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Women in the Boardroom and Their Impact on Governance and Performance

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Abstract

We show that female directors have a significant impact on board inputs and firm outcomes. In a sample of US firms, we find that female directors have better attendance records than male directors, male directors have fewer attendance problems the more gender-diverse the board is, and women are more likely to join monitoring committees. These results suggest that gender-diverse boards allocate more effort to monitoring. Accordingly, we find that CEO turnover is more sensitive to stock performance and directors receive more equity-based compensation in firms with more gender-diverse boards. However, the average effect of gender diversity on firm performance is negative. This negative effect is driven by companies with fewer takeover defenses. Our results suggest that mandating gender quotas for directors can reduce firm value for well-governed firms.

Keywords: Board of Directors, Board Effectiveness, Gender, Diversity

JEL Classifications: G12, G30, G34, J16, J33

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Women in the boardroom and their impact on governance and performance

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ABSTRACT

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1. Introduction

Women hold few corporate board seats. In the US, women held 14.8% of Fortune 500 board seats in 2007 (Catalyst, 2007). The percentage of female directors in Australia, Canada, Japan, and Europe is estimated to be 8.7%, 10.6%, 0.4%, and 8.0%, respectively (Equal Opportunity for Women in the Workplace Agency–EOWA, 2006; and European Professional Women's Network–EPWN, 2004). Furthermore, the majority of firms with female directors in the samples in EOWA (2006) and EPWN (2004) have only one female director, a fact that is often regarded as evidence of tokenism (Branson, 2006; Bourez, 2005; and Corporate Women Directors International–CWDI, 2007). For example, in the top two hundred companies in Europe, 62% of companies have at least one female director, but only 28% have more than one in 2004 (EWPN, 2004). In Australia, 50% of ASX200 companies have at least one female director, but only 13.5% have more than one in 2006 (EOWA, 2006). In our data, 65% of the firms have at least one female director in 2003, but only 25% have more than one.

This situation is likely to change because boards around the world are under increasing pressure to choose female directors. Many proposals for governance reform explicitly stress the importance of gender diversity in the boardroom. In the UK, the Higgs report (Higgs, 2003), commissioned by the British Department of Trade and Industry, argues that diversity could enhance board effectiveness and specifically recommends that firms draw more actively from professional groups in which women are better represented [see also the subsequent Tyson report (Tyson, 2003)]. If companies do not voluntarily reserve a minimum of 25% of their board seats for female directors, Sweden has threatened to make gender diversity a legal requirement (Medland, 2004). The most extreme promotion of gender diversity occurs in Norway, where since January 2008 all listed companies must abide by a 40% gender quota for female directors or face dissolution.[1] Although it is still too early to assess the consequences of Norway's unique experiment, Spain has followed Norway's lead by enacting a law requiring companies to increase

[1]The law was imposed in 2006 and firms were given two years to adjust. As of February 2008, 93% of the public companies complied with the requirements, according to Statistics Norway. In April 2008, the Norwegian government announced full compliance.

the share of female directors to 40% by 2015.

Most of these legislative initiatives are based on the view that the presence of women on boards could affect the governance of companies in significant ways. One argument is that boards could enhance their effectiveness by tapping broader talent pools for their directors. The Higgs review, for example, points out that, although approximately 30% of managers in the UK corporate sector are female, women hold only 6% of nonexecutive director positions. Another argument is that, because they do not belong to the "old boys club," female directors could more closely correspond to the concept of the independent director emphasized in theory.

In this paper, we provide new evidence that is relevant to this debate by investigating the hypothesis that gender diversity in the boardroom affects governance in meaningful ways. In particular, we ask the following questions. First, do measures of board inputs (director attendance and committee assignments) vary with gender diversity? Second, does the gender composition of the board affect measures of governance, such as chief executive officer (CEO) turnover and compensation? Finally, does the effect of gender diversity on governance matter sufficiently to affect corporate performance?

The answers to these questions are interesting for several reasons. For example, they can help us understand the effect group composition has on board effectiveness and the likely success or failure of governance proposals advocating greater diversity. They can also shed light on whether tokenism prevents female directors from having an impact on corporate outcomes.

We find that gender diversity in boards has significant effects on board inputs. Women appear to behave differently than men with respect to our measure of attendance behavior. Specifically, women are less likely to have attendance problems than men. Furthermore, the greater the fraction of women on the board is, the better is the attendance behavior of male directors. Holding other director characteristics constant, female directors are also more likely to sit on monitoring-related committees than male directors. In particular, women are more likely to be assigned to audit, nominating, and corporate governance committees, although they are less likely to sit on compensation committees than men are.

Women also appear to have a significant impact on board governance. We find direct

evidence that more diverse boards are more likely to hold CEOs accountable for poor stock price performance; CEO turnover is more sensitive to stock return performance in firms with relatively more women on boards. In our data, this effect is stronger and more robust than the previously shown effects of board independence on CEO turnover (Weisbach, 1988). We also find that directors in gender-diverse boards receive relatively more equity-based compensation. We do not find a statistically reliable relation between gender diversity and the level and composition of CEO pay, which is consistent with our findings that women board members are under-represented on compensation committees and thus have less involvement in setting CEO pay.

The evidence on the relation between gender diversity on boards and firm performance is more difficult to interpret. Although the correlation between gender diversity and either firm value or operating performance appears to be positive at first inspection, this correlation disappears once we apply reasonable procedures to tackle omitted variables and reverse causality problems. Our results suggest that, on average, firms perform worse the greater is the gender diversity of the board. This result is consistent with the argument that too much board monitoring can decrease shareholder value (Almazan and Suarez, 2003; and Adams and Ferreira, 2007). Thus, it is possible that gender diversity only increases value when additional board monitoring would enhance firm value. To investigate this hypothesis, we examine whether gender diversity affects performance differentially in firms with different levels of shareholder rights, defined using the Investor Responsibility Research Center (IRRC) governance data as in Gompers, Ishii, and Metrick (2003). Consistent with this hypothesis, we find that gender diversity has beneficial effects in companies with weak shareholder rights, where additional board monitoring could enhance firm value, but detrimental effects in companies with strong shareholder rights.

Despite the importance of gender diversity in the policy debate, relatively little research links diversity and corporate governance (for a survey of this literature, see Fields and Keys, 2003). Carter, Simkins, and Simpson (2003) find a positive relation between gender and ethnic

diversity of the board and corporate performance, as proxied by Tobin's Q.[2] Farrell and Hersch (2005) find that gender systematically impacts the selection of directors to the board. They argue that their evidence is consistent with the idea that women directors are added to the board following internal or external calls for diversity. These papers do not fully address the endogeneity problems that arise because of differences in unobservable characteristics across firms or reverse causality. Thus, their findings cannot be given causal interpretations. Our paper complements these by providing a comprehensive analysis of the consequences of gender diversity in boards. We also pay special attention to endogeneity issues that could confound the interpretation of the empirical findings.

More generally, our paper contributes to the literature on the demography of organizations, which has been studied primarily by researchers in management and organization theory and increasingly in economics and corporate finance. Empirical papers in this tradition have looked both at the effects of demography on outcomes and at the determinants of demography in organizations (Haveman, 1995; O'Reilly, Caldwell, and Barnett, 1989; Pelled, Eisenhardt, and Xin, 1999; and Wagner, Pfeffer, and O'Reilly, 1984). In the economics and finance literatures, Hermalin and Weisbach (1988) and Agrawal and Knoeber (2001) document that firms appear to choose directors for their personal characteristics. Coles, Daniel, and Naveen (2008), Linck, Netter, and Yang (2008), and Boone, Fields, Karpoff, and Raheja (2007) find that some personal characteristics of the CEO (such as tenure and age) are related to board structure.[3]

Overall, our results suggest that gender-diverse boards are tougher monitors. Nevertheless, they reveal that mandating gender quotas in the boardroom could harm well-governed firms in which additional monitoring is counterproductive.

The structure of our paper is as follows. We discuss our data and basic facts about women representation on corporate boards in our sample in Section 2. In Section 3, we first examine the relation between gender diversity and board inputs and then examine the relation between diversity and governance. We analyze the relation between diversity and performance in Section

[2] Adler (2001) finds similar results, although the focus of this study is more broadly on the gender diversity of senior management.

[3] See also Lehn, Patro, and Zhao (2008) for an analysis of the determinants of board structure.

4. Section 5 concludes.

2. Data and methodology

Our initial sample consists of an unbalanced panel of director-level data for Standard & Poor's (S&P) 500, S&P MidCaps, and S&P SmallCap firms collected by the Investor Responsibility Research Center for the period 1996–2003. This data set is based on an IRRC annual publication (*Board Practices/Board Pay: The Structure and Compensation of Boards of Directors at S&P 1,500 Companies*). It contains information on directors from company proxy statements or annual reports, such as the director's gender, the number of other directorships each director holds, the director's tenure as director, age, and retirement status. The Securities and Exchange Commission (SEC) requires that in their proxy statements companies report the names of directors who during the previous fiscal year attended less than 75% of the total number of board and committee meetings they were supposed to attend. For all but two of 125,319 unique directorships, the IRRC indicates whether directors met this attendance threshold. The IRRC data also contain a classification of director independence. Directors are classified as independent if they have no business relation with the firm, are not related or interlocked with management, and are not current or former employees. Directors who are not independent are either classified as inside directors, who are current employees, or affiliated directors, who have significant business or family relations with the firm. For the years 1998–2003 the IRRC data also contain information concerning memberships of directors on the nominating, compensation, audit, and corporate governance committees.

To obtain financial data, director and CEO compensation data, and data on CEO tenure and reasons for CEO turnover during each fiscal year, we merge our data with ExecuComp. We obtain standard industrial classification (SIC) codes and business segment data from Compustat and stock prices from the Center for Research in Security Prices (CRSP). Our final sample of complete director- and firm-level data consists of 86,714 directorships (director firm-years) in 8,253 firm-years of data on 1,939 firms. The number of observations varies across regressions

due to multicollinearity and perfect prediction of the dependent variable.

Table 1 shows descriptive statistics for selected firm, board, and director characteristics. In our analysis, we use a market-based measure of performance, a proxy for Tobin's q, as well as an accounting measure, return on assets (ROA). Our proxy for Tobin's q is the ratio of the firm's market value to its book value. The firm's market value is calculated as the book value of assets minus the book value of equity plus the market value of equity. ROA is the ratio of net income before extraordinary items and discontinued operations to its book value of assets. Our measure of firm risk or volatility is the standard deviation of monthly stock returns from CRSP over the previous five years.

