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The Relationship Between Organizational/Board Characteristics and the Extent of Female Representation on Corporate Boards

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Existing research suggests that women are significantly underrepresented in executive positions (Dreher *et al.*, 2011) and in the boardroom of public firms. As noted by Hillman *et al.* (2007), women made up 37 percent of the U.S. workforce in 2005 but only accounted for 14.7 percent of the board seats in Fortune 500 firms. Moreover, in the U.S. women hold half of the managerial and professional positions (Helms *et al.*, 2008). This situation exists in spite of many calls for increased diversity in corporate boards (Blackman, 2004; Singh, 2005) and research suggesting gender diversity is linked to increases in financial performance (Carter *et al.*, 2003).

The rationale for more female representation on corporate boards can be looked at from two major perspectives: ethical and financial (Campbell and Minguez-Vera, 2008). From an ethical perspective, it is viewed as immoral for women to be excluded from boards and thus organizations should increase female representation to create a more equitable situation between men and women. From a financial perspective, it can be argued that firms increasing diversity could increase performance (Orlitzky and Benjamin, 2003) and prior studies have found a positive relationship between the presence of female directors and firm performance (Campbell and Minguez-Vera, 2008; Erhardt *et al.*, 2003). As such, those lacking in gender diversity may remain so to the detriment of financial performance.

Currently, little research has focused on gender diversity in large corporate boards. While there is some breadth of research in this area, gender diversity lacks the depth present in other areas of governance research. Thus, there is much to learn in this understudied area of the literature. For example, prior studies have examined female

representation on boards over time (Daily *et al.*, 1999a), female membership on board committees (Bilimoria and Piderit, 1994), as well as how demographics differ between male and female directors (Hillman *et al.*, 2002). More recent research has examined organizational factors that impact the likelihood of female membership on boards (Hillman *et al.*, 2007), the relationship between female representation on boards and firm performance (Campbell and Minguez-Vera, 2008; Francoeur *et al.*, 2008), as well as the role of equality perception in female directors' contributions on boards (Nielsen and Huse, 2010). However, the literature is sparse in any of the above areas and more research is needed to extend or validate prior findings.

The current study seeks to build upon the work of Hillman *et al.* (2007) by examining organizational factors that impact female representation on large corporate boards. However, while Hillman *et al.* (2007) examined factors that influence the presence of one or more women on a board from a dichotomous perspective, the current study utilizes a dependent variable that measures the percentage representation of women on a given board. This allows for a different perspective and provides a richer source of data. Thus, this study provides multiple contributions to the current literature. First, an important contribution is the examination of not only female board representation, but also the level of female board representation. This is an important distinction as it allows for the examination of whether board and organizational characteristics impact not just the existence of a sole "token" board member, but also the existence of more inclusive representation involving multiple diverse members (Shore *et al.*, 2011). Also, the study expands the literature by examining the impact of organizational size, outside board representation, board size, board member representation on other boards, and older board representation on the level of female representation on a given board.

In the following paragraphs, the variables expected to impact female representation on boards and the associated theory are explored. Formal hypotheses are then developed concerning the relationship between organizational/board characteristics and female board representation. Next, the methodology used to test these hypotheses is presented. Finally, the results and implications of the findings are discussed.

Resource Dependence and Institutional Theory

Resource dependency theory (Pfeffer and Salancik, 1978) argues that firms are not self-sufficient, thus highlighting the interdependence between organizations and their environment. Central to this theory is that organizations are open systems and rely on the external environment for survival (Hillman *et al.*, 2007). This creates uncertainties and costs which firms must endure. Because firms are dependent on resources, they create links with the environment, and board directors are one such link (Johnson *et al.*, 1996). In selecting a director, firms can obtain a particular expertise or an important connection to a needed resource. Thus, the rationale behind the resource-dependence role of directors suggests that diversity of board representation enhances overall board expertise and the number of important external linkages to the firm's environment (Hillman *et al.*, 2002).

