent directors increased steadily from 59.8% in 1998 to 79.2% in 2011. Similarly, the fraction of firms with fully independent boards increased each year, from 36.4% in 1998 to 70.2% in 2011. Nevertheless, the correlation between the two variables is only 0.488 so that neither is subsumed in the other.

My measure of firm performance is ROA. While several prior studies use Tobin's *q* to measure performance, this proxy has been the subject of recent criticisms.[2] Using data from Compustat, I calculate ROA as the ratio of operating income after depreciation to total assets at the beginning of the year. Its mean and median are 9.7% and 8.7%, respectively. I winsorize ROA at the 1st and 99th percentiles to minimize the impact of a few outliers in both tails.

Prior research identifies several covariates of firm performance. I control for these variables in order to isolate the effect of fully independent boards. The control variables and my proxies for them include firm size (natural log of the book value of total assets), investment opportunities (the ratio of capital expenditures to total assets), research and development expenditures (R&D, normalized by total assets), and leverage (the ratio of long-term debt to total assets). Others are board size, board independence, CEO equity

[2] See Faulkender and Wang (2006) and Erikson and Whited (2012) for examples. As discussed in Section 4.2, I obtain similar results when I use other measures of firm performance, including Tobin's *q* and return on sales.

ownership (proportion of outstanding shares owned by the CEO), board monitoring intensity (equals one if a majority of independent directors serve on two or more monitoring committees, zero otherwise), CEO duality (equals one if the CEO serves as board chair, zero otherwise), the number of other corporate boards on which the CEO serves, and the average number of other corporate boards on which directors as a group serve. I use data from Compustat and Riskmetrics to construct these variables.

Table 2 provides summary statistics. As expected, sample firms are fairly large, with mean and median total assets of $15.9 billion and $2.0 billion, respectively. Average investments in R&D and capital expenditures are 2.5% and 4.9% of total assets, with corresponding medians of 0.0% and 3.5%. The median firm finances 16.9% of its assets with long-term debt. The CEO owns 3.5% of outstanding shares at the average firm, with a median ownership of 1.0%. The CEO chairs the board in 61.6% of the sample, and the median CEO serves on no other corporate boards.

3. Empirical results

3.1. Firm performance when the CEO is the only employee director

I begin my empirical tests by estimating regressions of my measure of firm performance on the fully independent board indicator variable and the control variables discussed earlier. I also include two-digit standard industrial classification (SIC) code and year dummies to control for industry effects and secular performance trends, respectively. Table 3 presents results of these regressions. In the first column, the model is a pooled time-series cross-sectional ordinary least squares (OLS) regression with robust standard errors clustered at the firm level. As the table shows, the indicator variable is negative

and significant at the 1% level. Its coefficient of -0.0078 implies that ROA is lower by 78 basis points when the CEO is the only employee director. Since the sample average ROA is 9.7%, this implies an economically significant reduction of 8.0% in operating profitability when the board is (nearly) fully independent.

While this suggests that firm performance suffers when the board is fully independent, it is nevertheless possible that the result is simply a spurious relation attributable to other factors. In particular, the result potentially suffers from reverse causality because poorly performing firms may restructure their boards to include more independent directors at the expense of employee directors. For example, Easterwood and Raheja (2008) find that boards become more independent in the three years following underperformance. Several factors mitigate this concern, however. First, as shown in Table 1, the proportion of firms where the CEO is the only inside director increased each year in the sample, from 36.4% in 1998 to 70.2% in 2011. A reverse causality explanation implies that such a dramatic increase would be preceded by a noticeable decline in average firm performance. Yet there are no clear trends in ROA during the sample period. While average ROA declined from 10.7% in 1998 to 6.4% in 2001, it increased steadily to 11.1% in 2006, then declined to 7.9% in 2009, and finally increased to 10.6% in 2011. Thus, the proportion of firms with fully independent boards increased during years following good as well as poor firm performance, which is inconsistent with poor performance causing the reduction in the number of employee directors.

Second, I compare the prior performance of firms whose boards became fully independent after a period of at least three successive years during which they had other employee directors with the same-period performance of firms that continued to maintain

other employee directors. Specifically, I identify firm-years preceded by at least three years during which the firm had other employee directors besides the CEO. I then compare average ROA during these years for firms that subsequently removed non-CEO employee directors with the average ROA for firms that retained their other employee directors. Mean and median ROA are 11.0% and 9.3% for the former group, compared with 11.3% and 10.0% for the latter. Neither the means nor the medians are significantly different from each other at conventional levels, which is again inconsistent with reverse causality.