(Insert Table 1 near here)

Directors are generally paid an annual retainer, meeting fees for attendance at board meetings, and some stock-based compensation in the form of restricted shares or options. Each director faces the same compensation schedule. We define total (individual) director compensation to be the sum of the annual retainer, the meeting fee times the number of board meetings, and the value of all stock-based compensation. We choose to value director options using a procedure that mirrors ExecuComp's procedure for valuing options for the top five executives in each firm. To price the options we use the Black and Scholes formula, assuming continuously paid dividends. Estimates of firm volatility, dividend yield, and the risk-free rate are from ExecuComp. Expiration of director options usually occurs in ten years. We use seven years to be consistent with ExecuComp. Total CEO compensation is item TDC1 in ExecuComp. Fraction CEO Incentive pay is 1-(Salary+Bonus)/Total CEO Compensation. For comparison purposes, we adjust for inflation by converting all compensation variables into 2003 dollars using the Consumer Price Index-All Urban Consumers (CPI-U), produced by the Bureau of Labor Statistics.

2.1. Women in the boardroom: the basic facts

In this subsection, we use the entire IRRC database, not just the subsample for which we have complete data, to provide a broader picture of female representation in the boardroom.

The key summary statistics in our subsample are not statistically different from those in the full sample. The IRRC data set contains information on 24,820 unique directors holding a total of 125,319 directorships (firm-year board positions). Women constitute 2,012 or 8.11% of directors, holding 8.87% of directorships.[4] Women act as inside directors in 6.64% of female board positions, as independent directors in 84.07% of female board positions, and as affiliated directors in the remainder. The primary reasons they are classified as affiliated are because they provide professional services to the firm (39.75% of affiliated directorships); they are related to a member of management (26.62%); and they act on behalf of a supplier (19.44%), function as a union or large shareholder representative (15.57%), or are former employees (13.02%). In only a few cases (0.4%) are women classified as affiliated because they act on behalf of a charity that receives donations from the company.

In our sample, the percentage of board seats women occupy has increased by 25% over time, rising from 8.10% in 1996 to 10.41% in 2003. Similarly, Catalyst (2003) finds that the proportion of board seats women held in the Fortune 500 rose from 9.6% in 1996 to 13.6% in 2003. The proportion of firms with only one woman on the board remained unchanged throughout the sample period at roughly 40%. Thus, most firms with female directors have only one and this pattern has not changed much over time.

2.2. Firms with female directors: are they different?

In Table 2, we compare the means of various firm characteristics across firm-years in which firms have at least one woman on the board and firm-years without women for our sample of complete data. The comparison shows that, in years in which firms have women on their boards, firms are larger, have more business segments, have worse performance in terms of Tobin's q but have better performance in terms of ROA, have lower volatility, and have larger boards than firms without female directors. These comparisons suggest that firms' choices to nominate female directors could be influenced by firm characteristics. Thus, it is important to

[4]These numbers are consistent with Farrell and Hersch (2005), who find that female directors make up 8.6% of board members in a sample of approximately three hundred unregulated Fortune 500 firms over the period 1990 to 1999.

control for these characteristics in our analysis, as we do.[5]

(Insert Table 2 about here)

2.3. Methodology

When analyzing the effect of women on governance, endogeneity concerns arise because of omitted unobservable firm characteristics. Omitted variables that affect both the selection of female directors and governance choices could lead to spurious correlations between board gender diversity and governance variables. It is plausible, for example, that some firms are more progressive than others, so they have better governance as well as more female directors. Under the assumption that corporate culture does not vary over the time period studied, we use firm fixed effects to address the concern that omitted culture (or any other time-invariant firm characteristic) is driving our results. Thus, whenever possible, we use firm fixed effects methods to control for time-invariant unobservable firm characteristics. Although we sometimes also report results without firm fixed effects for comparison, we emphasize only those results that are robust to the inclusion of fixed effects.

Another concern is reverse causality. Although there are few reasons to believe that individual director attendance, committee assignments, and CEO turnover-performance sensitivities are direct causes of changes in board gender diversity, both director compensation structure and firm performance are likely to affect both the incentives of women to join firms and the incentives of firms to hire female directors. We address such problems by means of instrumental variables (IV) methods. We hypothesize that the fraction of male directors with board connections to female directors could be a valid instrument for the fraction of female directors and report IV results when appropriate. We discuss the economic logic behind our instrument and its limitations in Section 4.

[5] We also find that the proportion of women on boards varies significantly across industries. Female directors are less prevalent in industries that deal with infrastructure, energy, or electronics than with consumer goods.

3. Empirical results

To examine whether gender diversity matters in terms of board governance, we examine whether governance characteristics of boards that are more diverse are different from those that are less diverse. We begin by examining behavior differences at the individual level and then examine board-level governance characteristics.

We first analyze the effect of gender on observable measures of board inputs: attendance behavior and committee assignments. Attendance behavior is important from a governance perspective because the primary way in which directors obtain necessary information to carry out their duties is by attending board meetings. Attendance behavior is also the only measure of individual director behavior publicly available, so we can use it to examine whether female directors behave differently than male directors. We analyze committee assignments because many of the monitoring-related tasks, such as auditing, governance, and the selection and compensation of executives and directors, are performed by board committees. A board member is more likely to be influential for governance if he or she sits on key committees.

We then investigate the effect of gender diversity on board-level governance characteristics and choices. We first consider CEO turnover. Evidence exists that independent boards are more likely to force CEO turnover after poor stock performance (Weisbach, 1988). Thus, if female directors are tougher monitors, we should find that CEO turnover is more sensitive to performance in firms with more gender-diverse boards.

We examine the relation between diversity and equity-based compensation for directors and CEOs, because the governance literature suggests that performance pay is an important mechanism to ensure that directors and managers act in the interests of shareholders. We also examine the relation between diversity and total pay, although it is less clear whether better governance requires more or less total pay.

Although we also analyzed the relation between director independence and board size and gender diversity, we do not show this analysis. We believe that these relations are largely mechanical and difficult to interpret. For example, suppose that, as in Norway, regulators force

a firm that previously had no women on the board to hire at least one woman. As a consequence, both board independence and board size would increase. Thus, although one could point to the increase in the number of women as the cause of an increase in board size and independence, this mechanical relation has no interesting economic implications. However, we are careful in our analysis to control for board size and independence to ensure that the effects we find are due to gender diversity and not those variables.

3.1. The impact of women on observable board inputs

In this subsection we analyze the impact of women directors on observable board inputs: attendance and committee assignments.

3.1.1. Attendance: do men and women have different attendance behavior?

If gender diversity affects the workings of the board, then we expect female directors to behave differently than male directors in at least some respects. Thus, we begin by analyzing directors' attendance behavior.

We estimate a probit model in our directorship-level data in which the dependent variable is one if the firm's proxy reports that the director did not meet the SEC's 75% attendance threshold in a given year and zero otherwise. Clearly, directors do not want to be named in proxies as having attendance problems. Thus, it is not surprising that the percentage of observations in which directors do not meet the 75% attendance threshold is small, 2.38%. Nevertheless, director characteristics affect this extreme measure of attendance problems in ways one would expect them to affect actual attendance behavior (see Adams and Ferreira, 2008).

Because the factors that cause insiders to fail to meet the 75% attendance threshold are unlikely to be the same as for outsiders, we restrict our sample to outside directors. We also eliminate all observations in which the director's tenure is equal to one year. This ensures that we do not consider directors who were appointed in the middle of the previous year. These sample restrictions have no substantial effect on the percentage of director firm-years with attendance problems.

We include a set of board, director, and firm characteristics that are related to director attendance behavior. For example, Ferris, Jagannathan, and Pritchard (2003) argue that, as directors accumulate more directorships in other firms, they could become too busy to carry out their duties. This suggests that directors' opportunity cost of time increases with more directorships. Thus, we include the number of board positions held in other firms as a control, along with a director's tenure on the board, age, and retirement status. We include some board-level controls such as the meeting fee, total director compensation excluding meeting fees, the number of board meetings, board size, and the fraction of independent directors on the board. Because independent directors are supposed to improve governance, we expect that director attendance behavior should improve with greater board independence. Finally, in the set of firm-level controls we include the two performance measures, Tobin's q and ROA, a proxy for firm size (the natural logarithm of sales), and the volatility of stock returns. All regressions include year dummies. All standard errors are corrected for potential heteroskedasticity and, in the specifications without firm fixed effects, group correlation within directorship (director-firm) units.

We report the results in Table 3. In Column 1, we find that the coefficient on the female dummy is negative and statistically significant, which suggests that female directors are less likely to experience attendance problems than male directors.[6] We report the marginal effect of the female dummy, evaluated at the means of the data, beneath its z-statistics in Column 1. We can use this to assess whether the gender effects are also economically significant. The results in Column 1 suggest that, if a director is female, the likelihood she has attendance problems decreases by 0.007. Given that the fraction of attendance problems in our data is 0.024, this means that women are roughly 30% less likely to have attendance problems than men.

(Insert Table 3 about here)

[6]To ensure that this result is not driven by the fact that most female directors are classified as independent and independent directors could have better attendance records than affiliated directors, we perform a robustness check by restricting the sample to independent directors. The results are similar. The coefficient on the female dummy in the restricted sample is -0.113 with a p-value lower than 1%. If we include firm fixed effects in the restricted sample of independent directors as in Column 2, the coefficient on the female dummy becomes -0.008 with a p-value of 1%. Thus, independence does not appear to be driving our results.

Our results could be driven by omitted unobserved firm characteristics, such as corporate culture. Some firms could be more likely to appoint women to their boards and could also encourage better attendance behavior of directors. To control for this possibility, in Column 2 we estimate a linear probability model of the specification in Column 1 and include firm fixed effects. The coefficient estimate on the female dummy is the same as before (0.007, which is equal to the marginal effect in Column 1) and remains significant at the 1% level. Thus, the results are robust to the inclusion of firm fixed effects.

Our conclusion is that, even after controlling for director characteristics such as independence, age, tenure, retirement status, and number of other directorships, female directors appear to behave differently than male directors. This is consistent with a large experimental literature arguing that women are intrinsically different from men (Croson and Gneezy, 2004). However, it is also consistent with the Kanter (1977) theory of tokenism. She argues that, because tokens are more visible, they are under more performance pressure. This can leave them to perform worse than members of the numeric majority but can also induce better performance at the individual level.

3.1.2. Attendance: interactive effects due to the presence of women on the board

For gender diversity to have an impact on board governance, it is not sufficient that female directors behave differently than male directors.[7] Their behavior should also affect the working of the board. This begs the question, does the presence of women on boards affect the behavior of male directors?

