

Local Director Talent and Board Composition*

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Abstract

This study explores the effects of local director labor markets near firm headquarters locations on board structure. We examine whether firms are able to attract more independent directors to their boards when a larger pool of prospective directors (officers and directors of other firms, financial institutions and universities) is located near the firm. Empirically, firms located near large pools of prospective directors have a larger percentage of independent directors and directors with executive expertise on their boards. Firms located closer to financial institutions and universities attract a larger percentage of directors with financial and academic expertise, respectively. The effects of local director labor markets on board composition is concentrated among firms with lower visibility and firms that benefit more from specific knowledge. Following 2002 governance reforms, we find that firms have increasingly expanded their search for independent directors beyond local labor markets. We use our findings on director labor market determinants of board composition to reexamine the relation between board independence and firm value.

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Recent research on the role and effectiveness of boards of directors has emphasized the optimal choice of board composition, while recognizing that in the design of corporate governance mechanisms one size does not fit all (e.g., Coles, Daniel and Naveen, 2008; Boone et al., 2007). Much of this literature focuses on the demand for independent directors, with particular emphasis on their monitoring and advisory skills. This body of research concludes that the nature of a firm's investment projects and its other characteristics affect its demand for independent directors. In contrast, this study explores an important, yet overlooked question, namely the role of supply side factors in the local labor market in affecting a firm's ability to recruit outside experts to its board.

We find that the labor market for directors near a firm's headquarters has a significant effect on board structure, after controlling for previously proposed determinants of board design. This study argues that the local market for prospective directors is important for board appointment decisions due to lower costs of serving as a director on a nearby firm's board and the potential benefits of local expertise and information access. Indeed, we document that firms located in the vicinity of larger pools of prospective directors have a higher percentage of locally employed independent directors on their boards. The size of the local pool of prospective directors has a positive effect on the proportion of independent directors, especially those with executive experience. In addition, firms located closer to financial institutions and universities attract a higher percentage of independent directors with financial and academic expertise, respectively. We also examine the effect of the local labor market on inside and gray directors. We find that firms constrained by a limited local pool of qualified prospective directors rely more heavily on gray directors and insiders for their board appointments, in place of independent directors. Our main results establish a

significant role for the supply of prospective directors in explaining board composition. We use these results to instrument for board independence and reexamine the relation between board composition and firm value using the local director labor market as an instrument for board structure.

Our main hypothesis and testable predictions are summarized below. We argue that a firm's ability to find qualified independent directors for its board is affected by the availability of prospective directors in the local labor market. The local supply of director talent is relevant for the firm's board selection process for three reasons.

First, the ability to hire non-local directors may be limited due to their higher costs of attending board meetings, including obvious transportation costs as well as opportunity costs of director time spent traveling to board meetings far from their own firm's offices. Such opportunity costs could be considerable for directors with full-time positions at distant firms or financial institutions.

Second, firms have more soft information about the quality of local directors, such as their skills and ability to advise and oversee the management. Existing evidence corroborates a nontrivial impact of distance on the acquisition of soft information in a variety of other contexts. Coval and Moskowitz (2001) find that mutual fund managers earn higher abnormal returns on nearby investments. Bae, Stulz, and Tan (2008) illustrate the information advantage of local analysts. They find earnings forecasts of analysts located in the same country as the firm they cover to be more precise than forecasts of foreign analysts.

Third, local independent directors bring key location specific knowledge and expertise that enhances a board's capacity to monitor and advise management. As Fama and Jensen (1983) point out, although independent directors pose fewer conflicts of interest, they

may lack specific knowledge compared to inside board members. All else same, local independent directors, especially directors with executive experience at other local firms, are more likely to have specific knowledge about local investment opportunities, industry trends, product market conditions, quality and reliability of suppliers, internal executive conflicts, etc. than non-local directors. The importance of location has been recognized in the venture capital literature. For example, Lerner (1995) argues that that firm location relative to that of a venture capitalist office affects whether a venture capitalist is willing to investor or join the firm's board since oversight of local firms can be much less costly than for more distant firms. Bengtsson and Ravid (2009) conclude that shorter distance between a VC and a firm facilitates soft information transfers and lowers VC monitoring costs. Masulis, Wang and Xie (2009) find that directors far removed from the firm, specifically foreign directors, are less likely to attend board meetings and that boards that include them tend to offer excessive CEO compensation and are more likely to restate their earnings due to financial misreporting. In contrast, Wan (2008) shows that although local directors are better informed, they are less effective as monitors.

The above discussion summarized the principal benefits of recruiting local independent directors on a board. However, qualified directors are a scarce human resource. An average executive holds less than one outside board seat (Perry and Peyer, 2005; Ferris, Jagannathan, and Pritchard, 2003). If the local market for prospective directors is thin, firms may be unable to reach the desired number of experienced independent directors by hiring locally. Smaller and less established firms may encounter greater challenges in attracting qualified independent experts to join their boards. Faced with a supply side constraint from the local director labor market as well as high search costs and tradeoffs associated with non-

local directors such as specific expertise or active board participation, firms may appoint fewer independent directors to their boards, especially independent directors with particular expertise.

Thus, we hypothesize that availability of prospective independent directors in the local labor market affect a firm's choice of board structure, everything else same. This posited hypothesis will be tested holding constant a firm's demand for independent directors as a function of the costs and benefits a firm realizes from intensive oversight and advisory services of these independent directors.

The main empirical predictions are formulated below.

First, firms located near larger pools of prospective directors are expected to have a higher fraction of independent directors, holding other factors constant. The notion of a local pool of prospective directors is detailed below. According to Guner, Malmendier, and Tate (2008) and Linck, Netter, and Yang (2008b), most outsiders come from non-financial executive or similar industry backgrounds. Thus, our main focus in characterizing the pool of prospective directors is on current officers and directors of nearby firms.

Although the median independent director is a Main Street executive, other director career paths include executive positions at financial institutions; legal or non-corporate backgrounds (academia, politics, non-for-profits); and work as consultants. Holding other factors constant, access to additional sources of director talent due to proximity to financial institutions, universities, law firms, and capital cities is similarly expected to have a positive effect on the proportion of independent directors with particular skill sets, although the overall effect may be mitigated by a lower prevalence of miscellaneous director categories (e.g. academic or legal) on a typical board.

Second, firms located near a larger local director pool are expected to draw a higher proportion of independent directors with executive expertise, especially from nearby firms. Further, firms in proximity to a larger local pool of potential directors with corporate experience are expected to have a higher fraction of independent directors with executive expertise, all else the same. Proximity to other potential sources of qualified independent directors (mainly, financial institutions and universities) is expected to increase the presence of financial experts and academics on local firm boards.

Third, we consider firm and industry characteristics that may affect the dependence of a firm's board composition on the local director labor market. Qualified prospective directors have opportunity costs of joining a company's board. A prospective director may be more likely to accept a board appointment at a company with more visibility, which can have greater director reputation benefits. Thus, we expect directors to be more willing to assume greater distance-related costs of becoming directors in larger, more established firms. Smaller and less established firms are expected to face greater hurdles in attracting non-local directors and, conversely, to rely more heavily on local director talent and on outside gray directors and officer-directors. In addition, growth firms and firms in competitive industries that stand to gain more from specific director knowledge and expertise are expected to rely more heavily on local director labor markets to meet their director needs.

Next, we examine the effect of the Sarbanes Oxley Act of 2002 and stock exchange governance rule changes aimed at increasing board independence. On the one hand, as the proportion of independent directors on boards increases to comply with these laws and regulations, firms search the local labor pool for prospective directors more intensively. On the other hand, an exogenous increase in aggregate demand for independent directors could

lead many firms to exhaust local labor markets and thus, be forced to pursue a regional or nationwide search. As the emphasis on board independence intensifies, boards can lose directors with valuable skills and knowledge. We also investigate this issue. Whether the relation between a firm's board composition and the local director market measurably changes following recent governance reforms is also an important unanswered empirical question.

Finally, it is important to recognize that if local labor markets have a significant effect on board characteristics, while firm location is largely predetermined and thus independent of later corporate decisions, then we can use exogenous variation in local director market conditions to obtain a more powerful experimental design for examining the empirical association of board composition with firm value. Given that we show that local labor markets significantly affect board composition, and this variable is missing in most, if not all existing studies of board composition and firm value, this is a very important question to explore. Thus, we investigate how the observed empirical relation of board composition and firm value is affected by an endogeneity correction.

Our main findings are as follows. Firms located near larger pools of prospective directors have a higher proportion of independent directors on their boards. The effect is driven by firms that rely more heavily on the local director market for their board members due to their lower visibility and prestige, their greater need for local director knowledge, or a great need for specific skills available locally. Firms with access to larger local labor markets have a higher proportion of skilled executives among their outside board members, and a higher fraction of these directors drawn locally. The proportion of financial and academic experts also increases in a firm's proximity to major financial institutions, universities and

business schools, respectively. We find the 2002 passage of SOX and the tougher exchange listing rules weakened firm dependence on local director talent as a source of independent directors. Instrumenting for board independence with the size of the local pool of prospective directors, we re-examine the effect of board independence on firm performance and value. We find that board independence continues to have a positive effect on both firm performance and value.

This paper adds to an extensive literature on the determinants of board structure and its effects on firm value (see, e.g., Rosenstein and Wyatt, 1990; Yermack, 1996; Yermack, 2004; Guner, Malmendier, and Tate, 2008; Fich, 2005; Linck, Netter, and Yang, 2008a; Boone et al., 2007; Masulis and Mobbs, 2009; Brickley, Coles, and Terry, 1994). These studies focus on the demand for particular types of directors. In contrast, we examine the supply effect of potential directors in the local labor market as an important determinant of a firm's board structure. Controlling for the supply of potential local directors, we re-examine the association between board governance, CEO pay, and firm value and find that a higher proportion of independent directors is associated with higher firm value and greater reliance on CEO incentive compensation.

A second, recently developing strand of literature explores the implications of geography and location for corporate and investors decisions and the accuracy of analysts forecasts (Almazan, Titman, and Uysal, 2008; Kedia, Panchapagesan, and Uysal, 2004; John, Knyazeva, and Knyazeva, 2008; Gao, Ng, and Wang, 2006; Becker, Ivkovic, and Weisbenner, 2007; Coval and Moskowitz, 2001; Coval and Moskowitz, 1999; Ivkovic and Weisbenner, 2005; Malloy, 2005; Bae, Stulz, and Tan, 2008; Landier, Nair and Wulf, 2007) and find that distance reduces the effectiveness of monitoring, advising and analyzing in a

variety of dimensions. Further, other studies document significant differences in institutional ownership and analyst followings and the debt cost of capital of urban and rural firms (Loughran and Schulz, 2005, 2006). In our study, we focus on the quality of board governance and examine the effect of location-specific labor markets for prospective directors on this important governance mechanism.

In a related paper, Becker, Cronqvist, and Fahlenbrach (2008) use the density of wealthy individuals around a firm's headquarters to instrument for the presence of a large individual blockholder. Unlike their study, we examine board composition, rather than ownership structure. A recent paper by John and Kadyrzhanova (2008) demonstrates the significance of industry and state fixed effects in corporate governance. Wan (2008) reports that board members living closer to a firm's headquarters are more informed, which results in higher abnormal returns on inside trades, but are less effective monitors, which manifests itself in an inverse relationship between the number of local independent directors and firm value.

Our analysis differs in several important ways from this prior literature. We do not examine the effects of peer firms' governance on board monitoring or the effect of distance to a firm's headquarters on director performance. Instead, we focus on the pool of potential independent directors in the geographic area near a firm's headquarters and argue that it enhances a firm's ability to attract independent directors and experts to its board.

Finally, sociological research by Kono et al. (1998) reveals increased incidences of interlocks among firms located in proximity to other firms. In contrast to Kono et al., we explore the link between local labor markets and board characteristics such as independence,

expertise, and use local labor market size to instrument for board monitoring in our analysis of board governance and firm performance.

This study contributes to the existing literature in several key areas. First, it provides empirical support for the importance of local director labor markets for board composition. Second, we demonstrate the role of proximity to different sources of potential director talent in affecting a firm's ability to attract outside executive, financial, and academic experts as independent directors. Third, we identify firm characteristics that increase board composition dependence on the local pool of director talent. Finally, we use the identified location-dependent determinant of board monitoring as an instrument to correct for endogeneity in the relation between board governance and firm value.

The remainder of the paper is organized as follows. The second section describes the sample, data, and variables. The third section presents empirical results and robustness checks. The fourth section concludes.

2. Data

Sample

The sample includes Compustat / CRSP firms with available IRRC / RiskMetrics data on board characteristics and takeover provisions, CDA Spectrum 13f filings data on institutional holdings, and Execucomp data on CEO ownership and characteristics. Financial firms (6000-6999), regulated utilities (4900-4999), small firms with total assets under \$20 million, foreign firms, and firms headquartered outside the continental US are excluded. The sample period is 1996-2006, unless specified otherwise. In several tests, sample selection criteria are modified for robustness.

Variables

Board characteristics

The main measure of board composition is *board independence*, defined as the proportion of the board represented by independent (non-gray) outside directors on the board. The natural log of the number of independent directors is alternatively used for robustness. *Gray directors* are board members whose familial ties or business involvement with senior management or the firm or other connections subjects them to conflicts of interests that may compromise their board functions.¹ Robustness tests also consider *inside directors*, defined as the proportion of firm officer-directors on the board (excluding gray directors). For the average firm in our sample, the board is comprised of 9.3 directors, of whom 66% are independent outside directors, 14% are gray directors and 20% are employee-directors.

As independent directors not only monitor, but also advise CEOs (Adams and Ferreira, 2007; Raheja, 2005), the level of director expertise contributes to their ability to effectively perform board duties (Fich, 2005). Independent director expertise is measured by the proportion of executive, financial, and academic experts among outside board members.² Independent directors are classified as having executive experience if they serve as chief executive officers, chief financial officers, chief operating officers, or employee directors on other nonfinancial firms' boards. To capture hiring of local executives as outside board members, we define *local independent directors* as the fraction of independent directors holding outside corporate jobs that are employed at nearby companies. Nearby companies are

¹ Gray directors are identified by IRRC / RiskMetrics based on proxy statements and disclosures of related transactions. Examples include providers of professional services retained by the firm; customers and suppliers; former employees of the company or its majority-owned subsidiary; employees of subsidiaries in which the company holds less than fifty percent ownership; designees under an agreement with a group (such as a union), directors designated by a significant shareholder, and majority holders; family members of executive officers; recipients of the firm's charitable giving; certain interlocking directors (in instances where a director and an executive of the company sit on a board of another company that has an executive and a director also sit on the original company's board).

