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**CORPORATE GOVERNANCE STRUCTURES  
AND FINANCIAL PERFORMANCE:  
A COMPARATIVE STUDY OF PUBLICLY LISTED  
COMPANIES IN SINGAPORE AND VIETNAM**

A thesis

submitted in fulfilment

of the requirements for the degree

of

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at

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By

**TUAN VAN NGUYEN**



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## ABSTRACT

This study uses a dynamic modelling approach to investigate the relationship between corporate governance structures and financial performance of publicly listed companies in Singapore and Vietnam. The dynamic modelling approach facilitates answering the first research question: whether the relationship between corporate governance structures and firm financial performance persists in the Singaporean and Vietnamese markets when the relationship's dynamic nature is taken into account. Moreover, by focusing on two different types of national governance systems in the Asian region (well-developed vs. under-developed), this study observes how the relationship between corporate governance structures and firm performance is moderated by each country's national governance quality. By carrying out this observation, this study answers the second research question: whether the corporate governance–firm performance relationship varies according to the quality of national governance systems in which firms operate.

Two samples – including a total of 379 publicly listed non-financial companies<sup>1</sup> covering a four-year period from 2008 to 2011– are examined through the use of a two-step system generalised method of moments estimator. This estimation technique allows for potential sources of endogeneity inherent in the corporate governance–firm performance relationship, including dynamic endogeneity, simultaneity, and unobserved time-invariant heterogeneity across firms.

The results suggest that the performance effect of corporate governance structures persists in both markets even after the dynamic nature of the corporate

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<sup>1</sup> There are 122 companies for the Vietnamese market and 257 companies for the Singaporean market.

governance–firm performance relationship is taken into consideration. For the Singaporean market, the results also show that the three corporate governance structures (board diversity, board size and ownership structures) appear to have statistically significant effects on firm performance. For both markets, it is observed that there is a statistically significantly positive relationship between ownership concentration and financial performance. This finding supports the prediction of agency theory regarding the efficient monitoring effect of large shareholders in markets with highly concentrated ownership.

For the Vietnamese market, the results show that board gender diversity has a positive effect on firm performance. Remaining robust even after the alternative proxies for gender diversity are employed, this finding is consistent with the perspectives of agency theory and resource dependence theory. The number of female directors in the boardroom also matters, supporting the view that if female board representation affects firm outcomes, this effect is more pronounced when the number of female directors increases. However, the marginal positive performance effect of board gender diversity ceases when the percentage of female directors reaches a breakpoint of about 20%. This finding suggests that there is perhaps a potential trade-off between the costs and benefits of board gender diversity.

Importantly, the results indicate that the relationship between the current performance and one-year lagged performance is statistically significantly positive in both markets, and robust when alternative estimation methods and models are employed. In line with Wintoki, Linck, and Netter (2012), among others, this finding suggests that the corporate governance–firm performance

relationship should be investigated in a dynamic framework. This means that past firm performance should be considered as an important independent variable to control for potential effects of unobserved historical factors on current corporate governance structures and performance.

Furthermore, the results show that better national governance quality has a positive effect on firm performance, and that the performance effect of ownership concentration is contingent upon national governance quality. The results suggest that ownership concentration appears to have a stronger positive effect on performance of companies in Vietnam where the national governance system is underdeveloped. In contrast, concentrated ownership tends to have a weaker effect on financial performance of firms in Singapore where the national governance system is well-established. This finding is consistent with the argument that ownership concentration is an efficient corporate governance mechanism which can substitute for weak national governance quality. 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. On the contrary, 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.

This study is novel in that it is the first to explore the corporate governance–firm performance relationship using a dynamic modelling approach for the Vietnamese and Singaporean markets. The findings of this study significantly contribute toward a better understanding of international diversity on corporate governance by providing robust empirical evidence from the emerging and mature markets in

the Asian region. This study also extends the corporate governance literature by enriching the understanding of the interaction between corporate-level and national-level governance mechanisms.

## THESIS RELATED RESEARCH OUTCOMES

A number of refereed journal articles and conference papers have been produced from this thesis as follows.

### REFERRED JOURNAL ARTICLES

Nguyen, T., Locke, S., & Reddy, K. (2014). A dynamic estimation of governance structures and financial performance for Singaporean companies. *Economic Modelling*, 40(C), 1-11. [[SSCI](#)]. [[ABDC](#): A].

Nguyen, T., Locke, S., & Reddy, K. (2015). Does boardroom gender diversity matter? Evidence from a transitional economy. *International Review of Economics and Finance*, 37(C), 184-202. [[SSCI](#)]. [[ABDC](#): A].

### REFERRED CONFERENCE PAPERS

Nguyen, T., Locke, S., & Reddy, K. (2012). *Do female directors add value? Evidence from an emerging market*. Paper presented at the 16th Annual Waikato Management School Student Research Conference, University of Waikato, Hamilton, New Zealand.

Nguyen, T., Locke, S., & Reddy, K. (2014). *A dynamic estimation of governance structures and financial performance for Singaporean companies*. Paper presented at the 18th New Zealand Finance Colloquium (PhD Symposium), AUT Business School, Auckland University of Technology, Auckland, New Zealand.

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<sup>2</sup> Another version of this paper was presented at the 2014 Department of Finance Seminar Series, Waikato Management School, University of Waikato, Hamilton, New Zealand.

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Nguyễn Văn Tuấn



# GENERAL TABLE OF CONTENTS

<b>ABSTRACT .....</b>	<b>III</b>
<b>THESIS RELATED RESEARCH OUTCOMES .....</b>	<b>VII</b>
<b>ACKNOWLEDGMENTS .....</b>	<b>IX</b>
<b>GENERAL TABLE OF CONTENTS.....</b>	<b>XI</b>
<b>DETAILED TABLE OF CONTENTS.....</b>	<b>XIII</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>XIX</b>
<b>LIST OF TABLES .....</b>	<b>XXI</b>
<b>LIST OF FIGURES .....</b>	<b>XXV</b>
<b>LIST OF APPENDICES .....</b>	<b>XXVII</b>
<b>CHAPTER 1 INTRODUCTION .....</b>	<b>1</b>
<b>CHAPTER 2 LITERATURE REVIEW AND RESEARCH HYPOTHESES .....</b>	<b>17</b>
<b>CHAPTER 3 INSTITUTIONAL BACKGROUND OF CORPORATE GOVERNANCE IN SINGAPORE AND VIETNAM.....</b>	<b>47</b>
<b>CHAPTER 4 DATA AND METHOD .....</b>	<b>67</b>
<b>CHAPTER 5 CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE IN VIETNAM .....</b>	<b>121</b>
<b>CHAPTER 6 CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE IN SINGAPORE.....</b>	<b>167</b>
<b>CHAPTER 7 CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE: A COMPARATIVE ANALYSIS BETWEEN AN EMERGING MARKET AND A MATURE MARKET.....</b>	<b>193</b>
<b>CHAPTER 8 CONCLUSIONS, IMPLICATIONS AND LIMITATIONS .</b>	<b>239</b>
<b>APPENDIXES .....</b>	<b>251</b>
<b>REFERENCES.....</b>	<b>259</b>

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# DETAILED TABLE OF CONTENTS

<b>ABSTRACT .....</b>	<b>III</b>
<b>THESIS RELATED RESEARCH OUTCOMES .....</b>	<b>VII</b>
<b>ACKNOWLEDGMENTS .....</b>	<b>IX</b>
<b>GENERAL TABLE OF CONTENTS.....</b>	<b>XI</b>
<b>DETAILED TABLE OF CONTENTS.....</b>	<b>XIII</b>
<b>LIST OF ABBREVIATIONS .....</b>	<b>XIX</b>
<b>LIST OF TABLES .....</b>	<b>XXI</b>
<b>LIST OF FIGURES .....</b>	<b>XXV</b>
<b>LIST OF APPENDICES .....</b>	<b>XXVII</b>
<b>CHAPTER 1 INTRODUCTION .....</b>	<b>1</b>
1.0 OUTLINE.....	1
1.1 MOTIVATION AND RESEARCH QUESTIONS.....	2
1.1.1 Why should a dynamic modelling approach be used?.....	2
1.1.2 Why should national governance quality be involved? .....	5
1.1.3 Why Singapore and Vietnam? .....	6
1.2 SIGNIFICANCE OF THE STUDY.....	8
1.3 ORGANISATION OF THE THESIS .....	14
1.4 SUMMARY .....	15
<b>CHAPTER 2 LITERATURE REVIEW AND RESEARCH HYPOTHESES</b> <b>.....</b>	<b>17</b>
2.0 INTRODUCTION .....	17
2.1 DEFINITIONS OF CORPORATE GOVERNANCE.....	17
2.2 THREE DOMINANT THEORIES IN CORPORATE GOVERNANCE RESEARCH: AN OVERVIEW .....	19
2.2.1 Agency theory .....	21
2.2.2 Resource dependence theory.....	22
2.2.3 Institutional theory and its role in cross-national comparative studies of corporate governance .....	23
2.3 CORPORATE GOVERNANCE STRUCTURES AND FIRM FINANCIAL PERFORMANCE	26
2.3.1 Board structure and firm financial performance .....	27

2.3.1.1	Board diversity and firm financial performance.....	27
2.3.1.2	Board composition and firm financial performance.....	32
2.3.1.3	Board leadership structure and firm financial performance .....	34
2.3.1.4	Board size and firm financial performance .....	36
2.3.2	Ownership structure and firm financial performance.....	39
2.3.3	Capital structure and firm financial performance.....	42
2.4	NATIONAL GOVERNANCE QUALITY AND FIRM FINANCIAL PERFORMANCE .....	43
2.5	MODERATING EFFECT OF NATIONAL GOVERNANCE QUALITY ON THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE STRUCTURES AND FINANCIAL PERFORMANCE .....	44
2.6	SUMMARY.....	45
<b>CHAPTER 3 INSTITUTIONAL BACKGROUND OF CORPORATE GOVERNANCE IN SINGAPORE AND VIETNAM .....</b>		<b>47</b>
3.0	INTRODUCTION .....	47
3.1	CORPORATE GOVERNANCE IN SINGAPORE .....	47
3.1.1	Corporate governance regulatory system in Singapore.....	47
3.1.2	The context of corporate governance in Singapore .....	49
3.2	CORPORATE GOVERNANCE IN VIETNAM .....	50
3.2.1	Corporate governance regulatory system in Vietnam .....	50
3.2.2	The context of corporate governance in Vietnam .....	52
3.3	CORPORATE GOVERNANCE IN SINGAPORE AND VIETNAM: A COMPARATIVE ANALYSIS .....	55
3.4	NATIONAL INSTITUTIONS IN SINGAPORE AND VIETNAM .....	59
3.4.1	National governance quality in Vietnam and Singapore.....	59
3.4.2	Gender-related institutional environment in Vietnam.....	62
3.5	SUMMARY.....	64
<b>CHAPTER 4 DATA AND METHOD .....</b>		<b>67</b>
4.0	INTRODUCTION .....	67
4.1	CONCEPTUAL FRAMEWORK.....	67
4.2	SAMPLE SELECTION AND DATA .....	69
4.2.1	Data sources .....	69
4.2.1.1	Data sources for Vietnam .....	69
4.2.1.2	Data sources for Singapore.....	70
4.2.1.3	Data sources for national governance quality variables .....	71
4.2.2	The criteria for data collection .....	71
4.2.3	Data sample .....	75

4.3 RESEARCH METHOD.....	80
4.3.1 Endogeneity and the dynamic of corporate governance–financial performance relationship.....	80
4.3.2 Variables .....	83
4.3.2.1 Dependent variables .....	83
4.3.2.2 Firm-level explanatory variables.....	85
4.3.2.3 National governance quality variables .....	90
4.3.2.4 Other control variables .....	92
4.3.3 Model specifications .....	104
4.3.3.1 The general model.....	104
4.3.3.2 The model specification for the Vietnamese market.....	106
4.3.3.3 The model specification for the Singaporean market.....	108
4.3.3.4 The model specification for the combined dataset of both markets.....	109
4.3.4 Estimation approaches .....	111
4.3.5 Specification tests for the System GMM model .....	116
4.3.5.1 Durbin-Wu-Hausman (DWH) test for endogeneity of regressors.....	116
4.3.5.2 Testing over-identifying restrictions .....	117
4.4 SUMMARY .....	118
<b>CHAPTER 5 CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE IN VIETNAM .....</b>	<b>121</b>
5.0 INTRODUCTION .....	121
5.1 PRELIMINARY DATA ANALYSIS .....	122
5.1.1 Descriptive statistics .....	124
5.1.2 Correlation matrix and multi-collinearity diagnostic.....	132
5.1.3 The slow-changing characteristic of corporate governance variables .	135
5.2 MULTIPLE REGRESSION ANALYSIS .....	137
5.2.1 Static vs. dynamic models: Pooled OLS and FE estimations .....	137
5.2.1.1 The static models.....	137
5.2.1.2 The dynamic models .....	141
5.2.2 Dynamic models: A System GMM estimation.....	146
5.2.2.1 Testing for endogeneity of the regressors .....	146
5.2.2.2 The validity of the System GMM estimator.....	146
5.2.2.3 Empirical results from the System GMM model .....	147
5.2.3 Robustness checks .....	149
5.2.3.1 The sensitivity of the results to the reduction of instruments.....	149
5.2.3.2 Robustness check with alternative corporate governance variables.....	156

5.3 SUMMARY.....	164
<b>CHAPTER 6 CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE IN SINGAPORE .....</b>	<b>167</b>
6.0 INTRODUCTION .....	167
6.1 PRELIMINARY DATA ANALYSIS .....	167
6.1.1 Descriptive statistics.....	169
6.1.2 Correlation matrix and multi-collinearity diagnostic .....	172
6.1.3 The slow-changing characteristic of corporate governance variables..	173
6.2 MULTIPLE REGRESSION ANALYSIS .....	175
6.2.1 Static vs. dynamic models: Pooled OLS and FE estimations.....	176
6.2.2 Dynamic models: A System GMM estimation .....	178
6.2.2.1 Testing for endogeneity of the regressors.....	178
6.2.2.2 The validity of the System GMM estimator .....	179
6.2.2.3 Empirical results from the System GMM model.....	181
6.2.3 Robustness checks .....	185
6.2.3.1 The sensitivity of the results to the reduction of instruments .....	186
6.2.3.3 Robustness check with alternative corporate governance variables.....	188
6.3 SUMMARY.....	190
<b>CHAPTER 7 CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE: A COMPARATIVE ANALYSIS BETWEEN AN EMERGING MARKET AND A MATURE MARKET .....</b>	<b>193</b>
7.0 INTRODUCTION .....	193
7.1 THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE STRUCTURES AND PERFORMANCE: EVIDENCE FROM A CROSS-COUNTRY COMPARISON .....	194
7.1.1 A comparison of corporate governance structures and firm performance between Singapore and Vietnam .....	194
7.1.1.1 The difference in the means of numerical variables between Singapore and Vietnam.....	195
7.1.1.2 The difference in the proportions of categorical variables between Singapore and Vietnam .....	203
7.1.2 A cross-country comparative analysis of corporate governance structures–firm performance relationship.....	205
7.1.2.1 Dynamic nature of the corporate governance–firm performance relationship in Singapore and Vietnam .....	205
7.1.2.2 Board diversity and firm performance.....	207
7.1.2.3 Board composition and firm performance .....	209
7.1.2.4 Board leadership structure and firm performance .....	210
7.1.2.5 Board size and firm performance .....	211

7.1.2.6	Ownership concentration and firm performance.....	212
7.1.2.7	Capital structure and firm performance.....	212
7.2	THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE: DOES NATIONAL GOVERNANCE QUALITY MATTER? .....	214
7.2.1	Descriptive statistics .....	214
7.2.2	Correlation matrix and multi-collinearity diagnostic.....	218
7.2.3	Multiple regression analysis .....	221
7.2.3.1	Empirical findings from the combined dataset of both markets: The pooled OLS and FE models .....	221
7.2.3.2	Empirical findings from the combined dataset of both markets: The System GMM models.....	222
7.2.3.3	Does national governance quality matter? .....	227
7.2.4	Robustness checks .....	232
7.2.4.1	Robustness check for the possible non-linearity in the ownership structure–performance relationship.....	232
7.2.4.2	Robustness check with alternative national governance quality variables .....	234
7.3	SUMMARY .....	237
<b>CHAPTER 8 CONCLUSIONS, IMPLICATIONS AND LIMITATIONS .</b>		<b>239</b>
8.0	INTRODUCTION .....	239
8.1	CONTRIBUTIONS AND IMPLICATIONS .....	239
8.1.1	A summary of key findings and policy implications .....	239
8.1.2	The contributions of the thesis .....	243
8.2	LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH .....	244
8.3	SUMMARY .....	250
<b>APPENDIXES .....</b>		<b>251</b>
<b>REFERENCES.....</b>		<b>259</b>

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## LIST OF ABBREVIATIONS

AB AR(2) test	The Arellano-Bond test for second-order serial correlation
ADB	The Asian Development Bank
AR(1)	The first-order autoregressive process
ASEAN	The Association of Southeast Asian Nations
BOD	Board of directors
BOS	Board of supervisors
CEO	Chief executive officer
CGIO	The Centre for Governance, Institutions and Organisations [Business School , National University of Singapore]
CLSA	The Credit Lyonnais Securities Asia
DWH	The Durbin-Wu-Hausman test for endogeneity
FE	Fixed-effects [within-groups] estimator
GDP	The gross domestic product
GLCs	The government-linked companies [in Singapore]
GMS	General meeting of shareholders
GNI	The gross national income
HKEC	The Hong Kong Exchanges and Clearing Limited
HNX	The Hanoi Stock Exchange [Vietnam]
HOSE	The Ho-Chi-Minh Stock Exchange [Vietnam]
ICB	The Industry Classification Benchmark
IFC	The International Finance Corporation
IPO	Initial public offering
IV methods	Instrumental variable methods
LOCI	The [Vietnamese] Law on Credit Institutions
LOE 2005	The [Vietnamese] Law on Enterprises 2005

MAS	The Monetary Authority of Singapore
MOF	The [Vietnamese] Ministry of Finance
OECD	The Organisation for Economic Co-operation and Development
OLS	Ordinary least squares estimator
RE	Random-effects estimator
ROA	Return on assets
SGX	The Singapore Exchange Limited
Singaporean Code	The [Singaporean] Code of Corporate Governance 2005
SSC	The [Vietnamese] State Securities Commission
System GMM	The system generalised method of moments estimator
The UK	The United Kingdom
The US	The United States of America
UNIDO	The United Nations Industrial Development Organization
UPCoM	The Unlisted Public Company Market [Vietnam]
Vietnamese Code	The [Vietnamese] Code of Corporate Governance for Listed Companies 2007
VIFs	The variance inflation factors
WGIs	The Worldwide Governance Indicators

# LIST OF TABLES

## Chapter 2

Table 2.1: Summary of research hypotheses.....	46
--	----

## Chapter 3

Table 3.1: The comparison of corporate governance systems between Singapore and Vietnam .....	56
---	----

Table 3.2: The governance indicators (percentile ranks) of East Asia-Pacific region, OECD, Singapore, and Vietnam in 2013.....	61
--	----

## Chapter 4

Table 4.1: The number of publicly listed companies in Vietnam and Singapore at the end of 2011 .....	76
--	----

Table 4.2: Summary of the sample selection procedure for Vietnam.....	77
---	----

Table 4.3: The industrial structure of sampled firms in Vietnam .....	78
---	----

Table 4.4: Summary of the sample selection procedure for Singapore .....	79
--	----

Table 4.5: The industrial structure of sampled firms in Singapore.....	80
--	----

Table 4.6: Definition of variables .....	97
--	----

Table 4.7: Predicted signs of the estimated coefficients on explanatory variables .....	102
---	-----

## Chapter 5

Table 5.1: Sample sizes of alternative research models for Vietnam .....	124
--	-----

Table 5.2: Descriptive statistics .....	126
---	-----

Table 5.3: The frequency of female directors (panel A) and percentage of female directorship (panel B) by board size .....	129
--	-----

Table 5.4: The <i>t</i> -test for equal population means with unequal variances.....	132
--	-----

Table 5.5: Pair-wise correlation coefficients and variance inflation factor coefficients .....	134
--	-----

Table 5.6: Overall, between and within standard deviations of the corporate governance variables for the Vietnamese market .....	136
--	-----

Table 5.7: The relationship between corporate governance structures and performance of Vietnamese listed companies: Static models.....	139
--	-----

Table 5.8: The relationship between corporate governance structures and performance of Vietnamese listed companies: A dynamic OLS estimation .....	144
Table 5.9: The relationship between corporate governance structures and performance of Vietnamese listed companies: A fixed-effects estimation .....	145
Table 5.10: Difference-in-Hansen tests of exogeneity of instrument subsets .....	148
Table 5.11: The relationship between corporate governance structures and performance of Vietnamese listed companies: A System GMM estimation .....	154
Table 5.12: Robustness check of the sensitivity of the results to the instrumental variables' reduction .....	155
Table 5.13: Difference-in-Hansen tests of exogeneity of instrument subsets used in the robustness model .....	156
Table 5.14: Robustness check of the sensitivity of the results to alternative proxies for board gender diversity.....	158
Table 5.15: Robustness checks with alternative proxies for gender diversity.....	159
Table 5.16: Robustness checks using a segmented regression analysis .....	163
Table 5.17: Summary of empirical findings for the Vietnamese market .....	165
<b>Chapter 6</b>	
Table 6.1: Sample sizes of alternative research models for Singapore .....	169
Table 6.2: Descriptive statistics.....	171
Table 6.3: Pair-wise correlation coefficients and variance inflation factor coefficients.....	174
Table 6.4: Overall, between and within standard deviations of the corporate governance variables for the Singaporean market.....	175
Table 6.5: Difference-in-Hansen tests of exogeneity of instrument subsets .....	180
Table 6.6: The relationship between corporate governance structures and performance of Singaporean listed companies: A System GMM estimation .....	184
Table 6.7: Robustness check of the sensitivity of the results to the instrumental variables' reduction .....	187
Table 6.8: Robustness check of the sensitivity of the results to alternative corporate governance structure variables .....	189

Table 6.9: Summary of empirical findings for the Singaporean market.....	191
--	-----

## **Chapter 7**

Table 7.1: Shapiro-Wilk test for the normality of the numerical variables .....	197
Table 7.2: Levene's robust test for the equality of variances of the numerical variables .....	198
Table 7.3: Two-sample <i>t</i> -test on the equality of population means with unequal variances.....	199
Table 7.4 Two-sample <i>z</i> -test on the equality of population proportions .....	204
Table 7.5: Summary of empirical estimations: A cross-country comparison.....	206
Table 7.6: Sample sizes of alternative research models using combined dataset of Singapore and Vietnam .....	215
Table 7.7: Descriptive statistics for the combined sample of Singapore and Vietnam .....	217
Table 7.8: Pair-wise correlation coefficients and variance inflation factor coefficients for the combined sample of Singapore and Vietnam .....	219
Table 7.9: Difference-in-Hansen tests of exogeneity of instrument subsets.....	224
Table 7.10: The relationship between corporate governance structures and performance: Evidence from the combined sample of Singapore and Vietnam .....	226
Table 7.11: The relationship between corporate governance structures and performance: Does national governance quality matter?.....	231
Table 7.12: Robustness check of the sensitivity of the results to alternative national governance variables ( <i>NGindex(a)</i> ) .....	235
Table 7.13: Robustness check of the sensitivity of the results to alternative national governance variables ( <i>IPindex</i> ).....	236
Table 7.14: Summary of empirical findings from Chapter 7 .....	237

## **Chapter 8**

Table 8.1: A summary of the empirical findings of the thesis .....	241
--	-----

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# LIST OF FIGURES

## Chapter 4

Figure 4.1: A conceptual framework for corporate governance–financial performance relationship.....	69
---	----

## Chapter 5

Figure 5.1: The average values of Tobin’s Q of Vietnamese companies with and without female directors.....	131
--	-----

Figure 5.2: The median-spline plot and scatter-plot for Tobin’s Q against the Blau index.....	161
---	-----

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## LIST OF APPENDICES

Appendix 1: Some illustrations of the differences in corporate governance regulations between the financial industry and other industries in the Vietnamese and Singaporean markets .....	251
Appendix 2: Changes in the Vietnamese stock index (%) vs. Tobin's Q 2008–2011 .....	252
Appendix 3: Case-wise correlation matrix for the variables used for the Vietnamese market.....	253
Appendix 4: Case-wise correlation matrix for the variables used for the Singaporean market.....	254
Appendix 5: The relationship between corporate governance structures and performance of Singaporean listed companies: Static models.....	255
Appendix 6: The relationship between corporate governance structures and performance of Singaporean listed companies: A dynamic OLS estimation .....	256
Appendix 7: The relationship between corporate governance structures and performance of Singaporean listed companies: A fixed-effects estimation .....	257
Appendix 8: Case-wise correlation matrix for the variables (combined dataset of Singapore and Vietnam).....	258



# CHAPTER 1

## INTRODUCTION

### 1.0 OUTLINE

Over recent decades, especially after the Asian Financial Crisis of 1997, the corporate governance–financial performance relationship has emerged as one of the most fascinating and controversial issues in the corporate finance literature. A survey conducted by Ahrens, Filatotchev, and Thomsen (2011) shows that there are more than 7,776 refereed journal articles on corporate governance and most of them (4,783 items) have been published since 2004. The Global Financial Crisis of 2007 raised further concerns about the nature of corporate governance practiced by publicly listed companies. It also raised an important research question as to whether improved corporate governance structures indeed lead to better financial performance.

However, prior empirical studies have reported inconclusive and weak evidence. Ahrens et al. (2011, p. 312) state that “despite enormous volume of research, we still know very little about corporate governance. We cannot say, for example, that specific ownership, or board structures lead to better economic performance”. It is argued that mixed findings reported in the corporate governance–firm performance relationship may have been affected by: (i) the institutional differences between countries (Aguilera, Filatotchev, Gospel, & Jackson, 2008; Ahrens et al., 2011); and (ii) the imperfection of estimation methods (Ahrens et al., 2011; Bhagat & Bolton, 2008; Love, 2011).

To address the abovementioned issues, this thesis – using a well-structured dynamic modelling approach – undertakes a cross-national comparative study on

the relationship between corporate governance and financial performance of companies in two Asian markets, namely Singapore and Vietnam. This 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; 1.1.2; and 1.1.3 discuss the questions (i); (ii); and (iii), respectively. The significance of the current study is noted in Section 1.2. The organisation of the thesis is introduced in Section 1.3.

## **1.1 MOTIVATION AND RESEARCH QUESTIONS**

### **1.1.1 Why should a dynamic modelling approach be used?**

One of the biggest challenges in corporate governance empirical studies is how to deal with the endogeneity of corporate governance variables. It is well documented in the corporate governance literature that endogeneity problems may arise from two main sources: (i) time-invariant unobserved characteristics across companies, and (ii) simultaneity (Flannery & Hankins, 2013). However, recent empirical research has recognised that the corporate governance–firm performance relationship is dynamic in nature which is considered as another source of endogeneity, namely dynamic endogeneity (Wintoki et al., 2012).

The dynamic nature of this relationship suggests that corporates' contemporaneous performance and board/ownership structures are influenced by their past financial performance (Wintoki et al., 2012; Yabei & Izumida, 2008). This implies that if the dynamic endogeneity problem is not fully controlled, it is

impossible to make causal interpretation from the econometric estimations (Wintoki et al., 2012).

For example, theoretical studies by Harris and Raviv (2008); Hermalin and Weisbach (1998); and Raheja (2005) imply that the relationship between board structure and firm performance is dynamic in nature. An empirical study undertaken by Wintoki et al. (2012) for the US market confirms that the dynamic relationship between current board structure and past firm performance does exist. Taking the dynamic endogeneity problem into consideration, Wintoki et al. (2012) suggest that board structure has no significant impact on firm performance, and the causal relationships uncovered by previous studies using traditional ordinary least squares (OLS) or fixed-effects (FE) techniques are spurious.

It is noteworthy that such a suggestion is drawn from an institutional context where the market for corporate control operates well. In cases where internal corporate governance structures do not have impact on firm performance, it is expected that the markets for corporate control, such as takeover markets, will play a compensatory role as the external governance mechanism for monitoring managerial behaviour. This has potential to mitigate agency problems and ultimately lead to improved performance. However, it is not clear whether the findings of Wintoki et al. (2012) can be generalised in the context of Asia where the market for corporate control is generally not an effective external corporate governance mechanism. In other words, the question here is when the dynamic endogeneity is taken into account, whether or not board structure has an effect on the financial performance of firms in Asian markets, which are characterised as being ineffective markets for corporate control.

Similarly, the causal relationship between ownership structure and performance predicted by traditional agency theory is also challenged in the corporate governance literature. It is recognised that ownership concentration is dynamically related to firm performance (Gedajlovic & Shapiro, 2002; Thomsen & Pedersen, 2000; Yabei & Izumida, 2008). This implies that the causal relationship (if any) may run in the opposite direction, i.e., from past performance to current ownership structure (Yabei & Izumida, 2008).

Taking into account the dynamic endogeneity, recent empirical studies on the relationship between ownership concentration and performance in the Australasian region have provided conflicting results. For example, 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 (Yabei & 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.

**The first research question:** Given the presence of the potential dynamic endogeneity in corporate governance research, it is questioned whether the causal relationship between corporate governance structures and firm performance suggested by the agency theory and resource dependence theory persists in the Asian markets, in particular, Singapore and Vietnam, after controlling for the dynamic endogeneity. To the best of the author's knowledge, no prior study on these two markets has treated the corporate governance–firm performance relationship this way. More interestingly, by doing so, this 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.

### **1.1.2 Why should national governance quality be involved?**

It should also be noted that most prior corporate governance research has focused on the US or UK markets and ignored moderating effects of national governance mechanisms (Filatotchev, Jackson, & Nakajima, 2013). Arguably, such an approach tends to offer a narrow and less rigorous understanding about the effectiveness of the corporate governance strategies in different institutional settings (Kumar & Zattoni, 2013).

Recently, corporate governance researchers have re-examined the non-contextualised, traditional agency framework to understand contexts outside Anglo-Saxon jurisdictions, especially in the Asia region where highly concentrated ownership is the norm (Filatotchev et al., 2013). Based on the institutional corporate governance framework, the researchers have recognised that national governance mechanisms, such as legal system, rule of law, or investor protection, have the potential to influence the effectiveness of corporate governance strategies (Filatotchev et al., 2013). In this regard, Kumar and Zattoni (2013) and Filatotchev et al. (2013), among others, have suggested investigating the interaction impact of country-level and firm-level variables in corporate governance research<sup>3</sup>.

**The second research question:** Based on the aforementioned arguments and motivated by the view of institutional theory, this study questions whether the

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<sup>3</sup> These points will be expanded in Chapter 2.

relationship between corporate governance and firm performance varies depending on the quality of national governance systems in which firms operate. More specifically, this study aims to answer the second research question: whether the relationship between corporate governance structures and firm performance is moderated by national governance quality. By doing so for the two typical Asian markets, this study contributes to an emergent stream of research on the interaction between corporate governance mechanisms and national institutions.

### **1.1.3 Why Singapore and Vietnam?**

In order to address the two research questions mentioned above, it is ideal to have a deep and historical database from which generalizable findings can be achieved (Heugens, Van Essen, & Van Oosterhout, 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 suggestion, the empirical analyses in this study are based on the samples of firms selected from two typical Asian markets: Singapore and Vietnam. These markets are chosen to be the platform to conduct this 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, 2006a, 2012). Given that Singapore and Vietnam markets are highly representative for two contrastive groups of national governance systems (well-developed vs. under-developed) in the Asia region, the generalisation of this study’s 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, 2006a) and the average corporate

governance score of Vietnamese firms is lower than that of the other markets in the Asia region (IFC, 2012)<sup>4</sup>. From a comparative perspective, this heterogeneity of firm-level governance is important to strengthen empirical estimations (Mallin et al., 2015) that allow to obtain credible inferences. Therefore, such a sample structure guarantees an acceptable compromise between the generalizability and credibility of the findings and the limitations on research sources when conducting this study.

## **1.2 SIGNIFICANCE OF THE STUDY**

This study is novel as it is the first to explore the corporate governance–firm performance relationship using a dynamic modelling approach for the Singapore and Vietnamese markets. The significance of this research, therefore, is in the form of 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.

With regard to the model specification and estimator, most prior studies on the corporate governance–firm performance relationship commonly employed the FE approach and/or the traditional instrumental variable (IV) approach to mitigate potential endogeneity concerns arising from unobserved time-invariant heterogeneity and/or simultaneity. However, these techniques are not designed to deal with dynamic endogeneity, which very likely arises in the board structure and performance relationship in general (Wintoki et al., 2012); and in the board gender diversity and performance relationship in particular (Adams & Ferreira,

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<sup>4</sup> See Chapter 3 for more details. The IFC stands for the International Finance Corporation.

2009; Dezsö & Ross, 2012); or in the ownership structure and firm performance relationship (Yabei & Izumida, 2008). In addition, applying the traditional IV approach, which requires identifying reliable external instruments, is no easy task (Flannery & Hankins, 2013). It is therefore extremely difficult, if not impossible, to look for a set of multiple external instruments for the current study in which almost all explanatory variables are considered to be endogenously determined.

Given the unavailability of appropriate external instruments for corporate governance research, the two-step System GMM estimator – proposed by Blundell and Bond (1998) – constitutes the most feasible solution for dealing with endogeneity issues arising from a dynamic panel setting (Antoniou, Guney, & Paudyal, 2008; Nakano & Nguyen, 2012). This technique, on the one hand, allows the current study to employ internal instruments available within the panel itself (Blundell & Bond, 1998), facilitating the empirical estimation process.

On the other hand, it allows this study to cope with “the combination of a short panel, a dynamic dependent variable, fixed effects and a lack of good external instruments” (Roodman, 2009b, p. 156). Indeed, simulation analyses recently undertaken by Flannery and Hankins (2013); and Zhou et al. (2014), documented that the System GMM emerges as the best-performing estimator across common data features encountered in this study’s datasets, including: (i) short panel; (ii) endogenous explanatory variables; and (iii) dynamic panel bias. More importantly, by construction, the System GMM estimator allows for mitigating the problem of the slow-changing characteristics of independent variables, which renders the FE estimator powerless (Antoniou et al., 2008). Therefore, to probe further the relationship between corporate governance structures and financial

performance, the dynamic modelling method is likely to be helpful and more robust.

With regard to the institutional settings on which this study focuses, this study extends the extant corporate governance literature by providing an understanding of the dynamic nature of the corporate governance–firm performance relationship in Singapore and Vietnam. Specifically, to the best of the author’s knowledge, the work of Mak and Kusnadi (2005) is the only empirical study focussing on the corporate governance–firm performance relationship in Singapore. This study differs from theirs in the way it deals with the endogeneity problems. This study examines the corporate governance–firm performance relationship in a dynamic modelling framework by using the System GMM estimator. This panel-data estimation technique, as mentioned above, is able to control for potential sources of endogeneity which have plagued many earlier studies.

Similarly, the corporate governance–firm performance relationship in the Vietnamese market is virtually unknown to international scholars. The latest review paper on the theme of corporate governance in emerging markets conducted by Claessens and Yurtoglu (2013) does not include any information about Vietnam. Another recent meta-analysis paper concerning corporate board–firm performance relationship in the Asian region conducted by Van Essen, Oosterhout, and Carney (2012) similarly provides no information about Vietnam<sup>5</sup>. Noticeably, in the most recent comprehensive review paper by Terjesen, Sealy,

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<sup>5</sup> A simple survey was conducted by the author of this thesis at the end of 2012 to look for publications regarding the corporate governance–firm performance relationship in Vietnam. The author followed Love (2011) and used the key words ‘corporate governance’ + ‘performance’ + ‘Vietnam’ to search on [www.GoogleScholar.com](http://www.GoogleScholar.com), [www.SSRN.com](http://www.SSRN.com), and the Proquest5000 database. Generally, the search results showed that there was no empirical research considering the case of Vietnam.

and Singh (2009) dealing with the topic of female directors in the boardroom, there is no research using Vietnamese company data among more than 400 relevant publications either.

Therefore, Chapter 5 of this thesis will highlight the potential performance effect of board gender diversity in the Vietnamese market. Using empirical data from the Vietnamese context, this thesis significantly contributes to understanding how female representation on boards of directors (BOD) affects a company's financial performance. The topic has recently become a central focus of corporate governance rejuvenation efforts around the world, with companies being encouraged to appoint female directors to their boards (Adams & Ferreira, 2009). This raises an important research question as to whether there is a causal relationship between gender diversity on the BOD and firm performance.

There has been an increase in the literature on this topic but it relates predominantly to studies in mature markets characterised by well-established corporate governance systems (Adams & Funk, 2012). Several have reported inconclusive results (Campbell & Mínguez-Vera, 2008; and Rose, 2007). Moreover, they have not fully addressed potential endogeneity concerns, making inferences about the causal relationship between gender diversity and firm performance problematic (Terjesen et al., 2009).

Consequently, the causal effect of board gender diversity on firm performance, especially in markets characterised by underdeveloped corporate governance systems, remains unclear. The current research, applying a well-structured dynamic modelling approach to control for potential endogeneity concerns, makes

a significant contribution to understanding how such diversity works in the Vietnamese market and suggests an approach for similar economies.

The issue tends to be more complicated since, as Adams and Ferreira (2009) suggested, the nature of the relationship between board gender diversity and firm performance is contingent upon whether the firms are well governed. Using a sample of US firms, they contended that because female directors bring tougher monitoring to boardrooms, adding more women directors is likely to provide excessive and unnecessary monitoring for well-governed firms, which may ultimately have a detrimental impact on firm performance.

If so, the subsequent question is whether more gender-diverse boards will improve firm performance in markets where companies, which are generally poorly governed, benefit from additional monitoring. Chapter 5 addresses this question, contributing to the growing literature of non-US based studies by focusing on Vietnam, a market characterised by an underdeveloped corporate governance system, where the benefits of board diversity may be more pronounced.

It is argued by Carter, Simkins, and Simpson (2003) that the link between board gender diversity and firm performance is not predicted directly by any single extant theory. Therefore, examining this causal relationship becomes an empirical issue (Carter et al., 2003). However, as pointed out by Mohan (2014) in a recent comprehensive review paper, there are several reasons why such a causal relationship has the potential to exist. Mohan notes that the presence of women in boardrooms may matter for risk-taking and leadership style, both of which

eventually result in effects on firm performance<sup>6</sup>. If the gender of directors matters for firm outcomes, then female directors should fundamentally differ from their male counterparts in terms of behaviour and personality characteristics (Mohan, 2014).

A recent survey by the United Nations Industrial Development Organization (UNIDO, 2010) confirmed that Vietnamese female entrepreneurs are distinguishable from their male counterparts in regard to both human values and attitudes to risk<sup>7</sup>. These findings are relevant to the current study since Vietnamese female directors are typically appointed from the pool of female entrepreneurs. This being the case, it is plausible that female and male directors in Vietnam will differ in terms of their human values and attitudes to risk. Following Mohan's proposal, this suggests a causal effect of board female representation on firm performance in Vietnamese companies. Therefore, the UNIDO (2010) findings strengthen the context for the current study and help establish not only the rationale but also the significance of this thesis's results for policy implications.

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<sup>6</sup> For example, Adams and Funk (2012) documented that female and male directors are systematically different in their core values and attitudes to risk. The subsequent question is how financial markets evaluate these differences. Adams, Nowland, and Grey (2011) found that market reaction to the appointment of female directors is, on average, significantly positive, and consistently greater than it is to the appointment of their male counterparts. Mohan and Chen (2004), however, documented that the initial public offering (IPO) markets do not appear to distinguish between female- and male-led IPOs when evaluating them.

<sup>7</sup> For instance, while Vietnamese male entrepreneurs are risk-taking investors and tend to make decisions by themselves, their female counterparts –due to cultural tradition and their social role– tend to consult their family members on important business decisions (UNIDO, 2010). Furthermore, the perseverance and determination to succeed of Vietnamese female entrepreneurs appear to be greater than those of their male counterparts. As goal-oriented entrepreneurs, Vietnamese women also take their businesses seriously, participate in entrepreneurial organisations, and readily grasp how to use informal means to promote their own businesses (UNIDO, 2010).

### **1.3 ORGANISATION OF THE THESIS**

The remainder of the thesis is structured as follows. Chapter 2 provides a review of the theoretical and empirical literature of the corporate governance–financial performance relationship. Based on the literature review, Chapter 2 establishes the hypotheses on (i) the relationship between corporate governance structures and financial performance; (ii) the performance impact of national governance quality; and (iii) the moderating effect of national governance quality. Chapter 3 describes the context of corporate governance in Singapore and Vietnam to help the readers fully grasp the background of the empirical analyses implemented in Chapters 5, 6, and 7.

Chapter 4 describes the research framework, measurement of variables, data and data sources, and model specifications for the empirical analyses of the thesis. There are two models using the separate datasets of the Vietnamese and Singaporean markets, and one model employing the combined dataset of both countries. Chapter 5 and Chapter 6 in turn examine the relationship between corporate governance structures and financial performance of listed companies in Vietnam and Singapore. Taken together, the findings attained from Chapters 5 and 6 contribute to addressing the first research question of this thesis as to whether the causal relationship between corporate governance structures and financial performance persist in the Vietnamese and Singaporean markets when the dynamic nature of this relationship is controlled.

Taking into account the country-specific institutional characteristics, Chapter 7 discusses cross-country evidence on the corporate governance–financial performance relationship from a comparative perspective. Chapter 7 also

investigates how national governance quality affects firm performance and its interaction effect on the relationship between ownership concentration and firm performance. This chapter's findings contribute to addressing the second research question of this thesis.

Chapter 8 concludes the thesis, clarifies the limitations, and provides recommendations for potential future research. The chapter provides a summary of empirical findings, reported in Chapters 5, 6 and 7, concerning the relationship between corporate governance structures, national governance quality, and financial performance of publicly listed companies in Vietnam and Singapore. Relevant conclusions and implications for policy formulation in the two markets are also noted.

## **1.4 SUMMARY**

This chapter discusses the research motivations from which two important research questions of the thesis are raised.

- (i) Does the causal relationship between corporate governance structures and firm performance suggested by agency theory and resource dependence theory persist in the Singaporean and Vietnamese markets, after controlling for the dynamic endogeneity?
- (ii) Does the relationship between corporate governance structures and firm performance vary according to the quality of national governance systems in which firms operate?

Based on the literature review, Chapter 2 will develop six pairs of hypotheses (denoted from [ $\mathbf{H}_{VN1} - \mathbf{H}_{SG1}$ ] to [ $\mathbf{H}_{VN6} - \mathbf{H}_{SG6}$ ]) to provide potential answers for

the first research question, and two other hypotheses (denoted as  $H_{VN\_SG7}$  and  $H_{VN\_SG8}$ ) to respond to the second research question. Using the separate datasets of the Vietnamese and Singaporean markets, Chapters 5 and 6 will empirically test the six pairs of hypotheses. Chapter 7 will provide empirical evidence for two others.

