The Role of National Culture in the Impact of Board Gender Diversity on Firm Performance: Evidence from a Multi-country Study

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Abstract

Purpose: This study seeks to add more insights to the debate on 'whether', 'how', and 'under which condition' women representation on the board contributes to firm performance. More specifically, the current study aims to investigate if the effect of board gender diversity on firm performance is dependent on macro factors of national cultures.

Design/methodology/approach: We used the generalized method of moments regression and a data set consists of 2,550 company year observations over 10 years.

Findings: The results indicated that cultural variables interact with board diversity to influence firm performance. Having women on the board in countries with high power distance, individualist, masculine, and low uncertainty avoidance culture influences the firm performance negatively.

Originality: Our findings indicate that the effects of corporate governance structure on firm performance depends on culture-specific factors, providing support for the argument that institutional norms that are governed by cultural norms affect the effectiveness of corporate governance structure.

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Introduction

Board gender diversity has received considerable attention across the world (Bernile et al., 2018, Erhardt et al., 2003, Farag and Mallin, 2017, Liu et al., 2014, Terjesen et al., 2016). A growing body of research suggests that one way to improve firm performance would be increasing the proportion of female directors (Ahmadi et al., 2018, Arun et al., 2015, Kim and Starks, 2016, Liu et al., 2014, Nguyen et al., 2015, Reguera-Alvarado et al., 2017). This idea is based on the premise that a firm should be a reflection of the society in which operates, whereas, a homogenous group of directors does not seem an appropriate reflection of the society (Lückerath-Rovers, 2013). Moreover, the pressure towards conformity impede the innovation in a firm and causes adverse impact on firm performance (Miller and del Carmen Triana, 2009). Heterogeneous groups contrarily bring together a more diverse body of knowledge and wider perspectives, which induce innovative decision-making (Joshi and Roh, 2009, Low et al., 2015).

Yet, despite the benefits of board gender diversity, women remain relatively underrepresented in governing bodies of most institutions across the world (Heidrick & struggles, 2017, Terjesen et al., 2015). This disparity could be explained via the "double burden" and "social stereotyping of women and men" concepts. The latter refers to the fact that promotion systems and social networks tend to be biased towards men (Gammie et al., 2007), while the former points to the dual role undertaken by working women, who remain the primary caregivers at home despite their increasing responsibilities at the workplace (Süssmuth-Dyckerhoff et al., 2012).

In order to solve this issue, several countries have implemented boardroom diversity policies for state-owned and listed companies (Adams and Kirchmaier, 2015). However, empirical evidence indicates that setting a quota would not necessarily increase real involvement of women on the board. Some firms resorted to "circumvention strategies" in

various ways to evade having more women on the board, among them are company delisting (Economist, 2018), decreasing board size (Matsa and Miller, 2013, Zenou et al., 2017), and limiting female directors participation in governance mechanisms (Green and Homroy, 2018). In such a situation, the forced board diversity might lead to tokenism whereby appointment decisions are not necessarily based on merit (Larcker and Tayan, 2011, Li and Harrison, 2008, Torchia et al., 2011).

Despite the seemingly persuasive arguments, requirement, and policies favouring board diversity, the results of empirical studies are, at best, mixed or even downright contradictory. While the results of several studies showed that board gender diversity improves firm performance (Vietnam: Nguyen et al. (2015); China: Liu et al. (2014); France: Ahmadi et al. (2018); Meta-analysis: Post and Byron (2015)), some studies reported contradictory findings (Malaysia: Lim et al. (2019); US: Adams and Ferreira (2009)), and many others could not find any relationship between the presence of women on the board and firm performance (Turkey: Ciftci et al. (2019); Fortune 500 firms: Miller and del Carmen Triana (2009); Dutch and Danish firms: Marinova et al. (2016); Australia: Dimovski and Brooks (2006)).

The results of meta-analysis studies suggest that the effect of board diversity on firm performance depends on the context (Johnson et al., 2013, Pletzer et al., 2015). Given the double-edged nature of board gender diversity (Lai and Yen, 2018), it is essential to investigate the conditions under which the benefits derived from gender diversity might outweigh the potential costs. To do so, researchers have recommended developing conditional effect models to investigate 'when' and 'how' board diversity contributes to firm performance (Chen et al., 2018, Gabrielsson and Huse, 2004, Li and Chen, 2018, Miller and del Carmen Triana, 2009).

In light of the above explanation, our study investigates the circumstances in which female representation on board of directors would enhance firm performance. This research objective is rooted in the institutional theory (Conyon and He, 2017, Meyer and Rowan, 1977,

Scott, 1987), which postulates that organizations tend to reflect the societies in which they are embedded (Inzerilli, 1980). Thus, we hypothesize that the effect of board gender diversity on firm performance depends on the national culture in which the firm operates. In other words, we investigate whether the supposed benefits of board gender diversity dissipate in various cultural settings.

This paper contributes to the body of literature from different angles. First, it adds more insights to the debate on 'whether', 'how', and 'under which condition' women representation on the board contributes to firm performance (Chen et al., 2018, Johnson et al., 2013, Miller and del Carmen Triana, 2009, Pletzer et al., 2015). Second, while previous studies have highlighted the heterogeneity at industry level as a factor causing contradictory results in the relationship between board diversity and firm performance (Chen et al., 2018), our study complements this notion by considering the heterogeneity at country level. Thirdly, referring to the debate on the requirements and policies recommending a quota for appointing women on the board, the current study provides insightful input to explain if such conditions are dependent on institutional framework. Fourth, the results of the study provide empirical evidence on the path-dependency of corporate governance in every country suggesting that the effectiveness of governance practices and policies in different contexts may depend on their respective institutional culture (Bebchuk and Roe, 1999, Sharif et al., 2015).

