

RELATIONSHIP OF BOARD DIVERSITY WITH FIRM'S FINANCIAL PERFORMANCE: THE CASE OF PUBLICLY LISTED COMPANIES IN CHINA

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Abstract

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This study examines the impact of board diversity including the gender, nationality, and independence of board members on the financial performance of publicly listed companies in China. This study uses a sample of 206 publicly listed companies on the Shanghai Stock Exchange and the Shenzhen Stock Exchange in China to measure the impact of board diversity on their financial performance. Organizational financial performance is measured with the widely-used accounting-based measurement tool return on asset (ROA), and the market value measurement tool Tobin's Q. After applying a hierarchical regression analysis this study finds that women on the board impact positively on firm's financial performance while measures by ROA, but not by Tobin's Q. The study also finds that the nationality of directors and independent board membership is found to have no significant influence on firms' financial performance. This study has implications on the business firms to develop the strategic guidelines of board composition to ensure the effectiveness and profitability of their companies.

Keywords: Board Diversity, Corporate Governance, Financial Performance, Foreign Directors, Independent Directors, Women Directors

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1. INTRODUCTION

Board diversity has received much attention from researchers since the financial scandals and failures in maintaining good corporate governance in the past in developing countries (Terjesen, Couto, & Francisco, 2016; Luo, Xiang, & Huang, 2017). Board diversity is considered to have crucial impacts on improving companies' performance, regulating companies effectively, and encouraging economic development (Braga-Alves & Shastri, 2011). Although board diversity in developed countries has been studied widely, it is still a topic for debate in developing countries (Luo et al., 2017). In general, board diversity is defined as appointing board

members with different demographic and ownership characteristics (Harjoto, Laksmana, & Yang, 2018).

Research on board diversity is important because an effective board diversity framework can ensure the strategic guidance of the company, help effective monitoring of management by the board, and enhance the board's accountability to the company and the shareholders (Mulili & Wong, 2011). Due to the differences in cultural, economic, and social factors, the effects of board diversity on firm performance in developed countries may be construed differently to those in developing countries (Durnev & Kim, 2007). Therefore, empirical studies on developed countries may not be directly applicable to developing countries (Durnev & Kim,

2007). Some researchers argue that weak legal controls and considerable government intervention have affected corporate governance in developing countries (Luo et al., 2017). It is noticeable that most companies in Asia are managed by family members or state owners, which weakens the autonomy of the governing boards (Low, Roberts, & Whiting, 2015). Therefore, research on board diversity is deemed to be critical to ensure good corporate governance in developing nations.

Several studies have investigated the relationship between board diversity and firm performance in different countries (Liu, Wei, & Xie, 2014; Mahadeo, Soobaroyen, & Hanuman, 2012; Mulili & Wong, 2011). The results from prior research on the relationship between board diversity and firm performance are mixed. Some researchers find that board diversity has a negative impact on companies' return on total assets (Bhagat & Bolton, 2008), while others find a positive relationship (Kiel & Nicholson, 2003). However, there appears to be an inadequacy in research in this area in China, in particular, there is a significant lack of research on board diversity in publicly listed companies in China (Liu et al., 2014). Though a few pieces of research have investigated board diversity in China, most of them have focused only on the gender dimension and have not included other major dimensions of board diversity such as the nationality of directors and independent board membership (Liu et al., 2014). The compositions of the boards in terms of women members, independent members, and overseas-born members and the ramification of these compositions for firms' financial performance have been under-researched.

In order to fill this identified research gap, this study examines the relationship of different dimensions of board diversity (gender, nationality, and independent board membership) with the financial performance of publicly listed firms in the Shanghai and Shenzhen Stock markets in China. Particularly, this research aims to seek the answer to the following question: *Whether board members' gender, nationality, and independence have any influence on a firm's financial performance?*

Since publicly listed Chinese companies are growing very fast in terms of size and financial volume, the implementation of good corporate governance is viewed as a priority to maintain global standards and compliances (Luo et al., 2017). The findings of this research will help business firms, particularly in China, to develop the strategic guidelines of board composition for their companies to ensure the effectiveness and profitability of their companies. Particularly, the findings will address the concern of whether Chinese companies need any change in their existing practices of board compositions.

This study uses 206 publicly listed companies and collects publicly available secondary data for analysis. This paper commences with a discussion on the relationship between board diversity and financial performance. It then introduces hypotheses based on the literature review provided in Section 2. The methodology for the study is presented in Section 3 along with the findings and analysis of the data highlighted in Section 4. Based on the discussion in Section 5, a set of conclusions are drawn and the implications and limitations of the study are also discussed in Section 6.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1. Literature review

Financial policymakers and business investors globally have emphasized more diverse board composition as a means of ensuring better corporate governance and greater financial performance in recent years (Kılıç & Kuzey, 2016). While board diversity is commonly considered as the heterogeneity of board directors, research studies adopt two different ways to define the term. One group enunciates demographic attributes, such as culture, age, and gender to define board diversity (Kagzi & Guha, 2018). The other group focuses on functional attributes, such as expertise, tenure, and ownership type of board members to define board diversity (Chakraborty & Saha, 2017; Hafsi & Turgut, 2013). Board diversity is essential to bring greater innovation to the firm, and the most effective way to enhance board diversity is to combine different cultures, genders, and so forth (Mahadeo et al., 2012). The common assumption about board diversity is that diversity in board directors helps unbiased and fair decision-making, which reduces corporate corruption and dispenses with poor governance (Harjoto et al., 2018).

