Does Board Diversity Affect Corporate Dividend Policy?

by

Soku Byoun
Associate Professor of Finance
Hankamer School of Business
Baylor University
One Bear Place #98004
Waco, Texas 76798
(254) 710-7849
Soku_Byoun@baylor.edu

Kiyoung Chang*
Associate Professor of Finance
College of Business
University of South Florida Sarasota-Manatee
Sarasota, FL 34243
(941) 359-4359
chang1@sar.usf.edu

Young Sang Kim
Associate Professor of Finance
Haile/US Bank College of Business
Northern Kentucky University
Highland Heights, KY 41099
(859) 572-5160
kimy1@nku.edu

July 2015

*** Corresponding Author:** Kiyoung Chang, Ph.D. Associate Professor of Finance, University of South Florida Sarasota-Manatee, Sarasota, FL 34343, USA. Tel: 1-941-359-4359, E-mail: chang1@sar.usf.edu

Does Board Diversity Affect Corporate Dividend Policy?

Abstract: We find that firms with gender/racial diversity in their boards are more likely to pay larger dividends than are firms with non-diverse boards. Our results suggest that board diversity has a significant impact on dividend payout policy. The impact of board diversity on dividend payout policy is particularly conspicuous for firms with potentially greater agency problems of free cash flow, suggesting that a diverse board helps to mitigate the free cash flow problem. Our findings are consistent with the argument that board diversity enhances the monitoring function of directors and the shareholder-manager conflict resolution for the benefit of shareholders.

JEL Classification: G3; G35

Keywords: Board diversity; Payout policy; Monitoring; Free cash flow

1. Introduction

Despite the acknowledgement by U.S. corporations that gender/racial diversity in the board is a very important factor contributing to good corporate governance, they are silent about how this is so.[1] As reviewed in the next section, the literature suggests that diversity in general brings positive *cognitive* outcomes for groups; i.e., diversity translates into a greater variety of perspectives being brought to bear on decisions and, thereby, increases the likelihood of creative and innovative solutions to problems. This cognitive effect is particularly important in decisions such as those that a board of directors deals with because they often require information input from a variety of functional areas within and outside the organization. Along these lines, the Alliance of Board Diversity (ABD) argues that female and minority directors bring independent, creative and fresh ideas to the boardroom, thus enhancing corporate performance. Adams and Ferreira (2009) suggest that gender-diverse boards are more effective monitors, while Carter et al. (2010) argue that female and minority directors provide unique information to the board, and thus improve strategic decision making. Thus, diverse boards can contribute to a better understanding of the complexities of the environment, a reduced risk of "group think," and more astute decisions.

However, there can be negative effects of diversity. Diverse board members with different backgrounds and skills may have integration problems. This is due to an *affective* effect that people are mostly attracted to those similar to them and are more likely to form relationships with them. Consequently, people who are different from their peers are more likely to turn over. On the other hand, firms may select female and minority directors merely as tokenism (Baysinger and Butler, 1985; Adams and Ferreira, 2009): having a diverse board may appear legitimate in the views of the public, the media, and the government.

The effect of board diversity on corporate governance can be captured by differences in behavior when female and minority directors are present on the board. Since it is difficult to directly observe such differences in behavior, the literature focuses on the relation between board diversity and a measure of

[1] *The Wall Street Journal*, December 26, 2011, "Female Directors: Why so Few? Groups Push Major Companies to Make Changes; 'Guys Don't Want to Give Up Their Board Seats,'" by Joann S. Lublin.

firm performance in order to determine the extent to which board diversity matters. The presumption is that if board diversity increases board effectiveness, then it should affect corporate performance.

In this study, unlike previous studies, we investigate whether board diversity has a significant impact on corporate decisions. To this end, we examine whether firms with diverse boards adopt different payout policies vis-à-vis those with non-diverse boards. We focus on the dividend payout policy because one of the most important conflicts between managers and shareholders is the free cash flow problem (Jensen, 1986). The literature suggests that dividends can mitigate the free cash flow problem.[2] Thus, dividend payout policy is a key component in resolving the shareholder-manager conflict. To the best of our knowledge, no other study has directly examined the relation between board diversity and corporate payout policy. Examining such a relation can aid in understanding the role of board diversity in corporate governance.

The dividend payout policy is approved by the board of directors. Thus, the major advantage of our study is to investigate the direct impact of interactions by diverse board members on a major corporate decision. Unlike dividend policy, firm performance may be affected by the activities of a firm's employees working individually or various other factors, which makes it difficult to make a clear connection between the effect of board diversity and firm performance. For example, a diverse board can be just a symbol of a socially just organization. Such a symbolic effect may attract talented members of diverse groups and encourage customers to purchase the firm's products and services (Thomas and Ely, 1996), which may in turn have a positive impact on firm performance. However, the symbolic effect would not affect the board decision on dividend policy.

To the extent that a diverse board helps to mitigate the agency problem of free cash flow through its enhanced monitoring and effectiveness of resolving the shareholder-manager conflict, we hypothesize that corporate board diversity has a greater impact on dividend payout policy for firms with potentially

[2] For example, see Grossman and Hart (1980), Easterbrook (1984), Jensen (1986), and DeAngelo, DeAngelo, and Stulz (2006).

greater agency problems: i.e., firms with low management stock ownership, weak shareholder rights, and large free cash flows.

We find that firms with diverse boards are more likely to pay dividends and, further, tend to pay larger dividends than do those with non-diverse boards. After controlling for various firm and board characteristics, our results suggest that diverse boards have significant impacts on dividends. In particular, firms with diverse boards are associated with about a 15% higher probability to pay dividends than are firms without diverse boards, and firms with diverse boards have significantly higher dividend payout ratios than do firms without diverse boards. Furthermore, the differential effect of board diversity on dividend payout policy is highly significant, conditional on high free cash flow, managerial entrenchment, and low CEO ownership. We also examine the change in payout policy when a company adds a new female or minority director to its board. This allows us to assess the change in dividend policy for the same firm before and after it adds a female/minority director. Our results show that a significantly larger portion of firms pay dividends after they add a female/minority director to their boards. Also, firms pay significantly higher dividends after adding a new female/minority director for the first time. Interestingly, there are decreases in dividend payouts, albeit statistically insignificant, when firms dismiss female and minority board members. These results suggest that the presence of female/minority directors in a board does make a difference in dividend policy, which is consistent with the hypothesis that board diversity has an impact on corporate decisions. Our findings suggest that enhanced monitoring of a diverse board has greater benefits for high free cash flow firms that are subject to managerial entrenchment and a lack of managerial incentives.

We also find that firms with multiple female/minority directors tend to have a greater propensity to pay dividends. Moreover, we find a positive association between the fraction of diverse directors on the board and payout ratios, which finding suggests that there are incremental effects of additional female/minority directors on the payout level. The increased number of female/minority directors appears to reflect less integration problems and more effective collaboration within the board.

Given their different characteristics and backgrounds between woman and minority, one might expect different effects of female and minority directors on dividend policy. Accordingly, we generate all our results separately for female and minority directors. The results (available upon request) suggest that the gender and racial diversities of the board have similar effects on dividend policy. Only exception is that the effect is negative but insignificant when the CEO of the firm has the same ethnic background as some of the board members. This finding reveals that the ethnic tie between the CEO and directors clouds the board's effective monitoring and that directors are less likely to impose discipline on managers when they share the same racial/ethnic background, which is consistent with the findings of Parsons et al. (2011), Hwang and Kim (2009, 2011), and Schmidt (2009). Thus, it is not simply the presence of diverse directors on the board that exerts a significant impact on the dividend payout policy, but also the racial heterogeneity between the board and the CEO.

A positive association between board diversity and dividend payout can arise if firms that expect to increase dividends add female/minority directors. In order to address this concern, we incorporate the propensity-score matching method and examine the treatment effect of board diversity after matching firms with similar conditional probabilities of adopting a diverse board given their prior-treatment characteristics. We run difference-in-difference regressions based on the propensity-score matched firms in order to compare changes in dividend payout policy between non-diverse board firms (the control group) and firms that add a new female/minority director for the first time (the treatment group). The results based on the matched samples confirm that there are significant and positive changes in dividend payout after adding a new female/minority director. Additionally, we find that the significant treatment effect of board diversity on dividend payout policy remains intact when we match firms by dividend payout propensity before the adoption of a diverse board.

We explore alternative explanations for a positive association between board diversity and dividend payout policy. First, if firms that are more attentive to shareholders' voices choose a high payout policy (Baker and Wurgler, 2004; Li and Lie, 2006) as well as a more diverse board (since it is the right thing to do in the eyes of shareholders), then we may observe a positive association between board diversity and

payout policy. In particular, companies may have pressure from the institutional investors for greater board diversity as well as for higher dividend payouts.[3] Second, firms with high information asymmetry may also pay higher dividends in order to signal their prospects to shareholders (Ross, 1977; Bhattacharya, 1979) while promoting board diversity. Finally, firms expecting better performance may signal their quality by increasing dividends and diversifying their boards. We find no supporting evidence for these alternative arguments.

We also perform an array of additional robustness checks, including instrumental variable probit and tobit regressions, the two-stage least square instrumental variable approach (2SLS-IV), and the generalized method of moment (GMM) estimation in order to address the endogeneity concern. Our results are robust to these alternative estimations and specifications. Additionally, board diversity remains relevant for dividend payout policy throughout various sub-periods. In conclusion, board diversity affects corporate dividend policy.

Our study contributes to the governance literature in the following ways. First, our findings add to existing evidence that board diversity enhances the board's monitory effectiveness. Gul, Srinidhi, and Ng (2011) show that board diversity improves the quality of board discussions and firms' disclosures and reports, while Srinidhi, Gul, and Tsui (2011) find that firms with diverse boards exhibit higher-quality earnings. Anderson et al. (2011) also suggest that a diverse board provides greater monitoring benefits to shareholders by providing various viewpoints on executive actions. Consistent with the findings of previous studies, our results show supporting evidence for the impact of board diversity on corporate dividend policy.

Second, we show that a diverse board exerts a significant impact on corporate dividend policy. Given the findings of recent studies on the relation between board diversity and firm performance (e.g., Carter et al., 2003; Erhardt et al., 2003; Carter et al., 2010; Adams and Ferreira, 2009; Anderson et al., 2011), our evidence is particularly revealing. Our evidence suggests that the positive impact of a diverse

[3] For instance, Connecticut's state public pension funds and Calvert Investment Management Inc. urged Urban Outfitters to actively pursue female and minority directors.

board on firm performance can be partly attributable to the board's effectiveness in addressing the agency problem of free cash flow through improved monitoring and discipline. Consistent with Adams and Ferreira (2009), who show that the sensitivity of CEO turnover to performance is greater with a more diverse board, our findings suggest that board diversity yields benefits to shareholders through its impact on dividend payout policy.