## **CHAPTER 2 LITERATURE REVIEW AND RESEARCH HYPOTHESES**

### **2.0 INTRODUCTION**

The main aim of this chapter is to develop theory-based hypotheses to empirically respond to the research questions established in Subsection 1.1 of Chapter 1. To achieve this aim, this chapter reviews the theoretical and empirical literature of the corporate governance–financial performance relationship. The chapter proceeds with different definitions of corporate governance in Section 2.1. An overview of three major theories in corporate governance literature, from which the hypotheses of this study are developed, is presented in Section 2.2. The theoretical frameworks and empirical findings of the corporate governance–financial performance relationship, especially in the context of the Asian region, will be reviewed in Section 2.3. The hypotheses on the effect of national governance quality on the relationship between corporate governance and performance are introduced in Sections 2.4 and 2.5. Section 2.6 summarises the chapter.

### **2.1 DEFINITIONS OF CORPORATE GOVERNANCE**

There are many different definitions of corporate governance which are usually classified as either ‘narrow’ or ‘broad’ (Claessens & Yurtoglu, 2013). According to Claessens and Yurtoglu (2013), the narrow cluster of definitions mainly focuses on the role of key internal governance mechanisms, such as board characteristics and ownership structure, in determining the performance of firms and maximising the benefit of shareholders. This type of definition is logically suitable for studies

on corporate governance within an individual country (Claessens & Yurtoglu, 2013).

On the other hand, the broad set of definitions considers the external institutional environment within which firms operate. These definitions are suitable for cross-country comparative studies as they allow researchers to investigate how differences in country-level specific characteristics affect the behavioural patterns of firms, shareholders and stakeholders (Claessens & Yurtoglu, 2013). For analysis purposes, especially comparative analyses, this current study collectively employs both narrow and broad definitions of corporate governance.

The most typical ‘narrow’ definition in finance literature is originally sourced from Shleifer and Vishny (1997, p. 737) who define corporate governance as “the ways in which suppliers of finance to corporations assure themselves of getting a return on their investment”. Denis and McConnell (2003, p. 2) likewise define corporate governance as “the set of mechanisms, both institutional and market-based, that induces the self-interested controllers of a company to make decisions that maximise the value of the company to its owners”. In a similar vein, the Cadbury Committee (1992, para. 2.5) describes corporate governance as a “system by which companies are directed and controlled”. These definitions, generally focusing on how shareholders maximise their profit and protect themselves against expropriation from managers, are the foundation for solo-country analyses in this study.

A broader definition of corporate governance is proposed by OECD (2004, p. 11) as follows:

Corporate governance involves a set of relationships between a company's management, its board, its shareholders and other stakeholders. Corporate governance also provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined.

This definition shows that corporate governance goes beyond the internal corporate governance structures and shareholders' profit to take account of external corporate governance mechanisms and stakeholders' benefits. By integrating the external environment within which firms operate, this stakeholder perspective on the firm is suitable for analysing corporate governance in a cross-country framework.

Taking both perspectives together, researchers have often classified corporate governance mechanisms into two sets which are either internal or external to firms (Gillan, 2006). It is argued that such a dual classification is somewhat limited and may not capture the "multidimensional network of interrelationships" (Gillan, 2006). However, for convenience, this study follows Gillan (2006) and consistently considers capital structure, ownership structure, and board structure (including the diversity, composition, leadership structure, and size of board) to be the most important internal corporate governance mechanisms.

## **2.2 THREE DOMINANT THEORIES IN CORPORATE GOVERNANCE RESEARCH: AN OVERVIEW**

Agency theory is considered to be a predominant theoretical approach in corporate governance studies (Daily, Dalton, & Cannella, 2003; Shleifer & Vishny, 1997). Nevertheless, alternative approaches have been considered in prior research.

Eisenhardt (1989) suggests that agency theory depicts only a part of the complicated picture of an organisation. Moreover, agency theory insufficiently presents corporate governance practices in all analytical contexts due to cross-national differences in institutions (Young, Peng, Ahlstrom, Bruton, & Jiang, 2008). Resource dependence theory, meanwhile, is probably more appropriate for explaining board functions in East Asian companies (see Young, Ahlstrom, Bruton, & Chan, 2001 for detail). Following a similar line of argument, Hillman and Dalziel (2003) and Nicholson and Kiel (2007) among others suggest that agency theory should be complemented by resource dependence theory in studies on corporate governance.

As mentioned in Subsection 1.1.2 of Chapter 1, most prior corporate governance research has focused on the US or UK markets and has primarily applied the principal–agent model which ignores moderating effects of national governance mechanisms (Filatotchev et al., 2013). As a consequence, this approach cannot give a full grasp of the effectiveness of corporate governance strategies in different institutional settings (Kumar & Zattoni, 2013).

Recent literature in corporate governance has made attempts to re-examine the non-contextualised, traditional agency framework to understand contexts outside the Anglo-Saxon jurisdictions, especially in the Asian region where highly concentrated ownership is the norm (Filatotchev et al., 2013). Based on institutional corporate governance framework, the emerging literature recognises that national governance mechanisms, such as legal system, rule of law, or investor protection, have the potential to influence the effectiveness of corporate governance strategies (Filatotchev et al., 2013). In recent studies, Kumar and

Zattoni (2013) and Filatotchev et al. (2013), among others, have called for the consideration of the interactive impact of country-level and firm-level variables in corporate governance research.

Based on the abovementioned arguments, this study uses a multi-theoretical orientation in which agency theory, resource dependence theory, and institutional theory are collectively employed as the foundation for hypothesis development and result discussions. The next three Subsections 2.2.1, 2.2.2, and 2.2.3 briefly introduce these important theories.

### **2.2.1 Agency theory**

An agency relationship is defined as “a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent” (Jensen & Meckling, 1976, p. 5). This implies that the separation between control functions (of agents) and ownership (of principals) in contemporary public corporations is a potential source of interest confliction between agents and principals, called the principal-agent problem.

According to Eisenhardt (1989), the principal-agent relationship arises from three primary assumptions about people, organisations, and information. Correspondingly, it is assumed that (i) both owners and managers are opportunistic, rational, and risk-antipathetic individuals; (ii) the goals of members in an organisation are dissimilar and information asymmetry exists between owners and managers; and (iii) information is regarded as a purchasable commodity.

Agency theory, therefore, is generally concerned with aligning the interest conflicts between principals and agents. Jensen and Meckling (1976) and Shleifer and Vishny (1997) among others argue that managers, who are inherently opportunistic, tend to abuse a firm's resources to pursue their own egocentric benefits rather than those of the owners. Agency theory suggests that firms should establish appropriate governance structures to monitor behaviours of managers and prevent owners from such abuses, i.e. mitigate the principal-agent problem (Jensen & Meckling, 1976). Jensen and Meckling (1976) also suggest that establishing these governance structures generates three different types of cost which shareholders have to bear: monitoring costs, bonding costs, and agency costs. However, the impacts of those costs can be minimised and firm financial performance may be enhanced provided that firms can establish effective governance mechanisms (Shleifer & Vishny, 1997).

### **2.2.2 Resource dependence theory**

Resource dependence theorists take the view that a firm is an open social entity which is closely connected with the conditions of its environment, such as human resource, capital resource, and information (Boyd, 1990; Pfeffer, 1973). In this regard, resource dependence theory suggests that the board of directors plays a crucial role in linking the firm and those social resources (Boyd, 1990; Pfeffer, 1973). More specifically, the function of the board is to not only monitor managerial behaviours (as mentioned by agency theory), but also provide essential resources<sup>8</sup> that are needed to enhance firm performance and/or ensure

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<sup>8</sup> Pfeffer and Salancik (1978) assert that board's provision of essential resources includes: "(i) advice and counsel; (ii) legitimacy; (iii) channels for communicating information between external organisations and the firm; and (iv) preferential access to

those resources via connections with the external environment (Hillman, Cannella, & Paetzold, 2000).

In other words, apart from the monitoring function, the board also serves as a resources provider. Hillman and Dalziel (2003, p. 383) refer to the ability of the board to bring essential resources to the firm as “board capital” including “human capital (experience, expertise, reputation) and relational capital (network of ties to other firms and external contingencies). They also state that the question examined by resource dependence theory is how such board capital can lead to a board’s provision of resources and subsequent firm performance. In summary, resource dependence theory offers two important implications regarding the board: (i) environmental pressures and demands may have impacts on board composition, and (ii) differences in board composition may result in various firm performance (Boyd, 1990).

### **2.2.3 Institutional theory and its role in cross-national comparative studies of corporate governance**

The theory of institution is drawn from various domains of social science, such as economics, sociology, and political science (Aguilera & Jackson, 2010). These domains are categorised as two major branches by Ahrens et al. (2011), that is: (i) political science and economics oriented institutional theory; and (ii) sociology and organisation oriented institutional theory. 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

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commitments or support from important elements outside the firm” (as cited in Hillman & Dalziel, 2003, pp. 385-386).

formal rules (constitutions, laws, property rights)” (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.

With regard to the role of institutional theory in studying corporate governance, some studies (e.g., Aguilera et al., 2008; Aguilera & Jackson, 2003; Ahrens et al., 2011) support the general view that the implementation of corporate governance mechanisms in a country is influenced by its institutional environment. In other words, the effectiveness of corporate governance mechanisms may vary from country to country. It is suggested that the factors within a national institutional environment, such as culture, financial system, corporate ownership patterns, legal tradition, and economic situation (Davies & Schlitzer, 2008; Zattoni & Cuomo, 2008) are important determinants in analysing different models of organisation and their different levels of performance (Millar, Eldomiaty, Choi, & Hilton, 2005), as well as creating diverse national corporate governance practices (Davies & Schlitzer, 2008).

For instance, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (1997), by investigating the relationship between legal tradition and corporate governance for a sample of 49 countries, show that the investor protection and the capital market development of civil law countries are weaker than those of common law countries, and as a result, the corporate governance codes of common law countries concentrate on protecting the shareholders’ rights. Similarly, Love (2011), in a comprehensive review paper, has reported that corporate governance structures have more influence on firm valuation in countries where legal protection is weak (Love, 2011). Moreover, in countries with incomplete legal

systems and weak legal enforcement, corporate governance mechanisms may be adopted for legitimate target rather than for firm performance (Lynall, Golden, & Hillman, 2003). In this regard, corporate governance practice is a purely formal matter rather than a fact (Chuanrommanee & Swierczek, 2007; Love, 2011).

The above examples illustrate the impacts of national institutional characteristics on corporate governance practices as well as their importance to cross-country comparisons of corporate governance and firm performance. Ahrens et al. (2011, p. 323) argue that:

Agency problems may vary across different national settings and implies that researchers should integrate the agency framework with institutional analysis to generate robust predictions. Future research should expand on this concept and seek to more explicitly examine the nature of agency conflicts and their implications in different institutional settings.

For this reason, cross-country comparisons of corporate governance and firm performance, whether at firm level or at country level, must take into account the national institutional factors. In general, although there is a growing consensus of opinion on the role of national institutions in corporate governance practices, cross-national comparative research on the corporate governance–firm performance relationship is still in the early stages of development (Aguilera & Jackson, 2003). Examining what institutional factors matter and how they affect corporate governance, therefore, is considered the primary objective of comparative studies of corporate governance (Aguilera & Jackson, 2003; Ahrens et al., 2011).

## **2.3 CORPORATE GOVERNANCE STRUCTURES AND FIRM FINANCIAL PERFORMANCE**

It is well-documented in corporate governance literature that shareholders can rely on at least two broad strategies, that is, external and internal governance mechanisms, to ensure them some return on their investment (Heugens et al., 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 internal corporate governance mechanisms (also known as corporate governance structures) to mitigate agency problems raised by the separation of ownership and control (Jensen & Meckling, 1976). Therefore, as mentioned in Section 2.1, this study follows Gillan (2006) and considers capital structure, ownership structure, and board structure (including the diversity, composition, leadership structure, and size of board) to be the most important internal corporate governance mechanisms.

Subsection 2.3.1 reviews the theoretical and empirical literature on the relationship between board structure and firm financial performance. Accordingly, the hypotheses on the performance effects of board diversity, board composition, board leadership structure, and board size will be developed in this subsection. The theory-based hypotheses on the performance impacts of ownership structure and capital structure are established in Subsections 2.3.2 and 2.3.3, respectively. It is noteworthy to repeat that these hypotheses are framed from the combined perspective of agency theory and resource dependence theory, which provides for

a breadth of explanatory variables<sup>9</sup>. Accordingly, the board of directors, on behalf of the shareholders, actively and independently provides the shareholders with: (i) a monitoring of managerial behaviours (agency theory); and (ii) a linkage between firm and externally essential resources (resource dependence theory).

### **2.3.1 Board structure and firm financial performance**

Board of directors (hereafter referred to as the BOD) is one of the vital determinants of internal corporate governance mechanisms (Fama & Jensen, 1983), and its relationship to financial performance has attracted many scholars for a long time (Lynall et al., 2003). Although the relationship between board structure and performance is explained and predicted by agency theory and/or resource dependence theory (Hillman & Dalziel, 2003), empirical findings of the performance influence of the board structure remain inconclusive (Bhagat & Bolton, 2008; Daily et al., 2003).

#### **2.3.1.1 Board diversity and firm financial performance**

Theoretically, the link between board gender diversity and firm performance is not predicted directly by any single theory, including agency theory and resource dependence theory<sup>10</sup> (Carter et al., 2010). However, both these theories do provide insight into the link and imply the possibility that board gender diversity affects firm value (Carter et al., 2010). In fact, there is a small but developing literature

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<sup>9</sup> In addition, this study also considers prior empirical evidence in order to adjust the hypotheses to each country's contexts.

<sup>10</sup> Therefore, "until a theoretical framework that predicts the nature of the relationship is developed", examining the board gender diversity–firm performance relationship is an empirical issue (Carter et al., 2003, p. 38). Nevertheless, among several theories from various fields, resource dependence theory provides "the most convincing theoretical arguments for a business case for board diversity" (Carter, D'Souza, Simkins, & Simpson, 2010, p. 398).

documenting that female board representation matters for firm outcomes (Adams & Funk, 2012).

According to agency theory, the monitoring function of the BOD plays an extremely important role in mitigating principal-agent conflicts, which ultimately affect firm performance (Fama & Jensen, 1983; Jensen & Meckling, 1976). Recent empirical studies suggest that greater gender diversity on boards has the potential to strengthen this monitoring function. For example, Adams and Ferreira (2009) and Adams et al. (2011) reported that female directors tend to have better monitoring abilities because they are able to think independently and are not affected by the so-called old-boys' club syndrome.

Greater gender diversity on boards may also provide better monitoring since female director representation helps to improve managerial accountability, such as improving board meeting attendance and chief executive officer's (CEO) responsibility (Adams & Ferreira, 2009). As a result, female directors may act as additional independent directors who help to improve the monitoring function of the BOD (Adams & Ferreira, 2009).

However, it is worth noting that even if boards with more gender diversity do improve the monitoring function of the BOD, it does not necessarily follow that this improvement will result in better firm performance. A plausible reason could be that the potential effect of gender diversity on firm performance is contingent upon the quality of firm governance. Adams and Ferreira (2009) suggested that weakly governed companies may benefit from including more women on their boards, enhancing additional monitoring and improving firm value. In support, Gul, Srinidhi, and Ng (2011, p. 314) argue that greater gender diversity on boards

acts as a “substitute mechanism for corporate governance that would be otherwise weak”, and this in turn may lead to improved performance. Conversely, board gender diversity seems to have a detrimental effect on the firm performance of well-governed firms because of unnecessary, excessive monitoring (Adams & Ferreira, 2009).

Resource dependence theory suggests that the security of firms’ vital resources as well as the linkage between firms and their external environment can be improved by an increase in the size and diversity of the BOD (Goodstein, Gautam, & Boeker, 1994; Pfeffer, 1973). In other words, firms with larger and/or more diverse boards may have advantages when obtaining and maintaining their important resources, including: (i) the human capital of board members (knowledge, skills, and talent); (ii) advice and counsel; (iii) channels of communication; and (iv) legitimacy (Hillman & Dalziel, 2003; Pfeffer & Salancik, 2003). Indeed, it is documented in the corporate governance literature that more gender-diverse boards may help to extend these firms’ vital resources (Liu, Wei, & Xie, 2014). Hillman, Cannella, and Harris (2002) have argued that diversifying the BOD by adding more women would help companies to gain legitimacy as gender equality becomes increasingly one of the widely accepted social norms.

In a similar vein, female directors may broaden the human capital and channels of communication of the BOD by offering additional insight into firms’ strategic issues, especially those that relate to female employees, consumers, and business partners (Daily, Certo, & Dalton, 1999). It follows that female representation in boardrooms should improve information processing, leading to higher quality

decisions and ultimately better firm performance (Dezsö & Ross, 2012; Rose, 2007). However, greater boardroom gender diversity may not necessarily result in more effective boards (Carter et al., 2003). More specifically, greater board gender diversity may lead to several difficulties in reaching a consensus on strategic decisions and in implementing monitoring functions effectively, since the greater diversity may generate greater potential for conflicts of interest among board members (Goodstein et al., 1994).

In summary, although both theories suggest that the relationship between board gender diversity and firm performance appears to be a real possibility (Carter et al., 2010), the nature of the relationship remains unclear (Carter et al., 2010; Erhardt, Werbel, & Shrader, 2003; Rose, 2007). The empirical question that needs to be answered is, if the relationship between board gender diversity and firm performance does exist, does female director representation make the difference?

Prior empirical studies on this topic, predominantly conducted in developed markets, provide us with inconclusive evidence (Campbell & Mínguez-Vera, 2008; Rose, 2007). Some researchers argue that the relationship between gender diversity and performance is positive (Campbell & Mínguez-Vera, 2008; Carter et al., 2003; Dezsö & Ross, 2012; Erhardt et al., 2003), or negative (Adams & Ferreira, 2009; Ahern & Dittmar, 2012), while others see evidence of no significant relationship at all (Carter et al., 2010; Rose, 2007). It is argued that such mixed empirical evidence reflects the differences in research contexts and econometric techniques used. For instance, given that women tend to work for better performing companies (Farrell & Hersch, 2005), studies that link gender diversity to firm performance should treat gender diversity as an endogenous

variable (Adams & Ferreira, 2009; Carter et al., 2010; Dezsö & Ross, 2012). This implies that ignoring the endogenous nature of the gender diversity–firm performance connection makes empirical estimations problematic.

Given that the extant theoretical framework and prior empirical findings do not suggest a clear outcome for the board gender diversity–firm performance association, this study’s analysis will be based on the Vietnamese and Singaporean corporate governance contexts. Accordingly, if the performance effect of greater gender diversity on boards appears to be more pronounced in firms with weak governance (Adams & Ferreira, 2009; Gul et al., 2011), it is plausible to infer that Vietnamese firms, characterised by underdeveloped governance practices, may greatly benefit from adding female directors to their boards.

In other words, it is argued that if female directors provide greater monitoring expertise, which is more valuable in a weak corporate governance environment (Adams & Ferreira, 2009; Adams et al., 2011; Gul et al., 2011), it may be expected that Vietnamese listed companies<sup>11</sup> with more gender-diverse boards will enjoy better financial performance. On the contrary, the performance impact of board gender diversity is expected to be negative for companies in the Singaporean market where the quality of corporate governance practices is high. Based on these arguments, the first pair of hypotheses for this study is proposed as follows:

**H<sub>VN1</sub>:** *Board gender diversity has a positive effect on financial performance of Vietnamese listed companies.*

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<sup>11</sup> The terms “publicly listed companies”, “listed companies”, and “companies” are used interchangeably in this thesis.

**HSG1:** *Board gender diversity has a negative effect on financial performance of Singaporean listed companies.*

### **2.3.1.2 Board composition and firm financial performance**

Board composition, often defined as the proportion of non-executive directors on boards, is one of the measures of board independence (Muth & Donaldson, 1998). The performance effect of board composition is predicted by both agency theory and resource dependence theory as presented below.

Agency theory suggests that a higher proportion of non-executive directors will lead to greater monitoring by the board (Fama & Jensen, 1983; Jensen & Meckling, 1976; Nicholson & Kiel, 2007). It is assumed that non-executive directors may exercise their monitoring function better than executive directors as they are less dependent on management and more interested in protecting their reputation in the external labour market (Fama & Jensen, 1983).

Nicholson and Kiel (2007) argue that if the monitoring functions of the board are implemented effectively, the chance for managers to gain self-interest at the expense of shareholders will be minimised, and as a result, shareholders will obtain larger benefits. This view is compatible with the perspective of resource dependence theory. Daily et al. (2003) argue that non-executive directors provide the link to vital resources required by companies and therefore a higher proportion of non-executive directors on the board may have a positive impact on firm performance.

Empirically, extant literature provides more than twenty different measures for board composition, such as, the proportion of executive directors, or non-

executive directors, or affiliated directors, or interdependent directors (Dalton, Daily, Johnson, & Ellstrand, 1999). Because each of these measures reflects only a specific aspect of board independence (Dalton et al., 1999), prior research evidence provides inconsistent findings regarding the relationship between board composition and firm performance. For example, there is evidence supporting the view that board composition is either negatively related to (Bhagat & Bolton, 2008) or insignificantly associated with (Kiel & Nicholson, 2003) operating performance (measured by return on total assets – ROA). It is also evident that board composition is either insignificantly correlated to (Bhagat & Bolton, 2008, 2009) or significantly linked to (Kiel & Nicholson, 2003) market-based performance (Tobin's Q). Whereas, Hermalin and Weisbach (1991) and Laing and Weir (1999) have suggested that board composition does not matter at all.

For the Vietnamese market, Nguyen (2008) reports that most directors of Vietnamese listed firms (including the board chairperson) are majority shareholders, and therefore, they are elected as executive managers for their company. Consequently, in fact, the boards not only play a vague role in monitoring managerial actions, but are also deeply involved in daily business management instead of their long-run strategic role (Nguyen, 2008). This fact may suggest that better board composition of Vietnamese firms is not necessary to result in better monitoring and/or managerial effectiveness.

In a similar vein, for Singaporean companies, Mak (2007) states that there is a relatively small pool from which non-executive directors are chosen. It is argued that the shortage of non-executive directors may make seeking high profile candidates and ensuring the real independence of potential directors more

difficult. It is therefore reasonable to assume that the non-executive directors play a vague role in determining performance in Singapore. Based on the aforementioned consideration, the second pair of hypotheses of this study is proposed as follows:

**H<sub>VN2</sub>**: *Board composition has no effect on financial performance of Vietnamese listed companies.*

**H<sub>SG2</sub>**: *Board composition has no effect on financial performance of Singaporean listed companies.*

### **2.3.1.3 Board leadership structure and firm financial performance**

Board leadership structure refers to duality; i.e. whether a company has one position combining the duties of the CEO with those of the board chairperson (CEO duality) or these positions are filled by different people (CEO non-duality) (Elsayed, 2011; Nicholson & Kiel, 2007). The effect of board leadership structure on firm performance forecasted by agency theory is presented below.

According to agency theory, CEO duality hinders boards from implementing a monitoring function because “the impartiality of the board is compromised” (Donaldson & Davis, 1991, p. 51), and the power of monitoring tends to be abused for self-interest reasons. Daily et al. (2003) argue that CEO non-duality has the potential to result in better monitoring of any self-interested behaviour of managers. Therefore, it is assumed that CEO non-duality may diffuse and separate managerial decisions from control decisions, and consequently may help diminish agency problems (Fama & Jensen, 1983).

International empirical research on the relationship between CEO duality and firm performance offers conflicting results (Bhagat & Bolton, 2009). Some have shown that the relationship is positive (Donaldson & Davis, 1991), or insignificant (Laing & Weir, 1999). Meanwhile, others have reported mixed results depending on whether accounting-based or market-based measures of performance are employed (negatively associated with ROA but insignificantly related to Tobin's Q) (Bhagat & Bolton, 2009).

Within the East Asian context, Haniffa and Hudaib (2006) have indicated a statistically significantly negative relationship between CEO duality and firm performance (ROA), implying that the separation of BOD chairperson and CEO may lead to better firm performance. However, the shortcoming of the study undertaken by Haniffa and Hudaib (2006) is that it does not take into account the endogeneity of corporate governance variables, thus resulting in spurious correlations. Nowland (2008), using data from Singapore and six other East Asian countries, reported that CEO non-duality has a positive linkage with operating performance (ROA) and market value (Tobin's Q). Although the study by Nowland (2008) offers fascinating insights into the nature of the board independence–firm financial performance relationship, it only focuses on the largest firms in Singapore, and therefore its findings may not be significantly generalised to the whole country.

It is argued that a high concentration of managerial and monitoring functions in a group of major shareholders (including members who are both board directors and senior executive managers) may pose serious challenges in terms of protecting the interests of other minority shareholders and maintaining an effective monitoring

function. In other words, such a board leadership structure may facilitate self-interest behaviour among majority shareholders which in turn may reduce firm performance. Based on the aforementioned literature and as predicted by agency theory, the third pair of hypotheses of this study is proposed as follows:

*H<sub>VN3</sub>: Board leadership structure has a negative effect on financial performance of Vietnamese listed companies.*

*H<sub>SG3</sub>: Board leadership structure has a negative effect on financial performance of Singaporean listed companies.*

#### **2.3.1.4 Board size and firm financial performance**

Dalton et al. (1999) argue that the size of boards is one of the most essential characteristics of board functionality. However, there is no consensus among scholars about whether board size has an effect on firm performance (Dalton et al., 1999). Agency theory predicts an inverse relationship between board size and performance (Jensen, 1993) while resource dependence theory suggests it is positive (Dalton et al., 1999).

From the perspective of agency theory, Jensen (1993) argues that firm performance could be enhanced if the board is kept small, and suggests that the optimal size should be no more than eight. This is backed up by Lipton and Lorsch (1992); Sonnenfeld (2002); and Yermack (1996), among others. One of the plausible explanations for this opinion is that an organisation tends to function less efficiently when its quantity of members increases (Jensen, 1993). The benefits obtained from having more members cannot compensate for troubles in terms of corporation and procedure (Lipton & Lorsch, 1992). Muth and

Donaldson (1998) explain that if the board size is large, it takes CEOs more time and effort to convince various directors to consent to managerial decisions. To the contrary, the proponents of resource dependence theory (e.g., Dalton et al., 1999) argue that a large board leads to better firm financial performance. Likewise, Firstenberg and Malkiel (1994) take the view that a small board cannot provide diverse managerial experience, gender, or nationality, which in turn may restrict its own capabilities in terms of stimulating various perspectives.

Empirically, the linkage between board size and firm financial performance in the extant literature is inconclusive. Some researchers have estimated a positive relationship (e.g., Beiner, Drobetz, Schmid, & Zimmermann, 2006), while others (e.g., Mak & Kusnadi, 2005; Yermack, 1996) have reported a negative relationship. The third alternative is found by Reddy, Locke, and Scrimgeour (2010); Schultz et al. (2010); Wintoki et al. (2012) who, among others, have documented an insignificant relationship between board size and financial performance after controlling for endogeneity issues.

Within the Asian context, Haniffa and Hudaib (2006), using a sample of 347 Malaysian listed companies, have reported that the direction of the board size and financial performance relationship may change over from positive to negative when the measures of performance change from accounting-based (ROA) to market-based measures (Tobin's Q). For the Singaporean market, Mak and Kusnadi (2005) document that there is an inverse relationship between board size and firm value (as measured by Tobin's Q). Mak and Kusnadi (2005) also argue that their finding is consistent with the findings from other markets, such as Yermack (1996) and Eisenberg, Sundgren, and Wells (1998) for the US market.

They suggest that the negative relationship between board size and firm value can be generalised to various corporate governance systems.

However, one of the primary limitations of the abovementioned studies within the East Asian context is that they use an OLS regression without taking into account the endogeneity of corporate governance variables. In that case, such regression results may introduce spurious relationships (Bhagat & Jefferis, 2002; Reddy et al., 2010). In summary, the theoretical and empirical direction of the board size and financial performance relationship is inconclusive. The empirical evidence of this relationship within the context of East Asia is mixed and, as mentioned above, maybe the consequence of spurious regressions.

Given the conflicted prediction about the board size–firm performance relationship between agency theory and resource dependence theory, this study adjusts the fourth pair of hypotheses based on the empirical suggestions of prior studies. Accordingly, it is plausible to hypothesise that there is no relationship between board size and financial performance for Vietnamese listed companies given that boards in emerging economies play a vague role and are often ineffective (Chen, Li, & Shapiro, 2011; Young et al., 2008). In line with Mak and Kusnadi (2005), board size is expected to have a negative effect on the financial performance of Singaporean listed companies. Based on the aforementioned arguments, the fourth pair of hypotheses of this study is proposed as follows:

**H<sub>VN4</sub>:** *Board size has no effect on financial performance of Vietnamese listed companies.*

**H<sub>SG4</sub>:** *Board size has a negative effect on financial performance of Singaporean listed companies.*

### **2.3.2 Ownership structure and firm financial performance**

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 et al., 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). A number of empirical studies have emphasised and/or confirmed this endogenous relationship (e.g., Demsetz & Villalonga, 2001; Himmelberg, Hubbard, & Palia, 1999; Lemmon & Lins, 2003)

However, another source of endogeneity, namely dynamic endogeneity, has been recently recognised in the ownership structure–firm performance relationship (Yabei & Izumida, 2008) as well as in the corporate governance–firm performance relationship in general (Wintoki et al., 2012). The dynamic nature of the corporate governance structures–firm performance relationship means that the current corporate governance structure and firm performance are influenced by past performance (Wintoki et al., 2012).

In particular, the dynamic nature of the ownership structure–firm 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 (Yabei & 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 at risk, they may reduce the size of their concentrated ownership (at high prices) to achieve more diverse personal portfolios (Yabei & Izumida, 2008). In this situation, a negative impact of past performance on ownership concentration is expected. As mentioned later in Subsection 4.3.1 of Chapter 4, the dynamic nature of the corporate governance–firm performance relationship has significant implications for choosing a suitable empirical approach.

Prior empirical studies on the ownership concentration–firm performance relationship for Asian markets have provided inconclusive findings. For example, some studies have reported a positive relationship (Xu & Wang, 1999), while others have found the relationship to be either negative (Hu, Tam, & Tan, 2010) or mixed (Haniffa & Hudaib, 2006). It should be noted that although these studies have taken other sources of endogeneity into consideration, they have ignored the dynamic endogeneity.

However, recent empirical studies in the Australasian region, which take into account the dynamic endogeneity, have also reported inconclusive results. Some studies have reported that the relationship is insignificant for the Australian market (Pham et al., 2011; Schultz et al., 2010), but significant for the Japanese market (Yabei & Izumida, 2008). Based on the conflicted predictions of agency theory and the above-mentioned arguments, this study proposes a significant linkage between ownership concentration and performance but does not establish any direction for this relationship. The fifth pair of hypotheses in this thesis is proposed as follows:

**H<sub>VNS</sub>**: *Ownership concentration has a significant effect on financial performance of Vietnamese listed companies.*

**H<sub>SGS</sub>**: *Ownership concentration has a significant effect on financial performance of Singaporean listed companies.*

### **2.3.3 Capital structure and firm financial performance**

Capital structure of a firm is considered a key internal corporate governance mechanism (Gillan, 2006). According to agency theory, the nature of the agency problem and thus the performance impact of corporate governance structure may be affected by capital structure (Jensen & Meckling, 1976). Using debt in capital structure acts as a mechanism for solving agency problems (Shleifer & Vishny, 1997). In more detail, capital structure 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 other words, "debt can act as a self-enforcing governance mechanism; that is, issuing debt holds managers' feet to the fire by forcing them to generate cash to meet interest and principal obligations" (Gillan, 2006, p. 388). Therefore, using debt in capital structure helps to alleviate the potential agency costs of free cash flow (Jensen, 1993). In support, Black et al. (2014) argue that capital structure is mechanically associated with Tobin's Q because debt financing helps to reduce income tax and free cash flow problems. Given the prediction of agency theory regarding the positive linkage between capital structure and firm financial performance, the sixth pair of hypotheses of this study is proposed as follows:

**H<sub>VN6</sub>**: *Capital structure has a positive effect on financial performance of Vietnamese listed companies.*

**H<sub>SG6</sub>**: *Capital structure has a positive effect on financial performance of Singaporean listed companies.*

## **2.4 NATIONAL GOVERNANCE QUALITY AND FIRM FINANCIAL PERFORMANCE**

As mentioned earlier, the performance of firms may be driven not only by firm-level or industry-level characteristics, but also by country-level specific environments within which firms operate. Recent empirical evidence also supports the proposition that country-level specific effects matter in firm performance. Ngobo and Fouda (2012, p. 435) argue that “good [national] governance can reduce uncertainty, transaction, search and production costs, and ultimately affect firm performance”. More specifically, better national governance quality may help to mitigate the degree of variability in firms’ profitability, leading to high-return and low-risk investments (Ngobo & Fouda, 2012). Based on the abovementioned arguments, the seventh hypothesis in this study is proposed as follows:

**H<sub>VN\_SG7</sub>**: *National governance quality has a significant effect on financial performance of Singaporean and Vietnamese listed companies.*

## **2.5 MODERATING EFFECT OF NATIONAL GOVERNANCE QUALITY ON THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE STRUCTURES AND FINANCIAL PERFORMANCE**

The moderating role of national governance quality in the corporate governance–firm performance relationship has become the subject of an important and ongoing debate in the corporate governance literature. Emerging literature on comparative corporate governance has highlighted how variations in national governance quality lead to variations in the corporate governance–firm 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 the national governance system 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 not only driven 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). La Porta et al. (1999); and Love (2011) have documented that corporate governance mechanisms have greater influences on firm performance in countries with weak legal protection. For example, the effect of concentrated ownership on firm performance is likely to be influenced by the national-level governance characteristics that are beyond the control of the companies.

In support, a 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 used meta-analysis of the Asian markets and argued that ownership concentration is an effective corporate governance mechanism in markets with weak legal protection of minority shareholders. Based on the arguments mentioned above, the eighth hypothesis in this study is proposed as follows:

***H<sub>VN\_SG8</sub>**: The relationship between corporate governance structures and financial performance of firms in Singapore and Vietnam is significantly influenced by national governance quality.*

## **2.6 SUMMARY**

This chapter reviews the literature of corporate governance. Six pairs of theory-based hypotheses on the relationship between corporate governance structures and financial performance, denoted from [**H<sub>VN1</sub> – H<sub>SG1</sub>**] to [**H<sub>VN6</sub> – H<sub>SG6</sub>**], have been developed for the Singaporean and Vietnamese markets. In addition, the hypothesis on the performance impact of national governance quality [**H<sub>VN\_SG7</sub>**], and the hypothesis on the moderating effect of national governance quality [**H<sub>VN\_SG8</sub>**] have been also established. Table 2.1 summarises these hypotheses, together with the predicted signs. Chapter 4 will develop empirical models to test these hypotheses. Using the separate datasets for each market, Chapters 5 and 6 respectively report empirical results and discussions obtained from testing the pairs of hypotheses from [**H<sub>VN1</sub> – H<sub>SG1</sub>**] to [**H<sub>VN6</sub> – H<sub>SG6</sub>**]. Empirical evidence supporting **H<sub>VN\_SG7</sub>** and **H<sub>VN\_SG8</sub>** is reported in Chapter 7.

**Table 2.1: Summary of research hypotheses**

<b>Hypotheses</b>	<b>Tested relationships</b>	<b>Predicted signs</b>	
		<b>Vietnam</b>	<b>Singapore</b>
H <sub>VN1</sub> – H <sub>SG1</sub>	Board gender diversity–firm performance	+	–
H <sub>VN2</sub> – H <sub>SG2</sub>	Board composition–firm performance	∅	∅
H <sub>VN3</sub> – H <sub>SG3</sub>	Board leadership structure–firm performance	–	–
H <sub>VN4</sub> – H <sub>SG4</sub>	Board size–firm performance	∅	–
H <sub>VN5</sub> – H <sub>SG5</sub>	Ownership concentration–firm performance	+/-	+/-
H <sub>VN6</sub> – H <sub>SG6</sub>	Capital structure–firm performance	+	+
H <sub>VN_SG7</sub>	National governance quality–firm performance	+/-	+/-
H <sub>VN_SG8</sub>	Moderating effect of national governance quality on the corporate governance–firm performance relationship	+/-	+/-

Note: Symbols (+), (–) and (∅) represent positive, negative, and no significant relationships, respectively.

# **CHAPTER 3**

## **INSTITUTIONAL BACKGROUND OF CORPORATE GOVERNANCE IN SINGAPORE AND VIETNAM**

### **3.0 INTRODUCTION**

This chapter presents the contexts of corporate governance in Singapore and Vietnam, which are the research backgrounds for the empirical analyses implemented in Chapters 5, 6, and 7. The remainder of this chapter is structured as follows. Sections 3.1 and 3.2 introduce the corporate governance contexts in the Singaporean and Vietnamese markets, respectively. The corporate governance regulatory systems and monitoring agencies in each market are also briefly presented. A comparative analysis regarding the similarities and differences in the corporate governance systems between the two markets is presented in Section 3.3. Finally, Section 3.4 provides a summary of institutional environments in Singapore and Vietnam.

### **3.1 CORPORATE GOVERNANCE IN SINGAPORE**

#### **3.1.1 Corporate governance regulatory system in Singapore**

According to the Asian Development Bank (2013), the regulatory system of corporate governance for publicly listed companies in the Singaporean market includes a number of corporate governance rules, principles, and recommended practices, all of which are administered by some primary regulatory bodies, including: (i) the *Accounting and Corporate Regulatory Authority*; (ii) the *Monetary Authority of Singapore*; and (iii) the *Singapore Exchange Limited*

(SGX). The primary sources of corporate governance rules, principles, and recommended practices are presented below<sup>12</sup>.

- (i) Companies Act of 1967 (and subsequent amendments). According to the Singapore Ministry of Finance (2012), the Companies Act applies to all companies incorporated in Singapore, and contains provisions relating to the life-cycle of companies, from incorporation to management to winding up. The Act also contains some provisions that apply only to publicly listed companies and branches of foreign companies that are operating in Singapore.
- (ii) Securities and Futures Act of 2001 (and subsequent amendments)
- (iii) Listing Requirements (the Rulebook). To be listed in the stock exchange market, the companies must comply with the Listing Requirements issued by the SGX. The SGX provides two types of exchange market with different listing requirements, namely *Mainboard* and *Catalist*. The *Catalist* is a secondary board with lower listing requirements.
- (iv) The Code of Corporate Governance of 2001 (and subsequent revisions). This Code provides most of the principles and recommended practices for good corporate governance for publicly listed companies in Singapore.

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<sup>12</sup> It should be noted that for the sampling period 2008–2011 of this study, the companies in the sample are governed by the Companies Act (the 2006 revised edition), the Securities and Futures Act (the 2009 revised edition), and the Code of Corporate Governance (the 2005 revised edition).

The Code of Corporate Governance was first promulgated by the *Singapore Corporate Governance Committee* in 2001, was reviewed in 2005 and became effective from 2007 (hereafter the Singaporean Code)<sup>13</sup>. The Singaporean Code was most recently revised in May 2012, and a number of major changes in corporate governance requirements were introduced into the listing rules.

The Singaporean Code takes the principle-based approach (also known as ‘comply or explain’ approach). It means that compliance with the Singaporean Code is voluntary, but under the Listing Requirements, publicly listed companies are required to disclose their corporate governance practices and explain non-compliance in their annual reports. Therefore, it will imply that the company is following the recommendations of the Singaporean Code if non-compliance is not mentioned (Mak, 2007). It is argued that the Singaporean corporate governance system, due to its strict discipline and effective implementation, is considered to be better structured than many other East Asian countries (Lim, 2010).

### **3.1.2 The context of corporate governance in Singapore**

Singapore is recognised as having the best corporate governance system in the Asia region (CLSA, 2010). In fact, Singapore has the highest average country score of corporate governance when compared with the rest of the Association of Southeast Asian Nations (ASEAN) (see, Chuanrommanee & Swierczek, 2007 for more details). Furthermore, a recent survey undertaken by CLSA (2012)<sup>14</sup> shows that corporate governance practices in Singapore achieve top ranking across the Asia region. Although the legal and corporate governance system of Singapore

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<sup>13</sup> The *Monetary Authority of Singapore* and the *Singapore Exchange Limited* have supervised the implementation of the Singaporean Code since September 2007.

<sup>14</sup> The Credit Lyonnais Securities Asia

has been borrowed from Western jurisdictions, there remain some important differences between Singapore and developed Western countries regarding the institutional environment, including:

- (i) There is a high concentration of ownership in Singapore (Kimber, Lipton, & O'Neill, 2005; Mak & Li, 2001; Witt, 2012), but the rights of minority shareholders are still well protected (Witt, 2012; World Bank, 2013).
- (ii) Singapore has a weak market for corporate control (Mak & Li, 2001). It is reported that although friendly mergers sometimes happen, the takeover market is generally inactive in Singapore (Mak, 2007; Mak & Li, 2001; Phan & Yoshikawa, 2004; Witt, 2012). Therefore, unlike the US and the UK, the market for corporate control in Singapore is not an effective external corporate governance mechanism.
- (iii) The Singaporean government plays the role of a significant block holder in the business sector (Ang & Ding, 2006; Kimber et al., 2005; Mak, 2007; Witt, 2012).

## **3.2 CORPORATE GOVERNANCE IN VIETNAM**

### **3.2.1 Corporate governance regulatory system in Vietnam**

The corporate governance regulatory system in Vietnam comprises a number of corporate governance regulations, and several primary regulatory bodies (Asian Development Bank, 2013). The primary regulatory bodies of corporate governance in the Vietnamese market comprise: (i) the *Vietnamese Ministry of Finance* (MOF); and (ii) the *Vietnamese State Securities Commission* (SSC). The

SSC governs two corporate governance regulatory sub-bodies for Vietnamese publicly listed companies, including the *Ho-Chi-Minh Stock Exchange* (HOSE) and the *Hanoi Stock Exchange* (HNX), which are two stock markets, in southern and northern Vietnam<sup>15</sup>, respectively. The primary corporate governance regulations in the Vietnamese market include: (i) the Law on Enterprises of 2005; (ii) the Law on Securities of 2006; (iii) the Model Charter of 2007; (iv) the HOSE and HNX Listing Requirements, and (v) the Code of Corporate Governance for Listed Companies of 2007 (hereafter the Vietnamese Code).

Specifically, the Law on Enterprises was enacted in 2005 and became officially binding as of July 2006 (hereafter the LOE 2005), marking a turning point in the development of business freedom and the legal framework of corporate governance practices in Vietnam (Bui & Nunoi, 2008). According to Le and Walker (2008), the LOE 2005 is heavily based on the legal principles of Anglo-American jurisdictions, and aims to establish an effective corporate governance system as well as improve public awareness regarding corporate governance.