² Identification of executive and financial director experts is based on concurrent positions at financial and nonfinancial firms within IRRC/RiskMetrics S&P1500 universe of companies during our sample period, which does not cover very small or privately held firms. Compared to their peers at large firms, executives of small firms and banks are more likely to be invited to local firms' (as opposed to non-local firm's) boards, so if this produces any effect, it would be to bias empirical results against finding a significant effect of local director markets on board expertise.

firms headquartered within a sixty-mile radius of the sample firm's headquarters.³ For the average firm in our sample, forty percent of independent directors have concurrent executive experience. In turn, among directors with identifiable corporate positions, a third are employed at local firms.

RiskMetrics provides information about a director's primary title for the years 1998-2001, so academic and financial expertise regressions are defined over this shorter sample period. Independent directors are classified as financial experts if they hold chief financial officer, treasurer, or other finance-related titles or serve as employee directors on financial institutions' boards (SIC codes 6000-6999), or have done so in the recent past (past three years, as reported in RiskMetrics). An academic expertise designation is based on a director's current or past primary position being a faculty member or administrator at a college or university.

Characteristics of local director labor markets

We construct several variables to characterize the availability of prospective directors in the vicinity of a firm's headquarters. According to Guner, Malmendier, and Tate (2008), the most common outside career for an independent director is an executive title at another nonfinancial firm, followed by finance and non-corporate backgrounds.

Our main measure of the local pool of prospective directors is the density of nonfinancial companies headquartered within a sixty mile radius of a sample firm's headquarters, in a given year.⁴ To take into account that directors from competing companies are highly unlikely to join the board due to concerns about losing proprietary information

³ We choose the sixty mile threshold as a rough approximation for the short duration of a one-way commute.

⁴ This formulation implicitly assumes that prospective directors employed in top positions at other firms are generally concentrated at a firm's headquarters, which seems plausible.

such as strategic plans and potential criminal liability associated with price collusion, we exclude firms in the same four-digit SIC industry from the pool of local firms, termed *Local Director Pool*. Logs are used since the variable is right-skewed. Higher values of the variable represent a larger local pool of prospective directors. For robustness, the definition of local firms is expanded to a hundred mile radius around a firm's headquarters, and is termed *Local Director Pool (100 mi)*.

In addition to looking at the size of the local pool of prospective executive expert directors, we consider proximity of a firm to prospective directors with other backgrounds. We consider a firm's proximity to (1) large financial institutions as a source of financial experts, (2) academic institutions (business schools and national universities (institutions offering a full range of degrees as identified by US News and World Report) and medical complexes as a source of directors with non-corporate backgrounds, (3) law firms as a source of directors with legal expertise, and (4) capital cities (Washington DC and state capitals) as a source of directors with regulatory experience or political connections (Agrawal and Knoeber, 2001). Firm location is based on its corporate headquarters state and county, taken from Compustat and the geographic coordinates of each county are taken from the US Census (2000) Gazetteer. Distance is constructed as natural log of one plus the distance in miles from the county of a firm's headquarters location to the county of each other firm's headquarters. Detailed variable descriptions are provided in Appendix A. Since our local prospective directors proxies (for specific types of expertise) are correlated with each other, we construct an index of proximity to various sources of director talent using factor analysis of the listed distance between a firm and other sources of prospective directors. Lower values

of the resulting index indicate greater proximity to organizations that employ prospective directors.

Headquarters locations are generally chosen many years prior to the board composition decisions we examine, for reasons unrelated to board composition, such as the location of production inputs (suppliers, labor), customers, transportation networks etc. Furthermore, Pirinsky and Wang (2005) find that relocations of headquarters are quite infrequent.⁵ Thus, we can treat firm location as a predetermined variable for our purposes. At the same time, board structure is likely to have evolved since a firm's incorporation under the influence of ownership structure change, corporate governance needs and statutory or regulatory changes. Overall, examining a snapshot of the industry in a firm's locality is likely to give us a source of exogenous variation that is not caused by demand for firm governance characteristics.

Control variables

Several control variables are included in board composition regressions to capture costs and benefits that a prospective board member expects to realize. Complex firms are expected to have a greater need for advice from outside directors (Boone et al., 2007; Coles, Daniel, and Naveen, 2008; Linck, Netter, and Yang, 2008a). Our main proxy for firm complexity is firm size measured as log of total assets. In some of our analysis, we also control for firm diversification measured by a firm's number of business segments. Firms

⁵ Even if managers could affect the choice of firm locations, it is not clear why CEOs that face less outsider scrutiny from the board would want to locate farther from other companies. The extent of hubris may in fact increase with proximity to other companies (networking). We note that potential preference of poorly monitored CEOs to locate in large cities, which also tend to have a higher density of firm headquarters, was addressed by controlling for location in a metropolitan area. Pirinsky and Wang (2005) identify 118 relocating firms in 1992-1997 (for comparison, the full sample included approximately 4,000-5,000 firms per year).

with more business or geographic segments can be viewed as having a greater degree of complexity, hence, potentially greater need for advice by independent directors.

Independent outside directors have fewer conflicts of interests than insiders, but they have less firm-specific knowledge (Fama and Jensen, 1983). Firms more sensitive to firm-specific information and facing high costs of transferring this information are expected to have a lower proportion of independent directors on their boards (Coles, Daniel, and Naveen, 2008; Linck, Netter, and Yang, 2008a). Sales growth and R&D intensity (and to some extent standard deviation of returns) proxy for firms with a high level of sensitivity to firm-specific information and higher costs independent directors must bear to become informed, so as to effectively monitor and advise a firm. Low firm age and a high fraction of intangible assets may capture a similar effect in terms of measuring a firm's valuable growth options.

Other control variables capture agency costs and the presence of governance mechanisms that could serve as substitutes or complements to monitoring by independent directors. The G Index is an index of twenty-four takeover defense provisions constructed by Gompers, Ishii, and Metrick (2003), often used in existing research to capture agency costs due to managerial entrenchment. Classified board dummy is used for robustness. Institutional ownership is included to measure potential monitoring by blockholders, although it could also capture institutional preferences toward board governance. When managerial and shareholder interests are aligned through higher CEO ownership, shareholder need for monitoring by independent directors can be expected to decrease (Raheja, 2005).

CEO characteristics may also affect the optimal level of board independence. More influential CEOs with longer tenure may present a need for greater board monitoring (Raheja, 2005). In contrast, if a manager's influence is a function of perceived ability, then

CEOs with longer tenure would tend to have less independent boards. After controlling for industry effects, return on assets would serve as another proxy for a CEO's perceived skill. Firms with older CEOs approaching retirement may add insiders to the board to groom potential internal successors (Linck, Netter, and Yang, 2008a; Hermalin and Weisbach, 1998). It should be recognized that governance controls such as the G Index, institutional ownership or CEO characteristics could be determined simultaneously with board independence, so their coefficients are more indicative of an association with board independence, rather than representing determinants. To check if our findings are qualitatively unchanged with the exclusion of other potentially endogenous controls, we also report estimates for a specification that includes only our key variables of interest and industry and year fixed effects.

All specifications include three-digit SIC industry and year fixed effects to capture industry and temporal effects. Indicators for sample firm location in large (top ten) and medium-sized (next forty) cities based on population data reported in the US Census (2000) are included for robustness.

Two-stage analysis

Two-stage estimation is used to examine the effect of board monitoring on firm value and operating performance. Firm value is measured using the ratio of a firm's market value to the book value of total assets. Operating performance is measure by the rate of return on assets, ROA. We also perform instrumental variables analysis of CEO compensation structure to explore the effects of board independence on the proportion of incentive compensation in total CEO pay (Execucomp). Following Coles, Daniel, and Naveen (2008), one- and two-year lags of return on assets are added as controls in the market-to-book

regressions. Controls for a firm dividend yield and a CEO-Chair indicator are also included in the second stage.

In this analysis, director labor market conditions at a firm's location are viewed as predetermined. Evidence suggests that firms rarely change their headquarters locations. Our measures of director labor market characteristics are based on a firm's headquarters location, which are likely to be most relevant for managerial oversight, board activity, and hiring of independent directors.

Variable definitions are formalized in Appendix A. Summary statistics for the main variables are presented in Table 1.

[Table 1]

3. Results

Before proceeding to formal hypothesis tests, we review descriptive evidence related to our main premise that firms with access to larger local director markets draw more independent directors from local companies. As can be seen from Fig. 1 in Appendix B, companies located near larger local director markets have a higher average proportion of locally employed independent directors. The proportion of locally employed directors among independent directors with identifiable corporate positions is three times greater for a company in the top quartile of local director pool compared to a company in the bottom quartile.

Main results

Our multivariate analysis begins by examines the association of local director markets and board composition, controlling for a number of other firm characteristics. OLS estimates of the percentage of independent directors on the board are presented in Table 2.

[Table 2]

In Column I, a larger local pool of prospective directors is associated with higher independent director representation, after controlling for industry and year effects. This finding is consistent with the hypothesis that board governance quality is affected by the size of prospective director pool in a firm's locality. Controls for firm characteristics (size, growth, ROA, age, risk, asset tangibility, R&D intensity, institutional ownership, and the G index) and CEO characteristics (ownership, age, tenure) are included in Columns II and III. The main effect remains unchanged in significance and the parameter estimates only marginally fall in size.

Several variables besides local director markets are significant predictors of board composition. Similarly to Coles, Daniel, and Naveen (2008), Denis and Sarin (1999), and Linck, Netter, and Yang (2008a), larger firms have a greater percentage of outside directors, consistent with complex firms seeking more advice from outsiders. As expected, high growth firms and younger firms have a lower fraction of independent directors, consistent with greater demand for the firm-specific knowledge of inside directors. Similarly, firms with more intangible assets, which proxy for greater growth options, have a lower proportion of independent outside directors. Firm risk and ROA coefficients are not significantly related to independent director representation.⁶ Consistent with Coles, Daniel, and Naveen (2008), R&D intensive firms have a higher fraction of independent directors on the board. Monitoring by institutional investors and oversight by independent boards appear to be complementary, although we are careful to interpret the relation as indicative of association rather than causality. Firms with managers protected by takeover defenses tend to have more

⁶ In an unreported robustness check, the main result continues to hold after the inclusion of a quadratic firm age effect and alternative definitions of the firm risk measure (daily standard deviation of raw or excess returns).

independent boards, which is consistent with board monitoring acting as a substitute for the discipline of the corporate control market and vice versa. When managers are more closely aligned with shareholders as a result of higher ownership stakes, boards are less independent, consistent with a lower need for oversight by independent directors. CEO tenure enters with a negative sign, but it is not statistically significant.

We find that local director labor markets have a significant effect on board composition, after controlling for determinants of board structure identified in earlier work. Economic magnitudes of these effects are summarized in Appendix B. The economic magnitudes of the coefficient estimates in Column II of Table 2 are shown in Fig. 2. The magnitude of the effect of access to local director labor markets exceeds the magnitudes of individual effects of sales growth, risk, ROA, and CEO characteristics. The local labor market's relation to board composition is comparable in magnitude to that of asset tangibility or firm size and is roughly half the size of the relation of CEO ownership or the G index.

Other sources of director talent

Besides prospective independent directors with executive experience, other sources of director talent may affect board composition. Table 3 reports effects of proximity to financial and academic institutions and an aggregate index of other sources of directors. Proximity to prospective financial directors has a marginally (10%) significant positive effect on board independence. The effect of proximity to academic institutions is not statistically significant. Although academics constitute one sizable source of outside board members, on the margin other sources of director talent are more important for determining board composition.

[Table 3]

In addition, we use an index of distance to other sources of director talent based on factor analysis of distance to financial institutions, business schools, universities, medical complexes, law firms, and capital cities. The resulting measure, Distance (other sources of director talent), assigns positive coefficients to distance variables. Its coefficient is not statistically significant (Column III). Variables from Columns I-III are included jointly with our main measure, local executive talent, in Columns IV-VI. Neither proximity to financial and academic institutions, nor an index of other sources of director talent enters the regressions significantly. The primary measure of local pool of director talent, based on executive expertise, retains its significant positive effect on board independence (marginally significant when included jointly with distance to financial institutions). With the caveat that all local director talent variables are correlated, the result can be reconciled with the tabulations of director careers in Guner, Malmendier, and Tate (2008) and Linck, Netter, and Yang (2008b) that show corporate backgrounds to be significantly more prevalent than financial, nonprofit, consultant or academic backgrounds of independent directors. Averaging across the years in the Linck, Netter, and Yang (2008b) sample, directors with executive experience account for over forty percent of independent directors, retired executives account for twenty-five percent, financial directors represent ten percent, lawyers represent seven percent, academic directors account for four and a half percent, and the remainder – less than ten percent.

Which firms are most dependent on local director markets?

The relation between local director labor markets and board composition may be stronger for certain groups of firms. The main specification reported in Column II of Table 2 is estimated within subsamples. The first set of subsamples aims to distinguish between firms

with low and high visibility. Prospective directors may be less willing to join low visibility firms as the benefit from the standpoint of directors' career development and reputation may be less than the opportunity cost of their time.⁷ In contrast, high visibility, better established firms may be more likely to succeed in a national search, overcoming the constraints of local labor markets. Directors interested in building their reputation and gathering other director appointments would be more willing to join larger, more established firms even if they are located farther from their place of employment. Larger firm size, firm age, and inclusion in S&P500 may raise a firm's profile.⁸ The second set of subsamples differentiates between firms that are expected to be more dependent on the board's firm-specific knowledge and firms that are more likely to place greater value on general outside expertise. Firm-level growth opportunities and the extent of product market competition in the industry can raise the need for greater firm specific knowledge. The real options of high growth firms could be made even more valuable by having outside directors with more expertise, which are more readily available when there is a deep local pool of potential directors. To the extent that local directors have more soft information about a firm's geographic region, their local knowledge could be essential for successfully identifying and pursuing positive NPV projects. Further, firms in competitive industry environments operate on narrower margins. Due to soft information about local executives, firms hiring board members locally could be in a better position to select more reliable directors with sought after characteristics that cannot be easily verified at a distance, which could be particularly valuable for companies facing intense competition. Moreover, local knowledge of directors could help companies

⁷ Small firms also pay their directors less (Linck, Netter, and Yang, 2008b). In turn, Vafeas (1999) finds no effect of firm size on the number of board meetings, so director time costs associated with being on these boards appears to be similar.

⁸ Boards of small recently formed firms may also have a greater presence of venture capitalists, and venture capitalists' board positions were shown to be affected by distance and location (Lerner, 1995).

successfully reduce their marginal costs relative to their main competitors or produce more reliable or higher quality products. In contrast, companies in concentrated industries may be able to achieve higher profit margins regardless of local knowledge.

