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# Board Structure and Firm Performance in Emerging Economies: Evidence from Vietnam

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## Abstract

This paper examines the effects of board structure on firm performance in Vietnam using the fixed effect, the random effect, and the least square dummy variable regression models under the panel estimation methods. The paper adopts both the accounting and the market based measures of firm performance. The empirical results reveal that the board size and the board independence are positively and significantly associated with the firm performance in Vietnam. By contrast, supervisory board independence and concentration of non executive directors in the board are negatively associated with the firm performance, implying that they fail to add potential economic value to the firms in Vietnam. Besides, the relationship between board diversity and firm performance is found to be statistically significant only under the Tobin's *q*. The study, however, does not find any significant relationship between supervisory board size and firm performance. The paper argues that emerging economies that have a growing stock market with lagging in prudential laws and regulations such as Vietnam should include more independent members in the board to enhance firm value. Simultaneously, they should carefully monitor the roles and responsibilities of the supervisory board members with an object to reducing organizational delinquency, enhancing the decision making quality, and improving firm's performance.

***Keywords:*** *board structure; firm performance; Vietnam*

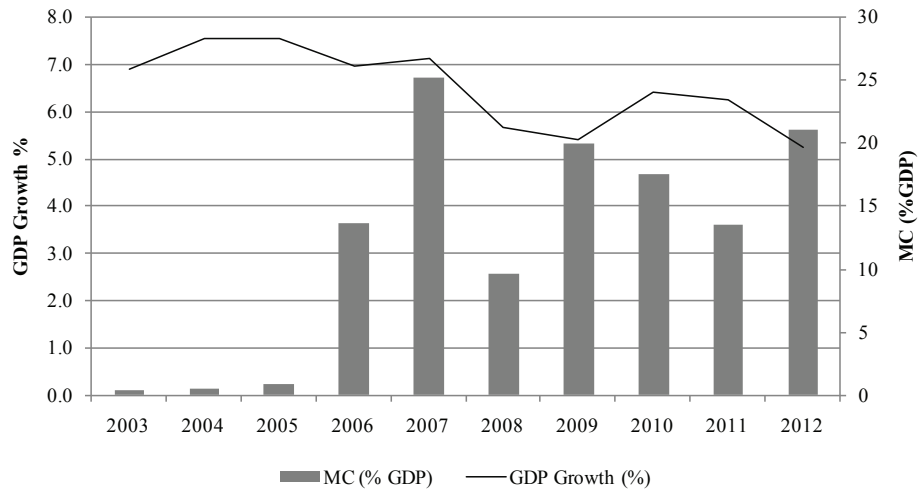
## 1. Introduction

Over the past two decades, the adoption of sound corporate governance practices has received considerable attention in the developed economies in reducing the agency problem and increasing of shareholders' return. In recent years, however, the collapse of corporate stalwarts such as Saytam has created a renewed interest in corporate governance for the emerging economies. As opposed to the developed economies, emerging economies do not have efficient capital markets, sufficient base of institutional investors and prudential rules and regulations that can be used to ensure the appropriate corporate practices. Thus, shareholders of the emerging economies tend to be more vulnerable to the cunning behaviours of the agents as compared to the developed economies. This also implies that shareholders of the emerging economies usually rely on the Board of Directors to receive protection from the opportunistic behaviour of managers. In reality, however, among the voluminous literature of corporate governance, a few studies have examined the relationship between board structure and firm performance in

emerging economies, possibly due to data limitation. This research intends to fill this gap by examining empirically the link between board structure and firm performance in Vietnam, one of the fast growing countries in the Southeast Asia.

The study considers Vietnam for three reasons. First, besides the higher GDP growth rate in 2000s; the stock market (note 1) in Vietnam, since its birth in 2000, has grown substantially to channel capital to growing companies (figure 1). Even, amidst unfavorable global economic recession, the VN-index was regarded as "the best performer in Asia and the second in the world to Ukraine's PFTS index in 2009" (Nguyen & Folkmanis, 2009). The Vietnamese stock market is expected to attract more and more sources of equity capital (note 2) in future, as it grows rapidly and becomes an important emerging market in the world.

Secondly, although the government adopted *DoiMoi*[1] policy in December 1986 and subsequently enacted a number of laws and regulations to promote investment both from the domestic and foreign players, the corporate governance practices remain in a nascent stage in Vietnam. Corporate governance as a separate subject received importance in Vietnam from the year 2005 with the enactment of the Enterprise Law. Arguably, at the initial stage of corporate governance, shareholders tend to be far more vulnerable in emerging economies than are in developed economies to the cunning behaviours of managers because of the institutional lagging and opaqueness of the capital markets. Thus, it is necessary to examine the extent to which board structure influences firms' performance in emerging economies for better policy making. Finally, there is a shortage of quantitative research on the link between board structure and firm performance in Vietnam. In fact, it has been found only one empirical paper on the relationship between corporate governance and firm performance in Vietnam that addressed commercial banks only.




*Source: Adapted by authors from the WDI database, 2012.*

Figure 1: GDP growth rates and Market Capitalization (MC) in Vietnam

In this backdrop, this paper examines the relationship between board structure and firm performance of 58 large publicly traded firms in Vietnam by using the latest econometric devices and thereby expects to supplement empirical evidences to the existing literature.

*1 The "DoiMoi" policy is popularly known as "renovation policy" which aimed at liberalizing the former command economy in favor of the market economy.*

This paper is organized as follows. Section 2 briefly discusses corporate governance system in Vietnam. Section 3 discusses the theories and relevant literature of corporate governance and firm performance and hypotheses of the study. Data description and econometric models are presented in the section 4 of this paper. Section 5 focuses on the empirical results and section 6 discusses results of the study. Final section presents the conclusions of this study.

## 2. Overview of Corporate Governance System in Vietnam

Corporate governance received attention in Vietnam from the year 2005 with the enactment of the Vietnamese Enterprise Law 2005. The Enterprise Law 2005 addresses essential aspects of a publicly traded company in Vietnam. According to this law, Vietnam follows a two-tier corporate governance system where the top management is simultaneously controlled by the two bodies, the Board of Directors (the first checking tier) and the Supervisory Board (the second checking tier), as depicted in figure 2.

The Board of Directors, as a supreme body and representative of all shareholders of a company, is authorized to supervise, control and discipline the top management. In Vietnam, the number of board members is minimum three and maximum eleven. However, corporations can nominate independent members in the board to ensure sound governance. On the other hand, the Supervisory Board supervises both the top management and the Board of Directors. Functions of the Supervisory Board encompass monitoring the performance of management, evaluating the financial accounts, overseeing disclosures and communications made by the enterprise, and other oversight roles. Notably, although both the Board of Directors and the Supervisory Board control the top management, as clearly identified in figure 2, these lines of authority are just superficial. They actually form triangular axes to covertly check each other's behaviours.