Under the LOE 2005, the MOF promulgated the Vietnamese Code in March 2007, updated in July 2012<sup>16</sup>, reflecting most of the OECD Principles of Corporate Governance (the OECD Principles)<sup>17</sup>. However, it is noteworthy that while the OECD Principles are a flexible, principle-based approach to governance, the

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<sup>15</sup> From 2009, Vietnamese joint-stock companies can also trade their securities on the *Unlisted Public Company Market* (UPCoM), organized by the HNX.

<sup>16</sup> The issuance of the Vietnamese Code in March 2007 is under Decision 12/2007/QD-BTC. The Vietnamese Code was revised in July 2012 under Circular 121/2012/TT-BTC.

<sup>17</sup> The OECD Principles of Corporate Governance were approved by the *Organisation for Economic Co-operation and Development Ministers* in 2004 and have since become an international benchmark of corporate governance practices for policy makers worldwide.

Vietnamese Code is mandatory for all publicly listed companies in Vietnam (Le & Walker, 2008)<sup>18</sup>.

### **3.2.2 The context of corporate governance in Vietnam**

Corporate governance is a new concept for Vietnam and there is also no equivalent Vietnamese terminology that fully explains the meaning of the term ‘corporate governance’. This term is translated as ‘quản-trị-công-ty’, similar in meaning to ‘company administration’ (OECD, 2006). The corporate governance system in Vietnam is in its initial stages of development<sup>19</sup> (World Bank, 2006a) and the current situation can be characterised as follows:

- (i) Corporate governance regulations are underdeveloped (World Bank, 2006a);
- (ii) Public awareness regarding corporate governance is poor (Freeman & Nguyen, 2006);
- (iii) The role of the state sector is predominant (Le & Walker, 2008; Nguyen, 2008; World Bank, 2006a);
- (iv) The protection of private property rights is weak (Le & Walker, 2008; Nguyen, 2008; World Bank, 2006a);

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<sup>18</sup> The question of whether a flexible principle-based governance approach or a rule-based one is more suitable for emerging markets and/or mature markets has no definitive answer. In my view, implementing a compulsory code of corporate governance is suitable for the Vietnamese market where the public awareness of corporate governance is poor. This may help to improve the effectiveness and enforcement of the Vietnamese Code.

<sup>19</sup> The OECD (2006, p. 27) comments that: “there is a strong need for raising awareness on corporate governance in Vietnam is underlined by the fact that the Vietnamese language equivalent of ‘corporate governance’ itself is a confusing term because of which ‘governance’ is sometimes wrongfully understood to be the same as ‘management’”.

- (v) Both internal and external corporate governance mechanisms are limited (Le & Walker, 2008; Nguyen, 2008; World Bank, 2006a).

In complying with the LOE 2005 (National Assembly, 2005) and the Vietnamese Code (MOF, 2007), the typical governance structure of a Vietnamese listed company follows a two-tier model and consists of four governance bodies: (i) a general meeting of shareholders (GMS); (ii) a board of directors (BOD); (iii) a chief executive officer (CEO); and (iv) a board of supervisors (BOS, also referred to as ‘a control committee’).

The GMS, the most powerful body of a publicly listed company, establishes the company’s constitution and elects the members of both the BOD and BOS. In accordance with the company’s constitution, the BOD chairperson may be elected by either BOD members or the GMS. As stipulated by the LOE 2005, the BOD—consisting of three to eleven members—is responsible for guiding and establishing the company’s business strategies as well as monitoring managerial decisions. Specifically, the LOE 2005 clearly stipulates four major duties of the BOD: (i) making decisions regarding management strategies; (ii) nominating the CEO and approving senior executive positions; (iii) monitoring daily managerial operations; and (iv) proposing matters for the consideration of the GMS. Compared to the German internal corporate governance model, the BOD of Vietnamese companies has a more direct role in monitoring daily management (Le & Walker, 2008).

The LOE 2005 provides that a BOS must be established in companies which have more than eleven individual shareholders or at least one institutional shareholder holding more than 50% of the company’s equity. The membership of a BOS must

range from three to five members who need not be shareholders or employees of the company. Unlike the one-tier board structure in Anglo-American jurisdictions where a supervisory committee is composed and nominated by the BOD, the members of a Vietnamese BOS are elected by the GMS and function independently from the BOD (Bui & Nunoï, 2008). According to the LOE 2005, more than half of the BOS's membership must reside permanently in Vietnam and at least one member must be an accountant or auditor.

The major role of the BOS is to make an internal assessment of the annual financial statements and supervise the performance of both the BOD and CEO. However, the LOE 2005 does not stipulate what specific form of supervision is required and how the BOS should implement its decisions (Bui & Nunoï, 2008). The absence of clear legal guidance for the BOS in Vietnamese companies on what and how to supervise the BOD means the BOS's supervisory role is largely ineffective (World Bank, 2006a). As a consequence, the BOS in Vietnamese companies, in reality, appears to exist in form rather than in substance (Bui & Nunoï, 2008).

Despite the efforts made by the government to improve the standard of governance practiced by publicly listed companies, the corporate governance system in Vietnam still remains underdeveloped. Indeed, Vietnam is ranked 166<sup>th</sup> out of 183 economies for the strength of investor protection (World Bank, 2012). The most recent corporate governance scorecard for 2011, conducted by the IFC (2012), reported that the average corporate governance score in Vietnam is only 42.5%, which is much less than those of other markets across the Asia region. For

example, the average scores of Thailand (in 2011), Hong Kong (in 2009), and the Philippines (in 2008) are 77%, 73% and 72%, respectively (IFC, 2012).

### **3.3 CORPORATE GOVERNANCE IN SINGAPORE AND VIETNAM: A COMPARATIVE ANALYSIS**

Following Weimer and Pape (1999), this section compares seven characteristics of the corporate governance systems between Singapore and Vietnam, including: (i) the type of systems of corporate governance; (ii) the board system; (iii) the legal system; (iv) the characteristics of external market for corporate control; (v) the concentration of ownership structure; (vi) the approach of corporate governance practices; and (vii) the corporate governance practice. These seven comparative characteristics are summarised in Table 3.1.

With regard to the type of systems of corporate governance, it is argued that the corporate governance systems in Singapore and Vietnam appear to be characterised by a combination of family-based and government-based systems of corporate governance (IFC, 2010; Mak, 2007; Nguyen, 2008; World Bank, 2006a). The type of corporate governance systems in Singapore and Vietnam is therefore different from the market-based corporate governance in the US, the bank-based corporate governance in Japan and Germany, or the family-based corporate governance in Hong Kong.

With regard to the board system, Maassen (2002) argues that the organisation of BOD can be categorised as two primary models: (i) the Anglo-Saxon one-tier board model; and (ii) the continental European two-tier board model<sup>20</sup>. The one-tier board model refers to a type of organisational structure in which executive

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<sup>20</sup> These prototypical models have several variants. See Maassen (2002) for more details.

and non-executive directors operate together. Meanwhile, there are two organisational layers in the two-tier board model, including a BOS (in charge of control decisions) and a BOD (in charge of managerial decisions). In this regard, the two-tier board model obviously separates the executive function of the management board from the control function of the supervisory board (Maassen, 2002)

**Table 3.1: The comparison of corporate governance systems between Singapore and Vietnam**

No	Comparative characteristics	Singapore	Vietnam
1	Type of corporate governance system	Mix between family-based and government-based system	Mix between family-based and government-based system
2	Board system	One-tier: executive and non-executive board	Two-tier: board of directors and board of supervisors
3	Legal system	Anglo-American	Anglo-American
4	External market for corporate control	Rather weak	Weak
5	Ownership concentration	High	High
6	Corporate governance approach	Voluntary	Mandatory
7	Corporate governance practice	Very good	Poor

Note: The comparative characteristics from 1 to 5 are based on the taxonomy of corporate governance systems of Weimer and Pape (1999). The sixth and seventh characteristics are added by the author, based on the statements presented in Subsections 3.1.2 and 3.2.2.

Under the one-tier board model, it is recommended by the OECD (2004) that some important committees, such as audit, remuneration, and nomination committees be established to enhance the level of independence of the BOD

through effectively implementing monitoring functions. As mentioned in Subsection 3.2.1 that although the Vietnamese Code follows the two-tier board model, it does allow Vietnamese listed companies to establish subcommittees such as remuneration, nomination, or strategic planning subcommittees to assist their BOD's activities. On the contrary, the organisation of the BOD in Singaporean companies follows a one-tier model in which the audit, nomination and remuneration committees should be established. Mak (2007) indicates that all of Singapore's listed corporations have established audit committees, and most of them (over 93%) have nomination and remuneration committees. In fact, the presence of these subcommittees appears to have positive influences on the quality of financial reporting and auditing effectiveness in Singapore (Goodwin & Seow, 2002).

With regard to the legal system, as a former British colony, Singapore's legal system is based on common law. It is argued that the Companies Act and corporate governance system of Singapore are similar to those of Australia, New Zealand, and the UK. This implies that the Anglo-American model<sup>21</sup> is the origin of Singapore's legal system which has a significant influence on the development of the Singaporean market economy and business sector. For example, the

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<sup>21</sup> In general, there are two major corporate governance systems in the extant literature, including the Anglo-American corporate governance system and Continental-European one. The former is characterised by short-run equity finance, dispersed ownership, strong shareholder rights, active markets for corporate control, flexible labour markets, little direct government intervention, and minimal legal rights for stakeholders (Aguilera & Jackson, 2003; Aguilera & Jackson, 2010). In addition, Aguilera et al. (2008) argue that the Anglo-American system should be complemented by some other attributes such as independent directors, executive pay incentives, and information disclosure.

Meanwhile, the Continental-European system is characterised by long-run debt finance, concentrated ownership, weak shareholder rights, inactive markets for corporate control, and inflexible labour markets (Aguilera & Jackson, 2003; Aguilera & Jackson, 2010). With regard to jurisdiction, Anglo-American model refers to the system of common law jurisdiction with legal foundations and principles originating from the UK (Kimber et al., 2005).

Companies Act of Singapore is derived from the UK Companies Act 1945 and the Australian Companies Code 1961 (Kimber et al., 2005). For the Vietnamese market, the Western jurisdictions, especially the Anglo-American pattern, is a major inspiration for the Vietnamese lawmakers to promulgate the LOE 2005 (Le & Walker, 2008). Thus, both Singaporean and Vietnamese corporate governance systems are influenced by the Anglo-American pattern.

Regarding the characteristics of external market for corporate control, Singapore has a weak market for corporate control (Mak & Li, 2001), characterised by an inactive takeover market (Mak, 2007; Mak & Li, 2001; Phan & Yoshikawa, 2004; Witt, 2012). Likewise, the market for corporate control in Vietnam is not an external corporate governance mechanism at all (Le & Walker, 2008; Nguyen, 2008; World Bank, 2006a). In summary, it appears unlikely that the markets for corporate control in Singapore and Vietnam are effective external corporate governance mechanisms.

In regard to the concentration of ownership structure, it is observed that highly concentrated ownership and government participation in the business sector as a block-holder of numerous companies are two noticeable characteristics of the corporate governance systems in Singapore and Vietnam (Kimber et al., 2005; Mak & Li, 2001; World Bank, 2006a). Indeed, the Vietnamese corporate governance system is characterised by a concentrated ownership structure (IFC, 2010). Most of the listed companies are equitized state-owned enterprises<sup>22</sup> of which the significant proportion of capital, approximately 26% on average, is held by the government (World Bank, 2006a).

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<sup>22</sup> The predecessors of these companies are the state-owned enterprises transformed through the so-called 'equalisation process' which is privatisation by nature.

Similarly, for the Singaporean market, Anwar and Sam (2006) document that Singapore pursues a model of state directed capitalism and employs the so-called ‘government-linked corporations’ to join in the economy. Consequently, a common type of state-owned firms in Singapore is ‘government-linked companies’ (hereafter the GLCs), which are mostly controlled by the government and dominate the Singaporean economy (Claessens & Fan, 2002). According to Ang and Ding (2006), the GLCs account for approximately 24% of the stock market’s total capitalisation and control over 10% of the economic output of the country.

### **3.4 NATIONAL INSTITUTIONS IN SINGAPORE AND VIETNAM**

#### **3.4.1 National governance quality in Vietnam and Singapore**

Because corporate governance practices are affected by the institutional characteristics, legal systems, and the stages of development of a country, every corporate governance study must take these factors into consideration (Aguilera & Jackson, 2010; Claessens & Fan, 2002; Klapper & Love, 2003). For that reason, this subsection briefly introduces some differences and similarities between Singapore and Vietnam in terms of the abovementioned factors.

Vietnam is a Marxist-Leninist one-party state, (governed by the *Vietnam Communist Party*) but pursues a ‘market economy with socialist orientation’ in which: (i) the role of the state sector is predominant; (ii) the protection of private property rights is poor; (iii) most of the essential economic resources (such as natural resources, land) are under public ownership; and (iv) government

intervention in the economy is strong (Abonyi, 2005; Bui, 2006; Le & Walker, 2008; World Bank, 2006a).

While Vietnam is an emerging market<sup>23</sup> with per capita GNI about US\$ 1,110 in 2010, Singapore is considered the most advanced economy in the region with the highest level of GNI per capita about US\$ 41,430 in 2010<sup>24</sup>. Also being situated in the East Asian region, Singapore is one of the most active and successful economies in the world. Indeed, Singapore was not only the second-most competitive economy in the world in 2011, and has remained in first position among Asian economies for many years, it also leads the world in terms of financial market development (World Economic Forum, 2011). Singapore is also ranked the best for government efficiency and the least for corruption in the world (World Economic Forum, 2011).

Recent studies (see e.g., Aslan & Kumar, 2014; Van Essen et al., 2013) suggest that the corporate governance–firm performance relationship is influenced by the efficiency of the national governance system in which firms operate. Globberman, Peng, and Shapiro (2011, p. 1) emphasise that:

[...] One needs to understand the institutional framework in which organisations operate in order to understand the rationale for and consequences of specific corporate governance models, as well as the

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<sup>23</sup> The World Bank divides economies into four groups according to 2010 GNI per capita: (i) low income, \$1,005 or less; (ii) lower middle income, \$1,006–\$3,975; (iii) upper middle income, \$3,976–\$12,275; and (iv) high income, \$12,276 or more. Meanwhile, the International Monetary Fund divides the world into two major groups: (i) advanced economies, and (ii) emerging and developing economies. Singapore is listed in the former group and Vietnam belongs to the latter one.

<sup>24</sup> GNI per capita is the gross national income, converted to US dollars using the World Bank Atlas method, divided by the midyear population. The data are provided by *World DataBank* of The World Bank, retrieved from <http://data.worldbank.org/>.

likelihood that specific governance reforms will be adopted and prove effective.

This implies that the quality of corporate governance practice at firm level is likely to be dependent on the quality of country governance. Kaufmann, Kraay, and Mastruzzi (2011) claim that the governance quality of a country is measured by six factors: *Voice and Accountability*; *Political Stability and Absence of Violence*; *Government Effectiveness*; *Regulatory Quality*; *Rule of Law*; and *Control of Corruption*.

**Table 3.2: The governance indicators (percentile ranks) of East Asia-Pacific region, OECD, Singapore, and Vietnam in 2013**

Governance Indicator 2013	Percentile Rank (0-100)			
	<i>Singapore</i>	<i>Vietnam</i>	<i>East Asia-Pacific Average</i>	<i>OECD Regional Average</i>
Voice and Accountability	52.1	11.8	53.8	87.0
Political Stability	95.7	55.9	63.2	75.8
Government Effectiveness	99.5	44.0	49.4	87.5
Regulatory Quality	100.0	28.2	46.5	87.6
Rule of Law	95.3	39.3	56.4	87.2
Control of Corruption	96.7	36.8	53.4	84.7

Source: <http://info.worldbank.org/governance/wgi/index.aspx#home>. The methodology used to calculate the governance indicators was developed by Kaufmann et al. (2011).

Note: The list of countries in the East Asia-Pacific region is available at <http://go.worldbank.org/>. The list of 34 member countries worldwide of the OECD is available at <http://www.oecd.org/>. Percentile ranks indicate the percentage of countries worldwide that rate below the selected country. Higher values indicate better national governance ratings.

Table 3.2 provides the national governance indicators for the East Asia-Pacific region, OECD, Singapore, and Vietnam in 2013. It shows that the national governance ranking of Vietnam regarding all governance indicators is lower than

the average ranking of other countries in the East Asian-Pacific region. Vietnam also lags far behind Singapore and the OECD countries in all national governance indicators. This suggests that the Vietnamese national governance system is underdeveloped.

In contrast, Singapore is the best benchmark in terms of national governance quality among the East Asia-Pacific and OECD economies, suggesting that the Singaporean national governance system is well-established. As reported in Table 3.2, Singapore occupies the first position for five among six governance indicators in 2013, notably in governance effectiveness, regulatory quality, and control of corruption. Noticeably, the level of corruption in Singapore is very low when compared with the other countries. It is argued that “strong government effectiveness coupled with low levels of corruption can be expected to translate into relatively effective corporate governance” (Robertson, 2009, p. 623).

### **3.4.2 Gender-related institutional environment in Vietnam**

This subsection highlights the gender-related institutional environment in Vietnam. This is essential to strengthen the background of the empirical analysis implemented in Chapter 5, regarding the potential effect of board gender diversity on firm performance. This is also in line with Grosvold and Brammer (2011), who recommend that the national institutional environment should be considered in studies on boardroom diversity. According to Grosvold and Brammer (2011), national institutional systems, such as the socio-economic and political structure, legal background, governance system, and cultural foundation, among others, constitute important antecedents for female representation in boardrooms as well as opportunities for women to advance in their careers.

UNIDO (2010) argues that Vietnam was strongly influenced by Confucian gender ideologies in which women are subordinated to men. However, Vietnamese companies nowadays enjoy an advanced gender-related institutional environment in which women's rights and gender equality are constantly promoted. As a Marxist-Leninist one-party state, Vietnam has pursued '*a socialist-oriented market economy*' in which the state sector rather than market forces plays the decisive role in controlling the economy. In such an economic structure, the government intervenes strongly and directly in the economy in order to achieve the socialist ideals of citizens' equality and, to a lesser extent, gender equality.

Gender equality, therefore, is considered to be one of the central goals of this communist state's socio-economic development strategies (Knodel, Vu, Jayakody, & Vu, 2004). Since 1945, the Vietnam Communist Party has been strongly committed to achieving this goal by adopting gender-based interventions. In 2002, for example, the Vietnamese government proclaimed a *National Strategy for the Advancement of Women to 2010* that identifies high priorities for achieving equal rights for women in labour, employment, education, health, and economic participation (Asian Development Bank, 2005). The *National Strategy on Gender Equality 2011-2020*, adopted in 2010, also specifies objectives for the participation of women in leadership and management (World Bank, 2011).

Through concerted efforts for gender equality, Vietnam has achieved key gender equality indicators extremely well in comparison with other East Asian countries at a similar, or even higher, level of GDP per capita (World Bank, 2011). For instance, the World Bank (2006b) assessed Vietnam as one of the countries in the world that had achieved the highest rate of economic participation by women and

the highest participation of women in state power structures, such as parliament, in the East-Asian region. More recently, the World Bank (2011) reported that the participation rate of Vietnamese women in the labour force ranked among the highest for countries in the region and that the gender gap in earnings was lower in Vietnam than in many other East Asian countries.

Vietnam has also made considerable progress in reducing gender-related hindrances in the business environment for female entrepreneurs (UNIDO, 2010). More specifically, UNIDO (2010, p. 12) reported that this organisation “did not find any significant difference in perceived gender-based bias of male and female entrepreneurs in getting collateral, entering networks, acquiring new contracts, employing workers and dealing with authorities”. This situation may facilitate economic participation and promotion opportunities for Vietnamese women, which in turn may help to extend the pool of qualified women from which the most suitable candidates for director will be chosen.

In summary, the institutional environment in Vietnam, on the one hand, is remarkable for its underdeveloped corporate governance system and on the other hand, is characterised by advanced gender-related institutions. Together, these distinctive institutional features make Vietnam an interesting case to study the performance effect of board gender diversity.

### **3.5 SUMMARY**

This chapter provides the backgrounds on corporate governance practices, laws and regulations in the Singaporean and Vietnamese markets. It is observed that while Vietnam is characterised by an under-developed corporate governance system, Singapore has a well-developed corporate governance system and

constitutes a benchmark for good corporate governance practices. Singapore and Vietnam both are located in East Asia, which is one of the most dynamic growing regions in the world, attracting international attention. For this reason, a comparative study on the corporate governance–firm performance relationship between the two countries has the potential to offer insights into better understanding of the corporate governance–firm performance relationship within the contexts of emerging and mature markets.

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## **CHAPTER 4 DATA AND METHOD**

### **4.0 INTRODUCTION**

This chapter presents the method and data used in the current study. The chapter is organised as follows. Section 4.1 introduces the conceptual framework for this research. Section 4.2 describes the criteria of sample selection, data and data sources. In order to provide the foundation for the choice of appropriate research method, Subsection 4.3.1 discusses the endogeneity and the dynamic nature of the corporate governance–firm performance relationship. Subsection 4.3.2 introduces the dependent and independent variables employed in the current study, all of which are suggested by the extant corporate governance literature. Subsection 4.3.3 in turn presents model specifications used for the Vietnamese market, the Singaporean market, and for the combined sample of both countries. Multiple regression techniques, especially the rationale for using the System GMM estimator, are discussed in Subsection 4.3.4. Section 4.4 provides a summary of the chapter.

### **4.1 CONCEPTUAL FRAMEWORK**

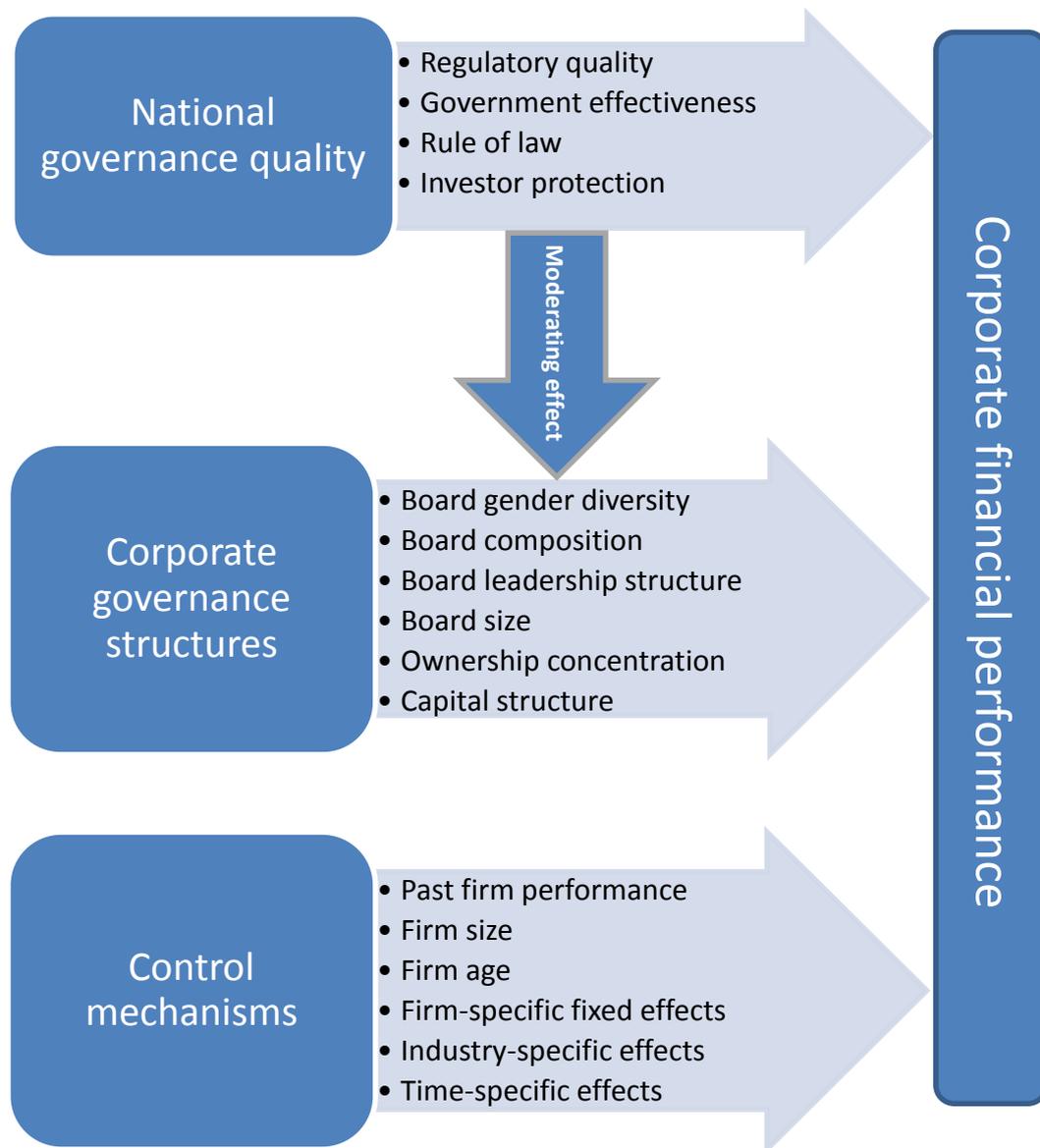
This section, based on Chapter 2, provides a conceptual framework for the current research. On the left-hand side of Figure 4.1 are corporate governance structure variables suggested by the extant literature. They include board gender diversity, board composition, board leadership structure, board size, ownership concentration, and capital structure. These corporate governance structure variables are linked to firm financial performance (Tobin's Q ratio), presented on the right-hand side of Figure 4.1.

Prior studies have used a non-contextualised approach and have ignored potential effects of country-level governance mechanisms (Filatotchev et al., 2013). The current research explicitly examines the moderating influences of national governance quality on the relationship between corporate governance structures and firm performance. As presented in Figure 4.1, the relationship between corporate governance structure variables and firm performance is moderated by national governance quality measured by *Regulatory Quality*, *Governance Effectiveness*, *Rule of Law*, or *Investor Protection*<sup>25</sup>. Furthermore, the potential direct effects of these national governance quality variables on firm performance are also empirically examined.

While prior studies have investigated the corporate governance–firm performance relationship in a static framework, this study takes into account the dynamic nature of the linkage. Accordingly, this study uses past financial performance as an explanatory variable to control for the potential effect of unobserved historical factors on both current corporate governance structures and financial performance. The conceptual framework of this research also includes various control factors suggested by the extant literature. Particularly, industry-specific effects, time-specific effects, unobservable firm fixed-effects, and other observable firm-specific characteristics, such as firm size and firm age, are fully controlled.

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<sup>25</sup> For the empirical analysis purposes of the current study, these national governance quality variables will be combined to form an aggregate national governance quality index (see Subsection 4.3.2.3 for more details).



**Figure 4.1: A conceptual framework for corporate governance–financial performance relationship**

## **4.2 SAMPLE SELECTION AND DATA**

### **4.2.1 Data sources**

#### **4.2.1.1 Data sources for Vietnam**

As introduced in Subsection 3.2.1 of Chapter 3, the HOSE and the HNX are two stock markets in southern and northern Vietnam, respectively. The list of publicly

listed companies on these two markets, classified according to the ICB<sup>26</sup>, is provided by the *StoxPlus Corporation*<sup>27</sup>. In order to ensure the exactness of data used, the list of firms is cross-checked against the lists provided by the HNX and HOSE official websites. The financial data of companies listed on these two bourses is sourced from *Thomson One Banker (Worldscope database)*.

Data on ownership structure are extracted from *Thomson One Banker (Ownership module)* and the companies' annual reports. Data on board structure are collected manually from the firms' annual reports which are downloaded directly from *FPT-Ez-search Online Information Gateway*<sup>28</sup> and *Vietstock*<sup>29</sup>. Where necessary, any additional data or information is directly gathered from annual reports and/or companies' websites.

#### **4.2.1.2 Data sources for Singapore**

As mentioned in Subsection 3.1.1 of Chapter 3, the SGX – the regulatory body for publicly listed companies in Singapore – provides two types of exchange market with different listing requirements, namely *Mainboard* and *Catalist*. The list of companies listed on the SGX *Mainboard* is obtained from the SGX website<sup>30</sup>. This list is matched against the list provided by *Thomson One Banker (Worldscope database)* which is classified into ten industries based on the ICB.

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<sup>26</sup> According to the ICB, there are ten industries including *Oil & Gas, Basic Materials, Industrials, Consumer Goods, Health Care, Consumer Services, Telecommunications, Utilities, Finance, and Technology*. However, the *StoxPlus Corporation* classifies the *Finance* industry's companies into two categories, namely *Banks* and *Financials*, resulting in a category of eleven industries.

<sup>27</sup> The *StoxPlus* is a leading company providing financial information, market data, and investing tools for institutional and individual investors in Vietnam. Its website is at <http://stoxplus.com/>

<sup>28</sup> <http://ezsearch.fpts.com.vn/Services/EzData/>

<sup>29</sup> <http://finance.vietstock.vn/>

<sup>30</sup> <http://www.sgx.com>

The corporate governance data are extracted manually from the companies' annual reports directly downloaded from the SGX website. In addition, financial data are obtained from *Thomson One Banker (Worldscope database)*. Ownership structure data are extracted from *Thomson One Banker (Ownership module)* as well as firms' annual reports. Where necessary, the data are supplemented and verified consulting the annual reports and the official websites of companies.

#### **4.2.1.3 Data sources for national governance quality variables**

The quality of national governance is measured by the *Worldwide Governance Indicators (WGIs)* developed by Kaufmann et al. (2011) and the *Investor Protection Index (IPindex)* developed by *Doing Business Project* (World Bank, 2012, 2013). The data on the *WGIs* are available at the website of the World Bank<sup>31</sup>. The data on *IPindex* are downloaded from the website of *Doing Business Project* of the World Bank<sup>32</sup>.

#### **4.2.2 The criteria for data collection**

In this study, the following criteria will be employed to guide the choice of the sample of companies: (i) the companies must be listed on the *SGX Mainboard* (for the case of Singapore), or the *HOSE* and the *HNX* (for the case of Vietnam); (ii) financial firms and banks are excluded from the sample; (iii) the companies must be locally incorporated; (iv) the firms' annual reports for the period of 2008–2011 are available; and (v) the firms' corresponding financial data for the period of 2008–2011, including market-based data and accounting-based data, must be available on *Thomson One Banker (Worldscope database)*. The companies have

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<sup>31</sup> <http://info.worldbank.org/governance/wgi/index.aspx#home>

<sup>32</sup> <http://www.doingbusiness.org/>

to meet the abovementioned five criteria to be included in the final sample due to the following reasons.

First, the basic reason for excluding firms listed on the UPCoM (Vietnam) and *Catalist* (Singapore) is that listing requirements of these two markets are different from those of main-board markets. For example, it is not compulsory for the Singaporean listing applicants on *Catalist* to meet any minimum quantitative entry criteria except for a sponsor's acceptance. Whereas, a company can only list on the SGX *Mainboard* if it completely meets some strict requirements, including revealing pre-tax profits, market capitalisation, shareholding spread, operating track record, continuing listing obligations, accounting standards, and continuity of management<sup>33</sup>.

Similarly, Vietnamese listing applicants on the HNX or HOSE must fulfil several conditions stipulated in Decree No. 14/2007/NĐ-CP<sup>34</sup>, while firms trading on the UPCoM need not meet such conditions. The differences in listing requirements between the main-board and the unlisted markets may lead to different impacts both on corporate governance and financial performance variables. Hence, it is reasonable to separate companies listed on the UPCoM and *Catalist* markets from those listed on main-board ones when studying the relationship between corporate governance structure and financial performance (Haniffa & Hudaib, 2006).

Second, consistent with the previous literature, finance and banking industries are excluded from this study's sample because their liquidity and governance can be

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<sup>33</sup> Further information can be seen at <http://www.sgx.com>

<sup>34</sup> Decree No. 14/2007/NĐ-CP, dated January 19, 2007, issued by the Vietnam Prime Minister. This Decree provides detailed instructions to implement some articles of the Law on Securities 2006.

influenced by different regulatory factors (Bauer, Frijns, Otten, & Tourani-Rad, 2008; Dittmar & Mahrt-Smith, 2007; Schultz et al., 2010). For instance, financial firms and banks function under strict regulations that have different influences on corporate governance mechanisms, such as board structure (Yermack, 1996). In addition, they not only are governed by rules which do not apply to other commercial entities (Laing & Weir, 1999; Victoria, 2006), but are also subjected to specific accounting rules which may make the calculating of financial performance ratios difficult (Rose, 2007). Appendix 1 provides several illustrations of such differences in corporate governance regulations between financial industry and other industries in Vietnam and Singapore. Furthermore, given that many previous studies on corporate governance do not consider financial companies and banks (see e.g., Bauer et al., 2008; Dittmar & Mahrt-Smith, 2007; Haniffa & Hudaib, 2006; Mak & Kusnadi, 2005; Ntim, Opong, & Danbolt, 2012; Schultz et al., 2010; Yermack, 1996 among others), excluding financial companies from the samples makes this study's findings comparable.

Third, given the international characteristic of the SGX market, it is the sample selection criterion that publicly listed companies in Singapore must be locally incorporated. Foreign companies listed on the SGX market should be excluded from the sample since they may be subjected to various corporate governance practices. In addition, the institutional environments within which such foreign companies operate may have different effects on their corporate governance–financial performance relationships. Therefore, this criterion facilitates a consistent comparison between the two countries' domestic companies.

Fourth, the criterion of a four consecutive years' dataset implies that the companies included in the research sample should have fully required information covering a four-year consecutive period (2008–2011). This criterion meets the requirements of proposed robustness analyses for panel data and helps to obtain a balanced panel dataset. In the presence of endogenous variables, a balanced panel dataset facilitates the estimation of this study's empirical models. This is because the combination of panel imbalance and endogeneity may induce extreme difficulty in estimating and inferring (Flannery & Hankins, 2013)<sup>35</sup>.

Specifically, using the Monte Carlo simulation method, Flannery and Hankins (2013, pp. 13, 16) indicate that while the System GMM is likely “the most robust methodology for unbalanced panels with endogenous variables”, the root mean squared errors (RMSEs) of the endogenous variables are so much larger for unbalanced panels that it would be impossible to draw reliable inferences. For this reason, the choice of a balanced panel instead of an unbalanced one is an acceptable compromise between the sample representativeness and the estimation effectiveness, at least in this study.

However, one concern is that this criterion may introduce potential survivorship bias into the sample (Ntim et al., 2012). Taking this concern into consideration, this research explicitly reports the number of delisted and/or inactive companies discovered in the sample selection process. Table 4.2 and Table 4.4 show that the number of delisted and/or inactive companies for the Vietnamese market (3 out of 837) and for the Singaporean market (17 out of 773) accounts for relatively small

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<sup>35</sup> Flannery and Hankins (2013) used the Monte Carlo simulation to examine seven estimation methods under a variety of corporate finance dataset characteristics. The evidence and suggestions provided in their study may help empirical researchers in determining the most appropriate estimation method for the various features of datasets.

proportions of the initial population sizes. Moreover, the sample size of this study is far larger than that of previous studies<sup>36</sup> which helps to eliminate the potential survivorship bias and ensure the generalisation of this study's findings. For these reasons, it is plausible to argue that the potential survivorship bias, induced by the sample selection criterion of the consecutive four-year period, may not be a problem in this study.

Finally, the year 2008 is selected because it is one year after the promulgation of the new corporate governance guidelines/regulations in both countries. More specifically, the revised Singaporean Code was issued on 14 July 2005 and came into effect from 1 September 2007. Whereas, the Vietnamese Code was first released and became effective in March 2007. Given that the new corporate governance guidelines/regulations in both countries affect their companies' annual reports in the next financial year, 2008 is thus an appropriate point of time to collect data for the comparative purpose of the current research. The sample ends in 2011 since it is the most recent year for which data were available at the time this study was conducted. Moreover, the time frame is kept the same in both markets to facilitate the comparative purposes of this study.

### **4.2.3 Data sample**

Table 4.1 presents general information about the number of publicly listed companies in Vietnam and Singapore at the end of 2011. In the case of Vietnam, as at the end of 2011, there are 837 companies listed on the HNX, the HOSE, and

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<sup>36</sup> For example, the sample size for the Singaporean market is 257 firms covering a four-year period from 2008 to 2011, giving a total of 1028 firm-year observations. This sample size is nearly five times as many as the sample size of 230 observations used in the study of Mak and Kusnadi (2005) for the Singaporean market.

the UPCoM. In the case of Singapore, as at the end of 2011, there are a total of 773 firms listed on the *SGX Mainboard* and the *SGX Catalist*.

**Table 4.1: The number of publicly listed companies in Vietnam and Singapore at the end of 2011**

<b>The Vietnamese market</b>		<b>The Singaporean market</b>	
HNX	396	<i>SGX Mainboard</i>	637
HOSE	310	<i>SGX Catalist</i>	136
UPCoM	131		
<b>Total</b>	<b>837</b>		<b>773</b>

Source: The Vietnamese data are tabulated from data directly provided by *StoxPlus Corporation*. The Singaporean data are tabulated from data available on the website of *Singapore Exchange Ltd. Company* as at the end of 2011.

Table 4.2 provides a summary of the sample selection procedure for the Vietnamese market. Applying the abovementioned criteria, 131 firms listed on the UPCoM and 114 financial firms and banks listed on the HNX and HOSE are excluded from the sample. The selection process yielded a research population size of 592 companies. Of these 592 remaining companies, 122 companies have relatively full information on key corporate governance variables during a four-year period from 2008 to 2011. Hence, a panel dataset comprising 488 firm-year observations is used as the initial dataset for the Vietnamese market.

**Table 4.2: Summary of the sample selection procedure for Vietnam**

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All firms listed on the three stock exchanges as at the end of 2011	837
<i>Subtract firms listed on the UPCoM</i>	<i>131</i>
=	706
<i>Subtract banks and financial firms</i>	<i>114</i>
=	592
<i>Subtract firms which data are unavailable on the Thomson One</i>	<i>74</i>
=	518
<i>Subtract delisted firms</i>	<i>3</i>
=	515
<i>Subtract firms listed after 2008</i>	<i>243</i>
=	272
<i>Subtract firms with some years' financial data missing</i>	<i>58</i>
=	214
<i>Subtract firms which annual reports are not fully available</i>	<i>92</i>
<b>Total sampled firms with full data</b>	<b>122</b>

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Source: This table 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* (accessed in December 2011).

Table 4.3 shows the industrial composition of sampled companies in Vietnam covering a four-year period from 2008 to 2011. The number of firm-year observations operating in *Consumer Goods* and *Industrials* is respectively 30 and 53, which accounts for approximately 68% of the entire final sample's observations.

**Table 4.3: The industrial structure of sampled firms in Vietnam**

<b>Industry categories</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>Total</b>
<i>Basic Materials</i>	19	19	19	19	76
<i>Consumer Goods</i>	30	30	30	30	120
<i>Consumer Services</i>	6	6	6	6	24
<i>Health Care</i>	4	4	4	4	16
<i>Industrials</i>	53	53	53	53	212
<i>Oil &amp; Gas</i>	1	1	1	1	4
<i>Technology</i>	3	3	3	3	12
<i>Utilities</i>	6	6	6	6	24
<b>Total of firm-year observations</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>122</b>	<b>488</b>

Source: This table is based on data directly provided by *StoxPlus Corporation* and/or downloaded from *Thomson One Banker Database* (accessed in December 2011).

Table 4.4 summarises the sample selection procedure for the Singaporean market. Using the abovementioned criteria, 136 firms listed on the *SGX Catalist*, 214 overseas companies and 69 financial firms and banks listed on the *SGX Mainboard* are excluded from the sample. This provides a research population size of 354 companies among which 257 companies have relatively full information on key corporate governance variables during a four-year period from 2008 to 2011. Therefore, a panel dataset comprising  $(257 \times 4) = 1028$  firm-year observations is used as the initial dataset for the Singaporean market.

**Table 4.4: Summary of the sample selection procedure for Singapore**

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All firms listed on the two stock exchanges as at the end of 2011	773
<i>Subtract firms listed on the SGX Catalist</i>	<i>136</i>
=	637
<i>Subtract overseas companies</i>	<i>214</i>
=	423
<i>Subtract banks and financial firms</i>	<i>69</i>
=	354
<i>Subtract firms listed after 2008</i>	<i>25</i>
=	329
<i>Subtract firms which data are unavailable on the Thomson One</i>	<i>38</i>
=	291
<i>Subtract inactive firms</i>	<i>17</i>
=	274
<i>Subtract firms which annual reports are not fully available</i>	<i>17</i>
<b>Total sampled firms with full data</b>	<b>257</b>

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Source: This table is based on data downloaded from *Thomson One Banker Database* and the website of *Singapore Exchange Ltd. Company*, including companies' annual reports (accessed in December 2011).

Table 4.5 presents the industrial composition of sampled companies in the Singaporean market covering a four-year period from 2008 to 2011. The number of firm-year observations operating in *Consumer Goods*, *Consumer Services*, *Industrials*, and *Technology* is respectively 144, 128, 544 and 104, all of which accounts for approximately 89% of the entire final sample's observations.

**Table 4.5: The industrial structure of sampled firms in Singapore**

<b>Industry categories</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>Total</b>
<i>Basic Materials</i>	14	14	14	14	56
<i>Consumer Goods</i>	36	36	36	36	144
<i>Consumer Services</i>	32	32	32	32	128
<i>Health Care</i>	4	4	4	4	16
<i>Industrials</i>	136	136	136	136	544
<i>Oil &amp; Gas</i>	2	2	2	2	8
<i>Technology</i>	26	26	26	26	104
<i>Telecommunications</i>	5	5	5	5	20
<i>Utilities</i>	2	2	2	2	8
<b>Total of firm-year observations</b>	<b>257</b>	<b>257</b>	<b>257</b>	<b>257</b>	<b>1028</b>

Source: This table is based on data downloaded from *Thomson One Banker Database* and the website of *Singapore Exchange Ltd. Company* (accessed in December 2011).

### **4.3 RESEARCH METHOD**

#### **4.3.1 Endogeneity and the dynamic of corporate governance–financial performance relationship**

One of the biggest challenges in corporate governance empirical studies is how to deal with the endogeneity of corporate governance variables. The endogeneity problem arises when the explanatory variables are correlated to the error term in a regression leading to biased and/or inconsistent estimations (Wooldridge, 2002). Therefore, ignoring the endogeneity inherent in the corporate governance–financial performance relationship may result in unreliable causality inferences. According to Roberts and Whited (2013, p. 494), endogeneity leads to “biased and inconsistent parameter estimates that make reliable inference virtually impossible”.