The above notwithstanding, I perform additional tests to examine the robustness of my results to these issues. Boone et al. (2007) and Faleye, Kovacs, and Venkateswaran (2013), among others, address reverse causality concerns by regressing the dependent variable on lagged values of the explanatory variable based on the intuition that such historical values are largely predetermined. I follow this approach and estimate a regression of ROA three years in the future on fully independent boards and the other explanatory variables in the current year. As the second column of Table 3 shows, the coefficient on fully independent boards is negative and significant. Thus, firms where the CEO is the only employee director in the current year perform significantly worse three years later, which is inconsistent with a reverse causality explanation for my results.

Next, I perform two additional tests that focus on the subsample of firms whose boards were not fully independent for at least three successive years. In the first test, I estimate a regression that controls for the average ROA of these firms during the years when their boards had other employee directors in addition to the CEO. If the subsequent change to a fully independent board is predicated on performance issues, then the fully

independent board variable should lose its significance once I control for prior performance in this sample. As the third column of Table 3 shows, this is not the case. Instead, fully independent boards remain negative and significant at the 1% level.

Faleye (2007) focuses on the subset of top-performing firms to address reverse causality problems when the concern is about the adoption of a governance practice in response to poor performance. This is based on the argument that top-performing firms that adopted the practice are less likely to have done so because of poor performance since they were top performers around the time of adoption. Following this approach, I estimate a second regression over firms classified as historical top performers, that is, those whose average ROA during the three-year period when they had other employee directors is at or above the sample third quartile. As the fourth column of Table 3 shows, the fully independent board indicator variable remains negative and significant in this regression. I obtain similar results in untabulated regressions in which I define top performers as those at or above the 90^{th} percentile of historical ROA and when I use industry-adjusted ROA as the measure of performance.

Overall, the above results suggest that my findings are less likely attributable to reverse causality. As a further step in addressing potential endogeneity problems, I estimate a firm fixed effect regression with standard errors clustered at the firm level. This allows me to eliminate the effects of time-invariant omitted variables by using within-firm variations to identify the effects of full board independence and is particularly useful in this context where there are significant firm-level changes in the variable over time. The fifth column of Table 3 presents results of this regression. As

before, the indicator variable for fully independent boards is negatively associated with firm performance at less than the 1% level.

While firm fixed effect regressions correct for time-invariant correlated omitted variables, they do not address time-variant unobservable heterogeneity. A conclusive test for proper identification in this case is a completely randomized experiment in which firms are randomly assigned into treatment (i.e., boards with the CEO as the only insider) and control (i.e., boards with more than one insider) groups. Since such an experiment is not possible in the context of this study, I rely on a quasi-natural experiment based on regulatory changes in 2002. During this period, U.S. Congress and the major stock exchanges mandated new governance standards requiring corporate boards to be majority independent and the principal board committees to be fully independent. Admittedly, these mandates do not require the board itself to be fully independent, that is, they do not require companies to replace all non-CEO employee directors with independent directors. Nevertheless, the data suggest that many companies adopted this practice in response to the new regulatory demands. For example, the proportion of firms where the CEO is the only inside director jumped by 10 percentage points from 43% in 2001 (the year immediately preceding the mandates) to 53% in 2003 (the year immediately after). This is the largest two-year increase during the entire sample period. Similarly, the largest one-year increase of 5.1 percentage points occurred in 2003.

Consequently, I identify 184 firms whose boards were not majority independent prior to 2002, had non-CEO employee directors prior to the same year,[3] and became majority independent thereafter. Thus, these requirements allow me to identify firms that

[3] It is possible for a firm to have no non-CEO employee directors and still have a board that is not majority independent because of grey directors.

were most likely forced by regulatory changes to increase the independence of their boards. In the process of doing so, some removed all non-CEO employee directors while others did not. To identify the effect of fully independent boards, I focus on how the change to full board independence around these mandates impacts firm performance by estimating a firm fixed effect regression for this sample over the year just before the regulatory changes to the two years after, that is, over 2001–2004. As the sixth column of Table 3 shows, I find that performance is significantly lower for firms whose boards became fully independent following the mandated governance changes relative to those whose boards became compliant with the mandates without becoming fully independent.

Finally, I employ two-stage instrument variable (IV) regression in a further attempt to address potential endogeneity issues. The major benefit of an IV framework is that it allows consistent estimation in the presence of reverse causality, correlated omitted variables, and other sources of unobserved heterogeneity. The difficulty, of course, lies in finding relevant and valid instruments, that is, variables that are correlated with the endogenous variable but uncorrelated with the error term in the structural model. For this purpose, I use two instruments for firm-level full board independence. The first is the percentage of same-industry (two-digit SIC code) firms with fully independent boards in the preceding year while the second is the percentage of same-size-decile firms with fully independent boards, also in the preceding year.