Univariate evidence on local hiring of independent directors by various firm subsamples is presented in Appendix B, Table B1. Low visibility firms and firms in competitive industries have higher proportions of locally employed directors among independent directors with corporate positions, specifically 6-11% and 3.4% more respectively.

Differences in sensitivity of board selection to local director labor markets are examined in a multivariate framework in Table 4. The results of Table 4A indicate that the effect of a local director pool on board independence is concentrated among smaller, younger firms not listed on NYSE.⁹ Table 4B shows that high growth firms and firms operating in competitive industries are more reliant on the local director pool in attracting independent directors to their boards.

[Table 4]

Next, we consider time series differences in the relation between local director pools and board independence before and after major governance reforms (Sarbanes-Oxley and governance rules in NYSE and Nasdaq exchange listing requirements). On the one hand, firms that need to meet board independence requirements may rely more on local prospective director talent since it is more accessible (albeit more limited), hence, the relation could be

⁹ In an unreported robustness test, we separately consider firms deemed more vulnerable to takeovers and hence potentially less attractive to prospective directors due to career concerns. Specifically, we expect firms in industries with more merger and acquisition related delistings and firms publicly listed less than ten years ago to be more vulnerable to takeovers or liquidations. For such firms, the local director pool has a significant positive effect on board independence. For all other firms (older firms in industries with fewer merger and acquisition related delistings), the local director pool effect is only marginally significant.

stronger in the post-reform period. On the other hand, the new governance provisions have elevated the importance of independent directors on boards, which could potentially prompt firms to expand their director search efforts beyond the vicinity of a firm's headquarters.

The evidence is presented in Table 4C. Comparing estimates from pre-reform period and post-reform period (Columns I and II), we note that the effect of the local pool of prospective directors on board independence is stronger in the pre-reform period. All boards saw a decline in the proportion of current and retired executives among independent directors after the passage of the Sarbanes-Oxley Act (Linck, Netter, and Yang, 2008b), which could partly explain the lower significance of the coefficient on local director pool - our proxy for prospective directors with corporate backgrounds. It is also possible that firms have expanded search for new directors beyond a regional level due to a higher priority being placed on board independence following governance reforms. Previously, firms with thin local director markets could decide against hiring nonlocal independent directors due to the costs and tradeoffs described earlier. However, compliance with governance rules requires them to appoint a majority of independent directors even if qualified directors are not available locally. Assuming the previous choice of board composition was optimal, the described cost of selecting and retaining nonlocal directors and reduction in the local knowledge of an average independent director could be viewed as an additional tradeoff of Sarbanes-Oxley for firms with thin local director markets.

Table 4C also presents post-reform period coefficient estimates in subsamples based on firm and industry characteristics from Tables 4A and 4B. Consistent with the previous tables, the local director pool continues to affect independent director representation on boards of firms experiencing high growth and highly competitive product markets. However,

the coefficient is no longer significant for small and recently formed firms in the post-reform period, which undercuts the pre-reform distinction between local director pool effects on small firms versus large established firms. Small firms, which tended to rely more heavily on local director markets, are likely to bear higher costs of attracting directors following the passage of SOX. By imposing higher independent director requirements on firms, SOX appears to have forced smaller firms to refocus their director search from the local to the national level, so as to attract the required number of independent directors. Indeed, while director pay increased by 51% at all firms following Sarbanes-Oxley, small firms were particularly affected (Linck, Netter, and Yang, 2008b).

Robustness checks

Several robustness checks are performed to examine the sensitivity of our findings in Table 2 to variable definitions, sample selection criteria, and additional controls. Alternative definitions of the variable of interest are examined in Table 5A. Our main measure includes executives at nearby US firms in the pool of prospective directors. Canadian firms are added to the pool in Columns I and II. The sixty-mile radius around a firm's headquarters that we use to identify prospective local directors is expanded to a hundred-mile radius in Column II. The coefficient on the local director pool remains positive and significant and is similar in magnitude to the coefficient based on a sixty-mile radius.

[Table 5]

We have included executives from local firms of varying sizes in the local pool of prospective directors. However, it is plausible that smaller firms prefer to hire directors with executive experience at larger firms. As a sensitivity test, we use a measure of director pool comprised of firms of similar or larger size (Column III). It is also possible that all hiring

firms prefer directors with experience at medium-sized and large firms. The local director pool measure used in Column IV excludes small firms.¹⁰ Our main coefficients increase in size, while also remaining significant under these robustness tests.

Our main measure excludes firms from the same industry. In Column V, we consider nonfinancial firms from all industries, including the sample firm's industry, as prospective sources of experienced independent directors. Coefficient estimates are very similar to the results reported in Table 3.

In Column VI, the local director pool is allowed to have a different effect depending on whether the size of the director pool is below or above the sample median. The local director pool effect remains positive and significant, but is slightly smaller at higher director pool sizes. However, a test for the equality of the coefficients reveals no statistically significant difference (not shown in the table), which is consistent with a linear effect of local director supply on board composition.

Alternative sample selection criteria and additional control variables are used in Table 5B. The main sample includes firms from forty-eight continental US states to avoid extreme observations associated with more remote firm locations in Alaska and Hawaii. Only a handful of observations with data available for all the controls come from those two states, and their inclusion in the sample does not affect the result (Column I). Headquarters locations in a large metropolitan area could affect board structure as well as explain a systematically larger pool of prospective directors. To account for the possibility that specific types of firms are more likely to locate there, we exclude firms headquartered in top ten metropolitan areas in Column II and then broaden the criterion to also exclude firms located

¹⁰ We exclude firms with assets below hundred million, which approximately corresponds to the first and second quintiles of assets in the full sample of nonfinancial firms (including firms with missing governance data) for our sample period.

in California, Illinois, Massachusetts, and New York in Column III. The coefficient of interest retains its sign and significance and even increases in magnitude. (It seems that largest urban centers have greater and more uniform availability of prospective directors, so their exclusion from the sample increases variation in local director pool.)

For robustness, the variable of interest is lagged one period in Column IV. Other controls are introduced in Columns V-VIII, including classified board, business segments, foreign segment, exchange listing, and a quadratic firm size term where firm size is measured by the log of firm market value.¹¹ In all cases, the local director market effect remains significant and comparable in magnitude to the coefficient in Table 2. Similarly to firms with more takeover defenses captured by a higher G-Index, firms with a classified board appear to compensate by adding more independent directors to the board to mitigate potential agency conflicts (Column VI).

Several other alternative explanations for our main local director pool effect are considered in Table 5C. In Columns I and II, we test possible effects of industry clusters on board independence. Concentration of same-industry firms does not explain variation in independent director representation on boards. When the industry cluster measure is included jointly with the local director pool, the industry cluster variable has no effect, while the local director pool remains significant. In Columns III and IV, we account for variation in population density since population density could be correlated with local director pool and in turn demographic characteristics of the firm's location could be a proxy for other determinants of a firm's board composition. When included separately, population density

¹¹ In the quadratic size specification, the linear term becomes negative and the quadratic term enters with a positive coefficient: as small companies grow, they are able to meet their expertise needs internally, but as firms continue to expand and their complexity increases, they are less able to rely on internal expertise and appoint more independent directors. In another robustness check (not reported), inclusion of a linear and quadratic market value terms, or replacing market value terms with equity market capitalization does not affect the results.

does not affect independence. When included together with the local director pool, population density remains insignificant, but local director pool enters with a significant positive sign, as in previous tables. Finally, in Column V, we consider the education profile of the local population, in case it is correlated with characteristics other than local director pool that explain board independence. This is not the case, as the proportion of college graduates among population aged twenty-five years and over does not have a direct effect on boards, whereas the local director pool coefficient remains significant.

Proportion of inside and gray directors on the board

In Table 6A, we supplement our previous findings on the proportion of independent directors by examining the log of the number of independent directors and the proportion of inside directors, similarly to Coles, Daniel and Naveen (2008).

[Table 6]

The findings are consistent with evidence on independent directors presented in previous tables. The fraction of inside directors is decreasing in the size of the local director pool, whereas the number of independent directors on the board is increasing in the size of the local director pool. Further, we test the possibility that firms with weak local director markets rely more heavily on gray directors. These types of directors may not be as effective as monitors, but they may offer valuable advisory services and may be easier to recruit. Indeed, we find that the proportion of gray directors is decreasing in the local director pool.

Independent director expertise

The prior analysis of board characteristics focuses on the proportion of independent directors on a firm's board. In Table 6A, we examine the effects of the local director labor markets on board expertise.

Executives of other firms comprise a significant proportion of independent directors and are a key component of the local pool of prospective directors. The main variable, the local pool of prospective directors, has a positive and significant effect on the proportion of independent directors with executive expertise on a firm's board. In addition, financial expertise of prospective independent directors may be of importance to key board functions such as the work of audit committees. As expected, proximity to financial institutions has a significant and positive effect on the presence of financial experts on the board. Similarly, proximity to universities or business schools has a significant and positive effect on the proportion of academic directors.

Our next test examines in more detail the channels through which the local director pool affects a firm's board composition. To address the possibility that the association of higher fractions of independent directors with executive experience on the boards of firms near larger executive director pools is coincidental, we analyze the presence of independent directors employed at local firms on corporate board composition (Table 6B). Consistent with the descriptive evidence in Appendix B, Figure 1, the proportion of independent directors drawn from local companies is increasing in the size of the local director pool (Column I). The finding supports the hypothesized effect of local director markets on firms' director appointment decisions.

We have so far focused on firms drawing their board members from a potentially limited local pool of prospective directors. Tests in Tables 3-5 and 6A reveal that independent director representation on the board and board expertise are increasing in local director talent. We interpret this evidence as support for the hypothesis that local labor markets are an important factor in the appointment of directors to boards. Below we further

test that the channel that explains the empirical relation between local director pools and board composition is indeed local labor market conditions. Without controlling for other determinants, firms located near larger local director pools have a higher proportion of locally employed directors (Fig. 1 of Appendix B). Consistent with the univariate evidence, in multivariate tests, the proportion of local directors is increasing in local director pools (Column I of Table 6B). Further, as could be expected, distance between the sample firm and an average independent director's main job is decreasing in local director pool (Column II of Table 6B). In other words, firms near larger director pools can recruit executives working closer to the sample firm to serve as independent board members.

Next, we consider the effect of firm size on a firm's decision to appoint local independent directors. Univariate evidence in Table 1B indicates that the proportion of locally employed directors among independent directors with identified corporate positions is a third higher for small firms, compared to large firms. Consistent with that result, multivariate tests reveal that the proportion of locally employed executives among independent directors is highest for small firms (Column I of Table 6B).

The above analysis points to small firm size as a predictor of greater demand for local directors. A related question is what type of firms serves as the primary source of local director talent. We conjecture that large firms contribute more prospective directors with executive experience.¹² Univariate evidence in Table 1B shows that officer-directors of large firms are on average twice as likely to hold outside local directorships; specifically an average insider of a large firm has double the number of local directorships compared to an

¹² In Table 5, availability of executives with experience at similarly sized or larger firms was shown to affect board independence. Larger firms may also supply more retired officers as potential directors and these individuals are still likely to be located, at least part of the year, near their old headquarters location as well.

average officer-director of a small firm. The finding is more rigorously confirmed in multivariate tests. The proportion of inside directors with other board appointments at local firms is increasing in firm size (Table 6B, Column III).¹³ Further, the average number of appointments an inside director holds on other local boards is also increasing in firm size (Table 6B, Column IV). Thus, compared to small firms, large firms supply more prospective directors with executive expertise to local boards (above and beyond the effect of larger firms having more officer-directors).

Consistent with our findings on the effect of the local director pool on the appointment of independent directors with executive experience, inside directors are more likely to hold a local board appointment at another firm and to hold more local board appointments when the firm is located in an area with a high density of other firms (Columns III and IV of Table 6B, respectively). Intuitively, the average distance to other firms seeking an outside director with the executive's skills is lower as density rises. Empirically, a high density of local firms decreases the average distance to board meetings for executives joining these local boards as independent directors (Column V of Table 6B). The reduced opportunity costs of accepting outside board appointments in high density areas encourage executives to serve on multiple local boards.

Effects of board independence on firm value

¹³ At an average firm in our sample, 31% (14%) insiders hold a concurrent appointment at another (local) firm. The average number of appointments at other (local) firms in our sample is 0.45 (0.18) per insider. Local firms are defined based on headquarters locations within a sixty-mile radius of the firm. When all directors (inside, gray and independent) are considered, the average number of appointments at other (local) firms in our sample is 0.65 (0.08) per director. Compared to all directors, insiders tend to hold fewer concurrent board appointments, presumably due to the demands of their main job, however, their board appointments are disproportionately concentrated among local firms, which is consistent with high opportunity costs of executives' time that elevate the role of distance. Figures are based on an inside director's concurrent independent or gray director status on the board of another firm as reported by RiskMetrics.

One of the pressing questions in empirical corporate governance research is the relation between a firm's governance and its performance or valuation. Evidence of the favorable effects of governance on firm value and shareholder wealth is presented in a number of existing studies (see, e.g., Gompers, Ishii, and Metrick, 2003; Cremers and Nair, 2005; Bebchuk and Cohen, 2005; Masulis, Wang and Xie, 2007 and 2009; Yermack, 1996; Rosenstein and Wyatt, 1990; Brickley, Coles, and Terry, 1994). Related work highlights the concerns about endogeneity of board composition and the challenges to inferring causality from analyzing the firm governance-performance relation (see, e.g., Adams, Hermalin and Weisbach, 2009; Coles, Daniel, and Naveen, 2008; Boone et al., 2007).

In this section we exploit the exogenous variation in the characteristics of the local director labor market, documented in the previous tables, to undertake an instrumental variables analysis of the effects of board independence on firm value and performance. Board independence is predicted using the local director pool, industry median level of board independence and large and medium-sized city indicators. In the second stage, market-to-book and firm performance are regressed on the predicted values of board independence and other controls. Regression estimates are presented in Table 7A.

[Table 7]

Proportion of independent directors on the board has a significant positive effect on firm value and operating performance. The effects are obtained after controlling for size, growth opportunities, firm age, risk, G index, institutional ownership, dividends, CEO ownership and CEO characteristics, and industry effects. The relation between board independence and firm value or operating performance is weaker for R&D firms that face a greater need for firm-specific expertise (Coles, Daniel, and Naveen, 2008).