It is well documented in the corporate governance literature that the endogeneity may arise from at least two potential sources<sup>37</sup>: (i) unobserved heterogeneity; and (ii) simultaneity (Wintoki et al., 2012). Unobserved heterogeneity across companies (also usually referred to as ‘omitted variable bias’) occurs when the identified relationship is affected by one or more unobserved factors that drive both governance and performance (Roberts & Whited, 2013; Wintoki et al., 2012). In the context of the corporate governance–financial performance relationship, these unobserved factors may be firm-specific characteristics such as managerial ability, managerial risk aversion, company culture, or employee capability, all of which are unobservable and constant over time. Because one is not sure whether the explanatory variables included in an empirical model can capture all relevant (observable and unobservable) firm characteristics, a fixed-effects estimator must be employed to eliminate omitted variable bias (Roberts & Whited, 2013).

Simultaneity may arise when at least one independent variable is determined concurrently with the dependent variable in a model (Wooldridge, 2009). For instance, greater gender diversity in the boardroom may result in better monitoring which ultimately improves firm financial performance (Adams & Ferreira, 2009). Nevertheless, high-performing companies may have more female directors on their boards because females have a tendency to work for better performing companies (Farrell & Hersch, 2005). This means that boardroom gender diversity and firm performance may be jointly determined, that is, each variable affects the other simultaneously.

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<sup>37</sup> Another possible source of endogeneity in the domain of empirical corporate finance is measurement error. It is defined as the difference between unobservable or difficult to quantify variables and their proxies employed in a model (Roberts & Whited, 2013).

In addition, there is another source of endogeneity inherent in the relationship between corporate governance and financial performance, namely dynamic endogeneity. Recent empirical studies (e.g., Pham et al., 2011; Schultz et al., 2010; and Wintoki et al., 2012) suggest that the relationship between corporate governance and financial performance is dynamic in nature. That is, current corporate governance characteristics and firm performance are affected by firms' past performance (Wintoki et al., 2012). This empirical finding is consistent with the theoretical arguments of Harris and Raviv (2008); Hermalin and Weisbach (1998); and Raheja (2005) about the dynamic nature of the corporate governance–firm performance relationship. Schultz et al. (2010); and Wintoki et al. (2012), among others, argue that if the dynamic relationship between current corporate governance and past firm performance does exist, then the causal relationships uncovered by previous studies using the OLS or FE estimators appear to be spurious. This implies that if the dynamic endogeneity problem inherent in the corporate governance–firm performance relationship is not fully controlled, it is impossible to make causal interpretations from the econometric estimations.

Empirical findings of Wintoki et al. (2012), among others, provide an important and useful guidance for determining model specifications and selecting appropriate estimation approaches for the current research. Schultz et al. (2010); and Wintoki et al. (2012), among others, suggest that the appropriate empirical model for the corporate governance–firm performance relationship should be a dynamic model, in which lagged performance is used as one of the explanatory variables, rather than a static model applied by prior studies. In the context of corporate governance literature, the dynamic modelling approach has recently been applied in studies on the board structure–performance relationship (e.g.,

Nguyen, Locke, & Reddy, 2015; Wintoki et al., 2012), determinants of board structure (e.g., Chen, 2014), or corporate governance–firm performance relationship (e.g., Munisi & Randøy, 2013; Nguyen, Locke, & Reddy, 2014).

Therefore, taking the dynamic endogeneity into consideration, this study adopts a dynamic modelling approach to investigate the corporate governance–firm performance relationship in Singapore and Vietnam<sup>38</sup>. By doing so, this study responds to the recent calls from Flannery and Hankins (2013); Wintoki et al. (2012); and Zhou et al. (2014) for using dynamic panel models in corporate finance and corporate governance research.

### **4.3.2 Variables**

#### **4.3.2.1 Dependent variables**

This study employs Tobin’s Q, originally defined as the ratio of the market value of a company and the replacement cost of its assets (Chung & Pruitt, 1994), to measure firm financial performance. Companies that achieve Tobin’s Q larger than one are considered to be utilising scarce resources effectively. In contrast, those with Tobin’s Q less than one are judged to be poorly exploiting their resources (Lewellen & Badrinath, 1997).

Although Tobin’s Q is widely accepted as a measure of firm performance (Lewellen & Badrinath, 1997), estimating the replacement cost of companies’ assets is not an easy task given data unavailability. Indeed, several estimations of Tobin’s Q suggested in corporate finance literature (see e.g., Lindenberg & Ross,

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<sup>38</sup> The econometric estimation technique used to implement this dynamic approach can also control for the two other sources of endogeneity, including unobserved heterogeneity and simultaneity. See Subsection 4.3.4 for more details.

1981) are too complicated and time-consuming (Chung & Pruitt, 1994). For this reason, Chung and Pruitt (1994) developed an alternative formula for approximating Tobin's Q that allows utilising the readily-available data from financial reports to obtain relatively accurate values of Tobin's Q with minimal computational effort. As documented by Chung and Pruitt (1994), this simplified version of Tobin's Q is highly correlated with other mathematically more complex and theoretically more representative measures of Tobin's Q. Following Chung and Pruitt (1994), this study computes an approximation of Tobin's Q as the market value of equity plus the book value of debt, all divided by the book value of total assets. Besides, natural logarithmic transformation is applied on Tobin's Q (denoted as  $\ln q$ ) to improve the normality of this variable.

Using Tobin's Q as a market-based proxy for financial performance has some advantages over using accounting-based counterparts in at least four critical aspects. First, Tobin's Q, by construction, is less sensitive to accounting practices than other accounting-based measures thus mitigating the potential effects of accounting practices and standards on calculating corporate performance (Demsetz & Villalonga, 2001). This characteristic of Tobin's Q is therefore particularly valuable when examining the corporate governance–performance relationship in a comparative context between two markets with different accounting conventions.

Second, unlike accounting-based performance measures, Tobin's Q is able to capture the market value of firm-specific intangible assets, such as high quality managers and growth opportunities, which are supposed to be a reflection of 'the results of performance' (Perfect & Wiles, 1994).

Third, while accounting-based performance measures are backwards-looking, Tobin's Q reflects the market predictions about what firms will achieve (Demsetz & Villalonga, 2001). In other words, Tobin's Q is capable of capturing the long-run effects of corporate actions (Yabei & Izumida, 2008). Finally, given that it is the convention in corporate governance literature to use Tobin's Q ratio to measure firm financial performance (Coles, Lemmon, & Felix Meschke, 2012), use of Tobin's Q facilitates comparing the findings of the current study and those of relevant prior research.

Moreover, using Tobin's Q facilitates checking a market's reaction to the change of firms' board and ownership structures. For instance, as mentioned by Shan and McIver (2011), if investors favour the independence of boards as a way to reduce agency cost and improve performance, then any change in a firm's board structure leading to a more independent board will be reflected in the positive change of Tobin's Q.

#### **4.3.2.2 Firm-level explanatory variables**

This study employs six firm-level explanatory variables to control for corporate governance characteristics<sup>39</sup> which are well-documented in the literature. They consist of: (i) board gender diversity; (ii) board composition; (iii) board leadership structure; (iv) board size; (v) ownership concentration; and (vi) capital structure. The theoretical framework for including these variables has been mentioned in Chapter 2. The following subsections discuss in turn how they are calculated.

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<sup>39</sup> In this study, the terms 'corporate governance structures', 'corporate governance characteristics', and 'corporate governance mechanisms' are all interchangeable with each other.

- ***Board gender diversity***

This research uses gender diversity as a proxy for board diversity. According to Walt and Ingley (2003), board diversity comprises the various characteristics of boards that are associated with decision-making and other administrative processes within the board. These characteristics are categorised as: (i) observable characteristics such as ethnicity, nationality, gender and age; and (ii) unobservable characteristics such as knowledge, educational and professional background, industry experience, among others (Erhardt et al., 2003).

According to Erhardt et al. (2003), the recent empirical studies on the relationship between board diversity and financial performance have concentrated on observable demographic characteristics, including gender and ethnicity. Therefore, there is a lack of consensus among researchers regarding what board diversity actually is. In line with prior studies (e.g., Adams & Ferreira, 2009; Ahern & Dittmar, 2012), this research uses gender diversity as a proxy for board diversity. This is also consistent with the suggestion of Srinidhi, Gul, and Tsui (2011) that research about the relationship between board governance and firm performance should consider explicitly female director representation.

As mentioned in Subsection 2.3.1.1 of Chapter 2, both agency theory (Jensen & Meckling, 1976) and resource dependence theory (Goodstein et al., 1994; Pfeffer, 1973) imply that board gender diversity is value-relevant (Carter et al., 2010). 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 the board diversity variable. Following Adams and Ferreira (2009); and Dezsö and Ross (2012), this research treats the board gender diversity

variable, defined by the percentage of female directors on BOD (*female*)<sup>40</sup>, as an endogenous variable.

- ***Board composition and board leadership structure***

As mentioned in Chapter 2, board composition and board leadership structure are key characteristics of board independence. It is common in corporate governance literature to separately use the percentage of independent directors or the percentage of non-executive directors as alternative proxies for board composition. In line with prior research, this study uses the percentage of non-executive directors (denoted as *nonexe*) as a main proxy for board composition of companies in both the Singaporean and Vietnamese markets.

Given that the Singaporean Code (2005) distinguishes between non-executive directors and independent directors<sup>41</sup>, it would be expected that the presence of independent directors on corporate boards will have a different impact on board effectiveness and firm performance. For this reason, and to check the robustness of the findings, this study also uses the percentage of independent directors (denoted as *indep*) as an alternative proxy for board composition of Singaporean companies.

However, data on independent directors are not available for the Vietnamese market for the sampling period because the Vietnamese Code 2007 (MOF, 2007) does not distinguish between non-executive directors and independent directors.

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<sup>40</sup> Additionally, three other proxies for board gender diversity are included in the model designed for the Vietnamese market. See Subsection 4.3.3.2 for more details.

<sup>41</sup> The Guideline 2.1 of the Singaporean Code (2005, p. 2) defines that “an independent director is one who has no relationship with the company, its related companies or its officers that could interfere, or be reasonably perceived to interfere, with the exercise of the director’s independent business judgment with a view to the best interests of the company”.

For comparative purposes, the current study does not differentiate between independent and non-executive directors in comparative analyses implemented in Chapter 7. Accordingly, board composition – in Chapter 7 – is measured as the percentage of independent and/or non-executive directors (denoted as *indep\_nonexe*).

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 measure board leadership structure, this study uses a dummy variable (denoted as *dual*) that takes a value of one if the chairperson of BOD is also the CEO, and zero otherwise. Following Schultz et al. (2010); Wintoki et al. (2012), this study considers board composition and board leadership structure variables endogenous.

- ***Board size***

Board size is measured by the total number of directors on the board. The natural logarithmic form of board size (denoted as *lnbsize*) is used in the models. As mentioned in Chapter 2, from the perspective of agency theory, good governance prescriptions assume 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 et al., 1999). Prior empirical evidence is mixed, and hence, no consensus has been reached. As suggested by Schultz et al. (2010); Wintoki et al. (2012), among others, board size is treated as an endogenous variable in this study.

- ***Ownership structure***

Following Holderness (2009); Munisi, Hermes, and Randøy (2014); and Thomsen, Pedersen, and Kvist (2006), among others, this research defines ownership concentration as the percentage of common stocks held by shareholders who own at least 5% of the total number of a firm's common stocks (denoted as *block*). As argued in Subsection 2.3.2 of Chapter 2, ownership concentration is treated as an endogenous variable.

Given data availability, this study follows Reddy, Locke, Scrimgeour, and Gunasekarage (2008) in using another proxy for ownership concentration of Singaporean listed companies to check the robustness of the results. Specifically, this proxy is measured by the ratio of ordinary shares held by twenty largest shareholders to the total number of ordinary shares of a company, named as 'ownership concentration top 20' (denoted as *blockktop20*).

- ***Capital structure***

This study also takes account of the potential performance effect of financial leverage (denoted as *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 details, leverage is supposed to have an effect on firm value because it can help to discourage managers' over-investment of free cash flow (Hoechle et al., 2012). In support, Black et al. (2014) also argue that leverage is mechanically associated with Tobin's Q by its effects on reducing income tax and free cash flow problems. In line with Antoniou et al. (2008), capital structure is considered to be an endogenous variable in the current research.

### 4.3.2.3 National governance quality variables

In order to capture the potential performance effects of country-level governance characteristics, three country-level explanatory variables regarding national governance quality are included in the empirical models designed for the combined dataset of the Singaporean and Vietnamese markets. The quality of national governance is measured by the *Worldwide Governance Indicators (WGIs)* developed by Kaufmann et al. (2011) and the *Investor Protection Index* developed by *Doing Business Project* (World Bank, 2012, 2013).

The *WGIs* 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, the *WGIs* 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), the current research focuses narrowly on the measures of country-level governance quality which are most relevant to firm operations. Accordingly, of the six dimensions, three indicators of national governance namely *Government Effectiveness*, *Regulatory Quality*, and *Rule of Law* are singled out. According to Kaufmann et al. (2011, p. 4), these indicators are defined as follows.

*Government Effectiveness index* captures the quality of public services, the quality 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.

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 Globerman and Shapiro (2002), the current study finds that these indicators are highly correlated with each other as evidenced by their significantly high correlation coefficients<sup>42</sup>. 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.,  $NGindex = Government\ Effectiveness + Regulatory\ Quality + Rule$

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<sup>42</sup> The results are not reported to save space, but available from the author upon request.

of Law. As an alternative solution, the current study follows Globerman and Shapiro (2002) and uses 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 abovementioned indicators of national governance quality.

Besides the *WGIs*, comparative corporate governance research typically employs several different proxies for national governance quality. Therefore, in order to check the robustness of the main findings, this study follows Van Essen et al. (2013) and utilises another proxy for national governance quality, namely *Investor Protection Index* (denoted as *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. In line with Aslan and Kumar (2014), the current study assumes that national governance quality variables are exogenously determined.

#### **4.3.2.4 Other control variables**

In an attempt to alleviate the potential bias caused by omitted variables, this research controls for unobservable historical factors, other general firm-specific characteristics (including firm age and firm size), industry-specific effects, and time-specific effects. By doing so, there is confidence that this study has included most of the control variables identified in corporate governance literature that have potential effects on firm financial performance.

- ***Firm size***

Firm size (denoted as *fsize*) is measured by the natural logarithm transformation of the book value of total assets<sup>43</sup>. This variable is used to account for the potential effect of economies of scale on Tobin's Q (Black et al., 2014; Yabei & 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 (Antoniou et al., 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 error terms of the models – would be correlated with firm size. The endogeneity problem is therefore introduced if firm size is included as an independent variable in the models (Roberts & Whited, 2013).

- ***Firm age***

Firm age (denoted as *lnfage*) 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 the current study's models because younger firms tend to have higher market values as they grow faster and are more intangible-asset intensive

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<sup>43</sup> In Chapters 5 and 6, the book values of total assets are in local currency. For the comparative purposes in Chapter 7, the book values of total assets of companies in both markets are in US dollars corrected by price index.

(Black et al., 2014). In addition, international operations and innovative capacity of a firm may be affected by its age (Chen & Yu, 2012). As suggested by Wintoki et al. (2012), firm age is treated as an exogenous variable in this study.

- ***Industry dummy variables***

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 potential impacts of industry-specific characteristics are controlled in this study by employing [0, 1] industry dummy variables (where appropriate)<sup>44</sup>, in which industries are classified by the Industry Classification Benchmark (ICB). Specifically, nine industry dummy variables are employed for each of nine industries<sup>45</sup>, including: *Basic Materials*; *Consumer Goods*; *Consumer Services*; *Health Care*; *Industrials*; *Oil & Gas*; *Technology*; *Telecommunication*; and *Utilities*. One industry dummy variable is treated as the benchmark category to avoid dummy variable trap. Following Wintoki et al. (2012), industry dummies are considered to be exogenously determined.

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<sup>44</sup> By construction, industry dummies cannot be included in the models estimated by the fixed-effects (within-groups estimator) and the System GMM techniques.

<sup>45</sup> Because there are no listed companies in *Telecommunications* industry for the Vietnamese market, the number of industry dummy variables for this market is eight.

- *Year dummy variables*

Year dummy variables are included in all of the models to account for time-specific effects. The year dummy variables capture macroeconomic circumstances or market fluctuations (e.g., inflation rate, demand shocks and other macroeconomic conditions) which are common to all companies and can change through time. More specifically, four year dummy variables are employed for four years (from 2008 to 2011) of which one year dummy variable is treated as the benchmark category to avoid dummy variable trap. Following Wintoki et al. (2012), year dummies are considered to be exogenously determined.

- *Lagged dependent variable*

Finally and importantly, this study employs 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–financial performance relationship as suggested by Wintoki et al. (2012). Using the 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 non-trivially mitigating omitted variable biases by taking into account the impacts of inherently unobservable historical factors on the current dependent variable (Wooldridge, 2009). It is important to emphasize that even “when coefficients on lagged dependent variables are not of direct interest, allowing for dynamics in the underlying process may be crucial for recovering consistent estimates of other parameters” (Bond, 2002, p. 142).

The detailed definitions and acronyms of the variables used in this study are summarised in Table 4.6. Based on the theoretical frameworks and prior empirical

findings discussed in Chapter 2, the predicted signs of the estimated coefficients on the explanatory variables in the current study's empirical models are presented in Table 4.7.

**Table 4.6: Definition of variables**

Variables	Acronyms	Employed in samples			Definitions
		Vietnam	Singapore	Aggregate	
<b>Dependent variable</b>					
<i>Tobin's Q ratio</i>	<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.
<b>Board structure variables</b>					
<i>Percentage of female directors (%)</i>	<i>female</i>	✓	✓	✓	The percentage of female directors on boards.
<i>Blau index for gender</i>	<i>blau</i>	✓			Blau index for gender = $1 - \sum_{i=1}^2 P_i^2$ , where $i = (1, 2)$ is the number of gender categories (two), $P_i$ is the proportion of board members in each category. This variable is used for robustness checks.
<i>Dummy variable for gender diversity (1)</i>	<i>d1women</i>	✓			A dummy variable that takes a value of one if there is at least one female director, and zero otherwise. This variable is used for robustness checks.

**Table 4.6: Definition of variables (cont.)**

Variables	Acronyms	Employed in samples			Definitions
		Vietnam	Singapore	Aggregate	
<i>Dummy variable for gender diversity (2)</i>	<i>d2women</i>	✓			A dummy variable that takes a value of one if there are at least two female directors, and zero otherwise. This variable is used for robustness checks.
<i>Percentage of non-executive directors (%)</i>	<i>nonexe</i>	✓	✓		The ratio of non-executive directors to total number of directors.
<i>Percentage of independent directors (%)</i>	<i>indep</i>		✓		The ratio of independent directors to total number of directors. This variable is used for robustness checks.
<i>Percentage of non-executive and/or independent directors (%)</i>	<i>indep_nonexe</i>			✓	The percentage of non-executive and/or independent directors.
<i>Duality</i>	<i>dual</i>	✓	✓	✓	A dummy variable that takes a value of one if BOD chairperson is also CEO, and zero otherwise.
<i>Board size</i>	<i>lnbsize</i>	✓	✓	✓	The natural logarithm of the total number of directors on BOD.

**Table 4.6: Definition of variables (cont.)**

Variables	Acronyms	Employed in samples			Definitions
		Vietnam	Singapore	Aggregate	
<b>Ownership structure variables</b>					
<i>Ownership concentration (%)</i>	<i>block</i>	✓	✓	✓	The percentage of common stocks held by shareholders who own at least 5% of total number of a firm's common stocks.
<i>Ownership concentration top 20 (%)</i>	<i>blocktop20</i>		✓		The ratio of ordinary shares held by twenty largest shareholders to the total number of ordinary shares of a company. This variable is used for robustness checks.
<b>Capital structure variable</b>					
<i>Leverage (%)</i>	<i>lev</i>	✓	✓	✓	The ratio of total debt to total assets.
<b>National governance quality variables</b>					
<i>Aggregate national governance index</i>	<i>NGindex</i>			✓	<i>NGindex</i> = <i>Government Effectiveness</i> + <i>Regulatory Quality</i> + <i>Rule of Law</i> . All components of this index are developed by Kaufmann et al. (2011).

**Table 4.6: Definition of variables (cont.)**

Variables	Acronyms	Employed in samples			Definitions
		Vietnam	Singapore	Aggregate	
<i>Alternative aggregate national governance index</i>	<i>NGindex(a)</i>			✓	<i>NGindex(a)</i> is constructed by extracting the first principal component of <i>Government Effectiveness</i> , <i>Regulatory Quality</i> , and <i>Rule of Law</i> using factor analysis technique. This variable is used for robustness checks.
<i>Investor protection index</i>	<i>IPindex</i>			✓	<i>IPindex</i> is developed by <i>Doing Business Project</i> (World Bank, 2012, 2013). This variable is used for robustness checks.
<b>Other control variables</b>					
<i>Firm age</i>	<i>lnfage</i>	✓	✓	✓	The natural logarithm of the number of years from the time the company first appears on stock-exchange markets.
<i>Firm size</i>	<i>fsize</i>	✓	✓	✓	The natural logarithm of the book value of total assets.
<i>Lagged dependent variable</i>	<i>laglnq</i>	✓	✓	✓	The natural logarithm of one-year lagged Tobin's Q ratio.

**Table 4.6: Definition of variables (cont.)**

Variables	Acronyms	Employed in samples			Definitions
		Vietnam	Singapore	Aggregate	
<i>Industry dummy variables</i>	<i>industry</i>	✓	✓	✓	Nine dummy variables for nine industries defined by IBC categories, namely <i>Basic Materials</i> ; <i>Consumer Goods</i> ; <i>Consumer Services</i> ; <i>Health Care</i> ; <i>Industrials</i> ; <i>Oil &amp; Gas</i> ; <i>Technology</i> ; <i>Telecommunication</i> ; and <i>Utilities</i> .
<i>Year dummy variables</i>	<i>year</i>	✓	✓	✓	Four year dummies for four years from 2008 to 2011.

**Table 4.7: Predicted signs of the estimated coefficients on explanatory variables**

Explanatory variables [ <i>Acronyms</i> ]	Relevant hypotheses	Predicted relationships	
		Vietnam	Singapore
<b>Board structure variables</b>			
<i>Percentage of female directors (%) [female]</i>	$H_{VN1} - H_{SG1}$	+	-
<i>Blau index for gender [blau]</i>	$H_{VN1}$	+	N/A
<i>Dummy variable for gender diversity (1) [d1women]</i>	$H_{VN1}$	+	N/A
<i>Dummy variable for gender diversity (2) [d2women]</i>	$H_{VN1}$	+	N/A
<i>Percentage of non-executive directors (%) [nonexe]</i>	$H_{VN2} - H_{SG2}$	∅	∅
<i>Percentage of independent directors (%) [indep]</i>	$H_{SG2}$	N/A	∅
<i>Percentage of non-executive and/or independent directors (%) [indep_nonexe]</i>	$H_{VN2} - H_{SG2}$	∅	∅
<i>Duality [dual]</i>	$H_{VN3} - H_{SG3}$	-	-
<i>Board size [lnbsize]</i>	$H_{VN4} - H_{SG4}$	∅	-

Note: Symbols (+), (-) and (∅) represent positive, negative, and no significant relationships, respectively. Notation (N/A) stands for ‘not applicable’.

**Table 4.7: Predicted signs of the estimated coefficients on explanatory variables (cont.)**

Explanatory variables [ <i>Acronyms</i> ]	Relevant hypotheses	Predicted relationships	
		Vietnam	Singapore
<b>Ownership structure variables</b>			
<i>Ownership concentration (%) [block]</i>	$H_{VN5} - H_{SG5}$	+/-	+/-
<i>Ownership concentration top 20 (%) [blocktop20]</i>	$H_{SG5}$	N/A	+/-
<b>Capital structure variable</b>			
<i>Leverage (%) [lev]</i>	$H_{VN6} - H_{SG6}$	+	+
<b>National governance quality variables</b>			
<i>Aggregate national governance index [NGindex]</i>	$H_{VN\_SG7}$	+/-	+/-
<i>Alternative aggregate national governance index [NGindex(a)]</i>	$H_{VN\_SG7}$	+/-	+/-
<i>Investor protection index [IPindex]</i>	$H_{VN\_SG7}$	+/-	+/-
<i>Interaction term(s) between film-level and country-level governance variables</i>	$H_{VN\_SG8}$	+/-	+/-

Note: Symbols (+), (-) and (∅) represent positive, negative, and no significant relationships, respectively. Notation (N/A) stands for ‘not applicable’.

### 4.3.3 Model specifications

#### 4.3.3.1 The general model

As mentioned in Subsection 4.3.1, the theoretical arguments postulated by Harris and Raviv (2008); Hermalin and Weisbach (1998); and Raheja (2005) imply that the relationship between corporate governance structures and firm performance is dynamic in nature; that is, current corporate governance characteristics and performance are affected by firms' past performance. Several recent empirical studies conducted by Schultz et al. (2010); Wintoki et al. (2012) have confirmed that this is indeed the case, and suggest that the appropriate empirical model for the corporate governance–financial performance relationship should be a dynamic one, in which lagged performance is used as one of the explanatory variables.

In view of that, the model specification for estimating the corporate governance–financial performance relationship in a dynamic framework can be described as an autoregressive panel model. A general specification for first-order autoregressive [AR(1)] panel models can be expressed as the following equation (4.1):

$$Y_{it} = \alpha_0 + \alpha_1 Y_{i,t-1} + \sum_{k=1} \beta_k X_{k,it} + \mu_i + \eta_t + \varepsilon_{it} \quad (4.1)$$

where,  $Y_{it}$  is Tobin's Q which is a proxy for financial performance of firm  $i$  in year  $t$ ;  $\alpha_0$  is the constant;  $\alpha_1$  and  $\beta_k$  are unknown estimated coefficients;  $X$  is a vector of the explanatory variables used in the model, including board structure, ownership structure, capital structure, national governance quality, and other firm-level control variables. The definitions of these variables are as mentioned in Subsection 4.3.2 and also summarised in Table 4.6;  $\mu_i$  represents unobserved firm

fixed-effects;  $\eta_t$  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;  $\varepsilon_{it}$  is the classical error term which is assumed to be independent and identically distributed.

In equation (4.1), the subscripts ( $i$ ) and ( $t$ ) respectively stand for individual firms (cross-sectional dimension) and time dimension, both of which are the characteristics of a panel data approach. Having both cross-sectional and time dimensions, this approach helps, on the one hand, to increase the number of observations and the degrees of freedom, and on the other hand, decrease the collinearity among explanatory variables (Wooldridge, 2002). As a result, this approach helps to improve the reliability of estimations and inferences of this research compared to prior studies which have mostly employed cross-sectional data<sup>46</sup>.

It is noteworthy that how many lags of dependent variable (Tobin's Q) should be used on the right-hand side of equation (4.1) is an empirical question. Prior corporate governance studies employed AR(1) structure (e.g., Adams & Ferreira, 2009; and Dezsö & Ross, 2012; Munisi & Randøy, 2013; Nguyen et al., 2014, 2015) or AR(2) structure (e.g., Pham et al., 2011; and 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

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<sup>46</sup> Brown, Beekes, and Verhoeven (2011) have reported in a recent comprehensive review article that the earlier studies in corporate governance literature usually adopted the OLS method to cross-sectional data to estimate the relationship between corporate governance and firm performance. This approach, based on a very strict assumption that corporate governance variables are exogenously determined, ignores the fact that all corporate governance structure variables are, in nature, endogenous (Brown et al., 2011; Wintoki et al., 2012).

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 this study's model may not completely capture the dynamic nature of the corporate governance–firm performance relationship.

Following Wintoki et al. (2012), this research confirms the model specification displayed in equation (4.1) by estimating an OLS regression of  $Y_{it}$  on  $Y_{it-1}$ ;  $Y_{it-2}$  and  $X_{it}$ . Using separate datasets for the Vietnamese market, the Singaporean market, and the combined dataset of the two countries<sup>47</sup>, this study finds no statistical evidence on the effect of  $Y_{it-2}$  on  $Y_{it}$ . This suggests 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. Subject to data availability and the analysis purposes, the general model (4.1) is modified appropriately for each market. Subsections 4.3.3.2; 4.3.3.3; and 4.3.3.4 introduce the model specifications for the Vietnamese market, the Singaporean market, and the combined dataset of both markets, respectively.

#### **4.3.3.2 The model specification for the Vietnamese market**

Using the measures of corporate governance mechanisms and other firm-level characteristics mentioned in Subsection 4.3.2, the general equation (4.1) can be displayed in more details for the Vietnamese market as equation (4.2).

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<sup>47</sup> The results are not reported because of space limitations, but available from the author upon request.

$$\begin{aligned}
\ln q_{it} = & \alpha_0 + \alpha_1 \ln q_{i,t-1} + \beta_1 \text{female}_{it} + \beta_2 \text{nonexe}_{it} + \beta_3 \text{dual}_{it} \\
& + \beta_4 \ln \text{bsize}_{it} + \beta_5 \text{block}_{it} + \beta_6 \ln \text{fage}_{it} + \beta_7 \text{fsize}_{it} \\
& + \beta_8 \text{lev}_{it} + \text{industry dummies}_i + \mu_i + \eta_t + \varepsilon_{it}
\end{aligned} \tag{4.2}$$

As will be mentioned in Chapter 5, it is observed that board gender diversity (measured by *female*) has a significantly positive effect on financial performance of Vietnamese listed companies. Since the matter is important (as mentioned in Subsection 1.2 of Chapter 1), the author has signalled this by including three further alternative proxies for board gender diversity in equation (4.2). Subsequently, the variable *female* in this model is replaced in turn by the variables *blau* ; *d1women* ; *d2women* to empirically check the robustness of the relationship between board gender diversity and firm performance.

More specifically, this study follows Campbell and Mínguez-Vera (2008) and employs two alternative proxies for gender diversity: (i) a gender diversity dummy variable (*d1women*); and (ii) the Blau index for gender (*blau*). The variable *d1women*, which distinguishes companies with at least one female director on their boards from those without, allows answering the question of whether the presence of women in boardrooms in itself has an impact on firm performance.

Meanwhile, the variable *female* enables examination of the effect that board gender balance has on firm performance. The *Blau index* for gender combines both of the above aspects of diversity, that is, the gender variety (measured by *d1women*) and the gender balance (measured by *female*) (Campbell & Mínguez-Vera, 2008). Following Blau (1977), as cited in Harrison and Klein (2007), this study calculates the *Blau index* for gender as  $(1 - \sum_{i=1}^2 P_i^2)$ , where  $i = (1, 2)$  is the number of gender categories (two);  $P_i$  is the proportion of board members in each

category. The minimum and maximum values of the *Blau index* for gender are zero (perfectly homogeneous boards) and 0.5 (perfectly heterogeneous boards), respectively. Moreover, in order to capture the potential effect of the number of female directors, this study follows Liu et al. (2014) in employing a dummy variable (denoted as *d2women*) that takes a value of one if there are at least two female directors and zero otherwise.

#### **4.3.3.3 The model specification for the Singaporean market**

Equation (4.2) is also used for the Singaporean market. However, as mentioned in Subsection 4.3.2.2, given that the Singaporean Code (2005) differentiates between non-executive directors and independent directors, it would be expected that independent director representation on BOD will also have an effect on board effectiveness and firm performance. For this reason and in order to check the robustness of the finding regarding the relationship between board composition and firm performance in the Singaporean market, this study employs the percentage of independent directors as an alternative proxy for board composition.

In view of that, equation (4.2) is re-estimated by replacing the percentage of non-executive directors (*nonexe*) with the percentage of independent directors (*indep*). In a similar vein, to check the robustness of the result concerning the relationship between ownership concentration and firm performance in the Singaporean market, the variable ownership concentration (*block*) is replaced by another proxy for concentrated ownership structure, namely ownership concentration top 20 (*blocktop20*).

#### 4.3.3.4 The model specification for the combined dataset of both markets

The base-line model specification for the combined dataset of both markets is established as follows:

$$\begin{aligned} \ln q_{it} = & \alpha_0 + \alpha_1 \ln q_{i,t-1} + \beta_1 \text{female}_{it} + \beta_2 \text{indep\_nonexe}_{it} \\ & + \beta_3 \text{dual}_{it} + \beta_4 \ln \text{size}_{it} + \beta_5 \text{block}_{it} + \beta_6 \ln \text{fage}_{it} \\ & + \beta_7 \text{fsize}_{it} + \beta_8 \text{lev}_{it} + \text{industry dummies}_i + \mu_i + \eta_t + \varepsilon_{it} \end{aligned} \quad (4.3)$$

As mentioned in Subsection 4.3.2.2, the current study, for comparison purposes, does not differentiate between independent and non-executive directors in comparative analyses using the combined dataset of both markets. Therefore, the proxy for board composition in equation (4.3) is the percentage of independent and/or non-executive directors (denoted as *indep\_nonexe*).

Following Antoniou et al. (2008); and Krivogorsky and Grudnitski (2010), the empirical models for the combined dataset of the two countries are developed from the base-line equation (4.3) via a two-step procedure. First, the effects of firm-level governance structures on financial performance will be investigated by estimating equation (4.3). This step allows the current study to determine which corporate governance mechanisms are significantly correlated with financial performance of listed companies in the two markets. Subsequently, 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. The current research also explores the potential interaction between national governance quality and those corporate governance mechanisms which are significantly related to financial performance as evidenced by the findings obtained from the first step. By doing so, the author can step-by-step empirically test the two research hypotheses with regards to the

performance effect of national governance quality  $H_{VN\_SG7}$ , as well as its moderating influence on the corporate governance–firm performance relationship  $H_{VN\_SG8}$ .

To test hypothesis  $H_{VN\_SG8}$ , equation (4.3) 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 (*block*) has a significant effect on firm performance<sup>48</sup>, one interaction term between the concentrated ownership variable and country dummy variable is added to equation (4.3) to initially check whether the ownership concentration–firm performance relationship is influenced by country-level specific characteristics. It would suggest that country-specific characteristics matter if the estimated coefficients on this country dummy variable and the interaction term are statistically significant (Antoniou et al., 2008; Mallin et al., 2015).

It is found that the coefficients on the country dummy variable and the interaction term are statistically significant at the 10% and 5% level, respectively, thus suggesting that the role of ownership concentration in determining firm performance is expected to vary across countries<sup>49</sup>. It is, therefore, necessary to investigate this further by focusing in details on the country-level governance characteristics which may have an effect on the relationship between ownership concentration and financial performance. For this purpose, equation (4.3) is modified by including an aggregate national governance quality variable (measured by *NGindex*) and an interaction term between *NGindex* and the existing

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<sup>48</sup> See Subsection 7.2.3 of Chapter 7 for more details.

<sup>49</sup> The result is not reported to save space, but available from the author upon request.

concentrated ownership variable (measured by *block*). Therefore, equation (4.3) is rewritten as follows<sup>50</sup>:

$$\begin{aligned}
Y_{it} &= \alpha_0 + \alpha_1 Y_{it-1} + \sum_{k=1} \beta_k X_{k,it} + \gamma block_{it} + \delta NGindex_{jt} \\
&\quad + \varphi block_{it} \times NGindex_{jt} + \mu_i + \eta_t + \varepsilon_{it} \\
\Leftrightarrow Y_{it} &= \alpha_0 + \alpha_1 Y_{it-1} + \sum_{k=1} \beta_k X_{k,it} + \delta NGindex_{jt} \\
&\quad + (\gamma + \varphi NGindex_{jt}) block_{it} + \mu_i + \eta_t + \varepsilon_{it}
\end{aligned} \tag{4.4}$$

If the coefficient on the *NGindex* variable ( $\delta$ ) is statistically significant, it will suggest that national governance quality matters. A positive value for the coefficient on the interaction term ( $\varphi$ ) would imply that the higher the *NGindex* is, the stronger the effect of *block* on firm performance will be. On the contrary, a negative value for ( $\varphi$ ) would be inferred that the higher the *NGindex* is, the weaker the effect of *block* on firm performance will be. In estimating equation (4.4), the current study follows Aslan and Kumar (2014) and assumes that national governance quality variables are exogenous to the choices made by firms.

#### 4.3.4 Estimation approaches

This subsection introduces the estimation approaches used in the current research and explains why the estimation techniques including the OLS; FE; and traditional instrumental variable (IV) methods are undesirable for this study. Also, this subsection clarifies why the BB two-step system GMM (System GMM) is the most feasible approach to examine the corporate governance–firm performance relationship in a dynamic framework.

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<sup>50</sup> The subscript (*j*) on *NGindex<sub>jt</sub>* indicates country *j*<sup>th</sup> (*j* = 1, 2)

As mentioned in Chapter 2, one of the most problematic issues in corporate governance literature relates to the credibility of causal inferences regarding the relationship between corporate governance structures and firm performance (Brown et al., 2011). Previous corporate governance research has highlighted that it is not only the ownership structure variable, but also board structure variables that are considered to be endogenously determined by, and dynamically correlated with, past firm performance (e.g., Wintoki et al., 2012; Yabei & Izumida, 2008). Therefore, a regression of the performance variable on the ownership structure and board structure variables in which other firm-specific characteristics are controlled should be examined in a dynamic modelling framework, as displayed in the general equation (4.1).

However, the presence of the AR(1) structure and endogenous explanatory variables in equation (4.1) introduces serious estimation biases (Flannery & Hankins, 2013). It is well-documented in econometric literature that estimating equation (4.1) via the OLS method yields biased and inconsistent coefficients because the OLS ignores the time-invariant unobserved individual effects ( $\mu_i$ ) and the endogeneity of  $Y_{it-1}$  (Flannery & Hankins, 2013; Wintoki et al., 2012). To address endogeneity concerns, including unobserved heterogeneity and/or simultaneity, the FE and/or IV methods are usually employed in corporate governance literature (Brown et al., 2011).

The FE approach wipes out  $\mu_i$ , 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  $Y_{it-1}$  (Nickell, 1981). Specifically, the estimated coefficient on lagged dependent variable ( $Y_{it-1}$ ) produced by the FE estimator is inconsistent and

biased because of the correlation between  $Y_{it-1}$  and the time-invariant component of the error term (Nickell, 1981). It should be emphasised that even if the coefficient on  $Y_{it-1}$  is not the major concern of the scholars, its bias makes the other estimated parameters in the regression model highly questionable (Flannery & Hankins, 2013).

Similarly, although IVs approach is commonly used to mitigate the simultaneity concern, it is not designed to deal with dynamic endogeneity which very likely arises in the board structure–firm performance relationship (Wintoki et al., 2012), and in the ownership structure–firm performance relationship (Yabei & Izumida, 2008). Schultz et al. (2010); and Wintoki et al. (2012) emphasise that ignoring the dynamic nature of the corporate governance–firm performance relationship may lead to inconsistent estimations. As a consequence, all of the OLS, FE, and IV approaches appear to be undesirable, at least in the current study.

Two other econometric techniques, which can correct the inconsistency caused by the presence of the AR(1) structure and endogenous explanatory variables in equation (4.1) if T is fixed, are: (i) the AB difference GMM estimator proposed by Arellano and Bond (1991); and (ii) the 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<sup>51</sup>. Whereas, the System GMM is testified to be more efficient and less small-sample biased when compared with its AB difference GMM counterpart (Blundell & Bond, 1998). In

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<sup>51</sup> Some recent studies on corporate governance–firm performance relationship have employed the AB difference GMM approach. However, given that corporate governance structures change slowly over time, applying the AB difference GMM estimator to such highly persistent series is particularly likely problematic (Bond, 2002).

addition, the System GMM estimator, by construction, mitigates the influence of the high persistence of corporate governance variables, which in turn helps to improve the power of estimations (Antoniou et al., 2008; Hoechle et al., 2012).

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 structure and ownership structure are all considered to be endogenous; (iv) corporate governance–firm performance relationship is, by 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, this study uses the System GMM as the primary estimation technique to alleviate the concerns about dynamic panel bias, simultaneously, and time-invariant unobserved heterogeneity (Wintoki et al., 2012). Moreover, this estimation technique can control for autocorrelation and heteroskedasticity in the error term (Antoniou et al., 2008). 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).

Basically, the System GMM technique involves a system of equations in differences and in levels, and allows treating all the explanatory variables in equation (4.1) as endogenous variables (Roodman, 2009a)<sup>52</sup>. This estimation technique allows empiricists to use internal instrumental variables available

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<sup>52</sup> Following Wintoki et al. (2012), firm age (*Infage*) and *year dummies* are considered to be exogenously determined.

within the panel itself (Blundell & Bond, 1998). More specifically, while lagged levels of explanatory variables can be employed as instruments in the first differenced equation, the lagged first differences of explanatory variables can be used as instrumental variables for the levels equation (Blundell & Bond, 1998; Roodman, 2009a).

This study also employs a finite-sample corrected estimate of variance, suggested by Windmeijer (2005), to take into account the concern raised by Blundell and Bond (1998) regarding the downward-biased tendency of standard errors estimated by the System GMM approach for small samples. Windmeijer (2005, p. 25) documents that “estimated asymptotic standard errors of the efficient two-step GMM estimator can be severely downward biased in small samples”. As documented by Windmeijer (2005), implementing the finite-sample correction for the variance of linear efficient two-step GMM estimators will help to achieve more accurate inference.

Additionally, in order to check the robustness of the findings across different econometric estimation techniques and to facilitate comparing the findings of the current study with those of prior relevant studies, the empirical models in this study are also estimated by alternative estimators, including the pooled OLS, and FE estimators. This estimation practice is in line with the suggestion of Bond (2002) that the consistent System GMM estimator should be compared with simpler estimators such as the pooled OLS or FE estimators to detect potential biases in empirical studies.

When implementing the pooled OLS, and FE estimators, this study does take into account three key assumptions about: (i) the conditional variances of the

disturbances ( $\varepsilon_{it}$ ); (ii) the correlation between any two ( $\varepsilon_{it}$ ); and (iii) the perfect collinearity among independent variables ( $X_{it}$ ). Accordingly, this study reports  $t$ -statistics based on cluster-robust standard errors corrected for potential heteroskedasticity and serial correlation in the error term (within each firm) to ensure the assumptions (i) and (ii) are taken into consideration. The assumption (iii) that there are no perfect linear relationships among the independent variables in the models is diagnosed through the use of variance inflation factors (VIFs).

### **4.3.5 Specification tests for the System GMM model**

#### **4.3.5.1 Durbin-Wu-Hausman (DWH) test for endogeneity of regressors**

When the independent variables are actually exogenous, the OLS and FE approaches can obtain more efficient estimations than those of the System GMM (Schultz et al., 2010). Therefore, it is important to test for the endogeneity of the regressors in the models, i.e., test whether those regressors are correlated with the error term, before proceeding with the System GMM estimator. To do so, this study performs the DWH test for endogeneity of all regressors as a group. The test is under the null hypothesis that the endogenous regressors may be actually treated as exogenous variables (Baum, Schaffer, & Stillman, 2007). Test statistics follow a Chi-squared (*Chi-sq*) distribution with the degrees of freedom equal to the number of explanatory variables checked for endogeneity. Following Schultz et al. (2010), this study performs the test based on the equation (in levels) of firm performance and corporate governance variables.