My instrument choice is based on two considerations. First is the intuition that a firm is more likely to institute a governance practice if similar firms engage in the same practice. This intuition is supported by shareholder activists and management who usually reference governance structures at similar firms in proposing (or opposing)

specific governance practices. Second, while it is difficult to argue that these variables have absolutely no direct effect on firm performance, it is not likely that firm-level operating performance is directly impacted by the extent to which similar firms have fully independent boards. To verify these arguments, I perform econometric tests to evaluate the strength and validity of my instruments. With respect to instrument strength, both variables are highly significant in the first stage regression predicting fully independent boards (with *p*-values lower than 0.001), and the Cragg-Donald Wald *F*-statistic for weak instruments is 60.93, which is larger than the largest Stock-Yogo critical value of 19.93 (Stock and Yogo, 2005). Similarly, the Sargan-Hansen over-identification test does not reject the null hypothesis that the instruments are uncorrelated with the error term in the second stage regression, with a *p*-value of 0.34. The final column of Table 3 presents results of the second stage model. As before, it shows that fully independent boards have a negative and significant effect on operating performance.

Each of the above tests has its limitations and weaknesses. Taken together, however, they do suggest that my results are less likely to be mere artifacts of some confounding underlying issues, reverse causality, or other endogeneity problems. Rather, they suggest that fully independent boards negatively impact firm performance.

3.2. Other robustness checks

As indicated in Section 2, my measure of firm performance is ROA. Nevertheless, I recognize that other measures of performance are used in the literature. For example, Tobin's *q* is a common measure of firm performance in spite of criticisms in some recent studies. Therefore, I repeat my tests using Tobin's *q* as the dependent variable. I define Tobin's *q* as the market value of common equity plus the book values of preferred equity

and long-term debt divided by the book value of assets. Mean and median Tobin's *q* are 1.1 and 1.5, respectively. In untabulated regressions, I find results that are very similar to those for ROA. In particular, Tobin's *q* is lower by 4.2% at firms with fully independent boards (*p*-value = 0.009) and the result is generally robust to the issues discussed above with respect to ROA. I also estimate additional regressions where I use return on sales (i.e., the ratio of operating income after depreciation to sales) as the dependent variable. I obtain qualitatively similar results in these regressions.

Governance studies sometime exclude financial firms (and to a lesser extent, utilities) from their samples because such firms are subject to regulatory oversight that can limit the board's role. I include these firms in the samples for my main results reported earleir. As a robustness check, I estimate additional regressions where I exclude (i) financial firms and (ii) financials and utilities from the samples. In each case, I obtain results that are quite similar to those for the full sample.

4. Channels for performance loss

In this sections, I examine two potential channels for the performance loss associated with fully independent boards while recognizing that these channels need not be mutually exclusive. Specifically, I focus on the loss of inputs from other executives in board decision-making and the loss of board-level experience for future CEOs.

4.1. Loss of inputs from employee directors

The governance literature has long recognized that employee and outside directors bring different even if complementary qualifications and skills to the board of directors. As argued by Fama and Jensen (1983), employee directors possess firm- and position-

specific skills and information. This equips them with deeper insights into the firm's operations and potentially facilitates better monitoring and advising. Nevertheless, being insiders themselves, employee directors lack independence from the CEO and enjoy greater private benefits of control, both of which compromise their effectiveness as monitors. In contrast, outside directors are more independent of the CEO, have reputational capital often acquired in other contexts, and bring a wealth of outside expertise that can complement the skills of employee directors. Thus, outside directors are often regarded as better monitors and valuable advisors. As argued by Song and Thakor (2006), however, their effectiveness in both roles often depends on the quality of information provided by employee directors.

These considerations suggest that an important channel for the poorer performance associated with fully independent board is the loss of the inputs of non-CEO employee directors into board monitoring and advising, either directly as board members themselves or indirectly through the spontaneous provision of information to outside directors. To test this conjecture, I rely on predictions from the literature that analyzes the optimal mix of employee and outside directors as a function of firm characteristics.

This literature shows that the need for independent directors depends on organizational complexity and the firm's information environment. Klein (1998) and Coles, Daniel, and Naveen (2008) argue that larger and more diversified firms benefit more from a higher number of independent directors because such directors provide strategic advising that complements the skills of top management. Coles, Daniel, and Naveen argue further that the demand for independent directors increases with a firm's reliance on external capital because independent directors can enhance the firm's access

to external financing, for example, in the form of bank loans. Fama and Jensen (1983) argue that the monitoring effectiveness of independent directors decreases as the knowledge and information critical for an organization's success becomes diffused throughout the organization because such diffusion increases the difficulty for outsiders to access the information necessary for efficient monitoring and increases the costs for insiders to transmit such information. Consistent with this, Raheja (2005) shows that "firms for which it is more difficult for outsiders to verify projects, such as high tech firms, optimally have a higher proportion of insiders on the board." Boone et al. (2007) provide supportive empirical evidence.