The remainder of the paper proceeds with an overview of relevant literature, followed by a description of the data and methodology, the empirical results, and a detailed discussion in the light of prior studies.

Literature review

While there is a growing body of research on the effect of board gender diversity on firm performance, existing empirical evidences remain ambiguous and have yielded conflicting results. Some studies provided support for women's presence on the board (Ahmadi et al.,

2018, Arun et al., 2015, Kim and Starks, 2016, Liu et al., 2014, Nguyen et al., 2015, Reguera-Alvarado et al., 2017), whereas other studies found no link between board gender diversity and firm performance (Carter et al., 2010, Ciftci et al., 2019, Dimovski and Brooks, 2006, Marinova et al., 2016, Miller and del Carmen Triana, 2009) and at times, a negative relationship (Adams and Ferreira, 2009, Ahern and Dittmar, 2012, Lim et al., 2019, Terjesen et al., 2016). The mixed results of past studies could be due to the data from different contexts, time periods, or measures of firm performance (Johnson et al., 2013, Li and Chen, 2018, Pletzer et al., 2015). Based on a contingency approach, the effect of board characteristics on firm performance may be strengthened or weakened depending on different aspects of organizational environment such as organizational culture (Boyd et al., 2011), task requirements (Van Knippenberg et al., 2004), firm size (Li and Chen, 2018), participative strategy making (Richard et al., 2013), and export dependence (Solakoglu and Demir, 2016). Consequently, researchers call for studies on the role of moderating or intervening variables in the impact of gender diversity on firm performance to examine 'when', 'how', and 'under which condition' board diversity improves firm performance (Chen et al., 2018, Gabrielsson and Huse, 2004, Li and Chen, 2018, Miller and del Carmen Triana, 2009).

The effects of board diversity on firm performance tend to be presented as either positive or negative. In one literature stream, opponents of board diversity argue that gender diversity is unrelated to firm performance, or some suggest that board diversity exhibits negative impact on firm performance (Erhardt et al., 2003, Lamers, 2016, Petrovic, 2008, Smith et al., 2006). Lim et al. (2019) and Lamers (2016) argued that board diversity results in conflicts that negatively affect firm performance. These conflicts might stem from lack of sufficient solidarity and conformity (Pelled et al., 1999), which leads to more time-consuming decision making. Also, Lim et al. (2019) suggest that female board members may be involved in micro-management while based on the cardinal rule, the board should focus on strategic financial and

operational matters. Adams and Ferreira (2009) claimed that, although boards are deemed essential in overcoming agency problem, too much monitoring due to having more female board members could decrease shareholder value. Their results supported this view, suggesting that directors' intervention in decision-making could adversely affect the communication between managers and directors. In sum, having more women on the board is considered as a greater participation by directors, which might result in more interference. In this case, gender diversity in the boardroom could negatively affect performance.

In the literature stream supporting board diversity, focus is given to its positive effects on firm performance. The literature supporting having more women on the board can be further divided into two sub-sectors, the first of which indicates that a mere increase in board gender diversity will increase firm performance. For example, Kramer et al. (2006) purported "the more the merrier" meaning that boards should not stop at having one or two women on their board. Instead, they should actively seek to increase number of qualified women as; they can enhance the quality of discussions in the boardroom. Thus, it is argued that, nominating committees should not try to be "gender-blind", as increasing the number of women can be beneficial for the firm performance (Ararat et al., 2015, Bennouri et al., 2018, Dezsö and Ross, 2012, Nguyen et al., 2015, Terjesen et al., 2016). Carter et al. (2003) also asserted that gender-diverse boards possess a greater knowledge of the marketplace that improves decision-making processing time and quality.

In the second strand of the literature supporting board diversity, researchers discuss the conditional clauses for reaping the benefits of diversity. For example, they opine that it is not possible to simply appoint some women to the board and expect a change in firm performance. Instead, they argue that, as the corporate governance process is dynamic, it is modified in response to country-specific factors and conditions. This string of literature emphasizing that corporate governance structure is contextual has prompted the present investigation. Dwyer et

al. (2003) focused on the effects of board gender diversity of US banks, concluding that when the culture of teamwork, conformity and unity is engrafted in organization roots, board diversity is more likely to exhibit positive impact on firm performance. Similarly, Aguilera and Jackson (2003) examined the importance of legal and cultural factors in conditioning corporate practices.

In this vein, authors of several studies have examined the link between corporate decision-making and cultural factors using Hofstede (1980) cultural dimensions (Gray, 1988, Hope, 2003, House and Mansor, 1999, Salter and Niswander, 1995, Semenov, 2000, Stulz and Williamson, 2003). The results yielded by pioneering studies, such as those conducted by Alford and Friedland (1985), Hofstede (1991) and Pugh and Hickson (1996), indicate that cultural and social characteristics of a country shape corporate governance practices in that context.

In the present investigation, we apply four Hofstede's cultural dimensions— "power distance", "masculinity-feminine", "uncertainty avoidance" and "individualism-collectivism"—and hypothesize that these may impact the effect of board diversity on firm performance. In other words, we argue that some certain cultural and social settings may embrace board diversity while other cultures might resist against it. For instance, in highly patriarchal cultures, there is societal acceptance towards male dominance in managerial positions and the meaning of success is associated with a male boss (Hofstede, 2001). In such cultural settings, board diversity would be curtailed to the "tokenism" (Larcker and Tayan, 2011); whereas gender stereotypes can positively affect work performance.