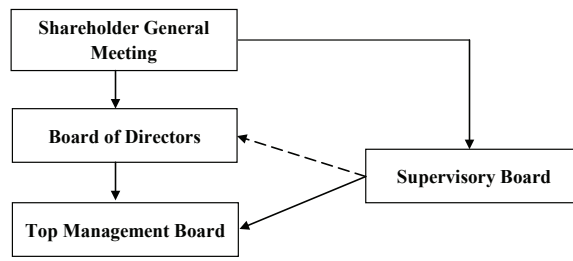



Figure 2: Two-tier corporate governance structure in Vietnamese public companies

## 3. Theories, Empirics, and Hypotheses

### *Board Size and Firm Performance*

The relationship between board size and firm performance is supported by different competing theories. While the agency theory (Berly & Means, 1968) and the resource dependency theory (Peffer & Salancik, 1978) support a large board size, the stewardship theory (Donaldson, 1985) suggests that a small board size is more suitable for effective corporate governance. Under the agency theory, the presence of a board of directors is necessary to ensure that there are representatives of shareholders to control the operations and behaviours of managers. A large board certainly includes more directors who work toward the interests of the owners. As more directors are responsible for supervising and directing managers, the governance tasks are shared among more people, making the job more manageable and consequently more effective.

Thus, the agency theory implies that a large board is expected to enhance firm performance. Likewise, the resource dependency theory proposes that a large board possesses more extensive networking which provide broader access to strategically important resources. Although the resource dependency theory at best advocates the appointment of independent directors who simultaneously have stake outside organizations, appointing more directors to the board more or less follows the practical implication of the theory. A large board with many directors who have their own access to different resources is expected to benefit the operations of the firm. Taken together, both the agency theory and the resource dependency theory explain the positive relationship between board size and firm performance. The stewardship theory, by contrast, supports a negative relationship between board size and firm performance. Under this theory, managers work diligently to attain high profits for the corporation and high returns for the shareholders. Therefore, managers should not be subject to control and supervision from directors. In other words, a small board is more effective in ensuring that managers have enough authority and freedom to implement their jobs like good stewards of the firm.

As regards to the link between board structure and firm performance, empirical studies have found mixed results. Negative relationship has been found in Yermack's research (1996) of large U.S. industrial corporations. In addition, Hermalin and Weisbach (2003) argued that a small board can coordinate and communicate better than a cumbersome large board because information flows more easily in a small board than in a large board, transaction costs are reduced and decision making process is fast. Over a long time horizon, a small board further outperforms a large board by creating more value for the firm. The free-riding problem is also reduced by adopting a small board model. Lipton and Lorsch (1992) argued that in a large board not every director member has enough time at board meetings to put forth his or her own ideas letting the final decision be made from only a few major influential directors. Furthermore, Jensen (1993) reasoned that a large board is less effective than a small board in controlling executives because individual directors find it disincentive to exert self-efforts in monitoring executives' behaviours. In a large board, collective actions are more preferred which increase the free-riding problem.

On the contrary, Kiel and Nicholson (2003) found a positive relationship between board size and firm performance in large Australian firms. They argued that additional directors on the board bring more potential networking and skilled personnel to the firm. This reasoning closely follows the idea of the resource dependency theory. In addition, Adams and Mehran (2003) and Belkhir (2005) found a positive relationship between board size and firm performance in the US bank-holding companies. They argued that in a large board more directors are able to share governing responsibilities and better monitor the managers' behaviours. Therefore, the benefits brought about by better monitoring of more directors tend to offset additional transaction costs.

Although empirical work yielded mixed results for the relationship between board size and firm performance, Shams, Michael, and Wickramanayake (2007) made a good observation that the relationship may follow patterns of an inverted U shape with an average board size of 6.6 in the upward sloping part of the curve and 12.3 in the downward sloping part. The inclusion of additional directors in the board would increase firm performance up to a point until more directors just create problems of low coordination, low communication and free-riders. Owing to this idea and given the mean board size of 58 Vietnamese firms in this research (5.87, table 6), it has been expected a positive relationship between board size and firm performance in Vietnam.

Hypothesis 1: Board size is positively related to firm performance.

***Board Diversity and Firm Performance***

Board diversity, which is measured by the ratio of female directors in the board, and its relationship to firm performance have been mostly examined in conceptual studies. Females typically possess a mindset and working styles different from those of males. Thus, the presence of females in the board is likely to bring new perspectives to the decision making process, to create new values for the firm and to enhance firm performance. In addition, women can provide access to new resources of networking and market segments of which male directors may have too little understanding and perception. Under the idea of resource dependency theory, the inclusion of females in the board of directors creates positive effects on firm performance and can be a good corporate governance mechanism.

In Robinson and Dechant's (1997) conceptual work, five propositions to advocate the diversity of board were proposed. First, corporate diversity promotes a better understanding of the marketplace. Second, diversity increases creativity and innovation. Third, diversity produces more effective problem solving capabilities. Fourth, diversity enhances the effectiveness of corporate leadership. Finally, diversity promotes more effective global relationship.

Empirical work has found mixed results on the relationship between board diversity and firm performance. Carter, Simkins, and Simpson (2002) found a statistically significant positive relationship in a research of a large sample of 637 Fortune 1000 firms after controlling firm size, industry and other corporate governance variables. Niclas, James, and Charles (2003) also found a positive association between board diversity and firm performance in a research sample of 127 large U.S. companies. In contrast, a negative relationship was found in the research work of Shrader, Blackburn, and Iles (1997) with a sample of 200 firms from Fortune 500 firms and Darmadi (2011) with a sample of 169 listed Indonesian companies. Darmadi argued that the appointment of women to the board of directors in Indonesian firms is largely driven by family relationship with important shareholders rather than by expertise and experience. However, Marinova, and Plantenga (2010) found that there is no effect of board diversity on firm performance in their research on 186 listed firms in Netherlands and Denmark.

In the case of listed companies in Vietnam, most women sitting in the board of directors have a respected academic background and sufficient working experiences. Thus, a positive relationship between board diversity and firm performance is expected.

Hypothesis 2: Board diversity is positively related to firm performance.

***Independent Directors and Firm Performance***

The appointment of independent directors to the board is strongly supported by the resource dependency theory. Independent directors through their wide networking with the external environment provide the firm new access to valuable resources. In addition, independent directors are more motivated to protect shareholders' interests to keep a good reputation in the market for outside directorships (Fama, 1980). Farrell and Whidbee (2000) also argued that independent directors tend to maintain and upraise their reputation rather than to work opportunistically for self-interests. Thus, a presence of independent directors on the board is expected to improve firm performance.