In addition, we provide evidence for the direct impact of board diversity on a major corporate decision. While previous studies focus on the effect of the presence of female/minority directors on firm performance, our study relies on a better identification strategy in that we examine how adding a diverse director to the board affects corporate payout policy. Thus, our study complements previous studies by showing that added diversity of the board enhances the effectiveness of monitoring and disciplinary functions of the board.

Interestingly, the Securities and Exchange Commission (SEC), with the intention of increasing corporate board diversity, issued a rule in 2010 that requires public companies to disclose how they view diversity with respect to their boards.[4] Our findings have important implications for policies aiming to increase the number of diverse directors in corporate boardrooms. Our results suggest that board diversity makes a significant difference in the board's monitory effectiveness. However, what makes the significant difference in the board's monitory effectiveness is not the sheer number of female/minority directors on the board; in particular, the effectiveness of a diverse board is weakened when the CEO and some of the board members share the same ethnic background.

The paper proceeds as follows. Section 2 provides a literature review. Section 3 describes the data and provides summary statistics. Section 4 reports univariate results and Section 5 presents results from the multivariate regressions. Section 6 explores alternative explanations and Section 7 provides robustness checks. Section 8 contains summary and concluding remarks.

2. A literature review on the effect of diversity

[4] The SEC RIN 3235-AK28, Proxy Disclosure Enhancements, effective on February 28, 2010.

A large body of literature in various disciplines suggests numerous effects of diversity in organizational groups. Following the literature, we classify the effects of gender/ethnic diversity into four categories (see, Milliken and Martins, 1996): affective, symbolic, communicative, and cognitive.

The affective effect refers to the fact that people are mostly attracted to those similar to them and are more likely to form relationships with them. It is well documented that people's behavior is often biased due to this affection. In particular, individuals attribute positive utility to the wellbeing of members of their own group and negative utility to that of members of other groups (Tajfel et al., 1971; Alesina and La Ferrara, 2000). This phenomenon of "homophily" can make integration and identification of a diverse group more difficult (Ibarra, 1992), which may affect negatively both majority and minority members in the group. However, this negative effect can give way to more effective collaboration within the group and it tends to decrease over time (Watson, Kumar, and Michaelson, 1993).

The board diversity can have symbolic significance for both internal and external stakeholders. Such a symbolic effect may have positive effects on firm value by attracting talented members of diverse groups and encouraging customers to purchase the firm's products and services (Thomas and Ely, 1996). This implies that the conclusion based on the impact of board diversity on firm value can be equivocal. However, the symbolic effect would not affect the board decision on dividend policy.

The communicative effect of diversity refers to the changes in communication within and outside the group. Members of a diverse group communicate more formally with each other and more frequently with outside the group (Ancona and Caldwell, 1988). Accordingly, diversity may allow the board to better fulfill its role as a monitor. However, the affective effect may interfere with the communication in a diverse group.

The cognitive effect refers to the ability of a group to gather information, process it, reach conclusions, and react to it. Northcraft et al. (1995) suggest that there are functional differences based on *invariable* characteristics (i.e., gender and races) in which they learn, think, process information, and deal with authority in the organizational context. Accordingly, the diverse group involves many different

perspectives that can lead to creativity and offers more counter-arguments that result in better-grounded decisions (Hoffman, 1959; Northcraft et al., 1995). Hong and Page (2001) develop a model in which a more diverse group of people with limited abilities and yet with diverse perspectives can outperform a more homogeneous group of high-ability problem solvers.

It is also important to note that the diverse board members bring unique *variable* characteristics (e.g., task-related capacities and status in the board) which can further enhance the cognitive effect. For instance, whereas most directors become directors through their promotion to senior executive ranks, such a route is constrained for female and minority directors—often referred to as the "glass ceiling effect" (Hillman, Cannella, and Harris, 2002; Farrell and Hersch, 2005). Indeed, Hillman et al. (2002) provide evidence that most female and racial minority directors come from non-business careers; they often rise to the upper echelon of directorship by demonstrating their conspicuous professional and educational credentials. This implies that woman and minority directors do not share the network of connections with other directors, which are often formed through their career paths.

Both variable and invariable characteristics of female and minority directors are particularly important because the governance literature suggests that formal and informal social ties between directors and the CEO impede the objective monitoring of the CEO and board independence (Fracassi and Tate, 2012; Hwang and Kim, 2009, 2011; Schmidt, 2009). Female and minority directors can counter the board's gravitation toward those who share its members' views and backgrounds by shaking things up and cutting across cliques and social groups within the board. Such characteristics appear to affect board decisions on acquisitions in such a way that a diverse board reduces the shareholder-manager conflict—i.e., empire building (Levi, Li, and Zhang, 2011). Similarly, a diverse board may adopt a dividend policy that reduces the agency problem of free cash flow.

In addition to enhanced monitoring of management, female/minority directors can cause implicit monitoring of other board members. In particular, female/minority directors deviate from a well-established group norm and enhance mutual monitoring by creating peer pressure (Kandel and Lazear, 1992). Thus, board diversity enhances monitoring effectiveness of the board on the behalf of shareholders.

Consistent with this argument, Adams and Ferreira (2009) find that male directors have fewer attendance problems when the board is gender-diverse. Gul, Srinidhi, and Ng (2011) and Srinidhi, Gul, and Tsui (2011) show that board diversity improves the quality of firms' disclosures and earnings' quality.

Additionally, female/minority directors, often being civic, community, and government leaders, bring important perspectives and resources to the board, such as public relations and legal expertise, enhancing the board's awareness and resolution of the shareholder-manager conflict. Page (2007) argues that the most striking effect of diversity can be seen in the area of conflict resolution.

Thus, a diverse board—with a variety of skills, perspectives, backgrounds, and resources—promotes objective monitoring and manager-shareholder conflict resolution and is less likely to be a "managerial rubber-stamp" and more likely to serve as a "watchdog for shareholders." If a diverse board is effective in monitoring and is activistic in resolving the shareholder-manager conflict, then it is likely to discipline management through its impact on dividend payout policy. Accordingly, board diversity has the potential to help align the incentives of managers and shareholders through its impact on the payout policy.

Clearly, there is a trade-off between cognitive benefits and affective costs with respect to board diversity. Thus, how board diversity affects corporate decisions is an empirical question. If board diversity reflects the seeking of efficient corporate governance, we expect that board diversity has a greater impact on dividend payout policy for firms with potentially greater agency problems. This line of argument is consistent with the findings of Adams and Ferreira (2009) and Anderson et al. (2011) in that the impact of board diversity on firm performance is greater for companies with weak shareholder rights or strong CEOs because those firms are more likely to face greater agency problems. On the other hand, if a diverse board reflects just a tokenism or suffers from more conflicts and communication breakdowns, then it would be a less effective monitor and have little impact on corporate payout policy.[5]

[5] Indeed, such conflicts and communication breakdowns appear to be eminent when the board consists of foreign independent directors (Masulis et al., 2012).

Previous studies on firm performance provide mixed results. Early studies on U.S. firms generally find negative or no impact of board diversity on firm performance. For instance, Zahra and Stanton (1988) and Farrell and Hersch (2005) find no significant relation between corporate diversity and firm performance measures, whereas Shrader, Blackburn, and Iles (1997) find that the presence of woman directors has a negative impact on firm performance. More recently, however, Carter et al. (2003) and Carter et al. (2010) document a positive impact of gender and ethnic board diversity on Tobin's Q and market value, respectively. Erhardt et al. (2003) find evidence of a positive relation between board diversity and accounting measures of firm performance. Adams and Ferreira (2009) show that the impact of gender diversity on firm performance is heterogeneous (i.e., gender diversity has beneficial effects in companies with weak shareholder rights, whereas it has detrimental effects in companies with strong shareholder rights). Anderson et al. (2011) also show that board diversity has beneficial effects on more complex firms and firms with greater CEO power. Evidence from international studies is also mixed. Using Danish firms, Rose (2007) finds no significant results, while Ahern and Dittmar (2012) find significant reduction in Norwegian firms' market values after they adjust to mandatory female quotas on boards.

Such mixed results may reflect the fact that some boards have simply not yet figured out how to get along with such diversity, but that when they do, board diversity will improve performance. Indeed, Watson, Kumar, and Michaelson (1993) suggest that the negative effect of diversity on a group tends to decrease over time. Moreover, the effect of board diversity forced by a new legislation may not reflect a firm's optimal decision. In sum, whether or not board diversity affects corporate governance is still an unresolved issue.

3. Data and summary statistics

(i) Data

Throughout our analysis, we utilize data from the following sources: the Investor Responsibility Research Center (IRRC, recently acquired by RiskMetrics), the Center for Research in Security Prices (CRSP), the CDA/Spectrum Institutional (13f) Holdings, and Compustat for the 12-year period from 1997 to 2008. Our initial sample includes all firms in the IRRC database with information available on the gender and ethnicity of directors.[6] Following the literature, we exclude financial (SIC Codes 6000-6999) and utility companies (SIC Codes 4900-4999).[7] We further exclude observations that do not have financial and price information from Compustat and CRSP. After imposing these requirements, our sample consists of 2,234 unique firms or 13,325 firm-year observations. Our discussion with the RiskMetrics reveals that the main sources of gender and ethnicity identification are pictorial representations of directors and director biographies from relevant documents, such as 10-Ks, 10-Qs, and other public disclosures.

(ii) Board diversity measures

We measure board diversity in several ways. First, we define a board diversity dummy variable (*Diversity*) that has a value of one if at least one board member is female or minority and zero if no female or minority director is present in the board.[8] Our second measure is defined as the proportion of female and minority directors on the board (*Pct_diverse*). For the purpose of addressing potential confounding effects between gender and ethnicity, we consider separate diversity measures for females and minorities: a female dummy variable (*Female*) that equals one for a board with at least one female and zero otherwise; the proportion of female directors on the board (*Pct_female*); a minority dummy variable (*Minority*) that equals one for a board with at least one minority and zero otherwise; and the

[6] The IRRC director database provides director information starting in 1996. Due to many missing observations in 1996, however, our sample period starts in 1997. One of the critical reasons to use IRRC is that the database contains information on the ethnicity of directors, which is not available from other data sources. The most recent studies on gender/ethnicity effect (e.g., Adams and Ferreira, 2009; Anderson et al., 2011; Carter et al., 2010) also use the IRRC data.

[7] See, for example, Anderson et al. (2011).

[8] For our main results, we narrowly define "minority" as African-American directors. However, our results remain intact when we broaden the ethnic minority definition to include Asian and Hispanic directors. These results are available from the authors upon request.

proportion of minority directors (not including woman) on the board (*Pct_minor*). Finally, we check the robustness of our results using the number of female and/or minority directors on the board (*Num_female, Num_minor,* and *Num_diverse*). We provide definitions of the variables in the appendix.

