



Ownership concentration and corporate performance from a dynamic perspective: Does national governance quality matter?



Tuan Nguyen^{a,b,*}, Stuart Locke^a, Krishna Reddy^a

^a Department of Finance, Waikato Management School, The University of Waikato, Gate 1 Knighton Road, Private Bag 3105, Hamilton 3240, New Zealand

^b Faculty of Economics and Business Administration, Dalat University, No 01 Phu-Dong-Thien-Vuong Street, Dalat, Lamdong, Vietnam

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ABSTRACT

In this paper, the relationship between ownership concentration and financial performance of companies in Singapore and Vietnam is investigated in a dynamic framework. By focusing on two different types of national governance systems (well-developed vs. under-developed), we observe how the relationship is moderated by the national governance quality. We find that the performance effect of concentrated ownership persists in these markets even after the dynamic nature of the ownership concentration–performance relationship is taken into consideration. Our finding supports the prediction of agency theory about the efficient monitoring effect of large shareholders in markets with highly concentrated ownership. In addition, we find that national governance quality does matter when explaining the ownership concentration–performance relationship. The positive effect of concentrated ownership on performance of firms operating in the under-developed national governance system (Vietnam) tends to be stronger than that in the well-established system (Singapore). This finding is consistent with the argument that ownership concentration is an efficient corporate governance mechanism which can substitute for weak national governance quality. Econometrically, our findings still hold even after controlling for dynamic endogeneity, simultaneity, and unobserved time-invariant heterogeneity, inherent in the corporate governance–performance relationship.

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1. Introduction

This paper – using a well-structured dynamic modelling approach – undertakes a cross-national study on the relationship between ownership concentration and financial performance of companies in two Asian markets, namely Singapore and Vietnam. This study is novel as it is the first to explore the ownership concentration–firm performance relationship using a dynamic modelling approach for the Singaporean and Vietnamese markets. The significance of this research, therefore, is in the form of: (i) applying a better model specification and estimator to two institutional settings where the corporate governance arrangements are greatly different from those of the US and the UK; and (ii) providing the first exploration contrasting a well-developed national governance system (Singapore) and an under-developed one (Vietnam), where weak regulatory frameworks and other institutional issues may have confounded the ownership concentration–firm performance relationship observed in previous mature-market-based studies.

Our research is motivated by several major reasons, which can be described briefly in three important questions: (i) why should a dynamic modelling approach be used?; (ii) why should national governance quality be involved?; and (iii) why are Singapore and Vietnam chosen to be the platform to conduct this research? The following Subsections 1.1; 1.2; and 1.3 discuss the abovementioned questions in turn.

1.1. Why should a dynamic modelling approach be used?

It is well-documented in corporate governance literature that shareholders can rely on at least two broad strategies, including external and internal governance mechanisms, to ensure them some return on their investment (Heugens, Van Essen, & Van Oosterhout, 2009). The external governance mechanisms, such as legal system or takeover markets, play a disciplinary role in monitoring managerial behaviour to mitigate agency problems and thus help to increase performance (Gillan, 2006). Alternatively, shareholders may also use their ownership concentration as one of the most important internal governance mechanisms to mitigate agency problems raised by the separation of ownership and control (Jensen & Meckling, 1976). This is based on the so-called ‘interest alignment’ which assumes that large shareholders

* Corresponding author at: Department of Finance, Waikato Management School, The University of Waikato, Gate 1 Knighton Road, Private Bag 3105, Hamilton 3240, New Zealand.

E-mail address: tuannv@dlu.edu.vn (T. Nguyen).

with concentrated ownership have strong incentive and power to discipline and/or monitor management at low cost since they somewhat internalise the benefits of their monitoring efforts (Grossman & Hart, 1986; Shleifer & Vishny, 1986). This causal relationship predicted by agency theory implies that the causality should run from ownership concentration to performance (Yabe & Izumida, 2008).

However, this traditional agency theory view has been challenged by Demsetz (1983) who argues that ownership structure should be considered to be endogenously determined by the profit-maximisation process of shareholders as well as observable and unobservable firm characteristics. Given that both ownership structure and performance are simultaneously determined in a system in which performance goal is a component, variations in ownership structure should not be systematically related to variations in firm performance (Demsetz & Villalonga, 2001). In other words, ownership structure should be unrelated to performance in the presence of endogeneity sourced from simultaneity and unobserved heterogeneity. This argument is generally supported by prior studies focusing on the US or the UK markets (see Demsetz & Villalonga, 2001 for more detail).

The causal relationship between ownership structure and performance predicted by traditional agency theory is even more challenged in recent corporate governance literature. It is recognised that ownership concentration is dynamically related to firm performance (Gedajlovic & Shapiro, 2002; Thomsen & Pedersen, 2000; Yabe & Izumida, 2008). This dynamic nature implies that the current governance structure and performance of a firm is affected by its past performance (Wintoki, Linck, & Netter, 2012). That is, the causality relationship (if any) may run in the opposite direction, i.e., from past performance to current ownership structure (Yabe & Izumida, 2008). This is acknowledged to be another source of endogeneity in the corporate governance–performance relationship, namely dynamic endogeneity (Wintoki et al., 2012). Taking into account the dynamic endogeneity, recent empirical studies on the relationship between ownership concentration and performance in the Asian region seem to yield conflicting results. Some studies report that the relationship is insignificant for the Australian market (Pham, Suchard, & Zein, 2011; Schultz, Tan, & Walsh, 2010), but significant for the Japanese market (Yabe & Izumida, 2008). Arguably, the dynamic nature of the relationship between ownership concentration and firm performance in other Asian markets is largely unknown and poorly understood.

Keeping the presence of potential dynamic endogeneity in mind, we question the effectiveness of concentrated ownership as an internal governance strategy within the Asian context once its dynamic nature is taken into consideration. In other words, we ask whether the causal relationship between ownership concentration and performance suggested by agency theory persists in typical Asian markets, such as Singapore and Vietnam, after controlling for the dynamic endogeneity. To the best of our knowledge, no prior study on these two markets has treated the ownership concentration–performance relationship this way. More interestingly, by doing so, our study well-responds to the recent calls from Flannery and Hankins (2013); Wintoki et al. (2012) and Zhou, Faff, and Alpert (2014) for using dynamic panel models in corporate finance and corporate governance research.

1.2. Why should national governance quality be involved?

It should also be noted that most prior corporate governance research focuses on the US or UK markets characterised by diffused ownership and well-established external governance mechanisms (Filatotchev, Jackson, & Nakajima, 2013). Applying the principal–agent model, such research ignores moderating effects of national governance mechanisms (Filatotchev et al., 2013) and thus cannot offer a rigorous understanding about the effectiveness of corporate governance strategies in different institutional settings (Kumar & Zattoni, 2013). Recent emerging literature of corporate governance has re-examined the traditional agency framework to understand contexts outside Anglo-Saxon

jurisdictions, especially in the Asian region where highly concentrated ownership is the norm (Filatotchev et al., 2013). Based on the institutional corporate governance framework, this emerging literature recognises that national governance mechanisms, such as legal system, rule of law, or investor protection, may influence the effectiveness of corporate governance strategies (Filatotchev et al., 2013).

Recently, Kumar and Zattoni (2013) and Filatotchev et al. (2013), among others, call for investigating the interaction impact of country-level and firm-level variables in studies on corporate governance. The need for further comparative studies on the ownership–performance relationship in emerging markets is also highlighted by Wang and Shailer (2015) who document that how and to what extent ownership concentration affects financial performance of firms operating in emerging markets is still a controversial question. This is not only because of the confliction of theoretical predications but also due to the inconsistency of empirical findings (Wang & Shailer, 2015).

Based on the aforementioned arguments and motivated by the view of institutional corporate governance, we ask whether the relationship between ownership concentration and performance will vary depending on the quality of national governance systems in which firms operate. More particularly, we aim to answer the second research question: whether the relationship between ownership concentration and performance is moderated by national governance quality. By doing so for two typical Asian markets, our study importantly contributes to an emergent stream of research on the interaction between corporate governance mechanisms and national institutions.

1.3. Why Singapore and Vietnam?

In order to address the two research questions, it is ideal to have a deep and historical database from which generalizable findings can be achieved (Heugens et al., 2009). This implies that the database should be comprehensive and should include as many firm-year observations across as many countries as possible. However, this is a severe obstacle given the lack of data on corporate governance (Black, de Carvalho, Khanna, Kim, & Yurtoglu, 2014). Prior solo-country research offers deep but often too narrow conclusions and thus suffers from lack of generalisation. Whereas multi-country studies, suffering from the absence of historical and comprehensive data on corporate governance, have potential to provide generalizable inferences but usually fail to achieve deep conclusions (Black et al., 2014).

In fact, collecting data on corporate governance structures, especially in multi-country research, is costly and time-consuming. It is, therefore, hard for comparative corporate governance studies to simultaneously achieve deep and generalizable insights. Black et al. (2014) propose a potential solution to overcome this difficulty through the use of a well-constructed sample in which selected countries must be highly representative. Following this idea, our empirical analysis is based on an aggregate sample of firms from two typical Asian markets: Singapore and Vietnam. These markets are chosen to be the platform to conduct our research because they are the most two representative markets in terms of corporate governance practices and national governance quality in the Asian region.

Indeed, compared with other countries in the Asian region, these two economies are typical for national governance quality. While Singapore is the most representative candidate for the ‘high minority protection and high rule of law’ cluster (Heugens et al., 2009), Vietnam is a typical market in the ‘low minority protection and low rule of law’ group (World Bank, 2006, 2012). Given that the Singaporean and Vietnamese markets are highly representative for two different groups of national governance systems (well-developed vs. under-developed) in the Asian region, the generalisation of our findings is, to a certain extent, achievable. This is supported by Mallin, Melis, and Gaia (2015) who argue that comparing such diverse institutional settings should improve the generalizability of empirical findings.