However, empirical evidences provide mixed results for the relationship between independent directors and firm performance. Park, Choi, and Yoo (2007) found strongly positive effects of independent directors on firm performance in Korean firms for the period 1999-2002, the aftermath of the Asian financial crisis of 1997. Park et al. (2007) suggested that board independence is critical in emerging market environments, which are subject to economic instability, external shocks and problems of lacking sufficient liquidity and infrastructure. In

addition, Chen (2008) in a research of all listed companies in Gre Tai Securities Market (Taiwan) found a significantly positive relationship between the presence of independent directors on the board and accounting performance of the firm. Shams et al. (2007) found a positive relationship between the proportion of independent directors on the board and performance of Thai banks.

By contrast, Bhagat and Black (2002) in a research of large American firms empirically showed that firms with more independent boards do not perform better than other firms. In a sample of top 100 listed Australian firms, Lawrence and Stapledon (1999) noted that the proportion of independent directors has no statistically significant influence on a company's management resources and performance. Agralwal and Knoeber (1996) also revealed similar results. Park et al. (2007) suggested that there may be a possibility that the effect of independent directors on firm performance is culture and situation bound. Following this idea and given that Vietnam is an emerging market that is subject to external shocks and vulnerable to the problems of insufficient liquidity and low developed infrastructure, a positive relationship between the number of independent directors on the board and firm performance is expected.

Hypothesis 3: The proportion of independent directors on the board is positively related to firm performance.

***Supervisory Board size, its Independence and Firm Performance***

As Vietnam follows a two-tier corporate governance system, the governance responsibilities are allocated not only to the board of directors but also to the supervisory board. However, the latter is expected to perform more oversight roles, watching over even the behaviours and performance of board directors. Thus, a supervisory board with more members is expected to provide more human resources for supervisory tasks. In other words, supervisory board size would have a positive association with firm performance.

However, empirical analysis on the relationship between supervisory board structure and firm performance is very limited and indirect. Klein (2002) found a negative relationship between audit committee independence and abnormal accruals which signify earnings manipulation. Thus, the hypothesis formulation in this case is largely subject to self-reasoning and self-judgment. In the case of Vietnam, the following two hypotheses have been considered.

Hypothesis 4: Supervisory board size is positively related to firm performance.

Hypothesis 5: The proportion of independent members in the supervisory board is positively related to firm performance.

***Non-executive Directors on the Board and Firm Performance***

The effect of the presence of non-executive directors on the board on firm performance is supported by the agency cost theory. The theory suggests that a board with a high proportion of executive directors may be influenced by executive management team and therefore be easily controlled by executives. Instead of playing the role of governing executives' behaviours and direct their actions, a board run by many executive directors loses its authority, power and influence over the managers. Thus, a board with large number of non executive directors is expected to perform better and bring about superior firm performance. Mace (1971) argued that non-executive directors would oppose exceedingly poor performance or obviously bad proposals.

Prior empirical studies mostly found a positive relationship between the proportion of non-executive directors on the board and firm performance. Hutchinson (2002) in his research

of 229 Australian firms found that firms with an increased number of non executive directors on the board perform better. Mura (2007) also found a positive relationship between non executive directors and firm performance.

As both conceptual and empirical studies support a positive relationship between the proportion of non-executive directors on the board and firm performance, it has been expected that there is a positive relationship between them in the case of Vietnam too.

Hypothesis 6: The proportion of non-executive directors on the board is positively related to firm performance.

## 4. Data Description and Econometric Model

The data of the study cover 58 large publicly traded firms in Vietnam over the period 2007-2009. All the firms have been randomly selected from the Ho Chi Minh Stock Exchange (HOSE). The sample size is about 25% of the number of firms on the HOSE (as of end 2010). The sample is assumed to be fairly representative of all the large public firms in the country. The data have been collected from 2007 because financial information of publicly traded companies was not well disclosed before the year 2007. Besides, data are collected and tabulated by the authors from the annual reports of the companies as there were no electronic databases of financial, statistical and market information on Vietnamese listed companies. The research supports a panel analysis with a total of 174 observations. This is a perfectly balanced panel with each firm having the same number of observations. In addition, the panel is a short panel with the number of cross-sectional subjects (firms) being greater than the number of periods.

To measure the firm performance, the study uses ROE, ROA and Tobin's q. While ROE is generally used by shareholders and potential investors in making investment decision, ROA is commonly used to evaluate the performance of managers in utilizing a firm's assets. Tobin's q, on the other hand, reflects the market assessment of the value of a firm. According to Jacobson (1987), and Landsman and Shapiro (1989), while both ROE and ROA have their own shortcomings as a proxy to firm performance, they are highly correlated. Therefore, it is suggested that the three proxies should be used interchangeably to measure firm's performance. Thus, the study includes all the three proxies to get better insights into the firm performance. Independent variables of the study include (1) board size, (2) board diversity, (3) board independence, (4) supervisory board size, (5) supervisory board independence and (6) the concentration of non-executives in the board. Further, the study involves three control variables such as firm size, leverage and industry dummies to ensure robustness of the results. The description of dependent, independent, and control variables are summarized in table 1. In order to find the relationship between board structure and firm performance, the following regression model is used.

$$(performance)_{it} = \left\{ \begin{array}{l} \beta_1 + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 D_{1it} + \beta_5 D_{2it} + \beta_6 D_{3it} + \beta_7 D_{4it} \\ + \beta_8 D_{5it} + \beta_9 D_{6it} + \beta_{10} D_{7it} + \beta_{11} D_{8it} + \beta_{12} D_{9it} + \beta_{13} D_{10it} + \\ \beta_{14} BS_{it} + \beta_{15} BD_{it} + \beta_{16} BI_{it} + \beta_{17} SBS_{it} + \beta_{18} SBI_{it} + \beta_{19} CEB_{it} + u_{it} \end{array} \right\}$$

where, $i = 1, 2\ldots 58$; $t = 1, 2, 3$; Performance: ROE, ROA or Q Thus, the study has three basic models. To select an appropriate model – Fixed Effect model (FE) model or Random Effect (RE) model – the study proceeds as follows. First, the Hausman testis invoked to understand which model would be a preferred model (Gujurati & Porter, 2009). The results of the Hausman test are shown in table 2.