(iii) Dividend payout measures

Following the literature, we consider three measures of dividend payout. The first measure is a dummy variable that equals one if a firm pays a cash dividend and zero otherwise (*DIV_dum*). We also measure payout by: 1) dividend-to-asset ratio (*DIV_TA*) and 2) dividend yield defined as dividend per share divided by fiscal year ending stock price (*DIV_P*). By incorporating stock price, dividend yield can measure a payout policy that reflects the shareholders' perspective. However, this measure can be largely affected by the fluctuation in stock price rather than by changes in dividends. Thus, we use *DIV_TA* along with *DIV_dum* for our main results. Some studies utilize other measures, such as dividend divided by net income (*DIV_NI*) or dividend per share divided by earnings per share before extraordinary items (*DIV_E*). These earnings-based measures show how much of a firm's earnings are returned to shareholders in the form of dividends. However, these variables are not defined and are difficult to interpret when earnings are zero or negative. Thus, we only consider these alternative measures in order to check the robustness of our main results. We do not include repurchases in our measures since pre-committed dividends are effective means of mitigating agency conflict due to governance (John and Knyazeva, 2006). However, we also check the robustness of our results when repurchases are included.

(iv) Summary statistics

Panel A in Table 1 shows the distribution of our sample firms over the 1997-2008 period. The proportion of firms with diverse boards and the yearly proportion of female/minority directors on the board tend to be higher during more recent years. About 60% of the sample firms have female/minority directors on their boards who represent about 10% of all directors. There is some fluctuation in the

proportion of firms that pay dividends over the sample period, but a greater proportion of diverse-board firms (64% on average) pay dividends relative to that of all firms in the sample (53% on average).

**********Table 1 **********

We also report the sample distribution across the Fama and French 12 industries, excluding the utilities and financial industries in Panel B.[9] The *Consumer non-durables* and *Chemicals and allied products* industries are associated with the largest proportions of firms with diverse boards and the highest percentages of female/minority directors on the board, whereas the *Oil, gas, and coal extraction and products* and *Business Equipment* industries have the lowest percentages of diverse-board firms and diverse board members. Given the substantial variation in board diversity across industries, we incorporate industry effects as well as year effects in our multivariate regressions.

3. Univariate analysis

Before we analyze the effect of board diversity on dividend payout policy, we compare some board characteristics of dividend payers versus non-payers in Table 2. There is a significant difference in the proportion of firms with female/minority directors (*Diverse*) between dividend-paying firms (73%) and non-paying firms (46%). The proportions of firms with at least one female (*Female*) and minority (*Minority*) director on the board are also significantly higher for dividend-paying firms (71% and 20%, respectively) than for non-paying firms (45% and 7%, respectively). Dividend-paying firms have significantly larger boards (*Bsize*) than do non-dividend-paying firms. These results are not surprising given that dividend payers are larger firms than are non-payers (as shown in Table 3). The results also suggest that there are significant differences between dividend-paying and non-paying firms in other

[9] The Fama and French industry classification is obtained at http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

board characteristics, such as the proportion of independent directors, the number of outside board positions held by directors, and average tenure of board members. We also report the proportion of directors missing more than 25% of board meetings, the average age of directors, and an indicator for a dual position of CEO and board chairmanship.

**********Table 2**********

We also compare firm characteristics for four different groups in Table 3: dividend-paying and non-dividend-paying firms with and without diverse boards. For both dividend payers and non-payers, firms with diverse boards are significantly larger (*LogTA*) and less leveraged (*Leverage*). Diverse-board firms also have higher earned-to-total equity ratio (*RE_TE*) than do non-diverse-board firms. Regardless of board diversity, dividend-paying firms are associated with less cash holdings (*Cash_TA*) and less stock return volatility (*STDRET*) while having higher market-to-book ratio (Q), return on asset (*ROA*) and earned-to-total equity ratios. Dividend payout ratios (*DIV_TA* and *DIV_P*) indicate that firms with diverse boards pay significantly higher dividends than do firms without diverse boards. Interestingly, for dividend payers, firms with diverse boards tend to have higher R&D than do those without diverse boards. On the other hand, for non-payers, diverse-board firms have lower R&D than do non-diverse board firms.

**********Table 3**********

In order to examine how having additional female/minority directors on the board affects payout policies, we compare payout measures across the number of female/minority directors on the board in Panel A of Table 4. The result reveals a strong monotonic and positive relation between the number of female/minority directors and the proportion of firms that pay dividends, which finding suggests that the more female/minority directors the firm adds, the more likely it is to pay dividends. The dividend payout ratios (*DIV_TA* and *DIV_P*) show similar monotonic patterns.

We also examine the effects of adding female directors to the board on dividend payout policy in Panel B. Again, we observe monotonically increasing dividend payouts. The results for minority directors in Panel C also show similar patterns, except for payout ratio *DIV_P*, which shows a less clear pattern due to the small number of firms with multiple minority directors. These results are interesting and consistent with the argument that more diverse boards have greater influence on dividend decisions.

**********Table 4**********

If board diversity affects corporate payout policy, then we expect to observe significant changes in payout policy after firms add a new female/minority director. In order to examine this effect, we report changes in payout policy when companies add new female/minority directors to their boards in Panel D of Table 4. For those undergoing a change from a non-diverse to a diverse board, all dividend payout measures are, on average, significantly greater after the change. The proportion of firms paying dividends increases from 39.81% to 50.57% after they add female/minority directors to their boards, with the difference being significant at the 1% level. There are also significant increases in payout ratios after firms add female/minority directors to their boards for the first time (e.g., *DIV_TA* changes from 0.59% to 0.84% while *DIV_P* changes from 0.56% to 1.04%). Firms maintaining diverse boards throughout the sample period also show significantly greater dividend payouts relative to those that remain non-diverse-board firms. Interestingly, when firms switch from diverse to non-diverse-board firms, there are decreases in dividends, albeit statistically insignificant.

In order to further explore how adding a new female/minority director affects dividend payout over time, we select firms that add new female/minority directors between 2001 and 2004 (newly diverse-board firms). We then plot their average dividend payout measures over the entire sample period in Figures 1 to 3.[10] For comparison, we also include the average dividend payouts of firms whose boards

[10] There are 117 firms that add a new female/minority director during this period. As a precaution for extreme values, we winsorize payout ratios at 99%.

remain diverse and non-diverse, respectively, throughout the sample period. The plots show that before they add a new female/minority director to their boards, newly diverse-board firms' payouts resemble those of non-diverse-board firms. However, after they add new female/minority directors, their dividend payouts diverge from those of non-diverse-board firms and approach those of diverse-board firms as time passes.

**********Figures 1, 2, and 3**********

Overall, the univariate results suggest that board diversity brings a significant change in dividend payout policy. Given the significant differences in their board and firm characteristics, however, in the next section we turn to multivariate regression analyses in order to take these differences into consideration.

4. Multivariate analysis

We first test whether there is a significant difference in dividend payout policy between companies with and without diverse boards. The regression models include the following independent variables from the dividend literature: firm size (*LogTA*), leverage ratio (*Leverage*), research and development expenses (*R&D*), market-to-book ratio (*Q*), return on assets (*ROA*), earned-to-total equity ratio (*RE_TE*), cash holdings (*Cash_TA*), tangible assets (*PPE_TA*), and stock return volatility (*STDRET*). Lloyd et al. (1985) and Vogt (1994) show that firm size affects firms' dividend-payout ratio. Fama and French (2001) find that growth firms pay substantially less dividends than do non-growth firms. *R&D*, as a proxy for growth opportunity, is defined as the ratio of research and development expenses to the book value of total assets. We also include market-to-book asset ratio, where the market value of total assets is total assets minus common equity plus market value of equity. Leverage ratio, defined as total debt divided by book assets, controls for its substituting effect for dividend. DeAngelo, DeAngelo, and Stulz (2006) show that earned-

to-total equity ratio (retained earnings divided by total equity) is an important variable in explaining the dividend payout ratio. Following Chay and Suh (2009), we also include stock return volatility. Additionally, we include board size (*Bsize*) and the percentage of independent directors (*Pct_indep*) in order to control for board characteristics.

(i) Regressions

In Table 5, we estimate logit regressions in order to examine the effect of board diversity on the propensity to pay dividends. The dependent variable is the dummy variable for dividend payout (*DIV_dum*). In order to capture the effects of board diversity on dividend payout policy found from the univariate analysis, we use the following alternative board diversity measures: 1) percentage of female and minority directors on the board (*Pct_diverse*) and a dummy variable for a diverse board (*Diversity*); 2) percentage of female directors on the board (*Pct_female*) and a dummy variable for a board with a female director(s) (*Female*); and 3) percentage of minority directors on the board (*Pct_minor*) and a dummy variable for a board with a minority director(s) (*Minority*). We use year and industry effects to control for time trends and omitted-variable bias. We report robust t-statistics after adjusting for firm clustering.

**********Table 5**********

The results show that board diversity carries highly significant and positive coefficient estimates. Separate results for gender and ethnic diversity measures also show highly significant effects. Thus, the findings suggest that diverse boards are significantly more likely to induce firms to pay dividends than are non-diverse boards. It is interesting to note that the percentage of independent directors is not significantly associated with the dividend payout decision in the presence of female/minority board members. As expected, firms with large boards are more likely to pay dividends. The coefficient estimates on other control variables are consistent with previous studies and suggest that the decision to

pay dividends is positively associated with firm size, ROA, earned-to-total equity ratio, and asset tangibility, but negatively associated with leverage, R&D, and stock return volatility. In order to assess the effect on probability (rather than on the odds ratio) of board diversity, we estimate the marginal probability while holding all other variables at their respective means. The results (not reported in the table) suggest that the probability to pay dividends is about 15% higher when the firm has a diverse board.

Table 6 reports estimation results for the ordinary least square (OLS) regressions with dividend payout ratio (*DIV_TA*) as the dependent variable. Again, the coefficient estimates on all the board diversity measures (female and minority considered together or separately) are positive and significant. Thus, board diversity affects not only the payout decision, but also the payout level of dividends. Interestingly, the coefficient estimates on the percentage of independent directors (*Pct_indep*), which are not significant in logit regressions, are significant and positive in regressions on payout ratio. Thus, firms with more independent board members tend to pay higher dividends.

**********Table 6**********

Given that the dividend payout ratio is bounded by zero, we also run tobit regressions. Additionally, we apply the Fama-MacBeth methodology in order to gauge the statistical significance of the coefficients from a time series of yearly fitted coefficients. Since the results are similar to those in Table 6, we do not report them in the tables. Overall, the results suggest that diverse boards have positive effects on corporate dividend payout policy.

