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Corporate Governance, Board Diversity, and Firm Value

David A. Carter
Betty J. Simkins*
W. Gary Simpson

Oklahoma State University

Abstract

This study examines the relationship between board diversity and firm value for *Fortune* 1000 firms. Board diversity is defined as the percentage of women, African Americans, Asians, and Hispanics on the board of directors. This research is important because it presents the first empirical evidence examining whether board diversity is associated with improved financial value. After controlling for size, industry, and other corporate governance measures, we find significant positive relationships between the fraction of women or minorities on the board and firm value. We also find that the proportion of women and minorities on boards increases with firm size and board size, but decreases as the number of insiders increases.

Keywords: corporate governance, diversity, board of directors, financial value

JEL Classifications: G38/M14/J15/J16

**Corresponding author*: Department of Finance, Oklahoma State University, 336 Business Bldg, Stillwater, OK 74078-4011; Phone: (405) 744-8625; Fax: (405) 744-5180; E-mail: simkins@okstate.edu

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1. Introduction

One of the most significant governance issues currently facing the managers, directors, and shareholders of the modern corporation is the gender, racial, and cultural composition of the board of directors. The issue has taken on a high public profile as a result of reports in the popular press, shareholder proposals from advocacy groups, and policy statements from major institutional investors. For example, the Interfaith Center on Corporate Responsibility (ICCR) has sponsored numerous shareholder proposals that would require corporations to increase and report board diversity at major corporations, including Texaco, First Data, Unocal, Circuit City Stores, Sprint, and York International.[1] TIAA-CREF adopted a policy statement on corporate governance that states the board should be composed of "qualified individuals who reflect diversity of experience, gender, race, and age" (TIAA-CREF, 1997). Diversity is a key investment criterion for TIAA-CREF because they believe a diverse board will be less beholden to management. Additionally, the National Association of Corporate Directors Blue Ribbon Commission recommended that gender, racial, age, and nationality diversity should be considered in the selection of directors (National Association of Corporate Directors, 1994).

Many corporations also see board of director make-up as a significant issue. For example, Sun Oil's CEO, Robert Campbell states: "Often what a woman or minority person can bring to the board is some perspective a company has not had before—adding some modern-day reality to the deliberation process. Those perspectives are of great value, and often missing from an all-white, male gathering. They can also be inspiration to the company's diverse workforce" (Campbell, 1996). There is evidence to support the argument that corporations are increasing board diversity over time.[2]

There are at least two important aspects to the issue of board diversity as suggested by Karen J. Curtin, executive vice president of Bank America: "There is real debate between those who think we should be more diverse because it is the right thing to do and those who think we should be more diverse because it actually enhances shareholder value. Unless we get the second point across, and people believe it, we're only going to have tokenism" (Brancato and Patterson, 1999). One aspect is equity and the other shareholder value. Many corporate leaders and other parties believe that board diversity must be considered in the context of shareholder value. For example, participants at a forum sponsored by the Conference Board "immediately rejected the notion that board diversity for its own sake, without a business case, was sufficient reason to act" (Brancato and Patterson, 1999). The participants in this forum represented many different organizational perspectives including major

[1] For more information about ICCR's shareholder proposals addressing diversity on the board of directors, see http://www.iccr.org.

[2] Refer to Brancato and Patterson (1999) and Daily, Certo, and Dalton (1999). Board diversity has increased over time, although the adequacy of the increase may be viewed differently by various groups.

corporations, e.g., Bank of America, Sara Lee Corporation, Motorola, Inc., PepsiCo, Inc., TIAA-CREF, the Society for Human Resource Management, the Hispanic Association on Corporate Responsibility, the Children's Defense Fund, the National Council of Negro Women, Fannie Mae, the Securities and Exchange Commission, and a variety of consulting groups. Referring to internal control mechanisms, Jensen (1993) argues that "suggestions to model the board process after a democratic political model in which various constituencies are represented are likely to make the process even weaker." The policy statement by TIAA-CREF also specifically recommends against constituency directors, stating that "Each director should represent all shareholders: therefore, TIAA-CREF opposes the nomination of specific representational directors and the practice of cumulative voting in the election of directors" (TIAA-CREF, 1997).

Many corporate managers and others interested in good governance believe that a positive link exists between board diversity and shareholder value. Veronica A. Haggart, Corporate Vice President and Director of Government Relations at Motorola, Inc. argues: "We have to look at the connection between diversity, the success of the board, and a successful company. We should look in a broader sense at good governance, not just because it includes a broad spectrum of people, but because it means running a good company. That means the numbers show up in the financials which, in turn, means that the issue is going to make a difference to shareholders" (Brancato and Patterson, 1999). The Conference Board report on board diversity, discussed above, concludes that good economic arguments exist for increasing the diversity of boards. However, this same report also comes to the rather contradictory conclusion that "changes in corporate value (and presumably shareholder value) cannot be statistically attributed solely to the presence or absence of a small number of individuals of any background on a board of directors," and, in reference to the process of board diversity creating shareholder value, "Metrics measuring the chain of events are not precise. Moreover, in the opinion of most working group members, too much emphasis can be placed on the need to definitively prove such a connection." Despite the often-stated assumption that board diversity creates shareholder value, we could find no evidence that directly supports this hypothesis.[3]

Given the emphasis being placed on board diversity as a part of good corporate governance, the relationship between board diversity and shareholder value creation deserves both theoretical and empirical investigation. The purpose of this paper is to empirically examine this relationship by studying *Fortune* 1000 firms.[4] Board

[3] The Conference Board report on board diversity in U.S. corporations did not present any statistical tests of the relationship between board diversity and firm value (Brancato and Patterson, 1999). See Section II of our paper for a discussion of empirical evidence on this topic.