For the convenience of the readers, the information about the test will be described in more details in the Subsections 5.2.2.1 of Chapter 5; 6.2.2.1 of Chapter 6; and 7.2.3.2 of Chapter 7.

#### 4.3.5.2 Testing over-identifying restrictions

It is worth noting that the consistency of the System GMM estimator greatly depends on the validity of instrumental variables used. It is therefore important to diagnose whether the instruments are valid, i.e., they are uncorrelated with the error term. According to Arellano and Bond (1991), there are three alternative tests for the validity of instrumental variables, including: (i) Arellano-Bond test for second-order serial correlation [the AB AR(2)] in the first differences of residual series; (ii) Hansen-J test of over-identifying restrictions; and (iii) Hausman specification test.

Among them, this study employs the Hansen-J test of over-identifying restrictions for two reasons. First, since the AB AR(2) test statistic is only defined if  $\min T \geq 5$  (Arellano & Bond, 1991), this test cannot be used in the current study's circumstance in which  $T = 4$  years. Second, while the power of the Hausman specification test is questionable, especially in the presence of outliers (Arellano & Bond, 1991), the Hansen-J test is considered as a standard test for joint validity of the instrumental variables after the System GMM estimation (Baum, 2006; Roodman, 2009a).

For those reasons, two following sets of specification tests are employed to check if the selected sets of lagged level and first-differenced values of the explanatory variables used as the instruments in the regressions are econometrically exogenous. First, the joint validity of the instruments is tested by the standard Hansen-J-test of over-identifying restrictions (also referred to as *Hansen-J-test for the joint validity of instruments*). Second, as recommended by Roodman (2009a, 2009b), the difference-in-Hansen tests for the subsets of System GMM-type

instruments, and for standard instrumental variables for the levels equation will be conducted (also referred to as *different-in-Hansen test for the validity of subsets of instruments*).

For the convenience of the readers, the information about these tests will be described in more details in the Subsections 5.2.2.2 of Chapters 5; 6.2.2.2 of Chapter 6; and 7.2.3.2 of Chapter 7.

#### **4.4 SUMMARY**

This chapter describes the research framework, model specifications, variables, and data for the empirical analyses of the thesis. Given the dynamic nature of the corporate governance–financial performance relationship, the empirical models in this study are established in a dynamic modelling framework. Accordingly, the one-year lagged dependent variable is employed as an explanatory variable in the empirical models which are estimated by the System GMM method to take into account the potential dynamic panel bias, time-invariant unobserved heterogeneity, and simultaneity.

Six firm-level explanatory variables are used to control for corporate governance characteristics which are well-documented in the corporate governance literature. One country-level independent variable is employed to examine the direct effects of national governance quality on firm performance, as well as the moderating influence of national governance quality on the corporate governance structures–firm performance relationship. Additionally, this study also employs seven alternative proxies for the firm-level and country-level characteristics to check the robustness of the empirical findings.

Furthermore, firm-, industry-, and time-specific effects on the corporate governance–firm performance relationship are also controlled. Firms in the 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). The choice of the sample is primarily guided by the availability of firms’ annual reports and corresponding financial data for a four-year period from 2008 to 2011.

The rest of this thesis flows as follows. Chapter 5 and Chapter 6 will provide the empirical results for the relationship between corporate governance structures and financial performance of publicly listed companies in the Vietnamese market and the Singaporean market, respectively. Taking into account the country-specific institutional characteristics, Chapter 7 will discuss cross-country evidence on the corporate governance–financial performance relationship from a comparative perspective<sup>53</sup>. Chapter 8 concludes the thesis, clarifies the limitations, and provides recommendations for potential future research.

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<sup>53</sup> More specifically, the six pairs of hypotheses denoted from [ $\mathbf{H}_{VN1} - \mathbf{H}_{SG1}$ ] to [ $\mathbf{H}_{VN6} - \mathbf{H}_{SG6}$ ] will be tested by estimating equations (4.2), using the separated datasets of the Vietnamese and Singaporean markets (please refer to Subsection 4.3.3). Furthermore, equations (4.3) and (4.4) will be applied to the combined sample of both markets to empirically verify the two hypotheses  $\mathbf{H}_{VN\_SG7}$  and  $\mathbf{H}_{VN\_SG8}$ .

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## CHAPTER 5

# CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE IN VIETNAM<sup>54</sup>

### 5.0 INTRODUCTION

Estimating equation (4.2) for the Vietnamese market, this chapter provides empirical evidence to test the six hypotheses on the relationship between corporate governance structures and financial performance of Vietnamese listed companies [denoted as  $H_{VN1} - H_{VN6}$ ]. The empirical findings provided by this chapter contribute to the understanding of the causal effects of the corporate governance structures on firm performance in the Vietnamese market.

It should be noted that both Chapters 5 and 6 address the first research question of the thesis: does the causal relationship between corporate governance structures and financial performance persist when the dynamic nature of this relationship is fully controlled? Therefore, in order to avoid duplicate analyses and interpretations of similar variables and hypotheses in both chapters, the most interesting point in each chapter will be intentionally highlighted.

Specifically, the causal effect of board gender diversity on financial performance of Vietnamese listed companies is emphasised in Chapter 5. This topic is interesting because female representation on boards has recently become a central focus of corporate governance rejuvenation efforts around the world, with

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<sup>54</sup> A version of this chapter has been published as a scholarly article in **International Review of Economics and Finance**, vol 37(C), pp.184-202, under the title '*Does boardroom gender diversity matter? Evidence from a transitional economy*'. The content of this chapter is reproduced from the article with permission from Elsevier (License number: 3524690936334 | Date: December 09, 2014).

companies being encouraged to appoint female directors to their boards<sup>55</sup> (Adams & Ferreira, 2009). Importantly, the Vietnamese market, characterised by an underdeveloped corporate governance system, provides a unique empirical research setting where the benefits of board gender diversity may be more pronounced<sup>56</sup>.

The remainder of the chapter proceeds as follows. Section 5.1 begins by presenting preliminary data analyses, including descriptive statistics, correlation matrix and multi-collinearity diagnostic. Additionally, the slow-changing characteristic of the corporate governance variables is discussed in Subsection 5.1.3. In doing so, the current study confirms that the nature of data has been taken into account to select the most appropriate estimation technique. Section 5.2 provides in turn empirical evidence obtained from estimating equation (4.2) through the use of the OLS, FE, and System GMM estimators. Section 5.3 concludes the chapter.

## **5.1 PRELIMINARY DATA ANALYSIS**

It is necessary to recall that the dataset for the Vietnamese market includes 488 firm-year observations which have relatively full information on key corporate governance variables covering a four-year period from 2008 to 2011 (Table 4.3). Following Balatbat, Taylor, and Walter (2004); Cornett, Marcus, Saunders, and

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<sup>55</sup> For example, in 2004 Norway adopted a mandatory gender quota law requiring 40% of positions on the boards of listed companies to be reserved for women (HKEC, 2012). This initiative has motivated many countries in Europe to follow suit, including Belgium (2011), Finland (2005), and Spain (2007).

In the Australasian region, Australia (2009), Hong Kong (2012) Malaysia (2011), New Zealand (2012) and others have revised their corporate governance codes to include new “comply or explain” provisions. The new provisions require listed companies to report measurable goals for diversity in their boardrooms, as well as progress in attaining those goals (see e.g., Catalyst, 2012b; HKEC, 2012 for more details).

<sup>56</sup> See Subsection 3.4.2 of Chapter 3 for more details.

Tehrani (2007); Schultz et al. (2010) and Giroud and Mueller (2010), among others, this study drops nine firm-year observations within the first and beyond the 99<sup>th</sup> percentiles in order to ensure that the empirical findings are not driven by the outliers of Tobin's Q. As a consequence, the final sample for the Vietnamese market includes 479 firm-year observations.

It is worth noting that univariate and bivariate analyses, including descriptive statistics and *t*-test for equality of the population means, are reported based on individual samples. This means that the full available data of each variable will be employed to maximise the obtainable sample sizes and to provide the best possible statistics of corporate governance structures and firm performance in the Vietnamese market. Meanwhile, a common sample including 448 firm-year observations will be used to run static multiple regression models<sup>57</sup>.

Similarly, this research uses a common sample with 352 firm-year observations to explore the corporate governance–financial performance relationship in formal dynamic multiple regression models<sup>58</sup>. The common sample sizes for the other robustness check models are reported either in the relevant result tables or in the footnotes. Table 5.1 summarises the sample sizes employed in alternative analyses for the Vietnamese market.

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<sup>57</sup> The common sample is not different from individual samples unless missing values exist in the dataset. The common sample can be obtained by removing all firm-year observations in which there is one (or more) missing value in any variables used in the models. In this case, the number of the firm-year observations with missing values removed from the final sample is 31.

<sup>58</sup> This is because using one-year lagged Tobin's Q as an explanatory variable in the right hand side of dynamic models results in losing 121 observations. In addition, six missing values in the variables used in the models are removed as well. Consequently, the final sample is reduced from 479 to 352 firm-year observations.

**Table 5.1: Sample sizes of alternative research models for Vietnam**

1	The initial sample size	<b>488</b>
2	The number of outliers of Tobin's Q excluded	9
3	The final sample size* (3) = (1) – (2)	<b>479</b>
<hr/>		
4	<b><i>Panel A: For static models</i></b>	
<hr/>		
5	The number of observations removed because of missing values in variables used in the static models	31
6	The common sample size for the static models** (6) = (3) – (5)	<b>448</b>
<hr/>		
7	<b><i>Panel B: For dynamic models</i></b>	
<hr/>		
8	The number of observations lost due to using one-year lagged Tobin's Q as an explanatory variable in the dynamic models	121
9	The number of observations lost because of missing values in variables used in the dynamic models	6
10	The common sample size for dynamic models** (10) = (3) – (8) – (9)	<b>352</b>

Note: (\*) individual samples' sizes may be various because of missing values. (\*\*) For other models used for robustness checks, the common sample sizes are reported either in the relevant tables of results or in attached footnotes. This table 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* (accessed in December 2011).

### 5.1.1 Descriptive statistics

Table 5.2 reports the descriptive statistics of the key dependent and independent variables used in equation (4.2). Tobin's Q values range from 0.20 to 2.96, with an average value of 0.85. The median Tobin's Q of 0.78 means that for half the observations, the Tobin's Q is less than or equal to 0.78. Furthermore, the median Tobin's Q of 0.78 is very close to the mean Tobin's Q of 0.85, both of which are less than one. This suggests that in terms of central tendency, the market value of the listed companies during the sampling period is lower than the book value. On

the one hand, this result may reflect the negative expectation of investors in response to the ineffective use of scarce company resources. On the other hand, it may also reflect the variations of the Vietnamese stock exchange during the crisis period of 2008–2011.

Appendix 2 demonstrates that the mean and median values of Tobin's Q closely follow the fluctuations of the Vietnamese Stock Index (*VNIndex*) across the years from 2008 to 2011. It is also evident from Appendix 2 that the mean and median of Tobin's Q—on a year-by-year basis—are smaller than one when the *VNIndex* annual growth rates are negative. Consequently, it is believed that the negative trend of the market during this crisis period is a possible explanation for why Vietnamese listed companies were undervalued by investors.

The mean percentage of female directors is 12.06%, which is twice as many as that reported by Sussmuth-Dyckerhoff, Wang, and Chen (2012) for the Asian region (6%). Furthermore, as reported by Catalyst (2012a), the mean percentage of female directors in Vietnam is far larger than that of other countries in the region, such as China (8.50%), Hong Kong (9%), Indonesia (4.50%), Japan (0.90%), Malaysia (7.80%), Singapore (6.90%), South Korea (1.90%), and Thailand (8.70%). Given that the institutional environment has an important influence on the social role and boardroom representation of women (Grosvold & Brammer, 2011), the higher ratio of female directors in Vietnamese companies appears to be the direct outcome of a better, more gender-diverse institutional context, mentioned in Subsection 3.4.2 of Chapter 3.

**Table 5.2: Descriptive statistics**

	<b>Observations</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
Tobin's Q ratio	479	0.85	0.78	0.39	0.20	2.96
Percentage of female directors (%)	472	12.06	9.09	13.76	0.00	66.67
Dummy variable for gender diversity	472	0.51	1.00	0.50	0.00	1.00
Blau index	472	0.17	0.17	0.18	0.00	0.50
Percentage of non-executive directors (%)	479	48.91	42.86	20.76	0.00	100.00
CEO duality	479	0.32	0.00	0.47	0.00	1.00
Board size (person)	479	5.81	5.00	1.29	4.00	11.00
Ownership concentration (%)	478	43.92	49.28	20.86	0.00	86.89
Firm age (year)	479	3.34	3.00	2.04	0.00	11.00
Firm size [Ln(Total assets)]	479	27.24	27.22	1.20	24.11	30.55
Leverage (%)	479	29.22	28.00	20.27	0.00	75.69

Note: This table reports descriptive statistics based on individual samples of which the sizes may be various because of missing values. The variables are as defined in Table 4.6. 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. This table 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* (accessed in December 2011).

The mean of the dummy variable for gender diversity (*dlwomen*) is about 0.51 suggesting that 51% of companies in the sample (equivalent to 239 out of 472 observations, as reported in Table 5.3) have at least one female director on their boards. Arguably, this proportion is much higher than that reported by Campbell and Mínguez-Vera (2008) for Spain (23.70%) and by CGIO (2011) for Singapore (40%). This result is a reflection of the high proportion of women in the labour force in Vietnam (World Bank, 2011), which may contribute to higher gender diversity in the boardroom than would otherwise be the case.

Nevertheless, female representation in Vietnamese boardrooms is still low. As reported in Table 5.3, of 239 cases with at least one female director, only 75 ( $\approx$  31%) have two or more women on the board. The number of cases with at least three female directors is negligible (20 cases). Table 5.3 also provides detailed information about the frequency of female directors and percentage of female directorship by board size. It can be observed from Table 5.3 that cases with one or two female directors on the board tend to be those that have a board membership ranging from five to seven.

On an average basis, non-executive directors account for about 49% of total directors, similar to the ratio found by the IFC (2011) for the Vietnamese market. The minimum percentage of non-executives is zero, although to ensure board independence (MOF, 2007), the Vietnamese Code requires that at least one-third of Vietnamese listed company directors must be non-executives. This situation reflects the fact that while one or more companies in the sample have failed to comply with the minimum level of non-executives on the BOD, the others have achieved well above the threshold. Among companies in the sample, only 32% of

the BOD chairpersons are also the CEOs, indicating that dual roles are less common in Vietnam. This ratio is in agreement with that reported by the IFC (2011) in its survey of the Vietnamese market.

The average number of board directors is approximately six, similar to the ratio reported by the IFC (2011) and, as reported by The Korn/Ferry Institute (2012), much smaller than the average board size of other countries in the Asian region, such as China (11.60), Hong Kong (11.50), India (10.80), Malaysia (9.00), and Singapore (8.60). Table 5.3 shows there are between five and seven members on the boards of most companies in the sample. It can be seen that the board size of companies in Vietnam is: (i) in compliance with the requirement of the Vietnamese Code that the boards should have from three to eleven members; and (ii) within the optimal threshold of board size – no more than eight members as recommended by Jensen (1993) for board effectiveness. The mean value of firm age (the period of time from the IPO) is about 3.34 years, reflecting the fact that listed companies in the sample are very young. This can partly explain their lack of experience in dealing with corporate governance issues as pointed out in recent IFC reports (IFC, 2011, 2012).

Notably, about 44% is the average percentage of ordinary shares held by shareholders who own at least 5% of the total number of a company's common stocks. Although this number is lower than that of Singapore (60%) and Malaysia (47%) (see, Mak & Kusnadi, 2005), it is still much higher than that of western developed markets, such as the US and UK. This finding is in line with Chen and Huang (2014), who documented that many emerging markets are characterised by highly concentrated ownership structures.

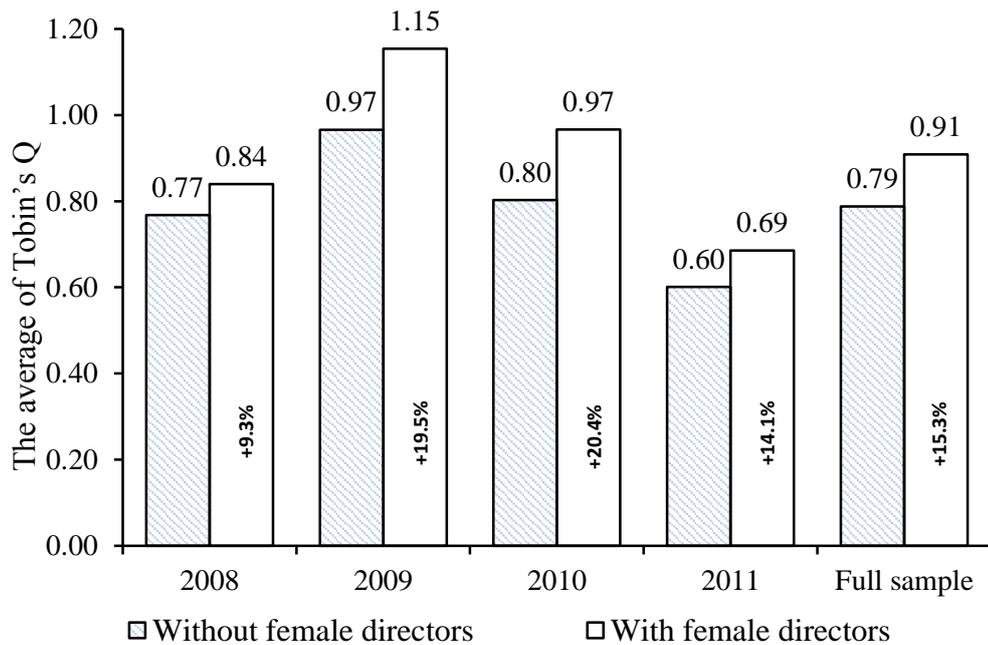
**Table 5.3: The frequency of female directors (panel A) and percentage of female directorship (panel B) by board size**

Board size (person)	Panel A						Panel B			
	The number of female directors in boardroom (person)						Percentage of female directorship (%)			
	0	1	2	3	6	Total	<20%	=20%	>20%	Total
4	1	5	0	0	0	6	0.21	0.00	1.06	1.27
5	163	111	19	0	0	293	34.53	23.52	4.03	62.08
6	14	8	17	5	0	44	4.66	0.00	4.66	9.32
7	43	25	15	6	0	89	14.41	0.00	4.45	18.86
8	3	3	1	5	0	12	1.27	0.00	1.27	2.54
9	8	8	1	0	1	18	3.39	0.00	0.42	3.81
10	1	0	2	3	0	6	0.21	0.42	0.64	1.27
11	0	4	0	0	0	4	0.85	0.00	0.00	0.85
<b>Total</b>	<b>233</b>	<b>164</b>	<b>55</b>	<b>19</b>	<b>1</b>	<b>472</b>	<b>59.53</b>	<b>23.94</b>	<b>16.53</b>	<b>100.00</b>

Note: Board size is as defined in Table 4.6

While this may indicate that the ownership structure of listed companies in Vietnam is highly concentrated, it should be noted that this ratio varies considerably from zero to approximately 87%.

Since board gender diversity is the variable of interest in this chapter, several further statistical explorations have been conducted to have a preliminary look at the relationship between board gender diversity and firm performance. Accordingly, the *t*-test procedure is carried out to investigate whether there is a significant difference in the performance between companies with and without female directors. The differences in the mean values of Tobin's Q between firms with and without women on their boards are presented in Figure 5.1. Intuitively, companies with female directors very likely performed better than those without women on their boards for all years from 2008 to 2011. The clearest evidence was from 2010 when, on average, the Tobin's Q of companies with female directors was 20.40% higher than that of their counterparts. Overall, the graph demonstrates that gender diversity in the boardroom might have a positive relation to firm financial performance, which is consistent with the correlation coefficient between the two variables as reported in Table 5.5.



**Figure 5.1: The average values of Tobin's Q of Vietnamese companies with and without female directors**

Across the full sample, the average value of the Tobin's Q ratio of companies with female board directors was 15.30% higher than that of those without, and the difference was statistically significant at the 1% level. The results reported in Table 5.4 indicate that the null hypothesis of equal population means<sup>59</sup> should be rejected in the years 2009, 2010, 2011, and across the full sample. It is plausible that in the years when the Vietnamese companies have female directors on their BOD, they tend to achieve better financial performance measured by Tobin's Q. This finding tentatively supports the hypothesis  $H_{VN1}$  that board gender diversity will have a positive impact on financial performance of Vietnamese listed companies. Since the *t*-test procedure does not account for other factors that may

<sup>59</sup> To capture both cross-sectional and time variances, this study follows Adams and Ferreira (2009) in comparing the means of Tobin's Q not only within the cross section but also across firm-year observations. In order to check the robustness of the results, this study follows prior studies (e.g., Chen, Guo, & Tay, 2010) and conducts the Wilcoxon rank-sum test for differences in medians of Tobin's Q. The (unreported) results obtained from this non-parametric test show that the conclusions obtained from the *t*-test procedure are robust, even after taking the non-normality of the data into consideration.

interact with the board gender diversity–firm performance relationship, it is difficult to draw causal inferences. Section 5.2 will present a further exploration of this relationship through multiple regression analyses.

**Table 5.4: The *t*-test for equal population means with unequal variances**

Year	Observations	The average values of Tobin's Q		
		Without female directors	With female directors	Difference
2008	119	0.77	0.84	-0.07
2009	118	0.97	1.15	-0.19**
2010	119	0.80	0.97	-0.16***
2011	116	0.60	0.69	-0.09*
Full sample	472	0.79	0.91	-0.12***

Note: Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*).

### 5.1.2 Correlation matrix and multi-collinearity diagnostic

Table 5.5 reports the pair-wise correlation coefficients between the variables employed in equation (4.2). The correlation coefficients are based on various individual samples in which all available observations are employed to compute each pair-wise correlation without considering whether variables outside that pair are missing. The correlation coefficient of 0.15 shows that the Tobin's Q is positively related to the percentage of female directors. Although this is only a weak positive linear relationship, it tentatively supports the hypothesis  $H_{vN1}$  of this study. The significantly positive relationship between Tobin's Q and the one-year lagged Tobin's Q is described by a correlation coefficient of 0.58. This supports the proposition that the proper empirical model for the relationship between corporate governance and firm performance should be considered in a dynamic framework rather than a static one (Wintoki et al., 2012).

With the exception of the variables *nonexe* and *lev*, the other explanatory variables are significantly correlated with the regressant. As can be seen from Table 5.5, the highest significant correlation coefficient among independent variables is 0.36. As suggested by Damodar (2004), unless correlation coefficients among regressors exceed 0.80, multi-collinearity will not be a serious problem for multiple analysis. Thus, there may be no problem of multi-collinearity among the regressors included in this chapter's regression models. In an additional analysis, variance inflation factors (VIFs) are employed to formally diagnose the multi-collinearity problem among independent variables used in the estimation models. As indicated in the last column of Table 5.5, all of the VIFs are below the acceptable cut-off point of 10 suggested by Chatterjee and Hadi (2012, p. 236). This indicates the absence of a multi-collinearity problem in the estimated models of this chapter.

To check the sensitivity of the correlation coefficients to data missing, a case-wise correlation matrix which is based on the common sample of 352 firm-year observations is also displayed in Appendix 3. Unlike the pair-wise correlation matrix, the case-wise correlation matrix is calculated on the basis of excluding all observations that have missing data in at least one of the selected variables. By doing so, the correlation coefficients can be obtained from the same set of 352 firm-year observations. It is evident from Table 5.5 and Appendix 3 that the correlation coefficients in both matrices are qualitatively the same. Thus, the abovementioned interpretations on the correlations between the selected pairs of variables still hold even after the potential effect of missing data on computing correlation coefficients is taken into consideration.

**Table 5.5: Pair-wise correlation coefficients and variance inflation factor coefficients**

	<i>lnq</i>	<i>female</i>	<i>nonexe</i>	<i>dual</i>	<i>lnbsize</i>	<i>block</i>	<i>lnfage</i>	<i>fsize</i>	<i>lev</i>	<i>laglnq</i>	<b>VIFs</b>
<i>lnq</i>	1.00										
<i>female</i>	0.15***	1.00									1.05
<i>nonexe</i>	-0.07	-0.05	1.00								1.17
<i>dual</i>	0.11**	0.12***	-0.30***	1.00							1.15
<i>lnbsize</i>	0.13***	0.09*	-0.13***	0.10**	1.00						1.18
<i>block</i>	0.13***	-0.07	0.10**	-0.14***	-0.26***	1.00					1.12
<i>lnfage</i>	-0.19***	-0.04	0.14***	-0.04	0.05	-0.04	1.00				1.21
<i>fsize</i>	0.21***	0.04	-0.08*	0.01	0.23***	0.10**	-0.00	1.00			1.36
<i>lev</i>	0.07	-0.09**	-0.11**	-0.10**	0.04	0.10**	-0.14***	0.36***	1.00		1.28
<i>laglnq</i>	0.58***	0.13**	-0.03	0.07	0.12**	0.12**	0.08	0.25***	-0.04	1.00	1.71

Note: This table presents pair-wise correlation coefficients which are based on various individual samples. The variance inflation factors (VIFs) are based on the common sample of 352 firm-year observations. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). This table 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* (accessed in December 2011).

### 5.1.3 The slow-changing characteristic of corporate governance variables

Flannery and Hankins (2013) suggest that the within-firm variance of independent variables should be thoroughly investigated before the economic impact of those independent variables on dependent variable is assessed. Following this suggestion, this subsection discusses the explanatory variables' within-firm variance and suitable analysis procedures which can be used to deal with the slow-changing characteristic of corporate governance variables.

Table 5.6 reports that the variation in the ratio of female directors within firms (5.34%) is lower than that across firms (12.85%). This result suggests that the percentage of female directors does not vary greatly over time. In other words, *female* is a slow-changing variable, given that if a variable does not vary across time, the within-standard deviation will be zero. The remaining corporate governance variables, including *nonexe*, *dual*, *lnbsize*, and *block*, share a similar characteristic. These findings are consistent with Brown et al. (2011), who reported that most corporate governance variables do not change over time, which leads to a reduction in the statistical power of corporate governance research.

Taking into account the slow-changing feature of these variables, this study employs the System GMM as the main approach. As mentioned in Subsection 4.3.4, the reason for this is that the System GMM, by construction, is superior to other estimators (e.g., the FE or AB Difference GMM) in dealing with the highly persistent characteristic of the explanatory variables (Antoniou et al., 2008; Hoechle et al., 2012).

**Table 5.6: Overall, between and within standard deviations of the corporate governance variables for the Vietnamese market**

Variables	Standard Deviations		
	<i>overall</i>	<i>between</i>	<i>within</i>
Percentage of female directors (%)	13.76	12.85	5.34
Percentage of non-executive directors (%)	20.76	18.93	8.46
CEO duality	0.47	0.42	0.21
Board size (person)	1.29	1.19	0.50
Ownership concentration (%)	20.86	18.71	9.11

Note: This table reports overall, between and within standard deviations of the corporate governance variables for the Vietnamese market based on various individual samples. The variables are as defined in Table 4.6. For interpretation purposes, the standard deviations of *board size* are calculated on the basis of levels instead of logarithmic form. This table 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* (accessed in December 2011).

However, using the lagged values of these slow-changing variables as instruments in the System GMM estimation procedure may be questionable. More specifically, if slow-changing explanatory variables are endogenous, then the lagged values of these variables used as instruments will suffer as much from the endogeneity issue as do the current ones (Brown et al., 2011). This raises doubts about the validity of the instrumental variables employed in the model. For this reason, this study follows the suggestion of Roodman (2009a, 2009b) and carefully tests the joint validity of the instruments as well as the validity of the subsets of System GMM-type instruments, and the standard instruments for the equation in levels<sup>60</sup>.

<sup>60</sup> See Subsection 5.2.2.2 for more details.

## 5.2 MULTIPLE REGRESSION ANALYSIS

### 5.2.1 Static vs. dynamic models: Pooled OLS and FE estimations

In this subsection, equation (4.2) will be estimated in static and dynamic frameworks through the use of the pooled OLS and FE approaches. For the ‘static framework’, the coefficient on  $\ln q_{it-1}$  ( $\alpha_1$ ) in equation (4.2) is assumed to be zero. The remainder of the subsection proceeds as follows.

First, Subsection 5.2.1.1 commences with an OLS estimation of equation (4.2) from a static perspective to provide a preliminary look at the data. Then, the FE method will be applied to equation (4.2) with the assumption that  $\alpha_1$  is equal to zero in order to see how the results obtained from the pooled OLS method are driven by unobserved time-invariant firm characteristics.

Finally, Subsection 5.2.1.2 employs the OLS and FE methods to estimate equation (4.2) in a dynamic framework. These dynamic estimations will show how including a one-year lagged dependent variable as an independent variable improves the explanatory power of the model. Furthermore, as mentioned in Subsection 4.3.4, applying the OLS and FE methods to estimate the parameters of equation (4.2) from a dynamic perspective will help to detect biases in empirical analyses of this study.

#### 5.2.1.1 The static models

Initial multiple regression results, conducted by using the pooled OLS approach, are reported in column 1 of Table 5.7. It is evident that the percentage of female directors in boardrooms (*female*) is positively significantly related to Tobin’s Q at the 10% level ( $p = 0.053$ ), thus providing support for hypothesis **H<sub>VN1</sub>**. The

coefficient on *female* ( $\beta = 0.003$ ) means that if the percentage of female directors in boardrooms increases by one percentage point, the predicted Tobin's Q will increase, on average, by approximately 0.30%, holding all other factors fixed.

It should be noted that such a percentage change is economically large, given that the size of boards in Vietnamese listed companies ranges between three and eleven members. For example, a change from a board with one woman and seven men to a board with three women and five men leads to a 25 percentage point change. Consequently, the predicted Tobin's Q will increase by approximately  $25 \times 0.30\% = 7.50\%$  or, more exactly, by  $100 \times [\exp(0.003 \times 25) - 1] \approx 7.79\%$ . This finding is consistent with that reported by prior studies including Reddy et al. (2008) in the New Zealand market, Carter et al. (2003) and Adams and Ferreira (2009, p. 305, column 1 of table 9) in the US market, but contrasts with the findings of Rose (2007) in the Danish market.

In a similar vein, it is observed from column 1 of Table 5.7 that the percentage of non-executive directors has no significant effect on firm performance, thus supporting hypotheses **H<sub>VN2</sub>**. Ownership concentration appears to be significantly positively correlated with firm performance, thus providing support for hypothesis **H<sub>VN5</sub>**.

The estimated coefficient on the variable *dual* is insignificant, thus not supporting hypothesis **H<sub>VN3</sub>**. From column 1 of Table 5.7, it is also observed that there is no statistical evidence to support hypotheses **H<sub>VN4</sub>** and **H<sub>VN6</sub>**. It should be noted that the OLS estimator cannot control for potential omitted variable bias caused by the effects of unobserved features of firms which are invariant over time and/or across firms. In consequence, further exploration is necessary.

**Table 5.7: The relationship between corporate governance structures and performance of Vietnamese listed companies: Static models<sup>61</sup>**

Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]		
Explanatory variables [ <i>notation</i> ]	OLS	FE
	b/[p]	b/[p]
	(1)	(2)
Intercept	-2.180***	-0.272
	[0.000]	[0.883]
Percentage of female directors (%) [ <i>female</i> ]	0.003*	0.002
	[0.053]	[0.470]
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	0.000	-0.001
	[0.968]	[0.624]
Duality [ <i>dual</i> ]	0.061	0.119**
	[0.146]	[0.024]
Board size [ <i>lnbsize</i> ]	0.178**	0.263*
	[0.046]	[0.098]
Ownership concentration (%) [ <i>block</i> ]	0.003***	0.003**
	[0.001]	[0.013]
Firm age [ <i>lnfage</i> ]	0.007	-0.011
	[0.860]	[0.888]
Firm size [ <i>fsize</i> ]	0.052***	-0.031
	[0.006]	[0.659]
Leverage (%) [ <i>lev</i> ]	0.001	0.007***
	[0.292]	[0.001]
Industry dummy variables [ <i>industry</i> ]	yes	no
Firm fixed-effects	no	yes
Year dummy variables [ <i>year</i> ]	yes	yes
Number of observations	448	448
R-squared	0.351	0.588
<i>F</i> statistic	14.816***	36.561***

Note: This table reports the result of static OLS (column 1) and static FE (column 2) regressions of firm performance (*lnq*) on corporate governance structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *p*-values are reported in brackets and are based on cluster-robust standard errors (cluster on firm) corrected for potential heteroskedasticity and serial correlation in the error term. *Industry* and *year* dummy variables are not reported.

<sup>61</sup> It should be noted that *industry* dummies are not included in the static OLS model reported in another version of this chapter, which has been published as a scholarly article in **International Review of Economics and Finance** (2015), *vol* 37(C), pp.184-202, under the title 'Does boardroom gender diversity matter? Evidence from a transitional economy'.

As shown in column 2 of Table 5.7, when firm fixed-effects<sup>62</sup> are taken into account to address the concern of unobserved heterogeneity in equation (4.2), the positive relationship between *female* and Tobin's Q is no longer significant ( $\beta = 0.002$ ,  $p = 0.470$ ), which is consistent with the result obtained by Carter et al. (2010) in the US market. The estimated coefficients on other variables, including *dual*, *fsize*, and obtained from the static FE approach are qualitatively different from those obtained from the static OLS one. This indicates that the relationship uncovered by the static OLS model may be driven by omitted variable biases.

However, it is noteworthy that the FE approach is implemented under the assumption of strict exogeneity which implies that the corporate governance variables and control variables are not correlated with the error term in the model. The assumption of strict exogeneity is criticised for its unreliability when the other sources of endogeneity, including simultaneity and dynamic endogeneity, are highly likely to arise in the board structure–firm performance relationship in general (Wintoki et al., 2012), or in the gender diversity–firm performance relationship in particular (Adams & Ferreira, 2009), and in the ownership structure–firm performance relationship (Yabei & Izumida, 2008). This suggests that while the FE method in this study produces better estimations, it cannot take into account other potential sources of endogeneity. As a consequence, it is hard to make reliable causal inferences from the results of equation (4.2), thus suggesting that the static FE model appears to be undesirable, at least in this study.

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<sup>62</sup> The Hausman test for a comparison between the fixed-effects and random-effects models was performed. The null hypothesis that the preferred model is random-effects is rejected, ( $\chi^2(9) = 624.10$ ,  $p = 0.00$ ), suggesting that the fixed-effects estimator should be employed.

### 5.2.1.2 The dynamic models

In another effort to capture unobserved heterogeneity, this study considers the one-year lagged performance variable as an explanatory variable<sup>63</sup>. As shown in Table 5.8, the estimated coefficient on *female* is statistically different from zero at the 5% level ( $\beta = 0.003$ ,  $p = 0.011$ ), thus providing support for the hypothesis  $H_{VN1}$ . Notably, it shows that past performance can significantly explain the variation in current performance ( $\beta = 0.698$ ,  $p = 0.00$ ). This is consistent with Wintoki et al. (2012), who showed the importance of using lagged performance variables to control for the dynamic nature of the corporate governance–firm performance relationship.

However, the coefficients of corporate governance variables in the dynamic OLS model are considerably smaller than those of the static OLS model. According to Wintoki et al. (2012), such a substantial reduction in the magnitude of the estimated parameters of key corporate governance variables in the dynamic model suggests that the current corporate governance variables are correlated with past firm performance. This again confirms the dynamic relationship between corporate governance and firm performance. It is important to notice that the  $R^2$  in the dynamic model (0.693) is over twice as many as the  $R^2$  in the static model (0.351). This indicates that including the past performance variable in the right-hand side of the model helps to improve considerably the explanatory power of the model, which in turn helps to explain more effectively the variation in the

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<sup>63</sup> In a preliminary analysis, it is found that all the coefficients on *industry* dummy variables included the dynamic OLS model are statistically insignificant at the 5% level. This suggests that *industry* dummies should not be included in this model. In order to confirm this, the Wald test is performed under the null hypothesis that the coefficients on all *industry* dummies are jointly equal to zero. The test result indicates that the null hypothesis cannot be rejected at any conventional levels of significance ( $p = 0.310$ ). For this reason, *industry* dummies are excluded from the official dynamic OLS estimations.

current performance. Although the dynamic OLS estimator is an improvement over the static models and although the findings are consistent with previous studies, they appear to be driven by endogenous biases, such as simultaneity, which cannot be controlled by the pooled OLS method. In addition, the presence of the lagged dependent variable among the regressors makes the OLS estimated parameters biased and inconsistent (Wooldridge, 2002).

The reason for applying the OLS and FE techniques to estimate equation (4.2) in a dynamic framework is that the estimates obtained from these two techniques can help to indicate whether the System GMM model is well-specified. It is documented in empirical econometric that the estimated coefficients on the lagged dependent variable ( $\alpha_1$ ) obtained from the OLS and FE methods are in turn considered to be the upper and lower bounds of a reasonable System GMM estimation (Bond, 2002). Therefore, the estimates made by the System GMM should be compared with those made by the OLS and FE estimators to detect potential biases in empirical studies (Bond, 2002).

This is because in the presence of the first-order autoregressive [AR(1)] structure in equation (4.2), the OLS estimates will be upward biased and inconsistent because of the correlation between lagged dependent variable and the time-invariant component of the error term (Nickell, 1981). Meanwhile, the traditional FE (within-groups) estimates will be downward biased and inconsistent (Nickell, 1981). This implies that to be a reasonable estimator, the System GMM must be able to produce an estimated coefficient on the lagged dependent variable ( $\alpha_1$ ) which should range between these two lower and upper bounds (Bond, 2002).

For this reason, as mentioned above, the empirical relationship between corporate governance structures and firm performance in a dynamic framework is undertaken by using the OLS, FE<sup>64</sup>, and system GMM approaches. This facilitates the comparison not only between the results of this study and those of previous studies, but also among the three models from which the most reasonable estimation will be confirmed.

As presented in Table 5.8, Table 5.9, and Table 5.11, the coefficient on one-year lagged Tobin's Q (*laglnq*) obtained from the System GMM estimator is significantly positive ( $\alpha_l = 0.611$ ) and lies between the ones obtained from the OLS ( $\alpha_l = 0.698$ ) and the FE estimators ( $\alpha_l = -0.057$ ). This suggests that the estimates obtained from the System GMM appear to be reasonable. As mentioned in Subsection 4.3.4, the bias of the estimated coefficient on the lagged dependent variable makes the other estimated parameters in the regression model using the OLS or FE methods highly questionable (Flannery & Hankins, 2013). Therefore, no further interpretation is provided for the results obtained from the FE approach (reported in Table 5.9).

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<sup>64</sup>The Hausman test for a comparison between the FE and RE estimators was performed under the null hypothesis that the preferred technique is the RE. It is found that the null hypothesis cannot be accepted ( $Chi-sq(9) = 698.78$ ;  $p = 0.00$ ), thus suggesting that the FE estimation procedure should be employed.

**Table 5.8: The relationship between corporate governance structures and performance of Vietnamese listed companies: A dynamic OLS estimation**

Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]		
Explanatory variables [ <i>notation</i> ]	b/[ <i>p</i> ]	<i>t</i>
	(1)	(2)
Intercept	-0.685* [0.056]	(-1.921)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.698*** [0.000]	(15.733)
Percentage of female directors (%) [ <i>female</i> ]	0.003** [0.011]	(2.546)
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.001 [0.291]	(-1.058)
Duality [ <i>dual</i> ]	0.037 [0.206]	(1.266)
Board size [ <i>lnbsize</i> ]	0.135** [0.028]	(2.212)
Ownership concentration (%) [ <i>block</i> ]	0.001* [0.088]	(1.710)
Firm age [ <i>lnfage</i> ]	0.051 [0.113]	(1.587)
Firm size [ <i>fsize</i> ]	-0.005 [0.708]	(-0.375)
Leverage (%) [ <i>lev</i> ]	0.001** [0.050]	(1.970)
Industry dummy variables [ <i>industry</i> ]		no
Firm fixed-effects		no
Year dummy variables [ <i>year</i> ]		yes
Number of observations		352
R-squared		0.693
<i>F</i> statistic		54.300***

Note: This table reports the result of dynamic OLS regression of firm performance (*lnq*) on corporate governance structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *t*-statistics are reported in parentheses and are based on cluster-robust standard errors (cluster on firm) corrected for potential heteroskedasticity and serial correlation in the error term. The *p*-values are presented in brackets. It should be noted that *industry* dummy variables are not included in this dynamic OLS model. *Year* dummy variables are included in the regression but not reported.

**Table 5.9: The relationship between corporate governance structures and performance of Vietnamese listed companies: A fixed-effects estimation**

Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]		
Explanatory variables [ <i>notation</i> ]	b/[ <i>p</i> ]	<i>t</i>
	(1)	(2)
Intercept	1.465 [0.600]	(0.526)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	-0.057 [0.306]	(-1.027)
Percentage of female directors (%) [ <i>female</i> ]	0.003 [0.309]	(1.022)
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.000 [0.845]	(-0.196)
Duality [ <i>dual</i> ]	0.143** [0.042]	(2.051)
Board size [ <i>lnbsize</i> ]	0.150 [0.403]	(0.839)
Ownership concentration (%) [ <i>block</i> ]	0.004** [0.023]	(2.300)
Firm age [ <i>lnfage</i> ]	0.245** [0.029]	(2.215)
Firm size [ <i>fsize</i> ]	-0.113 [0.286]	(-1.072)
Leverage (%) [ <i>lev</i> ]	0.008*** [0.001]	(3.305)
Industry dummy variables [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummy variables [ <i>year</i> ]		yes
Number of observations		352
R-squared		0.676
<i>F</i> statistic		36.042***

Note: This table reports the result of fixed-effects regression of firm performance (*lnq*) on corporate governance structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *t*-statistics are reported in parentheses and are based on cluster-robust standard errors (cluster on firm) corrected for potential heteroskedasticity and serial correlation in the error term. The *p*-values are presented in brackets. *Year* dummy variables are included in the regression but not reported.

## 5.2.2 Dynamic models: A System GMM estimation

### 5.2.2.1 Testing for endogeneity of the regressors

As mentioned in Chapter 2 and in Subsection 4.3.1, it is well-documented in corporate governance literature that all corporate governance variables used in equation (4.2) are endogenous variables. This subsection empirically checks the endogeneity of the regressors before proceeding with the System GMM specification. Accordingly, the DWH test for endogeneity of all the regressors is executed under the null hypothesis that the endogenous regressors may be actually treated as exogenous variables (Baum et al., 2007). Test statistics follow a Chi-squared (*Chi-sq*) distribution with the degrees of freedom equal to the number of suspected regressors (*laglnq*, *female*, *nonexe*, *dual*, *lnbsize*, *block*, *fsize*, and *lev*).