Resource dependency theory explains that enhancing board diversity can strengthen the relationship between the firm and its external environment (Jackling & Johl, 2009). The close connection between the firm and the outside environment reduces the environmental uncertainty and hence, lessens the cost related to such uncertainty (Pfeffer & Salancik, 2003). Some studies have shown that there is a positive relationship between board diversity and firm performance when board diversity is examined in terms of the proportion of executive directors (Erhardt, Werbel, & Shrader, 2003); the proportion of outside directors (Triana, Miller, & Trzebiatowski, 2013); and the board size (Rodriguez-Fernandez, Fernandez-Alonso, & Rodriguez-Rodriguez, 2014). However, Kajola (2008) shows that there is no significant link between board diversity and firm performance in a sample of 20 listed companies in Nigeria. A study of Australian companies, on the other hand, finds a negative correlation between board diversity and firm performance (Kiel & Nicholson, 2003). Negative correlations between board diversity and firm performance are also identified in Malaysian firms (Yusoff & Alhaji, 2012). Despite the divergent findings, diverse board composition is still believed to promote idea exchange, deeper insights, and thoughtful perspectives (Jackling & Johl, 2009; Harjoto et al., 2018).

Research has also been conducted especially on the relationship between gender diversity in boards of directors and firm performance, but the results are inconclusive. Some studies state that the correlation between gender diversity and firm performance is positive (Campbell & Minguez-Vera, 2008; Luo et al., 2017). Campbell and Minguez-Vera (2008) argue that differences in women's leadership styles compared with men's may lead to better access to resources and information since women gain better access to other women in the industry.

Some researchers claim that there is an implicit implication of the potential relationship between gender diversity and firm performance but that there is no provision of direct empirical evidence (Carter, D'Souza, Simkins, & Simpson, 2010; Erhardt et al., 2003). Li and Chen (2018) find that gender diversity on the board is positively associated with financial performance, but only for small firms. Rose (2007) also fails to find a conclusive result. In contrast to these results, several researchers contend that there is a negative correlation between the presence of females on the boards of directors and firm performance (Ahern & Dittmar, 2012; Adams & Ferreira, 2009).

It seems that based on the literature review by the authors of this study there is a lack of research addressing the impact of board directors' nationality on the firm performance, and such few existing studies provide two opposite results. A study finds a positive relationship between the director's nationality and the firm's financial performance (Richard, 2000). Another study finds a negative relationship between the director's nationality and the firm's financial performance (Mahadeo et al., 2012). The involvement of independent and non-independent directors regard as another aspect of board diversity, plays a key role in minimizing management and owner control over the board (Hermalin & Weisbach, 1988). Terjesen et al. (2016) suggest that boards with a large proportion of independent directors are linked to higher firm financial performance. Independent directors are more careful and objective in making decisions, which consequently helps firms improve financial performance (Mahadeo et al., 2012). The chance of fraud declines if there is a presence of independent directors on the board (Gupta & Sharma, 2014). However, Weir and Lang (2001) find a negative relationship between the proportion of independent directors and firm performance. Researchers provide several explanations for this negative correlation, including independent directors are often employed part-time, so they might prioritize other work commitments and that they might not have sufficient information about the firm's internal culture or norms to set strategies and make decisions (Weir & Laing, 2001). Nevertheless, other researchers find no relationship between independent directors and firm performance (García-Meca, García-Sánchez, & Martínez-Ferrero, 2015).

According to agency theory, agents (executive managers) work for their own best interest rather than for shareholders (principals), unless appropriate governance systems are implemented to protect the shareholders' interests (Daily & Dalton, 2003). On the contrary, stewardship theory assumes that the interests of principals and agents are aligned. Stewardship theory suggests that the agents (executive managers) are virtuous stewards of firms (Bernstein, Buse, & Bilimoria, 2016). Managers are found to be primarily motivated by their responsibilities, which serve as an intrinsic satisfaction to them (Bernstein et al., 2016). Daily and Dalton (2003) contend that managers tend to protect their reputation by operating the firm in a way that brings the best financial performance including shareholders' return. This stewardship theory proposes that managers should have their autonomy to reduce monitoring costs (Bernstein

et al., 2016). Some studies have found that boards with a majority of non-executive directors have deteriorated firm performance (Carter et al., 2010; Bhagat & Bolton, 2008). Therefore, supporters of the stewardship theory anticipate that firms with boards consisting of a greater number of non-independent directors will lead to better performance.

Resource dependence theory views a firm as a socially open entity, which is closely linked to its external environment and looks at boards of directors as a resource to the firm (Pfeffer & Salancik, 2003). Having access to the external environment can lead to the positive performance of the firm since boards of directors play key roles in connecting these external resources with the firm (Gupta & Sharma, 2014). Therefore, one implication of resource dependence theory is that board composition is a resource that can add benefit to the firm. Board composition facilitates resource exchange between a firm and its external resources (Jackling & Johl, 2009). Terjesen et al. (2016) find that in uncertain external environments, board size and independent directors are more likely to be efficient and effective in setting strategies and implementing them. The appointment of independent directors can help firms gain access to resources essential to a firm's success (Jackling & Johl, 2009). Previous studies reveal that when firm performance deteriorates, inside directors are replaced with experienced independent directors, suggesting that outsiders bring a fresh perspective to the firm (Mahadeo et al., 2012). This can help firms obtain legitimacy in external environments and hence, access to more external resources, which eventually enhance firm performance (Jackling & Johl, 2009).