Table 1: Descriptions of variables

| Abbreviation | Name | Descriptions |
|---|---|---|
| | | **Dependent Variables** |
| ROE | ROE | Ratio between net income and the average total equity for each year |
| ROA | ROA | Ratio between net income and the average total assets for each year |
| Q | Tobin's q | Ratio between the market and replacement value of a company's total assets |
| | | $\text{Tobin's q} = \frac{\text{LIABOOK + (COMSTOCK-TREASTOCK) * STOCK PRICE}}{\text{TOTAL ASSETS TO BOOK VALUE}}$ |
| | | With LIABOOK is the book value liabilities as at the end of each year<br>COMSTOK is the total number of common stocks as at the end of each year<br>TREASTOK is the number of treasury stock as at the end of each year<br>STOKPR is the closing stock price at the end of each year |
| | | **Independent Variables** |
| BS | Board size | Number of members on the board of directors as at the end of each year |
| BD | Board diversity | The proportion of female members on the board of directors as at the end of each year |
| BI | Board independence | The proportion of independent members on the board as at the end of each year |
| SBS | Supervisory board size | Number of members on the supervisory board as at the end of each year |
| SBI | board independence | The proportion of independent members on the supervisory board as at the end of each year |
| CEB | Concentration of non-executives on the board | The proportion of non-executive directors on the board as at the end of each year |
| | | **Control Variables** |
| SIZE | Firm size | Natural log of total assets as at the end of each year |
| LEV | Leverage | Ratio between total assets and total equity as at the end of each year |
| D1 | Dummy 1 | Agriculture Industry |
| D2 | Dummy 2 | Banking and Finance |
| D3 | Dummy 3 | Construction |
| D4 | Dummy 4 | Food Processing |
| D5 | Dummy 5 | Heavy Machineries |
| D6 | Dummy 6 | Pharmaceuticals |
| D7 | Dummy 7 | Real Estate |
| D8 | Dummy 8 | Technology and Communication |
| D9 | Dummy 9 | Utilities |
| D10 | Dummy 10 | Others |

Table 2: Hausman test

| Model with dependent variable | Chi-square Statistics | Degree of freedom | p-value |
|---|---|---|---|
| ROE | 19.94 | 8 | 0.0105** |
| ROA | 18.67 | 8 | 0.0167** |
| Q | 8.70 | 8 | 0.3686 |

** denote statistically significant at the 5% level

The Hausman test rejects the RE model against FE model for models with ROE and ROA, as the p-values of these models are found to be highly significant at the 5% level. On the other hand, the Hausman test for the model with Tobin's q accepts the null hypothesis and confirms that the RE model is an appropriate model for Tobin's q. Thus, there are two FE models with ROE and ROA, and one RE model with Tobin's q.

$$(1) ROE_{it} = \left\{ \begin{array}{l} \beta_{1i} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 D_{1it} + \beta_5 D_{2it} + \beta_6 D_{3it} + \beta_7 D_{4it} \\ + \beta_8 D_{5it} + \beta_9 D_{6it} + \beta_{10} D_{7it} + \beta_{11} D_{8it} + \beta_{12} D_{9it} + \beta_{13} D_{10it} + \\ \beta_{14} BS_{it} + \beta_{15} BD_{it} + \beta_{16} BI_{it} + \beta_{17} SBS_{it} + \beta_{18} SBI_{it} + \beta_{19} CEB_{it} + u_{it} \end{array} \right\}$$

$$(2)ROA_{it} = \left\{ \begin{array}{l} \beta_{1i} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 D_{1it} + \beta_5 D_{2it} + \beta_6 D_{3it} + \beta_7 D_{4it} \\ + \beta_8 D_{5it} + \beta_9 D_{6it} + \beta_{10} D_{7it} + \beta_{11} D_{8it} + \beta_{12} D_{9it} + \beta_{13} D_{10it} + \\ \beta_{14} BS_{it} + \beta_{15} BD_{it} + \beta_{16} BI_{it} + \beta_{17} SBS_{it} + \beta_{18} SBI_{it} + \beta_{19} CEB_{it} + u_{it} \end{array} \right\}$$

$$(3)Q_{it} = \left\{ \begin{array}{l} \beta_{1i} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 D_{1it} + \beta_5 D_{2it} + \beta_6 D_{3it} + \beta_7 D_{4it} \\ + \beta_8 D_{5it} + \beta_9 D_{6it} + \beta_{10} D_{7it} + \beta_{11} D_{8it} + \beta_{12} D_{9it} + \beta_{13} D_{10it} + \\ \beta_{14} BS_{it} + \beta_{15} BD_{it} + \beta_{16} BI_{it} + \beta_{17} SBS_{it} + \beta_{18} SBI_{it} + \beta_{19} CEB_{it} + w_{it} \end{array} \right\}$$

Where

$$\left\{ \begin{array}{l} \beta_{1i} = \beta_1 + \varepsilon_i \\ w_{1i} = \varepsilon_i + u_{1t} \end{array} \right\}$$

Some assumptions are needed for the REM model:

$$\left\{ \begin{array}{l} \varepsilon_i \sim N(0, \delta_\varepsilon^2 \\ u_{1i} \sim N(0, \delta_u^2 \\ E(\varepsilon_i u_{it}) = E(\varepsilon_i \varepsilon_j) = E(u_{it} u_{is}) = E(u_{it} u_{ij}) = E(u_{it} u_{js}) = 0 (i \neq j; t \neq s) \end{array} \right\}$$

In addition, the study tests for the fixed effect using least squares dummy variable (LSDV) model to allow the (fixed effect) intercept to vary among the companies. Thus, models (1) and (2) are modified as follows.

$$(4)ROE_{it} = \left\{ \begin{array}{l} \alpha_1 + \alpha_1 E_{2i} + ... + \alpha_{58} E_{58i} \\ \beta_{1i} + \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 D_{1it} + \beta_5 D_{2it} + \beta_6 D_{3it} + \beta_7 D_{4it} \\ + \beta_8 D_{5it} + \beta_9 D_{6it} + \beta_{10} D_{7it} + \beta_{11} D_{8it} + \beta_{12} D_{9it} + \beta_{13} D_{10it} + \\ \beta_{14} BS_{it} + \beta_{15} BD_{it} + \beta_{16} BI_{it} + \beta_{17} SBS_{it} + \beta_{18} SBI_{it} + \beta_{19} CEB_{it} + u_{it} \end{array} \right\}$$

$$(5)ROA_{it} = \left\{ \begin{array}{l} \alpha_1 + \alpha_1 E_{2i} + ... + \alpha_{58} E_{58i} \\ \beta_2 SIZE_{it} + \beta_3 LEV_{it} + \beta_4 D_{1it} + \beta_5 D_{2it} + \beta_6 D_{3it} + \beta_7 D_{4it} \\ + \beta_8 D_{5it} + \beta_9 D_{6it} + \beta_{10} D_{7it} + \beta_{11} D_{8it} + \beta_{12} D_{9it} + \beta_{13} D_{10it} + \\ \beta_{14} BS_{it} + \beta_{15} BD_{it} + \beta_{16} BI_{it} + \beta_{17} SBS_{it} + \beta_{18} SBI_{it} + \beta_{19} CEB_{it} + u_{it} \end{array} \right\}$$

With $E_n$ is the $n^{th}$ firm where $E_{2i} = 1$ for firm 1, 0 other wise and so on. Only 57 dummy variables are introduced to avoid dummy variable trap.

Second, the study conducts heteroskedasticity test for the main three models (1), (2) and (3). The results are shown in table 3. For the two FE models (1) and (2), the Modified Wald

test (for testing the group-wise heteroskedasticity) is used and the results confirm the presence of heteroskedasticity. Similarly, for the RE model (model 3), the Breusch-Pagan Lagrange Multiplier (BPLM) test detects heteroskedasticity. As a result, the study uses "robust" standard error type regression model to control the heteroskedasticity.