3.1.2.1. Does the presence of women affect the behavior of male board members?

In Column 3 of Table 3, we examine whether the attendance behavior of male directors is affected by gender diversity by replicating the analysis of Column 1 after restricting the sample to male directors and including the fraction of female directors among the explanatory variables. The coefficient on the fraction of female directors is negative and statistically significant at the 5% level. A one standard deviation increase in the fraction of female directors, 0.083,

[7]For example, Kanter (1977) argues that the contrast between tokens and the numeric majority could lead to the social and professional isolation of tokens, which suggests that tokens need not have an impact.

is associated with a 0.002 reduced likelihood that a male director has attendance problems. The fraction of male directors with attendance problems in our data is also 0.024. Thus, this amounts to a 9% reduction in male director attendance problems. Male directors have fewer attendance problems the more diverse is the gender mix on the board.

In Column 4 we add firm fixed effects. The results are qualitatively similar. The point estimate for the marginal effect of the fraction of female directors is larger than in Column 3, but it is now significant at only the 10% level.

The results suggest that the overall attendance behavior of directors improves the more women are on the board. We confirm this by regressing the total number of directors named as having attendance problems in a given year on the fraction of women on the board and the firm-level averages of all other right hand side variables from Column 1 including industry dummies. The coefficient on the fraction of women is -0.328 and significant at the 1% level. Similarly, the total number of male attendance problems is negatively and significantly related to the fraction of female directors.[8]

3.1.2.2. Peer effects or gender effects?

One reason that men have better attendance on boards with more women could be because directors behave differently when their peers are more dutiful, regardless of gender. Thus, an interesting question is whether the better attendance of men on more diverse boards is due to the presence of more dutiful directors (peer effects), the presence of women (pure gender effects), or both.

To examine this question we compare the attendance behavior of male directors in the presence of female directors to their attendance behavior in the presence of new male directors.[9] Newly appointed male directors could wish to make a good impression, at least initially, so that they have better attendance records than male directors with long tenures. We provide evidence consistent with this hypothesis in Column 1 of Table 4. We use the entire sample of directors including directors appointed in the current year and replicate the probit specification of Table

[8]For the sake of brevity, we do not report these additional regressions. They are available upon request.

[9]We thank Stacey Kole for suggesting this comparison.

3, Column 1, after including a dummy indicating newly appointed directors. The results show that newly appointed directors have better attendance than incumbent ones. Moreover, the better attendance of new directors is not driven by more female appointees, because we control for gender. Nor is the effect of gender on attendance significantly affected by the inclusion of this variable.

(Insert Table 4 near here)

Because newly appointed directors have better attendance, we can test for peer effects by estimating the effect that newly appointed male directors have on incumbent male directors. In Column 2, we report the results of a probit specification as in Table 3, Column 3, but now adding the fraction of newly appointed male directors to the set of explanatory variables. We find that the fraction of new male directors appears to reduce the likelihood of attendance problems, which is consistent with the peer effects hypothesis. However, this effect fails to be statistically significant at conventional levels. The effect of the fraction of female directors on male attendance problems remains negative and statistically significant, suggesting the existence of a pure gender effect. In unreported results, we also find that newly appointed women do not have better attendance than incumbent women, thus the better attendance behavior of women is not simply a newcomer effect.

Using the fraction of new male appointees as a proxy for peer effects could be problematic. Years with high turnover could be special in the sense that everyone works hard to help the new directors. Thus, even the statistically insignificant negative effect of the fraction of new male appointees could be due to this special year effect. In Column 3, we replicate the specification in Column 2 using the one-year lag of the fraction of new male directors as the proxy for peer effects. The lagged variable should be less contaminated by the special year effect, if such an effect is short lived. The results are essentially the same. The gender variable reduces attendance problems, but the peer effects variable does not display a statistically reliable effect.[10]

Another possibility that could confound the interpretation of the results is that director

[10]We also replicated specifications 1 to 3 with fixed effects (not reported for the sake of brevity). The results are similar, with a slight drop in significance of the female effect (similar to Table 3).

turnover could improve attendance because low-attendance directors are more likely to be replaced. In such a case, the fraction of new men or the fraction of women could appear to improve attendance simply because directors with good attendance records are replacing directors with poor attendance records.

To address this concern, in Column 4 we reestimate the specification in Column 2 after restricting the sample to male directors who have a prior history of attendance problems, i.e., directors who have had attendance problems at least once during their tenure. This sample restriction leaves 4,174 usable observations (the probit retains only 2,987 of these). Despite the small sample size, we still find a significant effect of the fraction of female directors, but no significant effect of the fraction of new male directors. This indicates that the effect of female directors is not simply due to turnover, but that the presence of female board members improves the attendance behavior of their male counterparts.[11]

Our evidence appears to be counter to the view that women board members are mere tokens. Although better attendance need not imply improved decision making, attendance is an important mechanism by which directors obtain the information necessary to carry out their fiduciary duties. Thus, the presence of women could influence board behavior in ways that can lead to better governance.

3.1.2. Committee assignments: do they vary by gender?

Unlike the board as a whole, board committees such as audit, nominating, corporate governance, and compensation committees specialize in narrowly defined tasks. The audit committee generally recommends the appointment of independent auditors and periodically consults with them on matters relating to internal financial controls and procedures. It is responsible for reviewing the scope of proposed audits and internal audit reports. The nominating committee generally considers the size and composition of the board. It reviews and recommends candidates for election as directors. The corporate governance committee considers corporate governance matters, which could include any policies and practices with respect to the functioning

[11] In a previous version of this paper, we also show that the better attendance behavior of male directors on gender-diverse boards does not seem to be driven by observable characteristics of female directors, such as age, tenure, retirement status, or number of other directorships. We omit these results here for the sake of brevity.

of the board, such as nominating directors or setting director compensation. The compensation committee generally reviews, approves and administers compensation of employees above a certain salary level, and it reviews management proposals relating to incentive compensation and benefit plans.[12]

Not all firms have each of these committees. In such cases, some committees perform multiple functions. For example, when both corporate governance and compensation committees exist in the same firm (36.4% of cases in our sample), director compensation is usually set by the former while CEO compensation is set by the latter. But in cases in which there is no corporate governance committee, the nominating committee often acts as a corporate governance committee that is responsible for setting director pay. In our sample, the nominating committee exists in 49.3% of firm-years in which firms have no corporate governance committee.

It is plausible that directors who sit on such committees are more likely to influence board governance due to their input into these aspects of monitoring and goal setting. Thus, we examine whether committee assignments vary by gender in our sample. To do so, we restrict our director-level sample to nonexecutive directors and firms that have at least one of the aforementioned committees. In Table 5, we report estimates of the parameters of linear probability models in which the dependent variable equals one if a director sits on each of the audit, nominating, corporate governance, and compensation committees, respectively. We use the same controls as in the attendance regressions but now add a measure of poor attendance behavior, the fraction of years a director was named as having attendance problems from his or her first appearance in the sample, up to and including the current fiscal year. All specifications include firm fixed effects and year dummies and all standard errors are corrected for heteroskedasticity.

(Insert Table 5 near here)

In Column 1, the dependent variable indicates whether a given director sits on at least one of these four key committees: audit, compensation, nominating, and corporate governance. Consistent with expectations, directors with poor attendance records are less likely to sit on

[12]This summary is based on our reading of descriptions of committee tasks in proxy statements from a sample of 352 Fortune 500 companies in 1998.

key monitoring committees. We also find that, all else equal, the likelihood female directors sit on at least one of these committees is 3.5 percentage points higher than for male directors. From Column 2 we see that female directors are 5.2 percentage points more likely to sit on audit committees than men. Because the unconditional probability a director sits on an audit committee is 39%, this implies that women are 7.5% more likely to sit on audit committees than men. Column 3 shows that the situation is different for compensation committees. Women are 3.3 percentage points less likely to sit on such committees. However, as shown in Columns 4 and 5, women are more likely to sit on nominating and corporate governance committees (2.0 and 5.1 percentage points, respectively)

We conclude that women are over-represented on monitoring-related committees. The fact that the proportion of women on committees (9.61%) is higher than the proportion of women on boards suggests that boards deploy women to committees more often than not. An important exception to this pattern is the compensation committee, which is responsible for designing the compensation contracts for the firm's senior executives. Because women are less likely to serve on compensation committees, we expect that the gender composition of boards should not be a major determinant of CEO pay.

3.2. Gender diversity and board-level governance

Our evidence on board inputs shows that women attend more meetings and are more likely to be assigned to monitoring-related committees than men. If women also participate actively at board and monitoring committee meetings, they could increase the monitoring intensity of the board. In this subsection, we address this issue by examining whether the presence of women affects observable governance choices. We focus on two important ways of providing incentives in firms: retention decisions and compensation contracts.

3.2.1. CEO turnover and gender diversity

The sensitivity of CEO turnover to stock return performance could be considered a measure of the intensity of board monitoring. Weisbach (1988) provides evidence that CEO turnover is more sensitive to performance when boards have a large fraction of outside directors. Here we

investigate the impact that women have on the performance-turnover sensitivity.

We define CEO turnover as a dummy variable that equals one if the CEO leaves the CEO position the following year.[13] We restrict our sample to turnover events that are not classified by ExecuComp as turnover due to CEO death. Our results are robust to also excluding turnover events that are classified as retirements. Our measure of stock performance is the firm's raw return for the year net of the CRSP value-weighted index, both compounded continuously. By construction, our variable definitions imply a lag of one year between poor performance (and other firm variables) and CEO departure. Other than standard firm-level controls, we control for CEO characteristics that could affect turnover, such as age, tenure, gender, stock holdings, and CEO-Chairman duality.[14] To control for the possibility that some firms have tougher governance and, as a result, exhibit both higher CEO turnover-stock return sensitivity and a greater proportion of female directors (for example, because the firm values better attendance by directors), we include firm fixed effects in all regressions. We also include year dummies and correct all standard errors for heteroskedasticity.

In Column 1 of Table 6, we find that, as expected, poor stock return performance increases the likelihood of CEO turnover. The fraction of female directors does not appear to have a significant effect on turnover. In Column 2, we interact Stock Performance with the fraction of women. We now find that, in firms with relatively more female directors, the sensitivity of turnover to performance is higher.

(Insert Table 6 near here)

To assess the hypothetical effect of gender quotas on the intensity of board monitoring, we can perform some back-of-the-envelope calculations. For example, what would be the impact of a Norway-type of quota on a firm that currently has no women on its board? For a firm

[13] To create this variable, some cleaning of the data was necessary. We identified the CEO as the person who holds the CEO position and who is an inside director. IRRC sometimes had two people indicated as CEO (49 cases). We cleaned these cases by comparing them to ExecuComp whenever possible. When that was not possible, we chose the executive who did not also hold the chair position as CEO, because the chairman is likely to be an outgoing, former, or retired CEO. We also define CEO turnover to be missing in the final year of the sample.