The documented effects are economically important. All else the same, a one standard deviation increase in the proportion of independent directors on a firm's board, which amounts to a 17% increase in board independence, results in a 0.12 rise in its market-to-book ratio and a 1.14% rise in its ROA. For the median firm in our sample that has 9 directors on the board, replacement of one inside or gray director with an independent director, which corresponds to a 11% increase in board independence, is associated with an increase in a firm's market-to-book ratio by 0.08 (given a median market-to-book of 1.66) and an increase in ROA of 0.74% (given a median ROA of 14%). For non-R&D intensive firms, the effects are more pronounced: all else the same, a one-standard deviation increase in board independence results in an increase in a firm's market-to-book ratio by 0.22 and a 1.6% increase in its ROA.

Several other coefficient estimates in Table 7A have expected signs: board size has a negative effect on firm value, consistent with Yermack (1996); similarly, G Index has a significant negative effect on value, consistent with Gompers, Ishii, and Metrick (2003). Institutional ownership is associated with better operating performance and CEO-Chair duality has a negative effect on ROA. CEO tenure, a possible measure of managerial quality, is associated with better operating performance.

While board independence can affect firm value directly, it can also influence firm value through top management compensation. Existing work shows that firms with more independent boards rely more heavily on incentive pay, and these better motivated managers lead to higher shareholder wealth (e.g., Mehran, 1995). We reexamine the relation between board composition and CEO compensation using the local availability of prospective directors as a source of exogenous variation in board structure. In Table 7B, we analyze the

proportion of option grants and equity-based pay (option and restricted stock grants) in total CEO compensation. Managers in companies with less independent boards receive a larger share of their pay in the form of equity based incentive pay (Columns I and II).

An important consideration when evaluating instrumental variables estimates in Table 7 is the validity of the instrument. The instrument we use, the local pool of prospective directors, must meet both the relevance and exclusion requirements to be a valid IV. Conceptually, a greater distance between a firm and its pool of potential directors decreases soft information available to the director and increases his/her cost and potentially the quality of monitoring (both direct and opportunity costs of time). In light of the role of location-driven soft information, certain firms can be more reliant on local director labor markets in their choice of independent directors. Hence, availability of a local director talent pool can be a critical factor in board composition. Statistically, the relevance of the instrument can be assessed by examining first-stage estimation results. After controlling for other variables, the local director pool variable is a significant predictor of independent director representation on boards (see Table 2).

The other consideration is the exclusion requirement. Relocations of firm headquarters are infrequent (Pirinsky and Wang (2005)), so firm location can be viewed as predetermined. Since we use local director labor market characteristics, rather than firm location per se, these local market characteristics are unlikely to affect firm value, other than through board composition. Finally, to account for industry effects on both firm value and the local prospective director pool, we include industry fixed effects in Table 7.

Discussion

Our findings provide evidence of the importance of local director labor markets and the notion that distance matters in spite of technological developments that facilitate teleconferencing and other forms of information sharing. The presence of independent directors at board meetings appears to be essential to the effective execution of their oversight and advisory roles. Although board meetings typically average only seven times a year, at the margin it appears that distance negatively affects the willingness of prospective directors to serve on boards, especially those who are full-time corporate and financial executives and holders of other professional positions.

If soft information about director quality cannot be fully communicated over longer distances, firms may also benefit from appointing local directors.¹⁴ As other research has shown, distance affects the ability to transfer soft information. As a result, firms may be in a better position to capitalize on soft information concerning director quality when they hire locally. In particular, firms that rely on the specialized skills and specific knowledge of independent directors can realize the greatest benefits from recruiting locally. Importantly, after the director selection process is complete, presence of local independent directors on a board can benefit the appointing firm through the director's intimate knowledge of local economic conditions, other nearby firms that could be suppliers, customers or competitors and their executives and employees who could be potential hires for the appointing firm.

Results of our subsample analysis indicate that firms with lower visibility are more likely to rely on local director labor markets in their search for independent directors. Prospective directors are generally more willing to accept the time costs of joining distant

¹⁴ Some of the information asymmetry about director quality can be resolved through the use of a local or national search firm. However, local reputation and soft information about director ability may still be important. Moreover, the role of director's location-specific knowledge for oversight and advisory functions of the board is not eliminated by the use of an intermediary in the search process.

boards if they are large, established companies. Further, our subperiod analysis suggests that after the mandated governance reforms associated with SOX and NYSE and Nasdaq exchange listing requirements, companies are more apt to expand their recruiting of outside directors to a national search to meet the current more demanding board independence requirements, at least over the early years following these reforms.

To further understand the finding of a higher proportion of independent directors on boards of firms located near larger director pools, we examine the proportion of locally employed independent directors on boards (Fig. 1 in Appendix B and Table 6). All else same, location near a larger pool of prospective directors significantly increases the proportion of local independent directors on a firm's board, which is the hypothesized channel through which the local director market affects board independence.

Finally, we examine the effect of heavy reliance on local labor market for hiring independent directors on board quality. We have examined several dimensions of director expertise, including executive expertise, financial expertise, and academic expertise that have been used in prior studies to proxy for director qualifications and ability to advise and oversee senior management. We find that firms located closer to a large pool of potential director talent have a higher proportion of independent directors with executive experience on their boards. Finally, we include a number of controls in all the specifications to reduce the possibility that a third variable is causing both variation in local labor markets and board structure.

4. Conclusions

In this study we examine the impact of local director labor markets on board composition choices and the quality of corporate governance. Executives of nearby firms and

financial institutions may be more likely to accept appointments as independent directors due to the relatively lower costs involved and a potential for local reputation building. The evidence suggests that distance to board meetings is a relevant cost for potential directors and the supply of potential directors in the local director labor market strongly affects board composition. For example, in an average sample firm, a third of independent directors holding executive positions are employed locally.

Our tests empirically document that access to a larger local pool of prospective directors has positive effects on the proportions of independent directors and independent executive experts on boards and a negative effect on the proportions of insiders and gray directors represented. At firms located near large local pools of prospective directors, a higher proportion of independent directors are employed locally. Further, although executive careers are most common among independent director backgrounds, proximity to financial and academic institutions also improves a firm's ability to retain financial and academic experts.

Low visibility firms and firms with a greater need for specific director knowledge are particularly reliant on the local director labor market for independent board members. In the aftermath of the Sarbanes Oxley Act (SOX) of 2003 and the introduction of stock exchange governance requirements, all the classes of firms we examine increased their demand for independent board members. One result is that US public corporations rely significantly less on local director labor markets for independent directors in the post SOX period. Whether this is a just a short term transition effect of these regulatory shocks or a permanent effect is yet to be seen.

Finally, one of our most important findings is that the local pool of prospective directors can serve as a powerful instrumental variable for explaining board composition. Using this instrument to reexamine effect of board independence on firm value and CEO incentive pay, we find strong evidence that an independent board has significant positive effect on the incentive alignment of CEO compensation with shareholder value and these improved CEO incentives result in greater shareholder wealth.

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Appendix A. Variable definitions.

The sample period is 1996-2006. The sample includes Compustat/CRSP firms with available board monitoring and takeover provisions data from IRRC/RiskMetrics, institutional holdings data from Thomson Financial/CDA Spectrum, and executive compensation data from Execucomp. Firms with total assets below twenty million, firms in financial industries (SIC codes 6000-6999), firms in regulated utilities industries (SIC codes 4900-4999), and firms headquartered outside continental US are excluded.

Variable	Definition
<i>Board composition and other board characteristics</i>	
Independent Directors (%)	Percentage of independent directors on the board. Source: RiskMetrics.
Gray Directors (%)	Percentage of gray (affiliated) directors on the company's board. Source: RiskMetrics. Gray directors are identified by RiskMetrics based on proxy statements and disclosures of related transactions. Examples include providers of professional services retained by the firm; customers and suppliers; former employees of the company or its majority-owned subsidiary; employees of subsidiaries in which the company holds less than fifty percent ownership; designees under an agreement with a group (such as a union), directors designated by a significant shareholder, and majority holders; family members of executive officers; recipients of the firm's charitable giving; certain interlocking directors (in instances where a director and an executive of the company sit on a board of another company that has an executive and a director also sit on the original company's board).
Inside Directors (%)	Percentage of inside (employee) directors on the company's board. Source: RiskMetrics.
No. of Independent directors (log)	Natural log of the number of independent directors on the company's board. Source: RiskMetrics.
Executive Expertise (%)	Percentage of independent directors with executive expertise on the board. Executive expertise is defined as having the title of CEO, CFO, CIO, COO, President, Chairman, VP, Executive VP, Senior VP, Partner, Managing Director, or Treasurer, or being an Employee board member at another firm (1998-2006). Source: RiskMetrics.
Financial Expertise (%)	Percentage of independent directors with financial expertise on the board. Financial expertise is defined as having the title of CFO or Treasurer at another firm or the title that contains "Finance"/"Financial", "Investment"/"Investor", "Accounting"/"Auditor", or "Economist", or being an Employee of a financial services company (SIC code 6000-6999) in the present or prior years. Source: RiskMetrics (1998-2001).
Academic Expertise (%)	Percentage of independent directors with academic expertise on the board. Academic expertise is defined as having the title of "Professor", "Dean", "Lecturer", or "Scholar" in the present or prior years. Source: RiskMetrics (1998-2001).
Local Independent Directors (%)	Percentage of local independent directors among independent directors with identifiable corporate positions. Corporate positions are identified as employee status on another company's board as reported by RiskMetrics. Independent directors with corporate positions are classified as local if their position is at a company headquartered within sixty miles of the firm's headquarters. Only observations where name and headquarters location of the company of outside employment is known were used.
Insiders with Local Directorships (%)	Percentage of insiders with at least one seat on the board of another local firm. Other board seats at local firms include insiders' concurrent independent or gray director positions at other companies headquartered within sixty miles of the firm's headquarters, as reported in RiskMetrics. Defined for firms with at least one insider. Source: RiskMetrics.
Local Directorships per Insider (Mean)	Number of other board seats at local firms, per insider, averaged across insiders on the firm's board. Other board seats at local firms include insiders' concurrent independent or gray director positions at other companies headquartered within sixty miles of the firm's headquarters, as reported in RiskMetrics. Defined for firms with at least one insider. Source: RiskMetrics.
Distance to Outside Directorship (Mean)	Natural log of one plus insiders' average distance in miles to other board seats, averaged across insiders on the firm's board. Other board seats include insiders' concurrent independent or gray director positions at other companies as reported in RiskMetrics. Defined for firms with at least one insider with another board seat. Source: RiskMetrics.
Board size	Natural log of the number of directors on the company's board. Source: RiskMetrics.
Board size (num)	Number of directors on the company's board. Source: RiskMetrics.
<i>Characteristics of local director labor markets</i>	
Local director pool	Natural log of one plus the number of US nonfinancial firms with headquarters located within sixty miles of the sample firm's headquarters, excluding firms in the same four-digit SIC industry as the sample firm.
Local director pool (below median)	Equal to Local director pool if Local director pool is below sample median and 0 otherwise.
Local director pool (above median)	Equal to Local director pool if Local director pool is above sample median and 0 otherwise.
Local director pool (US & Can)	Natural log of one plus the number of US and Canadian nonfinancial firms with headquarters located within sixty miles of the sample firm's headquarters, excluding firms in the same four-digit SIC industry as the sample firm.
Local director pool (100 mi)	Natural log of one plus the number of US and Canadian nonfinancial firms with headquarters located within hundred miles of the sample firm's headquarters, excluding firms in the same four-digit SIC industry as the sample firm.
Local director pool (similar or larger size)	Natural log of one plus the number of US nonfinancial firms in the same or higher quartile of total assets with headquarters located within sixty miles of the sample firm's headquarters, excluding firms in the same four-digit SIC industry as the sample firm.
Local director pool	Natural log of one plus the number of US nonfinancial firms with headquarters located within sixty miles of the sample firm's

(excl. small)	headquarters, excluding firms in the same 4-digit SIC industry as the sample firm and firms with total assets less than hundred million.
Local director pool (all industries)	Natural log of one plus the number of US nonfinancial firms with headquarters located within sixty miles of the sample firm's headquarters.
Distance (financial)	Natural log of distance in miles between a firm's headquarters and the closest financial institution with market value of at least one billion. Financial institutions are identified by SIC code between 6000 and 6999.
Distance (all b-schools)	Natural log of distance in miles between a firm's headquarters and the closest business school out of 425 US business schools listed in US News and World Report (2008).
Distance (top b-schools)	Natural log of distance in miles between a firm's headquarters and the closest business school out of top 65 US business schools ranked by US News and World Report (2008).
Distance (top universities)	Natural log of distance in miles between a firm's headquarters and the closest university out of top 130 US national universities ranked by US News and World Report (2008).
Distance (other sources of director talent, factor)	Variable based on factor analysis (scoring coefficients in brackets) of: Distance (financial) [0.12]; Distance (all b-schools) [0.15]; Distance (top universities) [0.17]; Distance (top medical centers) [0.31]; Distance (law firms) [0.37]; Distance (capital cities) [0.03]. Distance (financial) and Distance (academic, all) are defined above. Other distance variables are defined similarly as natural log of distance in miles between a firm's headquarters and the closest entity in the respective category. Top universities include top 130 national universities in the ranking of colleges by US News and World Report (2008). Top medical centers include top 170 medical centers in the ranking of hospitals by US News and World Report (2009). Top law firms include 250 largest law firms in the ranking by Internet Legal Research Group (2008). Capital cities include Washington, DC and fifty state capitals. Source: Compustat and rankings listed above.
<i>Control variables</i>	
Firm size	Natural log of total assets. Source: Compustat.
Firm size (mln)	Total assets in million. Source: Compustat.
Sales growth	Annual change in net sales divided by the previous year's net sales. Source: Compustat.
ROA	Ratio of operating income before depreciation to total assets. ROA(%) is ROA expressed as a percent of total assets. Source: Compustat.
Firm age	Natural log of one plus the number of years since the first listing of the firm's shares in CRSP. Source: CRSP monthly.
Firm age (years)	Number of years since the first listing of the firm's shares in CRSP. Source: CRSP monthly.
Firm uncertainty	Standard deviation of the firm's excess return over the value-weighted market index. Source: CRSP monthly.
Institutional ownership	Percentage stake of all institutional investors in the firm. Source: CDA Spectrum/Thomson Financial.
G Index	The index of 24 takeover defense provisions from Gompers, Ishii, and Metrick (2003). Data is reported for years 1995, 1998, 2000, 2002, 2004, and 2006. Similarly to existing work, gap years are filled in with data for adjoining years. Source: RiskMetrics.
CEO age	Equals 1 for CEO aged sixty-five and over; 0 otherwise. Source: Execucomp.
CEO ownership	Percentage ownership stake of the CEO in the firm. Source: Execucomp.
CEO tenure	Natural log of CEO tenure. Source: Execucomp.
CEO tenure (years)	CEO tenure. Source: Execucomp.
R&D intensity indicator	Dummy variable equal to one if the firm reports positive research and development expenditures and zero otherwise.
Tangible asset intensity	Ratio of property, plants, and equipment to total assets. Source: Compustat.
<i>Robustness control variables</i>	
Classified board	Dummy variable equal to 1 if the firm has a classified board provision and 0 otherwise. Source: RiskMetrics.
Business segments	Log of the number of business segments. Source: Compustat Segments.
Foreign segment	Dummy variable equal to 1 if the firm has a foreign geographic segment and 0 otherwise. Source: Compustat Segments.
Major exchange	Dummy variable equal to 1 if the firm's shares are listed on NYSE, Amex, or NASDAQ.
Large city	Dummy variable equal to 1 if the firm's headquarters are located in one of the top 10 metropolitan statistical areas by population size (New York City, Los Angeles, Chicago, Washington-Baltimore, San Francisco, Philadelphia, Boston, Detroit, Dallas, and Houston, and their suburbs) and 0 otherwise. Source: Compustat and US Census (2000).
Medium-sized city	Indicator variable equal to 1 if the firm's headquarters are located in one of top 11-50 metropolitan statistical areas by population size and 0 otherwise. Source: Compustat and US Census (2000).
Industry cluster	Natural log of number of US nonfinancial firms in the same four-digit SIC industry as the sample firm with headquarters located within sixty miles of the sample firm's headquarters.
Population density (60 mi)	Log of population density in the counties located within sixty miles of the sample firm's headquarters. Source: US Census (2000).
College graduates (%) (60 mi)	Percent of college graduates and holders of advanced degrees in the population ages 25 and over, in the counties located within sixty miles of the sample firm's headquarters. Source: US Census (2000).
<i>Additional variables used in firm value and compensation regressions</i>	
Market-to-book ratio	Ratio of the firm market value to the book value of total assets. Market value is defined as the book value of total assets minus the book value of equity plus the product of year-end price and the number of common shares outstanding. Source: Compustat.
Incentive/ Total CEO pay	Ratio of value of CEO option grants to total CEO compensation (including value of option grants). Source: Execucomp.
Incentive/	Ratio of value of CEO option grants and restricted stock grants to total CEO compensation (including value of option grants).