With regard to corporate governance practices, Singaporean firms achieve top ranking across Asia (CLSA, 2012) and have the highest average score of corporate governance when compared with the rest of the Association of Southeast Asian Nations (ASEAN) region (Chuanrommanee & Swierczek, 2007). In contrast, the corporate governance practices of companies in Vietnam are in the early stages of development (World Bank, 2006) and the average corporate governance score of Vietnamese firms is lower than that of almost other markets within the Asian region (IFC, 2012). From a comparative perspective, this heterogeneity of firm-level governance is important to strengthen empirical estimations (Mallin et al., 2015) that allow us to obtain credible inferences. We therefore believe that such sample structure guarantees an acceptable compromise between the generalizability and credibility of our findings and the limitations on research sources.

We find that there is a statistically significantly positive relationship between ownership concentration and financial performance in both markets, and that better national governance quality has a positive effect on firm performance. Our study also shows that the performance effect of ownership concentration is contingent upon the national governance quality. Accordingly, ownership concentration appears to have a stronger positive effect on performance of companies in Vietnam where the national governance system is under-developed. On the contrary, concentrated ownership seems to play a weaker positive role in determining financial performance of firms in Singapore where the national governance system is well-established.

The remainder of this paper is structured as follows. Section 2 provides a brief literature review from which research hypotheses are developed. This is followed by Section 3 introducing the method of the study, together with a description of our data collection and variable definitions. Empirical results and discussion are presented in Section 4. The final section concludes the paper and indicates its limitations.

2. Literature review and hypothesis development

2.1. Ownership concentration and firm performance from the perspective of agency theory

As suggested by agency theory, ownership concentration is a key corporate governance mechanism that helps to limit agency problems arising from the separation of ownership and control (Shleifer & Vishny, 1986). The central premise of arguments regarding the ownership concentration–performance relationship is the potential trade-off between the monitoring effect and expropriation effect of concentrated ownership (Filatotchev et al., 2013). Accordingly, predictions of the positive performance effect of ownership concentration are based on its effective monitoring effect. Owning a large proportion of shares, controlling shareholders have strong incentives to actively monitor and real power to discipline and/or influence management (Shleifer & Vishny, 1986). This helps to mitigate the agency problems which, in turn, leads to improved performance (Jensen & Meckling, 1976). In markets where external corporate governance mechanisms are under-developed, the monitoring effect of ownership concentration is even more important (Filatotchev et al., 2013). This is because in the absence of external managerial discipline, shareholders are forced to actively involve themselves in monitoring management which can only be effective if ownership is concentrated (Heugens et al., 2009).

In contrast, predictions of the negative performance effect of ownership concentration are based on its expropriation effect. As argued by La Porta, Lopez-de-Silanes, and Shleifer (1999), the nature of agency problems varies significantly between firms with and without large shareholders. In the presence of highly concentrated ownership, the agency problem is likely to shift from traditional principal–agent conflict to principal–principal conflicts (Bebchuk & Weisbach, 2010; Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). In other words, ownership concentration may increase the conflicts of interest between controlling shareholders and minority shareholders (Filatotchev et al., 2013).

Empirically, it has long been voiced by Demsetz (1983) that ownership structure is endogenously determined by the profit-maximisation process of shareholders as well as observable and unobservable firm characteristics. As a consequence, variations in ownership structure should not be systematically related to variations in firm performance (Demsetz & Villalonga, 2001). Following empirical research (e.g., Demsetz & Villalonga, 2001; Himmelberg, Hubbard, & Palia, 1999; Lemmon & Lins, 2003) has emphasised and/or confirmed this endogenous relationship. Besides, another source of endogeneity, namely dynamic endogeneity, has been recently recognised in the ownership structure–performance relationship (Gedajlovic & Shapiro, 2002; Thomsen & Pedersen, 2000; Yabe & Izumida, 2008) as well as in corporate governance–performance relationship in general (Wintoki et al., 2012). The dynamic nature of the corporate governance structure–performance relationship implies that the current corporate governance structure and performance are influenced by past performance (Wintoki et al., 2012).

In particular, the dynamic nature of the ownership structure–performance relationship can be explained in two ways. If returns on stocks are the concern of large shareholders, they are more likely to concentrate their ownership in companies that have performed well to obtain more control over these companies or to take advantage of extra profit in the future given the persistence of profit (Yabe & Izumida, 2008). This implies a positive impact of past performance upon ownership concentration. In a similar vein, if a company performs poorly and large shareholders think that their company is over-priced and their ownership is high risk, they may reduce the size of their concentrated owner's stake (at high prices) to achieve more diverse personal portfolios (Yabe & Izumida, 2008). In this situation, a negative impact of past performance on ownership concentration is expected. As mentioned later in Subsection 3.3, the dynamic nature of the corporate governance–performance nexus has significant implications for choosing a suitable empirical approach.

Previous empirical studies on the ownership concentration–performance relationship for Asian markets provide inconclusive findings. Some studies report a positive relationship (Xu & Wang, 1999), while some find the relationship to be either negative (Hu, Tam, & Tan, 2010) or mixed (Haniffa & Hudaib, 2006). It should be noted that despite taking into account potential sources of endogeneity, these studies ignore the dynamic endogeneity. Recent empirical studies in the Australasian region, which take into account the dynamic endogeneity, have also reported inconclusive results. Some studies report that the relationship is insignificant for the Australian market (Pham et al., 2011; Schultz et al., 2010), but significant for the Japanese market (Yabe & Izumida, 2008). Based on the conflicted predictions of agency theory and the above-mentioned arguments, we propose a significant link between ownership concentration and performance but do not establish any direction for this relationship. The first hypothesis is formulated as follows:

Hypothesis 1. Ownership concentration is significantly associated with financial performance in the Singaporean and Vietnamese markets.

2.2. Institutional theory and the role of national governance quality

Institutional theory is drawn from various domains of social science, such as economics, sociology, and political science¹ (Aguilera & Jackson, 2010). From the perspective of economics and political science, 'institution' is defined as "the humanly devised constraints that structure political, economic and social interaction. They consist of informal constraints (sanctions, taboos, customs, traditions, and codes of conduct), and formal rules (constitutions, laws, property rights)"

¹ Which are categorised as two major branches by Ahrens, Filatotchev, and Thomsen (2011), including: (i) Political science and economics oriented institutional theory; and (ii) Sociology and organisation oriented institutional theory.

(North, 1991, p. 97). In short, institutions may be seen as rules and constraints designed to direct and justify the interactive behaviours of individuals and organisations.

The moderating role of national governance mechanisms in corporate governance–performance relationship has become the subject of an important and ongoing debate in the corporate governance literature. A recently emerging literature on comparative corporate governance has highlighted how variations in national governance quality lead to variations in corporate governance–performance relationship across countries (see Kumar & Zattoni, 2013 for a brief review). Indeed, recent studies (see e.g., Aslan & Kumar, 2014; Van Essen, Engelen, & Carney, 2013) suggest that the corporate governance–firm performance relationship is influenced by the efficiency of national governance systems in which firms operate. In support, Aslan and Kumar (2012) argue that national governance quality has strong effects on the agency–principal conflicts at firm-level. In other words, firm performance is driven not only by industry conditions, corporate governance mechanisms and other firm-specific characteristics, but also by the governance quality of the country in which firms are embedded (Anderson & Gupta, 2009; Ngobo & Fouda, 2012). For example, La Porta et al. (1999) and Love (2011) document that corporate governance mechanisms have greater influences on firm performance in countries with weaker legal protection.

In particular, the effect of concentrated ownership on firm performance is also likely to be influenced by national-level governance characteristics that are beyond the control of companies. The meta-analysis for 18 emerging markets undertaken by Wang and Shailer (2015) documents that the effect of ownership concentration on performance tends to be weaker in countries where investor protection is better. A similar finding is reported by Heugens et al. (2009), who also use meta-analysis in Asian markets and argue that ownership concentration is an effective corporate governance mechanism in markets with weak legal protection of minority shareholders. It is worth noting that almost all the original studies on which the meta-analyses of Heugens et al. (2009) and Wang and Shailer (2015) have been based do not control for the potential dynamic endogeneity inherent in the corporate governance–performance relationship.² Based on the above-mentioned arguments and with the dynamic endogeneity in mind, we propose our second hypothesis as follows:

Hypothesis 2. The relationship between ownership concentration and financial performance of firms in Singapore and Vietnam is significantly influenced by national governance quality.

3. Data and method

3.1. Data collection and data sources

3.1.1. Data collection

Firms in our sample are drawn from those that are locally incorporated and listed on the SGX Mainboard (for Singapore), or the HOSE and the HNX (for Vietnam).³ Following previous studies (e.g., Dittmar & Mahrt-Smith, 2007; Schultz et al., 2010), we exclude financial companies and banks from the sample. The choice of the sample is guided by the availability of firms' annual reports and corresponding financial data for a four-year period from 2008 to 2011. The year 2008 is selected because it is one year after the promulgation of new corporate governance guidelines/regulations in both countries. More specifically, the revised *Singaporean Code of Corporate Governance* was issued in 2005 and

came into effect from September 2007. Whereas the *Vietnamese Code of Corporate Governance* was first released and became effective in March 2007. Given that the new corporate governance guidelines/regulations in both countries have their effects on companies' annual reports in the next financial year, 2008 is thus an appropriate point of time to collect data for the comparative purpose of this research. The sample ends in 2011 since it is the most recent year for which data was available at the time this study was conducted. Moreover, the time frame is kept the same in both the markets to facilitate the comparative purpose of this study.