[14] The source for all CEO characteristics except CEO tenure is IRRC. IRRC indicates the date directors are appointed to the board, not the date they are appointed to their current position. Thus, we take CEO tenure data from ExecuComp.

with no female directors, a one standard deviation fall in stock performance (-0.47) increases the probability of CEO turnover by 9.87 percentage points. In contrast, in a firm in which 40% of directors are women, the probability of CEO turnover after a similar fall in performance increases by 15.23 percentage points. This is a very large effect, especially compared with the unconditional probability of CEO turnover in the sample in Table 6, which is just 8.98%.

In Column 3, we also add interactions between the fraction of independent directors and stock performance. This interaction enters with the expected negative sign but fails to be statistically significant. The effect of the interaction between gender diversity and stock performance remains unchanged.

We conclude that the fraction of women on boards appears to be an important determinant of the turnover-performance sensitivity. This effect is more robust than the effect of independent directors. After controlling for the fraction of women, director independence no longer appears to have an important impact on the sensitivity of CEO turnover to stock return performance. Our results thus suggest that female directors appear to be tougher monitors than male directors.

3.2.2. Director pay and diversity

In this subsection, we examine the relation between director pay and gender diversity at the firm level. We focus on two aspects of director pay: the fraction of equity-based pay they receive and their total pay. We examine the fraction of equity-based pay because shares and options could provide more performance-based incentives than fixed cash compensation.[15] We also examine total pay, although theory does not provide a clear prediction for the correlation of total pay with better governance. On the one hand, better governed firms are less likely to overpay their directors. On the other hand, if better governed firms have more equity-based pay, standard principal-agent theories predict that they should also have higher total pay to compensate for extra risk (or due to limited-liability constraints).

In Columns 1 and 2 of Table 7, we analyze the relationship between the fraction of equity-based pay and gender diversity. Because the fraction of equity pay is bounded between zero

[15] Directors do not receive performance-based bonuses paid in cash.

and one, we use its logtransform (i.e., the log odds ratio) as our dependent variable. If the fraction is z, our dependent variable is $ln(\frac{z}{1-z} + \varepsilon)$, where ε is a very small number we add to ensure we do not attempt to take the logarithm of zero. The results are similar if we do not use this specific transformation. Standard principal-agent theory suggests that volatility should be a key explanatory factor for the fraction of equity-based pay. In addition to volatility, our controls include board size, board independence, log(sales) as a proxy for firm size, the number of business segments as a proxy for firm complexity, Tobin's q, and ROA. We use firm fixed effects to address the concern that diversity is endogenous due to omitted time-invariant firm characteristics, such as corporate culture. It is plausible, for example, that some firms are more progressive than others, so they have more incentive-based pay for directors as well as more female directors. All specifications include year dummies and, in the specifications without firm fixed effects, two-digit SIC dummies. The standard errors are corrected for potential heteroskedasticity and, in the specifications without firm fixed effects, group correlation within firms.

Reverse causality is also a concern. To address it, we used IV methods to estimate the effect of female directors on director compensation. The results are very similar, so we do not report them to economize on space. We leave the discussion of the instrument we use for the fraction of female directors for Section 4, where we report IV estimates for the diversity-performance relation.

(Insert Table 7 about here)

Column 1 of Table 7 shows the results of an ordinary least squares (OLS) regression. The coefficient on the fraction of women is positive and statistically significant at the 5% level. The coefficients on the control variables are generally consistent with expectations. Board independence is positively correlated with the fraction of equity pay. Volatility is also positively related to equity pay. Although this appears contrary to principal-agent theory, which argues that performance pay should decrease with more uncertainty, it is not inconsistent with the differing effects of volatility estimated in the literature (see, e.g., Prendergast, 2002).

In Column 2, we reestimate the specification in Column 1 (excluding industry dummies)

with firm fixed effects. The coefficient on diversity is still positive and now significant at the 1% level. This suggests that the effect of gender diversity on performance pay for directors is not driven by unobservable time-invariant firm characteristics. It is perhaps also interesting to note that, with firm fixed effects, the effect of volatility on equity-based pay is negative, as predicted by principal-agent theory, suggesting that omitted variables can explain the puzzling result we find in Column 1.

In Columns 3 and 4, we replicate our analysis in Columns 1 and 2 after replacing the dependent variable with the natural logarithm of total director compensation. The results from the OLS specification in Column 3 suggest that the fraction of women is negatively related to total compensation, although the coefficient is not significant. However, the coefficient on gender diversity in the fixed effects specification in Column 4 is positive and significant at the 10% level. Because the sign of the coefficient on gender diversity changes with fixed effects, omitted firm variables appear to be an important source of endogeneity. This suggests that the true effect of gender diversity is positive. It is not clear whether more total pay for directors is consistent with better governance. However, principal-agent theory predicts that total pay should rise with the amount of performance pay to compensate for risk. Because gender diversity is positively related to the fraction of equity-based pay, the results for total pay also seem consistent with theory.

We conclude that strong evidence exists that the proportion of female directors is associated with more equity-based pay for directors, which is suggestive of a board that is more aligned with the interests of shareholders. We also find some weak evidence of higher total director compensation in boards with relatively more female directors.

3.2.3. CEO pay and gender diversity

In Table 8 we replicate the previous analysis for Total CEO Compensation and Fraction CEO Incentive Pay. In addition to the same controls as in Table 7, we include CEO characteristics such as age, tenure, gender, and CEO-Chairman duality. Unlike in Table 7, we find no statistically significant effect of the fraction of female directors on either the fraction of

incentive pay or the level of CEO pay.

(Insert Table 8 near here)

CEO contracts are fairly heterogenous and complex, thus the compensation committee is likely to spend considerable time and effort discussing their details. Because women are less likely to be appointed to the compensation committee than men, they do not have as much influence over the design of CEO compensation as their male counterparts. However, they are more likely to sit on the corporate governance and nominating committees, which are generally responsible for determining director compensation. Thus, it is not surprising that the fraction of women on boards appears to affect director pay but does not seem to be an important determinant of the structure of CEO compensation.

4. The impact of gender diversity on performance

The results from Section 3 suggest that boards with more female directors are characterized by the potential for greater participation of directors in decision making (through attendance and committee assignments), by tougher monitoring of the CEO (through greater turnover-performance sensitivity), and by more alignment with the interests of shareholders (through equity-based compensation). In this section we examine whether gender diversity impacts corporate performance.

Tougher monitoring, more incentive alignment, and potentially greater participation by directors in decision making could have both positive and negative effects on corporate performance. Because boards are seen as essential to overcoming agency problems between managers and shareholders, the literature generally argues that stronger governance should increase shareholder value (see the survey by Hermalin and Weisbach, 2003). However, some theoretical papers also argue that too much board monitoring can decrease shareholder value (e.g., Almazan and Suarez, 2003). Adams and Ferreira (2007) point out that greater interference by directors in decision making could lead to a breakdown in communication between managers and directors. If greater participation by directors leads to more interference, gender diversity

in the boardroom could negatively affect performance. The literature on diversity also has ambiguous predictions for the effect of diversity on performance (see the survey by Milliken and Martins, 1996). Our results suggest that female directors are not mere tokens, thus they could be able to add value by bringing new ideas and different perspectives to the table. However, the more dissimilar directors are, the more they could disagree and the more conflict there could be on the board. Thus, although the CEO turnover results suggest that some aspects of decision making could improve in more diverse boards, this need not be the case for other aspects of decision making. Because the predicted effect of gender diversity on performance is ambiguous, the net effect must ultimately be determined empirically.

We estimate a simple model of performance that includes the fraction of women on the board, board size and independence, log(sales), the number of business segments, year dummies, and two-digit SIC industry dummies. We correct the standard errors for group correlation within firms and heteroskedasticity. We use two measures of performance: Tobin's q and ROA. The results for Tobin's q are in Column 1 of Table 9. Consistent with the positive relation between gender diversity and performance shown in previous studies, the coefficient on diversity is positive and significant at the 10% level. To address omitted variables problems, we add firm fixed effects in Column 2. Once we add firm effects, the coefficient on diversity remains statistically significant at the 10% level, but the sign is now negative. This suggests that the positive correlation between diversity and performance in Column 1 is driven by omitted firm specific factors.

(Insert Table 9 near here)

Reverse causality is also a concern for the performance regressions because of potential sorting of male and female directors to firms based on performance. To address this concern, we need an instrument that is correlated with the fraction of female directors on the board, but (essentially) uncorrelated with firm performance, except through variables we control for. In the context of governance regressions it is usually difficult to come up with valid instruments, because the factors that are arguably most correlated with the endogenous variable are other governance characteristics that are already (or should be) included in performance regressions,

such as board size, independence, etc. Thus, our approach is to find a variable that previous literature has not yet considered as an explanatory variable in performance regressions.

One reason that is often provided for the absence of women on boards is their lack of connections. Medland (2004), for example, argues that the most important impediment to female directorships is that the informal social network linking directors consists primarily of men. This suggests that the more connected male directors are to women, the more female directors should be observed. This idea is the basis for our instrument. While we cannot observe informal social connections between male and female directors, we can observe networks that occur because directors sit on multiple boards within our sample. Thus, we define our instrument as the fraction of male directors on the board who sit on other boards on which there are female directors. We argue that, the greater this fraction is, the greater the gender diversity on the board should be. Thus, this instrument should be correlated with the endogenous variable. We test this below. However, to be a valid instrument it must satisfy the second condition for an instrument, that it is uncorrelated with performance except through control variables included in the regression. One possibility is that the fraction of men connected to women is correlated with performance through industry effects. To address this possibility, we control for firm fixed effects. Another possibility is that our instrument is a proxy for the connectedness of the board, which could be correlated with performance. To address this possibility, we confirm that our results are not sensitive to controlling for two more direct measures of board connectedness in our performance regressions: the total number of external board seats by directors and the total number of male external board seats (results not reported in the tables).

We also considered variations of this instrument, such as the fraction of total board seats in other firms with female directors. Our results are similar with these measures, but the correlation of our chosen instrument with gender diversity is much higher, probably because these other measures count female board connections as well. These could have less of an influence on gender diversity.

To address the fact that gender diversity could be endogenous in the fixed effects specification

in Column 2 of Table 9 due to reverse causality, we reestimate this specification using IV techniques. The first stage is reported in Column 3; the second stage in Column 4. From the first-stage regression, it is evident that our instrument is correlated with gender diversity (this effect is significant at lower than the 1% significance level). The results from Column 4 are consistent with those in Column 2, i.e., the coefficient on gender diversity remains negative and is now statistically significant at the 5% level. The Hausman test statistic for the hypothesis that the fraction of female directors is uncorrelated with the error term of the performance regression in Column 2 is -2.17. Thus, we reject the null that diversity is exogenous even after including firm fixed effects. This test further stresses the importance of addressing the endogeneity of diversity in performance regressions.