Based on these results, I expect the negative performance effects of full board independence to be greater for less complex firms whose projects are more difficult for outsiders to verify. Because their projects are harder for outsiders to verify, these firms are more difficult for independent directors to monitor and would benefit less from such monitoring in the absence of firm- and position-specific information typically provided by employee directors. In addition, while a firm with high project verification costs can benefit from the advising role of independent directors, such benefits are negligible if the firm's advising needs are low because its operations are relatively less complex.

Following Coles, Daniel, and Naveen (2008), I employ firm size (natural log of revenue), scope of operations (number of business segments reported in the Compustat segment files), and external capital dependence (ratio of long-term debt to total assets) as proxies for firm complexity. I also employ R&D intensity (ratio of R&D expenses to total assets) and asset intangibility (ratio of intangible assets to total assets) as proxies for project verification costs. I then utilize principal component analysis to extract a common

factor from these variables. The factor loadings are 0.50 on firm size, 0.36 on scope of operations, 0.43 on external capital dependence, -0.52 on R&D intensity, and -0.41 on asset intangibility. The factor explains 35.2% of the variation in the underlying variables and its Eigenvalue is 1.76. As the factor loadings indicate, the factor assigns higher scores to larger, diversified, and highly leveraged firms (who therefore need more board advice) with low R&D spending and fewer intangible assets (whose projects are more easily verified and are therefore easily monitored by independent directors). I expect the performance loss associated with fully independent boards to be larger for low-scoring firms on this factor under the information hypothesis.

Table 4 presents results of regressions estimated over low-and high-scoring firms with the sample split at the median. As the table shows, the indicator variable for firms whose CEOs are their only employee directors is negative and significant in each regression. However, the economic impact is larger among low advice firms with high project verification costs. Among these firms, excluding non-CEO employees from the board is associated with a reduction of 91 basis points in ROA, which translates to a decrease of 8.5% relative to the average ROA of these firms. In contrast, high advice firms with easy-to-verify projects suffer a more moderate 5.2% reduction in average ROA if their CEOs are their only employee directors. Thus, boards that stand to benefit more from the information of top-level executive directors are significantly less effective when such employees are excluded from the board of directors, which suggests that the loss of information from employee directors is an important channel for the negative effects of full board independence

4.2. Loss of board-level experience for future CEOs

The second consequence of excluding non-CEO employees from service on the board of directors is that doing so deprives the company's future CEOs of first-hand exposure to board-level discussions of firm-specific strategic issues. This potentially explains the poorer performance associated with this practice for two reasons. First, as argued by Fama and Jensen (1983, p. 314), service on the board by non-CEO executives enables the board to use "information from each of the top managers about his decision initiatives and the decision initiatives and performance of other managers" to better evaluate them for succession. This presumably increases the quality and fit of the eventual CEO appointee. Second, exposure to board-level strategy discussions provides valuable training for top managers so that a CEO appointee without such exposure faces a significantly steeper learning curve as the firm's top executive.

I test these conjectures by focusing on the subset of internally promoted CEOs, whom I identify using data from Execucomp, proxy filings, and internet searches. Using this sample, I estimate regressions of ROA on two variables that measure pre-appointment board experience. The first is an indicator variable that equals one if the CEO was an employee director for at least one year before becoming CEO. The second is the (natural log of) number of years for which the CEO served on the board prior to his appointment as CEO. Sixty-eight percent of internally promoted CEOs served on their companies' boards before becoming CEOs. Among this group, mean and median number of years of pre-appointment board service are 5.5 years and 3.0 years, respectively.

The first and second columns of Table 5 show that neither the indicator variable nor the continuous variable is significantly related with ROA, even though both are

positive. This suggests that including non-CEO executives on the board does not provide a significant comparative advantage in evaluating and choosing intrinsically "better" internal CEO candidates. Next, I evaluate the hypothesis that service on the board prior to becoming CEO flattens the appointee's learning curve by estimating ROA regressions for newer internally promoted CEOs (i.e., those with tenures shorter than or equal to the first quartile of CEO tenures, which is two years) and seasoned internally promoted CEOs (i.e., those with tenures longer than the first quartile). The learning curve hypothesis implies that pre-appointment board service only matters when the CEO is relatively new. Panel B of Table 5 presents results of these regressions.