(ii) The effect of a female/ minority CEO

The benefits of board diversity are less likely when the board members and the CEO belong to the same group. Thus, we test if a diverse board has the same impact on the dividend payout policy for firms whose CEO is also an ethnic minority or a woman. The results are shown in Table 7. We run logit

regressions ((1) to (3)) for payout propensity (*DIV_dum*) and OLS regressions ((4) to (6)) for payout ratio (*DIV_TA*). Models (1) and (4) include a dummy variable that is equal to one for firms with a diverse CEO (*Diverse_CEO*) along with the diverse-board dummy variable (*Diversity*). The coefficient estimates on *Diverse_CEO* are not significant in both regressions, whereas the coefficient estimates on *Diversity* are positive and significant. When we divide the sample into firms with and without a female or minority CEO, the effect of board diversity on the payout policy is not significant for firms with a female or minority CEO, while the effect of board diversity on the payout policy for firms without a female or minority CEO remains positive and highly significant. When we further examine female and minority CEOs/directors separately, we find that the effect of minority board members on dividend payout is negative but not significant when the CEO is also a minority (not reported in the table). However, the effect of gender diversity on dividend policy remains significant whether the CEO is a female or not. These results suggest that the benefits of board diversity are reduced when both the CEO and directors are from the same racial background. In other words, directors are less likely to impose discipline on managers when they share the same racial background, which can be the manifestation of the racial/ethnic match preference documented by Price and Wolfers (2010) and Parsons et al. (2011).

**********Table 7**********

(iii) The effect of board diversity and free cash flow

If the positive impact of board diversity on the payout policy results from the board's enhanced monitoring, then the impact of board diversity on the payout policy is likely to vary systematically with firms' susceptibility to the free cash flow problem. Thus, we refine our tests by conditioning the effect of board diversity on the following three proxies for the degree of free cash flow problem: free cash flow (FCF), management entrenchment index (GINDEX as measured by Gompers, Ishii, and Metrick (GIM, 2003), and CEO ownership. We define: 1) *High-FCF* that equals one for firms with FCF greater than the

sample median and zero otherwise; 2) high GINDEX if GINDEX is greater than nine and low GINDEX otherwise; and 3) low CEO ownership if the proportion of CEO ownership is less than the sample mean and high CEO ownership otherwise.[11]

We want to consider how our results vary between subsamples of firms with varying abilities to pay dividends. In particular, the responses of dividends by firms are likely to be different according to board and governance characteristics. Sample splitting thus provides a way to consider differences in dividend responsiveness, even with imperfect measures of governance characteristics. In addition, it is easier and more intuitive to interpret the results when we interact free cash flow (FCF) with board diversity within subsamples of firms instead of dealing with the three-way interaction. However, the results with three-way interaction terms convey the same message.

The logit regression results for the dividend payout propensity are presented in Table 8. Regression (1) includes an indicator for the diverse board (*Diversity*), an indicator for high free cash flow (*High-FCF*), and the interaction between these two variables (*FCF*Diversity*). The positive coefficient (yet not significant) estimate on *Diversity* suggests that firms with diverse boards, on average, are more likely to pay dividends than are firms without diverse boards. The coefficient estimate on *High-FCF* is negative and significant, suggesting that high free cash flow is associated with low dividend payout propensity. The positive and significant coefficient estimate on the interaction variable (*FCF*Diversity*) suggests that there is a significantly greater effect of board diversity on dividend payout propensity for high FCF firms than for low FCF firms.

**********Table 8**********

We further compare the effects of board diversity on payout policy between low and high GINDEX firms and between low and high CEO ownership firms in regressions (2)-(5). The coefficient estimates on the interaction variable (*FCF*Diversity*) suggest that board diversity has the most pronounced and

[11] GIM define firms with GINDEX $\leq$ 5 as a "Democracy," whereas firms with GINDEX $\geq$ 14 are defined as a "Dictatorship." We use the cutoff value of GINDEX = 9 in order to include all firms. However, the results are similar when we use GIM cutoff values in defining high (Democracy) and low GINDEX (Dictatorship) and drop the observations in the mid-range.

significant effects on the propensity to pay dividends for firms with high GINDEX and low CEO ownership that yield large free cash flows. Thus, the results are consistent with our hypothesis that enhanced monitoring of a diverse board exerts a greater influence on the dividend payout policy of a high FCF firm that is also subject to managerial entrenchment and a lack of managerial incentives.

We also run the OLS regressions with payout ratio (*DIV_TA*) as the dependent variable in Table 9. The coefficient estimates on the interaction variable (*FCF*Diversity*) are all positive and significant. The results suggest that firms with diverse boards pay significantly higher dividends when they produce higher free cash flows regardless of managerial entrenchment or incentives.

**********Table 9**********

We also estimate regressions with alternative measures of board diversity, with *DIV_P* instead of *DIV_TA* as the dependent variable, and with various board characteristics included as additional control variables. The results (not reported) suggest that the effect of board diversity is the most significant for high FCF firms with high GINDEX and that the differential effects between high and low GINDEX/CEO ownership firms are less pronounced when *Minority* is used. The results are otherwise similar to those reported in Table 9.

(iv) *Propensity Score matching and difference-in-difference approach*

In this section we incorporate the difference-in-difference (DID) technique in order to examine the difference in dividend changes between firms with diverse and non-diverse boards. Masulis and Mobbs (2011) also use the DID analysis in order to examine the differential operating performance of firms whose inside directors gain outside directorship. We rely on the propensity-score matching method in order to match firms with similar conditional probabilities of adopting a diverse board given their characteristics before the treatment (adding a female/minority director). Our main interest here is to match firms with similar propensities to have a diverse board as predicted by their prior-treatment board and

firm characteristics, and then to examine the effect of board diversity on the dividend payout policy between treatment (diverse board) and control (non-diverse board) firms. Accordingly, we select firms that add a female/minority director to their boards for the first time during the sample period as the treatment group and firms that do not have female/minority directors on their boards during the sample period as the control group. We first run a logit regression in the year prior to the treatment with independent variables related to firm and board characteristics and with the dependent variable defined as a binary variable indicating whether or not a firm adds a female/minority director in the subsequent year.

We follow Adams and Ferreira (2009) to include board size (*Bsize*), the proportion of independent directors (*Pct_indep*), the logarithm of total assets (*LogTA*), and the number of business segments (*Segments*) in our logit model. Additionally, we include return on assets (*ROA*), Tobin's q (*Q*), and the proportion of director ownership (*Dir_own*).

From the logit regression for each year, we obtain the propensity score: the predicted probability of being a diverse board. We then use propensity scores to identify initial matched candidates by imposing a caliper (the maximum propensity score distance) within one quarter standard deviation of the logit of the propensity score. In this process, the observations are ordered randomly since nearest neighbor matching without replacement depends on the observation order. We then choose a matching firm from the initially matched firms for each firm in the treatment (diverse board) group that has the closest Mahalanobis distance calculated based on the propensity score and firm size, which produces the best balance for the covariates between groups. This method is considered superior to that which relies only on the propensity score (Dagostino, 1998). From this process, we generate 642 matched pairs with similar propensities and characteristics.

We run DID regressions, which, along with other control variables, include the following two dummy variables and their interaction: *Treatment*, which is equal to one for a firm that adds a female/minority director during the 1997-2008 sample period and zero otherwise; and *Post_Treat*, which is equal to one for the period after the firm adds a new female/minority director to its board and zero otherwise. The

interaction of these two dummy variables (*Treat_effect*) measures the treatment effect of board diversity; i.e., the change in dividend after adding a new female or minority director.

We report the estimation results in Table 10. The negative coefficient estimates on *Treatment* suggest that new diverse-board firms tend to pay less and lower dividends than do control firms. The coefficient estimates on *Post_Treat* tend to be negative as well, reflecting the diminishing dividends in more recent years (Fama and French, 2001; DeAngelo et al., 2006). The significant and positive coefficient estimates on treatment effect (*Treat_effect*) in all regressions suggest that firms pay significantly more dividends after adopting diverse boards relative to those whose boards remain non-diverse. The results suggest that, even though firms with newly adopted diverse boards pay, on average, less and lower dividends than do matched firms, they pay higher dividends after adopting diverse boards.

**********Table 10**********

5. Robustness checks

(i) *Instrumental variables approach*

In order to further address endogeneity issue, we first apply the 2SLS-IV approach. For instrumental variables, we consider the following: 1) an indicator variable for firms with notable progress in the promotion of women and minorities (*Diversity_str*);[12] 2) an indicator for firms whose chief executive officer is a female *(Woman_CEO)*; and 3) the proportion of directors with academic backgrounds (*Academic*). We choose these indicator variables since they are likely to be related to board diversity but are unrelated to dividend payout policy.

The results are reported in Table 11. The coefficient estimates on both *Diversity* and *Pct_diversity* are highly significant, confirming that our earlier results are robust to the endogeneity bias. We also report the endogeneity test and Hansen's J test statistics. The p-values of Hansen's J statistics suggest that the over-identifying restrictions, and hence, our instruments, are valid in our specifications. According to the

[12] We obtain *Diversity_str* from the MSCI (formerly KLD Research & Analytics, Inc.).

endogeneity tests, on the other hand, we cannot reject the null hypothesis that *Pct_diversity* is exogenous, whereas we strongly reject the null hypothesis that *Diversity* is exogenous.

We also rely on the GMM approach (not reported) that is known to be less prone to the endogeneity bias. Our results are robust to these alternative estimation approaches. However, to the extent that our instruments are imperfect and the endogeneity-robust approach still contains bias, our results are not fully free of the endogeneity bias. Additionally, the requirement of non-missing observations on instrument variables reduces the sample size significantly. Thus, we present our results with caveats.

In addition, we examine several alternative explanations for the effect of board diversity on dividends including the effect of institutional investors, signaling effect of dividend, and other board characteristics (not reported). Overall, our evidence is difficult to reconcile with alternative arguments of board diversity and dividend payout policy.

**********Table 11**********

(ii) Alternative specifications

We also produce results using alternative payout ratios (*DIV_NI* and *DIV_E*), including repurchases in payout ratio measures (dividend plus repurchase divided by total assets or net income) and alternative diversity measures. Our results do not show any material difference when we estimate the regressions with repurchases included. For earnings-based payout ratios, we do have less significant effect for minority directors. Otherwise, the conclusion does not change.

Given that the dividend payout ratio is bound by zero, we also run a tobit regression for the each of dividend payout ratios. We also control for the impact of other governance quality on the dividend payout ratio as used in John and Knyazeva (2006), Jiraporn et al. (2011), and Masulis and Mobbs (2011) with the following: multi-segment dummy, geographic-segment dummy and other board characteristics. Our results are robust to these alternative specifications and estimation methods.

We also examine whether our results are consistent over various sub-periods. From the sub-period analysis, we confirm that our results are not driven by the Sarbanes-Oxley (SOX) Act. Furthermore, we check our results excluding the 2007-2008 financial crisis period. Our results remain intact. Even though, for the sake of brevity, we do not report many results, they are available upon request from the authors.

6. Conclusion

We find that firms with diverse boards have a greater propensity to pay dividends and to pay larger dividends, especially when firms generate large free cash flows and when firms are prone to agency problems. Furthermore, adding a new female/minority director to the board is accompanied by significant increases in dividend payouts in the years that follow. Our findings are surprising since we did not presume such clear effects of board diversity on dividend payouts. Yet our evidence is consistent with the argument that board diversity enhances the monitoring and disciplining functions of the board for the benefit of shareholders. Our study helps to understand why there is value enhancement for firms with diverse boards as documented in previous studies. We conclude that a diverse board is more effective than a homogeneous board in monitoring and disciplining management through its impact on dividend payout policy.