In light of the conflicting results produced by prior research, we suggest that country culture may moderate the nexus between board diversity and firm performance. In other words, existing literature provides evidence for the linkage between micro and macro aspects of an economy. In the same vain, our aim is to investigate the contribution of simultaneous effects

of macro (national culture) and micro (board diversity) factors on a specific micro-level aspect (firm performance). The study objective is to ascertain if the effect of firms' appointment of more women on their board on performance is dependent on macro factors of national cultures. This category of literature provides justification for rejecting 'one-best-way' strategy of corporate governance in different countries. Although empirical evidence examining board diversity and its impact on firm performance are available in abundance, the results yielded by pertinent research are generally based on case studies and not on systematic methodological approaches, whereby the model is analysed empirically.

Hofstede's attributes

Although culture is a difficult concept to define and operationalize, it plays instrumental role in managerial perceptions of gender (Parboteeah et al., 2005). It is, therefore, reasonable to assume female prevalence on corporate board depends upon the national country of a given country (Frijns et al., 2016, Grosvold and Brammer, 2011). In the present study, Hofstede (1983) cultural framework is adopted, focusing on four specific dimensions, namely masculinity-femininity, uncertainty avoidance, power distance, and individualism-collectivism, based on the assumption that working in an organizational arrangement that is consistent with national culture is preferable for most individuals.

In this work, we aim to elucidate the nexus between gender diversity and firm performance while assuming countries specific cultural attributes play moderating roles. Therefore, the research questions guiding this study is under which country's attributes, board diversity would enhance firm performance. Answering this question helps us understand to what extent organizations' tendency to reflect the societies in which they are embedded would explain the effectiveness of women representation on the board. In this section, we further explain how different Hofstede cultural dimensions may moderate the association between board gender diversity and firm performance.

Power distance

Power distance refers to "the extent to which the less powerful members of institutions and organizations expect and accept that power is distributed unequally" (Hofstede, 1991, p. 28). In high power distance cultures, organizations tend to be centralized, with highly concentrated power. Therefore, it can be argued that, in high power distance countries, societal norms comply with distant hierarchical power between CEOs and their subordinates in the formal corporate governance structure (Goolaup and Ismayilov, 2012). In such a setting, a board with fewer female directors would be perceived as more legitimate. Thus, having more women on the board would be a sign of providing space for participation of subordinates, which leads to decentralization in the firm. Female directors typically challenge the status quo and inject new insights to the company leadership (Swanson, 2002). Therefore, female board members would conform to a less steep hierarchy in the organizational chart that can be perceived as less consolidated leadership. Board gender diversity would therefore not comply with the societal norms in a high-power distance country, resulting in the following hypothesis:

Hypothesis 1: Power distance dampens the positive effect of board diversity on firm performance.

Masculinity

Masculinity represents a preference in the society for achievement, heroism, assertiveness, and material rewards for success (Hofstede, 2001). Masculine societies are generally more competitive and objective oriented. Conversely, in feminine cultures, the strong concern rotates around upholding interpersonal relationships and supportive social orientation. More specifically, management by objective is a practice consistent with a masculine culture while work-life balance is consistent with a feminine culture (Hofstede, 1991, Jaeger, 1986, Schuler and Rogovsky, 1998). Having more women on the boards is equal to departing from mere performance-oriented objectives. Women are caregivers by nature and are thus more likely to

value non-monetary aspects of a business, such as sustainable activities, charity work, as well as customer care and satisfaction. Therefore, in a highly masculine society, a board of directors with a greater number of female members would be less likely to conform to societal norms that value decisive, performance-oriented corporate actions, and would thus appear to be less legitimate. Therefore, we hypothesize:

Hypothesis 2: Masculinity dampens the positive effect of board diversity on firm performance.

Individualism

Individualism is defined as a preference for a "loosely-knit social framework in which individuals only take care of themselves and their immediate families" (Hofstede, 1991). Its opposite, collectivism, represents a preference for a "tightly-knit framework in society in which individuals can expect their relatives or members of a particular in group to look after them in exchange for unquestioning loyalty" (Hofstede, 1991). In collectivist societies, individuals are indistinguishable from the group, and interpersonal relations and group affiliations are highly valued. Men are taught from childhood to be independent and assertive while women are taught to be interdependent and cooperative. Female members of such societies are more likely to exhibit forms of in-group cohesion and adhere to social norms. Zeffane (2017) recently reported that females are generally more collectivist than their male counterparts. Thus, having more women on the board tends to promote collectivist values in a firm. Conversely, a board of directors with more male directors would appear to be more legitimate in a highly individualistic culture. Therefore:

Hypothesis 3: Individualism weakens the positive effect of board diversity on firm performance.

Uncertainty avoidance

In cultures characterized by high uncertainty avoidance, members are accustomed to clear-cut procedures, explicit strategies, and precisely delineated rules to limit uncertainties and cope with ambiguous situations (Hofstede, 1980). In cultures that exhibit low uncertainty avoidance,

there is a greater tolerance for uncertainty, different ideas, approaches and concepts. Higher uncertainty avoidance thus implies a greater need to seek out information to reduce ambiguity (Zaheer and Zaheer, 1997).

In a society that values uncertainty avoidance, board of directors with more female members would appear legitimate, as this would signify a broader range of expertise for managing uncertainty. Researchers have argued that having more women on the board is equal to a greater range of skills and abilities for solving complex problems (Hill, 1982, Jackson, 1992). Not only do they better address the concerns of customers, employees, shareholders, and the local community, but also, they are far-sighted to focus on long-term priorities. Therefore:

Hypothesis 4: Uncertainty avoidance strengthens the positive effect of board diversity on firm performance.