Institutional theory suggests that firms develop structural routines and procedures, not necessarily for efficiency, but to create legitimacy with the external environment (Meyer and Rowan, 1977). Organizations are perceived as legitimate if they act in a way that is consistent with societal expectations of firm behavior. For example, a church may be

expected to minister to the congregation, a non-profit charity may be expected to serve its constituents, while a small business would be expected to seek profits. Thus, while society expects a small business to pursue profitability, the expectations for a church would not include this type of behavior. Institutional theory suggests that organizations conforming to societal expectations are viewed as legitimate and as such gain access to needed resources (Meyer and Rowan, 1977). Moreover, organizations develop isomorphic processes and structures in response to strong institutional forces (DiMaggio and Powell, 1983). These institutional forces can be coercive (e.g., regulations forcing the same behavior among firms), mimetic (e.g., firms copying the behavior of successful firms), or normative (e.g., professionals in an industry all receiving similar training). According to institutional theory, conformity to these forces, and thus societal and political/legal norms, may be more important than economic factors for long-term success.

Pfeffer and Salancik (1978) suggest that board linkages provide three benefits to organizations. The first benefit is that of advice and counsel. From a diversity perspective, prior research suggests that different genders have different norms, attitudes, and beliefs (Pelled *et al.*, 1999) and that gender diversity helps advance group creativity (Nemeth, 1986). Moreover, diverse groups produce more potential solutions to sets of problems (Watson *et al.*, 1993). While some outcomes of diversity could be viewed negatively, overall, the benefits of diversity should outweigh any costs. Given this, it is likely that firms with more board diversity will enhance the benefit of advice and counsel from the board (Hillman *et al.*, 2007).

Another benefit of board linkages is to provide legitimacy for the organization (Pfeffer and Salancik, 1978). The extent to which certain individuals are leaders or board members in a firm can provide legitimacy for the organization and its strategies and practices (Meyer and Rowan, 1977). Thus, factors such as societal pressure to increase female representation on boards (Elgart, 1983) and the increasing scrutinization of boardroom diversity from institutional investors (Singh, 2005) have added legitimacy to organizations with greater gender diversity (Milliken and Martins, 1996).

The final benefit suggested by Pfeffer and Salancik (1978) involves securing channels for communicating information, preferred access to commitments, or support from important external elements. This benefit allows for communication with various constituents as well as the access to certain commitments and resources that may not have otherwise been readily available. Clearly, many of a firm's constituents are female and indeed the purchasing power of women is large in the United States (Daily *et al.*, 1999a). Thus, it goes without saying that women provide a link of communication between the external environment (in this case understanding customers) and firms that is not likely to occur for firms lacking female director representation. It is also argued that female board members can help generate commitment from female employees (Hillman *et al.*, 2007). Based on the argument that many women leave organizations for lack of growth opportunities (Cox and Nkomo, 1991) and this turnover is costly (Robinson and Dechant, 1997), it is logical to suggest that female directors may serve as a signal to women working in the organizations that future opportunities exist for advancement (Hillman *et al.*, 2007; Milliken and Martins, 1996). Lastly, a link between female board members and suppliers may also exist. As noted by Hillman *et al.*, (2007), many institutional investors have policies requiring investment in firms with commitment to gender diversity (Coffey and Fryxell,

1991). Moreover, female-owned businesses play an ever increasing role in the economy and women may be best suited as a link to those businesses.

Given the above, it is likely that several organizational variables will impact the representation of women on corporate boards. Resource dependency theory suggests that variables such as the portion of outside directors, board size, and director interlocks impact the resource role of the board (Johnson *et al.*, 1996) and thus are likely to impact board diversity. Also, and in addition to these variables, due to the legitimacy and mimetic forces embedded in institutional theory (Pfeffer and Salancik, 1978), firm size, the proportion of outside directors, director interlocks, and age of directors should impact board gender composition. As such, in the following paragraphs, hypotheses are developed that propose relationships between female board representation and the following five variables: firm size, outside board membership, board size, director linkages, and director age.