Table 3: Heteroskedasticity test

| Model | Chi-square | d.f. | p-value |
|---|---|---|---|
| Panel A: Modified Wald Test | | | |
| (1) | 1.00E+05 | 58 | 0.0000*** |
| (2) | 6.70E+05 | 58 | 0.0000*** |
| Panel B: Breusch-Pagan LM Test | | | |
| (3) | 218.43 | 17 | 0.0000*** |

*** denote statistically significant at the 1% level

Table 4: Autocorrelation test

| Model | F-statistics | d.f. | p-value |
|---|---|---|---|
| (1) | 1.025 | 57 | 0.3155 |
| (2) | 1.462 | 57 | 0.2315 |
| (3) | 9.329 | 57 | 0.0034*** |

*** denote statistically significant at the 1% level

Table 5: Testing methods

| Dependent Variables | Methods | Model Applied |
|---|---|---|
| ROE | Fixed effects linear regression (FELR) adjusted for "robust" standard error type | (1) |
| | Least-squares dummy variable (LSDV) adjusted for "robust" standard error type | (4) |
| | Feasible generalized least squares (FGLS) adjusted for heteroskedasticity and no autocorrelation | (1) |
| ROA | Fixed effects linear regression (FELR) adjusted for "robust" standard error type | (2) |
| | Least-squares dummy variable (LSDV) adjusted for "robust" standard error type | (5) |
| | Feasible generalized least squares (FGLS) adjusted for heteroskedasticity and no autocorrelation | (2) |
| Tobin's q | Random effects linear regression (RELR) adjusted for "robust" standard error type | (3) |
| | Feasible generalized least squares (FGLS) adjusted for heteroskedasticity and first-order autocorrelation | (3) |

Finally, the study conducts a serial correlation test in the above three models. According to Drukker (2003), testing for serial correlation in linear panel data models is important and necessary because the presence of serial correlation biases the standard errors and makes the results to be less efficient. Although serial correlation is not a serious problem in micro panels with few years, the study invokes a serial correlation test to allow for justifiable adjustments to determine a suitable regression method. To this end, the Wooldridge test, of which the null hypothesis is no first-order autocorrelation, is used to test the presence of autocorrelation in three panel models (1), (2) and (3). Table 4 shows the results of the Wooldridge test. Accordingly, models (1) and (2), reveal no evidence of first order autocorrelation as *p* values fail to reject the null hypothesis. However, model (3) detects a first-order autocorrelation. The study comes up with the regression models presented in table 5.

## 5. Empirical Results

### *Descriptive Statistics*

Table 6 presents descriptive statistics relating to the variables included in the study. Panel A indicates that ROE has a mean value of 19.48% with the standard deviation 15.85%. The minimum ROE is 12.23% and the maximum is 101.55%. On the other hand, ROA has a mean value of 9.45%, the standard deviation 9.01%, the minima -6.83%, and the maxima 57.48%. Likewise, Tobins' q shows the mean value 1.455, standard deviation 1.036, minima 0.288, and the maxima 9.075.

Table 6: Descriptive statistics

| Variable | Number of observations | Mean | Standard Deviation | Minimum | Maximum |
|---|---|---|---|---|---|
| *Panel A: Dependent Variables* | | | | | |
| ROE | 174 | 0.1948 | 0.1585 | -0.1223 | 1.0155 |
| ROA | 174 | 0.0945 | 0.0901 | -0.0683 | 0.5748 |
| Q | 174 | 1.4550 | 1.0360 | 0.2880 | 9.0750 |
| *Panel B: Independent Variables* | | | | | |
| BS | 174 | 5.8740 | 1.3840 | 4.0000 | 11.0000 |
| BD | 174 | 0.1550 | 0.1620 | 0.0000 | 0.6700 |
| BI | 174 | 0.4440 | 0.2510 | 0.0000 | 1.0000 |
| SBS | 174 | 3.0400 | 0.3460 | 2.0000 | 5.0000 |
| SBI | 174 | 0.6270 | 0.3640 | 0.0000 | 1.0000 |
| CEB | 174 | 0.6490 | 0.1910 | 0.2000 | 1.0000 |
| *Panel C: Control Variables* | | | | | |
| SIZE | 174 | 27.3380 | 1.1630 | 25.2100 | 31.8100 |
| LEV | 174 | 2.3370 | 1.2300 | 1.0100 | 6.9400 |
| D1 | 174 | 0.1210 | 0.3270 | 0.0000 | 1.0000 |
| D2 | 174 | 0.0170 | 0.1310 | 0.0000 | 1.0000 |
| D3 | 174 | 0.1720 | 0.3790 | 0.0000 | 1.0000 |
| D4 | 174 | 0.0520 | 0.2220 | 0.0000 | 1.0000 |
| D5 | 174 | 0.1030 | 0.3050 | 0.0000 | 1.0000 |
| D6 | 174 | 0.0340 | 0.1830 | 0.0000 | 1.0000 |
| D7 | 174 | 0.0690 | 0.2540 | 0.0000 | 1.0000 |
| D8 | 174 | 0.0520 | 0.2220 | 0.0000 | 1.0000 |
| D9 | 174 | 0.1210 | 0.3270 | 0.0000 | 1.0000 |
| D10 | 174 | 0.2590 | 0.4390 | 0.0000 | 1.0000 |

Panel B provides descriptive statistics for the independent variables. Accordingly, Board Size (BS) has a mean of 5.874, the standard deviation 1.384, the minima 4, and the maxima 11 measured in persons unit. Board Diversity (BD) or the proportion of female directors in the board has a mean value 0.155, the standard deviation 0.162, the minima 0, and the maxima 0.67 in terms of unit ratios. Board Independence (BI) or the proportion of independent directors in the board has a mean value of 0.444, the standard deviation 0.251, the minima 0, and the maxima 1 measured as unit ratios. Supervisory Board Size (SBS) shows the mean value 3.04, the standard deviation 0.346, the minima 2, and the maxima 5 measured in persons unit. SBI or the proportion of independent members in the supervisory board has a mean value 0.627, the standard deviation 0.364, the minima 0, and the maxima 1 measured as unit ratios. Finally, the concentration of non-executive directors or the proportion of non executive directors in the board (CEB) has a mean value 0.649, the standard deviation 0.191, the minima 0.2, and the maximum 1, measured as unit ratios.

Panel C presents descriptive statistics for the control variables. Firm Size (SIZE) has a mean value of 27.338, the standard deviation of 1.163, the minima 25.21, and the maxima 31.81, measured in units. Leverage (LEV) shows the mean value 2.337, the standard deviation 1.230, the minima 1.01, and the maxima 6.94 measured in times. Notably, descriptive statistics for industry dummy variables in table 6 are not well interpretative. Therefore, table 7 is prepared to present the distribution of industries in the sample. Accordingly, a large portion of the firms belong to construction industry, agriculture, heavy machineries, utilities and other categories.