To address endogeneity problems that arise because past performance could influence board diversity, we also present one-step Arellano and Bond estimates of the specification in Column 2 augmented by one-period lagged Tobin's q in Column 5. In this specification we use two and all further period lagged Tobin's q and one period lags of all right-hand-side variables except for year dummies as instruments. The standard errors are corrected for heteroskedasticity. The coefficient on diversity is no longer statistically significant in Column 5. However, it is still negative.

The conclusion we draw from Table 9 is that the positive correlation between performance and gender diversity shown in prior literature is not robust to any method of addressing the endogeneity of gender diversity. If anything, the relation appears to be negative.[16]

In Table 10 we replicate the analysis in Table 9 for ROA. As for Tobin's q, we confirm the positive relation between gender diversity and ROA in OLS regressions with industry controls (Column 1). As for Tobin's q, this relationship is not robust to any method of addressing the endogeneity of diversity. Instead, the coefficient on diversity is negative and significant in the fixed effects and IV specifications and is negative, although not significant, in the Arellano and Bond specification. As for Tobin's q, our results remain robust to controlling for the total

[16] Although that is not the main focus of their paper, Bøhren and Strøm (2007) also find a negative effect of diversity on performance for Norway.

number of external board seats of directors and the total number of male external board seats. For example, if we control for the total number of male external board seats, the coefficient on diversity in the second stage is -76.9 and is significant at the 5% level.

(Insert Table 10 near here)

Given that our previous findings suggest that more gender-diverse boards have stronger governance, these results imply that, on average, tough boards do not improve firm value. But they do not imply that tough boards never add value. There is no reason to expect tough boards to add value in all firms. The value of a tough board should depend on the strength of the other governance mechanisms. If firms have otherwise strong governance, having a tough board could lead to overmonitoring. But if firms have otherwise weak governance, we would expect tough boards to be particularly valuable.

To examine this hypothesis, we use the Gompers, Ishii, and Metrick (2003) governance index as a proxy for the strength of firms' other governance mechanisms. This index is the sum of 24 indicator variables, each of which measures whether a firm has a particular charter provision, bylaw provision, or state of incorporation law that makes it more difficult for the firm to be taken over. A higher value for this index indicates a firm that is more insulated from takeovers and one in which, ceteris paribus, one might expect agency problems to be higher. From our perspective, the benefit of using this index as a measure of governance is that it measures a completely different set of governance mechanisms than the ones we examine above. The average value of the index in our sample is 9.177, with a minimum of 2 and a maximum of 19.

In Table 11, we rerun our performance regressions after including two new variables: the governance index and the product of the index and the fraction of female directors. We report both firm fixed effects regressions as well as Arellano and Bond one-step estimates. We omit IV estimates because we do not have an instrument for the governance index. In Columns 1 and 2, we first report firm fixed effects estimates for Tobin's q and ROA regressions that include the governance index. Consistent with the idea that this index is a measure of agency costs, its coefficient is negative and statistically significant in both columns. In Columns 3 and 4, we include the interaction between the governance index and gender diversity. In these

regressions, the coefficient on the governance index is still negative, the coefficient on diversity is negative, but the coefficient on the interaction is positive and significant at the 10% level. This suggests that diverse boards add value in firms with otherwise weak governance. In Columns 5 and 6, we replicate this analysis using Arellano and Bond estimates. The results in Column 5 are consistent with those in Columns 3 and 4. The results for ROA in Column 6 provide no additional information because no variable is significant.

(Insert Table 11 near here)

Our interpretation of the results is that gender-diverse boards appear to be tougher monitors. Consistent with the idea that overmonitoring could decrease value, gender diversity does not add value on average. However, gender diverse boards appear to be particularly valuable for firms with otherwise weak governance.

More generally, the results highlight the importance of addressing the potential endogeneity of gender diversity. If we do nothing to address the endogeneity of gender diversity, we find that diversity has a positive correlation with performance. However, this is not a robust result. Thus, it should not be the basis of policy or business practice.[17] Our results suggest that firms should not add women to a board with the expectation that the presence of women automatically improves performance.

5. Final remarks

The gender diversity of the board is a central theme of governance reform efforts worldwide. However, the consequences of changing the gender diversity of the board are little understood. While a large literature shows that women behave differently in a variety of settings, ex ante it is not clear whether women also should be expected to behave differently than men in the boardroom. In this paper, we provide some new evidence that female directors behave

[17] For example, an article in Australia's *Financial Review Magazine* (Turner, 2007) describes one reason that a chief executive of Deloitte believes there is a business case for employing women as follows: "Swiegers was mindful, too, of a 2001 US study of Fortune 500 companies, which found that those with a high number of women executives outperformed median competitors in their industry, and that companies that scored best in terms of promoting women were consistently more profitable."

differently than male directors, even after controlling for observable characteristics. We also find that the gender composition of the board is positively related to measures of board effectiveness. Female directors appear to have a similar impact as the independent directors described in governance theory do.

Our results highlight the importance of trying to address the endogeneity of gender diversity in performance regressions. Although a positive relation between gender diversity in the boardroom and firm performance is often cited in the popular press, it is not robust to any of our methods of addressing the endogeneity of gender diversity. The true relation between gender diversity and firm performance appears to be more complex. We find that diversity has a positive impact on performance in firms that otherwise have weak governance, as measured by their abilities to resist takeovers. In firms with strong governance, however, enforcing gender quotas in the boardroom could ultimately decrease shareholder value. One possible explanation is that greater gender diversity could lead to overmonitoring in those firms.

More generally, our results show that female directors have a substantial and value-relevant impact on board structure. But this evidence does not provide support for quota-based policy initiatives. No evidence suggests that such policies would improve firm performance on average. Proposals for regulations enforcing quotas for women on boards must then be motivated by reasons other than improvements in governance and firm performance.

References

Adams, R., Ferreira, D., 2007. A theory of friendly boards. Journal of Finance 62, 217–250.

Adams, R., Ferreira, D., 2008. Do directors perform for pay? Journal of Accounting and Economics 46, 154–171.

Adler, R., 2001. Women and profits. Harvard Business Review 79, 30.

Agrawal, A., Knoeber, C., 2001. Do some outside directors play a political role? Journal of Law and Economics 44, 179–198.

Almazan, A., Suarez, J., 2003. Entrenchment and severance pay in optimal governance structures. Journal of Finance 58, 519–547.

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

Bourez, 5., 2005. Women on boards: moving beyond tokenism. www.EuropeanPWN.net.

Branson, D., 2006. No seat at the table: how corporate governance keeps women out of America's boardrooms. New York University Press, New York.

Bøhren, Ø., Strøm, R., 2007. Aligned, informed, and decisive: characteristics of value-creating boards. Unpublished working paper. Norwegian School of Management, Oslo.

Carter, D., Simkins, B., Simpson, W., 2003. Corporate governance, board diversity, and firm value. Financial Review 38, 33–53.

Catalyst, 1999. 1999 Catalyst Census of Women Board Directors of the Fortune 1000. Catalyst, New York.

Catalyst, 2003. 2003 Catalyst Census of Women Board Directors of the Fortune 1000. Catalyst, New York.

Catalyst, 2004, The Bottom Line: Connecting Corporate Performance and Gender Diversity. Catalyst, New York.

Catalyst, 2007. 2007 Catalyst Census of Women Board Directors of the Fortune 1000. Catalyst, New York.

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

Corporate Women Directors International (CWDI), 2007. Women board directors of the Fortune Global 200. www.globewomen.com/cwdi/CWDI.htm.

Croson, R., Gneezy, U., 2004. Gender differences in preferences. Unpublished working paper. Wharton School of Management, Philadelphia, PA.

Ellis, K., Keys, P., 2003. Stock returns and the promotion of workforce diversity. Unpublished working paper. University of Delaware, Newark.

Equal Opportunity for Women in the Workplace Agency (EOWA), 2006. 2006 EOWA Australian census of women in leadership. www.eowa.gov.au.

Erhardt, N., Werbel, J., Shrader, C., 2003. Board of director diversity and firm financial performance. Corporate Governance: An International Review 11, 102–111.

European Professional Women's Network (EPWN), 2004. The European PWN board women monitor 2004. www.europeanpwn.net/index.php?article_id=8.

Farrell, K., Hersch, P., 2005. Additions to corporate boards: the effect of gender. Journal of Corporate Finance 11, 85–106.

Ferris, S., Jagannathan, M., Pritchard, A., 2003. Too busy to mind the business? Monitoring by directors with multiple board appointments. Journal of Finance 58, 1087–1112.

Fields, M., Keys, P., 2003. The emergence of corporate governance from Wall St. to Main St.: outside directors, board diversity, earnings management, and managerial incentives to bear risk. Financial Review 38, 1–24.

Gompers, P., Ishii, J., Metrick, A., 2003. Corporate governance and equity prices. Quarterly Journal of Economics 118, 107–155.

Haveman, H., 1995. The demographic metabolism of organizations: industry dynamics, turnover, and tenure distributions. Administrative Science Quarterly 40, 586–618.

Hermalin, B., Weisbach, M., 1988. The determinants of board composition. RAND Journal of Economics 19, 589–606.

Hermalin, B., Weisbach, M., 2003. Boards of directors as an endogenously-determined institution: a survey of the economic literature. Economic Policy Review 9, 7–26.

Higgs, D., 2003. Review of the role and effectiveness of nonexecutive directors. www.dti.gov.uk/cld/non_execs_review.

Kanter, R., 1977. Men and women of the corporation. Basic Books, New York.

Lehn, K., Patro, S., Zhao, M., 2008. Determinants of the size and composition of US corporate boards: 1935–2000. Unpublished working paper. University of Pittsburgh, Pittsburgh, PA.

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

Medland, D., 2004. Small steps for womankind. Corporate Board Member Europe, Winter.

Milliken, F., Martins, L., 1996. Searching for common threads: understanding the multiple effects of diversity in organizational groups. Academy of Management Review 21, 402–433.

Office of the Comptroller of the Currency, 1997. The Director's Book: The Role of a National Bank Director. US Government Printing Office, Washington, DC.

O'Reilly, C., Caldwell, D., Barnett, W., 1989. Work group demography, social integration, and turnover. Administrative Science Quarterly 34, 21–37.

Pelled, L., Eisenhardt, K., Xin, K., 1999. Exploring the black box: an analysis of work group diversity, conflict, and performance. Administrative Science Quarterly 44, 1–28.