[4] It is important to note what this paper does not do. We do not evaluate the issue of equity and board diversity. Our goal is to explore the economic implications of board diversity and leave the sociological and political implications to others.

diversity is defined as the percentage of women or minorities (i.e., African Americans, Asians, and Hispanics) on the board of directors and firm value is measured by Tobin's Q. We control for possible endogeneity between firm value and diversity using two-stage least squares analysis. Overall, we find a positive significant relationship between board diversity and firm value. This result holds after controlling for size, industry, and other corporate governance measures. Our results are important because we present some of the first empirical evidence that indicates board diversity is associated with improved financial performance.

The remainder of the paper is organized as follows. Section 2 presents the conceptual case for a relationship between board diversity and firm value, and Section 3 examines prior empirical evidence on board composition and firm value relevant to our study. Section 4 discusses the data and empirical methodology employed. The results of the empirical analysis are presented in Section 5, while Section 6 concludes the paper.

2. Board diversity and firm value

2.1. The business case for a positive relationship between board diversity and firm value

Cox and Blake (1991) and Robinson and Dechant (1997) provide good summaries of the conceptual case for diversity often heard in the corporate world. While they focus on workplace diversity in general, the points are similar for board diversity. Diversity is believed to affect a firm's long-term and short-term financial value in several ways. While these propositions do not flow from any single theoretical framework, Robinson and Dechant (1997) cite limited empirical evidence and provide intuitive examples to support each proposition.

These propositions are as follows. First, corporate diversity promotes a better understanding of the marketplace. Because demographic projections indicate the marketplace is becoming more diverse, matching the diversity of a company to the diversity of the company's potential customers and suppliers increases the ability to penetrate markets. Second, diversity increases creativity and innovation. According to this view, "attitudes, cognitive functioning, and beliefs are not randomly distributed in the population, but tend to vary systematically with demographic variables such as age, race, and gender" (Robinson and Dechant, 1997). Third, diversity produces more effective problem-solving. While heterogeneity may initially produce more conflict in the decision making process, the variety of perspectives that emerges cause decision makers to evaluate more alternatives and more carefully explore the consequences of these alternatives. Fourth, diversity enhances the effectiveness of corporate leadership. Homogeneity at the top of a company is believed to result in a narrow perspective while diverse top managers take a broader view. The result of diversity at the top is a better understanding of the complexities of the environment and more astute decisions. Finally, diversity promotes more effective global relationships. Cultural sensitivity is

critical in an international environment and ethno-cultural diversity makes corporate leaders more sensitive to cultures not in North America.

Additionally, Cox and Blake (1991) argue that substantial costs exist for firms that do a poor job of integrating their diverse workforce. These costs are related to turnover and absenteeism of women and minorities that are dissatisfied with their careers and prospects for advancement. Firms that deal with diversity-related issues should have cost advantages over firms that do not. To assess the impact of diversity on firm performance, Keys, Turner, and Friday (2002) compare firms ranked by *Fortune* as being among the "diversity elite" with firms not ranked as such. They find that diversity promoters add more value to shareholders than nondiversity promoters do.

2.2. Agency theory and the link between board diversity and firm value

Agency theory is the theoretical framework most often used by investigators in finance and economics to understand the link between board characteristics and firm value. The arguments of Fama and Jensen (1983) are well known but, as a general statement, they propose a very important role for the board as a mechanism to control and monitor managers. The role of the board in an agency framework is to resolve agency problems between managers and shareholders by setting compensation and replacing managers that do not create value for the shareholders. One of the key elements of an agency view of the board is that outside board members will not collude with inside directors to subvert shareholder interests because directors have incentives to build reputations as expert monitors. Board independence is critical for boards to function in the best interests of shareholders. The central question for our analysis is the impact board diversity would have on board independence. In other words, should we expect a more diverse board to be a better monitor of management and less likely to subvert the interest of shareholders?

One argument is that diversity increases board independence because people with a different gender, ethnicity, or cultural background might ask questions that would not come from directors with more traditional backgrounds. In other words, a more diverse board might be a more activist board because outside directors with nontraditional characteristics could be considered the ultimate outsider. However, a different perspective may not necessarily result in more effective monitoring because diverse board members may be marginalized. We can see no *a priori* reason to expect diversity to affect the incentives for directors to build their reputations as expert monitors.

Hermalin and Weisbach (2000) make the following statement, "Although such principal-agent modeling provides many insights, it is not particularly useful for explaining board-specific phenomena: For example, why the ratio of insiders to outsiders matters or changes: or why management seems to have such influence in the selection of directors." Hermalin and Weisbach's (2000) point is important to our study because agency theory simply does not provide a clear-cut prediction concerning the link between board diversity and firm value.

The preceding discussion highlights our dilemma. The most promising theoretical framework does not give a clear prediction of the role of board diversity in firm value, while at the same time the intuitive belief in a positive relationship appears to be strong in the corporate world. We submit that the issue becomes an empirical question until a theoretical framework that predicts the nature of the relationship is developed. The importance of the topic justifies empirical examination. Next, we discuss relevant studies on board composition and firm value that lead to the development of our research methodology.