Data and Methodology

Forbes has published the latest list on the global 2000 publicly-traded companies from 60 countries in June 2018.[1] The biggest public companies have been ranked based on four metrics—sales, profit, assets and market value. A minimum cutoff value for each of these metrics is identified for a company to qualify for the inclusion on the *Forbes* list. Collectively, the companies on this list account for $39.1 trillion in sales, $3.2 trillion in profit, $189 trillion in assets and $56.8 trillion in market value. While the top ten companies are based in China and the U.S., 30% of the companies included in the list are U.S.-based. In the current study, 540 financial companies and banks are excluded from the list. Moreover, to reduce the bias that may arise from unbalanced number of companies in each country, we only include the top ten companies in each country that has been listed for at least ten years. For those countries

[1] https://www.forbes.com/global2000/#2358b21c335d.

with fewer than ten eligible firms, all are included. The final sample contains of 255 companies based in 46 countries with various cultural environments including Australia, Austria, Belgium, Bermuda, Brazil, Canada, Chile, China, Colombia, Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Luxembourg, Malaysia, Mexico, Netherlands, Norway, Philippines, Poland, Portugal, Qatar, Russia, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sweden, Switzerland, Taiwan, Thailand, Turkey, United Arab Emirates, United Kingdom, and United States that were operational in the 2008−2017 period.

The countries represented in the sample also varied substantially in terms of Hofstede's national cultural dimensions. Therefore, there is a considerable heterogeneity in the sample in terms of both cultural environment and industry type. After selecting the sample companies, data related to board composition, board independence, board size, firm size, CEO duality and firm performance are retrieved from DataStream. Observations are deleted if more than 50% of the company information is missing. We assemble a panel of data from the fiscal year 2007 to 2018. The power distance, uncertainty avoidance, individualism/collectivism, and masculinity/femininity measures for the various societies are adopted from Hofstede (1980)[2].

Variables

Our primary outcome variable is firm performance. Firm performance, as the dependent variable, is measured through four variables, the first of which is Tobin's Q as a market-based performance measure, calculated as a sum of market equity and book value of debt divided by total assets. As a market-based measure of financial performance, a Tobin's Q ratio higher than one reflects investors' expectation that the company has powerful comparative advantages or good growth opportunities. The other variable known as market-to-book ratio (M2B) is used

[2] https://www.hofstede-insights.com/product/compare-countries/

to assess company performance comparing the book value of a firm to its market value. Return on assets (ROA) and return on equity (ROE) as accounting-based performance measures are also adopted as variables measuring firm performance. We calculate ROE as company's net income divided by the value of total shareholders' equity and ROA as the ratio of net income to the total value of assets. Having four dependent variables allow us to estimate four models to determine if using different measures for firm performance affect the results. Our main explanatory variable is the ratio of women on the board [*boardiv*], as an indicator of board gender diversity.

Guided by the strategies adopted by other studies, we include board size, firm size, CEO duality and board independence as control variables. Board size is measured as the total number of directors on the board (*bsiz*e), while firm size is measured as the logarithm of total sales (*firmsiz*e). When the CEO is also the chair of the board of directors, *ceodual* variable takes the value of one and zero otherwise. We control for board size as it reflects the firm's advising and monitoring needs. Following past studies, we also control for board independence and CEO duality (Adams and Ferreira, 2009, Anderson et al., 2009). National culture variables are measured using Hofstede's individualism, power distance, uncertainty avoidance, and masculinity index. Variable acronyms and their definitions are summarized in Table 1, while the descriptive statistics of the pooled sample for the main variables used in the empirical analysis are presented in Table 2.

Despite considerable variation in individualism (*SD* = 24.158) and uncertainty avoidance (*SD* = 24.035) we note a relatively lower variation in masculinity (*SD* = 20.071) and power distance (*SD* = 21.341) in our sample. The percentage of female on the board on average is 14.39%. The average board size is 12 directors, and the mean size of companies in our sample is 18.56.

---Table 1 here---

---Table 2 here---

Average Tobin's Q is approximately 1.64 with the median of 1.2. The mean percentage of women on the board is about 14.38% and the median is 12.5%. Moreover, 85 percent of companies in our sample have at least one female director in a period of 2007-2018.

Methodology

There has been a long debate in the empirical literature on the endogeneity between board diversity and financial performance and their causal relationship. Fixed effect approach models based on the assumption of strict exogeneity imply that corporate governance variables are not correlated with error terms. This assumption is criticized for its unreliability (Adams and Ferreira, 2009, Nguyen et al., 2015, Wintoki et al., 2012) when simultaneity and dynamic heterogeneity are likely to arise in the board structure−performance relationship. Endogeneity results in biased and inconsistent coefficients and this makes statistical inferences virtually impossible. The existing body of literature has focused on two main sources of endogeneity, namely unobservable heterogeneity and simultaneity (reverse causality), such as the causality between board diversity and firm financial performance (Adams and Ferreira, 2007). In this study, we adopted national culture as a proxy for the firms' operating environment. The exogenous component of these countries' characteristics exerts a causal effect on board structure. While there is strong evidence in the literature suggesting such impact (Wintoki et al., 2012), in many cases, authors of these studies did not control for all major sources of endogeneity in the board structure-performance relationship.