The indicator variable for pre-promotion board service is positive and significant in the regression estimated for internally promoted CEOs in their first two years on the job. Its coefficient implies that ROA is higher by 1.6 percentage points when the CEO served as an employee director prior to assuming the CEO position. The second column shows similar results when I use the number of years for which the CEO served on the board prior to being promoted, with the coefficient implying that an increase of one standard deviation in (the natural log of) such years is associated with an increase of 73 basis points in ROA. In contrast, neither the indicator nor the continuous variable is significant in regressions estimated for more experienced CEOs who were internally promoted. Thus, membership on the board of directors prior to assuming the CEO position has beneficial effects only in the first few years of the CEO's tenure. After those initial years when the CEO has presumably overcome the position's learning curve, it does not matter whether and for how long he served as a director in his pre-appointment years, which is consistent with the learning curve hypothesis.

5. Summary and conclusion

One of the most significant changes in board structure since the late 1990s is a dramatic increase in the percentage of fully independent boards, that is, boards where the CEO is the only employee director. Among S&P 1500 firms, 36% had fully independent boards in 1998; by 2011, that proportion has increased to 70%. In this paper, I study the impact of this practice on board effectiveness using a sample of 2,900 unique S&P 1500 firms over 1998–2011.

I find that fully independent boards are associated with poorer operating performance. The effect is stronger when the firm has less need for independent directors because its advising requirements are low and its projects are more costly for outsiders to verify. As a corollary, I also find that internally promoted CEOs who served as directors prior to their appointment perform better initially than their counterparts who did not serve on their firms' boards prior to promotion.

These results illustrate the importance of a balanced approach to corporate governance. While the role of independent directors in facilitating improved board effectiveness is well documented, my results suggest that independent directors cannot fully replace employee directors. The knowledge, skills, and firm-specific information of employee directors are valuable resources. My results suggest that doing away with these resources ultimately diminishes board effectiveness.

References

Boone, A. L., Field, L. C, Karpoff, J. M., Raheja, C. G., 2007. The determinants of corporate board size and composition: An empirical analysis. Journal of Financial Economics 85, 66–101.

Coles, J., Daniel, N., Naveen, L., 2008. Boards: does one size fit all? Journal of Financial Economics 87, 329–356.

Easterwood, J. C., Raheja, C. G., 2008. CEOs vs. directors: Who calls the shots when firms underperform? Working paper, Virginia Tech and Wake Forest University.

Erikson, T., Whited, T., 2012. Treating measurement error in Tobin's q. Review of Financial Studies 25, 1286–1329.

Faleye, O., 2007. Classified boards, firm value, and managerial entrenchment. Journal of Financial Economics 83, 501–529.

Faleye, O., Hoitash, R., Hoitash, U., 2011. The costs of intense board monitoring. Journal of Financial Economics 101, 160–181.

Faleye, O., Kovacs, T., Venkateswaran, A., 2013. Do better-connected CEOs innovate more? Journal of Financial and Quantitative Analysis, forthcoming.

Fama, E. F., Jensen, M. C., 1983. Separation of ownership and control. Journal of Law and Economics 26, 301–325.

Faulkender, M., Wang, R., 2006. Corporate financial policy and the value of cash. Journal of Finance 61, 1957–1990.

Golden, B. R., Zajac, E. J., 2001. When will boards influence strategy? Inclination x power = strategic change. Strategic Management Journal 22, 1087–1112.

Hillman, A. J., Dalziel T., 2003. Boards of directors and firm performance: Integrating agency and resource dependence perspectives. Academy of Management Review 28, 383–396.

Jensen, M. C., 1993. The modern industrial revolution, exit, and the failure of internal control systems. Journal of Finance 48, 831–880.

Klein, A., 1998. Firm performance and board committee structure. Journal of Law and Economics 41, 137–165.

Linck, J. S., Netter, J. M., Yang, T., 2008. The determinants of board structure. Journal of Financial Economics 87, 308–328.

Pfeffer, J., 1972. Size and composition of corporate boards of directors: the organization and its environment. Administrative Science Quarterly 17, 218–229.

Raheja, C., 2005. Determinants of board size and composition: A theory of corporate boards. Journal of Financial and Quantitative Analysis 40, 283–306.

Song, F., Thakor, A., 2006. Information control, career concerns, and corporate governance. Journal of Finance 61, 1845–1896.

Stock, J. H., Yogo, M., 2005. Testing for weak instruments in linear IV regression. In: Andrews, D. W. K., Stock, J. H. (Eds.), Identification and Inference for Econometric

Models: Essays in Honor of Thomas Rothenberg. Cambridge University Press, Cambridge.

Yermack, D., 1996. Higher market valuation of companies with a small board of directors. Journal of Financial Economics 40, 185–213.