3. Previous evidence on board composition and firm value

Investigators of board composition have explored numerous board characteristics including the number of directors on the board, the percentage of outside directors on the board, the ownership position of inside directors, the board committee structure, and the number of meetings held annually.[5] As stated previously, few academic studies address the relationship between board diversity and firm value. The facet of board composition most often studied is the number of outside directors relative to inside directors on the board (Hermalin and Weisbach, 2000). This aspect of board composition appears to have relevance to our analysis because a more diverse board is likely to be a more independent or activist board.

Shrader, Blackburn, and Iles (1997) investigate the relationship between the percentage of female board members and two accounting measures of financial value (e.g. ROA and ROE) for a sample of approximately 200 *Fortune* 500 firms.[6] They find a significant negative relationship between the percentage of women on the board and firm value in some tests. Zahra and Stanton (1988) use canonical analysis to test the relationship between the percentage of ethnic minority directors and several accounting measures of financial value (e.g. ROE and EPS). However, they find no statistically significant relationship.[7]

An early study by Baysinger and Butler (1985) tests the relationship between the percentage of independent directors and a relative measure of return on equity. They find that boards with more outsiders outperformed other firms but that a majority of independent directors was not necessary to insure above average value. Baysinger

[5] Refer to Hermalin and Weisbach (2000), Bhagat and Black (1999), and Shultz (2000) for a review of the evidence on corporate boards.

[6] The investigation controls indirectly for firm size, but includes no other variables in a simple OLS regression equation. The average firm in the sample had approximately one woman on the board.

[7] Two other studies marginally related to our analysis explore diversity in the work place. Wright, Ferris, Hiller, and Kroll (1995) find significant positive excess returns when firms were recognized with U. S. Department of Labor awards for affirmative action programs and significant negative excess returns when firms announced discrimination settlements in lawsuits. Richard (2000) finds a positive relationship between a firm's ROE and employee diversity for firms following a growth strategy.

and Butler conclude that boards with both insiders and outsiders produce the best financial value. Hermalin and Weisbach (1991) compare the percentage of outsiders on boards to a relative measure of Tobin's Q. They conclude that there is no relationship between the percentage of outsiders on the board and firm value. Yermack (1996), Bhagat and Black (1999), and Agrawal and Knoeber (1996) find a negative correlation between Tobin's Q and the proportion of independent directors on the board. Bhagat and Black (2000) find no relationship between long-term market returns and board independence. Rosenstein and Wyatt (1990) use event study methodology and find a very slight increase in stock prices when a company appointed an additional outside director. MacAvoy and Millstein (1999) argue that the mixed results have followed from concentrating on periods when boards were largely irrelevant and using unreliable proxies for board independence. They use two measures of activism developed by CALPERS as an indication of board independence and Economic Value Added as the measure of financial value. MacAvoy and Millstein find a positive relationship between board independence and financial value. The results are obviously mixed and Hermalin and Weisbach (2000) argue that "Overall, there is little to suggest that board composition has any cross-sectional relation with firm value."

While it is difficult to predict the relation between board diversity and firm value based on prior studies, these studies provide a basis for our empirical tests. The following section discusses our data sources and the methods used to investigate the relationship between board of director diversity and firm value.

4. Data sources and methodology

4.1. Sample and sources of data

To investigate the relationships among corporate governance, board of director diversity, and firm value, we focus our analysis on publicly traded *Fortune* 1000 firms. For these firms, data on board of director characteristics for 1997 were obtained from *Significant Data for Directors 1999: Board Policies and Governance Trends*, prepared by Directorship.[8,9] In addition, accounting data for the firms in our sample were taken

[8] Directorship is a corporate governance consulting organization. The bulk of the data in Directorship's board of director database originated from proxy statements issued by the firms during 1997.

[9] We recognize the limitations of using a single year of diversity data in this investigation. However, because these data are not regularly reported or collected, there are few viable options for obtaining detailed information on the demographic characteristics of board members for a large sample of firms (note: Directorship does not collect and report these data annually). One potential way to obtain this information is to use pictures of the board members provided in annual reports. However, many firms do not provide pictures of their boards. Further, firms that do include pictures of their board often do not do so in a consistent manner. The use of surveys would seem to be another way to obtain the data needed for this study. However, survey data is notorious for having low response rates and would likely provide data on far fewer firms. Further, survey data would likely be biased toward those firms wishing to "showcase" their diverse boards. On balance, we believe that the use of the Directorship data is reasonable given the difficulty of obtaining data for a large sample of firms over several years.

Table 1

Descriptive statistics for sample firms

This table presents descriptive statistics for sample firms. The sample is drawn from the *Fortune* 1000 firms. Data related to board of director characteristics are taken from *Significant Data for Directors 1999: Board Policies and Governance Trends*, compiled by Directorship.

Variable	Number of firms	Mean	Standard deviation
Total assets ($ million)	737	13,342	36,752
Duality of CEO and board chair	797	0.777	0.417
Number of annual board meetings	797	7.448	2.866
Age of directors	797	59.006	3.759
Number of directors	797	10.986	3.105
Number of inside directors	797	2.802	1.594
% of insiders on board	797	0.262	0.138
Number of women directors	797	1.093	0.860
% of women on board	797	0.096	0.074
Number of minority directors	797	0.693	0.924
% of minorities on board	797	0.059	0.075

from the COMPUSTAT database. There are 797 firms with a complete set of board of director data. Due to missing accounting data, the sample is reduced to 638 firms with a complete set of all the data items.