References

Adams, R. B., Ferreira, D., 2009. Women in the boardroom and their impact on governance and performance. Journal of Financial Economics 94, 291-309.

Adams, R. B., Hermalin, B. E., Weisbach, M. S., 2010. The role of boards of directors in corporate governance: A conceptual framework & survey. Journal of Economic Literature 48, 58-107.

Ahern, K. R., Dittmar, A.K., 2012. The changing of the boards: the impact on firm valuation of mandated female board representation. Quarterly Journal of Economics 127, 137-197.

Alesina, A., La Ferrara, E. L., 2000. Participation in heterogeneous communities. Quarterly Journal of Economics 115, 847–904.

Ancona, D. G., Caldwell, D. F., 1988. Beyond task and maintenance: Defining external functions in groups. Group and Organization Studies 13, 468-494.

Anderson, R. C., Reeb, D. M., Upadhyay, A., Zhao, W., 2011. The economics of director heterogeneity. Financial Management 40, 5-38.

Baker, M., Wurgler, J., 2004. A catering theory of dividends. Journal of Finance 59, 1125-1165.

Barclay, M., Smith, C. W., 1995. The maturity structure of debt. Journal of Finance 50, 609-631.

Barth, M., Kasznik, R., 1999. Share repurchases and intangible assets. Journal of Accounting and Economics 28, 211-241.

Bates, T. W., Kahle, K. M., Stulz, R., 2009. Why do U.S. firms hold so much more cash than they used to?. Journal of Finance 64, 1985-2021.

Baysinger, B. D., Butler, H. N., 1985. Corporate governance and the board of directors: performance effects of changes in board composition. Journal of Law, Economics, and Organization 1:1, 101-124.

Bhattacharya, S., 1979. Imperfect information, dividend policy and the 'bird in the hand' fallacy. Bell Journal of Economics 10, 259– 270.

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

Carter, D. A., D'Souza, F., Simkins, B. J., Simpson, W. G., 2010. The gender and ethnic diversity of US boards and board committees and firm financial performance. Coporate Governance: International Review 18, 396-414.

Chang, X., Dasgupta, S., Hilary, G., 2006. Analyst coverage and financing decisions. Journal of Finance 61, 3009-3048.

Chay, J.B., Suh, J., 2009. Payout policy and cash-flow uncertainty. Journal of Financial Economics 93, 88-107.

Dagostino, R., 1998. Propensity score methods for bias reduction in the comparison of a treatment to a non-randomized control group. Statistics in Medicine 17, 2265-2281.

DeAngelo, H., DeAngelo, L., Stulz, R. M., 2006. Dividend policy and the earned/contributed capital mix: A test of the lifecycle theory. Journal of Financial Economics 81, 227-254.

Dobbin, F., Jung, J., 2011. Corporate board gender diversity and stock performance: the competence gap or institutional investor bias?. North Carolina Law Review 89, 809-838.

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

Easterbrook, F. H., 1984. Two agency-cost explanations of dividends. American Economic Review 74, 650-659.

Fama, E. F., Babiak, H., 1968. Dividend policy: an empirical analysis. Journal of the American Statistical Association 63, 1132-1161.

Fama, E. F., French, K., 2001. Disappearing dividends: changing firm characteristics or lower propensity to pay?. Journal of Financial Economics 60, 3–43.

Fama, E. F. and MacBeth, J. D., 1973. Risk, return, and equilibrium: empirical tests. Journal of Political Economy 81, 607-636.

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

La Ferreira, D., 2010. Chapter 12: Board diversity. In: Baker, H. K., Anderson R. (Eds.), Corporate Governance: A Synthesis of Theory, Research, and Practice. Wiley.

Fracassi, C., Tate, G., 2012. External networking and internal firm governance. Journal of Finance 67, 153-194.

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

Grossman, S.J., Hart, O.D., 1980. Takeover bids, the free-rider problem, and the theory of the corporation. Bell Journal of Economics 11, 42-54.

Gul, F. A., Srinidhi, B., Ng, A. C., 2011. Does board gender diversity improve the informativeness of stock prices?. Journal of Accounting and Economics 51, 314-338.

Hillman, A. J., Cannella, A. A, and Harris, I. C., 2002. Women and racial minorities in the boardroom: how do directors differ? Journal of Management 28, 747-763.

Hoffman, L.R., 1959. Homogeneity of member personality and its effect on group problem-solving. Journal of Abnormal and Social Psychology 58, 27-32.

Hong, L., Page, S. E., 2001. Problem solving by heterogeneous agents. Journal of Economic Theory 97, 123-163.

Hwang, B.-H., Kim, S., 2009. It pays to have friends. Journal of Financial Economics 93, 138-158.

Hwang, B.-H., Kim, S., 2011. The effect of social ties between the CEO and audit-committee members on earnings management. Purdue University, Working Paper.

Ibarra, H., 1992. Homophily and differential returns: sex differences in network structure and access in an advertising firm. Administrative Science Quarterly 37, 422-447.

Jensen, M. C., 1986. Agency costs of free cash flow, corporate finance takeovers. American Economic Review 76, 323-339.

Jiraporn, P., Kim, J.-C., Kim, Y. S., 2011. Dividend payouts and corporate governance quality: an empirical investigation. Financial Review 46, 251-279.

John, K., Knyazeva, A., 2006. Payout policy, agency conflicts, and corporate governance. New York University, Working Paper.

John, K., Knyazeva, A., Knyazeva, D., 2011. Does geography matter? Firm location and corporate payout policy? Journal of Financial Economics 101, 533-551.

Kandel, E., Lazear, E. P., 1992. Peer pressures and partnerships. Journal of Political Economy 100, 801-817.

Knyazeva, A., Knyazeva, D., Raheja, C., 2009. The benefits of focus vs. heterogeneity: an analysis of corporate boards. University of Rochester, Working Paper.

Krishnaswami, S., Subramaniam, V., 1999. Information asymmetry, valuation, and the corporate spin-off decision. Journal of Financial Economics 53, 73-112.

Kroszner, R. S., Strahan, P. E., 2001. Bankers on boards: monitoring, conflicts of interest, and lender liability. Journal of Financial Economics 62, 415−452.

Levi, M., Li, K., Zhang, F., 2011. Men are from mars, women are from venus: gender and mergers and acquisitions. University of British Columbia, Working paper.

Li, W., Lie, E., 2006. Dividend changes and catering incentives. Journal of Financial Economics 80, 293-308.

Lloyd, P., Jahera, J., Page, D., 1985. Agency costs and dividend-payout ratios. Quarterly Journal of Economics 24, 19-29.

Masulis, R. W., Mobbs, S., 2011. Are all insider directors the same? Evidence from the external directorship market. Journal of Finance 66, 823-872.

Masulis, R. W., Wang, C., Xie, F., 2012. Globalizing the boardroom – the effects of foreign directors on corporate governance and firm performance. Journal of Accounting and Economics 53, 527-554.

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

Northcraft, G.B., Polzer, J.T., Neale, M.A., Kramer, R.M., 1995. Diversity, social identity and performance: Emergent social dynamics in cross-functional teams. In: Jackson, S.E, Ruderman, M.N. (Eds.), Diversity in Work Teams. American Psychological Association, Washington DC.

Page, S. E., 2007. The difference: how the power of diversity creates better groups, firms, schools, and societies. Princeton University Press, Princeton, NJ.

Parsons, C. A., Sulaeman, J., Yates, M. C., Hamermesh, D. S., 2011. Strike three: discrimination, incentives, and evaluation. American Economic Review 101, 1410-1432.

Price, J., W., J., 2010. Racial discrimination among NBA referees. Quarterly Journal of Economics 125, 1859–1887.

Rose, C., 2007. Does female board representation influence firm performance? The Danish evidence. Corporate Governance: An International Review 15:2, 404-413.

Ross, S., 1977. The determination of financial structure: the incentive-signaling approach. Bell Journal of Economics 1, 23– 40.

Schmidt, B., 2009. Costs and benefits of friendly boards during mergers and acquisitions. Emory University, Working paper.

Shrader C., Blackburn, V. B., Iles, P., 1997. Women in management and firm financial performance: an exploratory study. Journal of Managerial Issues 9, 355-372.

Srinidhi, B., Gul, F. A., Tsui, J., 2011. Female directors and earnings quality. Contemporary Accounting Research 28, 1610-1644.

Stoll, M. A., Raphael, S., Holzer, H. J., 2004. Black job applicants and the hiring officer's race. Industrial and Labor Relations Review 57: 267–287.

Tajfel, H., Billig, M., Bundy, R. P., Flament, C., 1971. Social categorization and intergroup behavior. European Journal of Social Psychology 1, 149–78.

Thomas, D.A., Ely, R., 1996. Making differences matter: a new paradigm for managing diversity. Harvard Business Review, September-October, 79-90.

Tuhus-Dubrow, R., 2009. The female advantage. Boston Globe, May 3. Ideas, Section 1.

Vogt, C., 1994. The cash flow/investment relationship: evidence from U.S. manufacturing firms. Financial Management 23, 3-20.

Watson, W.E., Kumar, K., Michaelson, L.K., 1993. Cultural diversity's impact on interaction process and performance: comparing homogeneous and diverse task groups. Academy of Management Journal 36, 590-602.

Zahra, S. A., Stanton, W. W., 1988. The implications of board of directors composition for corporate strategy and performance. International Journal of Management 5, 229-236.