Our data collection yields an initial panel dataset of 1516 firm-year observations. This initial dataset has relatively full data on key variables during the period 2008–2011 (1028 observations for Singapore and 488 observations for Vietnam). Following Balatbat, Taylor, and Walter (2004) and Schultz et al. (2010), among many others, we exclude 29 firm-year observations within the first and beyond the 99th percentiles to alleviate the potential bias caused by the outliers of Tobin's Q. For this reason, the final sample comprises 1487 firm-year observations. Because of data insufficiency or unavailability of variables used in our models, the individual samples used in univariate analyses may be slightly various. It should also be noted that 371 observations are dropped in the dynamic models in which one-year lagged Tobin's Q is employed as an explanatory variable. Besides, some of the control variables are missing for some observations which results in excluding 52 observations with missing values in the variables employed. Therefore, the common sample used for our dynamic models is finally reduced from 1487 to 1064 firm-year observations.

3.1.2. Data sources

Digital information sources such as *Thomson One Banker (Worldscope database)* and *Thomson One Banker (Ownership module)* are employed to obtain financial data and concentrated ownership data of sampled companies in both markets. Data on firm-level corporate governance structures are hand-collected from firms' annual reports. The list of Singaporean companies and corresponding annual reports are downloaded from the *Singapore Exchange Limited* website. The list of Vietnamese companies classified according to the *Industry Classification Benchmark–ICB* is directly provided by the *StoxPlus Corporation*. The annual reports of companies in the Vietnamese market are obtained from the websites of *FPT-Ez-search Online Information Gateway* and *Vietstock*. To ensure the data's reliability and to minimise missing values, the data are supplemented and verified consulting the annual reports and the websites of companies. Country-level data on national governance indicators, such as *Government Effectiveness*, *Regulatory Quality*, and *Rule of Law*, are sourced from the website of the *Worldwide Governance Indicators Project* (Kaufmann, Kraay, & Mastruzzi, 2011). Data on *Investor Protection Index* are obtained from the *Doing Business Project* website (World Bank, 2012, 2013).

3.2. Variables

3.2.1. Dependent variable

This study employs Tobin's Q as a dependent variable. Following Chung and Pruitt (1994) approach, Tobin's Q is computed as the market value of equity plus the book value of debt, all divided by the book value of total assets. In order to improve the normality of Tobin's Q, a natural logarithm transformation is applied (denoted as $\ln q$). Companies with larger Tobin's Q are considered to be using scarce resources more effectively while those with lower scores are seen as poorly exploiting their resources (Lewellen & Badrinath, 1997).

3.2.2. Firm-level explanatory variables

The independent variable of interest in this study is ownership concentration (*ownership*). Following Holderness (2009), Munisi, Hermes, and Randøy (2014), and Thomsen, Pedersen, and Kvist (2006), among others, we define ownership concentration as the percentage of

² For example, Wang and Shailer (2015) report that most original studies (about 64%) use OLS estimator that ignores the serious concerns of endogeneity.

³ The Ho Chi Minh Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) are two Vietnamese stock markets. The Singapore Exchange Limited (SGX) is the regulatory body for listed companies in Singapore. SGX offers two types of exchange market with different listing requirements, including *Mainboard* and *Catalist*.

common stocks held by shareholders who own at least 5% of the total number of a firm's common stocks. As argued in Subsection 2.1, ownership concentration is treated as an endogenous variable. We also control for other firm-level governance characteristics which are well-documented in corporate governance literature. Given that board structure has the potential to substitute for ownership structure in reducing agency problems (Munisi et al., 2014), it is thus essential to control for board structure in order to mitigate omitted variable bias. More specifically, board diversity, board size, and board independence (generally characterised by board composition and board leadership structure) are employed to account for the potential influences of board structure on firm performance. As suggested by Wintoki et al. (2012), whose argument is drawn mostly from the works of Harris and Raviv (2008), Hermalin and Weisbach (1998), and Raheja (2005), board structure variables are all considered to be endogenously determined. The following discusses in turn the potential impacts of these variables on performance and how they are calculated.

According to agency theory (Jensen & Meckling, 1976) and resource dependence theory (Goodstein, Gautam, & Boeker, 1994; Pfeffer, 1973), board diversity may have a positive effect on firm performance. However, prior empirical studies on this relationship provide inconclusive results due to differences in the way corporate governance empiricists deal with the endogenous nature of board diversity variables (for a comprehensive review, see e.g., Mohan, 2014). Following Adams and Ferreira (2009) and Dezsö and Ross (2012), we treat the board diversity variable, defined by the percentage of female directors on the board (*female*), as an endogenous variable.

Also, board independence is considered to be an important corporate governance mechanism which helps to moderate the principal-agent problem. In other words, more independent boards may lead to more effective monitoring which has potential to prevent managers from gaining self-interest at the expense of shareholders (Fama & Jensen, 1983; Jensen & Meckling, 1976; Nicholson & Kiel, 2007). It is, therefore, suggested by agency theorists that board independence is positively related to firm performance. Board independence is generally characterised by board composition and board leadership structure. To proxy for board composition, we use the percentage of independent and/or non-executive directors (denoted as *indep_nonexe*).⁴ Board leadership structure is defined by whether the roles of CEO and board chairperson are separated (non-dual leadership structure) or combined (dual leadership structure). To proxy for board leadership structure, we use a dummy variable (*dual*) that takes a value of one if the chairperson is also the CEO, and zero otherwise.

Board size is measured by the total number of board directors. The natural logarithmic form of board size (*lnsize*) is used in the models. From the perspective of agency theory, good governance prescriptions believe that smaller boards are more effective (Yermack, 1996) and thus may contribute positively to firm performance (Jensen, 1993). However, resource dependence theorists suggest that larger board size is positively related to performance (Dalton, Daily, Johnson, & Ellstrand, 1999). Prior empirical evidence is mixed, and hence, no consensus has been reached.

In an attempt to alleviate the potential bias caused by omitted variables, we control for other general firm characteristics including firm age, firm size, and leverage. By doing so, we are confident that we have included most of the variables identified in corporate governance literature that have potential effects on financial performance. Firm age (*lnage*) is the natural logarithm of the number of years from

the time a company first appears on the SGX Mainboard (for the Singaporean market) or on the HOSE or HNX (for the Vietnamese market). Firm age should be controlled in our model because younger firms tend to have higher market value as they grow faster and are more intangible-asset intensive (Black et al., 2014). In addition, international operations and innovative capacity of a firm may be affected by its age (Chen & Yu, 2012).

Firm size (*fsize*) is measured by the natural logarithm transformation of the book value of total assets in US dollars corrected by price index. This variable is used to account for the potential effect of economies of scale on Tobin's Q (Black et al., 2014; Yabe & Izumida, 2008). For example, larger firms tend to be more transparent firms and thus are able to more easily access the debt market at lower cost and/or borrow more to maximise their benefit of a tax shield (Antonioni, Guney, & Paudyal, 2008). As a result, the financial performance of firms appears to be influenced by the advantage or benefit gained by their scale. It is also crucial to note that the size of a firm should be considered endogenous (Roberts & Whited, 2013). Given that larger firms are harder to manage, and thus need more highly-qualified managers (Gabaix & Landier, 2008); managerial capability, which is an unobserved component in the residuals of the model, would be correlated with firm size. The endogeneity problem is therefore introduced if firm size is included as an independent variable in the model (Roberts & Whited, 2013).

This study also takes account of the potential performance effect of financial leverage (*lev*), measured by total debt over total assets. According to Jensen and Meckling (1976), the nature of the agency problem and thus the performance impact of ownership structure may be affected by capital structure. In more detail, leverage is supposed to have an effect on firm value because it can help to discourage managers' over-investment of free cash flow (Hoechle, Schmid, Walter, & Yermack, 2012). In support, Black et al. (2014) argue that leverage is mechanically associated with Tobin's Q by its effects in reducing income tax and free cash flow problems.

Thomsen and Pedersen (2000) argue that industry should be taken into account when modelling the performance effects of ownership structure. The possible reasons are: (i) industry may have a direct impact on the frequency of corporate ownership; and (ii) the level of profitability, growth, and free cash flow of firms are likely to be influenced by variances in the competition and maturity of the industry in which firms operate (Thomsen & Pedersen, 2000). For this reason, the impacts of industry-specific characteristics are controlled in this study by employing [0, 1] industry dummy variables (where appropriate),⁵ in which industries are classified by the Industry Classification Benchmark (ICB). In addition, year dummy variables are included in all of the models to account for time-specific effects which reflect macroeconomic circumstances or market fluctuations.

Finally and importantly, we employ the natural logarithm transformation of one-year lagged Tobin's Q (*laglnq*) as an explanatory variable to control for the dynamic nature of the corporate governance-performance relationship as suggested by Wintoki et al. (2012). Using lagged dependent variable as an explanatory variable allows corporate finance empiricists to control for potential dynamic panel bias (Flannery & Hankins, 2013; Wintoki et al., 2012). In addition, it also allows us to non-trivially mitigate omitted variable biases by taking into account the impacts of inherently unobservable historical factors on the current dependent variable (Wooldridge, 2009).

3.2.3. National governance quality variables

The quality of national governance is measured by the *Worldwide Governance Indicators (WGI)* developed by Kaufmann et al. (2011) and the *Investor Protection Index* developed by Doing Business Project (DBP) (World Bank, 2012, 2013).

⁵ Industry dummies are not included in fixed-effects (within-groups estimator) and two-step system GMM models.

⁴ It is the convention in corporate governance literature to separately use the percentage of independent directors or the percentage of non-executive directors in the board as alternative proxies for board composition. However, data on independent directors are not available for the Vietnamese market in our sampling period because the Vietnamese Code of Corporate Governance 2007 (MOF, 2007) does not distinguish between non-executive directors and independent directors. For this reason, we have not differentiated between independent and non-executive directors, and have measured board composition as the percentage of independent and/or non-executive directors.