Table 1 provides descriptive statistics for our sample firms. The average size (total assets) of the firms in our sample is $13.3 billion. In almost 78% of the firms, the chair of the board is also the CEO. The boards meet 7.4 times per year, on average, and the mean age of the directors is 59 years. The average board is made-up of 11 directors, of whom, on average, 2.8 are insiders, 1.1 are women, and 0.7 are minorities.

Table 2 provides a breakdown of the women and minority directors by industry. Panel A reports the distribution of female directors, while Panel B reports the breakdown of minority directors. As can be seen in Panel A, just under one half (46.9%) of the sample firms have one woman on their board of directors, while a quarter (24.8%) do not have women on their boards of directors at all. Around 28% of the firms have two or more female directors, with nine firms having four or more. Nine financial-services firms have three female directors and another four have four or more directors that are women. Firms in food, apparel, paper, and chemical manufacturing (one-digit SIC = 2) and transportation and communications (one-digit SIC = 4) have the lowest percentage of firms with no female directors (15.9% and 16.4% respectively). By contrast, three industries (one-digit SIC = 1, 7, and 8) have no firms with more than two female directors.

As reported in Panel B, almost half of the firms (49.7%) do not have a single minority director, while only three firms have four or more directors that are minorities. Further, only three sample firms have four or more minority directors. However, approximately half of the sample firms have one or more minority directors. As with women, financial-services firms are most likely to have larger numbers of minorities

Table 2

Breakdown of women and minorities on boards of directors for sample firms by industry

This table presents a breakdown of the number of women and minorities on boards of directors for sample firms by industry. Panel A presents the breakdown of women on boards, while Panel B presents the breakdown of minorities on boards. The sample is drawn from the *Fortune* 1000 firms. Data related to board of director characteristics are taken from *Significant Data for Directors 1999: Board Policies and Governance Trends*, compiled by Directorship.

Panel A: The number and % of women on boards of directors by industry

		Number of women on board										
		0		1		2		3		4+		
One-digit SIC	Industry description	Num. of firms	% of firms	Num. of firms	% of firms	Num. of firms	% of firms	Num. of firms	% of firms	Num. of firms	% of firms	Total firms
1	Mining & construction	12	44.4%	12	44.4%	3	11.1%	0	0.0%	0	0.0%	27
2	Manufacturing: food, apparel, paper, & chemical	26	15.9%	68	41.5%	61	37.2%	8	4.9%	1	0.6%	164
3	Manufacturing: rubber, leather, stone, metal, & electronic	61	32.6%	87	46.5%	33	17.6%	4	2.1%	2	1.1%	187
4	Transportation & communications	18	16.4%	60	54.5%	27	24.5%	3	2.7%	2	1.8%	110
5	Wholesale & retail trade	40	31.7%	59	46.8%	25	19.8%	2	1.6%	0	0.0%	126
6	Financial services	27	23.3%	47	40.5%	29	25.0%	9	7.8%	4	3.4%	116
7	Travel & entertainment	11	25.0%	27	61.4%	6	13.6%	0	0.0%	0	0.0%	44
8	Other services	3	13.0%	14	60.9%	6	26.1%	0	0.0%	0	0.0%	23
Total		198	24.8%	374	46.9%	190	23.8%	26	3.3%	9	1.1%	797

(*continued*)

Table 2 (*continued*)

Breakdown of women and minorities on boards of directors for sample firms by industry

Panel B: The number and % of minorities on boards of directors by industry

		Number of minorities on board										
		0		1		2		3		4+		
One-digit SIC	Industry description	Num. of firms	% of firms	Num. of firms	% of firms	Num. of firms	% of firms	Num. of firms	% of firms	Num. of firms	% of firms	Total firms
1	Mining & construction	19	70.4%	5	18.5%	3	11.1%	0	0.0%	0	0.0%	27
2	Manufacturing: food, apparel, paper, & chemical	62	37.8%	75	45.7%	22	13.4%	5	3.0%	0	0.0%	164
3	Manufacturing: rubber, leather, stone, metal, & electronic	113	60.4%	56	29.9%	17	9.1%	1	0.5%	0	0.0%	187
4	Transportation & communications	39	35.5%	48	43.6%	17	15.5%	5	4.5%	1	0.9%	110
5	Wholesale & retail trade	71	56.3%	42	33.3%	11	8.7%	2	1.6%	0	0.0%	126
6	Financial services	46	39.7%	43	37.1%	18	15.5%	7	6.0%	2	1.7%	116
7	Travel & entertainment	26	59.1%	14	31.8%	4	9.1%	0	0.0%	0	0.0%	44
8	Other services	20	87.0%	3	13.0%	0	0.0%	0	0.0%	0	0.0%	23
Total		396	49.7%	286	35.9%	92	11.5%	20	2.5%	3	0.4%	797

on their boards, with seven firms having three minority directors and two firms with four or more minority directors. Transportation and communications firms (one-digit SIC = 4) and food, apparel, paper, and chemical manufacturing firms (one-digit SIC = 2) have the lowest percentage of firms with no minority directors (35.5% and 37.8% respectively). Firms in other services (one-digit SIC = 8) and mining and construction (one-digit SIC = 1) have the highest percentage of firms without any minority directors (87.0% and 70.4% respectively).