Table 1. Board trends: 1998–2011

The sample consists of all firms covered in the Riskmetrics directors' database. Board size is the number of directors. %Independent is the percentage of directors who are independent directors, i.e., unaffiliated with the firm beyond their directorship. Fully independent equals 1 if the CEO is the only employee director, 0 otherwise.

Year	Observations	Board size	%Independent	Fully independent
1998	1,620	9.58	59.8%	36.4%
1999	1,627	9.67	60.2%	36.9%
2000	1,620	9.49	61.0%	39.9%
2001	1,676	9.27	62.9%	43.0%
2002	1,369	9.38	66.1%	47.8%
2003	1,399	9.39	68.7%	52.8%
2004	1,403	9.38	70.4%	54.6%
2005	1,389	9.36	71.7%	59.1%
2006	1,341	9.50	72.3%	61.4%
2007	1,329	9.30	77.1%	62.8%
2008	1,352	9.45	77.7%	64.4%
2009	1,342	9.41	77.8%	66.6%
2010	1,321	9.45	78.8%	69.0%
2011	1,298	9.41	79.2%	70.2%
	20,086	9.44	69.7%	53.7%

Table 2. Summary statistics

ROA is the ratio of operating income after depreciation to total assets at the beginning of the year. Firm size is the natural log of the book value of total assets. Growth opportunities is the ratio of capital expenditures to total assets. R&D is the ratio of research and development expenditures to total assets. Leverage is the ratio of long-term debt to total assets. Board size is the number of directors. Board independence is the percentage of directors who are unaffiliated with the firm beyond their directorship. CEO ownership is the proportion of outstanding shares owned by the CEO. Monitoring intensity equals 1 if a majority of independent directors serve on two or more monitoring (audit, compensation, and nominating/governance) committees, 0 otherwise. CEO duality equals 1 if the CEO serves as board chair, 0 otherwise. CEO external boards is the number of other corporate boards on which the CEO serves. Average other boards is the average number of other corporate boards on which directors as a group serve. P25 and P75 are the first and third quartiles, respectively.

Variable	Sample	P25	Mean	Median	P75	Std. dev.
ROA	20,084	0.040	0.097	0.087	0.148	0.100
Firm size	20,086	6.557	7.773	7.595	8.836	1.664
Growth opportunities	19,429	0.016	0.049	0.035	0.064	0.055
R&D	20,086	0.000	0.025	0.000	0.028	0.056
Leverage	20,086	0.037	0.192	0.169	0.300	0.175
Board size	20,086	8.000	9.436	9.000	11.000	2.704
Board independence	20,086	0.600	0.697	0.727	0.833	0.170
CEO ownership	20,066	0.003	0.035	0.010	0.027	0.073
Monitoring intensity	20,086	0.000	0.550	1.000	1.000	0.498
CEO duality	20,086	0.000	0.616	1.000	1.000	0.486
CEO external boards	20,075	0.000	0.552	0.000	1.000	0.853
Average other boards	20,086	0.364	0.818	0.727	1.174	0.590

Table 3. Fully independent boards and firm performance

The dependent variable is ROA, the ratio of operating income after depreciation to total assets at the beginning of the year. Fully independent board equals 1 if the CEO is the only employee director, 0 otherwise. Firm size is the natural log of the book value of total assets. Leverage is the ratio of long-term debt to total assets. Growth opportunities is the ratio of capital expenditures to total assets. R&D spending is the ratio of research and development expenditures to total assets. CEO ownership is the proportion of outstanding shares owned by the CEO. CEO outside boards is the number of other corporate boards on which the CEO serves. Board size is the natural log of the number of directors. Board independence is the percentage of directors who are unaffiliated with the firm beyond their directorship. CEO duality equals 1 if the CEO serves as board chair, 0 otherwise. Monitoring intensity equals 1 if a majority of independent directors serve on two or more monitoring (audit, compensation, and nominating/governance) committees, 0 otherwise. Average other boards is the average number of other corporate boards on which directors as a group serve. Historical ROA is average ROA over the three-year period immediately preceding the year when the board became fully independent. The model in the "*Pooled*" column is estimated over the full panel. The model in the "Forward DV" column is a regression of the 3-year forward dependent variable on current independent variables. Regressions in the "*Top P75*" column is estimated over subsequent years for firms whose average ROA during a three-year period when they have other employee directors is at or above the sample third quartile. The model in the "*FFE*" column is a firm fixed effect regression estimated over the full sample. The model in the "*Nat. exp.*" column is a firm fixed effect regression estimated over 2001–2004 for firms whose boards were forced by regulatory changes to become majority independent. The model in the "*2SLS*" column is the second stage of an instrumental variable two-stage least squares regression in which fully independent board is instrumented using the percentages of same-industry and same-size-decile firms with fully independent boards in the preceding year. Each regression includes year and industry (or firm) fixed effects. *P*-values are in parentheses. Levels of significance are indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