First, as argued by Hillman *et al.* (2007), organizational size should impact female representation in that larger firms are better known and face a greater level of pressure to conform to societal norms than smaller firms (Meyer and Rowan, 1977). The extent to which societal norms prefer diversity (Elgart, 1983) suggests larger firms face greater pressure to conform and as such will have more female board representation. In addition, prior research suggests larger firms dedicate more resources towards diversity training (Hyland and Marcellino, 2002) which may allow for more openness to women in business and result in more female board representation. For example, a Society for Human Resource Management study found that 75 percent of Fortune 500 companies offered diversity training programs compared to only 36 percent for companies of all sizes (Lippman, 1999). Moreover, as noted by Hyland and Marcellino (2002), for Fortune 1000 firms the number of firms with at least one woman on the board was 26% lower in the second 500 firms when compared to the first 500 firms. Firm size has been measured in multiple ways such as via revenue, assets, and number of employees. However, it can be argued from an organizational legitimacy perspective that size based on market evaluation and thus overall value of the firm may be the most important. In other words, pressure and influence from investors and in particular institutional investors are significant and affect the formation of corporate boards (Johnson *et al.*, 1996). Clearly, firms with greater market value are more likely to incur pressure and influence from investors and large block-holding investors in particular. Thus, the following hypothesis is offered.

H1: *The larger the firm based on firm value, the greater the female representation on the corporate board.*

Another variable that may impact gender diversity on corporate boards is outside representation. Outside board members are those that are not employees of the organization and do not have a significant relationship with the firm such as being a former employee or having a financial relationship with the organizations. There are multiple reasons for why greater levels of outside board representation may lead to more female board representation. First, prior literature suggests that outsiders enhance effort norms of the board (Forbes and Milliken, 1999) because outside board members view director tasks as separate but complementary to that of management while inside board members are more likely to view their director roles as an extension of their managerial responsibilities (Mace, 1986). Also, as suggested by Forbes and Milliken (1999), outside

representation may drive insider board members to show that they have their "house in order" which in turn leads to higher expectations of effort among insiders. If diversity is indeed an accepted societal norm, then from an institutional theory perspective insiders wanting to demonstrate that their "house is in order" would be more likely to include diversity on the board. It is argued that outsider representation creates more diversity on boards and thus an enhanced level of cognitive conflict (Forbes and Milliken, 1999). Cognitive conflict refers to differences in judgment, ideas, and viewpoints between group members (Jehn, 1995) and can result in better decision-making. Thus, from a resource dependency theory perspective greater diversity on a board could also provide a needed resource to the firm. This cognitive conflict produces more critical investigation by the group (Amason, 1996) and may result in the consideration of more alternatives in strategic decision-making (Forbes and Milliken, 1999) such as the selection of directors. Also, firms form links with other firms through directorships and this serves as an important method for organizations to obtain information, communication, and resources (Pfeffer, 1972). The extent to which a firm has a greater number of outside directors suggests the firm may be linking to the external environment in a more diverse method. Prior research suggests that one source of information communicated through director relationships is the practice of gender diversity (Hillman *et al.*, 2007). Given this, from an institutional theory perspective, greater outside representation should provide more information to a firm with regards to female board representation practices. Thus, it can be argued that firms with greater outside board members will have greater female board representation. This leads to the next hypothesis.

H2: *The greater the level of outside board membership, the greater the female representation on the corporate board.*

The overall size of the board may also impact female board representation, not just from the perspective of whether the board has a female director, but more specifically the percentage of women on the board. It is logical to suggest that larger boards are more likely to have a female on the board simply from a numbers perspective. Indeed, the larger a board, the more likely it is individuals will come from a more diverse set of backgrounds. Given this, members of larger boards will be more likely to become more familiar with a more diverse group of board members. While not directly hypothesizing a relationship between board size and female representation, Hillman *et al.* (2007) found a highly significant relationship between board size and the presence of a female on the board. From a network theory perspective, it can be argued that social ties among individuals, such as serving on boards together, allow the opportunity for social cohesion (Emirbayer and Goodwin, 1994). This greater familiarity among individuals may allow for more individual evaluation of diverse board members (Messick and Mackie, 1989) and thus helps to reduce stereotyping (Westphal and Milton, 2000). Shore *et al.* (2011) argued that in inclusive groups, individual or token members may enjoy positive experiences because they are valued for their uniqueness but also feel belongingness within the group. Moreover, the existence of multiple women leads to more equally balanced groups and should result in better relationships among members (Martin, 1985). From an institutional theory perspective, it is likely that larger boards will feel greater pressure to have adequate female board representation so as to align with societal norms. Thus, since larger boards are more