4.2. Empirical methodology and hypotheses

We use both comparisons of means and regression analysis to examine the effect of board of director diversity and firm value. With respect to our estimation procedure, we regress a measure of firm value against measures of board of director diversity as follows:

$$Firm\ Value = \alpha_0 + \alpha_1 Diversity + \Sigma\alpha x + \varepsilon \quad (1)$$

where the approximation of Tobin's Q [see Chung and Pruitt (1994)] is the measure of firm value and x is a vector of other explanatory variables. We use both a dummy variable indicating the presence of women/minorities on the board and the percentage of women/minorities on the board as measures of board of director diversity.

In the estimation, we include several corporate control variables that have previously been studied. Mork, Shleifer, and Vishny (1988) and other studies suggest a positive, nonlinear relationship between the ownership position of the board and Tobin's Q. Yermack (1996) finds a negative relationship between board size and Tobin's Q and Vafeas (1999) reports a negative relationship between board activity (as measured by the number of board meetings) and firm value. Perry (1999) finds evidence that stock based compensation plans for directors provide incentives to monitor management. Finally, Brickley, Coles, and Terry (1994) and Borokhovich, Parrino, and Trapani (1996) demonstrate the importance of the monitoring role by outside directors. Therefore, we include the following control variables: board size (natural logarithm of the number of directors), the logarithm of the number of meetings annually, CEO/chair duality, a dummy indicating whether directors receive stock compensation, insider ownership, and the percentage of insiders on the board. We also include a measure of firm size (e.g., natural logarithm of total assets), return on assets (ROA), and one-digit SIC dummies as control variables.

Hermalin and Weisback (2000) point out the problem of endogeneity in examining board composition and value. While board diversity could affect firm value, firm value could also affect board diversity. If this is the case, estimation of Equation (1) using OLS can produce biased coefficient estimates. To control for the possibility of endogeneity, we estimate the following system of equations using 2SLS:

$$Firm\ Value = \alpha_0 + \alpha_1 Diversity + \Sigma\alpha x + \varepsilon \quad (2)$$

$$Diversity = \delta_0 + \delta_1 Firm\ Value + \Sigma\delta z + \nu \quad (3)$$

where x and z are vectors of other explanatory variables. Vector z includes firm size (natural logarithm of total assets), board size (natural logarithm of the number of directors), CEO/chair duality dummy, the natural logarithm of the average age of the board, the percentage of insiders on the board, and the approximation of Tobin's Q.

Estimation of our system of equations allows us to test the following null hypothesis:

Hypothesis: Board of director diversity does not affect firm value ($\alpha_1 = 0$).

Rejection of the null hypothesis implies that having a diverse board of directors affects firm value. If the null hypothesis is rejected, the sign of the estimated α_1 could be either positive, suggesting firm value is enhanced by the presence of women, minorities, or both, on boards of directors or negative, implying that the presence of women and/or minorities on boards reduces firm value. Failure to reject the null hypothesis suggests that board of director diversity does not add value. It should be pointed out that either significant negative or nonsignificant estimates of α_1 do not mean that women or minorities make poor directors. Instead, these results may imply that firms are using women or minority directors as "window dressing," or that the culture of the firm is not conducive to their success as directors. Because our data only provide the number of women and minority directors for each firm, but not the overlap between the two groups (e.g., female directors are also minorities), we estimate our system of equations separately for women and minorities and test our null hypothesis for each.

5. Empirical results

In this section, we present the empirical results for our investigation of the relationship between board of director diversity and firm value. We present comparisons of means for firms with high and low representation of women and minorities on their boards. These comparisons are made for the full sample and for a subset of the firms matched by size and two-digit SICs (Table 3). Finally, we present 2SLS estimates of the relationship between firm value and board of director diversity (Tables 4 and 5).

5.1. Comparisons of firms with and without diverse boards

In Table 3, we present *t*-tests of differences in means for firms with high and low levels of women and minorities on their boards. We define low women or minority firms as those firms with no women or minority directors. High women or minority firms are those with two or more women or minorities on their boards. Firms with a single woman or minority director are eliminated from the *t*-tests of means to reduce the possibility of "token" female or minority directors in our comparisons. Further, we want to provide greater dichotomy in the comparisons. We examine the effect of the presence of women and minorities on boards separately. Panel A presents the *t*-tests of differences in means for firms with high and low levels of women on their boards, while Panel B presents the tests for firms with high and low levels of minority directors.

Table 3

Comparison of means for firms with low and high levels of representation by women and minorities on their boards of directors

This table presents tests of differences in means for several variables, between firms with low or high representation of women or minorities on their boards of directors. Firms with no representation of women or minorities on their boards of directors are classified as low representation firms, while firms with two or more women or minorities on their boards are classified as high representation firms. The matched sample is created by matching on two-digit SIC and size (+/− 20%). Panel A presents the comparisons for firms with low and high representation of women on their boards, while Panel B presents the comparisons for firms with low and high representation of minorities on their boards. The sample is drawn from the *Fortune* 1000 firms. Data related to board of director characteristics are taken from *Significant Data for Directors 1999: Board Policies and Governance Trends*, compiled by Directorship.