Prendergast, C., 2002. The tenuous trade-off between risk and incentives. Journal of Political Economy 110, 1071–1102.

Ryan, M., Haslam, S., 2005. The glass cliff: evidence that women are over-represented in precarious leadership positions. British Journal of Management 16, 81–90.

Ryan, M., Haslam, S., 2007. The glass cliff: exploring the dynamics surrounding women's appointment to precarious leadership positions. Academy of Management Review 32, 549–572.

Turner, B., 2007. The why chromosome. Australian Financial Review Magazine, March, 54–61.

Tyson, L., 2003. The Tyson report on the recruitment and development of nonexecutive directors. www.london.edu/tysonreport.

Wagner, W., Pfeffer, J., O'Reilly, C., 1984. Organizational demography and turnover in top-management groups. Administrative Science Quarterly 29, 74–92.

Weisbach, M., 1988. Outside directors and CEO turnover. Journal of Financial Economics 20, 431–460.

Table 1
Summary statistics.

The sample consists of an unbalanced panel of 86,714 director level observations from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. The IRRC Director data consist of director-level data for Standard & Poor's 500, S&P MidCap, and S&P SmallCap firms. Data on board meetings, director compensation, and most financial data are from ExecuComp. We obtain additional financial information (e.g., standard industrial classification codes, business segment data, and stock returns) from Compustat and the Center for Research in Security Prices. Tobin's q is the ratio of the firm's market value to its book value of assets. Market value is book assets minus book equity plus market value of equity. ROA is net income before extraordinary items and discontinued operations divided by book assets. Volatility is the standard deviation of previous 60-month stock returns. Stock Performance is the firm's raw return for the year net of the CRSP value-weighted index, both compounded continuously. The IRRC classifies directors as independent if they have no business relation with the firm, are not related or interlocked with management, and are not current or former employees. Total Director Compensation is the sum of the annual retainer, the number of board meetings times Board Meeting Fee, and the value of all stock-based compensation. Options were priced following the method in ExecuComp. We used the stock price at the end of the month of the firm's annual meeting for the exercise price of the options, as well as to value stock grants. Fraction CEO Incentive Pay is 1 - (Salary + Bonus) / Total CEO Compensation. Total CEO Compensation is from ExecuComp and is the sum of Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black and Scholes), Long-Term Incentive Payouts, and All Other Total. All compensation numbers have been converted to 2003 dollars using the CPI-U (consumer price index – all urban consumers). Firm Has Female Director is a dummy variable that is one if the firm has female directors in a given year. Firm Has Only One Female Director is a dummy variable that is one if the firm only has one female director. Attendance Problem is a dummy variable that is equal to one in a given fiscal year if a firm disclosed in its proxy statement that a director attended less than 75% of the meetings he was supposed to during that year. Tenure is equal to the number of years the director has served on the board. Retired Dummy is equal to one if the proxy indicated that the director retired from his primary occupation. Committee variables are dummy variables equal to one if a director sits on a committee of a given type. We show summary statistics for all observations for which Fraction Female Directors and the firm's and board level controls we use in all tables are not missing.

Variable	Number of observations	Mean	Standard deviation	Min	Max
Firm characteristic					
Sales (millions)	8,253	4,348	9,955	0.32	168,919
Log(Sales)	8,253	7.26	1.49	-1.15	12.04
# Business Segments	8,253	5.90	4.97	1	32
Tobin's q	8,253	2.09	2.07	0.48	77.64
ROA	8,253	3.19	16.38	-577.85	59.59
Volatility	8,253	0.42	0.20	0.10	1.89
Stock Performance	6,901	-0.038	0.469	-3.77	2.01
Board characteristic					
Board Size	8,253	9.38	2.68	3	39
Fraction Independent Directors	8,253	0.63	0.18	0	0.94
Firm Has Female Directors	8,253	0.61	0.49	0	1
Firm Has Only One Female Director	8,253	0.40	0.49	0	1
Fraction Female Directors	8,253	0.085	0.083	0	0.5
Total Director Compensation (thousands)	8,253	95.89	198.9	0	7,973
Fraction Equity Pay	8,253	0.395	0.36	0	1
Meeting Fee (thousands)	8,253	1.03	0.85	0	7.7
Total CEO Compensation (thousands)	8,114	4,829	13,327	0	580,641
Fraction CEO Incentive Pay	8,098	0.52	0.27	0	1
Director Characteristic					
Female Dummy	86,714	0.093	0.29	0	1
Attendance Problem	86,714	0.024	0.153	0	1
# Other Directorships	86,714	0.92	1.31	0	10
Tenure	86,714	9.7	8.1	0	63
Age	86,714	58.9	8.6	25	98

Retired Dummy	86,714	0.18	0.39	0	1
Committee Member	68,235	0.69	0.46	0	1
Audit Committee Member	68,235	0.39	0.49	0	1
Compensation Committee Member	68,235	0.37	0.48	0	1
Nomination Committee Member	68,235	0.29	0.45	0	1
Corporate Governance Committee Member	68,235	0.17	0.38	0	1

Table 2
Comparisons of firms with female directors to those without**.**

This table shows comparisons of means of firm-level characteristics for firm-years in which firms have female directors to firm-years without female directors, for the sample of complete data resulting from the intersection of the Investor Responsibility Research Center Director data, ExecuComp, Compustat, and the Center for Research in Security Prices. The number of observations is 8,253. Tobin's q is the ratio of the firm's market value to its book value of assets. Market value is book assets - book equity + market value of equity. ROA is net income before extraordinary items and discontinued operations divided by book assets. Volatility is the standard deviation of previous 60 month stock returns. *** indicates significance at the 1% level.

Firm characteristic	Mean for firm-years with female directors, n=5,006	Mean for firm-years without female directors, n=3,247	Difference
Log(Sales)	7.78	6.47	1.309***
# Business Segments	6.58	4.87	1.715***
Tobin's q	2.03	2.19	-0.165***
ROA	4.52	1.16	3.36***
Volatility	0.37	0.50	-0.126***
Board Size	10.37	7.85	2.514***

Table 3
Relation between attendance problems of directors and gender diversity in director-level data.

The sample consists of an unbalanced panel of director data from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. We exclude inside directors from the sample, as well as all directors in a given fiscal year who were appointed that year. The dependent variable is a dummy variable that is equal to one if the director was named in the proxy as having attended less than 75% of meetings during the previous fiscal year. Compensation measures are quoted in 2003 dollars. Total compensation excludes meeting fees. Columns 1 and 3 show results from probit regressions; Columns 2 and 4 show results from linear probability (ordinary least squares) models. The specifications in Column 1 and 3 include two-digit standard industrial classification industry dummies. The specifications in Columns 2 and 4 include firm fixed effects. All specifications include year dummies. The sample is restricted to male directors in Columns 3 and 4. Standard errors are adjusted for potential heteroskedasticity and for group correlation at the directorship (director-firm) level in regressions without firm fixed effects. Absolute values of robust *z*-statistics are in brackets. Marginal effects for the female dummy and the fraction of women on the board are reported in parentheses in the probit regressions. The effect of the constant term is omitted. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels, and ^ indicates that coefficients are multiplied by ten thousand. The number of observations varies because of perfect predictability of the dependent variable.

	Dependent variable: attendance problem			
Independent variable	(1)	(2)	(3)	(4)
Female Dummy	-0.116***	-0.007***		
	(-0.007)	[3.04]		
	[3.00]			
Fraction Female Directors			-0.417**	-0.035*
			(-0.026)	[1.71]
			[2.12]	
Meeting Fee	-0.043***	-0.001	-0.045***	-1.25^
	[2.66]	[0.34]	[2.64]	[0.07]
# Other Directorships	0.055***	0.004***	0.061***	0.005***
	[6.00]	[6.59]	[6.14]	[6.69]
Total Compensation	-1.05^	-0.001**	-0.63^	-0.001*
	[1.38]	[2.26]	[0.88]	[1.89]
# Board Meetings	-0.020***	3.03^	-0.018***	0.001
	[4.63]	[1.01]	[3.90]	[1.56]
Board Size	0.036***	0.002***	0.037***	0.002**
	[7.07]	[2.69]	[6.87]	[2.35]
Fraction Independent Directors	-0.189**	0.020**	-0.202**	0.021**
	[2.42]	[2.31]	[2.44]	[2.29]
Tenure	-0.009***	-0.001***	-0.009***	-0.001***
	[3.80]	[5.04]	[3.56]	[4.67]
Age	-0.002	-1.72^	-0.002	-1.57^
	[1.11]	[1.52]	[0.73]	[1.27]
Retired Dummy	-0.129***	-0.006***	-0.132***	-0.006***
	[3.87]	[3.44]	[3.79]	[3.17]
Log(Sales)	-0.043***	-0.003	-0.037***	-0.003
	[3.80]	[1.04]	[3.02]	[1.04]
Tobin's q	-0.009	-3.64^	-0.014	-0.001
	[1.20]	[0.79]	[1.53]	[1.59]
ROA	1.25^	0.04^	4.62^	0.47^
	[0.14]	[0.05]	[0.48]	[0.60]
Volatility	0.138	-0.005	0.118	-0.006
	[1.39]	[0.42]	[1.13]	[0.46]
Number of observations	63,998	65,480	56,951	58,302
R^2		0.07		0.08
Sample type	Full	Full	Men only	Men only
Industry effects	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes

Table 4

Differentiating the effect of gender on attendance problems from the effect of new male directors.

The sample consists of an unbalanced panel of director data from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. We exclude inside directors from the sample. The dependent variable is a dummy variable that is equal to one if the director was named in the proxy as having attended less than 75% of meetings during the previous fiscal year. New Director is a dummy equal to one if the director was appointed in the current fiscal year. Fraction New Men is the ratio of nonexecutive male directors who were appointed in the current year to board size. Other sample characteristics are as in Tables 1 and 3. All columns show probit regressions. We exclude all directors in a given fiscal year who were appointed that year in Columns 2—4. The sample is further restricted to male directors in Columns 2 and 3. In Column 4 the sample is restricted to male directors with nonzero lagged Fraction of Years with Attendance Problems, which is defined to be the fraction of sample years a director was named as having attendance problems from his first appearance on a board up to and including the current fiscal year. All specifications include year and industry dummies. Standard errors are adjusted for heteroskedasticity and group correlation at the directorship (director-firm) level. Absolute values of robust *z*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels, and ^ indicates that coefficients are multiplied by ten thousand. The number of observations varies because of perfect predictability of the dependent variable.