likely to have female representation (Hillman *et al.*, 2007), it is likely that the presence of a female on a board reduces bias among future female candidates and thus increases the extent of female representation on a board. Moreover, from a resource perspective, it is likely that larger boards will seek out a more diverse set of experiences as the nature of the larger board allows for the firm to tap into multiple types of experiences and backgrounds. As such, board size should not only impact female representation on a board, but also the extent of female representation on a board. This leads to the next hypothesis.

H3: *The larger the board, the greater the female representation on the corporate board.*

In addition to outside board representation and board size, the extent to which board members serve on multiple boards may impact female board membership. Following the same line of logic as the above hypotheses, firms with directors serving on multiple boards provide the group with a more diverse set of perspectives with regards to board dynamics and formation. Greater familiarity of diverse individuals by board members should help reduce stereotyping (Westphal and Milton, 2000) and allow for more individual evaluation of diverse board members (Messick and Mackie, 1989). Moreover, firms with multiple links to external firms should have a greater level of knowledge of currently accepted practices such as board diversity. As such, from an institutional theory perspective, the extent to which a firm has directors serving on multiple boards should increase a firm's openness to female board representation. This leads to the next hypothesis.

H4: *The greater the number of directors serving on multiple boards, the greater the female representation on the corporate board.*

The age and embeddedness of directors on the board may also impact the representation of female directors. Research by Duehr and Bono (2006) suggested that stereotypes toward women have been improving among male managers over the past 30 years. Earlier research by Schein (1973) found that the characteristics of successful middle managers were much more similar to characteristics attributed to men as opposed to women. Schein (1975) replicated this research by sampling women managers and found similar results suggesting that gender stereotypes also existed among females. Heilman *et al.* (1989) conducted another important extension in this line of research and found similar results to Schein's (1973, 1975) earlier work with regards to male stereotypes. This suggested little change in the stereotypes over time for men. This result is not altogether surprising given that prior research suggests that in spite of changing social influences, stereotypes do not change quickly (Lueptow *et al.*, 2001). However, Duehr and Bono's (2006) findings suggested that male managers rate women as more leader-like than was the case 15 to 30 years ago at the time of the Schein (1975) and Heilman *et al.* (1989) studies. Further, Daily *et al.* (1999a) found a significant increase in female board representation from 1987 to 1996 providing support for the notion that inclusion has increased over the past 15 years. Moreover, the literature proposes that recent trends in an ideology that values cultural diversity suggests that when individuals are not inclined towards stereotyping or categorization, then positive evaluations result for those in diverse groups (Larkey, 1996). Thus, from an institutional theory perspective, it may be the case that in prior years mimetic behavior took place among men keeping women from serving on

boards while in more recent years mimetic behavior has opened doors for female directors. From a resource dependency perspective, it may be the case that younger board members are more likely to view women as a valuable and needed resource that may provide benefit to the firm. Given that men still serve as the gatekeepers in most organizations, it seems likely that organizations with younger board members are more likely to have a larger female representation on the board than firms with older directors on the board. This leads to the following hypothesis.

> ***H5:*** *Firms with a greater percentage of older board members will have less female representation on the board of directors than firms with a lower percentage of older board members.*

METHODS

Population and Sample

The population for this study consisted of large publicly traded firms in the United States. The sample included over 3200 companies included in The Corporate Library® Board Analyst database. This database contains companies included in the S&P 500, S&P MidCaps 400, S&P SmallCaps 600, S&P/TSX 60, Fortune 1000, and Russell 3000. To provide a recent time frame, data were collected for the year 2007. Complete data was not available for all companies and thus the final sample included 3108 firms.

Measures

Dependent Variable. Prior research has measured female board representation dichotomously, coding 1 for firms with at least one woman on the board and 0 for firms without a woman on the board (Hillman *et al.*, 2007). To identify female board representation in the current study, percentage of women directors was calculated as the sum of women directors on a given board divided by the total number of all directors on a given board (excluding Emeritus and Advisory member positions). This allowed for the measurement of multiple female members on a given board and also allowed for a relative measure to other boards that would not exist using the absolute number of female directors. In other words, a twelve-person board with two women directors (16.7% women) has lower female board representation than an eight-person board with two women directors (25% women).