Panel A: Comparison of firms with low and high representation of women on their boards of director

	Unmatched sample			Matched sample		
Variable	Low women firms (N = 178)	High women firms (N = 207)	*t* statistic	Low women firms (N = 65)	High women firms (N = 65)	*t* statistic
Total assets ($ million)	5,002.1	26,523.0	4.94***	9,382.0	9,606.6	0.09
	(12,104.0)	(61,243.0)		(14,071.0)	(14,082.0)	
Average age of directors	58.6940	59.2130	1.29	59.7780	59.0170	1.00
	(4.5062)	(3.1405)		(4.7711)	(3.8993)	
Board size (number directors on board)	8.8933	12.7120	14.43***	9.3077	12.2620	6.17***
	(2.2486)	(2.9428)		(2.3974)	(3.0274)	
Number of annual board meetings	7.2022	8.2115	3.30***	7.7385	8.2308	0.85
	(3.2562)	(2.6528)		(3.5850)	(3.0144)	
% of insiders on board	0.3169	0.2169	7.27***	0.3011	0.2342	2.64***
	(0.1543)	(0.1069)		(0.1608)	(0.1265)	
% of minorities on board	0.0286	0.0863	7.48***	0.0418	0.0782	2.10**
	(0.0833)	(0.0653)		(0.1188)	(0.0732)	
Duality of CEO and board chair	0.7247	0.7885	1.45	0.7385	0.8308	1.28
	(0.4479)	(0.4094)		(0.4429)	(0.3779)	
Tobin's Q	1.0260	1.5836	4.01***	0.9548	1.3156	1.98**
	(1.0825)	(1.6170)		(0.8231)	(1.1631)	

(*continued*)

Table 3 (*continued*)

Comparison of means for firms with low and high levels of representation by women and minorities on their boards of directors

Panel B: Comparison of firms with low and high representation of minorities on their boards of directors

	Unmatched sample			Matched sample		
Variable	Low minority firms (N = 356)	High minority firms (N = 102)	*t* statistic	Low minority firms (N = 44)	High minority firms (N = 44)	*t* statistic
Total assets ($ million)	5,398.9	30,596.0	4.07***	9,417.7	9,844.2	0.16
	(11,429.0)	(62,255.0)		(11,891.0)	(12,982.0)	
Average age of directors	58.8980	59.7180	2.47**	59.9110	59.3360	0.79
	(4.3019)	(2.4282)		(4.1521)	(2.4782)	
Board size (number directors on board)	9.8455	12.9800	8.65***	11.4320	12.4770	1.64
	(2.7396)	(3.3537)		(3.2307)	(2.7406)	
Number of annual board meetings	7.0365	8.1863	3.73***	7.9091	7.7955	0.19
	(2.8574)	(2.7095)		(3.1536)	(2.2883)	
% of insiders on board	0.2940	0.2127	6.12***	0.2786	0.2088	2.90***
	(0.1525)	(0.1064)		(0.1362)	(0.0835)	
% of women on board	0.0740	0.1327	7.03***	0.0896	0.1273	2.54**
	(0.0733)	(0.0780)		(0.0663)	(0.0730)	
Duality of CEO and board chair	0.7275	0.8431	2.67***	0.7273	0.8864	1.91*
	(0.4459)	(0.3655)		(0.4505)	(0.3210)	
Tobin's Q	1.2725	1.5761	1.66*	1.5022	1.8892	0.84
	(1.4087)	(1.6751)		(1.9716)	(2.2644)	

*** Indicates statistical significance at the 0.01 level.
** Indicates statistical significance at the 0.05 level.
* Indicates statistical significance at the 0.10 level.

Table 4

2SLS estimates of the relationship between firm value and the presence of women on boards of directors

This table presents 2SLS results for the relationship between firm value and the presence of women on boards of directors. The sample is drawn from the *Fortune* 1000 firms. Data related to board of director characteristics are taken from *Significant Data for Directors 1999: Board Policies and Governance Trends*, compiled by Directorship. The measure of firm value is Tobin's Q, calculated using the method suggested by Chung and Pruitt (1994). Standard errors are reported in parentheses, beneath the parameter estimates.

Variable	Dep. Var. = Tobin's Q (1a)	Dep. Var. = woman director on on board (1/0) (1b)	Dep. Var. = Tobin's Q (2a)	Dep. Var. = % of women on board (2b)
Constant	1.0570	−0.1454	−0.0482	0.2902
	(1.0252)	(1.0485)	(0.7943)	(0.1972)
Size (log of total assets)	0.0841	0.0249*	0.0908	0.0051*
	(0.0741)	(0.0150)	(0.0722)	(0.0028)
Board size (log of number of directors)	−1.0062**	0.4752***	−0.3059	0.0188
	(0.4917)	(0.0664)	(0.2776)	(0.0122)
Log of number of annual board meetings	0.2595		0.1105	
	(0.1929)		(0.1832)	
Log of average age of board		−0.1554		−0.0775
		(0.2616)		(0.0491)
Duality of CEO and board chair	−0.3894***	0.0459	−0.4004***	0.0096
	(0.1492)	(0.0365)	(0.1521)	(0.0069)
Stock compensation	0.0821		0.1845	
	(0.1738)		(0.1591)	
Insider ownership %	2.2243*		2.2573*	
	(1.2530)		(1.2599)	
Insider ownership % squared	−2.7103		−2.9080	
	(1.8251)		(1.8727)	
% of insiders on board	0.5601	−0.3816***	0.7160	−0.0871***
	(0.5914)	(0.1138)	(0.6336)	(0.0212)
Minority director on board (1/0)		0.1449***		0.1536***
		(0.0340)		(0.0388)
ROA	0.1026***		0.0998***	
	(0.0111)		(0.0119)	
Tobin's Q		0.0619***		0.0124***
		(0.0194)		(0.0037)
Woman director on board (1/0)	1.6794**			
	(0.8475)			
% of women on board			9.4255**	
			(4.5493)	
One-digit SIC dummies	Yes	Yes	Yes	Yes
N	638	638	638	638
Adjusted R^2	0.256	0.263	0.250	0.149
F-Statistic	13.90***	17.25***	13.51***	8.99***

*** Indicates statistical significance at the 0.01 level.
** Indicates statistical significance at the 0.05 level.
* Indicates statistical significance at the 0.10 level.