This study follows Schultz et al. (2010) and conducts the test based on the levels equation of firm performance and corporate governance variables in which one-year lagged differences of the regressors are employed as instrumental variables. The *industry dummies* and *lnfage* are included in the test specification and treated as exogenous variables. It is found that the null hypothesis cannot be accepted at any conventional levels of significance ( $Chi-sq(8) = 24.621$ ;  $p = 0.002$ ), thus suggesting that the regressors cannot be treated as exogenous variables, and that the System GMM model will be superior in terms of consistency when compared with the OLS and FE models.

### 5.2.2.2 The validity of the System GMM estimator

As mentioned in Subsection 4.3.5.2, the consistency of the System GMM estimator is significantly contingent upon the validity of instrumental variables

employed. This subsection diagnoses empirically whether the instruments are valid, (i.e., they are exogenous) by using the Hansen-J test of over-identification and the difference-in-Hansen tests of the exogeneity of instrument subsets. As reported in the last row of Table 5.11, the Hansen-J test yields a  $p$ -value of 0.299, suggesting that the null hypothesis of the test cannot be rejected at any conventional levels of significance. In other words, this suggests that the instruments employed in the System GMM model are valid.

This study also follows the recommendation of Roodman (2009b) about good practices in implementing the System GMM estimation and applies the difference-in-Hansen test to the subsets of System GMM-type instruments, as well as standard instrumental variables for the levels equation. Table 5.10 presents difference-in-Hansen tests of the exogeneity of instrument subsets, under the null hypothesis of joint validity of a given instrument subset. The results reported in Table 5.10 indicate that there is no statistical evidence to reject the null hypothesis, thus suggesting that the subsets of instruments are econometrically exogenous. Thus, the F-test statistic for the overall significance of the regression<sup>65</sup> (Table 5.11), and the results from Hansen-J test (Table 5.11), and difference-in-Hansen tests (Table 5.10), all support the view that the System GMM model appears to be well-specified.

### **5.2.2.3 Empirical results from the System GMM model**

Taking into account the concern of the dynamic nature of the board structure–firm performance relationship, this study follows Wintoki et al. (2012) in employing

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<sup>65</sup> Based on small-sample corrections, Chapters 5 and 6 report  $t$ -test instead of  $z$ -test statistics for the estimated coefficients. Likewise,  $F$  test statistics are reported for the overall fit of the System GMM models instead of *Wald Chi-squared* test statistics.

the System GMM estimator. The results reported in column 1 of Table 5.11 show that the percentage of female directors is positively and statistically significantly related to Tobin's Q at the 5% level ( $p = 0.066$ ), thus supporting hypothesis  $H_{VN1}$ . To avoid duplication and save space, the empirical results reported in Table 5.11 are not interpreted, while the empirical results obtained from the System GMM model will be interpreted in more detail in the next subsection 5.2.3.1.

**Table 5.10: Difference-in-Hansen tests of exogeneity of instrument subsets**

Tested instrument subsets	Test statistics	Degrees of freedom	$p$ -value
<b>Panel A: System GMM-type instruments</b>			
Instruments for levels equation as a group	9.27	8	0.320
$lnq_{it-2}$ and $lnq_{it-3}$ (for transformed equation)	2.05	2	0.359
$\Delta lnq_{it-1}$ (for levels equation)	2.86	1	0.091
Instruments for board structure variables	6.07	12	0.913
Instruments for other corporate governance and control variables	13.54	9	0.140
<b>Panel B: Standard instruments</b>			
2009 and 2010 year dummies, and $lnfage$	7.63	3	0.054

Note: This table presents difference-in-Hansen tests of exogeneity of instrument subsets, under the null hypothesis of joint validity of a specific instrument subset. The variables are as defined in Table 4.6. The test statistics are asymptotically Chi-squared distribution with the degrees of freedom equal to the number of questionable instruments (Roodman 2009).

GMM instrument subset used for levels equation includes one-year lagged differences of firm performance, board structure, ownership structure, capital structure, and control variables ( $\Delta lnq_{it-1}$ ;  $\Delta female_{it-1}$ ;  $\Delta nonexe_{it-1}$ ;  $\Delta dual_{it-1}$ ;  $\Delta lnbsize_{it-1}$ ;  $\Delta block_{it-1}$ ;  $\Delta fsize_{it-1}$ ; and  $\Delta lev_{it-1}$ ). GMM instrument subset used for board structure variables includes lag 1 of the first differences; lags 2 and 3 in levels of board structure variables ( $female$ ;  $nonexe$ ;  $dual$  and  $lnbsize$ ).

GMM instrument subset used for other corporate governance and control variables includes lag 1 of the first differences; lags 2 and 3 in levels of these variables, including  $block$ ,  $fsize$ , and  $lev$ . The subset of standard instruments for levels equation includes 2009 and 2010 year dummies, and  $lnfage$ . 2008 and 2011 year dummies are dropped due to collinearity.

## 5.2.3 Robustness checks

### 5.2.3.1 The sensitivity of the results to the reduction of instruments

The potential danger of the System GMM estimation implementation is instrument proliferation. Numerous numbers of instrumental variables in the System GMM estimator may bias the estimated coefficients towards those from non-IV estimators, such as the OLS, and have potential to severely weaken the power of the Hansen-J test in detecting the invalidity of the instruments employed (Roodman, 2009b). Therefore, it is essential to check whether the results are sensitive to the reduction of instrumental variables.

It is obvious that 28 instruments used in the System GMM model (Table 5.11) are small relative to the total of 120 clusters. This suggests that instrument proliferation is unlikely to be the problem. More carefully, following good standard practices in using the System GMM approach suggested by Roodman (2009a, 2009b), this subsection checks the sensitivity of the results reported in Table 5.11 with the reduction in the number of instrumental variables. Specifically, the instrument count is reduced from 28 instruments (Table 5.11) to 21 instruments (Table 5.12)<sup>66</sup>. As shown in columns 1 and 2 of Table 5.12, the results generally remain unchanged, suggesting that the findings are robust to the instrument reduction.

The results reported in Table 5.12 show that the percentage of female directors is positively and statistically significantly related to Tobin's Q at the 5% level ( $p =$

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<sup>66</sup> Besides using only one lag of each instrumenting variable rather than all available lags for instrumental variables, the author also applies a collapsing instruments approach to reduce the instruments' count. See Roodman (2009b) for more details about the techniques for reducing the instrument count in the System GMM estimation.

0.037), thus supporting hypothesis  $H_{VN1}$ . The coefficient on *female* ( $\beta = 0.021$ ) means that a ten percentage point increase in the ratio of female directors will, on average, increase the predicted Tobin's Q by approximately 21%, holding all other factors fixed. As mentioned in Subsection 5.2.1.1, this is an economically strong effect given that the board size of Vietnamese listed companies is small. This System GMM model result is consistent with those obtained by using both static and dynamic OLS models, thereby suggesting that the findings are robust to alternative econometric approaches.

This result is also consistent with the findings of several prior studies that confirm the positive relationship between gender diversity and firm performance (e.g. Campbell & Mínguez-Vera, 2008; Dezsö & Ross, 2012). This finding implies that board gender diversity seems to affect firm value, a point which is in general agreement with Adams et al. (2011, p. 31), who suggest that “shareholders may value female directors because they are better monitors and because they may alleviate value-decreasing stakeholder conflicts”.

As reported in Table 5.12, the coefficient on one-year lagged Tobin's Q is significantly positive at the 1% level ( $\beta = 0.633$ ,  $p = 0.00$ ), thus suggesting that past performance can help to control for the unobserved historical factors in the relationship between corporate governance and firm performance. This empirical evidence strongly supports the arguments of Wintoki et al. (2012), among others, that the link between corporate governance and firm performance should be examined in a dynamic framework.

Regarding the variable *nonexe*, the results obtained from the static OLS, FE, and dynamic OLS models show that the presence of non-executive directors has no

significant impact on firm performance, thus supporting the hypothesis **H<sub>VN2</sub>**. However, when moving to the System GMM model, the results reported in Table 5.12 show that the relationship is significantly negative at the 5% level ( $\beta = -0.019$ ,  $p = 0.017$ ). This conclusion is in line with Nowland (2008), who challenged agency theory's viewpoint regarding the vital role of non-executive directors in monitoring managerial behaviours and in improving firm performance.

Regarding the other corporate governance variables, it is observed that there is statistical evidence of a significantly positive link between concentrated ownership and firm performance ( $\beta = 0.014$ ,  $p = 0.027$ ), thus supporting the hypothesis **H<sub>VN5</sub>**. This result is consistent in all four models applied in this study and similar to that obtained by Victoria (2006) and Nguyen et al. (2014), among others. The positive relationship between concentrated ownership and performance is in agreement with the agency theory perspective that ownership concentration helps to reduce agency problems arising from the separation of ownership and control (Shleifer & Vishny, 1986). This, in turn, is expected to improve firm performance.

However, the significantly positive relationship between board size and firm performance, revealed by the static OLS, FE, and dynamic OLS models (Table 5.7 and Table 5.8), disappears when dynamic endogeneity and simultaneity are controlled by using the System GMM approach (Table 5.11 and Table 5.12). This result, supporting hypothesis **H<sub>VN4</sub>**, accords with the findings of Pham et al. (2011); Schultz et al. (2010); and Wintoki et al. (2012), who argued that such significant links, estimated by the pooled OLS and FE models, may be the result

of spurious correlations. Similarly, the relationship between CEO duality and firm performance changes from significantly positive to insignificantly negative when the author moves from the static OLS and FE models to the System GMM model. Although this result does not support hypothesis  $H_{VN3}$ , it does support the argument of Schultz et al. (2010); and Wintoki et al. (2012), among others, that taking the dynamic nature of the relationship between corporate governance structures and firm performance into consideration is essential to ensure the reliability of causal inferences.

With regards to the capital structure variable *leverage*, it is evident from Table 5.11 and Table 5.12 that the positive relationship between financial leverage and firm performance revealed by the FE and the dynamic OLS models disappears when the potential sources of endogeneity are taken into consideration. Several robustness checking models reported in Table 5.14 and Table 5.15 also confirm that the estimated coefficient on *leverage* is not statistically different from zero at any conventional levels of significance, suggesting that financial leverage has no impact on firm performance, thus not supporting hypothesis  $H_{VN6}$ . Although this finding is consistent with that of Nguyen et al. (2014); Schultz et al. (2010) and others, the relationship between financial leverage and firm performance is not really clear in practice. The discussion below provides some possible explanations for this finding.

A recent study undertaken by Jiraporn, Kim, Kim, and Kitsabunnarat (2012) suggested that debt financing and corporate governance mechanisms may substitute for each other to alleviate agency cost, whereby firm performance is improved. If that is the case, it is plausible to argue that the potential performance

effect of financial leverage in Vietnamese companies is likely to be replaced by the stronger effects of other corporate governance mechanisms, including ownership concentration (measured by *block*) and board gender diversity (measured by *female*). In consequence, the estimated coefficient on *leverage* should not be statistically different from zero.

In a similar vein, González (2013) argued that the relationship between financial leverage and firm performance is likely to be contingent upon two contradictory antecedents: (i) the cost of financial distress; and (ii) the benefits of the disciplinary role of debt financing. A firm with higher financial leverage may suffer from higher costs of financial distress but may also benefit from the disciplinary role of debt financing, by which managers are forced to take value-maximising decisions (González, 2013). Therefore, the net effect of financial leverage on firm performance can be neutralised if neither of these two antecedents is predominant.

It is worth noting that Hansen-J test of over-identification and difference-in-Hansen tests of exogeneity of instrument subsets have been implemented to confirm the validity of the robustness model. Accordingly, the Hansen-J test, as reported in the last row of Table 5.12, yields a *p*-value of 0.22, suggesting that the instruments employed in the robustness model are valid. The results of difference-in-Hansen tests reported in Table 5.13 also suggest that the subsets of instruments in the robustness model are econometrically exogenous. In addition, as reported in Table 5.12, the *F*-test statistic (12.721) for the overall significance of the robustness regression also supports the model specification.

**Table 5.11: The relationship between corporate governance structures and performance of Vietnamese listed companies: A System GMM estimation**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[<i>p</i>]</b>	<b>(<i>t</i>)</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-5.391*	(-1.755)
	[0.082]	
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.611***	(3.123)
	[0.002]	
Percentage of female directors (%) [ <i>female</i> ]	0.018*	(1.858)
	[0.066]	
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.017**	(-2.131)
	[0.035]	
Duality [ <i>dual</i> ]	-0.011	(-0.054)
	[0.957]	
Board size [ <i>lnbsize</i> ]	-1.178	(-1.248)
	[0.214]	
Ownership concentration (%) [ <i>block</i> ]	0.010*	(1.881)
	[0.062]	
Firm age [ <i>lnfage</i> ]	0.369**	(2.291)
	[0.024]	
Firm size [ <i>fsize</i> ]	0.243*	(1.850)
	[0.067]	
Leverage (%) [ <i>lev</i> ]	-0.003	(-0.352)
	[0.725]	
Industry dummy variables [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummy variables [ <i>year</i> ]		yes
Number of observations		352
<i>F</i> statistic		12.806***
Number of instruments		28
Number of clusters		120
Arellano-Bond test for AR(1) in first differences ( <i>p</i> -value)		0.146
Arellano-Bond test for AR(2) in first differences ( <i>p</i> -value)		not defined
Hansen-J test of over-identification ( <i>p</i> -value)		0.299

Note: This table reports the result of the System GMM regression of firm performance (*lnq*) on board structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *t*-statistics are reported in parentheses and are based on Windmeijer-corrected standard errors. The *p*-values are presented in brackets. Lags 2 and 3 of the levels of firm performance variable (*lnq*), board structure variables (*female*, *nonexe*, *dual*, and *lnbsize*) and other control variables (*block*, *fsize*, and *lev*) are employed as GMM-type instruments for the first-differenced equation. Lag 1 of the first differences of firm performance, board structure variables, and other control variables are used as GMM-type instruments for the levels equation. *Year* dummies and *lnfage* are treated as exogenous variables. *Year* dummy variables are included in the regression but not reported.

**Table 5.12: Robustness check of the sensitivity of the results to the instrumental variables' reduction**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[<i>p</i>]</b>	<b>(<i>t</i>)</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-4.795* [0.096]	(-1.680)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.633*** [0.000]	(3.791)
Percentage of female directors (%) [ <i>female</i> ]	0.021** [0.037]	(2.109)
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.019** [0.017]	(-2.429)
Duality [ <i>dual</i> ]	-0.017 [0.933]	(-0.084)
Board size [ <i>lnbsize</i> ]	-1.429 [0.172]	(-1.373)
Ownership concentration (%) [ <i>block</i> ]	0.014** [0.027]	(2.237)
Firm age [ <i>lnfage</i> ]	0.430** [0.011]	(2.578)
Firm size [ <i>fsize</i> ]	0.227* [0.084]	(1.744)
Leverage (%) [ <i>lev</i> ]	-0.000 [0.990]	(-0.013)
Industry dummies [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummies [ <i>year</i> ]		yes
Number of observations		352
<i>F</i> statistic		12.721***
Number of instruments		21
Number of clusters		120
Arellano-Bond test for AR(1) in first differences ( <i>p</i> -value)		0.085
Arellano-Bond test for AR(2) in first differences ( <i>p</i> -value)		not defined
Hansen-J test of over-identification ( <i>p</i> -value)		0.220

Note: This table presents robustness check of the sensitivity of the results obtained from the System GMM to the instruments' reduction. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *t*-statistics are reported in parentheses and are based on Windmeijer-corrected standard errors. The *p*-values are presented in brackets. Lags 2 and 3 of the levels of firm performance variable (*lnq*), lag 2 of the levels of board structure variables (*female*, *nonexe*, *dual*, and *lnbsize*) and other control variables (*block*, *fsize*, and *lev*) are employed as GMM-type instruments for the first-differenced equation. Lag 1 of the first differences of firm performance, board structure variables, and other control variables are used as GMM-type instruments for the levels equation. *Year* dummies and *lnfage* are treated as exogenous variables. *Year* dummy variables are included in the regression but not reported.

**Table 5.13: Difference-in-Hansen tests of exogeneity of instrument subsets used in the robustness model**

<b>Tested instrument subsets</b>	<b>Test statistics</b>	<b>Degrees of freedom</b>	<b><i>p</i>-value</b>
<b><i>Panel A: System GMM-type instruments</i></b>			
Instruments for levels equation as a group	10.82	8	0.212
$lnq_{it-2}$ and $lnq_{it-3}$ (for transformed equation)	1.36	2	0.506
$\Delta lnq_{it-1}$ (for levels equation)	1.55	1	0.213
Instruments for board structure variables	11.60	8	0.170
Instruments for control variables	10.56	6	0.103
<b><i>Panel B: Standard instruments</i></b>			
2009 and 2010 <i>year</i> dummies, and <i>lnfage</i>	6.25	3	0.100

Note: This table presents difference-in-Hansen tests of exogeneity of instrument subsets employed in the robustness model to check the sensitivity of the results to the instrumental variables' reduction. The test is under the null hypothesis of joint validity of a specific instrument subset. The variables are as defined in Table 4.6 The test statistics are asymptotically Chi-squared distribution with degrees of freedom equal to the number of questionable instrumental variables (Roodman 2009).

GMM instrument subset used for levels equation includes one-year lagged differences of firm performance, board structure, ownership structure, capital structure, and other control variables ( $\Delta lnq_{it-1}$ ;  $\Delta female_{it-1}$ ;  $\Delta nonexe_{it-1}$ ;  $\Delta dual_{it-1}$ ;  $\Delta lnbsize_{it-1}$ ;  $\Delta block_{it-1}$ ;  $\Delta fsize_{it-1}$ ; and  $\Delta lev_{it-1}$ ). GMM instrument subset used for board structure variables includes lag 1 of the first difference and lag 2 in levels of board structure variables ( $female_{it-2}$  and  $\Delta female_{it-1}$ ;  $nonexe_{it-2}$  and  $\Delta nonexe_{it-1}$ ;  $dual_{it-2}$  and  $\Delta dual_{it-1}$ ;  $lnbsize_{it-2}$  and  $\Delta lnbsize_{it-1}$ ).

GMM instrument subset used for the other corporate governance and control variables includes lag 1 of the first differences and lag 2 in levels of these variables ( $block_{it-2}$  and  $\Delta block_{it-1}$ ;  $fsize_{it-2}$  and  $\Delta fsize_{it-1}$ ;  $lev_{it-2}$  and  $\Delta lev_{it-1}$ ). The subset of standard instruments for levels equation includes 2009 and 2010 *year* dummies, and *lnfage*. 2008 and 2011 *year* dummies are dropped due to collinearity.

### 5.2.3.2 Robustness check with alternative corporate governance variables

As mentioned in Subsection 4.3.3.2, in order to check the robustness of the estimations reported in Table 5.11 and Table 5.12, this subsection follows Campbell and Mínguez-Vera (2008) and employs two alternative proxies for gender diversity, including a gender diversity dummy variable (*dlwomen*) and the *Blau index* for gender (*blau*).

The result reported in column 1 of Table 5.14 shows that the presence of female directors in the boardroom (measured by *dlwomen*) is positively related to firm value at the 10% level ( $p = 0.076$ ). The coefficient on *dlwomen* ( $\beta = 0.379$ ) implies that the difference in the predicted Tobin's Q between companies with at least one female director on their boards and those without is about 37.90% or, more exactly,  $100 \times [\exp(0.379) - 1] \approx 46\%$ .

Similarly, it is observed from column 2 of Table 5.14 that heterogeneous boards (measured by *blau*) have a statistically positive impact on firm performance at the 5% level ( $\beta = 1.461$ ,  $p = 0.023$ ). Thus, the positive relationship between board gender diversity and firm performance remains robust when alternative proxies for gender diversity are employed. It is also observed that the estimated coefficients on the other corporate governance structure variables reported in Table 5.14 are not qualitatively different from those reported in Table 5.11 and Table 5.12. This suggests that the findings of this chapter appear to display little variability across different proxies for corporate governance structures.

To capture the potential effect of the number of female directors, this study follows Liu et al. (2014) and includes in equation (4.2) one dummy variable that takes a value of one if there are at least two female directors and zero otherwise (denoted as *d2women*). It is reported in column 2 of Table 5.15 that the estimated coefficient on *d2women* ( $\beta = 0.610$ ) is statistically significant at the 5% level and considerably larger than that on *dlwomen* reported in column 1 of Table 5.14 ( $\beta = 0.379$ ). This finding suggests that boards with at least two female directors appear to have a stronger effect on firm performance than those with at least one.

**Table 5.14: Robustness check of the sensitivity of the results to alternative proxies for board gender diversity**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[p]</b>	<b>b/[p]</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-4.867 [0.134]	-4.560 [0.104]
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.629*** [0.000]	0.607*** [0.000]
Dummy variable for gender diversity (1) [ <i>d1women</i> ]	0.379* [0.076]	
Blau's index for gender [ <i>blau</i> ]		1.461** [0.023]
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.016*** [0.008]	-0.018*** [0.007]
Duality [ <i>dual</i> ]	-0.117 [0.484]	-0.078 [0.663]
Board size [ <i>lnbsize</i> ]	-1.051 [0.222]	-1.368 [0.149]
Ownership concentration (%) [ <i>block</i> ]	0.009** [0.045]	0.012** [0.022]
Firm age [ <i>lnfage</i> ]	0.275** [0.034]	0.378** [0.014]
Firm size [ <i>fsize</i> ]	0.228 [0.147]	0.222* [0.099]
Leverage (%) [ <i>lev</i> ]	-0.007 [0.433]	-0.003 [0.745]
Firm fixed-effects	yes	yes
Year dummies [ <i>year</i> ]	yes	yes
Number of observations	352	352
<i>F</i> statistic	14.562***	14.228***
Number of instruments	27	20
Number of clusters	120	120
Hansen-J test of over-identification ( <i>p</i> -value)	0.300	0.230

Note: This table presents robustness check of the sensitivity of the results obtained from the System GMM to alternative corporate governance structure variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *p*-values are presented in brackets. The *t*-statistics are based on Windmeijer-corrected standard errors and presented in parentheses. Lag 2 of the levels of firm performance, lags 2 and 3 of board structure and other control variables are employed as GMM-type instruments for the first-differenced equation of the model in column (1). Lag 2 of the levels of firm performance, board structure and other control variables are employed as GMM-type instruments for the first-differenced equation of the model in column (2). Lag 1 of the first differences of firm performance, board structure, and other control variables are used as GMM-type instruments for the levels equations in both the models. *Year* dummies and *lnfage* are treated as exogenous variables. *Year* dummies are included in both the models but not reported.

**Table 5.15: Robustness checks with alternative proxies for gender diversity**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[p]</b>	<b>b/[p]</b>
	(2)	(3)
Intercept	-5.261**	-4.120**
	[0.03]	[0.02]
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.602***	0.545***
	[0.00]	[0.00]
Dummy variable for gender diversity (2) [ <i>d2women</i> ]	0.610**	
	[0.05]	
Percentage of female directors (%) [ <i>female</i> ]		0.033**
		[0.04]
The square of <i>female</i> [ <i>female_squared</i> ]		-0.001
		[0.14]
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.018**	-0.012*
	[0.04]	[0.06]
Duality [ <i>dual</i> ]	0.009	-0.127
	[0.96]	[0.46]
Board size [ <i>lnbsize</i> ]	-0.973	-0.588
	[0.30]	[0.37]
Ownership concentration (%) [ <i>block</i> ]	0.012**	0.008*
	[0.03]	[0.06]
Firm age [ <i>lnfage</i> ]	0.374**	0.229*
	[0.02]	[0.10]
Firm size [ <i>fsize</i> ]	0.224*	0.166*
	[0.05]	[0.05]
Leverage (%) [ <i>lev</i> ]	-0.000	-0.003
	[0.97]	[0.51]
Firm fixed-effects	yes	yes
Year dummy variables [ <i>year</i> ]	yes	yes
Number of observations	352	352
<i>F</i> statistic	15.76***	14.84***
Number of instruments	22	30
Number of clusters	120	120
Hansen-J test of over-identification ( <i>p</i> -value)	0.15	0.16

Note: This table presents the robust results from estimating modified equation (4.2) using the System GMM approach. Column (2) presents the robust results when the dummy variable *d2women* is added to equation (4.2) to capture the potential effect of the number of female directors. Column (3) presents the robust results when a quadratic term of *female* (denoted as *female\_squared*) is included in equation (4.2) to empirically check for the possible non-linearity in the board gender diversity–performance relationship. The definitions of the variables are provided in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *p*-values are based on Windmeijer-corrected standard errors and presented in brackets. Year dummies are not reported.

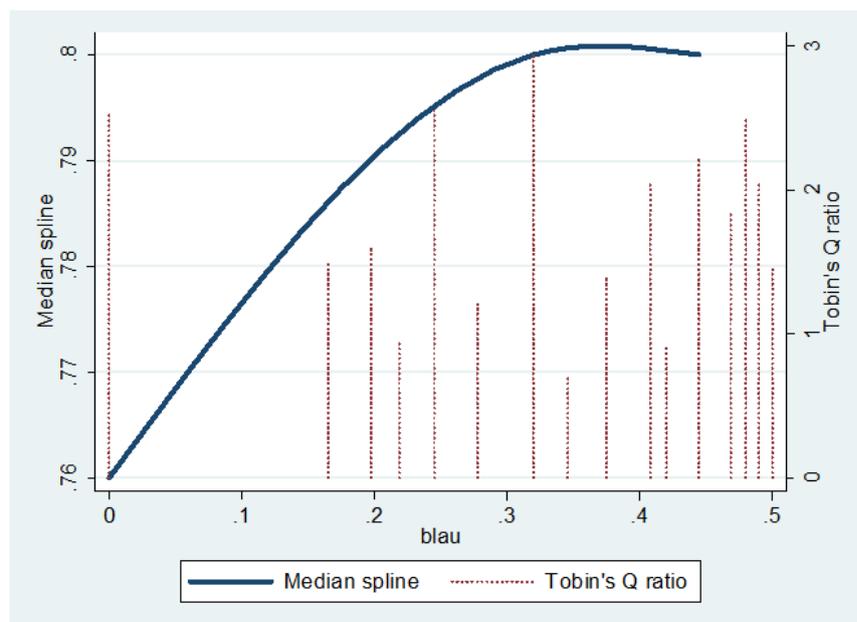
This empirical result generally supports the perspective of ‘critical mass theory’ proposed by Kanter (1977) that women may have a more significant effect on a group when they increase from a token number to form a significant minority of the group. In other words, if female board representation increases board effectiveness and firm performance, then that effect should be more pronounced when the number of female directors increases (Liu et al., 2014). However, given the significantly positive coefficient on both *d1women* and *d2women*, this study also supports the perspective of Zaichkowsky (2014), who suggests that although two or more women on boards appear to have a stronger effect on firm outcomes, even one woman can make a difference.

It is noteworthy that although the relationship between board gender diversity and firm performance appears to be significantly positive, it is not necessarily a linear relationship. To check empirically for possible non-linearity in the board gender diversity–performance relationship, a quadratic term of the variable *female* (denoted as *female\_squared*) is included in equation (4.2). In an un-tabulated analysis, the pooled OLS approach is applied to the modified equation (4.2) and the results show that: (i) the estimated coefficient on *female\_squared* is statistically insignificant ( $\beta = -0.0001$ ;  $p = 0.142$ ); and (ii) the estimated coefficient on *female* is still significantly positive ( $\beta = 0.0060$ ;  $p = 0.021$ ).

To further challenge these results, the System GMM estimation approach is applied to the modified equation (4.2) and the results are similar to those reported above. Specifically, as reported in column 3 of Table 5.15, the estimated coefficient on *female\_squared* is statistically insignificant ( $\beta = -0.001$ ;  $p = 0.140$ ), whereas the coefficient on the variable *female* is still significantly positive

( $\beta = 0.033$ ;  $p = 0.040$ ). The results obtained from the OLS and System GMM methods lead to a conclusion that there is not enough statistical evidence to support a non-linear relationship between board gender diversity and the performance of Vietnamese companies.

Nevertheless, one concern is that over-diversification will wipe out the variety and/or the balance of board gender diversity, so that gender diversification leading to an all-female BOD may be counterproductive. This argument raises an important empirical question: What is the breakpoint at which an undesired effect of gender diversification occurs? To find a possible answer to this question, the relationship between firm performance and board gender diversity is further explored by plotting a graph including a median-band plot together with a scatter-plot for *Tobin's Q* against the *Blau index*. The *Blau index* for gender is employed since, as mentioned earlier in Subsection 4.3.3.2, it allows for both aspects of diversity, that is, gender variety and gender balance.



**Figure 5.2: The median-spline plot and scatter-plot for Tobin's Q against the Blau index**

As shown by the median spline on Figure 5.2<sup>67</sup>, the medians of *Tobin's Q* increase with the medians of the *Blau index* until the latter reaches about 0.30 and then seem to remain unchanged when the *Blau index* goes beyond 0.30. This suggests that 0.30 is likely to be the breakpoint at which the undesired effect of gender diversification may occur. To check this result empirically, a segmented regression analysis is undertaken by dividing the sample into two separate datasets on the basis of the *Blau index*. Accordingly, the modified equation (4.2) is re-estimated on the sub-dataset with a *Blau index* smaller than 0.30, and on the other with a *Blau index* equal to or larger than 0.30. The results reported in Table 5.16 show that the relationship between *Tobin's Q* and the *Blau index* appears to change over different intervals of the *Blau index*.

More specifically, for firms with a *Blau index* smaller than 0.30, the *Blau index* is significantly positively related to financial performance (columns 2 and 3 of Table 5.16). By contrast, for firms with a *Blau index* equal to or larger than 0.30, the relationship becomes insignificant (columns 4 and 5 of Table 5.16). These results remain robust when alternative econometric techniques are applied and, consistent with what can be observed from the median-band plot, there is likely to be an upward trend in *Tobin's Q* as the *Blau index* increases to 0.30. After this point, there is no further significant trend in the *Tobin's Q*.

The critical *Blau index* of 0.30 can be approximately translated into two critical percentages of female directors: either 20% or 80%. However, it is impractical to consider the critical percentage of 80%, given that the maximum proportion of female directors on boards in the sample is just about 67%. Consequently, it is

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<sup>67</sup> A related two-way median spline providing a smoother version of the median-band plot is included in Figure 5.2.

evident from the aforementioned empirical analysis that a *Blau index* of about 0.30, corresponding to a ratio of about 20% of women on the BOD, is the breakpoint at which the potential performance effect of female board representation may change. In order to check for robustness, the segmented regression procedure is repeated in which the sample is divided into two datasets on the basis of *female*. Accordingly, the modified equation (4.2) is re-estimated on the sub-dataset with *female* less than 20%, and on the other with *female* equal to or greater than 20%. It is found that the results (unreported) are not qualitatively different from those reported in Table 5.16.

**Table 5.16: Robustness checks using a segmented regression analysis**

Regressant: [ <i>lnq</i> ]	<i>Blau Index</i> < 0.3		<i>Blau Index</i> ≥ 0.3	
	OLS	System GMM	OLS	System GMM
	b/[p]	b/[p]	b/[p]	b/[p]
(1)	(2)	(3)	(4)	(5)
...	...	...	...	...
Blau index [ <i>blau</i> ]	0.550*** [0.00]	1.493** [0.04]	0.215 [0.58]	0.265 [0.53]
...	...	...	...	...
No observations	209	209	143	143
R-squared	0.70		0.70	
<i>F</i> statistic	31.90***	10.80***	26.46***	14.10***
Hansen-J test ( <i>p</i> -value)		0.43		0.47

Note: This table presents the estimated coefficient on *blau* obtained from a segmented regression analysis in which the sample is divided into two separate datasets on the basis of the *Blau index*. Accordingly, modified equation (4.2) is estimated on the sub-dataset in which the *Blau index* is smaller than 0.30, and on the other sub-dataset in which the *Blau index* is equal to or larger than 0.30. Columns (2) and (4) present the results obtained from the pooled OLS approach. Columns (3) and (5) present the results obtained from the System GMM approach. The definitions of the variables are provided in Table 4.6.

Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *p*-values are presented in brackets. The *p*-values reported in columns (2) and (4) are based on cluster-robust standard errors corrected for potential heteroskedasticity and serial correlation of the error term. The *p*-values reported in columns (3) and (5) are based on Windmeijer-corrected standard errors. To save space, the estimated coefficients on other variables are not reported.

Although it is difficult to answer explicitly what the mechanism behind the scene is, for the purposes of the current study, one possible explanation for this finding

could be that greater gender diversity on boards will add value as long as the potential benefits obtained from the diversification outweigh its costs. The author believes that the trade-off between the costs and benefits of board gender diversification may offer insight into developing a theoretical framework that can provide a clear-cut prediction about the nature of the board gender diversity–firm performance relationship.

### **5.3 SUMMARY**

To address the first research question of this thesis, Chapter 5 investigates the relationship between corporate governance structures and financial performance of companies operating in the Vietnamese market characterised by a weak corporate governance system. Using a dynamic panel modelling approach, this chapter concludes that corporate governance structures matter for firm performance in the Vietnamese market even after controlling for the potential sources of endogeneity inherent in this relationship. More precisely, it is found that there is econometrical evidence to support the hypotheses  $H_{VN1}$ ;  $H_{VN4}$ ; and  $H_{VN5}$ . Meanwhile, the others  $H_{VN2}$ ;  $H_{VN3}$ ; and  $H_{VN6}$  are not supported by this study. The empirical findings obtained from this chapter are summarised and reported in Table 5.17.

Noticeably, this chapter documents that gender diversity in the BOD of publicly listed companies in Vietnam tends to have a positive effect on financial performance measured by Tobin's Q. It is also observed that the number of female directors in the boardroom makes a difference. Boards with at least one female director seem to outperform those with none, and boards with at least two female directors appear to have a stronger effect on firm performance than those with at

least one. Furthermore, this chapter finds that the nature of the board gender diversity–financial performance of Vietnamese listed companies may change when the percentage of women reaches the breakpoint of about 20%.

**Table 5.17: Summary of empirical findings for the Vietnamese market**

Hypotheses	Tested relationships	Support hypotheses	Findings
H <sub>VN1</sub>	Board gender diversity–performance	Yes	+*
H <sub>VN2</sub>	Board composition–performance	No	–*
H <sub>VN3</sub>	Board leadership structure–performance	No	∅
H <sub>VN4</sub>	Board size–performance	Yes	∅
H <sub>VN5</sub>	Ownership concentration–performance	Yes	+*
H <sub>VN6</sub>	Capital structure–performance	No	∅

Note: This table presents the summary of empirical evidence on the relationship between corporate governance structures and financial performance of listed companies in Vietnam. The table is based on the robust estimation results reported in Table 5.12. Symbols (+), (–) and (∅) represent positive, negative, and no significant relationships, respectively. Asterisk (\*) indicates significance at the 10% level or better.

Additionally, it is well-documented in this chapter that the positive effect of ownership concentration on firm performance is consistent in all four empirical models applied. This empirical finding supports the prediction of agency theory about the efficient monitoring effect of large shareholders in markets with highly concentrated ownership. The next chapter continues to address the first research question of this thesis by using a panel dataset collected from Singapore, a market characterised by a well-established corporate governance system.

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# CHAPTER 6

## CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE IN SINGAPORE<sup>68</sup>

### 6.0 INTRODUCTION

Applying a similar approach to the previous chapter, this chapter investigates the relationship between corporate governance structures and financial performance of Singaporean listed companies. The findings attained from Chapters 5 and 6 address the first research question of this thesis regarding whether the causal relationship between corporate governance structures and financial performance persist in these two markets when the dynamic nature of this relationship is taken into consideration.

The structure of this chapter is as follows. Section 6.1 presents descriptive analyses to provide readers with an initial look at the dataset. The slow-changing characteristic of corporate governance variables of the Singaporean market is discussed in Subsection 6.1.3. Multiple regression analyses will be introduced in Section 6.2. A summary of the empirical findings obtained from this chapter is provided in Section 6.3.

### 6.1 PRELIMINARY DATA ANALYSIS

As presented in Table 4.5, the panel dataset for the Singaporean market includes 1028 firm-year observations which have relatively full information on key corporate governance variables covering a four-year period from 2008 to 2011.

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<sup>68</sup> A version of this chapter has been published as a scholarly article in **Economic Modelling**, vol 40(C), pp.1-11, under the title 'A dynamic estimation of governance structures and financial performance for Singaporean companies'. The content of this chapter is reproduced from the article with permission from Elsevier (License number: 3370481040535 | Date: April 15, 2014).

Following Balatbat et al. (2004); Cornett et al. (2007) among others, this study drops 20 firm-year observations within the first and beyond the 99<sup>th</sup> percentiles to ensure the findings are not driven by the outliers of Tobin's Q. As a result, the final sample for the Singaporean market includes 1008 firm-year observations.

Applying a similar approach to Chapter 5, this chapter reports descriptive statistics based on individual samples to maximise the obtainable sample sizes. This, as a consequence, provides the best possible statistics of corporate governance and firm performance in Singapore. In the case of static multiple regression models, a common sample including 931 firm-year observations will be used. This common sample is obtained by removing 77 firm-year observations in which there are one or more missing values in any variables used in the static models.

When the dynamic models are applied to the dataset, 250 observations are lost due to the use of one-year lagged Tobin's Q as an explanatory variable in the dynamic models. In addition, 46 observations with missing values in the variables used in the models are also removed from the sample. Therefore, the common sample used for formal dynamic multiple regression models is finally reduced from 1008 to 712 firm-year observations.

For other models used for robustness checks, the common sample sizes are reported either in the relevant tables of results or in attached footnotes. Table 6.1 summarises the general information of the sample sizes employed in alternative situations of analysis for the Singaporean market.

**Table 6.1: Sample sizes of alternative research models for Singapore**

1	The initial sample size	<b>1028</b>
2	The number of outliers of Tobin's Q excluded	20
3	The final sample size* (3) = (1) – (2)	<b>1008</b>
<hr/>		
4	<b><i>Panel A: For static models</i></b>	
<hr/>		
5	The number of observations removed because of missing values in variables used in the static models	77
6	The common sample size for the static models** (6) = (3) – (5)	<b>931</b>
<hr/>		
7	<b><i>Panel B: For dynamic models</i></b>	
<hr/>		
8	The number of observations lost because of using one-year lagged Tobin's Q as an explanatory variable in the dynamic models	250
9	The number of observations lost because of missing values in variables used in the dynamic models	46
10	The common sample size for dynamic models** (10) = (3) – (8) – (9)	<b>712</b>

Note: (\*) individual samples' sizes may be various because of missing values. (\*\*) For other models used for robustness checks, the common sample sizes are reported either in the relevant tables of results or in attached footnotes. This table is based on data downloaded from *Thomson One Banker Database* and the website of *Singapore Exchange Ltd. Company*, including companies' annual reports (accessed in December 2011).

### 6.1.1 Descriptive statistics

Table 6.2 presents the summary of descriptive statistics for the variables used in equation (4.2) the sampling period 2008–2011. The mean (median) of Tobin's Q is 0.82 (0.68). Given that a Tobin's Q ratio greater than one is favourable, the smaller-than-one mean value of Tobin's Q suggests that the companies, on an average, did not create value for the shareholders during the sampling period. The mean percentage of female directors is 7.89% which is two percentage points higher than the total Asian region (6%) reported by Sussmuth-Dyckerhoff et al.

(2012). However, this percentage is relatively lower when compared to other mature markets such as the US or Australia. Arguably, the gap between female representation on the boards of Singapore's listed companies and that of developed countries remains large (CGIO, 2011, 2012). There is a wide variation in the percentage of non-executive directors across the sample firms. While the maximum percentage of non-executive directors is about 83%, the minimum is zero percent. On average, about 15% of board directors in the sample are non-executive, and approximately 47% are independent directors. Approximately 35% of chairpersons concurrently hold CEO positions, indicating that role duality is quite uncommon in Singapore.

The mean (median) number of directors on boards is around seven, which is in line with that reported by Witt (2012). The mean (median) percentage of stock held by the 20 largest shareholders (*blocktop20*) is approximately 75% (79%). Whereas, the mean (median) percentage of stock held by shareholders who own at least 5% of the common stock (*block*) is around 44% (49%). The values for *blocktop20* and *block* reflect that ownership concentration is relatively high in Singapore, which is consistent with the observation of Claessens, Djankov, and Lang (2000) regarding highly concentrated ownership structure in almost all Asian markets.

Despite having a highly concentrated ownership structure, the rights of investors, especially minority shareholder rights, are still well protected (World Bank, 2013). Indeed, the World Bank (2013) indicates that Singapore has been ranked second out of 185 economies on the strength of investor protection over the two years 2012 and 2013.

**Table 6.2: Descriptive statistics**

	<b>Observations</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
Tobin's Q ratio	1008	0.82	0.68	0.50	0.23	3.45
Percentage of female directors (%)	1003	7.89	0.00	10.66	0.00	50.00
Percentage of non-executive directors (%)	1004	15.00	14.29	15.61	0.00	83.33
Percentage of independent directors (%)	1004	46.84	44.44	13.22	0.00	90.91
CEO duality	1005	0.35	0.00	0.48	0.00	1.00
Board size (person)	1005	6.94	7.00	1.83	4.00	14.00
Ownership concentration (%)	981	43.75	48.55	24.74	0.00	95.39
Ownership concentration top20 (%)	987	75.44	78.58	14.52	23.58	99.35
Firm age (year)	978	10.56	9.00	8.38	0.00	43.00
Firm size [Ln(Total assets)]	1008	19.25	18.93	1.50	16.15	24.66
Leverage (%)	1008	19.46	17.18	17.09	0.00	101.46

Note: This table reports descriptive statistics based on individual samples of which the sizes may be various because of missing values. The variables are as defined in Table 4.6. 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. This table is based on data downloaded from *Thomson One Banker Database* and the website of *Singapore Exchange Ltd. Company*, including companies' annual reports (accessed in December 2011).

### 6.1.2 Correlation matrix and multi-collinearity diagnostic

Table 6.3 shows a pair-wise correlation matrix for the key variables used in equation (4.2) as well as in robustness checks<sup>69</sup>. A significantly positive correlation between *lnbsize* and dependent variable indicates that companies with larger board size tend to have higher firm value. The correlation coefficient between *lnbsize* and *fsize* is 0.56 and statistically significant at the 1% level. This may suggest that larger companies tend to have larger boards.

Two proxies for ownership concentration, namely *block* and *blocktop20*, are significantly positively correlated with the percentage of non-executive directors (*nonexe*) thus indicating that companies with a higher level of concentrated ownership also tend to have more non-executive directors on their boards. Importantly, the correlation coefficient between one-year lags of Tobin's Q and the current values of Tobin's Q is 0.75 ( $p = 0.00$ ). This shows that past performance is strongly positively correlated with current performance. This evidence supports the proposition suggested by Wintoki et al. (2012) that the appropriate empirical model for the studies of the impact of corporate governance structures on performance should be a dynamic model in which past performance is used as an explanatory variable.