The differences in prior study results may be attributed to different country settings where the studies were conducted. Most of the previous studies on the relationship between board diversity and firm performance were conducted in developed countries, resulting in a gap to be filled by further research in emerging countries such as China. Moreover, the relationship between board diversity and firm performance can be influenced by the efficiency of the national governance system of the country where the firm is based (Liu et al., 2014). For example, US capital markets are dominated by concentrated equity management, where the priority of board diversity and corporate governance is profit but not growth objectives (Pfeffer & Salancik, 2003). Therefore, it is suggested that researchers should consider local contexts when researching board diversity and financial performance (Hafsi & Turgut, 2013).

Since the economic reforms in 1978, China has shifted its economy from centrally-controlled to more of a market-oriented economy intending to increase efficiency (Li & Chen, 2018). However, a unique feature of most firms in China is the existence of a controlling owner since many listed firms are reformed state-owned enterprises. Boards of directors of these firms are appointed from state-owned enterprises' senior managers or government officers. Fan, Wong, and Zhang (2007) have researched the involvement of government in the corporate governance of listed firms in China and found that not only institutional contexts influence firm performance but also members of

the dominant political party hold important positions on the boards of directors of publicly listed firms. The governance systems in Asian countries in general, and China in particular, are often featured as weak institutions and having ineffective protection of property rights, which raises concerns that conventional corporate governance strategies are not applicable to those countries (Durnev & Kim, 2007). Due to China's unique internal and external institutional contexts, it is, therefore, necessary to have more studies conducted in China.

The above literature review thus indicates that the relationship between board members' gender identity and a firm's financial performance is inconclusive. There is evidence in the academic literature that some scholars find a positive relationship between gender and performance (Luo, et al., 2017), while others find no relationship (Rose, 2007) or even a negative relationship (Ahern & Dittmar, 2012). Similarly, the relationship between board director's nationality and firm performance is controversial. Some researchers find a positive relationship (Richard, 2000), while others find no relationship between the director's nationality and the firm's financial performance (Mahadeo et al., 2012). The relationship between independent board membership and firm's performance is also debatable and mixed in the literature. Some scholars find a positive relationship (Terjesen et al., 2016) while others find a negative relationship between the proportion of independent directors and firm performance (Weir & Laing, 2001). On the contrary, other scholars find no relationship between independent directors and firm performance (García-Meca et al., 2015).

2.2. Hypotheses development

Gender diversity, nationality diversity, and independent board members, as three key dimensions of corporate governance, are important for the firms' financial performance (Hermalin & Weisbach, 2001). The following section discusses these three dimensions of corporate governance.

2.2.1. Gender diversity and firm performance

Both resource dependence theory and agency theory suggest that gender diversity has a positive effect on the firm's financial performance (Carter et al., 2010). While there are no consistent results amongst studies regarding the effects of board gender diversity, overall theoretical implications propose that board gender diversity does have positive values in corporate governance. This effect is less evident in countries where the participation of women on corporate boards is higher. Women on boards of directors affect positively the return on equity in different Asian countries (Low et al., 2015). Post and Byron (2015) suggest that women directors are better educated and are more likely to possess a university degree and the associated skills set for such positions. Therefore, more gender diversity on boards of directors could lead to a more comprehensive understanding of the market (Triana et al., 2013).

Despite an increase in the number of women gaining managerial positions, women's representation

on boards of directors in China is still relatively low compared to some developed countries (Luo et al., 2017). It is reported that women need to face various challenges to advance in their careers, particularly in developing countries (Shukla, 2018). Women are more likely to improve the development activities of the board, are considered to have a harmonious style, and have effective interpersonal communication (Rashid, De Zoysa, Lodh, & Rudkin, 2010); therefore women on boards of directors are believed to have high prestige to others. Marinova, Plantenga, and Remery (2016) highlight that women tend to be risk-averse and can enhance the role of the board by their long-term vision. The representation of women on boards of directors promotes the career development of female staff, which makes direct and indirect contributions to firms' overall productivity (Smith, Smith, & Verner, 2006). Given these arguments, the first hypothesis is stated as follows:

H1: There is a positive relationship between the percentage of women on the board of directors and firm performance.

2.2.2. Nationality diversity and firm performance

Another approach to analyzing board diversity is by looking at the representation of foreign directors (nationality diversity) on boards. Although the diversity of culture and nationality of the directors may lead to cross-cultural communication problems or interpersonal conflicts (Mahadeo et al., 2012), some researchers contend that nationality diversity has positive effects on firm performance (Terjesen et al., 2016). In contrast, some other studies find no significant correlations between nationality diversity and firm performance (Mahadeo et al., 2012). However, it seems that such mixed findings by far mostly come from research in developed countries. Carter et al. (2010) find a positive effect of nationality diversity on firm performance in the USA. A study of Norwegian and Swedish firms also suggests a higher financial performance is associated with the firms that appoint Anglo-American nationals on their boards (Oxelheim & Randoy, 2003).