Total CEO pay (II)	Source: Execucomp.
Dividend yield	Cash dividends per share divided by price at year-end, times hundred. Source: Compustat.
Past ROA (lag 1)	ROA lagged one year. Source: Compustat
Past ROA (lag 2)	ROA lagged two years. Source: Compustat
CEO is chair	Dummy variable equal to 1 if CEO is chairman. Source: RiskMetrics.

Appendix B. Figures and descriptive evidence.

Fig. 1. Local director markets and presence of local independent directors on boards

Mean local independent directors (%) (on the Y-axis) by local director pool (DP) quartile. Local independent directors (%) is the percent of independent directors employed within a sixty-mile radius of the firm's headquarters among independent directors with identified corporate positions. For consistency, only observations where name and headquarters location of the company of outside employment is known were used. Variable definitions and sample selection criteria are presented in Appendix A.

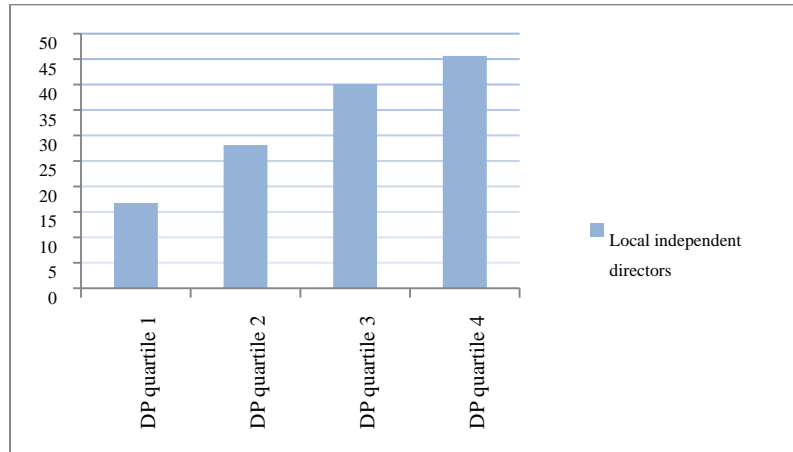


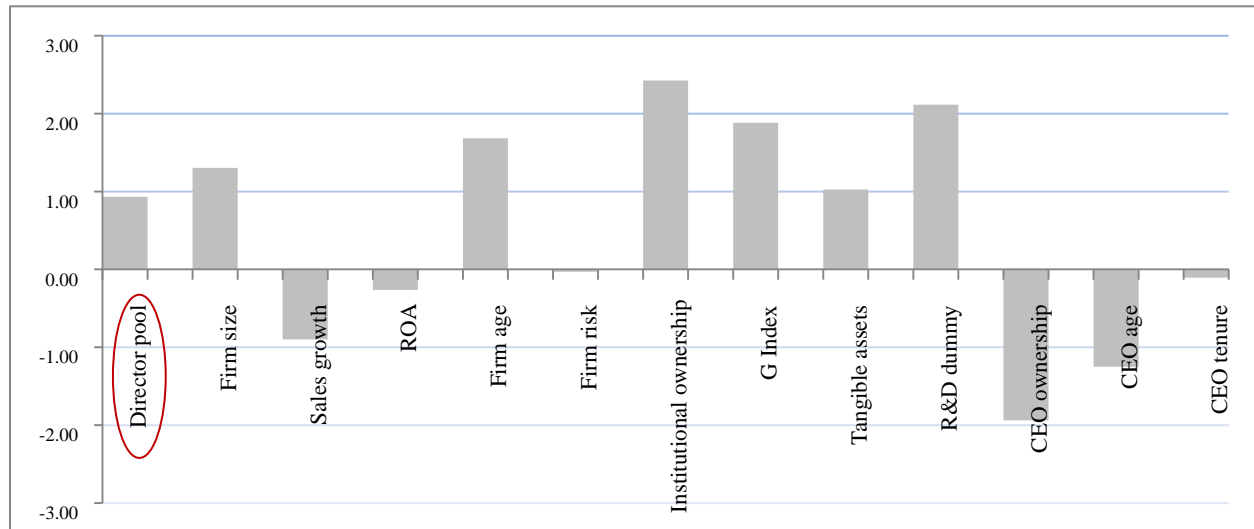
Table B.1. Presence of local independent directors on boards (by subsample)

Mean local independent directors (%), by subsample. Local independent directors (%) is the percent of independent directors employed within a sixty-mile radius of the firm's headquarters among independent directors with identified corporate positions. For consistency, only observations where name and headquarters location of the company of outside employment is known were used. Variable definitions and sample selection criteria are presented in Appendix A. Subsamples are identified as follows. Small firms (large) are firms with total assets below (above) the sample median. Young (mature) firms are firms with firm age below (above) the sample median. Firms in S&P500 (not in S&P500) are firms included (not included) in the S&P500 index. High (low) growth firms are firms with sales growth above (below) the sample median. Competitive (concentrated) industries are three-digit SIC industries with sales-based Herfindahl index below (above) the sample median. Two-sided t-tests of differences in means are performed; statistical significance at 1%, 5%, and 10% levels is denoted with ***, **, and *, respectively.

All firms	32.37	
Small firms	40.14	
Large firms	28.97	
Difference	11.17	***
Young firms	36.66	
Mature firms	30.30	
Difference	6.36	***
Not in S&P500	36.78	
In S&P500	28.03	
Difference	8.75	***
High growth	33.77	
Low growth	31.28	
Difference	2.50	
Competitive industries	34.17	
Concentrated industries	30.76	
Difference	3.41	**

Fig. 2. Economic significance of local director markets relative to other determinants of board independence (%)

Economic effect of a one standard deviation increase in the X variable on Independent Directors (%)



Economic effects are computed based on coefficient estimates from Table 2, Column II and standard deviations of right-hand-side variables reported in Table 1. For each determinant of Board independence, the Y-axis displays the expected change in independent director representation on the board, Independent Directors (%), in response to a one standard deviation increase in the determinant, holding other determinants constant.

Table 1. Summary statistics and variable definitions

Variable definitions and sample selection criteria are presented in Appendix A.

Panel A. Full sample

Variable	Obs	Mean	Med	SD
Independent Directors (%)	10463	65.55	66.67	17.37
Inside Directors (%)	10463	20.46	16.67	11.20
Gray Directors (%)	10463	13.99	11.11	13.76
No. of Independent Directors (log)	10434	1.73	1.79	0.45
Executive Expertise (%)	8765	39.88	37.50	29.03
Financial Expertise (%)	4031	6.67	0.00	11.19
Academic Expertise (%)	3997	6.74	0.00	13.92
Local Independent Directors (%)	3069	32.37	0.00	42.33
Independent Dir. Distance to Exec. Job (Mean)	3069	5.10	5.81	2.21
Independent Dir. Distance to Exec. Job, miles (Mean)	3069	538.83	331.28	607.94
Insiders with Local Directorships (%)	10384	14.01	0.00	30.79
Local Directorships per Insider (Mean)	10384	0.18	0.00	0.42
Insider Distance to Outside Directorship (Mean)	4265	4.64	5.58	2.49
Insider Distance to Outside Directorship, miles (Mean)	4265	473.50	263.52	591.46
Board Size	10463	2.19	2.20	0.28
Board Size [num]	10463	9.31	9.00	2.56
Local director pool	10463	3.76	4.04	1.63
Local director pool [num]	10463	104.53	56.00	116.33
Local director pool (100 mi)	10463	3.88	4.19	1.63
Local director pool (100 mi) [num]	10463	115.84	65.00	129.60
Local director pool (US & Can)	10463	3.76	4.04	1.63
Local director pool (US & Can) [num]	10463	104.58	56.00	116.29
Local director pool (similar or larger size)	10463	2.64	2.83	1.45
Local director pool (similar or larger size) [num]	10463	31.44	16.00	42.81
Local director pool (excl. small)	10463	3.32	3.61	1.52
Local director pool (excl. small) [num]	10463	61.03	36.00	64.98
Local director pool (all industries)	10463	3.88	4.09	1.52
Local director pool (all industries) [num]	10463	110.98	59.00	124.87
Distance (financial)	10463	0.67	0.00	1.41
Distance (financial) [miles]	10463	8.11	0.00	23.74
Distance (all b-schools)	10463	1.80	1.73	0.96
Distance (all b-schools) [miles]	10463	8.71	4.64	11.11
Distance (top b-schools)	10463	2.98	2.84	1.43
Distance (top b-schools) [miles]	10463	47.80	16.04	70.92
Distance (top universities)	10463	2.61	2.57	1.14
Distance (top universities) [miles]	10463	25.30	12.05	37.48
Distance (other sources of director talent, factor)	10463	0.00	-0.11	0.92
Large city	10463	0.52	1.00	0.50
Medium-sized city	10463	0.34	0.00	0.47
Industry cluster	1.35	1.10	0.92	1.35
Industry cluster [num]	6.44	2.00	14.08	6.44
Population density (60 mi)	15.28	15.35	0.99	15.28
Population density (60 mi) [mln]	6.47	4.64	5.50	6.47
College graduates (%) (60 mi)	28.31	28.78	4.86	28.31
Firm size	10463	7.46	7.33	1.46
Firm size [mln]	10463	6385	1524	18403
Sales growth	10463	0.11	0.08	0.28
ROA	10463	0.15	0.14	0.10
Firm age	10463	2.98	3.00	0.80
Firm age [years]	10463	25.68	19.00	20.42
Firm uncertainty	10463	2.54	2.24	1.26
Institutional ownership	10463	67.60	69.40	17.64
G Index	10463	9.30	9.00	2.59
Tangible asset intensity	10463	0.30	0.24	0.22

R&D intensity indicator	10463	0.54	1.00	0.50
Business segments	9289	0.74	0.69	0.69
Business segments [num]	9289	2.64	2.00	1.75
Foreign segment	9289	0.72	1.00	0.45
Major exchange	10463	0.96	1.00	0.19
NYSE listing	10463	0.69	1.00	0.46
Market-to-book ratio	10463	2.12	1.66	1.52
Dividend yield	10463	1.01	0.46	1.34
CEO-Chair	9588	0.73	1.00	0.45
CEO ownership	10463	2.23	0.28	5.81
CEO age	10463	0.09	0.00	0.29
CEO tenure	10463	1.73	1.79	0.90
CEO tenure [years]	10463	7.22	5.00	7.46
Incentive/total CEO pay	9790	0.37	0.37	0.29
Incentive/total CEO pay (II)	9790	0.44	0.47	0.29

Panel B. Statistics of the main variables by subsamples (firm size and age)

Firms with total assets below the sample median (small) and above the sample median (large); firms with firm age below the sample median (young) and above the sample median (mature).

	Firm size								Firm age							
	Small				Large				Young				Mature			
	Obs	Mean	Med	SD	Obs	Mean	Med	SD	Obs	Mean	Med	SD	Obs	Mean	Med	SD
Independent Directors (%)	5190	62.60	66.67	17.63	5273	68.46	71.43	16.62	5290	62.63	66.67	18.05	5173	68.54	71.43	16.12
Inside Directors (%)	5190	23.04	20.00	12.12	5273	17.91	15.38	9.54	5290	22.77	20.00	11.94	5173	18.09	15.38	9.83
Gray Directors (%)	5190	14.37	12.50	14.06	5273	13.61	11.11	13.46	5290	14.59	12.50	14.77	5173	13.36	11.11	12.61
Executive Expertise (%)	4316	39.26	33.33	30.43	4449	40.48	37.50	27.60	4580	38.04	33.33	30.48	4185	41.89	40.00	27.23
Financial Expertise (%)	2035	6.57	0.00	11.85	1996	6.77	0.00	10.47	2090	6.43	0.00	11.55	1941	6.93	0.00	10.77
Academic Expertise (%)	2011	6.86	0.00	14.79	1986	6.63	0.00	12.98	2061	6.05	0.00	14.55	1936	7.48	0.00	13.17
Local Independent Directors (%)	933	40.14	0.00	46.28	2136	28.97	0.00	40.03	998	36.66	0.00	45.01	2071	30.30	0.00	40.83
Insiders with Local Directorships (%)	5167	9.44	0.00	26.07	5217	18.54	0.00	34.24	5254	9.36	0.00	25.58	5130	18.78	0.00	34.69
Local Directorships per Insider (Mean)	5167	0.12	0.00	0.35	5217	0.24	0.00	0.48	5254	0.11	0.00	0.32	5130	0.24	0.00	0.49
Insider Distance to Outside Directorship (Mean)	1286	4.14	4.79	2.61	2979	4.86	5.78	2.41	1543	4.58	5.53	2.60	2722	4.67	5.63	2.43
Board Size	5190	2.06	2.08	0.25	5273	2.32	2.30	0.24	5290	2.08	2.08	0.26	5173	2.31	2.30	0.24
Local director pool	5190	3.73	4.05	1.67	5273	3.79	4.03	1.60	5290	3.89	4.32	1.65	5173	3.62	3.78	1.61
Distance (financial)	5190	0.77	0.00	1.48	5273	0.57	0.00	1.33	5290	0.71	0.00	1.45	5173	0.62	0.00	1.37
Distance (top b-schools)	5190	3.07	2.96	1.40	5273	2.89	2.84	1.45	5290	3.02	2.84	1.39	5173	2.94	2.99	1.46

Panel C. Subsamples (firm growth opportunities and industry competition)

Firms with sales growth above the sample median (strong) and below the sample median (weak); firms in three-digit SIC industries with Herfindahl index of net sales below the sample median (competitive) and above the sample median (concentrated).