Table 7: Industry composition

| Variable | Name | Percentage |
|---|---|---|
| D1 | Agriculture | 12.07% |
| D2 | Banking and finance | 1.73% |
| D3 | Construction | 17.24% |
| D4 | Food Processing | 5.17% |
| D5 | Heavy machineries | 10.34% |
| D6 | Pharmaceuticals | 3.45% |
| D7 | Real estate | 6.90% |
| D8 | Technology and Communication | 5.17% |
| D9 | Utilities | 12.07% |
| D10 | Others | 25.86% |

### *Regression Results*

*Regressions with ROE as a Measure of Firm Performance*

Tables 8, 9 and 10 present the regression results for ROE using different regression models mentioned in Section 4. Under the Fixed Effect (FE) regression model, Board Size (BS) and Board Independence (BI) have positively and significantly related with ROE. Besides, a significant negative association is found between the proportion of non-executive directors in the board and ROE. The FE model drops industry dummies due to multicolinearity problem, and possibly this has resulted in a low *R*-square value (14.29%) for this model.

Finally, the Feasible Generalized Least Squares (FGLS) method adjusted for heteroskedasticity and no autocorrelation shows a statistically significant (at the 10% level) positive relationship between BI and ROE. This finding is consistent with the previous two methods. In addition, a negative association is found between the proportion of Independent members in the Supervisory Board (SBI) and ROE. Other independent variables of interest do not reveal any statistically significant relationship with ROE.

Table 8: Fixed effects regression adjusted for "robust" standard error type

| **Dependent variable: ROE** | | | R-square: within = 0.1429 | |
|---|---|---|---|---|
| Number of observations | = 174 | | between = 0.0180 | |
| F(8,57 ) | = 2.60 | | overall = 0.0018 | |
| P-Value (>F) | **= 0.0172**** | | | |
| | **Coefficient** | **Robust Std. Error** | **t Statistics** | **P-Value** |
| BS | 0.06644 | 0.02642 | 2.51 | **0.015**** |
| BD | -0.16864 | 0.12566 | -1.34 | 0.185 |
| BI | 0.36614 | 0.13839 | 2.65 | **0.011**** |
| SBS | -0.01697 | 0.04636 | -0.37 | 0.716 |
| SBI | 0.17351 | 0.11776 | 1.47 | 0.146 |
| CEB | -0.28367 | 0.12200 | -2.33 | **0.024**** |
| SIZE | 0.02819 | 0.05824 | 0.48 | 0.630 |
| LEV | -0.00816 | 0.03017 | -0.27 | 0.788 |
| C | -0.95660 | 1.65192 | -0.58 | 0.565 |

** denote statistically significant at the 5% level

Table 9: Least Squares Dummy Variable (LSDV) regression adjusted for "robust" standard error type

| **Dependent variable: ROE** | | | Number of observations = 174 | |
|---|---|---|---|---|
| F( 65 , 108 ) | = 6.33 | | R-square = 0.6479 | |
| P-Value (>F) | = **0.0000***** | | | |
| | **Coefficient** | **Robust Std. Error** | **t Statistics** | **P-Value** |
| BS | 0.06644 | 0.02514 | 2.64 | **0.009***** |
| BD | -0.16864 | 0.12062 | -1.40 | 0.165 |
| BI | 0.36614 | 0.14083 | 2.60 | **0.011**** |
| SBS | -0.01697 | 0.04918 | -0.35 | 0.731 |
| SBI | 0.17351 | 0.11423 | 1.52 | 0.132 |
| CEB | -0.28367 | 0.13262 | -2.14 | **0.035**** |
| SIZE | 0.02819 | 0.05408 | 0.52 | 0.603 |
| LEV | -0.00816 | 0.02899 | -0.28 | 0.779 |
| D1 | 0.84120 | 0.35332 | 2.38 | **0.019**** |
| D3 | 1.06571 | 0.35236 | 3.02 | **0.003***** |
| D4 | 0.80475 | 0.36393 | 2.21 | **0.029**** |
| D5 | 0.74558 | 0.29675 | 2.51 | **0.013**** |
| D6 | 0.85730 | 0.35164 | 2.44 | **0.016**** |
| D7 | 0.94809 | 0.32967 | 2.88 | **0.005***** |
| D9 | 0.80426 | 0.30790 | 2.61 | **0.010***** |
| D10 | 0.82125 | 0.37717 | 2.18 | **0.032**** |

***, **, * denote statistically significant at the 1%, 5% and 10% level, respectively.

*Regressions with ROA as a Measure of Firm Performance*

Tables 11, 12, and 13 present the regression output under different estimation models using ROA as a measure of firm performance. The regression results show similar performance as obtained in the case of ROE. For instance, both the FE and LSDV models reveal a statistically significant positive relationship for BS and BI with the ROA. Similarly, a statistically significant negative relationship is found between CEB and ROA under both the FE and LSDV models. Among the control variables, Leverage (LEV) is found to be negatively related with ROA under all the

estimation methods. Notably, the Feasible Generalized Least Squares (FGLS) model reveals a statistically significant negative association between Supervisory Board Independence (SBI) and ROA. However, for other independent variables of interest, the FGLS model does not find and significant relationship with ROA.

Table 10: Feasible Generalized Least Squares (FGLS) regression[2]

| **Dependent variable: ROE** | | | Number of observations | = 174 |
|---|---|---|---|---|
| Panels: | heteroskedastic | | Wald Chi-square (17) | = 204.39 |
| Correlation: | no autocorrelation | | P-Value (>Chi2) | = **0.0000*****|
| | **Coefficient** | **Std. Error** | **t-Statistics** | **P-Value** |
| BS | -0.00910 | 0.00589 | -1.54 | 0.122 |
| BD | 0.06419 | 0.04785 | 1.34 | 0.180 |
| BI | 0.06921 | 0.04020 | 1.72 | **0.085*** |
| SBS | 0.00557 | 0.02528 | 0.22 | 0.826 |
| SBI | -0.06336 | 0.03041 | -2.08 | **0.037**** |
| CEB | -0.02119 | 0.04945 | -0.43 | 0.668 |
| SIZE | -0.00468 | 0.00681 | -0.69 | 0.492 |
| LEV | 0.01593 | 0.00427 | 3.73 | **0.000***** |
| D1 | -0.07824 | 0.02119 | -3.69 | **0.000***** |
| D2 | -0.09267 | 0.04512 | -2.05 | **0.040**** |
| D3 | -0.04149 | 0.02320 | -1.79 | **0.074*** |
| D4 | -0.09835 | 0.04127 | -2.38 | **0.017**** |
| D8 | -0.13501 | 0.04217 | -3.20 | **0.001***** |
| D9 | -0.04102 | 0.02230 | -1.84 | **0.066*** |
| C | 0.34637 | 0.20262 | 1.71 | **0.087*** |