Table 3 continued

	Pooled	*Forward DV*	*Historical*	*Top P75*	*FFE*	*Nat. exp.*	*2SLS*
Fully independent board	-0.0078***	-0.0057*	-0.0081***	-0.0133*	-0.0064***	-0.0224**	-0.0295*
	(0.003)	(0.056)	(0.005)	(0.095)	(0.004)	(0.016)	(0.093)
Firm size	0.0037**	-0.0016	0.0012	-0.0000	0.0111***	0.0534*	0.0127***
	(0.024)	(0.406)	(0.341)	(0.988)	(0.002)	(0.070)	(0.000)
Leverage	-0.0851***	-0.0296**	-0.0314**	-0.0133	-0.0929***	-0.1832**	-0.0854***
	(0.000)	(0.034)	(0.012)	(0.735)	(0.000)	(0.017)	(0.000)
Growth opportunities	0.2097***	0.1010***	0.1062**	0.1465	0.2412***	0.2769	0.2653***
	(0.000)	(0.005)	(0.016)	(0.182)	(0.000)	(0.259)	(0.000)
R&D spending	-0.4263***	-0.2243***	-0.0326	0.0201	-0.2858***	-1.6742***	-0.2220***
	(0.000)	(0.001)	(0.405)	(0.808)	(0.000)	(0.000)	(0.000)
CEO ownership	-0.0369*	-0.0153	-0.0038	0.0454	0.0143	0.0260	-0.0090
	(0.060)	(0.542)	(0.799)	(0.162)	(0.476)	(0.556)	(0.531)
CEO outside boards	0.0008	0.0015	0.0010	-0.0013	-0.0013	0.0124	-0.0005
	(0.548)	(0.314)	(0.467)	(0.726)	(0.293)	(0.228)	(0.641)
Board size	-0.0013	-0.0007	-0.0033	-0.0033	-0.0196***	-0.0113	-0.0250**
	(0.833)	(0.922)	(0.591)	(0.863)	(0.004)	(0.779)	(0.032)
Board independence	-0.0015	-0.0178*	0.0082	0.0303	0.0056	0.0672	0.0217
	(0.877)	(0.088)	(0.394)	(0.244)	(0.521)	(0.248)	(0.275)
CEO is board chair	0.0023	-0.0003	-0.0026	-0.0023	0.0031	0.0056	0.0033*
	(0.372)	(0.935)	(0.315)	(0.734)	(0.157)	(0.709)	(0.078)
Monitoring intensity	-0.0012	-0.0025	-0.0039*	-0.0145**	-0.0006	-0.0082	-0.0021
	(0.609)	(0.339)	(0.082)	(0.015)	(0.744)	(0.367)	(0.194)
Average other boards	-0.0050*	0.0031	0.0023	0.0003	-0.0081***	-0.0365	-0.0055**
	(0.077)	(0.340)	(0.427)	(0.966)	(0.003)	(0.124)	(0.012)
Historical ROA	----	----	0.7236***	0.6485***	----	----	----
			(0.000)	(0.000)			
Observations	19,397	11,547	3,972	1,023	19,397	349	15,832
Adjusted R^2	0.179	0.144	0.588	0.327	0.097	0.216	n.a

Table 4. Fully independent boards, need for employee directors, and firm performance.

High need firms are firms with high project verification costs and low board advising requirements. Fully independent board equals 1 if the CEO is the only employee director, 0 otherwise. Firm size is the natural log of the book value of total assets. Leverage is the ratio of long-term debt to total assets. Growth opportunities is the ratio of capital expenditures to total assets. R&D spending is the ratio of research and development expenditures to total assets. ROA is the ratio of operating income after depreciation to total assets at the beginning of the year. CEO ownership is the proportion of outstanding shares owned by the CEO. CEO outside boards is the number of other corporate boards on which the CEO serves. Board size is the natural log of the number of directors. Board independence is the percentage of directors who are unaffiliated with the firm beyond their directorship. CEO duality equals 1 if the CEO serves as board chair, 0 otherwise. Monitoring intensity equals 1 if a majority of independent directors serve on two or more monitoring (audit, compensation, and nominating/governance) committees, 0 otherwise. Average other boards is the average number of other corporate boards on which directors as a group serve. Each regression includes year and industry fixed effects. *P*-values are in parentheses. Levels of significance are indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