Given the structure of our panel data in large cross-section *(N)* and smaller timescale *(T)* Generalized Method of Moments (GMM) estimator is selected as the most suitable method of estimation. System Generalized Method of Moment (GMM) model reduces the heterogeneity effect (by including the first-order difference equation in the estimated system

of equations), simultaneity and dynamic endogeneity by considering both the first-order difference equation and the lagged values of the dependent variable in the principal equation. Lags 1 and 2 of the levels of firm performance variables, lag 2 of the levels of board diversity and control variables are employed as GMM-type instruments for the differenced equation. Lag 1 of the first differences of firm performance measures, board diversity and control variables are used as GMM-type instruments for the level equation. Cultural variables are treated as exogenous variables.

Moreover, to confirm that the (GMM) is the most appropriate method, as it leads to the least biased estimates, in particular for panel data with short time length (as was the case in our sample), it is worth noting the following issues: (1) presence of women on the board is correlated with the firm fixed effect (such as differences in corporate culture or board decision-making style) (Conyon and He, 2017); (2) presence of women on the board can be related to countries' overall culture and acceptance of women as key players in the corporate world (for example, if a society is masculine or feminine, or how the power distance is accepted in that country); and (3) if the within-firm variation in board gender diversity is low, controlling for the firm time-invariant effects in the performance equation tends to compensate for the women on the board effect.

From a methodological perspective, we model board diversity, board size, firm size, board independence, cultural factors and firm performance in a simultaneous equation regression framework. This approach was chosen as, in a single equation regression model, the relationship between the corporate governance mechanisms and the firm performance introduces the problem of endogeneity. The system of equations that we developed includes four endogenous and five exogenous variables.

As suggested by Wintoki et al. (2012), the model specification for estimating the corporate governance-firm performance relationship in a dynamic framework is described as follows:

$$y_{it} = \alpha + \sum_{s=1}^{k} \varphi_s y_{it-s} + \beta X_{it} + \delta Z_{it} + \eta_i + \varepsilon_{it} \quad (1)$$

where *i* indexes observational firms and *t* indexes time; φ, β, and δ are vectors of coefficients on lagged dependent variables y_{it-s}, independent variables X_{it} and control variables Z_{it}, respectively; η_i represents unobserved time-invariant firm effects; ε_{it} is a random error term; and *k* is the number of dependent variable lags. Pham et al. (2011) and Wintoki et al. (2012) suggested that two lags of the dependent variable ($k = 2$) are sufficient to capture all pertinent historical information.

Results

The association between board diversity, various cultural factors, and firm performance were analyzed to elucidate the countries' characteristics in which employing a more diverse board tends to improve the firm performance. Table 3 represents the results of the System GMM estimator for the influence of board diversity and cultural factors on performance of the selected companies.

---Table 3 here---

The important issue with the System GMM method is the proliferation of instruments. Since each explanatory variable provides a number of instruments (associated with lagged values and differences), there is a potential issue of weak instruments (Roodman, 2009b) that becomes greater as the number of lags and/or explanatory variables increases. We thus carried

out two tests to check the identification of the model. First, the Sargan test determines whether the model is overidentified. For our sample, the null hypothesis of overidentified model is rejected in all regressions. Second, the Hansen test of exogeneity of the instruments subset does not lead to the rejection of the null hypothesis of valid (exogenous) instruments. Insignificant values for the Hansen test for each estimation indicate that the instruments are adequate and that the model is correctly specified. These tests further validate our choice of the System GMM estimation methodology. The use of the System GMM estimation method requires testing autocorrelations to detect dynamic specifications of the endogenous and dependent variables. For this purpose, we conducted the Wooldridge (2002) test, which strongly rejects the null hypothesis of no autocorrelation. The results of the Arellano and Bond (1991) autocorrelation tests for all the dependent and independent variables, as well as instrument validity tests, are presented in Table 3. The null hypothesis of no first-order (AR(1)) auto-correlation is always rejected, which confirms the Wooldridge (2010) test result. The Arellano and Bond (1991) test, however, does not reject the null hypothesis of no second-order serial correlation (AR(2)), thus supporting the rationale for using the System GMM model, which performs better with only first-order serially correlated processes (Roodman, 2009a).

. Furthermore, Multicollinearity was assessed based on variance inflation factors (VIFs). All variables had a VIF below 5. Therefore, the cultural variables are free from multicollinearity issue.

In the System GMM model, the coefficients of 1-year and 2-year lag (β_1 and β_2) or all firm performance measurements are statistically significant at 1%, suggesting that past performance can help control for unobserved historical factors in the relationship between board diversity and firm performance. This empirical evidence strongly supports the arguments put forth by Schultz et al. (2010) and Wintoki et al. (2012), as well as the empirical results of

Nguyen et al. (2015), among others, indicating a dynamic link which ensures the reliability of causal inferences.

The results obtained from the System GMM model showed that board diversity while has a significant positive effect on ROA ($\beta_{3,\text{ROA}} = 0.027$, $p < 0.05$) and M2B ($\beta_{3,\text{M2B}} = 0.225$, $p < 0.001$), it is negatively related to ROE ($\beta_{3,\text{ROE}} = -0.942$, $p < 0.001$). The findings also indicated that the coefficient of board diversity for Tobin's Q is positive but not statistically significant ($\beta_{3,\text{Tobin's Q}} = 0.38$, $p = 0.97$).