WGLs are considered the primary and most widely-used indicators in multi-country comparative studies (Ngobo & Fouda, 2012). Reporting six broad dimensions of national governance quality for over 200 countries and territories since 1996, WGLs facilitate meaningful cross-country and over-time comparisons (Kaufmann et al., 2011). These six dimensions of national governance quality include: *Voice and Accountability*; *Political Stability and Absence of Violence/Terrorism*; *Government Effectiveness*; *Regulatory Quality*; *Rule of Law*; and *Control of Corruption* (Kaufmann et al., 2011). Following a similar approach undertaken by Knudsen (2011) and Van Essen et al. (2013), we focus narrowly on the measures of country-level governance quality which are most relevant to firm operations. Accordingly, of these six dimensions, three indicators of national governance namely *Government Effectiveness*, *Regulatory Quality*, and *Rule of Law* are singled out.⁶ These indicators are all acknowledged to have potential effects on firm performance since they are essential to firms' successful business operations (Krivogorsky & Grudnitski, 2010; Ngobo & Fouda, 2012). The indicators are displayed in standard normal units ranging approximately from -2.5 to $+2.5$, of which a larger value indicates better national governance quality (Kaufmann et al., 2011).

Consistent with Gliberman and Shapiro (2002), we find that these indicators are highly correlated with each other as evidenced by their significantly high correlation coefficients (unreported). Thus, it is hard to use them all in a single regression as their collinearity is highly likely to make empirical estimations problematic. For this reason, in line with Knudsen (2011), these three individual indices are combined to form an aggregate national governance index (denoted as *NGindex*), i.e., *NGindex* = *Government Effectiveness* + *Regulatory Quality* + *Rule of Law*. As an alternative solution, we follow Gliberman and Shapiro (2002) and use factor analysis technique to construct another robust and aggregate proxy for national governance quality (denoted as *NGindex(a)*) by extracting the first principal component of the three above-mentioned indicators of national governance quality.

Besides WGLs, comparative corporate governance research typically employs several different proxies for national governance quality. Therefore, in order to check the robustness of our main findings, we follow Van Essen et al. (2013) and utilise another proxy for national governance quality, namely *Investor Protection Index* (*IPindex*), developed by *Doing Business Project* (World Bank, 2012, 2013). *IPindex* captures the strength of legal protection against the misuse of firm assets by insiders and major shareholders for their self-interests (World Bank, 2012, 2013). The metric scale is from zero to ten, and a larger score indicates better protection of investors. Table 1 summarises definition of the variables used in this study.

3.3. Method

3.3.1. Model specification

A general specification for first-order autoregressive [AR(1)] panel models can be expressed as the following equation (Eq. (1)):

$$Y_{it} = \alpha_0 + \alpha_1 Y_{i,t-1} + \sum_{k=1} \beta_k X_{k,it} + \mu_i + \eta_t + \varepsilon_{it} \quad (1)$$

where, Y_{it} is Tobin's Q which is a proxy for financial performance of firm i in year t ; α_0 is the constant; α_1 and β_k are unknown estimated coefficients; X is a vector of explanatory variables used in the model,

including board structure, ownership structure, and other firm-level control variables. The definitions of these variables are as mentioned in Subsection 3.2 and also as summarised in Table 1; μ_i represents unobserved firm fixed-effects; η_t represents time-specific effects that are time-variant and common to all companies, such as the effects of GDP growth, inflation rates, market fluctuations or other macroeconomic conditions; and ε_{it} is the classical error term which is assumed to be independent and identically distributed.

It is worth noting that how many lags of dependent variable should be used on the right-hand side of the model is an empirical question. Prior corporate governance studies employed AR(1) structure (e.g., Adams & Ferreira, 2009; Dezsö & Ross, 2012; Munisi & Randøy, 2013; Nguyen, Locke, & Reddy, 2014, 2015) or AR(2) structure (e.g., Pham et al., 2011; Wintoki et al., 2012) to control for the potential effects of the autoregressive process on the stochastic term. Recognising that financial performance is typically path-dependent, i.e., the performance that a firm has at any point in time depends in part on the performance that it had at an earlier time (Bebchuk & Roe, 1999), it is plausible to expect that performance beyond the first lag may have a material effect on current performance. This implies that the general first-order autoregressive AR(1) structure used in our model may not completely capture the dynamic nature of the corporate governance–performance relationship.

Following Wintoki et al. (2012), we confirm our model specification displayed by Eq. (1) by estimating an OLS regression⁷ of Y_{it} on Y_{it-1} and Y_{it-2} and X_{it} . Using the combined dataset of two markets, we find no statistical evidence on the effect of Y_{it-2} on Y_{it} , suggesting that one-year lagged Tobin's Q appears to be adequate to capture all influence of the past on the current realisations of performance. This is in line with Zhou et al. (2014) who argue that given the limitation of the time dimension in corporate finance panel datasets, an AR(1) panel model seems to be unavoidable in almost empirical corporate finance studies. Using the measures of corporate governance mechanisms and other firm-level characteristics mentioned in Subsection 3.2, Eq. (1) can be displayed in more detail as follows:

$$\begin{aligned} \ln q_{it} = & \alpha_0 + \alpha_1 \ln q_{it-1} + \beta_1 \text{female}_{it} + \beta_2 \text{indep_nonexe}_{it} + \beta_3 \text{dual}_{it} \\ & + \beta_4 \ln \text{size}_{it} + \beta_5 \text{ownership}_{it} + \beta_6 \ln \text{age}_{it} + \beta_7 \text{size}_{it} \\ & + \beta_8 \text{lev}_{it} + \text{industry dummies}_i + \mu_i + \eta_t + \varepsilon_{it}. \end{aligned} \quad (2)$$

Following Antoniou et al. (2008) and Krivogorsky and Grudnitski (2010), our empirical models are developed from base-line Eq. (1) via a two-step procedure. Firstly, the effects of firm-level corporate governance mechanisms on performance will be investigated by estimating Eq. (2). This step allows us to determine which corporate governance mechanisms are significantly correlated with performance of the companies in the two markets. After that, taking country-specific institutional characteristics into consideration, the second step examines the direct effect of national governance quality on financial performance of listed companies in the two countries. We are also interested in the potential interaction between national governance quality and those corporate governance mechanisms which are significantly related to performance as evidenced by the findings obtained from the first step. By doing so, we can step-by-step empirically test the two research hypotheses with regard to the effects of corporate governance and national governance quality, as well as their interplay on firm performance.

3.3.2. Estimation approach

As mentioned in Section 2, one of the most documented problematic issues in corporate governance literature relates to the credibility of causal inferences about the relationship between corporate governance structure and firm performance (Brown, Beekes, & Verhoeven, 2011). Previous corporate governance research documents that it is not only the ownership structure variable but also board structure variables

⁶ According to Kaufmann et al. (2011, p. 4), *Government Effectiveness index* captures “the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies”. *Regulatory Quality index* captures “the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development”. *Rule of Law index* captures “the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence”.

⁷ The result is not reported because of space limitations, but available from the authors upon request.

Table 1
Definition of variables.

Variables	Acronym	Definition
Dependent variable Tobin's Q ratio	<i>lnq</i>	The natural logarithm of the market value of equity plus the book value of debt, all divided by the book value of total assets.
Ownership structure variable Ownership concentration (%)	<i>Ownership</i>	The percentage of common stocks held by shareholders who own at least 5% of total number of a firm's common stocks.
Board structure variables Percentage of female directors (%)	<i>Female</i>	The percentage of female directors.
Percentage of non-executive/independent directors (%)	<i>Indep_nonexe</i>	The percentage of non-executive and/or independent directors.
Duality	<i>Dual</i>	Dummy variable that takes the value of one if chairperson is also CEO, and zero otherwise.
Board size	<i>lnbsize</i>	The natural logarithm of the total number of directors.
National governance quality variables Aggregate national governance index	<i>NGindex</i>	<i>NGindex</i> = Government Effectiveness + Regulatory Quality + Rule of Law. All components of this index are developed by Kaufmann et al. (2011).
Alternative aggregate national governance index	<i>NGindex(a)</i>	<i>NGindex(a)</i> is constructed by extracting the first principal component of Government Effectiveness, Regulatory Quality, and Rule of Law using factor analysis technique.
Investor protection index	<i>IPindex</i>	<i>IPindex</i> is developed by Doing Business Project (World Bank, 2012, 2013).
Other control variables Firm age	<i>lnfage</i>	The natural logarithm of the number of years from the time the company first appears on stock-exchange markets.
Firm size	<i>fsize</i>	The natural logarithm of the book value of total assets.
Leverage (%)	<i>lev</i>	The ratio of total debt to total assets.
Lagged dependent variable	<i>laglnq</i>	The natural logarithm of one-year lagged Tobin's Q ratio.
Industry dummy variables	<i>Industry dummies</i>	A dummy variable for each of the nine industries defined by IBC categories, namely Basic Materials; Consumer Goods; Consumer Services; Health Care; Industrials; Oil & Gas; Technology; Telecommunication, and Utilities.
Year dummy variables	<i>Year dummies</i>	Four year dummies for each of the four years from 2008 to 2011.

that are considered to be endogenously determined by, and dynamically correlated with, past firm performance (e.g., Wintoki et al., 2012; Yabe & Izumida, 2008). Therefore, a regression of the performance variable on the ownership concentration variable in which board structure variables are controlled should be examined in a dynamic framework, as displayed in Eq. (2).