Although it is apparent that there is a lack of research on the effect of nationality diversity of boardrooms on firm performance in developing economies, it is believed that the presence of foreign directors on boards provides the firm with competitive advantages including international networks and prevention of managerial entrenchment (Oxelheim & Randoy, 2003). Boards of directors that are more diverse are more likely to possess a wider range of knowledge and skills and have greater insights into markets and business opportunities (Mahadeo et al., 2012). Foreign directors can provide competitive advantages to the firm by enhancing the firm's ability to cope with external uncertainty, especially in international business (Oxelheim & Randoy, 2003). These foreign directors could also provide access to different networks and external resources, reducing the transaction costs related to external operations. A board with a higher level of nationality diversity also promotes innovative ideas and effective problem-solving mechanisms (Carter et al., 2010). Although Smith et al. (2006) did not find a direct

correlation between nationality diversity and firm performance, they contend that nationality diversity contributes to a positive image of the firm in the view of stakeholders. Therefore, a positive link between nationality diversity and firm performance is expected. Based on the suggested advantages of having foreign directors on boards from the literature, the second hypothesis is that:

H2: There is a positive relationship between the percentage of foreign members of the board and firm performance.

2.2.3. Independent board membership and firm performance

Independent board member is an important component of corporate governance that can affect a firm's financial performance (Terjesen et al., 2016). Good corporate governance practice suggests that a board of directors should comprise a majority of independent directors (Hermalin & Weisbach, 2001). The agency theory supports the separation of ownership and management because managers are more likely to act for their own benefits rather than for the business shareholders (Bernstein et al., 2016). For this reason, outside directors could play the role of monitoring the management activities. Research on the monitoring function has shown that boards comprising primarily of outsiders are valued for their personal networks and ability to advise (Triana et al., 2013). The business relationships and expertise of independent directors could therefore increase the possibility that the firm's growth is placed as a top priority and that shareholder value is maximized (Bernstein et al., 2016). A higher proportion of independent directors on the board could enhance firm performance by providing

substantial development options, better access to external resources and thus improving the firm's position power (Terjesen et al., 2016).

Several countries have proposed standards to make sure that executives use independent judgment to make decisions. For instance, the Companies Act published by the parliament of India in 2013 regulates that all publicly listed organizations in India have at least one-third of their directors on the board as independent directors (Gupta & Sharma, 2014). Research has found that the percentage of independent directors is positively linked with firm financial performance in the context where shareholder rights are poorly protected (Hafsi & Turgut, 2013). A study in South Korea shows similar findings, especially after the crisis in Asia in 1997 (Choi, Park, & Yoo, 2007). Chang (2009) also maintains that the effect of independent directors on firm performance is positive in Taiwan.

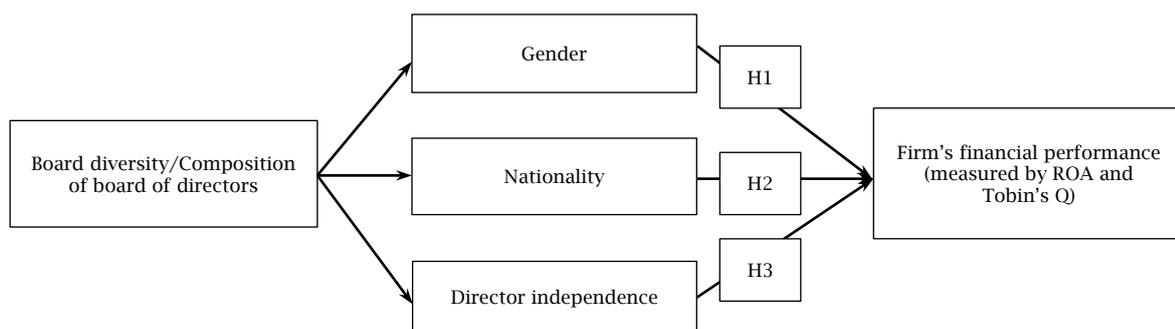
Based on the above arguments, the third hypothesis is that the percentage of independent directors would influence corporate governance, and thus enhance firms' financial performance.

H3: There is a positive relationship between the percentage of independent directors on the board and firm performance.

2.3. Conceptual framework

Hypotheses (H1, H2, and H3) developed above can be illustrated in the conceptual framework for this study as presented in Figure 1. These three hypotheses expect positive relationships between firm performance and the board's gender diversity, nationality diversity, and independent director which is also depicted in Figure 1.

Figure 1. The conceptual model



3. RESEARCH METHODOLOGY

This study sample is selected from a number of the largest companies, based on their market capitalization, listed on the Shanghai and Shenzhen stock exchanges in China in 2016. These firms are chosen from various industry groups excluding financial institutions, banks, investment funds, and insurance companies due to their unique capital structures and being operated under different legislations. This study also excludes firms for which data is not publicly available and not included in the Orbis database. Further, the study only uses the company which is active in the Orbis database

and does not include delisted companies for the sample period. Our initial sample includes 245 companies. After a careful selection of these sample by removing the companies whose data is not useable due to the lack of reliability and/or delisted from the stock market, a final sample of 206 companies are selected for the study.

The study uses secondary data from the database, including financial reports of publicly listed companies, information on boards of directors and ownership structure, and firm-level information from both the Shanghai and Shenzhen stock exchange markets. The study uses a mixed-method for the analysis, including quantitative and qualitative techniques. Further, a hierarchical regression

analysis is used to explore the relationship between board diversity variables and the firm's financial performance. It should be noted that some firm-level financial data is hand-collected from the firms' annual reports and official websites.