Table 5

2SLS estimates of the relationship between firm performance and the presence of minorities on boards of directors

This table presents 2SLS results for the relationship between firm value and the presence of minorities on boards of directors. The sample is drawn from the *Fortune* 1000 firms. Data related to board of director characteristics are taken from *Significant Data for Directors 1999: Board Policies and Governance Trends*, compiled by Directorship. The measure of firm value is Tobin's Q, calculated using the method suggested by Chung and Pruitt (1994). Standard errors are reported in parentheses, beneath the parameter estimates.

	Dep. Var. = Tobin's Q	Dep. Var. = minority director on board (1/0)	Dep. Var. = Tobin's Q	Dep. Var. = % of minorities on board
Variable	(1a)	(1b)	(2a)	(2b)
Constant	1.4608	1.6362	0.1746	0.1486
	(1.0714)	(1.2208)	(0.8145)	(0.2017)
Size (log of total assets)	0.0389	0.0841***	0.0858	0.0108***
	(0.0821)	(0.0173)	(0.0779)	(0.0028)
Board size (log of number of directors)	−0.7657**	0.2896***	−0.2355	0.0069
	(0.3640)	(0.0797)	(0.2670)	(0.0125)
Log of number of annual board meetings	0.0539		0.0640	
	(0.1865)		(0.1825)	
Log of average age of board		−0.6490**		−0.0519
		(0.3040)		(0.0503)
Duality of CEO and board chair	−0.3706**	0.0083	−0.3813***	0.0038
	(0.1508)	(0.0426)	(0.1479)	(0.0070)
Stock compensation	0.2398		0.2554*	
	(0.1578)		(0.1535)	
Insider ownership %	1.6383		1.2332	
	(1.1272)		(1.0719)	
Insider ownership % squared	−1.1020		−0.7843	
	(1.5533)		(1.4999)	
% of insiders on board	0.7596	−0.5136***	0.4025	−0.0574***
	(0.6137)	(0.1322)	(0.5719)	(0.0219)
Woman director on board (1/0)		0.2184***		0.1788***
		(0.0475)		(0.0418)
ROA	0.1138***		0.1139***	
	(0.0094)		(0.0091)	
Tobin's Q		−0.0130		−0.0016
		(0.0231)		(0.0038)
Minority director on board (1/0)	1.5975**			
	(0.6655)			
% of minorities on board			7.5735*	
			(4.5709)	
One-digit SIC dummies	Yes	Yes	Yes	Yes
N	638	638	638	638
Adjusted R^2	0.249	0.248	0.259	0.121
F-Statistic	13.45***	15.98***	14.06***	7.29***

*** Indicates statistical significance at the 0.01 level.
** Indicates statistical significance at the 0.05 level.
* Indicates statistical significance at the 0.10 level.

Because differences in firm value and corporate governance may be related to both size and industry, we create subsets of our sample, matched by size and two-digit SIC. We also conduct *t*-tests of differences in means for our matched sample. The matching procedure we employ produces 65 pairs of firms for our comparison of high and low women boards and 44 pairs for high and low minority boards. These results are also presented in Table 3.

On examination of Panel A, it is readily apparent that significant differences exist for several variables. Firms with two or more women directors are larger ($26.5 billion in total assets versus $5.0 billion), have larger boards (12.7 directors versus 8.9 directors), have more annual meetings (8.2 versus 7.2), and have a greater proportion of minority directors (8.6% versus 2.9%). Firms with two or more women directors also perform better, as measured by Tobin's Q (1.58 versus 1.03) or return on assets (5.2% versus 2.5%). Interestingly, firms with no women on their boards have more inside directors.

Panel A of Table 3 also presents *t*-tests of differences in means for firms with high and low representation of women on their boards for our matched sample of firms. We find several interesting differences between firms with two or more directors and those firms with no women on their boards. The boards of high representation firms are significantly larger (12.3 directors versus 9.3 directors), have a greater proportion of minorities (7.8% versus 4.2%), and have fewer insiders (23.4% versus 30.1%). Importantly, even after controlling for size and industry, there are significant differences in value ($p = 0.05$), as measured by Tobin's Q, between the two groups of firms, with the high representation firms outperforming the low representation firms. This last result suggests an important association between firm performance and the presence of women on boards of directors.