However, the presence of the AR(1) structure and endogenous explanatory variables in Eq. (2) introduces serious estimation biases (Flannery & Hankins, 2013). It is well-documented in econometric literature that estimating Eq. (2) via the ordinary least squares (OLS) method yields biased and inconsistent coefficients because OLS ignores the time-invariant unobserved individual effects (μ_i) and the endogeneity of $\ln q_{it-1}$ (Flannery & Hankins, 2013; Wintoki et al., 2012). The OLS with fixed-effects estimator wipes out μ_i , but it also produces inconsistent parameters if T is fixed, regardless of the size of N because it still does not deal with the endogeneity of $\ln q_{it-1}$ (Nickell, 1981). Two widely-used techniques to correct this inconsistency if T is fixed are: (i) AB difference GMM estimator proposed by Arellano and Bond (1991); and (ii) BB system GMM estimator recommended by Blundell and Bond (1998).

As documented by Blundell and Bond (1998), the AB difference GMM estimator may seriously suffer from finite-sample bias and perform poorly on highly persistent data due to weak instruments. Whereas, the BB system GMM estimator is testified to be more efficient and less small-sample biased when compared with its AB difference GMM counterpart (Blundell & Bond, 1998). In addition, the BB system GMM estimator, by construction, mitigates the influence of the high persistence of corporate governance variables, which helps to improve the power of estimations (Antonioni et al., 2008; Hoechle et al., 2012). It should be noted that this study employs a dataset that has the following characteristics: (i) a panel with moderate length ($T = 4$); (ii) low-within-firm variation in almost all corporate governance variables; (iii) board and ownership structures are all considered endogenous; (iv) corporate governance-performance relationship is, in nature, dynamic; and (v) financial performance (dependent variable) may be driven by individual fixed effects which are unobservable. As evidenced by the simulation analyses recently undertaken by Flannery and Hankins (2013) and Zhou et al. (2014), the BB system GMM emerges as the best-performing estimator across all the above-mentioned dataset conditions.

Therefore, we use the BB two-step system GMM (System GMM) as our primary estimation technique to alleviate the concerns about dynamic panel bias and endogeneity.⁸ This econometric technique has recently been employed in several corporate governance studies (see e.g., Munisi & Randøy, 2013; Nguyen et al., 2014, 2015; Wintoki et al., 2012). The two-step System GMM technique involves a system of equations in differences and in levels which allow us to treat all the explanatory variables in Eq. (2) as endogenous. Following Wintoki et al. (2012), firm age (*lnfage*) and year dummies are deemed exogenous. We also employ a finite-sample corrected estimate of variance, suggested by Windmeijer (2005), to take into account the concern of Blundell and Bond (1998) about the downward-biased tendency of standard errors estimated by the two-step System GMM approach for small samples.

4. Empirical results and discussion

4.1. Descriptive statistics

Table 2 summarises the descriptive statistics for the aggregate sample of Singapore and Vietnam. The mean (median) of Tobin's Q is .83 (.72), thus suggesting that market value of firms in these two countries during the sampling period is, on average, lower than their book value. This reflects the markets' expectations about poor capability of firms in exploiting their resources (Lewellen & Badrinath, 1997). We find that female directors account for, on average, 9.22% of total directors in the boardrooms of companies in these two countries. This percentage is higher than the average in the Asian region (6%), reported by Sussmuth-Dyckerhoff, Wang, and Chen (2012). Non-executive and/or independent directors account for approximately 57.66% of total directors, while only about 34% of board chairpersons play dual roles. This

⁸ In order to check the robustness of our findings across different econometric estimation techniques and to facilitate comparing our findings with those of prior relevant studies, the empirical models in this study are also estimated by using alternative estimators, including pooled OLS, and OLS with fixed-effects (within-groups estimator). Our estimation practice is in line with the suggestion of Bond (2002) that the consistent system GMM estimators should be compared with simpler estimators such as pooled OLS or fixed-effects to detect potential biases in empirical studies.

Table 2
Descriptive statistics for the aggregate sample of Singapore and Vietnam.

	Observations	Mean	Median	SD	Min	Max
Tobin's Q ratio	1487	0.83	0.72	0.47	0.20	3.45
Percentage of female directors (%)	1475	9.22	0.00	11.90	0.00	66.67
Percentage of independent and/or non-executive directors (%)	1483	57.66	60.00	18.26	0.00	100.00
CEO duality	1484	0.34	0.00	0.47	0.00	1.00
Board size (person)	1484	6.57	6.00	1.75	4.00	14.00
Ownership concentration (%)	1459	43.81	48.88	23.53	0.00	95.39
Firm age (year)	1457	8.19	6.00	7.74	0.00	43.00
Firm size [ln(total assets)]	1487	18.45	18.29	1.57	14.39	24.43
Leverage (%)	1487	22.60	20.07	18.73	0.00	101.46

Note: This table reports descriptive statistics based on aggregate samples of which the sizes may be various because of missing values. The variables are as defined in Table 1. For interpretation purposes, the descriptive statistics of Tobin's Q ratio, board size, and firm age are calculated on the basis of levels instead of logarithmic form. For the Singaporean market, raw data are downloaded from Thomson One Banker Database and the website of Singapore Exchange Ltd. Company, including listed companies' annual reports. For the Vietnamese market, the calculation is based on data directly provided by StoxPlus Corporation and/or downloaded from Thomson One Banker Database, and/or extracted from companies' annual reports which are downloaded from FPT-Ez-search Online Information Gateway and Vietstock.

suggests that companies in the two markets tend to follow a relatively independent board structure in which the proportion of non-executive and/or independent directors is high and the roles of CEO and chairperson are separated. In comparison with other countries in the Asian region, such as China (11.60), Hong Kong (11.50), and India (10.80) (The Korn/Ferry Institute, 2012), the average size of boards in Singapore and Vietnam is considerably smaller (6.57). This is, however, in line with the recommendation of Jensen (1993) that the optimal board size should not exceed eight members.

The mean (median) percentage of shares held by shareholders who own at least 5% of common shares is around 43.81% (48.88%) suggesting that the ownership structure of companies in the two countries is highly concentrated when compared to companies in the US or the UK. It should be noted that this proportion varies substantially from 0% to about 95.39%, reflecting the heterogeneity of ownership structure across firms and the two countries. The average period of time since the initial public offering of companies across the aggregate sample (firm age) is 8.19 years and the average leverage ratio is around 22.6% with a standard deviation of 18.73%.

As reported in Table 3, independent variables are all statistically significantly correlated with the dependent variable which is likely to offer at least some rough support for the proposition that these independent variables interact with performance. This evidence confirms that it is necessary to include these independent variables in our empirical models to mitigate potential bias caused by variable omission. Importantly, the correlation coefficient between Tobin's Q (lnq) and one-year lagged Tobin's Q (laglnq) is positive and statistically significant (.71), which supports the well-documented proposition that firm performance is path-dependent. Moreover, one-year lagged Tobin's Q is significantly correlated with almost all other corporate governance variables. Together, these findings tentatively reveal the dynamic nature of

the corporate governance–performance relationship which has an important implication for the choice of estimation method. Consistent with the prediction of agency theory, the correlation analysis reveals a significantly positive relationship between ownership concentration (ownership) and firm performance (lnq). Similar evidence is reported by Thomsen and Pedersen (2000) and Yabe and Izumida (2008), among others.

It is also evident from Table 3 that none of the correlation coefficients among independent variables are larger than the value of .80. As suggested by Damodar (2004), unless correlation coefficients among regressors exceed this threshold, multi-collinearity will not be a serious problem for multiple analysis. This is confirmed by the variance inflation factors (VIFs) calculated to officially detect multi-collinearity among independent variables in our models. Chatterjee and Hadi (2012, p. 236) suggest that a value of VIF larger than ten is usually considered an indication of the presence of collinearity problems. As reported in the last column of Table 3, the values of VIFs are all smaller than two, which is well below the cut-off value of ten. This evidence thus suggests that multi-collinearity is an unlikely problem in our empirical models.

4.2. Multiple regression analysis

4.2.1. The effect of ownership concentration on financial performance

4.2.1.1. Empirical evidence from OLS and fixed-effects estimators. In order to test Hypothesis 1, we first estimate Eq. (2) by applying a pooled OLS approach on the aggregate data of the two countries in which ownership concentration is our variable of interest. We then take into account unobserved effects through the use of common estimation methods for panel data, such as fixed-effects (FE) and random-effects

Table 3
Pair-wise correlation coefficients and variance inflation factor coefficients for the aggregate sample of Singapore and Vietnam.

	lnq	Female	Indep_nonexe	Dual	lnbsize	Ownership	lnfage	fsize	lev	laglnq	VIFs
lnq	1.00										
Female	0.08***	1.00									1.03
Indep_nonexe	0.06**	−0.15***	1.00								1.28
Dual	0.06**	0.09***	−0.22***	1.00							1.12
lnbsize	0.13***	−0.08***	0.16***	−0.12***	1.00						1.47
Ownership	0.06**	−0.09***	0.13***	−0.15***	0.12***	1.00					1.07
lnfage	−0.15***	−0.06**	0.28***	0.02	0.25***	0.02	1.00				1.42
fsize	0.08***	−0.08***	0.27***	−0.06**	0.55***	0.19***	0.38***	1.00			1.82
lev	0.13***	0.03	−0.18***	−0.02	−0.03	0.09***	−0.24***	0.16***	1.00		1.25
laglnq	0.71***	0.06*	0.07**	0.05*	0.06**	0.04	−0.13***	0.05	0.11***	1.00	1.06

Note: This table presents pair-wise correlation coefficients which are based on aggregate samples of which the sizes may be various because of missing values. The variance inflation factors (VIFs) are based on the common sample of 1064 firm-year observations. The variables are as defined in Table 1. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). For the Singaporean market, raw data are downloaded from Thomson One Banker Database and the website of Singapore Exchange Ltd. Company, including listed companies' annual reports. For the Vietnamese market, the calculation is based on data directly provided by StoxPlus Corporation and/or downloaded from Thomson One Banker Database, and/or extracted from companies' annual reports which are downloaded from FPT-Ez-search Online Information Gateway and Vietstock.