The existing literature on corporate governance practices often uses accounting-based performance measures and market value measures to evaluate firms' performance (Zhao, Teng, & Wu, 2018). Guided by the literature, this study aims to investigate the impact of board diversity on firm performance measure by return on asset (ROA) and Tobin's Q to estimate firms' accounting return and market value respectively.

ROA is calculated as the net income deflated by the total assets of an organization. This ratio indicates the efficiency of a firm by using its assets to generate profits. ROA is widely used in corporate governance studies because it shows shareholders' economic interests and captures the actual situation of the firm and directly represents the company's profitability and survival (Joh, 2003). ROA is calculated as follows:

$$ROA = \frac{\text{Net income}}{\text{Total assets}} \quad (1)$$

Tobin's Q is a measure of the ratio between the firm's total market value and total asset value. It is believed that a higher Tobin's Q ratio is an indicator of higher firm performance (Rodriguez-Fernandez et al., 2014). Leng (2004) refers to Tobin's Q as the future profitability of the assets compared to their book value. Following Brainard and Tobin (1968), the Tobin's Q ratio is calculated as follows:

$$Tobin's\ Q = \frac{\text{Total market value of the firm}}{\text{Total asset value}} \quad (2)$$

Tobin's Q is widely used in academic literature to determine the relationship between firm-level corporate governance and the financial performance of a firm (Rodriguez-Fernandez et al., 2014). If the value of Tobin's Q is greater than one, the market value is higher than the firm's book assets, which means that the firm is using its resources effectively. On the other hand, if the ratio is less than one, it indicates that the firm is exploiting its resource ineffectively. A high Tobin's Q suggests that the firm should invest more in its capital (Zhao et al., 2018).

This study uses several independent variables of the board diversity including gender, nationality,

and independent director to investigate the board composition of the sampled organizations. Gender diversity is measured by calculating the proportion of female directors on the board by dividing the number of females by the total number of directors. Nationality diversity is measured as the percentage of overseas nationals on the board. The level of board independence is calculated by dividing the number of independent directors by the total number of board members of the organization.

Data relating to gender and nationality of board members are extracted from annual reports downloaded from relevant companies' websites and the Orbis database. In some cases where this information is unavailable in reports, board members' introductory biographies are used to determine the gender and nationality of board members. Other missing data from annual reports is collected through the local stock exchange websites and firms' official websites to ensure data validity.

The study uses *industry* as a controlling variable which is widely suggested by prior academic literature (Tuggle, Sirmon, Reutzler, & Bierman, 2010). It is found that the effect of board diversity such as gender or nationality background on firm performance is dependent on the industry that the firm is operating in (Shukla, 2018). In this study, firms are grouped into five industry classifications: mining, manufacturing, transportation and communication, wholesale and retail trade, and real estate.

The size of the board and the size of the firm are commonly used as control variables for analyzing the relationship between board diversity and firm performance (Mahadeo et al., 2012). Earlier studies use firm size to control the relationship between board diversity and firm performance (Bhagat & Bolton, 2008). Li and Chen (2018) find that larger firms are more likely to increase their international business and enhance the diversity of their boards of directors.

Table 1 describes the measurement of all variables used in this study. This study uses the correlation of coefficient and hierarchical regression analysis to determine the explanatory power of the independent variables. First, the correlation of coefficient analysis is performed to examine the relationships among independent variables. Second, the hierarchical regression analysis is used to examine the association of the independent variables with the dependent variables while controlling industry, board size, and firm size.

Table 1. Measurement of variables

| <i>Variable</i> | <i>Measurement</i> |
|-----------------------|--|
| ROA | Net income/Total assets |
| Tobin's Q | Total market value of firm/Total asset value |
| Gender diversity | The percentage of women directors on the board |
| Nationality diversity | The percentage of foreign directors on the board |
| Board independence | The percentage of independent directors on the board |
| Industry | Industry types |
| Board size | The number of directors on the board |
| Firm size | The number of employees in the firm |

To determine the effect of independent variables on the dependent variables and the effect

of each variable on a firm's profitability, three statistical models are developed as below:

Module 1:

$$Performance_i = \alpha + \beta_1 INDUSTRY_i + \beta_2 BOARD SIZE_i + \beta_3 FIRM SIZE_i + \beta_4 GENDER_i + \varepsilon_i \quad (3)$$

Module 2:

$$Performance_i = \alpha + \beta_1 INDUSTRY_i + \beta_2 BOARD SIZE_i + \beta_3 FIRM SIZE_i + \beta_4 GENDER_i + \beta_5 BOARD INDEPENDENCE_i + \varepsilon_i \quad (4)$$

Module 3:

$$Performance_i = \alpha + \beta_1 INDUSTRY_i + \beta_2 BOARD SIZE_i + \beta_3 FIRM SIZE_i + \beta_4 GENDER_i + \beta_5 BOARD INDEPENDENCE_i + \beta_6 NATIONAL DIVERSITY_i + \varepsilon_i \quad (5)$$

In these models, *Performance* refers to the financial performance of the firm in *i* times. *INDUSTRY* is the industry classification of the firm; *BOARD SIZE* is the number of directors in the boardroom of the firm. *FIRM SIZE* is the number of employees in the firm. *GENDER* is the percentage of women directors on the board. *BOARD INDEPENDENCE* denotes the nature of independence of the directors on the board, and *NATIONAL DIVERSITY* is the percentage of foreign directors on the board and ε is the error terms.