Independent Variables. Size was calculated as the natural log of ***market capitalization*** (number of shares outstanding multiplied by market price at year end). Market capitalization reflects the market's assessment of overall firm value. Moreover, it is based on stock price and thus reflects future earnings of the firm. Lastly, directors often receive a significant portion of their compensation from stock price base incentives.

Outside directors was measured as the sum of all fully independent directors on a given board divided by the total number of directors on a given board (not including Emeritus and Advisory member positions). This excludes all directors that are executives of the company and all outside directors that have or have had a significant relationship with the company (such as former employees or those having a financial relationship with the firm).

Board size was calculated as the total number of directors on a given board (excluding Emeritus and Advisory member positions).

The number of directors serving on multiple boards (***Directors on Over 4 Public Boards***) was measured as the sum of directors with more than four corporate (public) directorships on a given board divided by the total number of directors on a given board (not including Emeritus and Advisory member positions). It should be noted that directors serving on more than three boards was also collected and analyzed with all regression results remaining the same in terms of direction and significance.

The number of older directors (***Directors over 70***) was measured as the sum of all directors over the age of 70 divided by the total number of directors on a given board (not including Emeritus and Advisory member positions). The cut-off age of 70 was chosen because this age range should represent those whose norms and beliefs were shaped in a different era than today. Schein (1973, 1975) found bias in favor of male managers and follow-up research echoed these results (Daily *et al.*, 1999b; Heilman *et al.*, 1989). However, more recent research suggests this bias may be changing (Duehr and Bono, 2006). Selecting the cut-off age of 70 and over should result in those that were in management positions 20 to 30 years ago and thus may be biased against female board representation. Utilizing the number of board members older than a cut-off age provides an advantage over average age in that if a board had eight members (half age 50 and half age 60), the average would be 55 while a board with 8 members (half age 70 and half age 40) would also have an average age of 55. This study attempts to determine if having board members over a certain age impacts female board representation, and using a cut-off age allows for this analysis.

Control Variables

Industry was measured utilizing the United States Department of Labor SIC division structure. Firms were categorized into one of nine industry divisions which include: (1) Agriculture, Forestry, and Fishing; (2) Mining; (3) Construction; (4) Manufacturing; (5) Transportation, Communications, Electric, Gas, and Sanitary Services; (6) Wholesale Trade; (7) Retail Trade; (8) Finance, Insurance, and Real Estate; (9) Services. A tenth industry classification exists in the United States Department of Labor SIC division structure but since all firms in the sample are publicly traded, no firms were in the public administration category. In the analysis, r-1 dummy variables were included such that eight dummy variables (9-1) were entered in the regression equation. The last industry, services, was the excluded variable, and thus the industry regression coefficients explain the amount of change in female board representation when a firm is in the given industry versus the services industry.

Data Analysis

Data from the 3108 firms were analyzed using multiple linear regression. This method is appropriate because of the expected relationship of the dependent variable with the multiple independent variables (Cohen and Cohen, 1983). To determine the effects of the organizational/board variables on female board representation, the multiple independent and control variables were regressed on female board representation. The relationship

between a firm's female board representation and the independent variables was modeled as follows:

$$Y_i = B_0 + B_1X_1 + B_2X_2 \ldots B_{13}X_{13} + \text{control variables} + \varepsilon,$$

where Yi is the percentage of female board membership for firm i, X_1 represents the first of thirteen independent variables, X_2 represents the second of the thirteen independent variables,...and X_{13} represents the thirteenth independent variable. In the regression model, the control variables were entered in the first stage and the independent variables were entered in the second stage. An alpha value of 0.05 was used as the critical value for significance testing.

RESULTS

Examination for multicollinearity among the independent variables was done prior to performing the analyses. While significance among variables in the correlation matrix existed, no particular correlations suggested that multicollinearity exists. To further test for the existence of multicollinearity, tolerance coefficients and an associated variance-inflation factor (VIF) were generated for each independent variable. All tolerance coefficients and VIFs fell well within the appropriate ranges suggesting that no multicollinearity problems existed.