Regarding the power distance dimension, the yielded result did not provide any conclusive results. Out of three insignificant coefficients for power distance, two showed negative signs ($\beta_{8,\text{Tobin's Q}} = -0.016$, $p = 0.299$; $\beta_{8,\text{B2M}} = -0.129$, $p = 0.456$; $\beta_{8,\text{ROE}} = 0.050$, $p = 0.760$). Applying the ROA index of firm performance, the coefficient turned to be statistically significant and positive ($\beta_{8,\text{ROA}} = 0.829$, $p < 0.001$). However, the mixed sign of the coefficients became consistently negative using the interaction of power distance with board diversity. Nonetheless, only using Tobin's Q index, the interaction effect of board diversity and power distance on firm performance was statistically significant ($\beta_{12,\text{Tobin'sQ}} = -0.656$, $p < 0.05$), whereas the results did not appear significant using other indices of firm performance ($\beta_{8,\text{ROA}} = 0.067$, $p = 0.764$; $\beta_{8,\text{ROE}} = -0.607$, $p = 0.305$; $\beta_{8,\text{B2M}} = -0.838$, $p = 0.648$). Therefore, the yielded results supported the first hypothesis that the positive impact of board diversity on firm performance is dampened in countries with high power distance only applying the Tobin's Q index. The moderating role of power distance on the relationship between board diversity and firm performance was not supported using other indices of firm performance.

Like power distance, the masculinity dimension did not provide any clear conclusion on its impact on firm performance. While the relationship between masculinity and firm performance was supported in two regressions, the coefficient signs were not consistent ($\beta_{10,\text{Tobin's Q}} = -0.078$, $p < 0.001$; $\beta_{10,\text{ROA}} = 0.188$, $p < 0.05$). However, the negative coefficient

of masculinity dimension in three out of four regressions, revealed a likelihood of negative relationship between masculinity and firm performance ($\beta_{10,Tobin's\ Q}$= -0.078, $p < 0.001$; $\beta_{10,ROE}$ = -0.298, $p = 0.102$; $\beta_{10,M2B}$ = -0.205, $p = 0.114$). Interestingly, the interaction effect of this dimension with board diversity turns to be significantly negative in three regressions ($\beta_{14,Tobin's\ Q}$ = -0.383, $p < 0.05$; $\beta_{14,ROE}$ = -0.379, $p < 0.05$; $\beta_{10,ROA}$ = -0.554, $p < 0.05$). It shows that the likely positive impact of board diversity on firm performance turns to be negative in a masculine society. Women on the board in a masculine society that is characterized by an ego-oriented society in which social gender roles are clearly distinct, would decrease the firm performance. This further confirms the role of female directors in ensuring a collectivist decision that improves decision making and ensures greater accounting returns. The effect is somewhat reduced in a masculinist society which counteracts the traits that female directors bring to boards. Therefore, the results supported the second hypothesis that masculinity dampens the positive impact of board gender diversity on firm performance.

Likewise, the yielded results did not provide any clear evidence on the impact of individualism on firm performance. While, the individualism coefficients appeared statistically significant across three regressions, two showed negative and one positive impact of individualism on firm performance ($\beta_{9,Tobin's\ Q}$ = -0.088; $p < 0.05$, $\beta_{9,M2B}$ = -0.984; $p < 0.001$, $\beta_{9,ROA}$ = 0.137, $p < 0.001$). Interestingly, defining individualism as the moderator on the relation between board diversity and firm performance, the results turned consistent. The coefficients of the interaction between board diversity and individualism were negative and significant across all regressions ($\beta_{13,Tobin's\ Q}$ = -0.091, $p < 0.001$; $\beta_{13,ROE}$ = -0.919, $p < 0.001$; $\beta_{13,ROA}$ = -0.135, $p < 0.001$; $\beta_{13,M2B}$ = -0.401, $p < 0.05$). The findings showed that having women on the board in countries characterized by highly individualistic values exerts a negative effect on firm performance. In highly individualist societies where self-interest prevails group welfare in decision making, a woman on the board having intrinsic compassion and care for group

benefit is not compatible with the cultural norms. It can be inferred that board diversity in societies with highly individualistic culture may decrease firm performance. Thus, individualism dampens the role and characteristics of female directors in improving the asset acquisition process leading to higher quality assets as claimed in the third hypothesis. Therefore, the third hypothesis discussing the weakening impact of individualism on the impact of board diversity on firm performance is supported.

For the uncertainty avoidance factor, only one coefficient appeared to be significant ($\beta_{11,\ M2B} = 0.282$, $p < 0.05$). While expecting a positive relationship between uncertainty avoidance and firm performance, the insignificant coefficients showed the mixed signs ($\beta_{11,\text{Tobin's Q}} = -0.023$, $p = 0.392$; $\beta_{11,\text{ROA}} = 0.269$, $p = 0.247$; $\beta_{11,\text{ROE}} = -1.248$, $p = 0.903$). However, the heterogenous results became consistent applying the uncertainty avoidance as the moderating factor. While the interaction effect of board diversity and uncertainty avoidance appeared positive in all regressions, three were statistically significant ($\beta_{15,\text{M2B}} = 0.369$, $p < 0.001$; $\beta_{15,\text{ROA}} = 0.322$, $p < 0.01$; $\beta_{11,\text{ROE}} = 0.113$, $p < 0.001$). This means the fourth hypothesis claiming that uncertainty avoidance strengthens the positive effect of board diversity on firm performance was supported. In other words, in societies with high uncertainty avoidance in which tolerance for ambiguity is negligible, having women on the board of directors increases the firm performance.

Discussion

Although a substantial number of studies have echoed cultural factors as well as board gender diversity as vital ingredients in enhancing the firm performance (Cabeza-García et al., 2019, Conyon and He, 2017, Dezsö and Ross, 2012, Dwyer et al., 2003, Frijns et al., 2016, Green and Homroy, 2018, Zheng, 2020), the simultaneous impact of board diversity and cultural factors is worth of more detailed investigation. Therefore, a noteworthy contribution of this

study is the investigating of the cultural aspects and thus the institutional norms under which having women on the board can contribute positively to firm performance.