	High need	*Others*
Fully independent board	-0.0091*	-0.0051*
	(0.066)	(0.061)
Firm size	0.0139***	0.0001
	(0.000)	(0.935)
Leverage	-0.1043***	-0.0611***
	(0.000)	(0.000)
Growth opportunities	0.5212***	0.0775**
	(0.000)	(0.014)
R&D spending	-0.4441***	0.3176*
	(0.000)	(0.075)
CEO ownership	-0.0227	-0.0577**
	(0.457)	(0.016)
CEO outside boards	-0.0010	-0.0001
	(0.717)	(0.959)
Board size	-0.0009	-0.0027
	(0.932)	(0.689)
Board independence	0.0020	-0.0061
	(0.909)	(0.540)
CEO duality	0.0053	0.0016
	(0.256)	(0.581)
Monitoring intensity	-0.0001	-0.0032
	(0.987)	(0.172)
Average other boards	-0.0068	-0.0009
	(0.165)	(0.761)
Observations	8,097	8,104
Adjusted R^2	0.197	0.181

Table 5. Pre-appointment board service and firm performance

The dependent variable is ROA, the ratio of operating income after depreciation to total assets at the beginning of the year. Newer CEOs have served for less than 3 years; others for more. Prior board service equals 1 if an internally promoted CEO served on the firm's board prior to being promoted, 0 otherwise. Prior board years is the natural log of one plus the number of years of such service. Firm size is the natural log of the book value of total assets. Leverage is the ratio of long-term debt to total assets. Growth opportunities is the ratio of capital expenditures to total assets. R&D spending is the ratio of research and development expenditures to total assets. CEO ownership is the proportion of outstanding shares owned by the CEO. CEO outside boards is the number of other corporate boards on which the CEO serves. Board size is the natural log of the number of directors. Board independence is the percentage of directors who are unaffiliated with the firm beyond their directorship. CEO duality equals 1 if the CEO serves as board chair, 0 otherwise. Monitoring intensity equals 1 if a majority of independent directors serve on two or more monitoring (audit, compensation, and nominating/governance) committees, 0 otherwise. Average other boards is the average number of other corporate boards on which directors as a group serve. Each regression includes year and industry fixed effects. *P*-values are in parentheses. Levels of significance are indicated by ***, **, and * for 1%, 5%, and 10%, respectively.

	A: Full sample		*B: Newer CEOs*		*C: Other CEOs*	
Prior board service	0.0046	----	0.0162**	----	-0.0012	----
	(0.401)		(0.014)		(0.854)	
Prior board years	----	0.0026	----	0.0080**	----	0.0003
		(0.361)		(0.022)		(0.939)
Firm size	0.0021	0.0021	0.0027	0.0031	0.0018	0.0018
	(0.500)	(0.484)	(0.468)	(0.405)	(0.607)	(0.609)
Leverage	-0.0950***	-0.0948***	-0.0509	-0.0488	-0.1132***	-0.1134***
	(0.000)	(0.000)	(0.106)	(0.123)	(0.000)	(0.000)
Growth opportunities	0.3361***	0.3378***	0.3837***	0.3903***	0.3158***	0.3153***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R&D spending	-0.3671***	-0.3681***	-0.3901***	-0.3898***	-0.3609***	-0.3605***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CEO ownership	-0.0947**	-0.0991**	-0.2253**	-0.2514**	-0.0848**	-0.0862**
	(0.020)	(0.013)	(0.034)	(0.018)	(0.035)	(0.029)
CEO outside boards	0.0055**	0.0054**	0.0055	0.0052	0.0049*	0.0048*
	(0.027)	(0.029)	(0.217)	(0.233)	(0.085)	(0.086)
Board size	0.0083	0.0080	0.0179	0.0170	0.0047	0.0045
	(0.459)	(0.478)	(0.304)	(0.330)	(0.709)	(0.724)
Board independence	-0.0437***	-0.0424***	-0.0469*	-0.0449*	-0.0430**	-0.0425**
	(0.008)	(0.009)	(0.058)	(0.069)	(0.021)	(0.021)
CEO duality	0.0027	0.0027	0.0031	0.0029	-0.0015	-0.0015
	(0.589)	(0.583)	(0.632)	(0.659)	(0.815)	(0.806)
Monitoring intensity	-0.0019	-0.0019	-0.0040	-0.0043	-0.0013	-0.0013
	(0.610)	(0.605)	(0.538)	(0.506)	(0.757)	(0.760)
Average other boards	-0.0114**	-0.0112**	-0.0097	-0.0097	-0.0123**	-0.0122**
	(0.032)	(0.037)	(0.188)	(0.185)	(0.043)	(0.048)
Observations	5,638	5,638	1,554	1,554	4,084	4,084
Adjusted R^2	0.206	0.206	0.218	0.217	0.206	0.206