A hierarchical linear regression model for the analysis is used to be consistent with prior academic studies on the effects of board diversity on firm performance (Mahadeo et al., 2012). Hierarchical regression analysis is a common method to explain if the variable of interest explains a statistical significance of the dependent variable after accounting for all other variables. In this study, the dependent variables (ROA and Tobin's Q) are examined separately in the hierarchical regression and three models are structured hierarchically.

4. RESEARCH RESULTS

Table 2 illustrates the descriptive statistic of the data that is used in this study. Looking at the size of the firms, variations can be observed with a large span ranging from 482 employees to 534652 employees. Our sample includes five different categories of industry based on the Global Industry Classification Standard (GICS). Manufacturing firms represent the largest proportion of the total firms in the sample (50.97%), followed by transportation (33%), mining (7.77%), and real estate (5.83%). The percentage of wholesale and retail trade firms is the lowest at 2.43% out of 206 firms. Firm performance measure, ROA, has a mean value of 0.068 with a relatively small standard deviation of 0.065. The minimum value of ROA is -0.087 and the maximum value is 0.448. Additionally, the smallest value of firm performance measure of Tobin's Q is 0.052 and the largest value is 68.303 with the standard deviation of 0.065. The size of the boards ranges from 5 to 21 members. The average *board size* is 10 members.

Table 2. Descriptive statistics for the sample (N = 206)

| Variable | Minimum | Maximum | Mean | Std. Deviation |
|-------------------------|---------|---------|--------|----------------|
| ROA | -0.087 | 0.448 | 0.068 | 0.065 |
| Tobin's Q | 0.052 | 68.303 | 5.535 | 8.327 |
| Firm size (employees N) | 482 | 534652 | 33638 | 60523 |
| Industry | 1 | 5 | 2.480 | 0.898 |
| Board size | 5 | 21 | 10.090 | 2.777 |
| Gender diversity | 0 | 0.5 | 0.092 | 0.102 |
| Board independence | 0.003 | 0.889 | 0.409 | 0.114 |
| Nationality diversity | 0 | 0.5 | 0.018 | 0.066 |

As stated previously, Tobin's Q indicates the market performance of a selected firm in a given time. In the case Tobin's Q value is greater than 1, the firm shows a positive investment opportunity. Analyzing the descriptive statistic in this study indicates that overall firm performance in the sample appears to be positive, although Tobin's Q value covers a wide interval. The independent variables related to the board characteristics include the proportion of female directors, the proportion of foreign directors, and the proportion of independent directors. The percentage of women on boards has a minimum value of zero and a maximum value of 50%. The average of *gender diversity* on boards is 9.17%, which is a low proportion and reflects male dominance in boardrooms in China. The firms in the sample have an average of 17.8% foreign directors on their boards. The percentage of independent board members reveals that there is a large variation in the percentage of non-executive directors on the boards, ranging from 0.25% to

88.89%. The average *board independence* is 40.94% for the 206 firms.

The study also performs a correlation of coefficient analysis to identify any potential multicollinearity problems among the independent variables of the sample companies. Multicollinearity between two variables usually requires correlations between variables of 0.80 or more. Table 3 provides an overview of the Spearman's rank correlations of all variables, which shows positive and significant correlations between the two dependent variables, ROA and Tobin's Q ($r = 0.299$, $p < 0.01$). This correlation indicates that these two measurements of firm performance both increase or decrease at the same time. The strongest significant correlation ($r = 0.413$) at the 0.01 level can be found between the two variables of *firm size* and the percentage of independent directors. This correlation suggests that the *board independence* level increase when the firm is larger.

Table 3. Spearman's rank correlation of coefficient between variables (N = 206)

| Variable | Firm size | Industry | Board size | Gender diversity | Nationality diversity | Board independence | ROA |
|-----------------------|-----------|----------|------------|------------------|-----------------------|--------------------|--------|
| Industry | -0.161* | | | | | | |
| Board size | 0.102 | -0.010 | | | | | |
| Gender diversity | -0.158* | 0.020 | -0.090 | | | | |
| Nationality diversity | 0.038 | -0.125 | 0.082 | -0.058 | | | |
| Board independence | 0.413** | -0.012 | 0.099 | -0.047 | 0.114 | | |
| ROA | -0.146* | -0.030 | -0.127 | 0.216** | -0.020 | -0.129 | |
| Tobin's Q | -0.143* | 0.039 | 0.022 | 0.051 | -0.012 | -0.073 | 0.299* |

Notes: * $p < 0.1$; ** $p < 0.01$; *** $p < 0.001$.

Nevertheless, the correlation analysis shows significant correlations between the control variable, *firm size*, and both firm performance indicators, ROA and Tobin's Q, although those correlations are negative: ($r = -0.146$, $p < 0.05$) and ($r = -0.143$, $p < 0.05$) respectively. *Firm size* is also negatively correlated with the proportion of female directors (*gender diversity*) at 5 per cent level ($r = -0.158$, $p < 0.05$). These results help confirm the inclusion of *firm size* as a control variable. Correlation analysis does not report any significant associations amongst independent variables. It is noticeable from the correlation analysis that only one board diversity measure (*gender diversity*) has a significantly positive correlation with firm performance

measured by ROA ($r = 0.216$, $p < 0.01$). However, the *gender diversity* variable is not significantly correlated with the other firm performance indicator, Tobin's Q.