The impact of board gender diversity on firm performance using various indices of firm performance was mixed. Using ROA as an accounting measure of effectiveness of ability of the firm to utilize its assets, board diversity plays a significant positive role. The results suggest that firm's investment decisions are heavily influenced by the presence of female directors. Thus, these firms tend to have greater quality assets in place which ultimately leads to greater accounting returns. Likewise, the positive significant coefficient of board diversity using the market-to-book ratio indicates that investors tend to value presence of greater proportion of female directors.

The results are consistent with the literature indicating that the market-to-book ratio captures elements of growth (Rhodes–Kropf et al., 2005) which further validates the need for board diversity from a valuation point. Conversely, the negative coefficient of board diversity using the ROE index can be looked at the point of view where increased presence of female members of the board reduces the amount of borrowing. Given the lower inclination of women to take risk and issue debt (Owen and Temesvary, 2018, Zalata et al., 2019), their presence may lead to reduced ROE as debt acts as a multiplier to ROE. The inconsistent results on the role of female directors to improve performance can be interpreted that board gender diversity acting as effective tools of governance should not be taken in its own. The firm specific characteristics which is a reflection of societal cultural norms would also influence the ability of female directors to influence performance (Terjesen et al., 2016).

The interaction of gender diversity and cultural factors were significant and supported all preceding hypotheses. Cultural differences contribute to differences in firm performance and management among countries. We argued that cultural variables interact with board diversity to influence firm performance. The results show that board diversity in countries in

which power distance is deeply entrenched in the cultural norms will decrease the firm performance. In such societies, the broad gap between different hierarchical level as well as gender setting of women below men is acceptable. When this culture is embedded among the nation, the traditional female gender role which keeps women at the bottom of career ladder is well tolerable. In such a context, the presence of women on the board who have high tendency to question the hierarchical order and challenge the common practice would conflict with cultural norms. That might explain dampening effect of this cultural dimension on the relationship between board gender diversity and firm performance. The results of past studies emphasizing high power distance as the cause for more gender inequality (Cabeza-García et al., 2019, Glick, 2006) confirm our findings that in such a culture having less women on the board seems more legitimate.

Regarding the masculinity dimension, not only for this dimension alone but also for its interaction with board gender, there is likely to be a negative influence on firm performance. In other words, the yielded results show that in a masculine society which is highly competitive, and assertiveness in achieving success is a norm, board gender diversity may have negative impact on firm performance. Having women on the board who may challenge such highly competitive strategy in favor of a more consensus-oriented environment can undermine the firm performance. It is hard for a woman to achieve her full potential in a masculine society characterized by highly competitive environment and long working hours. Therefore, it can be interpreted that women on the board in a masculine culture are unlikely to be effective in improving firm performance.

Overall, it can be interpreted that since cultural dimensions of power distance and masculinity are closely linked to attitudes about gender (Szymanowicz and Furnham, 2013), the board gender diversity would not be perceived beneficial in cultures high in these two dimensions. Our findings are in terms of moderating role of culture is consistent with Lewellyn

and Muller-Kahle (2019) results discussing that a supportive cultural condition (low power distance or low masculinity) are necessary for the occurrence of high percentage of female directors.

The statistically significant coefficient of individualism reveals a negative relationship between this dimension and firm performance. In Individualist societies where individual interests override those of a group, strong leadership which sets a firm strategic approach and monitors the orders and subordinates authoritatively, can appear more legitimate. This culture is in contrast to women's nature that is generally known for more sensitivity about others welfare (Seppala, 2013) and showing more collectivist values (Zeffane, 2017). Females with compassionate instinct (Maas, 2020) who can sacrifice their comfort for the greater good of everybody, do not seem a good match in an individualistic society in which individuals are urged to think about themselves. Therefore, board gender diversity would seem to be effective in collectivist cultures that interpersonal relationships and group affiliation are highly valued. This conclusion is consistent with the findings that indicate individualism has a close association with "male" values (Zeffane, 2017). In other words, in collective cultures in which kinship, family and community are extremely important, caring personality of a woman matches the needs of the society and increases the firm performance.

In nations high in uncertainty avoidance, people and organizations are sensitive to risk and they seek out information to reduce ambiguity. In such culture, the societal norms would imply that diverse board have greater information processing capabilities (Haleblian and Finkelstein, 1993) and broader range of expertise to minimize the uncertainty (Li and Harrison, 2008). In countries with less tolerance for ambiguity, women's presence on the board who provide close monitoring in their tasks would positively contribute to firm performance. Therefore, our results are consistent with Zheng (2020) that concluded in countries with high uncertainty avoidance more diverse views in the boardroom would be beneficial to the firm.

To sum up, the observed success of the culture-specific variables in explaining the impact of corporate governance mechanisms on firm performance provides strong support for the argument that institutional norms that are governed by cultural norms affect the effectiveness of corporate governance structure.

It is important to note the study limitations. First, our study focuses on the biggest publicly traded companies published by *Forbes*. However, small-and medium enterprises and private equity firms that are significantly different in terms of capital structure and ownership deserve further studies. Second, in investigating the impact of board diversity on firm performance across 46 countries, the countries' governance dimensions could be taken into consideration as well. Moreover, it would be of interest in future studies to consider the industry-specific characteristics as it is highlighted in Song et al. (2020) that effect of board diversity on firm performance is contingent on industry attributes. Thus, further cross-country studies are necessary to confirm (or refute) our findings, as there might be some other national specificities.