Appendix. Variable Definitions

Variables	Description
Firm characteristics	**Data source: Compustat, CRSP, CDA/Spectrum Institutional (13f) Holdings**
LogTA	Natural log of total assets
Leverage	Total debt / total assets
R&D	R&D expenses / total assets; if missing, recorded as zero
Q	(Book value of total assets + market value of equity- book value of equity)/ total assets
Q3	Three-year average of *Q* from years *t to t+3* at year *t*
High_q	One if *Q3* is greater than the sample median and zero otherwise
ROA	Net Income / total assets
RE_TE	Retained earnings / total common equity
Cash_TA	Cash and marketable securities / total assets
PPE_TA	Net Property plant & equipment / total assets
STDRET	Standard deviation of previous two years' daily stock returns
DIV_dum	One if cash dividend is positive, zero otherwise
DIV_TA	Cash dividends / total assets
DIV_P	Cash dividends / stock price (fiscal year end)
DIV_NI	Cash dividends / net income
DIV_E	Dividend per share/ earnings per share before extraordinary items
FCF	Free cash flow defined as operating cash flow minus capital expenditures divided by total assets
High-FCF	One for firms with free cash flow greater than the sample median, zero otherwise
P_institution	The percentage of institutional investor holdings
High_inst	One for firms with *P_institution* greater than the sample mean and zero otherwise
Inf_asymmetry	Standard deviation of analysts' earnings forecasts for next year earnings
High_asy	One if *Inf_asymmetry* is greater than the sample average and zero otherwise
Segments	Number of business segments
Board and CEO related	**Data source: IRRC and Risk Metrics**
Diversity	One if at least one board member is a female or minority, zero otherwise.
Num_diverse	Total number of female and minority directors in the board
Pct_diverse	Percentage of female and minority directors relative to total directors
Female	One if at least one board member is female, zero otherwise
Minority	One if at least one board member is minority (African-American), zero otherwise
Num_female	Number of female board members
Pct_female	Percentage of female board members in the board relative to total directors
Num_minor	Number of minority (African-American) board members
Pct_minor	Percentage of minority (African-American) board members in the board relative to total directors
Bsize	Board size (number of directors)
Pct_indep	Percentage of independent board members
Outside_board	Average number of outside board positions held by board members
Pct_absence	Average proportion of board members who attend meeting less than 75%
Avgage	Average age of board members
Tenure	Average tenure years of board members
Chair_CEO	One if the CEO is also the chairperson of the board, zero otherwise
Diverse_CEO	One if the CEO is female or minority, zero otherwise
GINDEX	Gompers, Ishii, and Metrics (2003) management entrenchment index
High-GINDEX	GINDEX > 9 and zero otherwise
CEO_own	Ratio of shares held by the CEO to total common shares outstanding
Academic	Percentage of directors with academic background
Dir_own	Percentage of director ownership
Diverse_Add	One if the firm adds a diverse director to its board, zero otherwise

Table 1. Sample distribution

The sample consists of 13,325 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP from 1997 to 2008. Panel A shows the number (#) of sample firms, the number of firms with diverse boards, the percentage of firms with diverse boards, and the percentage of female and minority directors in board each year. Panel B shows the sample distribution across Fama and French 12 industries excluding utility and financial industries.

Panel A. Sample distribution by year

Year	**# of Sample Firms**	**% of Firms Paying Dividend**	**# of Firms with Diverse Board**	**% of Firms with Diverse Boards**	**% of Diverse Directors in the Board**	**% of Diverse-Board Firms Paying Dividend**
1997	1,115	63.23	584	52.38	6.86	77.91
1998	1,243	58.17	591	47.55	6.28	73.27
1999	1,224	54.25	645	52.70	7.39	69.61
2000	1,239	51.65	676	54.56	7.83	65.24
2001	1,294	45.59	712	55.02	8.11	58.56
2002	1,071	48.36	686	64.05	12.15	58.31
2003	1,083	50.60	714	65.93	12.97	59.94
2004	1,087	53.17	741	68.17	13.56	61.54
2005	1,072	55.03	714	66.60	13.08	63.59
2006	1,035	55.55	715	69.08	13.59	63.78
2007	906	52.98	609	67.22	13.25	62.73
2008	956	51.88	654	68.41	13.78	60.09
Average	1,110	53.34	670	60.36	10.48	64.22
Total	13,325		8,041			

Panel B. Sample distribution across Fama and French industry classification

F-F Industry	**# of Sample Firms**	**# of Firms with Diverse Boards**	**% of Firms with Diverse Boards**	**% of Diverse Directors in the Board**
Consumer Non-Durables	1,103	907	82.23	17.88
Consumer Durables	433	271	62.58	10.99
Manufacturing	2,256	1,430	63.39	10.81
Oil, Gas, and Coal Extraction	666	310	46.55	7.69
Chemicals and Allied Products	569	458	80.49	16.60
Business Equipment	2,843	1,420	49.95	9.13
Telephone and Television Transmission	362	263	72.65	14.84
Wholesale, Retail, and Some Service	1,945	1,431	73.57	14.68
Healthcare, Medical, and Drugs	1,301	850	65.33	11.44
Other	1,847	1,148	62.15	11.00
Total	13,325	8,488		

Table 2. Comparison of board characteristics between dividend payers and non-payers

The sample consists of 13,325 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP from 1997 to 2008. The table shows the board characteristics and governance information of the sample firms divided into dividend payers and non-payers. Dividend Payers are firms with positive cash dividends and Non-Payers are firms without any cash dividend payouts. The mean and median difference test statistics are reported as t-stat and z-stat, respectively. Variable definitions are provided in the appendix.

	Non-Payers			**Dividend Payers**			**Difference**	
Variable	N	Mean	Median	N	Mean	Median	t-stat	z-stat
Diverse	6218	0.4627	0.0000	7107	0.7266	1.0000	32.02***	31.07***
Num_diverse	6218	0.6730	0.0000	7107	1.3371	1.0000	35.97***	34.93***
Pct_diverse	6218	0.0775	0.0000	7107	0.1289	0.1111	27.92***	27.28***
Female	6218	0.4490	0.0000	7107	0.7116	1.0000	3.88***	30.73***
Num_female	6218	0.5917	0.0000	7107	1.0962	1.0000	33.44***	33.38***
Pct_female	6218	0.0687	0.0000	7107	0.1064	0.1000	24.44***	24.56***
Minority	6218	0.0725	0.0000	7107	0.1974	0.0000	21.70***	20.78***
Num_minor	6218	0.0814	0.0000	7107	0.2409	0.0000	21.67***	20.94***
Pct_minor	6218	0.0088	0.0000	7107	0.0225	0.0000	19.10***	20.28***
Pct_indiverse	6190	0.0716	0.0000	7103	0.1265	0.1111	30.46***	29.17***
Bsize	6218	7.9791	8.0000	7107	9.8548	10.000	48.26***	46.33***
Pct_indep	6190	0.6443	0.6667	7103	0.6767	0.7059	10.63***	11.44***
Outside_board	5808	1.7225	1.6364	6402	1.9651	1.8750	22.12***	12.12***
Pct_absence	6218	0.0186	0.0000	7107	0.0172	0.0000	-1.64	1.45
Avgage	6218	57.8988	58.200	7107	60.1438	60.2308	30.61***	28.06***
Tenure	6218	10.5272	8.0000	7107	11.2478	8.0000	4.54***	1.86*
Chair_CEO	6218	0.5849	1.0000	7107	0.6740	1.0000	10.68***	10.64***
GINDEX	4874	8.3502	8.0000	6086	9.7042	10.000	28.02***	27.25***
CEO_own	3863	5.1460	1.3000	4374	3.6867	0.0000	-6.13***	14.99***

*** p<0.01, ** p<0.05, * p<0.1

Table 3. Firm characteristics by board diversity and dividend payout

The sample consists of 13,325 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP from 1997 to 2008. Firms are classified as Diverse Board if they have at least one female or minority director in their boards and Non-Diverse Board otherwise. Dividend Payers are firms with positive cash dividends and Dividend Non-Payers are firms without any cash dividend payouts. The mean and median difference test statistics are reported as t-stat and z-stat, respectively. Variable definitions are provided in the appendix.

	Non-Diverse Board *(Diverse= 0)*			**Diverse Board (*Diverse= 1*)**			**Difference**	
Variable	N	Mean	Median	N	Mean	Median	t-stat	z-stat
Dividend Payers								
DIV_TA	1753	0.0179	0.0104	5353	0.0218	0.0153	4.52***	13.12***
DIV_P	1753	0.0182	0.0109	5349	0.0219	0.0155	2.89***	11.33***
DIV_NI	1754	0.1410	0.1473	5353	0.4774	0.2390	2.00**	12.43***
LogTA	1753	6.7784	6.6665	5353	8.0787	7.9295	33.58***	32.08***
Leverage	1749	0.2142	0.2017	5344	0.2260	0.2186	2.75***	4.39***
R&D	1753	0.0176	0.0000	5353	0.0184	0.0009	0.84	4.69***
Q	1752	1.8888	1.5224	5348	1.9662	1.5965	2.38**	4.69***
ROA	1753	0.0487	0.0575	5353	0.0562	0.0572	2.99***	0.518
RE_TE	1754	0.5826	0.7072	5353	0.7785	0.8143	7.52***	10.66***
Cash_TA	1753	0.1165	0.0452	5353	0.0838	0.0439	-10.05***	-2.55**
PPE_TA	1753	0.5518	0.4666	5353	0.5649	0.5095	1.36	2.69***
STDRET	1749	0.1125	0.1020	5327	0.0921	0.0848	-17.60***	-17.44***
Dividend Non-Payers								
LogTA	3083	6.4139	6.3973	3135	7.1434	7.0290	24.23***	22.30***
Leverage	3067	0.1854	0.1424	3124	0.1956	0.1547	2.10**	3.32***
R&D	3083	0.0574	0.0208	3135	0.0453	0.0060	-6.17***	-6.13***
Q	3076	2.2199	1.7061	3124	2.2263	1.6725	0.16	-0.36
ROA	3072	-0.0200	0.0393	3128	0.0191	0.0467	5.45***	4.64***
RE_TE	3083	0.1450	0.3492	3135	0.2755	0.4282	4.05***	6.55***
Cash_TA	3079	0.2122	0.1460	3132	0.1901	0.1306	-4.48***	-2.31**
PPE_TA	3083	0.3829	0.2917	3135	0.3961	0.3053	1.55	2.74***
STDRET	3079	0.1680	0.1498	3123	0.1436	0.1279	-11.82***	-13.17***

*** p<0.01, ** p<0.05, * p<0.1

Table 4. Board diversity and dividend payout

The sample consists of 13,325 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP from 1997 to 2008. There are 4,837 firm-year observations with non-diverse boards and 8,488 firm-year observations with diverse boards. Panel A shows the association between the number of diverse (female and minority) directors in the firm's board and average dividend payout measures. Panels B and C show separate results for female and minority directors, respectively. Panel D shows the changes in dividend payouts for the same firms: when their boards switch from non-diverse to diverse boards; and when their boards switch from diverse to non-diverse boards, and the differences in dividend payouts between firms whose boards remain diverse and non-diverse (No Change). Variable definitions are provided in the appendix.