	Growth opportunities								Industry competition							
	Strong				Weak				Competitive				Concentrated			
	Obs	Mean	Med	SD	Obs	Mean	Med	SD	Obs	Mean	Med	SD	Obs	Mean	Med	SD
Independent Directors (%)	5258	64.27	66.67	17.86	5205	66.85	69.23	16.77	5165	64.96	66.67	17.21	5298	66.12	66.67	17.52
Inside Directors (%)	5258	21.52	18.18	11.65	5205	19.38	16.67	10.62	5165	20.79	16.67	11.10	5298	20.13	16.67	11.28
Gray Directors (%)	5258	14.22	11.11	14.14	5205	13.75	11.11	13.36	5165	14.25	12.50	13.90	5298	13.73	11.11	13.62
Executive Expertise (%)	4391	38.26	33.33	29.70	4374	41.51	40.00	28.26	4229	41.27	40.00	29.64	38.59	33.33	28.40	29.77
Financial Expertise (%)	1868	6.28	0.00	11.31	2163	7.01	0.00	11.07	2095	6.70	0.00	11.16	1936	6.64	0.00	11.21
Academic Expertise (%)	1849	6.28	0.00	13.83	2148	7.15	0.00	13.98	2069	6.45	0.00	14.24	1928	7.06	0.00	13.56
Local Independent Directors (%)	1339	33.77	0.00	43.39	1730	31.28	0.00	41.47	1454	34.21	0.00	42.31	1615	30.71	0.00	42.29
Insiders with Local Directorships (%)	5219	12.92	0.00	29.65	5165	15.12	0.00	31.86	5117	13.93	0.00	30.59	5267	14.09	0.00	30.98
Local Directorships per Insider (Mean)	5219	0.16	0.00	0.41	5165	0.19	0.00	0.43	5117	0.18	0.00	0.44	5267	0.17	0.00	0.41
Insider Distance to Outside Directorship (Mean)	1981	4.57	5.52	2.52	2284	4.70	5.68	2.47	1976	4.58	5.60	2.62	2289	4.69	5.56	2.38
Board Size	5258	2.17	2.20	0.28	5205	2.22	2.20	0.27	5165	2.17	2.20	0.30	5298	2.21	2.20	0.25
Local director pool	5258	3.82	4.20	1.64	5205	3.70	3.91	1.63	5165	4.14	4.60	1.56	5298	3.39	3.53	1.62
Distance (financial)	5258	0.69	0.00	1.42	5205	0.65	0.00	1.39	5165	0.56	0.00	1.31	5298	0.77	0.00	1.49
Distance (top b-schools)	5258	2.97	2.84	1.41	5205	2.99	3.02	1.44	5165	2.97	2.84	1.39	5298	2.99	3.04	1.46

Table 2. Local director labor markets and board composition.

The dependent variable is independent director representation on the board, Independent Directors (%). Variable definitions and sample selection criteria are presented in Appendix A. Ordinary least squares regressions. Three-digit SIC industry effects and year effects are included. Robust t-statistics adjusted for clustering by firm are italicized.

	I	II	III
Local director pool	0.666 **	0.525 **	0.569 **
	<i>2.39</i>	<i>2.08</i>	<i>2.33</i>
Firm size		1.230 ***	0.892 ***
		<i>3.74</i>	<i>2.76</i>
Sales growth		-3.664 ***	-3.221 ***
		<i>-3.30</i>	<i>-3.01</i>
ROA		-2.920	-2.526
		<i>-0.74</i>	<i>-0.67</i>
Firm age		2.280 ***	2.093 ***
		<i>4.14</i>	<i>3.88</i>
Firm uncertainty		0.202	-0.023
		<i>0.59</i>	<i>-0.07</i>
Institutional ownership		0.175 ***	0.137 ***
		<i>7.30</i>	<i>5.85</i>
G Index		0.843 ***	0.728 ***
		<i>5.45</i>	<i>4.79</i>
Tangible asset intensity			4.760 *
			<i>1.67</i>
R&D intensity indicator			4.239 ***
			<i>3.77</i>
CEO ownership			-0.334 ***
			<i>-5.69</i>
CEO age			-4.354 ***
			<i>-4.75</i>
CEO tenure			-0.117
			<i>-0.36</i>
Obs.	10463	10463	10463
R ²	0.244	0.310	0.332
Adj. R ²	0.228	0.295	0.317

*** Statistically significant at the 1% level; ** significant at 5% level; * significant at 10% level.

Table 3. Local director labor markets and board composition: Other sources of director talent.

The dependent variable is independent director representation on the board, Independent Directors (%). Variable definitions and sample selection criteria are presented in Appendix A. Ordinary least squares regressions. Three-digit SIC industry effects and year effects are included. Robust t-statistics adjusted for clustering by firm are italicized.

	I	II	III	IV	V	VI
Distance (financial)	-0.422 *			-0.151		
	<i>-1.81</i>			<i>-0.53</i>		
Distance (all b-schools)		-0.021			0.166	
		<i>-0.06</i>			<i>0.43</i>	
Distance (other sources of director talent)			-0.231			0.361
			<i>-0.53</i>			<i>0.71</i>
Local director pool				0.491 *	0.591 **	0.689 **
				<i>1.65</i>	<i>2.31</i>	<i>2.41</i>
Firm size	0.954 ***	0.995 ***	0.982 ***	0.891 ***	0.895 ***	0.892 ***
	<i>2.95</i>	<i>3.06</i>	<i>3.06</i>	<i>2.76</i>	<i>2.77</i>	<i>2.76</i>
Sales growth	-3.260 ***	-3.271 ***	-3.265 ***	-3.224 ***	-3.214 ***	-3.219 ***
	<i>-3.04</i>	<i>-3.05</i>	<i>-3.05</i>	<i>-3.01</i>	<i>-3.00</i>	<i>-3.00</i>
ROA	-2.585	-2.659	-2.685	-2.519	-2.492	-2.454
	<i>-0.68</i>	<i>-0.70</i>	<i>-0.71</i>	<i>-0.67</i>	<i>-0.66</i>	<i>-0.65</i>
Firm age	2.079 ***	2.117 ***	2.099 ***	2.083 ***	2.092 ***	2.116 ***
	<i>3.86</i>	<i>3.94</i>	<i>3.88</i>	<i>3.86</i>	<i>3.87</i>	<i>3.90</i>
Firm risk	0.035	0.071	0.059	-0.023	-0.024	-0.025
	<i>0.11</i>	<i>0.21</i>	<i>0.18</i>	<i>-0.07</i>	<i>-0.07</i>	<i>-0.08</i>
Institutional ownership	0.140 ***	0.141 ***	0.141 ***	0.138 ***	0.137 ***	0.137 ***
	<i>5.93</i>	<i>5.97</i>	<i>5.95</i>	<i>5.87</i>	<i>5.85</i>	<i>5.84</i>
G Index	0.701 ***	0.696 ***	0.696 ***	0.725 ***	0.728 ***	0.734 ***
	<i>4.63</i>	<i>4.60</i>	<i>4.60</i>	<i>4.76</i>	<i>4.79</i>	<i>4.80</i>
Tangible asset intensity	4.379	4.098	4.166	4.770 *	4.798 *	4.796 *
	<i>1.52</i>	<i>1.42</i>	<i>1.45</i>	<i>1.67</i>	<i>1.68</i>	<i>1.68</i>
R&D intensity indicator	4.294 ***	4.245 ***	4.251 ***	4.258 ***	4.231 ***	4.228 ***
	<i>3.80</i>	<i>3.76</i>	<i>3.76</i>	<i>3.78</i>	<i>3.76</i>	<i>3.77</i>
CEO ownership	-0.333 ***	-0.334 ***	-0.335 ***	-0.333 ***	-0.333 ***	-0.332 ***
	<i>-5.72</i>	<i>-5.74</i>	<i>-5.77</i>	<i>-5.69</i>	<i>-5.67</i>	<i>-5.64</i>
CEO age	-4.347 ***	-4.302 ***	-4.312 ***	-4.363 ***	-4.355 ***	-4.348 ***
	<i>-4.76</i>	<i>-4.69</i>	<i>-4.70</i>	<i>-4.77</i>	<i>-4.76</i>	<i>-4.75</i>
CEO tenure	-0.118	-0.123	-0.116	-0.116	-0.121	-0.127
	<i>-0.35</i>	<i>-0.37</i>	<i>-0.35</i>	<i>-0.35</i>	<i>-0.37</i>	<i>-0.39</i>
Obs.	10463	10463	10463	10463	10463	10463
R ²	0.331	0.330	0.331	0.332	0.332	0.332
Adj. R ²	0.316	0.315	0.315	0.317	0.317	0.317

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Table 4. Local director labor markets and board independence: Subsample analysis.

The dependent variable is independent director representation on the board, Independent Directors (%). Variable definitions and sample selection criteria are presented in Appendix A. Ordinary least squares regressions by subsample. Subsamples are identified as follows.

Panel A: firms with total assets below the sample median (Column I) and above the sample median (Column II); firms with firm age below the sample median (Column III) and above the sample median (Column IV); firms listed on NYSE (Column V) and firms not listed on NYSE (Column VI).

Panel B: firms with sales growth above the sample median (Column I) and below the sample median (Column II); firms in three-digit SIC industries with Herfindahl index of net sales below the sample median (Column III) and above the sample median (Column IV).

Panel C: firm-years prior to governance reforms, 1999-2001 (Column I) and firm-years after governance reforms, 2002-2006 (Columns II-X). Subsamples are defined similarly to Panels A and B.

Three-digit SIC industry effects and year effects are included. Robust t-statistics adjusted for clustering by firm are italicized.

Panel A. Measures of firm visibility: size, age, NYSE listing.

	Firm size		Firm age		NYSE listing	
	Small	Large	Young	Mature	No	Yes
	I	II	III	IV	V	VI
Local director pool	0.637 **	0.259	0.709 **	0.437	0.757 **	0.399
	<i>2.19</i>	<i>0.67</i>	<i>2.32</i>	<i>1.15</i>	<i>2.00</i>	<i>1.31</i>
Firm size	-1.063 *	1.871 ***	0.536	0.128	-0.223	1.463 ***
	<i>-1.70</i>	<i>2.90</i>	<i>1.27</i>	<i>0.26</i>	<i>-0.47</i>	<i>3.72</i>
Sales growth	-1.260	-5.507 ***	-2.482 **	-4.371 ***	0.031	-6.548 ***
	<i>-1.27</i>	<i>-3.22</i>	<i>-1.99</i>	<i>-3.30</i>	<i>0.03</i>	<i>-6.74</i>
ROA	-6.360	13.900 *	-4.516	8.142	-5.364	5.775
	<i>-1.56</i>	<i>1.75</i>	<i>-0.99</i>	<i>1.30</i>	<i>-1.16</i>	<i>1.16</i>
Firm age	1.024	2.342 ***	-0.516	9.484 ***	1.029	2.014 ***
	<i>1.36</i>	<i>3.18</i>	<i>-0.55</i>	<i>5.22</i>	<i>1.00</i>	<i>3.39</i>
Firm uncertainty	0.380	-0.802	-0.009	-0.097	0.764 **	-0.077
	<i>1.12</i>	<i>-1.18</i>	<i>-0.02</i>	<i>-0.18</i>	<i>2.02</i>	<i>-0.17</i>
Institutional ownership	0.176 ***	0.132 ***	0.127 ***	0.112 ***	0.176 ***	0.144 ***
	<i>6.72</i>	<i>3.21</i>	<i>3.93</i>	<i>3.24</i>	<i>5.42</i>	<i>4.98</i>
G Index	0.773 ***	0.824 ***	0.888 ***	0.749 ***	0.618 **	0.763 ***
	<i>4.19</i>	<i>3.46</i>	<i>3.82</i>	<i>3.64</i>	<i>2.48</i>	<i>4.55</i>
Tangible asset intensity	5.612	2.992	4.164	0.721	0.465	2.836
	<i>1.58</i>	<i>0.69</i>	<i>1.06</i>	<i>0.16</i>	<i>0.09</i>	<i>0.80</i>
R&D intensity indicator	3.959 ***	3.153 *	5.110 ***	2.790 *	6.516 ***	4.037 ***
	<i>2.63</i>	<i>1.89</i>	<i>3.00</i>	<i>1.79</i>	<i>2.75</i>	<i>3.10</i>
CEO ownership	-0.293 ***	-0.382 ***	-0.282 ***	-0.484 ***	-0.256 **	-0.358 ***
	<i>-4.04</i>	<i>-4.02</i>	<i>-3.83</i>	<i>-4.62</i>	<i>-2.58</i>	<i>-4.85</i>
CEO age	-4.397 ***	-2.917 **	-3.565 ***	-3.633 ***	-1.661	-4.830 ***
	<i>-4.25</i>	<i>-2.23</i>	<i>-2.77</i>	<i>-2.90</i>	<i>-1.00</i>	<i>-4.72</i>
CEO tenure	-0.413	0.027	0.091	0.023	-0.105	0.216
	<i>-0.99</i>	<i>0.06</i>	<i>0.20</i>	<i>0.06</i>	<i>-0.18</i>	<i>0.65</i>
Obs.	5190	5273	5290	5173	3240	7223
R ²	0.349	0.365	0.320	0.424	0.372	0.393
Adj. R ²	0.321	0.341	0.293	0.401	0.340	0.374

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Panel B. Measures of firm benefits from local knowledge: growth opportunities and industry competition.