The results have important practical implications for managers, policymakers, and other stakeholders. The findings suggest that the effectiveness of corporate governance mechanisms and more specifically the presence of women on the board depends on institutional norms that are governed by cultural norms, providing support for the 'one size does not fit all' argument in corporate governance. Moreover, managers and other stakeholders should take into consideration that having more women on the board in countries with low power distance, collectivist, feminine, and high uncertainty avoidance may be more beneficial to the firm. For policymakers and regulators, the findings of the study suggest the need for formulating context-specific initiatives and policies to improve women's representation and power on the board of directors. Thus, any intervention such as implementing board diversity policies and imposing gender quotas for listed firms should be from a contingency approach as the board gender

diversity can appear as a *boon* or *bane* to the firms depending on different aspects of organizational culture.

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Table 1: Definition of all variables (Firm specific characteristic and national cultural factors)

Variables	Acronym	Definition
Dependent variables	*FP*	
Firm performance		
Tobin's Q	*tobinq*	Sum of market equity and book value of debt by total assets
ROA	*roa*	Ratio of net income to total value of assets
ROE	*roe*	Ratio of net income to total value of shareholders' equity
Market to book ratio	*m2b*	Ratio of book value to market value of a firm
Independent variables		
Board diversity	*boardiv*	Number/percentage of women on board
Moderator		
Power distance	*pdist*	Distribution of power and wealth between individuals in a business, culture, or nation
Individualism	*indv*	Individual's independence from organizations or collectivity.
Masculinity	*musc*	Preference in society for achievement, heroism, assertiveness, and material rewards for success
Uncertainty avoidance	*avoid*	Expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity
Long term orientation	*orien*	Maintain some links with its own past while dealing with the challenges of the present and the future
Control variables		
Board Independence	*boardind*	Percentage of independent directors' total executives in the company
Board size	*bsize*	Total number of directors on the board
Firm size	*firmsize*	Logarithm of total sale
CEO duality	*ceodual*	When CEO is also the chair of board of directors

Table 2: Descriptive statistics of all variables

Variables	Mean	Standard Deviation	Median	Minimum	Maximum
Tobin's Q	1.64	1.17	1.28	0.189	15.97
ROE	16.10	18.83	13.90	-124.67	362
ROA	7.45	7.21	6.28	-59.12	87.3
B2M	9.39	133.28	1.89	-1091.11	4070.51
Diversity	14.38	12.60	12.5	0	63.64
Board size	12.34	3.40	12	1	33
Firm size	18.57	2.20	18.17	14.54	26.42
Board independence	49.54	26.08	50	0	100
Power distance (PD)	54.74	21.34	57	11	100
Individualism (IND)	52.99	24.16	56.50	13	91
Masculinity (MAS)	50.09	20.07	52	5	95
Uncertainty Avoidance UA)	59.34	24.03	59	8	100

Note: Authors' calculation

Table 3: Impact of board gender diversity and firm performance

Variables	Model 1 Tobin's Q	Model 2 ROA	Model 3 ROE	Model 4 M2B
First lag firm performance	0.818***	0.394***	-0.081***	0.977***
FP_{it-1} (β_1)	(0.000)	(0.000)	(0.002)	(0.000)
Second lag firm performance	0.068***	0.071***	0.076***	0.080***
FP_{it-2} (β_2)	(0.000)	(0.000)	(0.001)	(0.000)
Board diversity	0.380	0.027**	-0.942***	0.225***
boardiv (β_3)	(0.970)	(0.049)	(0.000)	(0.000)
CEO duality	-0.383**	0.027**	-1.656**	-0.496***
ceodual(β_4)	(0.017)	(0.049)	(0.016)	(0.000)
Board size	-0.012**	-0.658**	-2.392*	-0.225***
bsize (β_5)	(0.020)	(0.022)	(0.051)	(0.000)
Firm Size	-0.105	-0.234	-0.322	-0.343***
firmsize (β_6)	(0.221)	(0.103)	(0.111)	(0.000)
Board Independence	0.124***	-0.028	0.501***	0.391***
boardind (β_7)	(0.002)	(0.315)	(0.001)	(0.000)
Power distance	-0.016	0.050	0.829***	-0.129
PD (β_8)	(0.299)	(0.760)	(0.000)	(0.456)
Individualism	-0.088**	0.243	0.137***	-0.984***
Indv (β_9)	(0.013)	(0.297)	(0.000)	(0.000)
Masculinity	-0.078***	-0.298	0.188**	-0.205
Musc (β_{10})	(0.000)	(0.102)	(0.024)	(0.114)
Uncertainty avoidance	-0.023	0.269	-1.248	0.282**
Avoid (β_{11})	(0.392)	(0.247)	(0.903)	(0.015)
Board diversity * Power distance	-0.656**	-0.067	-0.607	-0.837
*boardiv*PD* (β_{12})	(0.015)	(0.764)	(0.305)	(0.648)
Board diversity * Individualism	-0.091***	-0.919***	-0.135***	-0.401**
*boardiv*Indv* (β_{13})	(0.001)	(0.000)	(0.000)	(0.004)
Board diversity * Masculinity	-0.383 **	-0.379***	-0.554***	0.110
*boardiv*Musc* (β_{14})	(0.017)	(0.007)	(0.003)	(0.216)
Board diversity * Uncertainty avoidance	0.322	0.322**	0.113***	0.369***
*boardiv*Avoid* (β_{15})	(0.150)	(0.05)	(0.000)	(0.001)
Number of Observation	2980	2980	2980	2980
Number of companies	298	298	298	298
Number of instruments	32	33	56	55
Sargan test	0.99	0.182	0.872	0.110
Arellano-Bond test for AR(2)	0.248	0.200	0.11	0.116

*Note: ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.*
p values are reported in parenthesis.