	Dependent variable: attendance problem			
Independent variable	(1)	(2)	(3)	(4)
Fraction Female Directors		-0.426**	-0.461**	-0.996*
		[2.17]	[2.18]	[1.76]
Fraction New Men		-0.211		-0.19
		[1.12]		[0.35]
Lagged Fraction New Men			-0.072	
			[0.38]	
Female Dummy	-0.113***			
	[2.93]			
New Director	-0.922***			
	[8.79]			
Meeting Fee	-0.042***	-0.046***	-0.054***	-0.081*
	[2.61]	[2.66]	[2.86]	[1.67]
# Other Directorships	0.055***	0.061***	0.058***	0.026
	[5.97]	[6.14]	[5.43]	[1.05]
Total Compensation	-1.16^	-0.63^	-0.43^	-1.52^
	[1.50]	[0.88]	[0.42]	[0.69]
# Board Meetings	-0.020***	-0.018***	-0.016***	-0.011
	[4.68]	[3.87]	[3.14]	[0.73]
Board Size	0.035***	0.037***	0.037***	0.02
	[6.95]	[6.91]	[5.79]	[1.37]
Fraction Independent Directors	-0.184**	-0.200**	-0.186**	-0.644***
	[2.38]	[2.41]	[2.05]	[2.81]
Tenure	-0.009***	-0.009***	-0.009***	0.006
	[3.79]	[3.56]	[3.21]	[1.00]
Age	-0.002	-0.002	-0.002	4.16^
	[1.02]	[0.74]	[0.88]	[0.07]
Retired Dummy	-0.133***	-0.132***	-0.149***	-0.214**
	[4.01]	[3.79]	[3.99]	[2.29]
Log(Sales)	-0.042***	-0.037***	-0.037***	-0.065*
	[3.73]	[3.02]	[2.69]	[1.80]
Tobin's Q	-0.009	-0.014	-0.012	-0.053*
	[1.18]	[1.53]	[1.09]	[1.74]
ROA	1.87^	4.62^	0.003*	0.013***
	[0.21]	[0.48]	[1.76]	[3.00]
Volatility	0.143	0.122	0.176	0.539*
	[1.46]	[1.16]	[1.48]	[1.93]
Number of observations	67,183	56,951	44,721	2,987
Sample type	Full	Men only, not newly appointed	Men only, not newly appointed	Men with past attendance problems, not newly appointed

Table 5
The assignment of women to committees.

The sample consists of an unbalanced panel of director data from 1,939 firms for the period 1998—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. We exclude inside directors from the sample. For each committee type we also restrict the sample to firms that have a committee of that type. The dependent variable in Column 1 is a dummy indicating whether a director is a member of the nominating, compensation, audit, or corporate governance committee in a given year. For each committee type, the dependent variable is a dummy variable indicating whether a director is a member of that committee in a given year. Fraction of Years with Attendance Problems is defined to be the fraction of sample years a director was named as having attendance problems from his first appearance on a board up to and including the current fiscal year. Other sample characteristics are as in Table 1. All columns show linear probability (ordinary least squares) models with firm fixed effects and year dummies. Standard errors are adjusted for potential heteroskedasticity. Absolute values of robust *t*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels, and ^ indicates that coefficients are multiplied by ten thousand. The number of observations varies because of perfect predictability of the dependent variable.

	Dependent variable				
Independent variable	Committee member (1)	Audit committee member (2)	Compensation committee member (3)	Nominating committee member (4)	Corporate governance committee member (5)
Female Dummy	0.035***	0.052***	-0.033***	0.020***	0.051***
	[7.34]	[7.19]	[4.79]	[2.72]	[5.38]
Fraction of Years with Attendance Problems	-0.054***	-0.121***	-0.009	0.012	0.032
	[3.42]	[6.38]	[0.46]	[0.52]	[1.02]
# Other Directorships	0.010***	-0.011***	0.026***	0.025***	0.026***
	[8.45]	[6.09]	[14.49]	[12.66]	[10.57]
# Board Meetings	-3.33^	-0.001	-0.001	-2.18^	-0.001
	[0.43]	[0.55]	[0.46]	[0.17]	[0.38]
Board Size	-0.019***	-0.020***	-0.020***	-0.015***	-0.015***
	[12.39]	[9.65]	[9.83]	[6.25]	[4.80]
Fraction Independent Directors	0.025	-0.052*	-0.032	0.002	-0.042
	[1.11]	[1.74]	[1.09]	[0.06]	[0.80]
Tenure	0.001***	-0.002***	0.002***	0.007***	0.005***
	[4.52]	[5.54]	[5.81]	[18.20]	[9.21]
Age	0.005***	0.001***	0.005***	0.004***	0.005***
	[17.06]	[4.25]	[13.27]	[10.21]	[9.95]
Retired Dummy	-0.033***	-0.007	-0.010*	-0.020***	-0.024***
	[7.90]	[1.19]	[1.76]	[3.14]	[2.85]
Log(Sales)	0.001	-0.01	-0.007	-0.009	-0.035**
	[0.11]	[1.00]	[0.75]	[0.71]	[1.99]
Tobin's q	0.65^	-0.001	0.002	0.004	0.003
	[0.05]	[0.32]	[0.93]	[1.09]	[0.75]
ROA	-1.84^	-0.78^	-0.58^	1.96^	4.70^
	[1.19]	[0.31]	[0.24]	[0.60]	[1.07]
Volatility	-0.044	-0.012	-0.038	0.029	-0.053
	[1.49]	[0.28]	[0.95]	[0.61]	[0.66]
Number of observations	54,458	54,397	54,099	41,508	24,853
R^2	0.15	0.08	0.09	0.12	0.12

Table 6

Firm fixed effects regressions of chief executive officer (CEO) turnover on gender diversity.

The sample consists of an unbalanced panel of firm-level data from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. CEO Turnover is a dummy equal to one if the CEO leaves the CEO position the following year. CEO turnover is defined to be missing in 2003. The sample is further restricted to turnover events that are not classified by ExecuComp as turnover due to CEO death. Stock Performance is the firm's raw return for the year net of the Center for Research in Security Prices value-weighted index, both compounded continuously. CEO Gender is a dummy that is one if the CEO is female. CEO Chairman is a dummy that is one if the CEO is also chairman. CEO Stockholdings are measured in percent. The source for CEO Age, CEO Stockholdings, CEO Gender, and CEO Chairman status is IRRC. The source for CEO Tenure is ExecuComp. Remaining sample characteristics are as in Table 1. All columns report linear probability models with firm fixed effects and year dummies. Standard errors are adjusted for potential heteroskedasticity. Absolute values of *t*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels, and ^ indicates that coefficients are multiplied by ten thousand.

	Dependent variable: CEO Turnover		
Independent variable	(1)	(2)	(3)
Fraction Female Directors	-0.033	-0.042	-0.041
	[0.26]	[0.34]	[0.34]
Fraction Female Directors times Stock Performance		-0.263**	-0.252**
		[2.41]	[2.29]
Fraction Independent Directors times Stock Performance			-0.040
			[0.75]
Stock Performance	-0.046***	-0.028**	-0.004
	[4.64]	[2.19]	[0.10]
CEO Age	0.022***	0.022***	0.022***
	[11.03]	[11.06]	[11.05]
CEO Stockholdings	0.004**	0.004**	0.004**
	[2.15]	[2.14]	[2.14]
CEO Gender	-0.068	-0.069	-0.069
	[0.60]	[0.61]	[0.61]
CEO Chairman	0.060***	0.060***	0.059***
	[3.04]	[3.05]	[3.04]
CEO Tenure	-3.94^	-4.05^	-4.12^
	[0.19]	[0.19]	[0.20]
Board Size	0.009*	0.009*	0.009*
	[1.90]	[1.86]	[1.86]
Fraction Independent Directors	-0.20***	-0.20***	-0.20***
	[3.58]	[3.59]	[3.62]
Log(Sales)	0.012	0.012	0.012
	[0.72]	[0.67]	[0.69]
# Business Segments	0.001	0.001	0.001
	[0.51]	[0.50]	[0.51]
Volatility	-0.05	-0.056	-0.053
	[0.70]	[0.77]	[0.73]
Number of observations	5,774	5,774	5,774
R^2	0.35	0.35	0.35

Table 7
Ordinary least squares and firm fixed effects regressions of measures of director pay on gender diversity.

The sample consists of an unbalanced panel of firm level data from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. Fraction Equity-Based Pay is the ratio of the value of equity pay to total compensation each director receives in a year. Total Director Compensation is calculated as the sum of the annual retainer, # Board Meetings times Board Meeting Fee, and the value of all stock-based compensation. Remaining sample characteristics are as in Table 1. The dependent variable in Columns 1 and 2 is ln((Fraction Equity-based Pay / (1 - Fraction Equity-based Pay)) + ε), where ε is a very small number. The dependent variable in Columns 3 and 4 is ln(Total Director Compensation). The specifications in Column 2 and 4 include firm fixed effects. The specifications without firm fixed effects include two-digit standard industrial classification industry dummies. All specifications include year dummies. Standard errors are adjusted for potential heteroskedasticity and for group correlation at the firm level in regressions without firm fixed effects. Absolute values of robust *t*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Dependent variable			
	Logtransform(Fraction Equity-Based Pay)		Ln(Total Director Compensation)	
Independent variable	(1)	(2)	(3)	(4)
Fraction Female Directors	4.536**	4.960***	-0.124	0.372*
	[2.52]	[3.37]	[0.55]	[1.89]
Board Size	-0.150**	-0.112**	-0.031***	-0.007
	[2.26]	[2.34]	[3.51]	[1.11]
Fraction Independent Directors	5.155***	0.328	0.329***	0.007
	[5.83]	[0.50]	[2.73]	[0.08]
Log(Sales)	0.827***	0.741***	0.192***	0.350***
	[6.28]	[3.40]	[11.25]	[10.89]
# Business Segments	0.014	0.047**	-0.003	-0.006**
	[0.41]	[2.27]	[0.73]	[2.43]
Tobin's q	0.341***	0.095**	0.072***	0.024***
	[4.04]	[1.97]	[6.08]	[3.41]
ROA	-0.004	0.004	0.001	0.003***
	[0.63]	[1.16]	[1.31]	[3.35]
Volatility	9.575***	-2.635***	1.744***	-0.298**
	[9.56]	[3.08]	[11.67]	[2.43]
Number of observations	7,856	7,983	8,123	8,253
R^2	0.17	0.79	0.28	0.81
Industry dummies	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes

Table 8

Ordinary least squares and firm fixed effects regressions of measures of chief executive officer pay on gender diversity.