	Growth opportunities		Industry competition	
	Strong	Weak	Competitive	Concentrated
	I	II	III	IV
Local director pool	0.822 *** 2.87	0.298 1.15	0.727 ** 2.00	0.356 1.16
Firm size	0.675 1.64	1.203 *** 3.67	0.615 1.26	1.299 *** 3.17
Sales growth	-1.417 -1.24	-0.290 -0.15	-2.442 * -1.80	-4.870 *** -4.26
ROA	-3.788 -0.79	-1.509 -0.36	-2.092 -0.44	-1.188 -0.20
Firm age	2.435 *** 3.60	1.438 ** 2.55	2.704 *** 3.05	1.531 ** 2.50
Firm uncertainty	-0.079 -0.16	0.011 0.03	0.042 0.09	-0.067 -0.15
Institutional ownership	0.144 *** 4.91	0.143 *** 5.85	0.141 *** 4.16	0.132 *** 4.20
G Index	0.689 *** 3.59	0.711 *** 4.41	0.758 *** 3.28	0.737 *** 4.12
Tangible asset intensity	7.165 * 1.93	0.593 0.20	3.256 0.77	6.037 * 1.66
R&D intensity indicator	4.429 *** 3.32	3.843 *** 3.02	5.423 *** 3.07	3.182 ** 2.35
CEO ownership	-0.283 *** -3.67	-0.349 *** -5.44	-0.306 *** -3.40	-0.341 *** -4.75
CEO age	-3.659 *** -3.21	-5.074 *** -4.80	-4.772 *** -3.75	-3.982 *** -3.27
CEO tenure	0.073 0.16	-0.301 -0.91	0.551 1.10	-0.756 * -1.84
Obs.	5258	5205	5165	5298
R ²	0.331	0.375	0.255	0.418
Adj. R ²	0.301	0.347	0.243	0.392

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level

Panel C. Governance reforms

	Before reforms		After reforms		After reforms		After reforms		After reforms		After reforms	
			Firm size		Firm age		Growth opportunities		Industry competition			
	All firms	All firms	Small	Large	Young	Mature	Strong	Weak	Competitive	Concentrated		
	I	II	III	IV	V	VI	VII	VIII	IX	X		
Director pool	0.774 **	0.458 *	0.299	0.501	0.399	0.599	0.701 **	0.142	0.640 *	0.279		
	2.32	1.79	0.83	1.32	1.22	1.40	2.28	0.47	1.81	0.78		
Firm size	0.823 *	1.261 ***	-0.410	1.685 ***	0.579	0.875	0.945 **	1.902 ***	1.169 **	1.458 ***		
	1.68	3.87	-0.50	2.60	1.35	1.52	2.27	5.14	2.52	3.26		
Sales growth	-1.859	-4.094 ***	-1.711	-5.810 ***	-3.443 **	-4.755 **	-2.815 *	-0.884	-3.281 **	-5.824 ***		
	-1.46	-3.53	-1.34	-3.37	-2.51	-2.32	-1.85	-0.30	-2.23	-3.48		
ROA	-8.860 *	-0.343	-0.275	4.886	-5.422	6.399	-6.038	3.644	-2.737	4.949		
	-1.69	-0.08	-0.05	0.66	-1.06	0.76	-1.10	0.65	-0.51	0.67		
Firm age	2.451 ***	1.695 ***	-0.715	2.436 ***	-1.725	10.186 ***	0.969	1.512 **	1.077	2.083 **		
	3.22	2.77	-0.77	2.87	-1.55	4.98	1.25	2.15	1.19	2.58		
Firm risk	0.525	-0.162	0.715	-1.097	-0.896 *	0.646	-0.395	0.059	-0.163	-0.220		
	1.16	-0.37	1.32	-1.54	-1.73	0.92	-0.62	0.11	-0.26	-0.38		
Institutional ownership	0.155 ***	0.149 ***	0.169 ***	0.148 ***	0.121 ***	0.152 ***	0.138 ***	0.152 ***	0.129 ***	0.173 ***		
	4.76	5.54	5.20	3.15	3.70	3.58	4.09	4.62	3.52	4.57		
G Index	0.974 ***	0.548 ***	0.644 ***	0.455 *	0.535 **	0.654 ***	0.549 ***	0.466 **	0.539 **	0.581 ***		
	4.26	3.31	2.82	1.87	2.22	2.79	2.70	2.25	2.19	2.71		
Tangible asset intensity	9.182 **	-2.566	-4.587	2.112	-6.452	-3.200	-2.435	-5.594	-3.445	-0.870		
	2.25	-0.81	-1.08	0.44	-1.59	-0.61	-0.57	-1.47	-0.76	-0.20		
R&D intensity indicator	4.523 ***	4.600 ***	3.012 *	4.984 ***	5.282 ***	4.102 **	3.876 ***	5.043 ***	4.634 **	4.515 ***		
	2.77	3.63	1.73	2.85	2.91	2.34	2.64	3.19	2.43	2.78		
CEO ownership	-0.333 ***	-0.293 ***	-0.262 ***	-0.377 ***	-0.379 ***	-0.288 ***	-0.322 ***	-0.247 ***	-0.349 ***	-0.237 ***		
	-3.41	-4.47	-2.93	-3.20	-4.60	-2.92	-3.47	-3.44	-3.71	-2.82		
CEO age	-5.168 ***	-3.221 ***	-2.909 **	-2.282	-2.951 **	-1.643	-2.454 *	-3.692 ***	-1.304	-4.171 ***		
	-3.04	-3.09	-2.16	-1.41	-2.31	-1.02	-1.80	-2.87	-0.85	-3.02		
CEO tenure	-0.358	-0.030	0.286	-0.375	0.872 *	-0.049	0.326	-0.440	0.413	-0.445		
	-0.70	-0.08	0.55	-0.69	1.69	-0.09	0.63	-0.97	0.76	-0.87		
Obs.	3033	4742	2287	2455	2497	2245	2528	2214	2135	2607		
R ²	0.346	0.297	0.326	0.356	0.309	0.434	0.309	0.382	0.208	0.371		
Adj. R ²	0.296	0.263	0.268	0.308	0.260	0.385	0.250	0.320	0.186	0.319		

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Table 5. Local director labor markets and board composition: Robustness checks.

The dependent variable is independent director representation on the board, Independent Directors (%). Variable definitions and sample selection criteria are presented in Appendix A. Ordinary least squares regressions. Three-digit SIC industry effects and year effects are included. Robust t-statistics adjusted for clustering by firm are italicized.

Panel A: Alternative definitions of Local director pool are used for robustness: including US and Canadian firms in Column I and US and Canadian firms in the hundred-mile radius of the firm's headquarters in Column II; including firms of similar or larger size in Column III; excluding small firms in Column IV; including nonfinancial firms from all four-digit SIC industries, including the firm's industry in Column V. Local director pool effect is allowed to vary depending on whether Local director pool is below or above sample median in Column VI.

Panel B: Sample selection criteria are varied for robustness as follows: Alaska and Hawaii observations are included in the sample in Column I; firms headquartered in ten largest metropolitan areas excluded from the sample in Column II; California, Illinois, Massachusetts, and New York are excluded from the sample in Column III. Local director pool is lagged one period in Column IV. Additional right-hand-side variables are included in Columns V-VIII. Firm size is defined as log of market value of the firm in Column VIII.

Panel C: Additional control variables are used to test alternative explanations: Industry cluster is included separately in Column I and jointly with the main effect in Column II; Population density is included separately in Column III and jointly with the main effect in Column IV; College graduates (%) (60mi) is included jointly with the main effect in Column V. Dummies for Census regions are included in Columns III-V.

Panel A. Alternative measures of the variable of interest.

	I	II	IV	V	V	VI
Local director pool (US & Can)	0.571 ** 2.33					
Local director pool (100mi)		0.498 ** 1.99				
Local director pool (similar or larger)			0.683 ** 2.50			
Local director pool (excl. small)				0.601 ** 2.35		
Local director pool (all industries)					0.592 ** 2.22	
Local director pool (below median)						0.609 *
						1.82
Local director pool (above median)						0.529 ** 2.31
Firm size	0.892 *** 2.76	0.910 *** 2.82	1.052 *** 3.19	0.891 *** 2.75	0.894 *** 2.76	0.904 *** 2.80
Sales growth	-3.220 *** -3.01	-3.220 *** -3.01	-3.192 *** -2.99	-3.211 *** -3.01	-3.220 *** -3.01	-3.204 *** -2.99
ROA	-2.528 -0.67	-2.546 -0.67	-2.487 -0.66	-2.515 -0.67	-2.538 -0.67	-2.583 -0.68
Firm age	2.093 *** 3.88	2.089 *** 3.86	2.072 *** 3.85	2.093 *** 3.88	2.096 *** 3.89	2.094 *** 3.88
Firm uncertainty	-0.024 -0.07	-0.013 -0.04	-0.035 -0.11	-0.017 -0.05	-0.022 -0.07	-0.017 -0.05
Institutional ownership	0.137 *** 5.85	0.138 *** 5.87	0.138 *** 5.89	0.137 *** 5.85	0.138 *** 5.85	0.138 *** 5.85
G Index	0.728 *** 4.79	0.719 *** 4.74	0.729 *** 4.78	0.725 *** 4.76	0.727 *** 4.78	0.724 *** 4.77
Tangible asset intensity	4.763 * 1.67	4.619 1.61	4.794 * 1.68	4.746 * 1.66	4.752 * 1.66	4.656 1.63
R&D intensity indicator	4.241 *** 3.77	4.222 *** 3.76	4.199 *** 3.74	4.224 *** 3.76	4.221 *** 3.76	4.246 *** 3.77
CEO ownership	-0.334 *** -5.69	-0.334 *** -5.69	-0.334 *** -5.68	-0.334 *** -5.70	-0.334 *** -5.70	-0.334 *** -5.71
CEO age	-4.352 *** -4.75	-4.357 *** -4.76	-4.344 *** -4.74	-4.334 *** -4.73	-4.351 *** -4.75	-4.350 *** -4.76
CEO tenure	-0.117 -0.35	-0.117 -0.35	-0.115 -0.35	-0.118 -0.36	-0.118 -0.36	-0.120 -0.36
Obs.	10463	10463	10463	10463	10463	10463
R ²	0.332	0.332	0.333	0.332	0.332	0.332
Adj. R ²	0.317	0.316	0.317	0.317	0.317	0.317

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Panel B. Alternative sample selection criteria and additional control variables

	I	II	III	IV	V	VI	VII	VIII
Local director pool	0.569 ** 2.33	1.496 *** 3.79	1.079 *** 3.31	0.572 ** 2.34	0.522 ** 2.09	0.498 ** 2.05	1.156 *** 3.44	1.029 *** 3.11
Firm size	0.892 *** 2.76	0.639 1.51	0.763 * 1.93	0.893 *** 2.76	0.562 1.61	0.984 *** 3.07	0.964 *** 3.04	-7.303 *** -3.45
Firm size ²								0.507 *** 3.84
Sales growth	-3.221 *** -3.01	-3.072 ** -2.15	-5.243 *** -3.13	-3.218 *** -3.01	-2.609 ** -2.56	-3.455 *** -3.08	-3.304 *** -3.11	-3.264 *** -3.22
ROA	-2.526 -0.67	-3.301 -0.58	-2.517 -0.47	-2.512 -0.66	-2.158 -0.57	-2.632 -0.68	-3.092 -0.81	-4.379 -1.14
Firm age	2.093 *** 3.88	1.801 ** 2.44	1.869 *** 2.86	2.096 *** 3.88	2.029 *** 3.68	2.730 *** 5.01	2.124 *** 3.96	1.835 *** 3.45
Firm uncertainty	-0.023 -0.07	-0.414 -0.93	-0.268 -0.61	-0.022 -0.07	0.068 0.21	-0.074 -0.22	-0.033 -0.10	-0.101 -0.31
Institutional ownership	0.137 *** 5.85	0.169 *** 5.66	0.152 *** 5.20	0.137 *** 5.85	0.143 *** 6.04	0.144 *** 6.17	0.144 *** 6.29	0.173 *** 7.44
G Index	0.728 *** 4.79	0.945 *** 4.55	1.043 *** 5.40	0.729 *** 4.79	0.775 *** 4.95		0.699 *** 4.61	0.769 *** 5.07
Tangible asset intensity	4.760 * 1.67	2.380 0.63	4.138 1.23	4.755 * 1.66	6.273 ** 2.14	4.708 * 1.65	4.536 1.58	5.079 * 1.80
R&D intensity indicator	4.239 *** 3.77	4.598 *** 2.86	4.474 *** 3.39	4.236 *** 3.77	3.853 *** 3.29	4.308 *** 3.83	4.209 *** 3.79	3.953 *** 3.57
CEO ownership	-0.334 *** -5.69	-0.291 *** -3.06	-0.262 *** -3.65	-0.334 *** -5.70	-0.312 *** -5.35	-0.360 *** -6.06	-0.325 *** -5.58	-0.311 *** -5.35
CEO age	-4.354 *** -4.75	-3.631 *** -2.98	-3.518 *** -3.26	-4.349 *** -4.75	-4.555 *** -4.94	-4.360 *** -4.80	-4.345 *** -4.85	-4.189 *** -4.78
CEO tenure	-0.117 -0.36	-0.170 -0.40	-0.079 -0.19	-0.116 -0.35	-0.029 -0.08	-0.184 -0.56	-0.099 -0.30	-0.083 -0.26
Business segments					0.979 1.52			
Foreign segment					0.779 0.99			
Classified board						1.662 ** 2.33		
Major exchange							-1.244 -0.67	-0.943 -0.51
Large city							-3.106 ** -1.96	-3.045 * -1.93
Medium-sized city							-0.308 -0.23	-0.228 -0.17
Obs.	10463	5032	6899	10463	9289	10463	10463	10463
R ²	0.332	0.437	0.385	0.332	0.342	0.326	0.335	0.340
Adj. R ²	0.317	0.413	0.365	0.317	0.325	0.310	0.320	0.324

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Panel C. Alternative explanations and additional control variables

	I	II	III	IV	V
Director pool		0.622 **		0.969 ***	0.626 **
		2.19		2.81	2.11
Firm size	0.963 ***	0.898 ***	1.017 ***	0.980 ***	0.941 ***
	2.95	2.77	3.23	3.12	2.96
Sales growth	-3.260 ***	-3.221 ***	-3.294 ***	-3.323 ***	-3.250 ***
	-3.03	-3.01	-3.06	-3.11	-3.06
ROA	-2.624	-2.529	-2.987	-3.133	-2.989
	-0.69	-0.67	-0.78	-0.83	-0.79
Firm age	2.136 ***	2.082 ***	2.136 ***	2.158 ***	2.132 ***
	3.97	3.86	3.90	3.95	3.92
Firm risk	0.031	-0.014	0.049	-0.008	-0.011
	0.10	-0.04	0.15	-0.03	-0.03
Institutional ownership	0.139 ***	0.138 ***	0.142 ***	0.142 ***	0.140 ***
	5.92	5.89	6.04	6.08	5.96
G Index	0.708 ***	0.725 ***	0.709 ***	0.715 ***	0.718 ***
	4.65	4.76	4.70	4.74	4.77
Tangible asset intensity	4.213	4.769 *	3.982	4.453	4.487
	1.46	1.67	1.39	1.57	1.58
R&D intensity indicator	4.164 ***	4.276 ***	4.029 ***	4.005 ***	4.050 ***
	3.72	3.80	3.60	3.63	3.64
CEO ownership	-0.334 ***	-0.334 ***	-0.324 ***	-0.317 ***	-0.323 ***
	-5.73	-5.69	-5.63	-5.45	-5.58
CEO age	-4.300 ***	-4.360 ***	-4.286 ***	-4.300 ***	-4.324 ***
	-4.66	-4.77	-4.76	-4.80	-4.78
CEO tenure	-0.124	-0.116	-0.132	-0.133	-0.124
	-0.38	-0.35	-0.40	-0.41	-0.38
G Index	0.708 ***	0.725 ***	0.709 ***	0.715 ***	0.718 ***
	4.65	4.76	4.70	4.74	4.77
Industry cluster	0.450	-0.207			
	0.90	-0.36			
Population density (60 mi)			0.180	-1.003	
			0.38	-1.55	
College graduates (%) (60 mi)					-0.049
					-0.47
Obs.	10463	10463	10463	10463	10463
R ²	0.331	0.332	0.333	0.336	0.335
Adj. R ²	0.315	0.317	0.318	0.320	0.319

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Table 6. Local director labor markets and board governance: Other dimensions of board monitoring and additional measures.