In addition to Spearman's rank correlation analysis, a multicollinearity test is performed to detect any multicollinearity issues among the dependent variables. Table 4 presents the tolerance and VIF values of control and independent variables, using ROA and Tobin's Q as dependent variables. It is evident that all tolerance values are approaching 1 and VIF values are lower than 10, which indicates no multicollinearity in our independent variables.

Table 4. Collinearity statistical analysis by using ROA and Tobin's Q

| Variable | ROA | | Tobin's Q | |
|-----------------------|-----------|------|-----------|------|
| | Tolerance | VIF | Tolerance | VIF |
| Firm size | 0.76 | 1.31 | 0.75 | 1.34 |
| Industry | 0.94 | 1.06 | 0.92 | 1.08 |
| Board size | 0.95 | 1.05 | 0.92 | 1.09 |
| Gender diversity | 0.90 | 1.11 | 0.84 | 1.20 |
| Board independence | 0.79 | 1.27 | 0.72 | 1.38 |
| Nationality diversity | 0.96 | 1.04 | 0.96 | 1.05 |

Table 5 illustrates the hierarchical regression analysis results for the effects of board diversity on firm performance using ROA as a dependent

variable. The first value in each cell is the regression coefficient, the second value in the parentheses is the coefficients standard error.

Table 5. Hierarchical regression results by using ROA (Robust N = 206)

| Variables | Model with no independent variables | Model 1 | Model 2 | Model 3 |
|--|-------------------------------------|--------------------|--------------------|--------------------|
| Constant (coefficients standard error-CSE) | 0.110** (0.0211) | 0.094** (0.022) | 0.109** (0.026) | 0.109** (0.026) |
| Control variables | | | | |
| Firm size | -0.143* (0.002) | -0.114 (0.002) | -0.082 (0.002) | -0.081 (0.002) |
| Industry | -0.004 (0.005) | -0.004 (0.005) | -0.004 (0.005) | -0.004 (0.005) |
| Board size | -0.003 (0.002) | -0.002 (0.002) | -0.002 (0.002) | -0.002 (0.002) |
| Independent variables | | | | |
| Gender diversity | | 0.122** (0.044) | 0.123** (0.044) | 0.123** (0.044) |
| Board independence | | | -0.045 (0.043) | -0.045 (0.043) |
| Nationality diversity | | | | 0.005 (0.069) |
| R-square | 0.037 | 0.072 | 0.077 | 0.077 |
| Adjust R-square | 0.023 | 0.053 | 0.054 | 0.049 |
| F-statistic | 2.577 | 3.893** | 3.333** | 2.764* |

Notes: ** indicates $p < 0.01$, and * indicates $p < 0.05$.

The study finds evidence that the hierarchical regression Model 1 is statistically significant (F-statistics 3.893) when three control variables (*firm size*, *industry*, and *board size*) and the independent variable of *gender diversity* are entered into the analysis. However, when we remove *gender diversity* from the model and run the regression with

the control variables (*firm size*, *industry*, and *board size*) only the *firm size* becomes statistically significant at $p > 0.05$ with the F-statistic = 2.577. However, the affect is negatively associated with a coefficient of -0.143.

Additionally, the positive coefficient of the percentage of female directors indicates that

there is a statistically significant positive association between the proportion of females on boards and ROA. This result supports the assumption made in *H1*. Evidence is also found that the R-squared value changes significantly when the percentage of female directors (*gender diversity*) is added into the models. The R-squared value changes from 0.037 to 0.072 or increases to 7.2%. This change explains the finding that a relatively significant part of the variation of firm performance is explained by gender diversity.

In Model 2, *board independence* is included as an independent variable with control variables (*firm size*, *industry*, and *board size*) and another independent variable *gender diversity*. The impact of *board independence* in Model 2 is statistically insignificant, though this model produces a better result than Model 1 with a higher R-squared value (0.077) and statistically significant F-statistics (3.333 at $p > 0.01$).

However, in Model 3 where foreign directors (*nationality diversity*) is included as an independent variable with other control variables (*firm size*, *industry*, and *board size*) and two other independent variables (*gender diversity* and *board independence*), the impact of *board independence* and *nationality diversity* is not statistically significant, though *gender diversity* remains statistically significant. The R-squared value for Model 3 is 0.077, which is consistent with the previous model, with the F-statistics of 1.764 ($p > 0.01$).

When the study uses ROA as the measurement for firm performance with the sample data, *H1* is well supported while *H2* and *H3* are not. The results from the regression analysis suggest that among the three board diversity indicators (*gender diversity*, *nationality diversity*, and *board independence*) only *gender diversity* has a significant positive effect on firm performance in terms of ROA.

Similar hierarchical regression analysis is conducted to measure the impact of board diversity on firm performance measured by Tobin's Q. The results are statistically insignificant for all three models using Tobin's Q as a dependent variable. Therefore, we conclude that none of the three models is a good fit when using Tobin's Q as a dependent variable.

5. DISCUSSION OF THE RESULTS

This research aims to examine the relationship of board diversity with firm performance of publicly listed companies in China by investigating: 1) whether gender diversity has a positive association with the firm performance (*H1*), 2) whether nationality diversity has a positive effect on the firm performance (*H2*), and 3) whether the presence of independent board membership has a positive relationship with the firm performance (*H3*). The research reveals that *H1* is supported through the significantly positive link of gender diversity to firm performance measured by ROA while *H2* and *H3* are not statistically or expressively supported.