The sample consists of an unbalanced panel of firm level data from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. Fraction CEO Incentive Pay is 1-(Salary + Bonus) / Total CEO Compensation. Total CEO Compensation is from ExecuComp and is the sum of Salary, Bonus, Other Annual, Total Value of Restricted Stock Granted, Total Value of Stock Options Granted (using Black and Scholes), Long- Term Incentive Payouts, and All Other Total. CEO Gender is a dummy that is one if the CEO is female. CEO Chairman is a dummy that is one if the CEO is also chairman. Data on CEO age, CEO gender, and CEO chairman status are from IRRC. CEO Tenure is from ExecuComp. Remaining sample characteristics are as in Table 1. The dependent variable in Columns 1 and 2 is ln((Fraction CEO Incentive Pay / (1- Fraction CEO Incentive Pay)) + ε), where ε is a very small number. The dependent variable in Columns 3 and 4 is ln(Total CEO Compensation). The specifications in Columns 2 and 4 include firm fixed effects. The specifications without firm fixed effects include two-digit standard industrial classification industry dummies. All specifications include year dummies. Standard errors are adjusted for potential heteroskedasticity and for group correlation at the firm level in regressions without firm fixed effects. Absolute values of robust *t*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels, and ^ indicates that coefficients are multiplied by ten thousand.

	Dependent variable			
	Logtransform(Fraction CEO Incentive Pay)		Ln(Total CEO Compensation)	
Independent variable	(1)	(2)	(3)	(4)
Fraction Female Directors	-0.156	0.779	0.188	0.271
	[0.45]	[1.47]	[0.88]	[0.94]
CEO Age	-0.015***	-0.002	-0.004	-0.001
	[3.21]	[0.41]	[1.59]	[0.22]
CEO Gender	-0.112	-0.295	0.042	0.004
	[0.42]	[0.99]	[0.29]	[0.03]
CEO Chairman	0.258***	0.130**	0.163***	0.033
	[4.23]	[1.97]	[4.56]	[0.98]
CEO Tenure	-0.027***	-0.037***	-0.005	-0.005*
	[4.99]	[5.48]	[1.64]	[1.83]
Board Size	0.018	0.008	0.016**	0.001
	[1.36]	[0.47]	[2.01]	[0.13]
Fraction Independent Directors	0.637***	-0.21	0.238**	-0.219
	[3.54]	[0.88]	[2.33]	[1.59]
Log(Sales)	0.295***	0.105	0.443***	0.378***
	[12.08]	[1.35]	[26.28]	[9.17]
# Business Segments	-0.01	-0.022***	-0.006	-0.011***
	[1.38]	[2.68]	[1.57]	[2.88]
Tobin's q	0.113***	0.035*	0.089***	0.045***
	[6.17]	[1.90]	[6.27]	[3.27]
ROA	-0.004***	-0.002	-2.23^	0.001
	[2.82]	[1.24]	[0.20]	[1.06]
Volatility	1.560***	0.009	0.731***	-0.085
	[7.34]	[0.03]	[5.83]	[0.43]
Number of observations	7,411	7,542	7,565	7,697
R^2	0.17	0.55	0.41	0.72
Industry dummies	Yes	No	Yes	No
Firm fixed effects	No	Yes	No	Yes

Table 9
Performance: Ln(Tobin's q) and gender diversity.

The sample consists of an unbalanced panel of firm-level data from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. Tobin's q is the ratio of the firm's market value to its book value of assets. Market value is book assets - book equity + market value of equity. Remaining sample characteristics are as in Table 1. The dependent variable in Columns 1—2 and 4—5 is the natural logarithm of Tobin's q. The specification in Column 1 includes two-digit standard industrial classfication industry dummies. The specifications in Columns 2—4 include firm fixed effects. Column 3 reports the first stage of an instrumental variables (IV) regression with Fraction Males with Board Connections to Female Directors as an instrument for Fraction Female Directors. Column 4 reports the results of the IV estimation. Column 5 reports the results of an Arellano and Bond one-step regression. All specifications include year dummies. Standard errors are adjusted for potential heteroskedasticity in Columns 2—5. Standard errors are adjusted for group correlation at the firm level in Column 1. Absolute values of *t*-statistics or *z*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels, and ^ indicates that coefficients are multiplied by ten thousand.

	Dependent variable				
	Ln(Tobin's q) Least squares regressions		Fraction Female Directors	Ln(Tobin's q) IV regressions	
Independent variable	(1)	(2)	(3)	(4)	(5)
Fraction Female Directors	0.221*	-0.135*		-5.924**	-1.895
	[1.72]	[1.67]		[2.21]	[0.56]
Board Size	-0.012***	-0.012***	3.59^	-0.010**	-0.103
	[2.81]	[4.14]	[0.89]	[2.56]	[0.89]
Fraction Independent Directors	-0.131**	0.04	0.051***	0.342**	-3.471**
	[2.29]	[1.11]	[9.89]	[2.32]	[2.20]
Log(Sales)	0.031***	-0.002	0.002	0.011	-0.553**
	[3.11]	[0.17]	[1.20]	[0.72]	[1.96]
# Business Segments	-0.016***	-0.003**	0.63^	-0.003*	0.098***
	[7.05]	[2.54]	[0.35]	[1.67]	[2.91]
Fraction Males with Board Connections to Female Directors			0.015***		
			[3.39]		
Lagged Ln(Tobin's q)					0.480***
					[5.50]
Number of observations	9,299	9,477	9,477	9,477	5,588
R^2	0.25	0.11	0.08		
Industry dummies	Yes	No	No	No	No
Firm fixed effects	No	Yes	Yes	Yes	Yes
Regression type	OLS	Fixed effects	First-stage IV with fixed effects	IV with fixed effects	Arellano and Bond one step

Table 10

Performance: Return on assets (ROA) and gender diversity.

The sample consists of an unbalanced panel of firm-level data from 1,939 firms for the period 1996—2003, which were both in the Investor Responsibility Research Center (IRRC) Director Data and ExecuComp. ROA is net income before extraordinary items and discontinued operations divided by book assets. Remaining sample characteristics are as in Table 1. The dependent variable in all columns is ROA. The specification in Column 1 includes two-digit standard industrial classification industry dummies. The specifications in Columns 2 and 3 include firm fixed effects. Column 3 reports the results of an instrumental variables (IV) estimation with Fraction Males with Board Connections to Female Directors as an instrument for Fraction Female Directors. The first stage of the IV estimation is the same as in Column 3 of Table 9. Column 4 reports the results of an Arellano and Bond one-step regression. All specifications include year dummies. Standard errors are adjusted for potential heteroskedasticity in Columns 2—4. Standard errors are adjusted for group correlation at the firm level in Column 1. Absolute values of *t*-statistics or *z*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Dependent variable: ROA			
Independent variable	(1)	(2)	(3)	(4)
Fraction Female Directors	6.190*	-6.170*	-231.409**	-159.658
	[1.89]	[1.71]	[2.07]	[0.81]
Board Size	-0.327***	-0.276**	-0.189	4.552
	[2.84]	[2.20]	[1.18]	[0.67]
Fraction Independent Directors	-3.787***	1.997	13.719**	30.618
	[2.82]	[1.26]	[2.24]	[0.28]
Log(Sales)	2.716***	4.053***	4.603***	-25.254
	[6.09]	[8.31]	[6.97]	[0.86]
# Business Segments	-0.03	-0.063	-0.049	2.332
	[0.58]	[1.10]	[0.70]	[0.66]
Lagged ROA				0.271**
				[2.55]
Number of observations	9,324	9,553	9,553	5,656
R^2	0.07	0.03		
Industry dummies	Yes	No	No	No
Firm fixed effects	No	Yes	Yes	Yes
Regression type	Ordinary least squares	Fixed effects	IV with fixed effects	Arellano- Bond one step

Table 11

Performance and interaction of gender diversity with the Investor Responsibility Research Center (IRRC) shareholder rights index.

The sample consists of an unbalanced panel of firm-level data from 1,939 firms for the period 1996—2003, which were both in the IRRC Director Data and ExecuComp. Tobin's q is the ratio of the firm's market value to its book value of assets. Market value is book assets - book equity + market value of equity. ROA is net income before extraordinary items and discontinued operations divided by book assets. Gindex is the governance index from Gompers, Ishii, and Metrick (2003). This index is the sum of 24 dummy variables indicating a firm has a provision making it more difficult to be taken over. Data on governance provisions are from the IRRC. Remaining sample characteristics are as in Table 1. The dependent variable in columns 1, 3, and 5 is Ln(Tobin's q). The dependent variable in Columns 2, 4, and 6 is ROA. The specifications in Columns 1-4 include firm fixed effects. Columns 5 and 6 report the results of Arellano and Bond one-step regressions. All specifications include year dummies. Standard errors in all columns are adjusted for potential heteroskedasticity. Absolute values of robust *t*-statistics or *z*-statistics are in brackets. Asterisks indicate significance at 0.01 (***), 0.05 (**), and 0.10 (*) levels.

	Dependent variable					
	Ln(Tobin's q)	ROA	Ln(Tobin's q)	ROA	Ln(Tobin's q)	ROA
	(1)	(2)	(3)	(4)	(5)	(6)
Fraction Female Directors	-0.103	-5.036	-0.616*	-22.500*	-26.472**	1,763.274
	[0.90]	[1.42]	[1.87]	[1.92]	[2.22]	[0.83]
Gindex times Fraction Female Directors			0.055*	1.857*	3.194**	-254.522
			[1.69]	[1.78]	[2.11]	[0.97]
Gindex	-0.015**	-0.411*	-0.019**	-0.561**	0.028	21.625
	[2.17]	[1.70]	[2.53]	[2.09]	[0.10]	[0.94]
Board Size	-0.005	-0.243*	-0.004	-0.233*	-0.189	10.398
	[1.56]	[1.91]	[1.46]	[1.83]	[-1.00]	[0.81]
Fraction Independent Directors	0.013	3.517**	0.012	3.502**	-3.970**	-96.215
	[0.28]	[2.18]	[0.27]	[2.17]	[2.15]	[0.41]
Log(Sales)	0.02	4.740***	0.02	4.759***	-0.419	-43.412
	[1.08]	[4.55]	[1.11]	[4.57]	[1.12]	[0.98]
# Business Segments	-0.002	-0.023	-0.002	-0.025	0.080*	3.840
	[1.20]	[0.62]	[1.24]	[0.67]	[1.8]	[0.83]
Lagged Ln(Tobin's Q)					0.299**	
					[2.31]	
Lagged ROA						0.474
						[1.17]
Number of observations	7,584	7,642	7,584	7,642	4,508	4,556
R^2	0.10	0.06	0.10	0.06		
Regression type	Firm fixed effects	Firm fixed effects	Firm fixed effects	Firm fixed effects	Arellano-Bond one step	Arellano-Bond one step

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