(RE). A Hausman test is conducted to differentiate between FE and RE approaches. We find that the null hypothesis of the test cannot be accepted at any conventional levels of significance [$\chi^2(9) = 1046.66$; p -value = .000]. Therefore, we employed the FE approach to control for time-invariant unobserved characteristics across firms.

The results obtained from pooled OLS and FE estimations are respectively reported in columns 2 and 3 of Table 4. For the pooled OLS model, the coefficient on past performance variable (laglnq) is found to be statistically positive at 1% level of significance ($\beta = .655$; p -value = .000). This, again, supports the claim that performance is path-dependent, i.e., past performance has significant effect on current performance. It is evident from columns 2 and 3 of Table 4 that the statistical significance of estimated coefficients on board structure variables (including *indep_nonexe* and *lnbsize*) disappears when the unobserved firm fixed-effects have been taken into consideration. This implies that the results obtained from the pooled OLS estimator are likely to be driven by omitted firm-level characteristics.

It should, however, be noted that the significantly positive relationship between concentrated ownership (*ownership*) and performance (lnq) still holds even after controlling for such omitted characteristics. Thus, empirical evidence from the OLS and FE approaches supports Hypothesis 1 that ownership concentration is positively correlated

Table 4
The relationship between ownership concentration and performance: evidence from the aggregate sample of Singapore and Vietnam.

Dependent variable: Tobin's Q ratio [lnq]			
Explanatory variables	Pooled OLS	Fixed-effects	System GMM
	b/(t)	b/(t)	b/(z)
	(2)	(3)	(4)
<i>Intercept</i>	−0.796*** (−5.363)	5.409*** (3.947)	−0.350 (−0.311)
<i>laglnq</i>	0.655*** (24.199)	−0.053 (−1.487)	0.268*** (2.643)
<i>Female</i>	0.001 (1.382)	−0.001 (−0.368)	0.005 (0.452)
<i>Indep_nonexe</i>	0.001** (2.085)	−0.000 (−0.316)	0.000 (0.036)
<i>Dual</i>	0.041** (1.972)	0.161** (2.260)	0.371 (1.045)
<i>lnbsize</i>	0.183*** (4.464)	0.084 (0.734)	−0.131 (−0.210)
<i>Ownership</i>	0.001** (2.309)	0.002** (2.383)	0.014*** (2.652)
<i>lnfage</i>	−0.034** (−2.270)	−0.291*** (−4.001)	−0.100 (−0.902)
<i>fsize</i>	−0.002 (−0.665)	−0.249*** (−3.946)	−0.023 (−0.799)
<i>lev</i>	0.001** (2.558)	0.005** (2.536)	0.003 (0.575)
<i>Industry dummies</i>	Yes	No	No
<i>Firm fixed-effects</i>	No	Yes	Yes
<i>Year dummies</i>	Yes	Yes	Yes
Number of observations	1064	1064	1064
R-squared	0.614	0.346	
F statistic	67.722***	29.143***	
Wald Chi-squared statistic			218.017***
Number of instruments			21
Number of clusters		363	363
Hansen-J test of over-identification (p-value)			0.152

Note: This table reports empirical results from estimating Eq. (2). Specifically, column 2 reports the results obtained from OLS method with clustering at the firm level. Column 3 presents the results obtained from fixed-effects (within-groups estimator) method. Estimations gained from two-step system GMM approach are reported in column 4. Asterisks indicate significance at 5% (**) and 1% (***). The notation is as defined in Table 1. t-Statistics of OLS and FE estimators are reported in parentheses and based on robust standard errors corrected for potential heteroskedasticity and time-series autocorrelation within each firm. z-Statistics of system GMM model are reported in parentheses and based on Windmeijer-corrected standard errors. *Year dummies* and *industry dummies* are unreported.

with performance. Although this finding is consistent with prior studies (e.g., Gedajlovic & Shapiro, 2002; Ma, Naughton, & Tian, 2010), it is likely to be severely distorted by other potential sources of endogeneity which are not controlled by the FE approach such as simultaneity and dynamic endogeneity (Wintoki et al., 2012). The next subsections discuss the results obtained from the two-step system GMM method which allows us to control for such potential sources of endogeneity.

4.2.1.2. The endogeneity of the explanatory variables. As mentioned earlier in Section 2 and Subsection 3.2, it is well-documented in corporate governance literature that all corporate governance variables used in Eq. (2) are endogenous variables. In this subsection, we empirically check the endogeneity of the regressors before proceeding with the two-step system GMM specification. Accordingly, the Durbin–Wu–Hausman (DWH) test for endogeneity of all the regressors is executed under the null hypothesis that the endogenous regressors may actually be treated as exogenous variables (Baum, Schaffer, & Stillman, 2007). Test statistics follow a Chi-squared (χ^2) distribution with the degrees of freedom equal to eight, which is the number of suspected regressors (*laglnq*, *female*, *indep_nonexe*, *dual*, *lnbsize*, *ownership*, *fsize*, and *lev*). We follow Schultz et al. (2010) and conduct the test based on the equation (in levels) of firm performance and corporate governance variables in which one-year lagged differences of the regressors are employed as instrumental variables. *Year dummies*, *industry dummies* and *lnfage* are included in the test specification and treated as exogenous variables. We find that the null hypothesis cannot be accepted at any conventional levels of significance ($\chi^2(8) = 24.03$; $p = .000$), thus suggesting that the system GMM model will be superior in terms of consistency when compared with the OLS and FE models.

4.2.1.3. The validity of system GMM estimator. The validity of the system GMM estimator is contingent on whether the lagged instrumental variables are exogenous (Roodman, 2009). For this reason, we empirically check the validity of the system GMM estimator through the use of the Hansen–J test of over-identification and Difference-in-Hansen test of exogeneity of instrument subsets. As reported in the last row of Table 4, the Hansen–J test yields the p -value of .152 confirming that the instruments (as a group) used in the system GMM model are valid. We also follow Roodman (2009) and apply the Difference-in-Hansen tests of exogeneity to the subsets of system GMM-type instruments and standard instruments. The tests are under the null hypothesis of joint validity of a specific instrument subset. Specifically, we test the validity of five subsets of system GMM-type instruments including: (i) all GMM-type instruments (as a group) for the equation in levels; (ii) GMM instruments for lagged dependent variable for the equation in differences; (iii) GMM-type instruments for lagged dependent variable for the equation in levels; (iv) GMM-type instruments for board structure variables; and (v) GMM-type instruments for ownership structure and the other control variables. The subset of standard instruments for the equation in levels is also tested for their validity. The results reported in Table 5 confirm that all the subsets of instruments used in the system GMM model are econometrically exogenous.

4.2.1.4. Empirical evidence from the two-step system GMM estimator. Given that the OLS and FE estimates of α_1 (the coefficient on laglnq) tend to be biased in opposite directions when the length of panel is short (Bond, 2002; Nickell, 1981), a reasonable estimate of α_1 should lie between the FE estimate (lower bound) and the OLS estimate (upper bound) (Bond, 2002). It is evident from Table 4 that α_1 obtained from the two-step system GMM (.268) is higher than that obtained from FE (−.053), but well below the OLS estimate (.655). This is consistent with what one would expect, thus suggesting that the two-step system GMM is likely to produce reasonable estimates, at least better than the OLS and FE estimates. Moreover, the Wald chi-squared statistic (218.017) reported in Table 4 confirms the overall fit of the system GMM model. Hence, the results from Hansen–J test,

Table 5
Difference-in-Hansen tests for exogeneity of instrument subsets.

Tested instrument subsets	Test statistics	Degree of freedom	p-Value
<i>Panel A: System GMM-type instruments</i>			
All instruments for equation in levels	12.45	8	0.132
$\ln q_{it} - 2$ and $\ln q_{it} - 3$ (for equation in differences)	3.81	2	0.149
$\Delta \ln q_{it} - 1$ (for equation in levels)	0.29	1	0.589
Instruments for board structure variables	12.99	8	0.112
Instruments for ownership structure and the other control variables	10.58	6	0.102
<i>Panel B: Standard instruments</i>			
2009 and 2010 year dummies, and $\ln fage$	0.63	3	0.890

Note: This table presents Difference-in-Hansen tests for exogeneity of instrument subsets, under the null hypothesis of joint validity of a specific instrument subset. The variables are as defined in Table 1. The test statistics are asymptotically Chi-squared distribution with degrees of freedom equal to the number of suspect instrumental variables (Roodman, 2009). GMM instrument subset used for the equation in levels includes one-year lagged differences of firm performance variable; two-year lagged differences of board structure, ownership concentration, and other control variables. GMM instrument subset used for board structure variables includes two-year lagged differences and lags 3 in levels of board structure variables. GMM instrument subset used for ownership structure and the other control variables includes two-year lagged differences and lags 3 in levels of these variables. The subset of standard instruments for the equation in levels includes 2009 and 2010 year dummies, and $\ln fage$. 2008 and 2011 year dummies are dropped due to collinearity.

Difference-in-Hansen tests, and Wald chi-squared test of overall model fit, together with the reasonable estimate of α_1 , suggest that the system GMM model appears to be well-specified.