The data analysis of this research shows that the board gender diversity (female directors on the board of directors) contributes to a firm's financial performance when it is measured with ROA. This result is consistent with some previous studies in this area (Mahadeo et al., 2012; Kılıç & Kuzey, 2016). Many of the previous studies argue that board gender diversity is beneficial in

improving the quality of board decisions and board reputation, which results in the firm's better financial performance (Mahadeo et al., 2012; Shukla, 2018; Luo et al., 2017). A gender-diverse board of directors enhances access to resources by providing effective communication channels to female clients or female employees (Kagzi & Guha, 2018). Moreover, women's leadership style adds value to the decision-making process, since women perform better in business deals in collective societies (Chakraborty & Saha, 2017). However, some studies conducted in firms of individualistic societies such as the USA and Europe find no evidence of the relationship between board gender diversity and firm performance (Carter et al., 2010; Ahern & Dittmar, 2012). This difference may be explained with the cultural differences between societies. Unlike Western culture, women in Chinese higher echelons come through high competition and extensive experience (Li & Chen, 2018), which may help them in making effective decisions for their businesses.

Although gender diversity is found to have no significant impact on a firm's performance when it is measured with Tobin's Q, as discussed before, measuring subjective issues with Tobin's Q is not above criticism (Wang, 2015). Tobin's Q measure is relatively noisy due to the strong influence of external factors (O'Connell & Cramer, 2010). On the other hand, accounting performance indicators such as ROA are less affected by external factors (O'Connell & Cramer, 2010). Tobin's Q ratio is more linked with the future prospects of the firm measured by the stock market, while ROA measures the operating efficiency of firms (Makhlouf, Laili, Ramli, Al-Sufy, & Basah, 2018). With this discussion, this study reinforces the argument that the board gender diversity has a positive impact on firms' financial performance when it is measured with ROA. This finding practically suggests that firms in China would benefit more from women directorship into their boardrooms, given that the proportion of women directors on board is relatively small in the current context.

The second hypothesis (*H2*) of this study stated that nationality diversity is positively associated with firm performance. However, the regression results from this study indicate that the proportion of foreign directors on boards has no significant relationship with the firm performance. This finding is consistent with the findings drawn by some previous studies (Rose, 2007; Hafsi & Turgut, 2013), despite those researchers' samples being limited to developed countries where the national economy context and culture are different from emerging countries like China.

The effect of board nationality diversity on firm performance is considered to be influenced by the international activities that the firm is dealing with (Anderson, Reeb, Upadhyay, & Zhao, 2011). The international activities include the dealing of business with foreign customers or having subsidiaries in other countries. Therefore, the participation of foreign board members might not be essential in firms that are operating in China only. In situations where corporate governance is typically designed by internal directors (mostly executives) such as in China, the level of involvement of foreign directors in making

important decisions is often limited (Liu et al., 2014). This finding, therefore, implies that companies in China should compose a boardroom that best suits their professional activities because having more foreign directors does not significantly improve firm performance.

Additionally, our study suggests the higher proportion of independent directors in the boardroom does not contribute significant value to the performance of publicly listed companies in China. Such a finding is in line with the findings of some previous studies (Rashid et al., 2010). It thus implies that Chinese firms can provide equal opportunities for independent and inside directors when recruiting directors for their boardrooms. Although this finding is not in line with H3, it offers practical suggestions for human resource strategies in Chinese companies. That is, an equal opportunity policy should be introduced for the recruitment of both inside and outside directors in Chinese firms.

6. CONCLUSION

Overall, the findings of this study have positively contributed to the existing literature on board diversity by providing a robust analysis of the effects of female directors, independent directors, and foreign directors on firms' performance in China. It has been shown that when the proportion of female directors on boards is increased, firms will be benefitted from enhanced return on assets. This positive impact of board gender diversity on firm performance implies that Chinese policymakers, regulators, and corporate decision-makers should consider increasing the proportion of female directors. Some developed countries in the world such as Norway and developing nations like South Africa have legislated

board gender quotas to increase gender diversity on their boards of directors (Kagzi & Guha, 2018). The results of this study have been evidenced with the extant literature, which suggests that companies should broaden their pool of candidates and impose anti-discrimination gender policies when recruiting new directors for Chinese boardrooms.

Through these findings, this research makes contributions to the corporate governance literature as well as infers some managerial implications. Although firm performance in general and board diversity, in particular, have been extensively researched, the impact of board diversity on firm performance still has been the study focus, especially in developing nations. In comparison with emerging nations such as China, despite its impressive economic growth over the last few decades, research on their business firms has remained remote about the impact of board diversity on firm performance. The findings of this research hence help firms, particularly in China, to develop strategic guidelines of board composition to ensure the effectiveness and profitability of their boards to the company and its stakeholders.

Nevertheless, these research findings should be applied with caution owing to their limitations. The research models may be retested in a larger sample and some smaller-sized companies to add more robustness to the results. Future research could as well utilize longitudinal data to provide more comparative analysis and reliability to the findings. Moreover, research may take other board diversity dimensions, such as age or education background of board members, into consideration. Other firm performance indicators, such as return on equity or return on sales may also be measured to enrich the research findings.

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