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<sup>69</sup> As mentioned earlier in Chapter 5, a pair-wise correlation coefficient between a pair of variables is computed from all observations that have valid data on those two variables. Therefore, the pair-wise correlation matrix is based on various individual samples.

For comparative purposes, a case-wise correlation matrix based on the common sample of 712 firm-year observations in the Singaporean market is also reported in Appendix 4. In contrast to the pair-wise correlation matrix, the case-wise correlation matrix is calculated on the basis of only those observations for which no selected variables are missing. It is observed from Table 6.3 and Appendix 4 that the correlation coefficients between a given pair of variables are not qualitatively different from each other regardless how they are calculated.

As reported in Table 6.3, the largest significant correlation coefficient among independent variables used in equation (4.2) is 0.56 which is well below the threshold of 0.80 suggested by Damodar (2004). This suggests that the multi-collinearity issue is unlikely to be a serious problem in empirical estimations of this chapter. The formal diagnostic of multi-collinearity presented in the last column of Table 6.3 indicates that the values of VIFs for all the explanatory variables are also well below the threshold of 10. The evidence provided above leads to a conclusion that there is no multi-collinearity issue in the estimations for the Singaporean market.

### **6.1.3 The slow-changing characteristic of corporate governance variables**

Following a similar approach to Subsection 5.1.3 in Chapter 5, this subsection investigates the within-firm variance of the independent variables employed in equation (4.2). It is observed from Table 6.4 that the within-firm variations of the variables *female*, *nonexe*, *indep*, *dual*, *lnbsize*, *block* and *blocktop20* are all lower than their between-firm variations. This finding suggests that the corporate governance variables used for the Singaporean market do not vary greatly over time, which is consistent with Brown et al. (2011), who reported that most corporate governance variables do not change so much over time.

As mentioned earlier in Subsection 5.1.3 of Chapter 5, the empirical model (4.2) will be estimated by the System GMM method which is considered to be superior to other panel estimators (e.g., the FE or AB Difference GMM) for dealing with the highly persistent characteristic of the explanatory variables (Antoniou et al., 2008; Hoechle et al., 2012).

**Table 6.3: Pair-wise correlation coefficients and variance inflation factor coefficients**

	<i>lnq</i>	<i>female</i>	<i>nonexe</i>	<i>indep</i>	<i>dual</i>	<i>lnbsize</i>	<i>block</i>	<i>blocktop20</i>	<i>lnfage</i>	<i>fsize</i>	<i>lev</i>	<i>laglnq</i>	VIFs
<i>lnq</i>	1.00												
<i>female</i>	0.03	1.00											1.06
<i>nonexe</i>	0.06*	-0.11***	1.00										1.59
<i>indep</i>	0.15***	-0.03	-0.45***	1.00									1.62
<i>dual</i>	0.04	0.09***	-0.27***	0.08**	1.00								1.17
<i>lnbsize</i>	0.17***	-0.08***	0.28***	-0.14***	-0.23***	1.00							1.69
<i>block</i>	0.04	-0.11***	0.24***	-0.10***	-0.15***	0.26***	1.00						1.71
<i>blocktop20</i>	0.06*	-0.05	0.15***	-0.07**	-0.02	0.25***	0.62***	1.00					1.65
<i>lnfage</i>	-0.11***	0.04	0.02	0.15***	0.02	0.12***	0.06*	-0.02	1.00				1.22
<i>fsize</i>	0.11***	-0.04	0.09***	0.20***	-0.11***	0.56***	0.25***	0.29***	0.25***	1.00			2.02
<i>lev</i>	0.13***	0.04	-0.10***	0.00	0.04	0.05	0.09***	0.00	-0.14***	0.29***	1.00		1.26
<i>laglnq</i>	0.75***	-0.00	0.02	0.20***	0.05	0.10***	0.01	-0.00	-0.10***	0.08**	0.12***	1.00	1.15

Note: This table presents pair-wise correlation coefficients which are based on various individual samples. The variance inflation factors (VIFs) are based on the common sample of 712 firm-year observations. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). Raw data are downloaded from *Thomson One Banker Database* and the website of *Singapore Exchange Ltd. Company*, including listed companies' annual reports (accessed in December 2011).

**Table 6.4: Overall, between and within standard deviations of the corporate governance variables for the Singaporean market**

Variables	Standard Deviations		
	<i>overall</i>	<i>between</i>	<i>within</i>
Percentage of female directors (%)	10.66	10.29	2.69
Percentage of non-executive directors (%)	15.61	14.54	5.65
Percentage of independent directors (%)	13.22	12.38	4.71
CEO duality	0.48	0.46	0.13
Board size (person)	1.83	1.75	0.52
Ownership concentration (%)	24.74	20.90	13.46
Ownership concentration top20 (%)	14.52	14.20	3.28

Note: This table reports overall, between and within standard deviations of the corporate governance variables for the Singaporean market based on various individual samples. The variables are as defined in Table 4.6. For interpretation purposes, the standard deviations of *board size* are calculated on the basis of levels instead of logarithmic form. Raw data are downloaded from *Thomson One Banker Database* and the website of *Singapore Exchange Ltd. Company*, including listed companies' annual reports (accessed in December 2011).

## 6.2 MULTIPLE REGRESSION ANALYSIS

It should be remembered that most previous studies examine the corporate governance–firm performance relationship in a static framework in which the potential effect of past performance on current performance and corporate governance structures is ignored. This study therefore investigates the relationship in a dynamic modelling framework in which the lagged dependent variable is employed as an explanatory variable.

However, in the presence of the dynamic structure in equation (4.2), the OLS estimation on  $\alpha_I$  will be upward biased while the FE estimation on  $\alpha_I$  will be downward biased when the panel is short (Nickell, 1981). It follows that the estimates obtained from the OLS and FE methods can be considered to be upper

bound and lower bound for reasonable estimates obtained from the System GMM method, respectively (Bond, 2002). As a consequence, it is necessary to compare the estimates provided by the System GMM with those provided by the OLS and FE estimators in order to detect potential biases in empirical studies (Bond, 2002).

Applying a similar approach to Chapter 5, the Subsection 6.2.1 reports the empirical findings attained from estimating equation (4.2) through the use of alternative regression techniques, such as the OLS and FE<sup>70</sup>, before proceeding with the more complicated System GMM model. By doing so, this study aims to: (i) check the robustness of the findings across different econometric estimation techniques; (ii) compare the findings of the current study with those of previous relevant studies; and (iii) follow the good practices suggested by Bond (2002) that the consistent System GMM estimator should be compared with simpler estimators such as the pooled OLS or FE estimator to detect potential biases in empirical studies.

### **6.2.1 Static vs. dynamic models: Pooled OLS and FE estimations**

The empirical analysis in this subsection commences with the pooled OLS model to have a preliminary look at the relationship between corporate governance and firm performance of Singaporean listed companies. Then, the potential effect of time-invariant unobserved heterogeneity across firms will be controlled by using common estimation approaches for panel data, such as the FE and random-effects (RE) approaches. The Hausman test for a comparison between the FE and RE models was performed under the null hypothesis that the preferred model is

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<sup>70</sup>For the static models using the OLS and FE methods, the coefficient on one-year lagged Tobin's Q ( $\alpha_l$ ) is assumed to be zero.

random-effects. It is found that the null hypothesis cannot be accepted at any conventional level of significance ( $Chi-sq(9) = 698.78; p = 0.00$ ), suggesting that the FE estimation procedure should be employed. To save space and to avoid repeating similar interpretations to Chapter 5, this subsection only signals the findings obtained from estimating equation (4.2) using the pooled OLS and FE methods<sup>71</sup>.

First, the explanatory power of the dynamic models is improved when compared to the static ones (as evidenced by the considerably higher value of  $R^2$ ) regardless of the estimation techniques used. This indicates that including a lagged dependent variable in the right-hand side of equation (4.2) is necessary to control for the persistence of firm performance and mitigate potential omitted variable biases (Wooldridge, 2002). This also supports the view suggested by Wintoki et al. (2012) that the relationship between corporate governance structures and firm performance should be investigated in a dynamic framework.

Second, the estimated coefficient on one-year lagged Tobin's Q ( $laglnq$ ) obtained from the System GMM estimator<sup>72</sup> ( $\alpha_l = 0.308$ ) is well below the one obtained from the OLS ( $\alpha_l = 0.657$ ) but well above the one obtained from the FE estimator ( $\alpha_l = -0.050$ ). In line with Bond (2002), this suggests that the System GMM is likely to produce reasonable estimates, at least better than those of the OLS and FE approaches.

Third, it can be observed that the estimated coefficient on the variable *block* appears to be robust across different econometric estimation techniques, thus

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<sup>71</sup> The detailed results obtained from the pooled OLS and FE methods are fully reported in Appendix 5; Appendix 6; and Appendix 7.

<sup>72</sup> Reported in Table 6.6.

supporting the hypothesis **H<sub>SG5</sub>**. This suggests that the performance effect of ownership concentration in the Singaporean market seems to persist even after controlling for unobserved fixed-effects across firms.

Fourth, it can be also observed from Appendix 6 that the presence of female directors in the boardrooms of Singaporean listed companies has no significant effect on firm performance. However, once time-invariant unobserved heterogeneity across firms is controlled by using the FE method (Appendix 7), the relationship between *female* and *lnq* is now negative, but not statistically different from zero at the 5% level. This may suggest that the positive correlation between board gender diversity and firm performance in the Singaporean market reported by the OLS estimator (Appendix 6) is driven by omitted firm characteristics.

Finally, it is likely that there is no significant relationship between board composition (measured by *nonexe*) and firm performance (measured by *lnq*). This finding is robust when different estimation techniques are employed, thus providing support for the hypothesis **H<sub>SG2</sub>**. Meanwhile, the estimated coefficients on the other corporate governance variables in both static and dynamic models provided by the OLS and FE techniques are inconclusive.

## **6.2.2 Dynamic models: A System GMM estimation**

### **6.2.2.1 Testing for endogeneity of the regressors**

Applying a similar approach to Chapter 5, this subsection reports the DWH test for endogeneity of all regressors as a group. As aforementioned in Subsection 4.3.5.1, the test is under the null hypothesis that the endogenous regressors may actually be treated as exogenous variables (Baum et al., 2007).

Following Schultz et al. (2010), the test is undertaken based on the levels equation of firm performance and corporate governance variables. Test statistics follow a Chi-squared (*Chi-sq*) distribution with the degrees of freedom equal to eight, which is the number of explanatory variables checked for endogeneity. The instrumental variables are one-year lagged differences of independent variables, including  $\Delta \ln q_{it-1}$  ;  $\Delta female_{it-1}$  ;  $\Delta nonexe_{it-1}$  ;  $\Delta dual_{it-1}$  ;  $\Delta \ln bsize_{it-1}$  ;  $\Delta block_{it-1}$  ;  $\Delta fsize_{it-1}$  ; and  $\Delta lev_{it-1}$ . Year dummies, industry dummies and *lnfage* are included in the test specification and treated as exogenous variables.

The DWH test's result indicates that the null hypothesis cannot be accepted at any conventional levels of significance ( $Chi-sq(8) = 25.67$ ;  $p = 0.001$ ). This suggests that the endogeneity in the corporate governance–firm performance relationship in the Singaporean market is a significant concern. Therefore, it is argued that the OLS and FE estimators cannot produce unbiased and consistent parameter estimates, and that applying the System GMM is necessary.

#### **6.2.2.2 The validity of the System GMM estimator**

As mentioned in Subsection 4.3.5.2, the validity of the System GMM estimation is very much affected by the validity of instrumental variables. It is therefore very important to diagnose whether the instruments employed in the System GMM regressions are exogenous. For this reason, several formal tests, including the Hansen-J test of over-identification and the difference-in-Hansen test of exogeneity of instrument subsets, have been conducted to confirm the validity of the System GMM estimator used in this chapter.

As presented in the last row of Table 6.6, the Hansen-J test yields a *p*-value of 0.791 suggesting that the instrumental variables used in the System GMM model

are valid. In an additional analysis, the author follows good practice in implementing the System GMM estimation recommended by Roodman (2009b) and applies the difference-in-Hansen tests of exogeneity to the subsets of System GMM-type instrumental variables, and standard instruments. The results of the difference-in-Hansen tests are reported in Table 6.5.

**Table 6.5: Difference-in-Hansen tests of exogeneity of instrument subsets**

<b>Tested instrument subsets</b>	<b>Test statistics</b>	<b>Degrees of freedom</b>	<b>p-value</b>
<b><i>Panel A: System GMM-type instruments</i></b>			
Instruments for levels equation as a group	6.69	8	0.571
$lnq_{it-2}$ and $lnq_{it-3}$ (for transformed equation)	0.03	2	0.983
$\Delta lnq_{it-1}$ (for levels equation)	0.07	1	0.796
Instruments for board structure variables	5.43	12	0.942
Instruments for other corporate governance and control variables	7.72	9	0.563
<b><i>Panel B: Standard instruments</i></b>			
2009 and 2010 year dummies, and $lnfage$	2.17	3	0.538

Note: This table presents difference-in-Hansen tests of exogeneity of instrument subsets, under the null hypothesis of joint validity of a specific instrument subset. The variables are as defined in Table 4.6. The test statistics are asymptotically chi-squared distribution with degrees of freedom equal to the number of questionable instrumental variables (Roodman 2009).

GMM instrument subset used for levels equation includes one-year lagged differences of firm performance variable, board structure variables, and other control variables ( $\Delta lnq_{it-1}$ ;  $\Delta female_{it-1}$ ;  $\Delta nonexe_{it-1}$ ;  $\Delta dual_{it-1}$ ;  $\Delta lnbsize_{it-1}$ ;  $\Delta block_{it-1}$ ;  $\Delta fsize_{it-1}$ ; and  $\Delta lev_{it-1}$ ). GMM instrument subset used for board structure variables includes lag 1 of the first differences; lags 2 and 3 in levels of board structure variables namely *female*; *nonexe*; *dual* and *lnbsize*.

GMM instrument subset used for other corporate governance and control variables includes lag 1 of the first differences; lags 2 and 3 in levels of these variables, including *block*, *fsize*, and *lev*. The subset of standard instruments for levels equation includes 2009 and 2010 year dummies, and *lnfage*. 2008 and 2011 year dummies are dropped due to collinearity.

Specifically, the author tests the validity of five subsets of System GMM-type instrumental variables including: (i) all GMM instruments for levels equation as a group; (ii) GMM instruments for lagged dependent variable for transformed

equation; (iii) GMM instruments for lagged dependent variable for levels equation; (iv) GMM instruments for board structure variables including *female*, *nonexe*, *dual*, and *lnbsize*; and (v) GMM instruments for the other corporate governance and control variables including *block*, *fsize*, and *lev*. The subset of standard instruments for levels equation including 2009 and 2010 *year* dummies and *lnfage* is also tested (Table 6.5). The tests are under the null hypothesis of joint validity of a specific instrument subset. The test results reported in Table 6.5 suggest that all the subsets of instruments employed in the System GMM model are econometrically exogenous.

### **6.2.2.3 Empirical results from the System GMM model**

This subsection reports the empirical results obtained from the System GMM model. As presented in Table 6.6, the coefficient on one-year lagged Tobin's Q ratio is found to be statistically positive at the 5% level of significance ( $\beta = 0.308$ ,  $p = 0.014$ ). This implies that past firm performance has significant effect on the current one. This finding is consistent with recent studies (see, e.g., Schultz et al., 2010; Wintoki et al., 2012 among others) suggesting that past firm performance should be considered an important variable to control for the dynamic nature of the corporate governance–firm performance relationship.

Taking into account the concerns of simultaneity and dynamic endogeneity, the result reported in Table 6.6 shows that the presence of female directors in the boardroom is significantly negatively correlated with firm performance ( $\beta = -0.028$ ,  $p = 0.026$ ). This result provides empirical evidence to support the hypothesis **H<sub>SG1</sub>**, and is consistent with the argument of Adams and Ferreira (2009) who argue that the nature of the relationship between board gender

diversity and firm performance is contingent upon whether the firms are well governed. Accordingly, since female directors bring tougher monitoring to boardrooms, adding more women directors is likely to provide excessive and unnecessary monitoring for well-governed firms, which may ultimately have a detrimental impact on firm performance. This being the case, it is plausible to infer that the presence of female directors in boardrooms is undervalued by the Singaporean market where the corporate governance system is well established and the companies are, in general, well-governed. In terms of estimation technique, Adams and Ferreira (2009, p. 306) argue that the positive relationship between boardroom gender diversity and firm performance reported in previous studies using the OLS or FE methods may be spurious, and that if the endogeneity of gender diversity is controlled, the relationship seems to be negative.

The size of boards is found to be significantly negatively correlated with firm performance ( $\beta = -1.183$ ,  $p = 0.014$ ) which is consistent with prior studies of Yermack (1996) and Eisenberg et al. (1998) for the US market; and Mak and Kusnadi (2005) for the Singaporean market. This result supports the hypothesis **H<sub>SG4</sub>** that there will be an inverse relationship between board size and firm value (as measured by Tobin's Q) of listed companies in Singapore. This finding also agrees with the prediction of agency theory. Based on agency theory, Jensen (1993) argues that firm performance will be enhanced if the board is kept small and suggests that the optimal size should be no more than eight. This is because an organisation tends to function less efficiently when staff numbers rise; the benefits obtained from having more members cannot compensate for troubles in terms of cooperation and procedure (Lipton & Lorsch, 1992). From agency theory's perspective, Muth and Donaldson (1998) explain that if board size is

larger, it will take the CEO more time and effort to convince the various directors to consent to managerial decisions. This, in turn, may negatively influence firm performance as predicted by agency theory.

Table 6.6 reports that the presence of non-executive directors has no significant effect on firm performance. This result of the System GMM model supports the hypothesis **H<sub>SG2</sub>** and is consistent with results obtained from the pooled OLS and the FE models, thus suggesting that this finding is robust to alternative econometric approaches. This result is also consistent with several prior studies of Hermalin and Weisbach (1991); Laing and Weir (1999); and Reddy et al. (2010), who, among others, suggest that non-executive director representation does not matter at all. The reason could be that companies appoint non-executive directors, who may lack knowledge about the firm and industry, to fulfil the Singaporean Code and obtain legitimacy. If that is the case, non-executive directors will play a tokenism role and may add no value to their firms (Reddy et al., 2010).

As reported in Table 6.6, there is no statistical evidence from the sample to support the hypothesis **H<sub>SG3</sub>** that CEO duality is negatively correlated with firm performance of listed companies in Singapore. This result is in line with the study of Mak and Kusnadi (2005) for the Singaporean market. It is interesting to note that the concentration of ownership (as measured by *block*) appears to be significantly positively correlated with Tobin's Q, thus supporting the hypothesis **H<sub>SG5</sub>**. This finding is consistent with agency theory and robust to alternative econometric approaches, including the pooled OLS, FE, and System GMM models.

**Table 6.6: The relationship between corporate governance structures and performance of Singaporean listed companies: A System GMM estimation**

Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]		
Explanatory variables [ <i>notation</i> ]	b/[ <i>p</i> ]	<i>t</i>
	(1)	(2)
Intercept	-2.051 [0.291]	(-1.057)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.308** [0.014]	(2.484)
Percentage of female directors (%) [ <i>female</i> ]	-0.028** [0.026]	(-2.237)
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.001 [0.835]	(-0.208)
Duality [ <i>dual</i> ]	0.066 [0.821]	(0.227)
Board size [ <i>lnbsize</i> ]	-1.183** [0.014]	(-2.488)
Ownership concentration (%) [ <i>block</i> ]	0.007** [0.017]	(2.409)
Firm age [ <i>lnfage</i> ]	-0.115* [0.062]	(-1.871)
Firm size [ <i>fsize</i> ]	0.208 [0.105]	(1.626)
Leverage (%) [ <i>lev</i> ]	0.004 [0.313]	(1.010)
Industry dummy variables [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummy variables [ <i>year</i> ]		yes
Number of observations		712
<i>F</i> statistic		9.601***
Number of instruments		28
Number of clusters		243
Hansen-J test of over-identification ( <i>p</i> -value)		0.791

Note: This table reports the result of the System GMM regression of firm performance (*lnq*) on board structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *t*-statistics are reported in parentheses and are based on Windmeijer-corrected standard errors. The *p*-values are presented in brackets. Lags 2 and 3 of the levels of firm performance variable (*lnq*), board structure variables (*female*, *nonexe*, *dual*, and *lnbsize*) and other control variables (*block*, *fsize*, and *lev*) are employed as GMM-type instruments for the first-differenced equation. Lag 1 of the first differences of firm performance, board structure variables, and other control variables are used as GMM-type instruments for the levels equation. *Year* dummies and *lnfage* are treated as exogenous variables. *Year* dummy variables are included in the regression but not reported.

This result supports the proposition of agency theory that shareholders who hold a large proportion of firm assets may have greater incentives to become involved in and monitor managerial behaviours. This, in turn, may help to mitigate agency cost and improve firm performance. However, La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2000) suggest that concentration of ownership may lead to possible conflicts of interest between minority and majority shareholders. In the context of Singapore where minority shareholder rights are well protected (Witt, 2012), such a concern is unlikely to be a serious problem.

Regarding the capital structure variable, Table 6.6 shows that financial leverage appears to have no significant effect on Tobin's Q ratio. Although this finding does not support the hypothesis  $H_{SG6}$ , it is consistent with the finding observed from the Vietnamese market. The arguments of Jiraporn et al. (2012) and González (2013), mentioned earlier in Subsection 5.2.3.1, appear to be suitable to explain why capital structure has no significant effect on financial performance of listed Singaporean companies.

### **6.2.3 Robustness checks**

This subsection reports the post-estimation checks for the robustness of the results obtained from the System GMM model. More specifically, Subsection 6.2.3.1 presents the sensitivity of the results to the reduction of instrumental variables, and Subsection 6.2.3.2 reports the robustness of the results when alternative proxies for corporate governance structure variables are employed.

### **6.2.3.1 The sensitivity of the results to the reduction of instruments**

As mentioned in Subsection 5.2.3.1, using too many internal instrumental variables (also referred to as ‘instrument proliferation’) may bias the estimated coefficients and severely deteriorate the power of the Hansen-J test in detecting the invalidity of the instruments employed (Roodman, 2009b). It is clear that 28 instruments used in the System GMM model (Table 6.6) are small relative to the total of 243 clusters. This suggests that instrument proliferation is unlikely to be a significant concern in the System GMM estimations reported in this chapter.

Though, following the good standard practices in using the System GMM approach suggested by Roodman (2009a, 2009b), the author carefully checked the sensitivity of the results against reductions in the number of instrumental variables. Specifically, the author reduced the number of instruments in the System GMM model from 28 to 20 by using only one lag of each instrumenting variable rather than all available lags. Following the suggestion of Roodman (2009b), the author also applied a collapsing instruments approach to reduce the instruments’ count. As shown in column 1 of Table 6.7, the results obtained from the robustness checking generally remain unchanged, suggesting that this chapter’s findings are robust to the instrument reduction.

**Table 6.7: Robustness check of the sensitivity of the results to the instrumental variables' reduction**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[<i>p</i>]</b>	<b>(<i>t</i>)</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-2.330 [0.304]	(-1.029)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.305** [0.026]	(2.245)
Percentage of female directors (%) [ <i>female</i> ]	-0.030* [0.070]	(-1.822)
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-0.003 [0.623]	(-0.493)
Duality [ <i>dual</i> ]	-0.088 [0.793]	(-0.262)
Board size [ <i>lnbsize</i> ]	-1.156* [0.063]	(-1.868)
Ownership concentration (%) [ <i>block</i> ]	0.007* [0.074]	(1.793)
Firm age [ <i>lnfage</i> ]	-0.129* [0.086]	(-1.724)
Firm size [ <i>fsize</i> ]	0.229 [0.138]	(1.488)
Leverage (%) [ <i>lev</i> ]	0.003 [0.459]	(0.741)
Industry dummies [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummies [ <i>year</i> ]		yes
Number of observations		712
<i>F</i> statistic		8.343***
Number of instruments		20
Number of clusters		243
Hansen-J test of over-identification ( <i>p</i> -value)		0.324

Note: This table presents robustness check of the sensitivity of the results obtained from the System GMM to the instruments' reduction. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *p*-values are presented in brackets. The *t*-statistics are based on Windmeijer-corrected standard errors and presented in parentheses. Lag 2 of the levels of *lnq*, *female*, *nonexe*, *dual*, *lnbsize*, *block*, *fsize* and *lev* are employed as GMM-type instruments for the first-differenced equation. Lag 1 of the first differences of these variables is used as GMM-type instruments for the levels equation. *Year* dummies and *lnfage* are treated as exogenous variables. *Year* dummies are included but not reported.

### 6.2.3.3 Robustness check with alternative corporate governance variables

This subsection checks the robustness of the findings, obtained from the System GMM model, when alternative proxies for corporate governance structures are employed. Specifically, equation (4.2) is re-estimated by replacing *nonexe* with *indep*, and replacing *block* with *blocktop20*. As mentioned earlier in Subsection 4.3.2.2, *indep* is employed as an alternative proxy for board composition and *blocktop20* is used as an alternative proxy for concentrated ownership structure.

Column 1 of Table 6.8 shows that the coefficients on *indep* and *blocktop20* are similar to those on *nonexe* and *block* in terms of both direction and magnitude. The coefficients on the other corporate governance variables are generally unchanged except for those on *dual* and *female*. In the robust model, while the coefficient on the variable of *dual* obtains a marginal significance at 10% level, the variable *female* loses significance but still negatively relates to firm financial performance. Basically, the findings regarding the key corporate governance variables of interest, such as board size, board composition, ownership structure, and capital structure, are robust when the alternative proxies for corporate governance structures are used.

**Table 6.8: Robustness check of the sensitivity of the results to alternative corporate governance structure variables**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[<i>p</i>]</b>	<b>(<i>t</i>)</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-1.267 [0.423]	(-0.802)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.228* [0.051]	(1.958)
Percentage of female directors (%) [ <i>female</i> ]	-0.017 [0.230]	(-1.204)
Percentage of independent directors (%) [ <i>indep</i> ]	-0.003 [0.719]	(-0.360)
Duality [ <i>dual</i> ]	0.498* [0.097]	(1.666)
Board size [ <i>lnbsize</i> ]	-1.521*** [0.002]	(-3.199)
Ownership concentration top 20 (%) [ <i>blocktop20</i> ]	0.020*** [0.008]	(2.654)
Firm age [ <i>lnfage</i> ]	-0.054 [0.359]	(-0.920)
Firm size [ <i>fsize</i> ]	0.128 [0.180]	(1.346)
Leverage (%) [ <i>lev</i> ]	0.004 [0.112]	(1.595)
Industry dummies [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummies [ <i>year</i> ]		yes
Number of observations		720
<i>F</i> statistic		10.721***
Number of instruments		28
Number of clusters		247
Hansen-J test of over-identification ( <i>p</i> -value)		0.456

Note: This table presents robustness check of the sensitivity of the results obtained from the System GMM to alternative corporate governance structure variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *p*-values are presented in brackets. The *t*-statistics are based on Windmeijer-corrected standard errors and presented in parentheses. Lags 2 and 3 of the levels of *lnq*, *female*, *indep*, *dual*, *lnbsize*, *blocktop20*, *fsize* and *lev* are employed as GMM-type instruments for the first-differenced equation. Lag 1 of the first differences of these variables is used as GMM-type instruments for the levels equation. *Year* dummies and *lnfage* are treated as exogenous variables. *Year* dummies are included but not reported.

### 6.3 SUMMARY

This chapter examines the relationship between corporate governance structures and financial performance of companies operating in a market characterised by a well-established corporate governance system. A sample of 257 Singaporean domiciled non-financial listed companies is investigated using the System GMM estimator. Contrary to the Vietnamese market, it is observed that female representation in boardrooms is negatively related to firm performance in the Singaporean market. This result supports the view of Adams and Ferreira (2009) that while more gender-diverse boards may add value to companies with weak governance, they appear to result in decreasing shareholder value of well-governed companies.

Importantly, the robust evidence indicates that past performance can help control unobserved historical factors in the corporate governance–firm performance relationship. This finding strongly supports the arguments of Pham et al. (2011); Schultz et al. (2010) and Wintoki et al. (2012) among others, that the link between corporate governance and firm performance should be investigated in a dynamic framework. Additionally, it is evident in this chapter that the positive effect of ownership concentration on firm performance is consistent in all four empirical models applied.

In summary, it is found that the three corporate governance structures, including board gender diversity, board size and ownership structure have significant effects on firm performance. These findings support the hypotheses **H<sub>SG1</sub>**; **H<sub>SG4</sub>**; and **H<sub>SG5</sub>**, respectively. It is also found that board composition has no significant effect on firm performance, thus supporting the hypothesis **H<sub>SG2</sub>**. However, there

is no econometric evidence to support the other hypotheses, including **H<sub>SG3</sub>**; and **H<sub>SG6</sub>**. Table 6.9 provides a summary of the findings of this chapter.

**Table 6.9: Summary of empirical findings for the Singaporean market**

Hypotheses	Tested relationships	Support hypotheses	Findings
H <sub>SG1</sub>	Board gender diversity–performance	Yes	–*
H <sub>SG2</sub>	Board composition–performance	Yes	∅
H <sub>SG3</sub>	Board leadership structure–performance	No	∅
H <sub>SG4</sub>	Board size–performance	Yes	–*
H <sub>SG5</sub>	Ownership concentration–performance	Yes	+*
H <sub>SG6</sub>	Capital structure–performance	No	∅

Note: This table presents the summary of empirical evidence on the relationship between corporate governance structures and financial performance of listed companies in Singapore. The table is based on the robust estimation results reported in Table 6.7. Symbols (+), (–) and (∅) represent positive, negative, and no significant relationships, respectively. Asterisk (\*) indicates significance at the 10% level or better.

Taken together, the findings of Chapters 5 and 6 provide robust empirical evidence to address the first research question of the current thesis. After controlling for potential sources of endogeneity, the author concludes that corporate governance structures have causal effects on financial performance of listed companies in Singapore and Vietnam.

Using an aggregate dataset on both markets, the next chapter investigates the relationship between corporate governance structures and financial performance of companies in the Singaporean and Vietnamese markets from a comparative perspective. Chapter 7 will address the second research question of this thesis as to the moderating role of national governance quality in the corporate governance–firm performance relationship.

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# **CHAPTER 7**

## **CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE: A COMPARATIVE ANALYSIS BETWEEN AN EMERGING MARKET AND A MATURE MARKET**

### **7.0 INTRODUCTION**

Chapters 5 and 6 provide the answer to the first research question of this study: whether the performance effects of corporate governance structures persist once the dynamic endogeneity is taken into consideration. This chapter examines the corporate governance–firm performance relationship from a comparative perspective to answer the second research question regarding the moderating effect of national governance quality on the corporate governance–firm performance relationship.

Specifically, Section 7.1 provides evidence from cross-country comparison in which the corporate governance–firm performance relationship is discussed and compared in the institutional scenarios of each market. Taking the country-specific institutional characteristics into consideration, Section 7.2 will present the results of an econometric model using a combined dataset of both countries. The model aims to explore the potential interaction of country-level and firm-level governance mechanisms and the effect of this interaction on determining the financial performance of listed companies in the two countries. Section 7.3 provides a summary for the chapter.

## **7.1 THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE STRUCTURES AND PERFORMANCE: EVIDENCE FROM A CROSS-COUNTRY COMPARISON**

### **7.1.1 A comparison of corporate governance structures and firm performance between Singapore and Vietnam**

For comparison purposes, this subsection reports and analyses the results of: (i) *t*-test for the difference in the population means of numerical variables; and (ii) *z*-test for the difference in the population proportions of categorical variables. As introduced in Subsection 4.3.2, there are seven numerical variables and two categorical variables that need to be compared between the Vietnamese market and the Singaporean market.

The seven numerical variables include: (i) Tobin's Q ratio; (ii) percentage of female directors; (iii) percentage of independent and/or non-executive directors; (iv) board size; (v) ownership concentration; (vi) leverage; and (vii) firm age. The two categorical variables are: (i) a dummy variable for gender diversity; and (ii) a dummy variable for CEO duality. Following Adams and Ferreira (2009), the tests are conducted across firm-year observations instead of on a year-to-year basis in order to capture both cross-sectional and time-series variances.

In summary, this subsection indicates that the age, capital structure and board structure including board size, board composition and board gender diversity of firms in both markets are statistically significantly different. This subsection also shows that ownership structure, board leadership structure, and firm performance of companies in both markets are not significantly different.

#### **7.1.1.1 The difference in the means of numerical variables between Singapore and Vietnam**

This subsection reports the results of comparing the means of the numerical variables through the use of a hypothesis-testing procedure in which the test statistic approximately follows a Student's *t*-distribution. This *t*-test procedure is based on two important assumptions that the populations should: (i) be normally distributed and (ii) have equal variances (Berenson, Levine, & Krehbiel, 2012). Therefore, checking if the populations are satisfied with such assumptions is essential to ensure the validity of the *t*-test procedure (Berenson et al., 2012). For this purpose, the remainder of this subsection will proceed as follows. First, assumption (i) will be assessed by implementing the Shapiro–Wilk normality test. Second, assumption (ii) will be checked by executing the Levene's robust test for the equality of variances.

To evaluate the normality assumption necessary for using the *t*-test, the Shapiro–Wilk normality test (Shapiro & Wilk, 1965) is carried out on the two markets' sample datasets. As reported in Table 7.1, the null hypothesis that the numerical variables of interest are normally distributed cannot be accepted at any conventional level of significance. In other words, the assumption of normal distribution required for the *t*-test is violated. However, according to Berenson et al. (2012), in cases where the populations are not normally distributed, the *t*-test still can be used if the sample sizes are large enough ( $N \geq 30$ ). It is evident from Table 7.3 that the sample sizes employed in the tests are large enough to reasonably assume that the populations are normally distributed. As suggested by Berenson et al. (2012), it is a standard practice to check the robustness of the *t*-

test's results by implementing an alternative nonparametric test in which normality is not a strict constraint<sup>73</sup>

To test whether the variance of a given variable differs by country, the Levene's robust test for the equality of variances between the two markets' numerical variables is applied<sup>74</sup> (Levene, 2006, as cited in Berenson et al., 2012). The test is under the null hypothesis that the variances of a given variable are the same across the two-country sample. The results displayed in Table 7.2 suggest that the null hypothesis cannot be accepted at any conventional level of significance.

Given the unequal population variances, the separate-variance *t*-test procedure developed by Satterthwaite (1946, as cited in Berenson et al., 2012) which takes into account the inequality of variances and sample sizes will be employed in this subsection to test for the difference in the population means of numerical variables. Specifically, this subsection tests the hypothesis that there is no statistically significant difference between the mean values of a given variable between the two markets under the assumption that the two population variances are unequal. Formally,  $\mu_V$  is the population mean of a particular variable from the Vietnamese market, and  $\mu_S$  is the population mean of a corresponding variable from the Singaporean market. The null hypothesis of no difference in the means of two independent populations and the alternative hypothesis can be stated as follows:

$$H_0: \mu_V - \mu_S = 0 \qquad H_1: \mu_V - \mu_S \neq 0 \quad (7.1)$$

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<sup>73</sup> This will be discussed in more detail at the end of this subsection.

<sup>74</sup> Given that none of the seven numerical variables are normally distributed, the normality assumption of Bartlett's test for homogeneity of variances is thus violated. For this reason, the Levene's test for homogeneity of variance, which is robust under non-normality situations, is employed instead.

**Table 7.1: Shapiro-Wilk test for the normality of the numerical variables**

Variables	Vietnam sample			Singapore sample		
	Observations	<i>z</i> -statistics	<i>p</i> -values	Observations	<i>z</i> -statistics	<i>p</i> -values
Tobin's Q ratio	479	9.318	0.000	1008	11.963	0.000
Percentage of female directors (%)	472	5.406	0.000	1003	7.064	0.000
Percentage of independent / nonexecutive directors (%)	479	2.909	0.002	1004	5.404	0.000
Board size (person)	479	7.480	0.000	1005	8.131	0.000
Ownership concentration (%)	478	5.079	0.000	981	7.400	0.000
Firm age (year)	479	7.096	0.000	978	11.292	0.000
Leverage (%)	479	6.370	0.000	1008	9.044	0.000

Note: This table reports the results of Shapiro-Wilk test for the normality of seven numerical variables. The test is based on various individual samples which are reported in the column 'Observations'. The test is under the null hypothesis that a given numerical variable is normally distributed. The variables are as defined in Table 4.6. 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* (accessed in December 2011).

**Table 7.2: Levene's robust test for the equality of variances of the numerical variables**

Variables	Observations			<i>F</i> -statistics	<i>p</i> -values
	Total	Vietnam	Singapore		
Tobin's Q ratio	1487	479	1008	18.005	0.000
Percentage of female directors (%)	1475	472	1003	73.903	0.000
Percentage of independent and/or nonexecutive directors (%)	1483	479	1004	82.008	0.000
Board size (person)	1484	479	1005	49.649	0.000
Ownership concentration (%)	1459	478	981	25.834	0.000
Firm age (year)	1457	479	978	272.647	0.000
Leverage (%)	1487	479	1008	44.523	0.000

Note: This table reports the results of Levene's robust test for the equality of variances of seven numerical variables. The test is based on various individual samples which are reported in the column 'Observations'. The test is under the null hypothesis that the variances of a given variable are the same across the two-country sample. The variables are as defined in Table 4.6. 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* (accessed in December 2011).

**Table 7.3: Two-sample *t*-test on the equality of population means with unequal variances**

Variables	Observations			Mean values			<i>t</i> -statistics
	Vietnam	Singapore	Total	Vietnam	Singapore	Difference	
Tobin's Q ratio	479	1008	1487	0.85	0.82	0.03	1.222
Percentage of female directors (%)	472	1003	1475	12.06	7.89	4.17***	5.82
Percentage of independent / nonexecutive directors (%)	479	1004	1483	48.91	61.84	-12.93***	-12.152
Board size (person)	479	1005	1484	5.81	6.94	-1.13***	-13.73
Ownership concentration (%)	478	981	1459	43.92	43.75	0.17	0.141
Firm age (year)	479	978	1457	3.34	10.56	-7.22***	-25.449
Leverage (%)	479	1008	1487	29.22	19.46	9.76***	9.113

Note: This table reports the results of two-sample *t*-test on the equality of population means (with unequal variances) of seven numerical variables. The test is based on various individual samples which are reported in the column 'Observations'. The test is under the null hypothesis that there is no statistically significant difference between the mean values of a given variable between the two markets (assume that the two population variances are inhomogeneous). The variables are as defined in Table 4.6. 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* (accessed in December 2011).

As reported in Table 7.3, there is not enough statistical evidence to reject the null hypothesis for two variables: (i) Tobin's Q and (ii) ownership concentration. This suggests that neither the means of Tobin's Q ratio nor the means of ownership concentration are statistically significantly different across the two markets. Given that the means of Tobin's Q ratio of companies in Singapore and Vietnam are both less than one, the companies, on average, did not create value for the shareholders during the four-year period of 2008–2011.

The percentage of stock held by shareholders who own at least 5% of the common stock (*ownership concentration*) in both countries is approximately 44%, suggesting that ownership concentration is relatively high in these two markets. This finding is in agreement with the study undertaken by Claessens et al. (2000) who document a highly concentrated ownership structure in almost all Asian markets. It is worth noting that although sharing a similar characteristic of a highly concentrated ownership structure, the two markets differ in terms of providing minority shareholder protection. While investor rights are well protected in the Singaporean market (World Bank, 2013), the protection of minority shareholder rights in the Vietnamese market is weak because both internal and external governance mechanisms are under-developed (Le & Walker, 2008; Nguyen, 2008; World Bank, 2006a).

The fact that companies in both countries, on average, are not significantly different in financial performance and concentrated ownership structure offers a pseudo-experiment scenario which facilitates investigating the impact of national governance characteristics, such as investor protection, on the corporate governance–firm performance relationship. In other words, the effect of national

governance characteristics on the corporate governance–firm performance relationship will be examined in a circumstance where potential noise made by the differences in *Tobin's Q* and *block* is controlled. Table 7.3 shows that there are statistically significant differences in the population means of the other numerical variables under consideration. More specifically, there is statistical evidence to document that the percentage of female directors; percentage of independent and/or non-executive directors; board size; leverage; and firm age are significantly different by country.

The percentage of female directors on the BOD of Vietnamese companies is 4.17 percentage-points (equivalent to 53%) higher than that of Singaporean companies. As mentioned earlier in Chapter 3, the Vietnamese government has put a lot of effort into improving the country's gender-related institutional environment. As a consequence, the greater boardroom gender diversity in Vietnamese companies may be a reflection of a higher proportion of females in the labour force (World Bank, 2011). In contrast, the smaller number of female directors in Singaporean boardrooms “may stem from the traditional view of women as primarily responsible for family care and welfare in Singapore, where women are often the default caregiver or homemaker” (Kang, Ding, & Charoenwong, 2010, p. 890).

The percentage of independent and/or non-executive directors of Vietnamese companies, on average, is approximately 13 percentage-points lower than that of Singaporean companies. It should be noted that the Singaporean Code 2005 and the Vietnamese Code 2007 both stipulate that independent and/or non-executive directors should/must make up at least one-third of the board. Because the board size of Vietnamese companies (mean  $\approx$  5.81 persons), on average, is statistically

significantly smaller than their Singaporean counterparts (mean  $\approx$  6.94 persons), the significantly lower percentage of independent and/or non-executive directors on Vietnamese companies is a reasonable and credible finding. Table 7.3 also shows that, on average, Vietnamese companies are younger than Singaporean companies. This is plausible because almost all Vietnamese companies were first listed on the HOSE and HNX markets from 2007 onwards. This also reflects the different development history of the stock exchange markets in the two countries.

With regard to using financial leverage in the two countries, it is evident from Table 7.3 that, on average, Vietnamese firms employ approximately a ten percentage point higher debt ratio than Singapore firms. In other words, Vietnamese companies tend to use more interest-bearing liabilities in their financial structures. This finding is consistent with the characteristics of the financial market in each country. Given an under-developed financial market, the financial structure of Vietnamese companies is considered to be a bank-based type (World Bank, 2006a) where firms predominantly use bank loans to finance their business operations. On the contrary, Singaporean companies enjoy a market-based financial system (Anderson & Gupta, 2009) where financing decisions are primarily based on the activities of the stock market.

In addition, this finding may also be a reflection of differences in institutional characteristics between the two countries which have potential to affect the capital structure choices of firms (Antoniou et al., 2008). Operating in an institutional environment with more efficient law enforcement regulations, especially in bankruptcy laws, Singaporean companies, naturally, tend to keep their financial leverage lower to alleviate the risk of bankruptcy.