The results using the two-step system GMM estimator with the Windmeijer (2005) finite-sample correction are reported in column 4 of Table 4. In line with recent findings of Pham et al. (2011) and Wintoki et al. (2012), among others, we find that board structure variables have no significant effects on firm performance after controlling for dynamic endogeneity, simultaneity, and unobserved heterogeneity. Noticeably, there is a significantly positive relationship between the concentrated ownership variable and performance ($\beta = .014$; p -value = .000), which is consistent with the findings attained from the pooled OLS and FE procedures. Thus, the positive relationship between ownership concentration and performance is robust across different econometric estimation techniques. This finding is generally in agreement with Heugens et al. (2009), Ma et al. (2010), and Yabei and Izumida (2008), among others. Our empirical evidence thus supports the agency perspective that ownership concentration appears to be an effective internal corporate governance strategy that helps to enhance performance.

We also check for the possible non-linearity in the ownership structure–performance relationship. Yabei and Izumida (2008) have documented that ownership concentration has a U-shaped effect on performance implying a trade-off between expropriation effects and efficient monitoring effects. More specifically, at low levels of ownership concentration, large shareholders tend to expropriate minority shareholders' wealth (Yabei & Izumida, 2008). Whereas at high levels of concentration, large shareholders have incentives to actively involve themselves in monitoring management (Yabei & Izumida, 2008). For this reason, a quadratic term of ownership concentration variable is included in Eq. (2) to allow for possible non-linearity in the ownership structure–performance relationship. Applying pooled OLS, FE, and two-step system GMM estimations on modified Eq. (2), we find that the coefficient on the quadratic term of ownership concentration variable is insignificant regardless of the econometric approaches employed.⁹

This robustness check indicates that the ownership structure–performance relationship does not follow the U-shaped pattern, at

least for the two markets' sample of firms used herein. This finding is in line with Wang and Shailer (2015) who, using a meta-analytical technique to survey primary studies on ownership–performance relationship across 18 emerging markets, report that there is no evidence of any non-linear relationship between ownership concentration and performance. Our finding supports the proposition drawn from agency theory that the efficient monitoring effects of ownership concentration play a dominant role in highly concentrated ownership markets, as is the case in most emerging markets in the Asian region. In other words, ignoring the potential non-linearity in the ownership structure–performance relationship is highly unlikely to cause serious misspecification in our empirical models.

In an additional analysis, we re-estimate Eq. (2) using the separate datasets of each country¹⁰ and find that the significantly positive effect of concentrated ownership on performance remains unchanged and is robust when alternative econometric estimators, including the pooled OLS, FE, and System GMM are employed. This evidence allows us to be confident that the positive relationship between ownership concentration and firm performance displays little variability across samples and negligible biases across different econometric techniques. It is therefore plausible to further investigate whether or not this robust relationship may be influenced by the national governance systems in which the firms operate. And if it does, then (i) how much does national governance quality matter in determining firm performance?; and (ii) what is the interaction effect of country-level and firm-level variables of governance on the relationship between ownership structure and firm performance? The next subsection reports our empirical analyses, testing Hypothesis 2, to answer these questions.

4.2.1.5. The effect of national governance quality on the relationship between ownership concentration and financial performance. To test Hypothesis 2, Eq. (2) is re-estimated with a country dummy variable that takes a value of one if a company operates in Singapore and zero otherwise. Given that only the concentrated ownership variable has a significant effect on performance, we add one interaction term between the concentrated ownership variable and country dummies to initially check whether the ownership concentration–performance relationship is influenced by country-level specific characteristics. It would suggest that country-specific characteristics matter if the estimated coefficients on these dummy variable and interaction term are statistically significant.

In an unreported analysis, we find that the coefficient on country dummy variable is statistically significant at the 10% level, thus suggesting that the role of ownership concentration in determining firm performance is expected to vary across countries. It is, therefore, necessary to investigate this further by focusing in detail on the national governance quality which may have an effect on the relationship between ownership concentration and financial performance. For this purpose, we include in Eq. (1) a national governance quality variable (measured by $NGindex$) and an interaction term between $NGindex$ and the existing concentrated ownership variable (measured by $ownership$). Eq. (1) is rewritten as follows:

$$\begin{aligned}
 Y_{it} &= \alpha_0 + \alpha_1 Y_{it-1} + \sum_{k=1} \beta_k X_{k,it} + \gamma ownership_{it} + \delta NGindex_{jt} \\
 &\quad + \varphi ownership_{it} \times NGindex_{jt} + \mu_i + \eta_t + \varepsilon_{it} \\
 &= \alpha_0 + \alpha_1 Y_{it-1} + \sum_{k=1} \beta_k X_{k,it} + \delta NGindex_{jt} \\
 &\quad + (\gamma + \varphi NGindex_{jt}) ownership_{it} + \mu_i + \eta_t + \varepsilon_{it}.
 \end{aligned} \tag{3}$$

It would be suggested that national governance quality matters if the coefficient on the $NGindex$ variable (δ) is statistically significant. A positive value for the coefficient on the interaction term (φ) would imply that the higher the $NGindex$ is, the stronger the effect of $ownership$ on

⁹ The results are not reported to save space, but available from the authors upon request.

¹⁰ The results of separate estimations for each country are not reported due to space limitations, but available from the authors upon request.

performance will be. On the contrary, a negative value for (φ) would be inferred that the higher the *NGindex* is, the weaker the effect of *ownership* on performance will be. In estimating Eq. (3), we follow Aslan and Kumar (2014) and assume that national governance variables are exogenous to the choices made by firms. As reported in columns 2 and 3 of Table 6, the positive relationship between ownership concentration and performance remains unchanged after controlling for national governance characteristics, thus supporting Hypothesis 1. We also find that the aggregate national governance quality index (*NGindex*) has a significantly positive effect on firm performance ($\beta = .465$). This evidence is in line with Ngobo and Fouda (2012) who document the positive role of national governance quality in improving firm performance. One of the potential explanations is that good national governance is likely to encourage low-risk investments which result in better profitability and lower performance variability of firms (Ngobo & Fouda, 2012).

Interestingly, it is found that national governance quality not only has a significantly direct impact on firm performance, it also moderates the relationship between ownership concentration and firm performance, thus supporting Hypothesis 2. As reported in columns 2 and 3 of Table 6, the estimated coefficient on the interaction term is negative ($\varphi = -.004$) and statistically different from zero at the 5% level of significance. This result can be inferred that the higher the national governance quality is, the weaker the effect of ownership concentration on performance will be. These outcomes confirm the emergent proposition that the performance effectiveness of corporate governance mechanisms can be contingent upon organisational and environmental characteristics (Kumar & Zattoni, 2013). In line with Munisi et al. (2014), we argue that in the absence of effective national governance mechanisms, ownership concentration is likely to be an important corporate governance strategy for Vietnamese firms to control potential agency problems. In contrast, in Singapore, where national governance quality, such as legal protection of shareholders, is much better, the role of ownership concentration in determining performance seems to be weaker.

Consistent with the results found by estimating Eq. (2), we find no statistical evidence for the relationship between board structure and firm performance. All the estimated coefficients on board structure variables are not statistically different from zero even at the 10% level of significance, after controlling for national governance quality. This finding is generally in agreement with that of recent empirical studies using a similar estimation approach (e.g., Pham et al., 2011; Schultz et al., 2010; Wintoki et al., 2012), but contrary to the predictions of both agency and resource dependence theories. As can be seen in Table 6, the significantly positive coefficients on the one-year lagged dependent variable (*laglnq*) indicate that performance is quite persistent. This is in line with Yabe and Izumida (2008) who argue that firms having performed well previously tend to continue to do so. This finding is robust to all three models using alternative proxies for national governance quality, and consistent with previous studies (e.g., Pham et al., 2011; Wintoki et al., 2012 among others). This implies that past performance is a key explanatory variable that needs to be included when modelling the relationship between corporate governance and performance. Regarding the other control variables, we find that only the leverage variable is significantly positively related to firm performance after the differences in national governance quality between the two markets are taken into consideration. This result persists for all three models using alternative proxies for national governance quality and is in agreement with that provided by initial testing using pooled OLS and FE estimation procedures. Similar evidence is reported by Mak and Kusnadi (2005) for Singapore and Malaysia, and Black et al. (2014) for Brazil, Korea, Turkey, and Russia.

One concern is that the inclusion of the interaction term *ownership* \times *NGindex* on the right-hand side of Eq. (3) may produce potential multi-collinearity because the interaction term is itself a product of their components. To check if our main findings are distorted by this potential multi-collinearity problem, we follow Lai and Chen (2014) and Wan and Yiu (2009) and centre the main effect variables (*ownership* and *NGindex*) at their grand-means before forming the interaction term. In an unreported robustness analysis, we find that the coefficient on

Table 6
The relationship between ownership concentration and performance: does national governance quality matter?