Panel B of Table 3 reports *t*-tests of differences in means for firms with high and low minority representation on their boards of directors. In many respects, the results are similar to that presented above for firms with high and low representation of women directors. Significant differences exist for several variables. Firms with two or more minority directors are larger ($30.6 billion versus $5.4 billion), have larger boards (13.0 directors versus 9.8 directors), have more board meetings per year (8.2 versus 7.0), and have a greater proportion of women on their boards (13.3% versus 7.4%). As before, firms with no minority directors have a greater percentage of insiders on their boards (29.4% versus 21.3%). In addition, firms with two or more minority directors are more likely to have a CEO who is also the board chair (84.3% versus 72.8%). Differences in value are less pronounced than was the case for firms with women directors. Tobin's Q is larger, on average, for firms with two or more minority directors than for those with no minority board members (1.58 versus 1.27). However, the difference is marginally significant.

Comparisons of firms with high and low representation of minorities on their boards for our matched sample of firms are also presented in Panel B. The high minority representation firms have a greater proportion of women on their boards (12.7% versus 9.0%) but fewer insiders (20.9% versus 27.9%). We find weak evidence

that firms with CEOs serving as board chairs are more likely to have minority directors. Almost 73% of the low representation group have duality between the CEO and the board chair, while almost 89% of the high representation firms have CEOs that are also chairs. Unlike the case for women directors, we do not find statistically significant differences in value between the two groups of firms. This may be due to the relatively small number of firms being compared.

Overall, the matched sample *t*-tests suggest that boards with greater proportions of insiders are less likely to have women and minority members, suggesting that women and minorities are likely to be outsiders. In addition, firms with women directors are also likely to have more minority directors, and vice versa. This result suggests effort by these firms to have more representative boards. We also find linkages between the presence of female directors and board size and firm value. In the next section we use regression to further explore relationships between board diversity and a number of corporate control variables.

5.2. Regression results: Board of director diversity and firm value

Tables 4 and 5 report the 2SLS estimates of the relationship between firm value and board of director diversity. The estimates for the effect of female directors on firm value are found in Table 4, while those for minority directors are found in Table 5.

The dependent variable in models (1a) and (2a) is Tobin's Q, while the dependent variable in models (1b) and (2b) is a measure of the presence of women on the board of directors. To capture the relationship between the presence of women on the board of directors and firm value, we use two variables: a dummy variable coded as one if there is at least one female member of the board of directors [model (1a)] and zero otherwise, and the percentage of women on the board [model (2a)].

The estimated coefficients for several of the dependent variables in the Tobin's Q equations [models (1a) and (2a)] are statistically significant. The estimates for board size are negative but significant only in model (1a). Interestingly, the coefficient estimates for CEO/board chair duality are negative and significant in both models (1a) and (2a), suggesting that firm value declines when CEOs are also board chairs. We also find that return on assets is significant in explaining Tobin's Q. Importantly, we find significant positive estimates for both the women director indicator variable [model (1a)] and the percentage of women on the board [model (2a)]. The estimated coefficient for the woman director on board variable is 1.6794 ($p = 0.048$) while the estimate for the percentage of women on board variable is 9.4255 ($p = 0.039$). These results provide strong evidence of the association between firm value and the presence of women directors.

In the woman director on board equation [model (1b)], we find positive relationships between the presence of a female director and firm size, board size, and Tobin's Q. Interestingly, we find an inverse relationship between the percentage of insiders on the board and whether or not there are women directors. However, we find a positive relationship between the presence of minority directors and that of women

directors. Similar results are found in model (2b) where the dependent variable is the percentage of women on the board.

The estimates for the relationship between firm value and the percentage of minorities on the board of directors are presented in Table 5. As before, the dependent variable in models (1a) and (2a) is Tobin's Q. The dependent variable in models (1b) and (2b) is a measure of the presence of minorities on the board of directors. We use two different independent variables in models (1a) and (2a) to determine whether a relationship exists between firm value and the presence of minority directors. The first measure of minority board representation is an indicator variable, coded as one if there are minority directors and zero otherwise [model (1a)]. The second measure of minority board membership is the percentage of minorities on the board [model (2a)].

Overall, the results are similar to those presented in Table 4 for women. As before, the estimates for CEO/board chair duality are negative and significant, suggesting that firm value is decreased by CEOs that are also board chairs. We also find that return on assets is significant in explaining firm value. The estimates for both the minority director indicator variable [model (1a)] and the percentage of minorities on the board [model (2a)] are positive and significant. The estimated coefficient for the minority director on board variable is 1.5975 ($p = 0.017$) while the estimate for the percentage of women on board variable is 7.5735 ($p = 0.098$). These results suggest that firms with minority directors have greater value.

In models (1b) and (2b), in which the dependent variable is a measure of minorities on the board, we find significant positive estimates for firm size and the woman director on board indicator variable. As was the case for women, we find an inverse relationship between the percentage of insiders on the board and whether or not there are minority directors. However, we find a positive relationship between the presence of minority directors and that of women directors.

6. Conclusion

A critical factor in good corporate governance appears to be the relationship between board diversity and shareholder value creation. Our research examines the relationships among corporate governance, board diversity, and firm value for *Fortune* 1000 firms. Board diversity is defined as the percentage of women, African Americans, Asians, Hispanics, and other minorities on the board of directors. Our most important finding is as follows. After controlling for size, industry, and other corporate governance measures, we find statistically significant positive relationships between the presence of women or minorities on the board and firm value, as measured by Tobin's Q. We also find that the fraction of women and minorities directors increases with firm size but decreases as the number of insiders increases. Our results suggest that firms making a commitment to increasing the number of women on boards also have more minorities on their boards and vice versa. Overall, our results provide important evidence of a positive relation between firm value and diversity on the board of directors.

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