***, **, * denote statistically significant at the 1%, 5% and 10% level, respectively

Table 11: Fixed Effects Regression Adjusted for "Robust" Standard Error Type

| **Dependent variable: ROA** | | | R-square: within = 0.1639 |
|---|---|---|---|
| Number of observations | = 174 | | between = 0.0035 |
| F( 8 , 57 ) | = 2.25 | | overall = 0.0005 |
| P-Value (>F) | = **0.0369**** | | |
| | **Coefficient** | **Robust Std. Error** | **t Statistics** | **P-Value** |
| BS | 0.03321 | 0.01602 | 2.07 | **0.043**** |
| BD | -0.07069 | 0.06614 | -1.07 | 0.290 |
| BI | 0.21740 | 0.07811 | 2.78 | **0.007***** |
| SBS | -0.02368 | 0.02699 | -0.88 | 0.384 |
| SBI | 0.06148 | 0.06611 | 0.93 | 0.356 |
| CEB | -0.09030 | 0.05232 | -1.73 | **0.090*** |
| SIZE | 0.01081 | 0.03280 | 0.33 | 0.743 |
| LEV | -0.02619 | 0.01360 | -1.93 | **0.059*** |
| C | -0.32827 | 0.93982 | -0.35 | 0.728 |

***, **, * denote statistically significant at the 1%, 5% and 10% level, respectively

*Regressions with Tobin's q as the proxy for firm performance*

Tables 14 and 15 provide regression results under the Random Effect (RE) and FGLS models respectively using Tobin's *q* as a proxy of firm performance. Accordingly, the RE model finds

2 *Only significant dummy variables have been reported. Full results can be obtained on request for all cases.*

that BI is negatively and significantly related with Tobin's $q$. This result is inconsistent with the result obtained in the case of ROE and ROA. On the other hand, the FGLS model reveals a significant positive relationship between BD and Tobin's $q$. Besides, a significant negative relationship is obtained between SBI and Tobin's $q$. However, the remaining independent variables do not confirm any statistically significant relationship with Tobin's $q$.

Table 12: Feasible Generalized Least Squares (FGLS) regression

| **Dependent variable: ROA** | | | Number of observations | = 174 |
|---|---|---|---|---|
| Panels: | heteroskedastic | | Wald Chi-square (17) | = 164.91 |
| Correlation: | no autocorrelation | | P-Value (>Chi2) | = **0.0000*****|
| | **Coefficient** | **Std. Error** | **t-Statistics** | **P-Value** |
| BS | -0.00142 | 0.00387 | -0.37 | 0.714 |
| BD | 0.04613 | 0.02992 | 1.54 | 0.123 |
| BI | 0.01267 | 0.01866 | 0.68 | 0.497 |
| SBS | 0.00176 | 0.01171 | 0.15 | 0.881 |
| SBI | -0.03101 | 0.01428 | -2.17 | **0.030**** |
| CEB | -0.02361 | 0.02091 | -1.13 | 0.259 |
| SIZE | 0.00119 | 0.00379 | 0.32 | 0.753 |
| LEV | -0.01739 | 0.00306 | -5.67 | **0.000***** |
| D1 | -0.04797 | 0.01106 | -4.34 | **0.000***** |
| D3 | -0.02485 | 0.01068 | -2.33 | **0.020**** |
| D4 | -0.05307 | 0.01887 | -2.81 | **0.005***** |
| D8 | -0.05690 | 0.02576 | -2.21 | **0.027**** |
| C | 0.13452 | 0.11696 | 1.15 | 0.250 |

***, **, * denote statistically significant at the 1%, 5% and 10% level, respectively

Table 13: Least-Squares Dummy Variable (LSDV) regression adjusted for "robust" standard error type

| **Dependent variable: ROA** | | | Number of observations | = 174 |
|---|---|---|---|---|
| F( 65 , 108 ) | = 5.83 | | R-square | = 0.6793 |
| P-Value (>F) | = **0.0000*****| | | |
| | **Coefficient** | **Robust Std. Error** | **t Statistics** | **P-Value** |
| BS | 0.03321 | 0.01476 | 2.25 | **0.026**** |
| BD | -0.07069 | 0.06533 | -1.08 | 0.282 |
| BI | 0.21740 | 0.07966 | 2.73 | **0.007***** |
| SBS | -0.02368 | 0.02957 | -0.80 | 0.425 |
| SBI | 0.06148 | 0.06503 | 0.95 | 0.347 |
| CEB | -0.09030 | 0.05132 | -1.76 | **0.081*** |
| SIZE | 0.01081 | 0.02974 | 0.36 | 0.717 |
| LEV | -0.02619 | 0.01245 | -2.10 | **0.038**** |
| D1 | 0.41896 | 0.18931 | 2.21 | **0.029**** |
| D3 | 0.50281 | 0.16676 | 3.02 | **0.003***** |
| D4 | 0.43308 | 0.19443 | 2.23 | **0.028**** |
| D5 | 0.36978 | 0.15756 | 2.35 | **0.021**** |
| D6 | 0.40873 | 0.19335 | 2.11 | **0.037**** |
| D7 | 0.46147 | 0.17640 | 2.62 | **0.010***** |
| D8 | 0.17644 | 0.16107 | 1.10 | 0.276 |
| D9 | 0.38974 | 0.16793 | 2.32 | **0.022**** |
| D10 | 0.38728 | 0.21334 | 1.82 | **0.072*** |

***, **, * denote statistically significant at the 1%, 5% and 10% level, respectively

Table 14: Random effects regression adjusted for "robust" standard error type

| **Dependent variable: Q** | | | R-square: within = 0.0184 | |
|---|---|---|---|---|
| Number of observations | = 174 | | between = 0.3322 | |
| Wald Chi-square (17) | = 31.94 | | overall = 0.1944 | |
| P-Value (>Chi2) | = **0.0153**** | | | |
| | **Coefficient** | **Robust Std. Error** | **t Statistics** | **P-Value** |
| BS | 0.02312 | 0.06252 | 0.37 | 0.711 |
| BD | 0.77270 | 0.58467 | 1.32 | 0.186 |
| BI | 0.11321 | 0.41308 | 0.27 | 0.784 |
| SBS | -0.02650 | 0.21874 | -0.12 | 0.904 |
| SBI | -0.47388 | 0.27540 | -1.72 | **0.085*** |
| CEB | -0.11490 | 0.35747 | -0.32 | 0.748 |
| SIZE | -0.09828 | 0.14520 | -0.68 | 0.499 |
| LEV | -0.13634 | 0.05752 | -2.37 | **0.018**** |
| D1 | -0.57164 | 0.23953 | -2.39 | **0.017**** |
| D4 | -0.52289 | 0.29517 | -1.77 | **0.076*** |
| C | 4.64398 | 4.10262 | 1.13 | 0.258 |