Variable definitions and sample selection criteria are presented in Appendix A. Ordinary least squares regressions. Three-digit SIC industry effects and year effects are included. Robust t-statistics adjusted for clustering by firm are italicized.

Panel A: Local director labor markets, board composition, and board expertise.

	No. of Independent Directors (log)	Gray Directors (%)	Inside Directors (%)	Executive Expertise (%)	Financial Expertise (%)	Academic Expertise (%)	Academic Expertise (%)
	I	II	III	IV	V	VI	VII
Local director pool	0.023 *** 2.95	-0.676 ** -2.35	-0.005 ** -1.97	0.983 ** 2.42			
Distance (financial)					-0.576 ** -2.40		
Distance (all b-schools)						-0.970 ** -2.17	
Distance (top universities)							-0.831 ** -1.97
Firm size	0.092 *** 11.95	0.046 0.17	-0.010 *** -5.42	0.845 ** 2.41	-0.570 ** -2.03	-0.347 -1.00	-0.323 -0.92
Sales growth	-0.093 *** -3.36	1.340 1.60	0.020 *** 4.37	1.585 1.45	-1.257 ** -1.96	-1.598 ** -2.03	-1.559 ** -1.98
ROA	-0.013 -0.14	-0.659 -0.21	0.039 * 1.91	2.394 0.48	-0.749 -0.31	4.723 1.18	4.515 1.13
Firm age	0.085 *** 7.12	-1.184 *** -2.65	-0.009 *** -3.12	1.449 ** 2.36	-0.280 -0.65	1.797 *** 3.15	1.705 *** 3.01
Firm uncertainty	-0.028 *** -3.72	0.143 0.51	-0.001 -0.59	0.405 1.02	-0.492 * -1.90	0.375 1.08	0.375 1.08
Institutional ownership	2.1E-04 0.39	-0.100 *** -5.09	-4.3E-04 *** -2.95	0.034 1.22	-0.015 -0.77	-0.038 -1.35	-0.036 -1.30
G Index	0.023 *** 6.41	-0.164 -1.24	-0.005 *** -6.12	0.073 0.39	0.227 1.63	-0.110 -0.65	-0.130 -0.76
Tangible asset intensity	0.172 ** 2.52	-1.854 -0.81	-0.028 -1.47	-2.318 -0.68	4.770 ** 2.00	-3.095 -0.95	-2.721 -0.84
R&D intensity indicator	0.081 *** 2.95	-3.561 *** -3.77	-0.007 -0.84	2.396 * 1.66	0.292 0.26	-0.101 -0.07	-0.121 -0.08
CEO ownership	-0.010 *** -6.85	0.027 0.55	0.003 *** 6.77	-0.040 -0.50	-0.118 ** -2.56	0.044 0.57	0.045 0.60
CEO age	-0.055 ** -2.18	0.600 0.80	0.037 *** 5.06	-1.898 -1.42	0.327 0.33	-2.396 ** -2.06	-2.443 ** -2.12
CEO tenure	-0.010 -1.26	-0.486 * -1.74	0.006 *** 2.77	0.509 1.27	0.371 1.21	0.435 1.12	0.446 1.15
Major exchange	0.031 0.71	1.653 1.12	-0.004 -0.38	3.859 1.62	0.934 0.63	1.238 0.79	1.363 0.88
Large city	-0.085 ** -2.17	2.734 ** 2.08	0.003 0.27	-3.514 * -1.94	-1.435 -1.23	0.365 0.29	-0.215 -0.16
Medium-sized city	-0.004 -0.12	1.765 1.58	-0.015 * -1.72	-1.764 -1.16	-0.974 -0.86	-0.038 -0.03	-0.030 -0.02
Obs.	10434	10463	10463	8765	4031	3997	3997
R ²	0.454	0.192	0.327	0.503	0.207	0.186	0.186
Adj. R ²	0.441	0.173	0.312	0.489	0.160	0.137	0.137

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Panel B: Local director labor markets, firm size, and board appointments.

	Local Independent Directors (%)	Independent Dir. Distance to Exec. Job (Mean)	Insiders with Local Directorships (%)	Local Directorships per Insider (Mean)	Insider Distance to Outside Directorship (Mean)
	I	II	III	IV	V
Local director pool	8.119 *** 5.55	-0.289 *** -4.21	1.807 *** 2.73	0.032 *** 3.24	-0.332 *** -4.31
Firm size	-4.094 *** -3.14	0.237 *** 3.57	3.726 *** 5.52	0.046 *** 4.40	0.271 *** 3.28
Sales growth	-2.116 -0.58	0.069 0.33	-4.118 *** -3.61	-0.057 *** -3.64	-0.108 -0.56
ROA	28.887 1.60	-1.602 * -1.80	7.464 1.38	0.108 1.41	-0.356 -0.39
Firm age	-1.608 -0.76	0.100 0.90	2.862 *** 2.78	0.034 ** 2.41	-0.095 -0.88
Firm uncertainty	2.646 * 1.92	-0.154 ** -2.05	-0.287 -0.57	-0.007 -1.02	0.090 1.19
Institutional ownership	-0.087 -0.85	0.003 0.55	-0.030 -0.73	0.000 -0.74	-0.003 -0.47
G Index	1.588 ** 2.43	-0.050 -1.54	0.652 ** 2.46	0.009 ** 2.38	0.026 0.73
Tangible asset intensity	-0.702 -0.05	0.308 0.44	-6.465 -1.30	-0.073 -1.08	1.047 * 1.56
R&D intensity indicator	9.099 * 1.79	-0.403 -1.56	1.837 0.87	0.029 1.02	0.139 0.45
CEO ownership	0.388 1.00	-0.024 -1.00	-0.059 -0.71	-0.001 -1.27	-0.036 -1.53
CEO age	0.250 0.05	-0.038 -0.12	-0.808 -0.39	-0.009 -0.36	-0.068 -0.32
CEO tenure	1.351 0.81	0.006 0.06	1.239 ** 2.02	0.019 ** 2.05	0.024 0.33
Major exchange	10.409 * 1.75	-0.297 -0.86	2.722 1.19	0.028 0.95	-0.163 -0.47
Large city	-2.595 -0.43	0.181 0.59	4.047 1.49	0.024 0.64	-0.106 -0.33
Medium-sized city	-4.110 -0.78	0.185 0.71	5.702 *** 2.73	0.076 ** 2.57	-0.461 * -1.76
Obs.	3069	3069	10384	10384	4254
R ²	0.335	0.303	0.190	0.205	0.283
Adj. R ²	0.290	0.256	0.171	0.187	0.245

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Table 7. The effect of board composition on firm value and performance

Variable definitions and sample selection criteria are presented in Appendix A. Instrumental variables regressions of Market-to-book ratio in Columns I-III and ROA (%) in Columns IV-VI. Independent Directors (%) (and Board size in Column I and IV or Independent Directors (%)*R&D intensity indicator in Columns II-III and V-VI) is predicted with Local director pool, second-stage controls, big and medium-sized city dummies, and industry median of Independent Directors (%) (and industry median of Board Size in Columns I and IV and product of industry medians of Independent Directors (%) and proportion of R&D firms in the industry in Columns II-III and V-VI). Three-digit SIC industry effects and year effects are included. Robust t-statistics adjusted for clustering by firm are italicized.

Panel A: Firm value and operating performance

	Market-to-book ratio						ROA (%)					
	I		II		III		IV		V		VI	
Independent Directors (%)	0.007	**	0.013	***	0.013	***	0.066	**	0.096	***	0.077	***
	<i>2.00</i>		<i>3.39</i>		<i>3.18</i>		<i>2.57</i>		<i>3.45</i>		<i>2.73</i>	
Firm size	0.061	*	0.019		0.016		0.170		0.252		0.349	
	<i>1.70</i>		<i>0.70</i>		<i>0.57</i>		<i>0.62</i>		<i>1.14</i>		<i>1.49</i>	
Sales growth	0.906	***	0.677	***	0.657	***	3.567	***	3.538	***	3.202	***
	<i>6.45</i>		<i>5.80</i>		<i>5.38</i>		<i>3.08</i>		<i>3.09</i>		<i>2.68</i>	
Firm age	0.003		-0.020		-0.013		-0.614	**	-0.585	**	-0.501	*
	<i>0.08</i>		<i>-0.55</i>		<i>-0.35</i>		<i>-2.25</i>		<i>-2.28</i>		<i>-1.89</i>	
Firm risk	0.080	***	0.069	***	0.082	***	-3.519	***	-3.559	***	-3.502	***
	<i>3.04</i>		<i>2.77</i>		<i>3.10</i>		<i>-15.70</i>		<i>-16.68</i>		<i>-15.96</i>	
Institutional ownership	-0.004	*	-0.001		-0.002		0.067	***	0.070	***	0.077	***
	<i>-1.78</i>		<i>-0.62</i>		<i>-0.89</i>		<i>4.12</i>		<i>4.40</i>		<i>4.65</i>	
G Index	-0.026	**	-0.037	***	-0.040	***	-0.068		-0.069		-0.050	
	<i>-2.41</i>		<i>-3.63</i>		<i>-3.92</i>		<i>-0.89</i>		<i>-0.97</i>		<i>-0.69</i>	
Tangible asset intensity	-0.903	***	-0.829	***	-0.723	***	8.614	***	8.663	***	8.702	***
	<i>-3.99</i>		<i>-3.75</i>		<i>-3.15</i>		<i>5.52</i>		<i>5.55</i>		<i>5.59</i>	
R&D intensity indicator	0.322	***	1.135	***	0.949	***	-0.232		5.703	***	5.301	***
	<i>4.38</i>		<i>4.13</i>		<i>3.68</i>		<i>-0.42</i>		<i>3.03</i>		<i>2.91</i>	
CEO ownership	-0.002		0.002		0.001		0.057		0.050		0.053	
	<i>-0.42</i>		<i>0.35</i>		<i>0.21</i>		<i>1.60</i>		<i>1.44</i>		<i>1.48</i>	
CEO age	0.017		-0.032		-0.031		0.316		0.137		0.179	
	<i>0.17</i>		<i>-0.31</i>		<i>-0.29</i>		<i>0.64</i>		<i>0.27</i>		<i>0.33</i>	
CEO tenure	0.013		0.017		0.026		0.439	**	0.399	**	0.643	***
	<i>0.59</i>		<i>0.77</i>		<i>1.02</i>		<i>2.51</i>		<i>2.34</i>		<i>3.23</i>	
Dividend yield	-0.072	***	-0.079	***	-0.086	***						
	<i>-4.50</i>		<i>-5.17</i>		<i>-5.46</i>							
ROA	3.721	***	5.384	***	5.497	***						
	<i>6.93</i>		<i>8.93</i>		<i>8.61</i>							
Past ROA (lag 1)	2.051	***										
	<i>4.79</i>											
Past ROA (lag 2)	0.467											
	<i>1.10</i>											
CEO-Chair					-0.058						-0.998	**
					<i>-1.17</i>						<i>-2.46</i>	
Board Size	-0.648	**					0.387					
	<i>-2.29</i>						<i>0.20</i>					
Independent Directors (%)*												
R&D intensity indicator			-0.014	***	-0.010	***			-0.099	***	-0.086	***
			<i>-3.28</i>		<i>-2.59</i>				<i>-3.38</i>		<i>-3.02</i>	
Obs.	10417		10463		9588		10468		10468		9592	
R ²	0.383		0.411		0.416		0.332		0.332		0.343	
Adj. R ²	0.369		0.398		0.401		0.316		0.317		0.327	

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.

Panel B: CEO incentive pay

	Incentive/ Total CEO pay		Incentive/ Total CEO pay (II)	
	I		II	
Independent Directors (%)	0.002	**	0.002	**
	2.52		2.11	
Firm size	0.035	***	0.045	***
	8.51		10.72	
Sales growth	0.004		0.008	
	0.25		0.63	
Firm age	-0.019	***	-0.018	***
	-2.84		-2.61	
Firm risk	0.021	***	0.023	***
	4.59		4.90	
Institutional ownership	0.002	***	0.002	***
	5.11		6.06	
G Index	-0.004	**	-0.004	**
	-2.07		-2.04	
Tangible asset intensity	-0.091	**	-0.092	***
	-2.56		-2.61	
R&D intensity indicator	0.017		0.008	
	1.14		0.53	
CEO ownership	-0.004	***	-0.005	***
	-5.11		-5.70	
CEO age	-0.037	**	-0.048	***
	-2.32		-2.97	
CEO tenure	-0.021	***	-0.030	***
	-4.33		-6.19	
Dividend yield	-0.018	***	-0.010	***
	-4.95		-2.85	
ROA	0.064		0.050	
	1.36		1.02	
Obs.	9790		9790	
R ²	0.239		0.239	
Adj. R ²	0.222		0.221	

*** Statistically significant at 1% level; ** significant at 5% level; * significant at 10% level.