Panel A. The number of female and minority directors and dividend payout

# of Female and Minority Directors	**# of firm-year observations**	**% of Female and Minority Directors**	**% of Dividend Payer**	***DIV_ TA*** **(%)**	***DIV_ P*** **(%)**
0	5,283	0.00	36.77	0.66	0.68
1	4,457	11.47	57.03	1.19	1.26
2	2,248	20.42	68.59	1.47	1.31
3	856	28.44	78.15	1.84	2.06
4	306	35.58	82.68	2.22	2.05
5 or more	174	44.46	90.80	2.62	2.25
Average			53.34	1.11	1.12

Panel B. The number of female directors and dividend payout

# of Female Directors	**# of firm-year observations**	**% of Female Directors**	**% of Dividend Payer**	***DIV_ TA*** **(%)**	***DIV_ P*** **(%)**
0	5,476	0.00	37.44	0.68	0.70
1	4,998	11.24	59.06	1.22	1.28
2	2,278	19.76	72.17	1.63	1.60
3	427	27.93	79.39	2.19	1.69
4	111	33.90	82.88	2.17	2.27
5 or more	35	42.35	85.71	3.31	2.85
Average			53.34	1.11	1.12

Panel C. The number of minority directors and dividend payout

# of Minority Directors	# of firm-year observations	% of African-American Directors	% of Dividend Payer	*DIV_ TA* (%)	*DIV_ P* (%)
0	11,471	0.00	49.73	1.01	1.01
1	1,519	10.05	73.86	1.70	1.83
2	311	17.82	82.95	1.85	1.81
3	19	24.87	94.74	2.00	1.57
4	5	27.93	100	3.82	1.79
5 or more					
Average			53.34	1.11	1.12

Panel D. Change in board diversity and change in dividend payout

		Firm-Year Obs.	*DIV_dum* (%)	*DIV_TA* (%)	*DIV_P* (%)
Non-Diverse to Diverse	Before	1,296	39.81	0.59	0.56
	After	1,847	50.57	0.84	1.04
	Change		10.75***	0.25***	0.48***
Diverse to Non-Diverse	Before	262	45.80	0.98	0.93
	After	193	41.97	0.65	0.82
	Change		-3.83	-0.33	-0.11
No Change	Non-Diverse	3,158	35.24	0.70	0.70
	Diverse	6,240	68.17	1.56	1.45
	Difference		32.93***	0.86***	0.75***

*** p<0.01, ** p<0.05, * p<0.1

Table 5. The likelihood of dividend payout with logit regression

The sample consists of 13,202 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP with non-missing variables from 1997 to 2008. The dependent variable is dividend dummy (*DIV_dum*), which equals one if a firm pays cash dividend and zero otherwise. Variable definitions are provided in the appendix. In the parentheses are the robust standard errors adjusted for firm clustering.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	***DIV_dum***	***DIV_dum***	***DIV_dum***	***DIV_dum***	***DIV_dum***	***DIV_dum***
Diversity	0.248**					
	(0.103)					
Female		0.213**				
		(0.102)				
Minority			0.412***			
			(0.128)			
Pct_diversity				1.587***		
				(0.474)		
Pct_female					1.411**	
					(0.561)	
Pct_minor						3.203***
						(1.021)
Pctindep	0.392	0.408	0.423	0.326	0.375	0.425
	(0.288)	(0.288)	(0.285)	(0.288)	(0.288)	(0.285)
LogBsize	1.468***	1.492***	1.553***	1.527***	1.554***	1.587***
	(0.233)	(0.233)	(0.221)	(0.224)	(0.225)	(0.222)
Log TA	0.231***	0.232***	0.223***	0.216***	0.228***	0.223***
	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)	(0.046)
Leverage	-1.015***	-1.018***	-1.026***	-1.018***	-1.023***	-1.030***
	(0.307)	(0.306)	(0.306)	(0.308)	(0.308)	(0.306)
R&D	-3.991**	-3.979**	-4.026**	-3.986**	-3.945**	-4.026**
	(1.588)	(1.587)	(1.586)	(1.578)	(1.579)	(1.586)
Q	-0.009	-0.009	-0.003	-0.008	-0.009	-0.003
	(0.040)	(0.040)	(0.040)	(0.040)	(0.040)	(0.040)
ROA	0.589	0.579	0.569	0.591	0.587	0.568
	(0.437)	(0.437)	(0.439)	(0.437)	(0.437)	(0.439)
RE_TE	0.168***	0.168***	0.166***	0.165***	0.167***	0.167***
	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)	(0.042)
CASH_TA	-0.322	-0.327	-0.335	-0.366	-0.355	-0.329
	(0.405)	(0.405)	(0.403)	(0.408)	(0.407)	(0.403)
PPE_TA	0.757***	0.759***	0.759***	0.750***	0.758***	0.757***
	(0.171)	(0.171)	(0.171)	(0.172)	(0.171)	(0.171)
STDRET	-15.463***	-15.462***	-15.643***	-15.463***	-15.470***	-15.642***
	(1.107)	(1.108)	(1.099)	(1.103)	(1.108)	(1.100)
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	13,171	13,171	13,171	13,171	13,171	13,171

*** p<0.01, ** p<0.05, * p<0.1

Table 6. Dividend payout ratio regression

The sample consists of 13,201 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP with non-missing variables from 1997 to 2008. This table shows estimation results of the ordinary least square (OLS) regression model. The dependent variable is the ratio of cash dividend to total assets (*DIV_TA*). Variable definitions are provided in the appendix. In the parentheses are the robust standard errors adjusted for firm clustering.

VARIABLES	**(1)** ***DIV_TA***	**(2)** ***DIV_TA***	**(3)** ***DIV_TA***	**(4)** ***DIV_TA***	**(5)** ***DIV_TA***	**(6)** ***DIV_TA***
Diversity	0.001**					
	(0.001)					
Female		0.001*				
		(0.001)				
Minority			0.003***			
			(0.001)			
Pct_diversity				0.011***		
				(0.003)		
Pct_female					0.009***	
					(0.003)	
Pct_minor						0.021***
						(0.005)
Pctindep	0.004**	0.004**	0.004**	0.003**	0.003**	0.004**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
LogBsize	0.008***	0.008***	0.008***	0.008***	0.008***	0.008***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Log TA	0.000	0.000	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.008***	-0.008***	-0.008***	-0.008***	-0.008***	-0.008***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
R&D	0.001	0.001	-0.000	0.000	0.001	0.000
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
Q	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
ROA	0.002	0.002	0.002	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
RE_TE	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CASH_TA	0.005**	0.005**	0.005**	0.005**	0.005**	0.005**
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
PPE_TA	0.005***	0.005***	0.005***	0.005***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
STDRET	-0.062***	-0.062***	-0.063***	-0.061***	-0.061***	-0.062***
	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)	(0.004)
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Observations	13,171	13,171	13,171	13,171	13,171	13,171
R-squared	0.259	0.259	0.261	0.261	0.259	0.260

*** p<0.01, ** p<0.05, * p<0.1

Table 7. The effect of female/ minority CEO and the likelihood of dividend payout

The sample consists of 13,201 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP with non-missing variables from 1997 to 2008. This table shows the Logit and OLS regression model. For Models (1) to (3), the dependent variable is dividend dummy (*DIV_dum*). For Models (4) to (6), the dependent variable is payout ratio (*DIV_TA)*. *Diverse_CEO* equals to one if the CEO is female or minority, zero otherwise. *Diversity* equals to one if a firm has at least one board member is woman or minority, zero otherwise. Models (2) and (5) show the regression results of *Diverse_CEO* = 0 while Models (3) and (6) show the regression results of *Diverse_CEO* = 1. Variable definitions are provided in the appendix. In the parentheses are the robust standard errors adjusted for firm clustering.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	***DIV_dum***	***DIV_dum***	***DIV_dum***	***DIV_TA***	***DIV_TA***	***DIV_TA***
	All sample	Diverse_CEO = 0	Diverse_CEO = 1	All sample	Diverse_CEO = 0	Diverse_CEO = 1
Diverse_CEO	-0.066			0.001		
	(0.225)			(0.001)		
Diversity	0.385***	0.375***	1.153	0.001**	0.001**	0.001
	(0.105)	(0.110)	(0.883)	(0.000)	(0.000)	(0.003)
Pctindep	0.044	0.118	-5.387**	0.003**	0.003**	-0.017*
	(0.241)	(0.235)	(2.193)	(0.001)	(0.001)	(0.009)
LogBsize	0.743***	0.751***	1.224	0.007***	0.007***	0.001
	(0.171)	(0.171)	(1.472)	(0.001)	(0.001)	(0.005)
Leverage	0.198***	0.190***	0.414	0.000	0.000	0.003**
	(0.054)	(0.054)	(0.357)	(0.000)	(0.000)	(0.001)
R&D	-1.109***	-1.192***	3.334**	-0.008***	-0.009***	0.006
	(0.350)	(0.332)	(1.474)	(0.002)	(0.002)	(0.007)
Q	-3.699***	-4.078***	4.696	0.001	0.001	0.023
	(1.267)	(1.133)	(4.324)	(0.007)	(0.008)	(0.016)
ROA	-0.037	-0.043	0.338**	0.002***	0.002***	0.002**
	(0.037)	(0.040)	(0.171)	(0.000)	(0.000)	(0.001)
RE_TE	0.445	0.385	1.494	0.001	0.001	0.007
	(0.451)	(0.509)	(1.842)	(0.002)	(0.002)	(0.006)
Cash_TA	0.143**	0.149***	0.283**	0.001***	0.001***	0.000
	(0.057)	(0.056)	(0.118)	(0.000)	(0.000)	(0.000)
PPE_TA	-0.568*	-0.545	0.271	0.005**	0.004*	0.027***
	(0.314)	(0.358)	(1.793)	(0.002)	(0.002)	(0.009)
STDRET	0.649***	0.650***	1.311	0.005***	0.005***	0.008*
	(0.231)	(0.222)	(1.187)	(0.001)	(0.001)	(0.005)
	-17.539***	-17.719***	-15.927*	-0.065***	-0.064***	-0.076***
Year	YES	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES	YES
Constant	0.156	-1.149	0.194	0.015***	0.010	0.015***
	(0.383)	(2.213)	(0.386)	(0.004)	(0.009)	(0.004)
Observations	13,171	12,749	392	13,171	12,749	422
R-squared				0.494	0.493	0.589

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8. Board diversity, free cash flow and the likelihood of dividend payout

The sample consists of 13,202 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP with non-missing variables from 1997 to 2008. This table shows the logit regression model with interaction variables. The dependent variable is Dividend dummy (*DIV_dum*), which equals to 1 if a firm paid common cash dividend, zero otherwise. *Diversity* equals to one if at least one board member is female or minority and zero otherwise. *High-FCF* equals one if a firm's free cash flow is above the sample mean and zero otherwise. *FCF*Diversity* is the interaction variable of *High-FCF* multiplied by *Diversity* . Model (1) includes all sample firms. In Models (2) and (3), firms are divided into high GINDEX if GINDEX is greater than 9 and low GINDEX otherwise (Gompers, Ishii, and Metrick, 2003). In Models (4) and (5), firms are divided into low CEO ownership if the proportion of CEO ownership is less than the sample mean and high CEO ownership otherwise. Variable definitions are provided in the appendix. In the parentheses are the robust standard errors adjusted for firm clustering.