Summary statistics for all variables are provided in Table 1 and the presentation of the model results are reported in Table 2. Overall, women accounted for over nine percent of the board seats in the sample of companies with the total number of directors slightly less than nine per company. This translates to women accounting for less than one board seat per company in the current sample. Firms in the sample had, on average, about a 72% outside to total director ratio. The largest industries represented in the sample were manufacturing (39%) and financial, insurance, and real estate (21%). The correlation matrix suggests that female board representation as measured by the percentage of women on the board had a significant positive relationship with several variables including outside director percentage, number of directors serving on more than four boards, as well as total number of directors. A significant negative correlation existed between female board representation and the percentage of board members that are active CEOs, the percentage of directors with over 15 years tenure on the board, and the percentage of board members over the age of 70. Among industries, retail trade had the largest positive correlation with female board membership while mining had the largest negative correlation with female board membership.

Table 1
Descriptive Statistics and Correlations

Variable	Mean	SD	1	2	3	4	5
1. Market Capitalization	6.027	2.151					
2. Outside Directors	0.721	0.141	0.007				
3. Board Size	8.871	2.525	0.017	0.110***			
4. Directors Over 4 Public Boards	0.017	0.046	0.027+	0.065***	0.051**		
5. Directors Over 70	0.097	0.128	-0.024*	-0.132***	0.012	0.005	
6. Women Directors	0.093	0.097	0.024+	0.185***	0.256***	0.063***	-0.122***

N = 3108
+ $p<0.10$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$

Note: Industry dummy variables were not included in the correlation matrix due to the number of industries controlled for in the analyses. However, mining, construction, and manufacturing were significant and negatively correlated with women directors. Transportation, communications, electric, gas, and sanitary services as well as retail trade were significant and positively correlated with women directors. Manufacturing (39%), finance, insurance and real estate (21%), services (16%), transportation, communications, electric, gas, and sanitary services (9%), and retail trade (6%) industries accounted for the largest proportion of firms in the sample.

Table 2
Regression Results

Independent Variables	Effect[a]	
Stage 1		
Farming	0.001	
Mining	-0.090***	
Construction	-0.028	
Manufacturing	-0.002	
Transportation	0.043*	R^2 =0.026
Wholesale Trade	0.018	
Retail Trade	0.124***	
Finance	0.041	
Stage 2		
Farming	0.000	
Mining	-0.086***	
Construction	-0.031	
Manufacturing	-0.031	
Transportation	0.009	
Wholesale Trade	0.004	
Retail Trade	0.109***	
Finance	-0.031	
Market Capitalization	0.011	R^2 =0.127
Outside Directors	0.147***	R^2 change =0.099***
Board Size	0.240***	Adj R^2 =0.123
Directors Over 4 Public Boards	0.041*	
Directors Over 70	-0.094***	

N= 3108
[a] Beta Coefficients are standardized
*p<0.05; ** p<0.01; *** p<0.001

The research hypotheses suggest that a significant relationship exists between organizational and board characteristics and the percentage of female representation on the boards of directors. Specifically, Hypothesis 1 predicts that a positive relationship exists between firm size and female board representation. In the regression analysis, the effect of firm size was positive but not significant. As such, Hypotheses 1 was not supported. Thus, in the current study, the size of the firm as measured by market value did not significantly impact the percentage of women on the board. Hypothesis 2 suggests that a positive relationship exists between the percentage of outside board members and the percentage of women on the board. As expected, the effect of outside board membership was positive and significant ($p<0.001$) when regressed on the percentage of women on the board. Thus, Hypothesis 2 received strong support.

Hypothesis 3 predicts a positive relationship between board size and female board representation. As expected, the effect of board size was positive and significant ($p<0.001$), providing strong support for Hypotheses 3. Thus, in the current study, the number of board members played a significant role in impacting the percentage of women on the board. Hypothesis 4 predicts a positive relationship between the number of directors serving on multiple boards and female board representation. The effect of number of directors serving on multiple boards was positive and significant ($p<0.05$). Thus, Hypothesis 4 was supported.