Dependent variable: Tobin's Q ratio [lnq]						
Explanatory variables	<i>NGindex</i>		<i>NGindex(a)</i>		<i>IPindex</i>	
	b	z	b	z	b	z
	(2)	(3)	(4)	(5)	(6)	(7)
<i>Intercept</i>	−3.984	(−1.413)	−2.437	(−1.176)	−6.594*	(−1.650)
<i>laglnq</i>	0.190*	(1.837)	0.190*	(1.841)	0.206**	(2.119)
<i>Female</i>	0.009	(0.881)	0.010	(0.904)	0.015	(1.529)
<i>Indep_nonexe</i>	−0.013	(−1.440)	−0.013	(−1.463)	−0.010	(−1.065)
<i>Dual</i>	−0.029	(−0.086)	−0.032	(−0.096)	0.037	(0.115)
<i>lnbsize</i>	−1.371	(−1.538)	−1.402	(−1.563)	−1.341	(−1.459)
<i>Ownership</i>	0.044***	(3.339)	0.029***	(3.834)	0.053***	(2.719)
<i>lnfage</i>	−0.050	(−0.744)	−0.050	(−0.750)	−0.066	(−1.051)
<i>fsize</i>	0.166	(0.968)	0.173	(0.998)	0.195	(1.087)
<i>lev</i>	0.013**	(2.306)	0.013**	(2.291)	0.010*	(1.860)
<i>NGindex</i>	0.465*	(1.874)				
<i>Ownership</i> \times <i>NGindex</i>	−0.004**	(−2.305)				
<i>NGindex(a)</i>			1.570*	(1.897)		
<i>Ownership</i> \times <i>NGindex(a)</i>			−0.014**	(−2.302)		
<i>IPindex</i>					0.505*	(1.775)
<i>Ownership</i> \times <i>IPindex</i>					−0.004**	(−2.181)
<i>Industry dummies</i>		No		No		No
<i>Firm fixed-effects</i>		Yes		Yes		Yes
<i>year dummies</i>		Yes		Yes		Yes
Number of observations		1064		1064		1064
Wald Chi-squared statistic		168.7***		168.9***		184.0***
Number of instruments		26		26		25
Number of clusters		363		363		363
Hansen-J test (p-value)		0.595		0.605		0.585

Note: This table reports empirical results from estimating Eq. (3) through the use of system GMM approach (columns 2 and 3). Columns 4–5 and 6–7 present the results of robustness checks with alternative proxies for national governance quality, including *NGindex(a)* and *IPindex*, respectively. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notation is as defined in Table 1. z-Statistics are reported in parentheses. Year dummies are unreported.

concentrated ownership variable (γ) and the coefficient on the interaction term (φ) are not qualitatively different from those reported in columns 2 and 3 of Table 6.

We check the robustness of our main findings by using alternative proxies for national governance quality. Specifically, we in turn replace *NGindex* by *NGindex(a)* and by *IPindex*, and re-estimate Eq. (3) using the two-step system GMM approach. The results are reported in Table 6 (columns 4 and 5 for *NGindex(a)* and columns 6 and 7 for *IPindex*). We find that the estimated coefficients (γ), (δ) and (φ) are qualitatively similar in both direction and magnitude to those obtained from the original Eq. (3). Hence, our main findings are robust when alternative proxies for national governance quality are employed.

5. Conclusions, implications, and limitations

5.1. Conclusions

The corporate governance literature focuses on the performance impacts of firm-level specific governance characteristics and does not pay sufficient attention to the importance of national governance quality. Motivated by recent development in integrating an institutional perspective with a traditional agency perspective in corporate governance studies (see eg., Aslan & Kumar, 2014; Kumar & Zattoni, 2013; Van Essen et al., 2013), this study attempts to document the interactive role of national governance quality in the corporate governance–performance relationship by applying a dynamic estimation approach on the dataset, including mature and transition markets in the Asian region.

First, given the robustness of our empirical evidence to alternative estimation approaches and various datasets, we plausibly conclude that ownership concentration has a positive and significant effect on performance in firms operating in markets where the ownership structure is highly-concentrated. This conclusion remains unchanged even after controlling for the dynamic nature of the ownership concentration–performance relationship. Second, better national governance plays a positive role in determining the performance of firms in these two markets. Third, in Singapore, where national governance quality is considered to be the best in the Asian region, the ownership concentration adds little to firm value. In contrast, the relationship between ownership concentration and financial performance is significantly stronger in Vietnam where national governance quality is poor. This finding generally supports the view that the performance effects of internal corporate governance mechanisms are country-specific, and therefore highlights the importance of incorporating country-level governance quality when researching the corporate governance–firm performance relationship.

The contribution of this study to the corporate governance literature is twofold. First, unlike most prior studies examining the corporate governance–performance relationship in a static perspective, our study re-investigates the relationship between ownership concentration and performance in a dynamic framework within which the possible impact of historical performance on current corporate governance structures is fully controlled. By taking into account this dynamic endogeneity and other potential sources of endogeneity (including simultaneity, and time-invariant unobserved heterogeneity), we expect to achieve more reliable inferences about the causal link between ownership concentration and performance.

Second, by providing robust empirical evidence from two typical kinds of national governance system in the Asian region (well-developed vs. under-developed), we support the emergent proposition that the performance effectiveness of corporate governance mechanisms can be contingent upon organisational and environmental characteristics (Kumar & Zattoni, 2013). This study, therefore, enriches the understanding of the interplay between corporate governance mechanisms and national governance quality, as well as its impacts on corporate performance. Given that Vietnam and Singapore are typical examples of

under-developed and well-developed national governance systems, our findings are, to some extent, generalizable to markets owning similar ownership structure and national governance characteristics.

5.2. Implications

Our findings regarding the significant relationship between ownership structure and firm performance, as well as the monitoring effect of national governance quality on this relationship, imply that good corporate practices may not be universal but contingent upon the institutional environment in which firms are embedded. Companies and shareholders in the Vietnamese market, therefore, may observe that in the absence of effective national governance (for example, a lack of rule of law to control management behaviour), ownership structure could be employed as one of the key governance strategies to discipline management and, to some extent, to determine firm performance.

Our findings also offer some implications for policy formulation. First, given that firm performance is significantly driven by ownership concentration, the effort in setting up corporate governance regulations in markets characterised by highly concentrated ownership, such as Singapore and Vietnam, should not undervalue the role of ownership structure (Yabe & Izumida, 2008). Second, given that national governance quality is a positive determinant of firm performance, regulatory bodies – by putting more effort into improving national institutional characteristics, such as investor protection or rule of law – will facilitate a better environment for businesses and stakeholders. Finally, as the performance effect of ownership concentration is dependent upon the quality of the national governance system in which firms are embedded, corporate governance reforms in countries with concentrated ownership should incorporate this into policy considerations. Efforts to promulgate corporate governance policies to establish more dispersed shareholding patterns, for example, may be counterproductive.

5.3. Limitations

Of course, no study is without its limitations and this study is no exception. Using the aggregate dataset of Singapore and Vietnam, we report that there are no statistically significant connections between board structure and firm performance. Although consistent with recent studies using a similar estimation technique (e.g., Pham et al., 2011; Wintoki et al., 2012), the insignificant coefficients on board structure variables found by our study dispute the predictions of agency and resource dependence theories. One of the possible explanations is that the performance effect of board structure may be substituted by that of ownership structure, especially in markets with highly concentrated ownership structure. Indeed, empirical evidence recently provided by Munisi et al. (2014) highlights that when the ownership structure is highly concentrated, the monitoring and advisory role of independent and large boards become less necessary.

It should be noted that when we re-estimate Eq. (2) using the separate datasets of each country, we find that some board structure variables do have significant effects on the financial performance of companies in both Vietnamese and Singaporean markets. For instance, the relationship between board gender diversity and firm performance is significantly positive for Vietnamese companies but significantly negative for their Singaporean counterparts. These contrasting effects disappear when the combined dataset of both markets is used. We argue that if the opposing effects of board structure variables on firm performance obtained from the separate country datasets do exist, then it is plausible to expect that they will be neutralised when the combined dataset is employed. Performance effects of board structure are not the primary focus of this study, but it is observed that seeking to address the causal connection between board structure and performance in a dynamic framework will be an interesting challenge for future empirical research on corporate governance.

This study considers ownership concentration as an effective corporate governance strategy employed by shareholders to influence managerial behaviour, mitigate agency problems and enhance performance. Because of the unavailability of relevant data for the Vietnamese market, we have completely ignored the important role of the ownership identity that may have potential influence on the aims of the owners and the way they implement their power (Thomsen & Pedersen, 2000). As a consequence, different types of ownership concentration may have different motivations and capabilities which, in turn, have different impacts on firm performance (Holderness, 2009). For this reason, we, in line with Judge (2012) and Munisi et al. (2014), believe that it is desirable for further research to seek to understand how various ownership types (such as managerial ownership, foreign ownership, government ownership, and family ownership) are related to performance of firms in Singapore, Vietnam and other markets in the Asian region. The high concentration of ownership by government is one of the key characteristics of corporate governance systems in Singapore (Kimber, Lipton, & O'Neill, 2005). A common type of fully or partly state-owned firm in Singapore are 'government-linked companies' (the GLCs) and according to Ang and Ding (2006), these account for approximately 24% of the stock market's total capitalisation and control over 10% of the economic output of the country. Unlike state-owned firms in many other countries, the "GLCs are run on a commercial and competitive basis" (Witt, 2012, p. 9). In addition, the GLCs in Singapore have higher valuations and have better corporate governance than a control group of non-GLCs (Ang & Ding, 2006). Keeping the dynamic endogeneity in mind, future research taking the role of government or government-related ownership into consideration should prove fruitful.

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Tuan Nguyen is a lecturer on the Faculty of Economics and Business Administration, Dalat University, Vietnam. Presently he is a senior PhD candidate in the Department of Finance, Waikato Management School, the University of Waikato, New Zealand. His research areas of interest include corporate governance and corporate finance.

Professor Stuart Locke is the former Chairperson of the Department of Finance, Waikato Management School, the University of Waikato, New Zealand. He is also the Director of the Institute for Business Research, Waikato Management School. He has a PhD in finance and a background in finance, economics, valuation and chartered accountancy. His current research interests are in corporate governance, capital market movements, agribusiness finance, small business finance and personal financial planning. Professor Locke has held positions at universities in New Zealand, Australia and the United Kingdom.

Dr Krishna Reddy is the Chairperson of the Department of Finance, Waikato Management School, the University of Waikato. He is also the course convenor for: Advanced Corporate Finance, Corporate Theory and Corporate Policy, Corporate Restructuring and Governance, and Personal Financial Planning. Dr Reddy researches in the areas of corporate governance, corporate finance, personal finance, market efficiency and mutual fund performance. Dr Reddy also serves as a board member for a number of trusts, providing services in the area of health, Kaupapa Maori health, and wellbeing.