VARIABLES	**(1)** ***DIV_dum***	**(2)** ***DIV_dum***	**(3)** ***DIV_dum***	**(4)** ***DIV_dum***	**(5)** ***DIV_dum***
	All Sample	High GINDEX	Low GINDEX	Low CEO Ownership	High CEO Ownership
Diversity	0.156	0.059	0.090	0.089	0.322
	(0.127)	(0.218)	(0.146)	(0.141)	(0.225)
High-FCF	-0.224*	-0.376*	-0.021	-0.326**	0.053
	(0.121)	(0.227)	(0.133)	(0.136)	(0.204)
*FCF*Diversity*	0.380***	0.472*	0.213	0.514***	-0.015
	(0.143)	(0.248)	(0.164)	(0.164)	(0.245)
Pctindep	0.053	1.204**	-0.478	0.156	-0.616
	(0.272)	(0.537)	(0.307)	(0.307)	(0.467)
Log Bsize	0.766***	2.034***	0.732***	0.703***	1.062***
	(0.171)	(0.445)	(0.187)	(0.192)	(0.302)
LogTA	0.202***	0.239***	0.216***	0.266***	0.005
	(0.045)	(0.076)	(0.052)	(0.050)	(0.086)
Leverage	-1.120***	0.142	-1.608***	-0.893**	-1.450***
	(0.304)	(0.587)	(0.335)	(0.350)	(0.486)
R&D	-3.863**	-1.682	-5.126***	-3.827**	-4.643*
	(1.550)	(2.940)	(1.680)	(1.796)	(2.493)
Q	-0.037	0.079	-0.050	-0.032	-0.052
	(0.040)	(0.086)	(0.045)	(0.046)	(0.070)
ROA	0.485	1.531*	-0.024	0.891*	-0.533
	(0.444)	(0.924)	(0.483)	(0.515)	(0.759)
RE_TE	0.144***	0.183***	0.136**	0.154***	0.120
	(0.041)	(0.064)	(0.053)	(0.046)	(0.087)
Cash_TA	-0.582	-0.696	-0.204	-0.680	-0.119
	(0.397)	(0.683)	(0.433)	(0.493)	(0.547)
PPE_TA	0.657***	0.668**	0.750***	0.622***	0.810***
	(0.171)	(0.275)	(0.201)	(0.189)	(0.298)
STDRET	-17.342***	-14.512***	-16.469***	-17.207***	-16.577***
	0.156	0.059	0.090	0.089	0.322
Year	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES
Observations	13,202	4,680	8,522	10,360	2,842

*** p<0.01, ** p<0.05, * p<0.1

Table 9. Board diversity, free cash flow and payout ratio

The sample consists of 13,201 firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP with non-missing variables from 1997 to 2008. This table shows the ordinary least square (OLS) regression model with interaction variables. The dependent variable is the ratio of dividend to total assets (*DIV_TA*). *Diversity* equals to one if at least one board member is female or minority and zero otherwise. *High-FCF* equals one if a firm's free cash flow is above the sample mean and zero otherwise. *FCF*Diversity* is the interaction variable of *High-FCF* multiplied by *Diversity*. Model (1) includes all sample firms. In Models (2) and (3), firms are divided into high GINDEX if GINDEX is greater than 9 and low GINDEX otherwise (Gompers, Ishii, and Metrick, 2003). In Models (4) and (5), firms are divided into low CEO ownership if the proportion of CEO ownership is less than the sample mean and high CEO ownership otherwise. Variable definitions are provided in the appendix. In the parentheses are the robust standard errors adjusted for clustering by firm level.

VARIABLES	**(1)** ***DIV_TA***	**(2)** ***DIV_TA***	**(3)** ***DIV_TA***	**(4)** ***DIV_TA***	**(5)** ***DIV_TA***
	All Sample	High GINDEX	Low GINDEX	Low CEO Ownership	High CEO Ownership
Diversity	-0.002***	-0.001*	-0.002***	-0.000	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
High-FCF	-0.002**	-0.003***	-0.001	-0.000	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
*FCF*Diversity*	0.006***	0.005***	0.005***	0.004***	0.006***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Pctindep	0.003**	0.005**	0.002	-0.003	0.004***
	(0.001)	(0.002)	(0.002)	(0.002)	(0.001)
Log Bsize	0.007***	0.010***	0.007***	0.007***	0.007***
	(0.001)	(0.002)	(0.001)	(0.001)	(0.001)
LogTA	0.000	0.000	0.001*	-0.000	0.001*
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-0.008***	0.000	-0.012***	-0.014***	-0.006***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
R&D	-0.001	0.009	-0.009	-0.016	0.001
	(0.007)	(0.016)	(0.007)	(0.011)	(0.008)
Q	0.002***	0.004***	0.001***	0.001	0.002***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
ROA	-0.000	0.013***	-0.005***	-0.007***	0.003
	(0.002)	(0.005)	(0.002)	(0.003)	(0.002)
RE_TE	0.001***	0.001***	0.001***	0.001	0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Cash_TA	0.005**	0.002	0.007***	0.014***	0.002
	(0.002)	(0.004)	(0.003)	(0.004)	(0.003)
PPE_TA	0.005***	0.005***	0.005***	0.007***	0.004***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
STDRET	-0.062***	-0.066***	-0.055***	-0.051***	-0.062***
	(0.005)	(0.007)	(0.006)	(0.008)	(0.005)
Year	YES	YES	YES	YES	YES
Industry	YES	YES	YES	YES	YES
Observations	13,201	4,679	8,522	10,359	2,842
R-squared	0.501	0.376	0.256	0.237	0.322

*** p<0.01, ** p<0.05, * p<0.1

Table 10. Differential impacts of board diversity on dividend policy for matched firms

The sample includes propensity score-Mahalanobis distance matched 642 pairs of firms or 5,476 firm-year observations in RiskMetrics (former IRRC database) and Compustat/CRSP from 1997 to 2008. Pre-treatment is the period prior to the matching and post-treatment is the period after the matching. The treatment group consists of firms that added a new female/minority director to their boards for the first time. The control group consists of matched firms whose boards remain non-diverse. *Treatment* is equal to one for a firm that adds a female/minority director for the first time during the 1997-2008 sample period and zero otherwise. *Post_Treat* is equal to one for the period after the firm added a new female/minority director to its board. The interaction (*Treat_effect*) measures the treatment effect of board diversity. In Models (1) and (2), the dependent variable is dividend dummy (*DIV_dum*). In Models (3) and (4), the dependent variable is payout ratio (*DIV_TA*). Variable definitions are provided in the appendix. In the parentheses are the robust standard errors adjusted for firm clustering.

	(1)	(2)	(3)	(4)
VARIABLES	***DIV_dum***	***DIV_dum***	***DIV_TA***	***DIV_TA***
Treatment	-0.579**	-0.501**	-0.002*	-0.001
	(0.232)	(0.247)	(0.001)	(0.001)
Post_Treat	-0.976***	-0.625***	-0.002**	0.000
	(0.170)	(0.181)	(0.001)	(0.001)
Treat_effect	1.102***	0.916***	0.004***	0.002*
	(0.210)	(0.219)	(0.001)	(0.001)
Pctindep	-0.406	0.234	0.000	0.003*
	(0.286)	(0.324)	(0.001)	(0.002)
LogBsize	0.814***	0.825***	0.006***	0.006***
	(0.190)	(0.203)	(0.001)	(0.001)
LogTA	0.164***	0.230***	0.000	0.001*
	(0.049)	(0.054)	(0.000)	(0.000)
Leverage	-0.564	-0.989***	-0.006***	-0.008***
	(0.350)	(0.363)	(0.002)	(0.002)
R&D	-4.590***	-4.802**	0.005	0.005
	(1.495)	(1.909)	(0.009)	(0.010)
Q	-0.049	-0.025	0.002***	0.002***
	(0.043)	(0.046)	(0.000)	(0.000)
ROA	0.670	0.411	-0.001	0.000
	(0.501)	(0.531)	(0.002)	(0.002)
RE_TE	0.136***	0.099**	0.001***	0.001***
	(0.048)	(0.050)	(0.000)	(0.000)
Cash_TA	-0.898**	-0.210	0.001	0.005**
	(0.455)	(0.484)	(0.003)	(0.003)
PPE_TA	0.643***	0.558***	0.004***	0.005***
	(0.193)	(0.207)	(0.001)	(0.001)
STDRET	-15.690***	-18.521***	-0.075***	-0.067***
	(0.962)	(1.327)	(0.005)	(0.006)
YEAR	YES	NO	YES	NO
INDUSTRY	YES	NO	YES	NO
Observations	5,476	5,476	5,475	5,475
R-squared			0.188	0.130

*** p<0.01, ** p<0.05, * p<0.1

Table 11. Robustness test: 2SLS –IV regression

The sample consists of firm-year observations that are available from Risk Metrics (former IRRC database) and Compustat/CRSP with non-missing instrument variables from 1997 to 2008. This table shows the result for two stage instrumental variable method (2SLS-IV). The dependent variable is *DIV_TA*. *Diversity* equals to one if at least one board member is female or minority and zero otherwise. *Pct_diversity* is the percentage of diverse board members. In first stage, we use instrumental variables: *Woman_CEO*, *Academic*, and *Diversity_str*. Variable definitions are provided in the appendix. In the parentheses are the robust standard errors adjusted for firm clustering.

VARIABLES		**(1)**		**(2)**
	First Stage	***DIV_TA***	***First Stage***	***DIV_TA***
Diversity				0.010***
				(0.003)
Pct_diversity		0.021***		
		(0.007)		
Pctindep	0.117***	0.003**	0.390*	0.001
	(0.008)	(0.002)	(0.032)	(0.002)
LogBsize	0.057***	0.007***	0.600***	0.002
	(0.006)	(0.001)	(0.023)	(0.002)
LogTA	0.019***	-0.000	0.034***	-0.000
	(0.001)	(0.000)	(0.004)	(0.000)
Leverage	0.010	-0.005***	0.022	-0.005***
	(0.008)	(0.001)	(0.033)	(0.001)
R&D	0.013	0.006	0.045	0.006
	(0.032)	(0.006)	(0.144)	(0.006)
Q	0.003***	0.003***	0.006	0.003***
	(0.001)	(0.000)	(0.004)	(0.000)
ROA	-0.007	0.008***	-0.067	0.009***
	(0.015)	(0.002)	(0.061)	(0.002)
RE_TE	0.006***	0.002***	0.014***	0.002***
	(0.001)	(0.000)	(0.005)	(0.000)
Cash_TA	0.013	0.005***	-0.044	0.006***
	(0.009)	(0.002)	(0.041)	(0.002)
PPETA	0.009**	0.006***	0.016	0.006***
	(0.004)	(0.001)	(0.016)	(0.001)
STDRET	-0.168***	-0.074***	-0.834***	-0.069***
	(0.029)	(0.004)	(0.124)	(0.005)
Woman_CEO	0.175***		0.340***	
	(0.011)		(0.020)	
Academic	0.024***		0.054***	
	(0.003)		(0.008)	
Diversity_str	0.033*		0.051	
	(0.019)		(0.067)	
Year	YES	YES	YES	YES
Industry	YES	YES	YES	YES
Observations	7588	7588	7588	7588
R-squared	0.3260	0.2882	0.3136	0.2447
Hansen's J Test (p-value)	0.8578		0.9356	
Endogeneity Test (p-value)	0.1358		0.0053***	

*** p<0.01, ** p<0.05, * p<0.1