Hypothesis 5 predicts that firms with a higher number of older board members will have less female board representation than firms with a lower number of older board members. As expected, in the regression analysis the effect of the number of older directors on female board representation was negative and significant ($p<0.001$). As such, Hypothesis 5 was supported.

DISCUSSION

Past research examining gender diversity in the boardroom has been limited. Moreover, research dedicated to what organizational factors impact female board representation has been nearly non-existent. In response to this lack of research, the current study seeks to extend the work of Hillman *et al.* (2007) by examining the relationship between organizational/board characteristics and the extent of female representation on corporate boards. One limitation of Hillman *et al.* (2007) was the measurement of female representation on boards. In their study, female representation was measured dichotomously as existing or not existing. Thus, firms with multiple female board members were measured in the same way as those with one. In the current study, female representation was measured by the percentage of women on a board of directors. This not only provides a richer source of data for female board representation but also allows for the study of factors that impact the extent of female board representation and not just whether a board has a female member.

Findings from this study both contrast and build upon prior research. First, while prior research finds a positive relationship between organizational size and female board representation (Hillman *et al.*, 2007), the results in this study do not confirm this finding and thus do not support the legitimacy dimension of institutional and resource dependency theory for this variable. These result differences could be due to the specific measure of size used in this study. While prior research such as Hillman *et al.* (2007) utilized sales, number of employees, or firm assets as a measure of size, the current study utilized the market value of the firm to measure firm size. This measure was selected because the market valuation of publicly traded firms should serve as a proxy for firm visibility and an indicator of how much scrutiny or pressure is applied by stakeholders. The current results clearly suggest this may not be the case. However, the extent of outside board membership, the extent of board members serving on multiple boards, and board size are found to be related to greater female board representation. This provides support for the logic of institutional and resource dependency theory. Larger boards, those with members on multiple boards, or those with more outside members are likely more diverse and thus communicate and develop connections with a more diverse population. This in

turn may lead to boards securing more diverse board members to create links to resources and provide legitimacy for the firm.

The results also suggest that the age of some board members may impact female representation on boards. Firms with a greater number of directors over the age of 70 had less female directors than those with fewer directors over the age of 70. Given the prior research on stereotyping, it may be the case that stereotypes of women in the boardroom may still exist for some groups of individuals and it is not unreasonable to expect that board members over the age of 70 would retain such stereotypes if their service on boards or in top management began when very few women had such positions. In the current study, more board seats were held by those over the age of 70 than were held by females overall. The positive aspect to this finding is that as turnover of more senior board members naturally occurs, the degree of this stereotyping should decrease over time.

A practical implication for organizations is that women are still significantly underrepresented on corporate boards and that some organizational/board characteristics may be hindering the growth of female board representation. If the gender bias is unintended in firms, the results of this study shed some light on factors that are related to lower levels of female representation. Beyond the obvious move of nominating more women to serve on boards, firms should create organizational and board dynamics that foster a culture that is open to a diverse pool of board candidates. Activities such as diversity training could aid in creating such cultures. In doing so, organizations may benefit from not just gender diversity, but other forms of diversity as well.

Like most research efforts, the current study does have limitations that provide opportunities for future research efforts. First, the use of cross-sectional data does not provide as rich of information as that found in longitudinal studies. However, the use of 2007 information provides timely data and the large sample size provides for significant power in testing the hypotheses. The use of cut-off data such as the number of directors serving on four or more boards as well as the number of directors over the age of 70 could be argued to reduce the richness of the data. Utilizing these variables provided insight not available if using variables such as average age; however, future studies may benefit from measuring these variables in different ways. Also, while the use of board characteristic variables provides objective data, it fails to capture managerial or board perceptions that may hinder female board representation. Future studies may benefit by examining board gender diversity issues from a more qualitative perspective.

Overall, it is hoped that this study will serve as an important addition to the work examining board of director diversity. Prior research has demonstrated that women are severely underrepresented on large corporate boards and the current study suggests the same. Thus, it is important to determine what individual, group, and organizational factors impact this underrepresentation.

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