***, **, * denote statistically significant at the 1%, 5% and 10% level, respectively

Table 15: Feasible Generalized Least Squares (FGLS) regression

| **Dependent variable: Q** | | Number of observations | = 174 |
|---|---|---|---|
| Panels: | heteroskedastic | Wald Chi-square (17) | = 48.48 |
| Correlation: | first-order autocorrelation | P-Value (>Chi2) | = **0.0001***** |
| | **Coefficient** | **Std. Error** | **t-Statistics** | **P-Value** |
| BS | -0.04149 | 0.02847 | -1.46 | 0.145 |
| BD | 0.77531 | 0.26389 | 2.94 | **0.003***** |
| BI | -0.09895 | 0.17493 | -0.57 | 0.572 |
| SBS | -0.05329 | 0.09733 | -0.55 | 0.584 |
| SBI | -0.30129 | 0.10884 | -2.77 | **0.006***** |
| CEB | -0.02277 | 0.20908 | -0.11 | 0.913 |
| SIZE | 0.04889 | 0.04402 | 1.11 | 0.267 |
| LEV | -0.09126 | 0.02882 | -3.17 | **0.002***** |
| D1 | -0.43237 | 0.13441 | -3.22 | **0.001***** |
| D2 | 0.41895 | 0.34188 | 1.23 | 0.220 |
| D3 | 0.03126 | 0.07938 | 0.39 | 0.694 |
| D4 | -0.24135 | 0.18389 | -1.31 | 0.189 |
| D5 | 0.70447 | 0.25688 | 2.74 | **0.006***** |
| D6 | 0.07113 | 0.33595 | 0.21 | 0.832 |
| D7 | 0.00917 | 0.16806 | 0.05 | 0.956 |
| D8 | -0.46823 | 0.20975 | -2.23 | **0.026**** |
| D9 | -0.06136 | 0.15640 | -0.39 | 0.695 |
| C | 0.74016 | 1.26321 | 0.59 | 0.558 |

***, **, * denote statistically significant at the 1%, 5% and 10% level, respectively

## 6. Discussion

This study found tangible evidence that the board size and the board independence are important positive factors that influence firm performance. This finding is consistent with hypothesis 1 and 3 in which it was expected that they would be positively associated with firm performance. This finding also supports the previous studies of Kiel and Nicholson (2003), Adams and Mehran (2003), and Belkhir (2005) that found a positive relationship between board size and

firm performance. The findings reinforce that emerging economies that have a less efficient stock market in terms of depth, and prudential rules and regulations should design an optimal board and give the board members enough autonomy to control the agents' behaviours and for that matter to increase the firms' performance. Importantly, this finding supports the agency theory and the resource dependence theory in that the increase of board members tends to offset the marginal cost by adding more positive value to the firm. Likewise, board independence tends to foster innovation and quality decision making which ultimately reduces organizational delinquency and improves firms' performance.

Regarding board diversity (hypothesis 2), the study has found a significant positive relationship with firm performance in the case of Tobin's q. However, it fails to find any relationship with ROE and ROA, the accounting measures of performance. Thus, it cannot be concluded that the inclusion of female members in the board is positively related with the firm performance in Vietnam. However, the paper does not reject hypothesis 2 either on the fact that Tobin's $q$ is a market measure of firm performance which provides higher importance in decision making in a rapidly growing stock market such as Vietnam. Arguably, the presence of female directors in the board is likely to bring new perspectives to the decision-making process which create new values for the firm and enhance firm performance.

In contrast, the study reveals a statistically significant negative relationship between the proportion of non-executive directors in the board and firm performance, implying that the non-executive directors fail to add potential economic value to the firms in Vietnam. This finding is consistent with the Cadbury Report 1992 and the Higgs Report 2003 in UK. However, it contradicts hypothesis 6 that states that the concentration of non executive directors on the board is positively related with the firm performance. A possible explanation could be that executive directors are likely to be motivated by dual responsibilities and by the reputation. Executive directors can work diligently and perform well in both aspects. Thus, a board with more executive directors may outperform other with more non executive directors.

In addition, the study documented a statistically significant negative relationship between the proportion of independent members in the supervisory board and firm performance. This finding contradicts hypothesis 5 and supports the study of Klein (2002) that revealed a negative relationship between independent members and firm performance. This finding implies that independent supervisory board members may either remain so busy with jobs at outside firms or have low insights into different aspects of the business that hinder them to perform their oversight activities effectively. This further indicates that although reputation is considered to be a priority of independent supervisory board members to work towards the interests of shareholders, their independence may be a disadvantage to the multifaceted oversight tasks.

Finally, the study does not find any significant relationship between the supervisory board size and firm performance. This implies that although Vietnam follows a two tier corporate governance system, the increase of supervisory board members do not enhance the cheek and balance system, and thus, they do not add economic value to the firms.

## 7. Conclusions

This paper provides empirical evidence of the effect of board size, board diversity, board independence, supervisory board size, supervisory board independence and the concentration of non-executive directors on the board on the firm performance in Vietnam using both accounting and market based measures of firm performance. The study unearths a positive relationship between board size, board independence, and firm performance. In contrast, it documents a negative association between supervisory board independence, the concentration of non-executive directors in the board, and firm performance. Besides, the study finds a statistically

significant positive relationship between board diversity and firm performance only under the Tobin's *q*. However, the study does not find any significant relationship between supervisory board size and firm performance. This implies that corporations in Vietnam should follow a large board size and include independent members on the board to enhance firm value. Simultaneously, they should discourage non-executive directors in the board and carefully monitor the roles and responsibilities of the supervisory board members. However, a note of caution is that the study only covers three years observations of 58 firms and treats the independent variables exogenous considering the limited period of the study. Thus, future studies can be undertaken covering large samples during a longer period and treating endogeniety. Besides, future studies can check why board diversity is found to be statistically significant only under Tobin's *q* and why the concentration of non-executive directors on the board has a negative relationship with the firm performance in Vietnam.

**Notes**

1. Vietnam stock market is composed of three main submarkets: Ho Chi Minh Stock Exchange (HOSE), Hanoi Stock Exchange (HAX), and UpCom market. HOSE and HAX are organized exchanges located in the two biggest cities of Ho Chi Minh and Hanoi, respectively, while UpCom market aims at consolidating the over-the-counter market.
2. To increase the depth of the stock market, government has transformed many State Owned Enterprises (SOEs) into privatized joint stock companies. At the end of 2010, the equitized SOEs were 3944 companies (Vietnam Tiger Fund, 2011). Besides, Vietnam's accession into the World Trade Organization (WTO) in 2007 has made the country to be more market-driven.
3. The two-tier system has been developed and widely used in the continental European corporate environment. This system is sometimes referred to as the German corporate governance structure style. On the other hand, the one-tier system has evolved in the Anglo-Saxon corporate world. The only difference between the two systems is whether there is an extra regulating body – the Supervisory Board besides the traditional body of the Board of Directors.

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