In an unreported analysis, the robustness of the comparative results obtained from the *t*-test procedure is checked by using an alternative nonparametric approach which does not require the normality assumption. Specifically, the Wilcoxon rank-sum test (Wilcoxon, 1945, as cited in Berenson et al., 2012) is performed under the null hypothesis that there is no statistically significant difference between two medians of a given variable. In general, the results of this nonparametric test are numerically equivalent to those of its parametric counterpart. This implies that the comparative findings obtained from the *t*-test procedure are robust even after the non-normality of data is taken into consideration.

#### **7.1.1.2 The difference in the proportions of categorical variables between Singapore and Vietnam**

The aim of this subsection is to compare the proportions of categorical variables between the two markets by employing a *z*-test on the equality of proportions, using large-sample statistics in which the test statistic is approximated by a standardized normal distribution (Berenson et al., 2012). The null hypothesis of the *z*-test is that the population proportions of a given categorical variable are equal across the two countries.

As mentioned earlier, the two categorical variables under consideration are: (i) a dummy variable for gender diversity (*dwomen*); and (ii) a dummy variable for CEO duality (*dual*). It should be noted that because these dummy variables use a [0, 1] system of values, their ‘mean’ values are actually the proportions of those observations that take the value of one. For example, the dummy variable for gender diversity for the Vietnamese market has the ‘mean’ value of 0.51. This means that 51% of companies in the sample have at least one female director in

their boards. As reported in Table 7.4, the proportion of companies having one or more female directors in their boardrooms in Vietnam (mean  $\approx 51\%$ ) is statistically significantly different from that in Singapore (mean  $\approx 42\%$ ). On average, this nine percentage point difference indicates that the number of companies with at least one female director on the BOD in Vietnam is about 21% higher than in Singapore. This finding is in accordance with that presented in Subsection 7.1.1.1.

With regard to the dummy variable for CEO duality, there is statistical evidence to conclude that the companies across the two countries are not significantly different from each other with respect to the proportions of those CEOs who are also BOD chairpersons. The relatively modest proportions of companies with a dual leadership structure (around 32% to 35% for the Vietnamese and Singaporean markets, respectively) suggest that CEO duality is uncommon in both markets.

**Table 7.4 Two-sample z-test on the equality of population proportions**

Variables	Observations			Proportions			z-statistics
	Viet	Sing	Total	Viet	Sing	Difference	
<i>dwomen</i>	472	1003	1475	0.51	0.42	0.09***	3.157
<i>dual</i>	479	1005	1484	0.32	0.35	-0.03	-0.975

Note: This table reports the results of two-sample z-test on the equality of population proportions of the two categorical variables, including *dwomen* and *dual*. The test is based on various individual samples which are reported in column 'Observations'. The test is under the null hypothesis that the population proportions of a given categorical variable are equal across the two markets. The variables are as defined in Table 4.6. Asterisk indicates significance at 1% (\*\*\*)

For the Singaporean market, raw data are downloaded 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 extracted from companies' annual reports which are downloaded from *FPT-Ez-search Online Information Gateway* and *Vietstock* (accessed in December 2011).

## **7.1.2 A cross-country comparative analysis of corporate governance structures–firm performance relationship**

In this subsection, a cross-country comparative analysis of the corporate governance structures–firm performance relationship is performed on the basis of the empirical estimations obtained from Chapters 5 and 6. Accordingly, the role of country-specific institutional characteristics is taken into consideration to interpret the similarities and differences in the corporate governance–firm performance relationship of each country. In other words, each market is examined separately and the impact of corporate governance structures on firm performance is discussed and compared in the institutional context of each market. For the convenience of the readers, the robust empirical evidence on the relationship between corporate governance structures and financial performance of listed companies in Vietnam and Singapore<sup>75</sup> is summarised in Table 7.5.

### **7.1.2.1 Dynamic nature of the corporate governance–firm performance relationship in Singapore and Vietnam**

Table 7.5 shows that the relationship between the current performance and one-year lagged performance is statistically significantly positive in both markets. Being robust to alternative estimation methods and models, this empirical finding strongly support the arguments of Pham et al. (2011); Schultz et al. (2010) and Wintoki et al. (2012), among others, that the corporate governance–firm performance relationship should be investigated in a dynamic framework. This means that past firm performance should be considered an important independent variable to control for potential effects of unobserved historical factors on current corporate governance structures and performance.

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<sup>75</sup> For the six pairs of hypotheses, denoted from [ $\mathbf{H}_{VN1} - \mathbf{H}_{SG1}$ ] to [ $\mathbf{H}_{VN6} - \mathbf{H}_{SG6}$ ]

**Table 7.5: Summary of empirical estimations: A cross-country comparison**

Determinants	Measures	Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]	
		The Vietnamese market	The Singaporean market
Past firm performance	One-year lagged Tobin's Q [ <i>laglnq</i> ]	+	+
Board gender diversity	Percentage of female directors (%) [ <i>female</i> ]	+	-
Board composition	Percentage of non-executive directors (%) [ <i>nonexe</i> ]	-	∅
Board leadership structure	Duality [ <i>dual</i> ]	∅	∅
Board size	Board size [ <i>lnbsize</i> ]	∅	-
Ownership concentration	Ownership concentration (%) [ <i>block</i> ]	+	+
Capital structure	Leverage (%) [ <i>lev</i> ]	∅	∅

Note: This table presents the summary of empirical evidence on the relationship between corporate governance structures and financial performance of listed companies in Vietnam and Singapore. The table is based on the robust estimation results reported in Table 5.11; Table 5.12; Table 6.6; and Table 6.7. The variables are as defined in Table 4.6 Symbols (+), (-) and (∅) represent positive, negative, and no significant relationships, respectively. Asterisk (\*) indicates significance at the 10% level or better.

This is consistent with Wooldridge (2009) who argues that including a lagged dependent variable as a proxy for omitted variables is a simple and useful approach to account for historical factors having effects on current differences in the regressant. This also implies that other commonly used static estimators that ignore the dynamic nature of the corporate governance–firm performance relationship may be biased (Wintoki et al., 2012). However, in the presence of lagged dependent variable(s) in the right hand-side of a model, traditional estimations for panel data such as the pooled OLS or FE will be biased and/or inconsistent as well (Nickell, 1981). In this situation, the System GMM estimator is an appropriate solution for controlling the dynamic nature of the corporate governance–firm performance relationship and other endogeneity problems.

The empirical results reported in Chapters 5 for the Vietnamese market and Chapter 6 for the Singaporean market have confirmed that it is necessary to use the System GMM estimator to alleviate the endogeneity concerns inherent in the corporate governance–firm performance relationship. This study therefore supports the recent calls for applying dynamic panel GMM estimator in corporate governance research in particular (Wintoki et al., 2012) as well as in corporate finance studies in general (Flannery & Hankins, 2013).

#### **7.1.2.2 Board diversity and firm performance**

As explained earlier, Singapore and Vietnam offer two pseudo-experimental scenarios for investigating and generalising the argument of Adams and Ferreira (2009) that the true relationship between gender diversity and firm performance seems to be complicated and depends on whether that firm is well governed or not. As reported in Table 7.5, it is found that the relationship between board

gender diversity and firm performance is positive in the weak corporate governance system (Vietnam) but negative in the strong one (Singapore).

Since the estimated coefficients on the variable *female* are not only statistically significant but also economically meaningful, boardroom gender diversity appears to be value-relevant for firms in both countries. In addition, the direction of the relationship between the two variables in each country well follows what one would expect. Specifically, the presence of female directors on the BOD has a significantly positive effect on financial performance for companies in Vietnam where corporate governance is under-developed. In contrast to the finding for the Vietnamese market, having a woman on the BOD leads to a significantly lower financial performance for companies in Singapore where corporate governance is well-developed.

The significantly positive relationship for the Vietnamese market is in agreement with Adams and Ferreira (2009) and Gul et al. (2011) who argue that higher gender-diverse boards may offer stronger monitoring, and therefore may substitute for weak corporate governance mechanisms. This implies that there is potential for poorly-governed companies to benefit from board gender diversity (Adams & Ferreira, 2009). It is therefore plausible to expect that board gender diversity will have a positive effect on financial performance of companies operating in the under-developed corporate governance system of Vietnam.

By way of contrast, Adams and Ferreira (2009) also argue that although more diverse boards may add value in weak-governed companies, it is likely that they would decrease the value of companies that have strong governance. A plausible reason could be that more gender-diverse boards may offer stronger monitoring,

which could result in over-monitoring in well-governed companies (Adams & Ferreira, 2009). Therefore, it is reasonable to expect that board gender diversity will have a negative effect on the financial performance of companies operating in the well-developed corporate governance system of Singapore.

### **7.1.2.3 Board composition and firm performance**

The study finds that the greater presence of non-executive directors on boards is significantly associated with lower firm value in the Vietnamese market (Table 7.5). It is also observed that non-executive directors have no significant effect on the financial performance of Singaporean companies. The finding is consistent with Campbell and Mínguez-Vera (2008) who posit that in countries where external corporate governance mechanisms are under-developed, the boards' monitoring function becomes an important internal corporate governance mechanism. In that situation, if the so-called non-executive directors play a vague role, the boards will not perform their monitoring functions effectively, allowing opportunists to follow their self-interests. Consequently, the presence of ineffective non-executive directors will ultimately lead to decreasing firm value.

This finding may be explained from the perspective of institutional theory. According to this theory, companies may randomly invite non-executive directors to participate on their boards to demonstrate merely that they comply strictly with the rule, and for this reason, they can obtain their legitimacy. In that case, the presence of non-executive directors on the board may not necessarily have a beneficial impact on the independence of the board or on firm performance (DiMag & Powell, 1983, as cited in Peng, 2004). By extension, it is likely that firms apply corporate governance rules or recommendations to seek firm

legitimacy instead of improving firm performance (Lynall et al., 2003). Institutional theorists argue that popularly institutionalised norms in the society in which companies are situated will largely establish the composition of boards. As a consequence, “boards of organisations in the same institutional set will tend to be more similar to each other than to the boards of organisations outside their set” (Lynall et al., 2003, p. 419). This point of view, again, indicates that it is necessary to take institutional perspectives into consideration for comparative studies on corporate governance between countries, such as Vietnam (characterised by a weak institutional environment and a poor corporate governance system) and Singapore (characterised by an advanced institutional environment and a strong corporate governance system).

#### **7.1.2.4 Board leadership structure and firm performance**

Table 7.5 shows that there is no significant relationship between board leadership structure (measured by *dual*) and financial performance of companies in both countries. It is necessary to recall that the comparative result reported in Table 7.4 shows that only 32% to 35% of the chairpersons of the two countries’ boards play dual roles. This result suggests that most companies in both countries follow a board leadership structure in which the CEO and chairperson roles are separated. However, the non-dual leadership structure may be more form than substance for the Singaporean companies (Mak & Kusnadi, 2005) and also for the Vietnamese companies (World Bank, 2006a).

For example, the Guideline 3.1, Principle 3 of the Singaporean Code (2005, p. 4) recommends that “the chairman and chief executive officer should in principle be separate persons, to ensure an appropriate balance of power, increased

accountability and greater capacity of the board for independent decision making”. Mak (2007), in his study, reports that 59% Singaporean listed companies establish a dual leadership structure to enhance the independence of the board. However, “while there is some anecdotal evidence of an improvement in willingness of directors to act independently, there remains considerable scepticism in the market about whether many independent directors really do exercise independent judgement and act in the interest of all shareholders” (Mak, 2007, p. 43). It is therefore plausible to infer that the board leadership structure has no significant influence on financial performance of Singaporean listed companies.

It is also common in the two markets that the chairperson is in practice an executive director who is also a major shareholder and interferes in the CEO’s operational decisions<sup>76</sup> (Mak & Kusnadi, 2005; World Bank, 2006a). This implies that the board leadership structure in the two countries is in fact a dual system but not a non-dual system as described by the statistical numbers in Table 7.4. In this situation, the dummy variable *dual* may not exactly reflect the board leadership structures in these two markets, and therefore, may result in problematic estimates and misleading interpretations.

#### **7.1.2.5 Board size and firm performance**

As reported in Table 7.5, the relationship between board size and firm performance is insignificant for the Vietnamese market but significantly negative

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<sup>76</sup> The LOE 2005 provides that the BOD chairperson appointed by the GMS can also be the CEO, unless otherwise stipulated by the company’s charter. A study conducted by Nguyen (2008) shows that most directors of Vietnamese listed firms including the BOD chairperson are majority shareholders, and therefore, they are elected as senior executive managers for their company.

for the Singaporean market. The finding for the Singaporean market is consistent with the prediction of agency theory suggesting that firm performance will be able to be enhanced if the size of the board is small (Jensen, 1993). Therefore, Jensen (1993) suggests that the optimal threshold of board size should not be more than eight. Meanwhile, the finding for the Vietnamese market is in line with Schultz et al. (2010); Wintoki et al. (2012) who, among others, have documented an insignificant relationship between board size and firm performance after controlling for endogeneity issues.

#### **7.1.2.6 Ownership concentration and firm performance**

Table 7.5 also indicates that the relationship between ownership concentration and firm performance is statistically significantly positive in both markets. This finding is generally in agreement with Heugens et al. (2009); Ma, Naughton, and Tian (2010); and Yabei and Izumida (2008), among others. This empirical evidence supports agency theory's perspective that ownership concentration is an effective internal corporate governance strategy that helps to enhance financial performance of firms operating in markets where the ownership structures are highly-concentrated, such as Singapore and Vietnam. Accordingly, by 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 agency problems and improve performance (Jensen & Meckling, 1976).

#### **7.1.2.7 Capital structure and firm performance**

As reported in Table 7.5, it is found that there is no evidence to support a significant relationship between capital structure and financial performance of

firms in both markets. This finding does not support the perspective of agency theory, that using debt in capital structure helps to alleviate the potential agency costs of free cash flow (Jensen, 1993), which in turn may lead to improved performance. Several possible explanations presented in Subsection 5.2.3.1 of Chapter 5 provide insight into this complex relationship between capital structure and firm performance.

In summary, it is documented in this subsection that financial performance of listed companies in both markets is quite persistent, i.e., past performance has a statistically significant influence on current performance. With regard to corporate governance structures, it is found that greater gender-diverse boards are significantly positively related to the financial performance of Vietnamese listed companies but significantly negatively correlated with the financial performance of their Singaporean counterparts. While ownership concentration has a significantly positive effect on firm performance in both markets, the leadership structure of boards has no significant effect at all.

It is also evident from this subsection that the presence of non-executive directors on the BOD appears to have significantly negative influence on the financial performance of Vietnamese companies but no significant impact on financial performance of their Singaporean counterparts. Finally, there is statistical evidence to conclude that the relationship between board size and financial performance is insignificant for Vietnamese firms but significantly negative for Singaporean companies. These comparative findings support the view that the effectiveness of corporate governance structures: (i) is country-specific; and (ii) appears to be contingent upon the institutional environment within which firms

operate. The next section further examines this point of view through the use of multiple regression techniques.

## **7.2 THE RELATIONSHIP BETWEEN CORPORATE GOVERNANCE STRUCTURES AND FIRM PERFORMANCE: DOES NATIONAL GOVERNANCE QUALITY MATTER?**

Taking the country-specific institutional characteristics into consideration, this section examines the direct effect of national governance quality on determining the financial performance of listed companies in the two countries. The potential interaction between national governance quality and corporate governance structures is also empirically investigated. The remainder of this section is structured as follows. Subsections 7.2.1 and 7.2.2 in turn provide descriptive statistics, the correlation matrix, and a multi-collinearity diagnostic. This is followed by Subsection 7.2.3 introducing empirical results obtained from multiple regression analyses.

### **7.2.1 Descriptive statistics**

It should be remembered that the dataset used in this chapter is based on the combination of the two countries' datasets. The data collection yields an initial panel dataset of 1516 firm-year observations. This initial dataset has relatively full data on key variables covering the period 2008–2011 (1028 observations for Singapore and 488 observations for Vietnam).

Following Balatbat et al. (2004) and Schultz et al. (2010), among many others, 29 firm-year observations within the first and beyond the 99<sup>th</sup> percentiles are excluded to alleviate the potential bias caused by the outliers of Tobin's Q. As a

consequence, the final sample comprises 1487 firm-year observations. Because of data insufficiency or unavailability of the variables used in models (4.3) and (4.4), the individual samples used in univariate analyses may slightly vary. The general information of the combined sample sizes employed in this chapter is summarised in Table 7.6.

**Table 7.6: Sample sizes of alternative research models using combined dataset of Singapore and Vietnam**

1	The initial sample size	<b>1516</b>
2	The number of outliers of Tobin's Q excluded	29
3	The final sample size* (3) = (1) – (2)	<b>1487</b>
4	<b><i>Panel A: For static models</i></b>	
5	The number of observations removed because of missing values in variables used in the static models	108
6	The common sample size for the static models** (6) = (3) – (5)	<b>1379</b>
7	<b><i>Panel B: For dynamic models</i></b>	
8	The number of observations lost because of using one-year lagged Tobin's Q as an explanatory variable in the dynamic models	371
9	The number of observations lost because of missing values in variables used in the dynamic models	52
10	The common sample size for dynamic models** (10) = (3) – (8) – (9)	<b>1064</b>

Note: (\*) individual samples' sizes may be various because of missing values. (\*\*) For other models used for robustness checks, the common sample sizes are reported either in the relevant tables of results or in attached footnotes. 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* (accessed in December 2011).

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 the dynamic models is finally reduced from 1487 to 1064 firm-year observations.

Using the combined sample of the Singaporean and Vietnamese markets, Table 7.7 summarises the descriptive statistics of the variables included in equation (4.3). The mean (median) of Tobin's Q is 0.83 (0.72), 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).

It is observed from Table 7.7 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 et al. (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 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.

**Table 7.7: Descriptive statistics for the combined sample of Singapore and Vietnam**

	<b>Observations</b>	<b>Mean</b>	<b>Median</b>	<b>SD</b>	<b>Min</b>	<b>Max</b>
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 combined samples of which the sizes may be various because of missing values. The variables are as defined in Table 4.6. 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* (accessed in December 2011).

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 zero to about 95.39%, reflecting the heterogeneity of ownership structure across firms and the two countries. The average age of firms across the combined sample (i.e., the average period of time since the IPO was undertaken) is 8.19 years and the average leverage ratio is around 22.6% with a standard deviation of 18.73%.

### **7.2.2 Correlation matrix and multi-collinearity diagnostic**

Table 7.8 reports the pair-wise correlation coefficients between each pair of variables employed in equation (4.3). As reported in Table 7.8, 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 the empirical models (4.3) and (4.4) 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 (0.71), 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.

**Table 7.8: Pair-wise correlation coefficients and variance inflation factor coefficients for the combined sample of Singapore and Vietnam**

	<i>lnq</i>	<i>female</i>	<i>indep_nonexe</i>	<i>dual</i>	<i>lnbsize</i>	<i>block</i>	<i>lnfage</i>	<i>fsize</i>	<i>lev</i>	<i>laglnq</i>	VIFs
<i>lnq</i>	1.00										
<i>female</i>	0.08***	1.00									1.03
<i>indep_nonexe</i>	0.06**	-0.15***	1.00								1.28
<i>dual</i>	0.06**	0.09***	-0.22***	1.00							1.12
<i>lnbsize</i>	0.13***	-0.08***	0.16***	-0.12***	1.00						1.47
<i>block</i>	0.06**	-0.09***	0.13***	-0.15***	0.12***	1.00					1.07
<i>lnfage</i>	-0.15***	-0.06**	0.28***	0.02	0.25***	0.02	1.00				1.42
<i>fsize</i>	0.08***	-0.08***	0.27***	-0.06**	0.55***	0.19***	0.38***	1.00			1.82
<i>lev</i>	0.13***	0.03	-0.18***	-0.02	-0.03	0.09***	-0.24***	0.16***	1.00		1.25
<i>laglnq</i>	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 combined 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 4.6. 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* (accessed in December 2011).

Consistent with the prediction of agency theory, the correlation analysis reveals a significantly positive relationship between ownership concentration (*block*) and firm performance (*lnq*). Similar evidence is reported by Thomsen and Pedersen (2000); Yabei and Izumida (2008), among others. Remarkably, firm size is significantly positively correlated with leverage as evidenced by the correlation coefficient of 0.16 which suggests that larger firms tend to employ higher financial leverage. This finding is consistent with Antoniou et al. (2008, p. 64) who argue that larger companies, due to their lower information asymmetry, may have “higher debt capacity and may borrow more to maximise their tax benefits”.

Whereas, the significantly positive correlation coefficients between *fsize* and *lnbsize* (0.55); *fsize* and *indep\_nonexe* (0.27); *fsize* and *lnfage* (0.38) suggest that larger firms tend to have larger board size, more independent and/or non-executive directors on their boardrooms, and tend to be more mature. The significantly positive correlation coefficient between *block* and *lev* supports the view of Antoniou et al. (2008) that companies with concentrated ownership structures favour financing their business operations through the use of debt rather than external equity to prevent possible dilution of ownership and control.

It is also evident from Table 7.8 that none of the correlation coefficients among independent variables are larger than 0.80. As suggested by Damodar (2004), unless correlation coefficients among regressors exceed the threshold of 0.80, multi-collinearity will not be a serious problem for multiple analysis. This result is also confirmed by the VIFs which are usually calculated to detect multi-collinearity among independent variables in the empirical models. Chatterjee and Hadi (2012, p. 236) suggest that values of VIFs larger than ten are usually

considered an indication of the presence of collinearity problems. As reported in the last column of Table 7.8, the values of VIFs are all smaller than two, which is well below the cut-off value of ten. This evidence thus suggests that multicollinearity is unlikely a problem in this chapter's empirical models.

## **7.2.3 Multiple regression analysis**

### **7.2.3.1 Empirical findings from the combined dataset of both markets: The pooled OLS and FE models**

An analytical procedure similar to that implemented in Chapters 5 and 6 will be employed in this subsection. Specifically, equation (4.3) is estimated by applying the pooled OLS approach to the combined data of both countries. Additionally, the effects of time-invariant unobserved characteristics across firms are controlled through the use of common estimation methods for panel data, such as the FE and the RE techniques. The Hausman test is conducted to differentiate between the FE and RE approaches. The test result shows that the null hypothesis cannot be accepted at any conventional level of significance [ $Chi-sq(9) = 1046.66$  ;  $p = 0.000$ ]. Therefore, the FE approach is employed to control for time-invariant unobserved heterogeneity.

The results obtained from the OLS and FE estimations are respectively reported in columns 2 and 3 of Table 7.10. For the OLS model, the coefficient on past performance variable ( $laglnq$ ) is found to be statistically positive at the 1% level ( $\beta = 0.655$ ;  $p = 0.00$ ). This supports the claim that performance is path-dependent, i.e., past performance has significant effect on current performance. It is also evident from columns 2 and 3 of Table 7.10 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 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 (*block*) and performance (*lnq*) still holds even after controlling for such omitted characteristics. Thus, empirical evidence obtained from applying the OLS and FE approaches to the combined dataset supports both hypotheses **H<sub>VN5</sub>** and **H<sub>SG5</sub>** that ownership concentration is positively correlated with firm performance. Although this finding is consistent with prior studies (e.g., Gedajlovic & Shapiro, 2002; Ma et al., 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). Therefore, the System GMM method is employed in the next subsection to control for such potential sources of endogeneity.

### **7.2.3.2 Empirical findings from the combined dataset of both markets: The System GMM models**

- ***Testing for endogeneity of the regressors***

In this subsection, the endogeneity of the regressors is checked empirically through the use of the DWH test for endogeneity. The test, executed for all the regressors as a group, is under the null hypothesis that the endogenous regressors may actually be treated as exogenous variables (Baum et al., 2007). Test statistics follow a Chi-squared (*Chi-sq*) 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*).

Following Schultz et al. (2010), the test is conducted based on the levels equation 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. It is found that the null hypothesis cannot be accepted at any conventional levels of significance ( $Chi\text{-}sq(8) = 24.03; p = 0.000$ ), thus suggesting that the System GMM model will be superior in terms of consistency when compared with the OLS and FE models.

- ***The validity of the System GMM estimator***

The validity of the System GMM estimator is contingent on whether the lagged instrumental variables are exogenous (Roodman, 2009b). For this reason, this subsection checks empirically the validity of the System GMM estimator through the use of the Hansen-J test of over-identification and difference-in-Hansen tests of exogeneity of instrument subsets.

As reported in the last row of Table 7.10, the Hansen-J test yields a  $p$ -value of 0.152 confirming that the instruments (as a group) used in the System GMM model are valid. Applying a similar approach to Subsection 5.2.2.2 of Chapter 5, the author also follows Roodman (2009b) and applies 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. The results reported in Table 7.9 confirm that all the subsets of instruments used in the System GMM model are econometrically exogenous.

**Table 7.9: Difference-in-Hansen tests of exogeneity of instrument subsets**

Tested instrument subsets	Test statistics	Degrees of freedom	<i>p</i> -value
<b><i>Panel A: System GMM-type instruments</i></b>			
Instruments for levels equation as a group	12.45	8	0.132
$lnq_{it-2}$ and $lnq_{it-3}$ (for transformed equation)	3.81	2	0.149
$\Delta lnq_{it-1}$ (for levels equation)	0.29	1	0.589
Instruments for board structure variables	12.99	8	0.112
Instruments other corporate governance and control variables	10.58	6	0.102
<b><i>Panel B: Standard instruments</i></b>			
2009 and 2010 <i>year</i> dummies, and <i>lnfage</i>	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 4.6. The test statistics are asymptotically Chi-squared distribution with degrees of freedom equal to the number of suspect instrumental variables (Roodman, 2009b).

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 lag 3 in levels of board structure variables.

GMM instrument subset used for the other corporate governance and control variables includes two-year lagged differences and lag 3 in levels of these variables. The subset of standard instruments for the equation in levels includes 2009 and 2010 *year dummies*, and *lnfage*. 2008 and 2011 *year dummies* are dropped due to collinearity.

Given that the OLS and FE estimates of  $\alpha_1$  (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  $\alpha_1$  should lie between the FE estimate (lower bound) and the OLS estimate (upper bound) (Bond, 2002). It is evident from Table 7.10 that  $\alpha_1$  obtained from the System GMM (0.268) is higher than that obtained from the FE (−0.053), but well below the OLS estimate (0.655). This is consistent with what one would expect, thus suggesting that the 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 7.10 confirms the overall fit of the System GMM model. Hence, the results from the Hansen-J test, difference-in-Hansen tests, *Wald chi-squared* test of overall model fit, together with the reasonable estimate of  $\alpha_1$ , suggest that the System GMM model appears to be well-specified.

- ***The results from the System GMM model***

The results using the System GMM estimator with the Windmeijer (2005) finite-sample correction are reported in column 4 of Table 7.10. The board structure variables have no significant effects on firm performance after controlling for dynamic endogeneity, simultaneity, and unobserved heterogeneity. This finding, obtained from the combined dataset, is in line with recent findings by Pham et al. (2011); Wintoki et al. (2012), among others.

However, it is important to remember that some board structure variables, as documented in Chapters 5 and 6, do have significant effects on the financial performance of companies in the Vietnamese and Singaporean markets. For example, the relationship between board gender diversity and firm performance is significantly positive for Vietnamese companies but significantly negative for their Singaporean counterparts. Naturally, these contrasting effects will disappear when the combined dataset of both markets is used. The author argues that if the opposing effects of board structure variables on firm performance obtained from the separate country datasets do exist (as reported in Chapters 5 and 6), then it would be plausible to expect that they will be neutralised when the combined dataset is employed (as reported in this chapter).

**Table 7.10: The relationship between corporate governance structures and performance: Evidence from the combined sample of Singapore and Vietnam**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>			
<b>Explanatory variables</b>	<b>Pooled OLS</b>	<b>Fixed-effects</b>	<b>GMM</b>
	<b>b/(<i>t</i>)</b>	<b>b/(<i>t</i>)</b>	<b>b/(<i>z</i>)</b>
	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>
Intercept	-0.796*** (-5.363)	5.409*** (3.947)	-0.350 (-0.311)
One-year lagged Tobin's Q	0.655*** (24.199)	-0.053 (-1.487)	0.268*** (2.643)
Percentage of female directors (%)	0.001 (1.382)	-0.001 (-0.368)	0.005 (0.452)
Percentage of independent and/or non-executive directors (%)	0.001** (2.085)	-0.000 (-0.316)	0.000 (0.036)
Duality	0.041** (1.972)	0.161** (2.260)	0.371 (1.045)
Board size	0.183*** (4.464)	0.084 (0.734)	-0.131 (-0.210)
Ownership concentration (%)	0.001** (2.309)	0.002** (2.383)	0.014*** (2.652)
Firm age	-0.034** (-2.270)	-0.291*** (-4.001)	-0.100 (-0.902)
Firm size	-0.002 (-0.665)	-0.249*** (-3.946)	-0.023 (-0.799)
Leverage (%)	0.001** (2.558)	0.005** (2.536)	0.003 (0.575)
Industry dummies	yes	no	no
Firm fixed-effects	no	yes	yes
Year dummies	yes	yes	yes
Number of observations	1064	1064	1064
R-squared	0.614	0.346	
<i>F</i> statistic	67.722***	29.143***	
<i>Wald Chi-squared</i> statistic			218.017***
Number of instruments			21
Number of clusters		363	363
Hansen-J test of over-identification ( <i>p</i> -value)			0.152

Note: This table reports the results from estimating equation (4.3). Column 2 reports the results obtained from the OLS method with clustering at the firm level. Column 3 presents the results obtained from the FE method. The estimates gained from the System GMM approach are reported in column 4. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The notation is as defined in Table 4.6. The *t*-statistics of the OLS and FE estimators are reported in parentheses and are based on cluster-robust standard errors corrected for potential heteroskedasticity and serial correlation. The *z*-statistics of the System GMM model are reported in parentheses and based on Windmeijer-corrected standard errors. *Year dummies* and *industry dummies* are unreported.

Noticeably, there is a significantly positive relationship between the concentrated ownership variable and firm performance ( $\beta = 0.014$ ), which is consistent with the findings attained from the OLS and FE procedures. Thus, the positive relationship between ownership concentration and performance is robust across different econometric estimation techniques, providing strong support for both hypotheses  $H_{VN5}$  and  $H_{SG5}$  that ownership concentration is positively correlated with firm performance. This finding is generally in agreement with Heugens et al. (2009); Ma et al. (2010); and Yabei and Izumida (2008), among others. This empirical evidence thus supports the agency perspective that ownership concentration appears to be an effective internal corporate governance strategy that helps to enhance performance.

### **7.2.3.3 Does national governance quality matter?**

Chapters 5 and 6 report that ownership concentration is significantly positively related to the financial performance of companies in both markets. Importantly, this positive relationship is robust to alternative econometric estimators, including the pooled OLS, FE, and System GMM. Hence, the positive relationship between ownership concentration and firm performance displays little variability across samples and negligible biases across different econometric techniques.

Therefore, it is 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? This subsection reports the empirical analyses, testing the hypotheses **H<sub>VN\_SG7</sub>** and **H<sub>VN\_SG8</sub>**, to answer those questions.

As mentioned earlier in Subsection 4.3.3.4, the hypotheses **H<sub>VN\_SG7</sub>** and **H<sub>VN\_SG8</sub>** will be tested through estimating equation (4.4). As reported in columns 1 and 2 of Table 7.11, the positive relationship between ownership concentration and performance remains unchanged after controlling for national governance characteristics, thus supporting both hypotheses **H<sub>VN5</sub>** and **H<sub>SG5</sub>**. It is also found that the aggregate national governance quality index (*NGindex*) has a significantly positive effect on firm performance ( $\beta = 0.465$  ;  $p = 0.061$ ). This evidence supports the hypothesis **H<sub>VN\_SG7</sub>** and is in line with Ngobo and Fouda (2012) who documented 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 the hypothesis **H<sub>VN\_SG8</sub>**. As reported in columns 1 and 2 of Table 7.11, the estimated coefficient on the interaction term [*block*×*NGindex*] is negative ( $\varphi = -0.004$ ) and statistically different from zero at the 5% level. It would be inferred from this result 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), this study argues 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 equation (4.3), it can be observed from the combined dataset of both markets that there is no statistical evidence for the relationship between board structure variables 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 recent empirical studies that use 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 argued by the author in Subsection 7.2.3.2, that if the contrasting effects of board structure variables on firm performance obtained from the separate country datasets do exist (as reported in Chapters 5 and 6), then it would be plausible to expect that such effects will be neutralised when the combined dataset is employed (as reported in this subsection).

As can be seen in Table 7.11, the significantly positive coefficients on the one-year lagged dependent variable (*laglnq*) indicate that performance is quite persistent. This is in line with Yabei 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 capital structure variable, it is observed from column 4 of Table 7.10 that this variable has no significant effect on firm performance when the potential sources of endogeneity are controlled. This finding is consistent with that obtained from estimating equation (4.2) for the Vietnamese and Singaporean markets. Thus, the empirical models using the separate datasets of each market as well as the combined dataset of both markets provide consistent evidence for an insignificant relationship between capital structure and firm performance.

However, the relationship between capital structure and firm performance becomes significantly positive when the differences in national governance quality between the two markets are taken into account in equation (4.4). This result persists for all three models using alternative proxies for national governance quality (as reported in Table 7.11; Table 7.12; and Table 7.13), thus providing support for the hypotheses  $H_{VN6}$  and  $H_{SG6}$ . Similar evidence is reported by Mak and Kusnadi (2005) for Singapore and Malaysia, and Black et al. (2014) for Brazil, Korea, Turkey and Russia.

**Table 7.11: The relationship between corporate governance structures and performance: Does national governance quality matter?**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[<i>p</i>]</b>	<b>(<i>z</i>)</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-3.984 [0.158]	(-1.413)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.190* [0.066]	(1.837)
Percentage of female directors (%) [ <i>female</i> ]	0.009 [0.378]	(0.881)
Percentage of independent and/or non-executive directors (%) [ <i>indep_nonexe</i> ]	-0.013 [0.150]	(-1.440)
Duality [ <i>dual</i> ]	-0.029 [0.931]	(-0.086)
Board size [ <i>lnbsize</i> ]	-1.371 [0.124]	(-1.538)
Ownership concentration (%) [ <i>block</i> ]	0.044*** [0.001]	(3.339)
Firm age [ <i>lnfage</i> ]	-0.050 [0.457]	(-0.744)
Firm size [ <i>fsize</i> ]	0.166 [0.333]	(0.968)
Leverage (%) [ <i>lev</i> ]	0.013** [0.021]	(2.306)
National governance index [ <i>NGindex</i> ]	0.465* [0.061]	(1.874)
Interaction term [ <i>block</i> × <i>NGindex</i> ]	-0.004** [0.021]	(-2.305)
Industry dummies [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummies [ <i>year</i> ]		yes
Number of observations		1064
<i>Wald Chi-squared</i> statistic		168.740***
Number of instruments		26
Number of clusters		363
Hansen-J test of over-identification ( <i>p</i> -value)		0.595

Note: This table reports the empirical results from estimating equation (4.4) through the use of the System GMM approach. Columns 1-2 present the results obtained from using *NGindex* as a proxy for national governance quality. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The notation is as defined in Table 4.6. The *z*-statistics and *p*-values are reported in parentheses and brackets, respectively. *Year dummies* are unreported.

The contradictory evidence for the capital structure–firm performance relationship revealed by empirical models (4.2); (4.3); and (4.4) confirm the argument presented in Subsection 5.2.3.1 that this relationship appears to be complicated and not really clear in practice. It is likely that such contradictory evidence is a consequence of one (or several) potential empirical concerns which have not been addressed by this study. Further research is therefore necessary to fully grasp the nature of the relationship between capital structure and firm performance.

One concern is that the inclusion of the interaction term  $block \times NGindex$  on the right-hand side of equation (4.4) may produce potential multi-collinearity because the interaction term is itself a product of their components. To check if the main findings are distorted by this potential multi-collinearity problem, this study follows Lai and Chen (2014); Wan and Yiu (2009) and centres the main effect variables ( $block$  and  $NGindex$ ) at their grand-means before forming the interaction term. The (unreported) results indicate that the coefficient on the concentrated ownership variable ( $\gamma$ ) and the coefficient on the interaction term ( $\varphi$ ) are not qualitatively different from those reported in columns 1 and 2 of Table 7.11. Hence, the multi-collinearity is unlikely to be a significant concern when the interaction term  $block \times NGindex$  is included in the equation (4.4).

## **7.2.4 Robustness checks**

### **7.2.4.1 Robustness 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 equation (4.3) to allow for possible non-linearity in the ownership structure–performance relationship. Applying the pooled OLS, FE, and System GMM methods on the modified equation (4.3), the author finds that the coefficient on the quadratic term of ownership concentration variable is insignificant regardless of the econometric approaches employed<sup>77</sup>.

The 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 the ownership–performance linkage across 18 emerging markets, report that there is no evidence of any non-linear relationship between ownership concentration and performance.

This 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 the empirical models of this study.

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<sup>77</sup> The results are not reported to save space, but available from the author upon request.

#### **7.2.4.2 Robustness check with alternative national governance quality variables**

In this subsection, the robustness of the main findings is checked by using alternative proxies for national governance quality. Specifically, the variable *NGindex* is in turn replaced by *NGindex(a)* and *IPindex*, and the equation (4.4) is re-estimated using the System GMM approach<sup>78</sup>. The results are reported in Table 7.12 [for *NGindex(a)*] and Table 7.13 [for *IPindex*].

It is found that the estimated coefficients ( $\gamma$ ), ( $\delta$ ) and ( $\varphi$ ) in modified equation (4.4) are qualitatively similar in both direction and magnitude to those obtained from the original equation. Hence, the main conclusion about the moderating effect of the national governance quality on the corporate governance–firm performance relationship is robust when the alternative proxies for national governance quality are employed.

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<sup>78</sup> The difference-in-Hansen tests are executed to ensure that the subsets of instrumental variables used in these robustness check models are valid. The (unreported) test results confirm that the instruments employed in these models are econometrically exogenous.

**Table 7.12: Robustness check of the sensitivity of the results to alternative national governance variables ( $NGindex(a)$ )**

<b>Dependent variable: Tobin's Q ratio [<math>lnq</math>]</b>		
<b>Explanatory variables [<math>notation</math>]</b>	<b>b/[<math>p</math>]</b>	<b>(z)</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-2.437 [0.240]	(-1.176)
One-year lagged Tobin's Q [ $laglnq$ ]	0.190* [0.066]	(1.841)
Percentage of female directors (%) [ $female$ ]	0.010 [0.366]	(0.904)
Percentage of independent and/or non-executive directors (%) [ $indep\_nonexe$ ]	-0.013 [0.143]	(-1.463)
Duality [ $dual$ ]	-0.032 [0.923]	(-0.096)
Board size [ $lnbsize$ ]	-1.402 [0.118]	(-1.563)
Ownership concentration (%) [ $block$ ]	0.029*** [0.000]	(3.834)
Firm age [ $lnfage$ ]	-0.050 [0.453]	(-0.750)
Firm size [ $fsize$ ]	0.173 [0.318]	(0.998)
Leverage (%) [ $lev$ ]	0.013** [0.022]	(2.291)
National governance index [ $NGindex(a)$ ]	1.570* [0.058]	(1.897)
Interaction term [ $block \times NGindex(a)$ ]	-0.014** [0.021]	(-2.302)
Industry dummies [ $industry$ ]		no
Firm fixed-effects		yes
Year dummies [ $year$ ]		yes
Number of observations		1064
Wald Chi-squared statistic		168.941***
Number of instruments		26
Number of clusters		363
Hansen-J test of over-identification ( $p$ -value)		0.605

Note: This table reports the empirical results from estimating equation (4.4) through the use of the System GMM approach. Columns 1-2 present the results obtained from using  $NGindex(a)$  as a proxy for national governance quality. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The notation is as defined in Table 4.6. The  $z$ -statistics and  $p$ -values are reported in parentheses and brackets, respectively. *Year dummies* are unreported.

**Table 7.13: Robustness check of the sensitivity of the results to alternative national governance variables (*IPindex*)**

<b>Dependent variable: Tobin's Q ratio [<i>lnq</i>]</b>		
<b>Explanatory variables [<i>notation</i>]</b>	<b>b/[<i>p</i>]</b>	<b>(z)</b>
	<b>(1)</b>	<b>(2)</b>
Intercept	-6.594* [0.099]	(-1.650)
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.206** [0.034]	(2.119)
Percentage of female directors (%) [ <i>female</i> ]	0.015 [0.126]	(1.529)
Percentage of independent and/or non-executive directors (%) [ <i>indep_nonexe</i> ]	-0.010 [0.287]	(-1.065)
Duality [ <i>dual</i> ]	0.037 [0.909]	(0.115)
Board size [ <i>lnbsize</i> ]	-1.341 [0.144]	(-1.459)
Ownership concentration (%) [ <i>block</i> ]	0.053*** [0.007]	(2.719)
Firm age [ <i>lnfage</i> ]	-0.066 [0.293]	(-1.051)
Firm size [ <i>fsize</i> ]	0.195 [0.277]	(1.087)
Leverage (%) [ <i>lev</i> ]	0.010* [0.063]	(1.860)
Investor protection index [ <i>IPindex</i> ]	0.505* [0.076]	(1.775)
Interaction term [ <i>block</i> × <i>IPindex</i> ]	-0.004** [0.029]	(-2.181)
Industry dummies [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummies [ <i>year</i> ]		yes
Number of observations		1064
Wald Chi-squared statistic		184.037***
Number of instruments		25
Number of clusters		363
Hansen-J test of over-identification ( <i>p</i> -value)		0.585

Note: This table reports the empirical results from estimating equation (4.4) through the use of the System GMM approach. Columns 1-2 present the results obtained from using *IPindex* as a proxy for national governance quality. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The notation is as defined in Table 4.6. The z-statistics and p-values are reported in parentheses and brackets, respectively. *Year dummies* are unreported.

### 7.3 SUMMARY

The corporate governance literature focuses on the performance effects of firm-level specific governance characteristics and does not pay sufficient attention to the importance of national governance quality. Motivated by the recent development in integrating the institutional perspective with the traditional agency perspective in corporate governance studies (see eg., Aslan & Kumar, 2014; Kumar & Zattoni, 2013; Van Essen et al., 2013), this chapter documents the interaction effect of national governance quality on the corporate governance–firm performance relationship by applying a dynamic modelling approach to the combined dataset of mature and transitional markets in the Asian region. Two important findings obtained from this chapter are summarised in Table 7.14.

**Table 7.14: Summary of empirical findings from Chapter 7**

<b>Hypotheses</b>	<b>Tested relationships</b>	<b>Support hypotheses</b>	<b>Findings</b>
H <sub>VN_SG7</sub>	National governance quality–firm performance	Yes	+*
H <sub>VN_SG8</sub>	Moderating effect of national governance quality on the corporate governance–firm performance relationship	Yes	–*

Note: This table presents the summary of empirical evidence obtained from estimating equation (4.4) using the combined dataset of Singapore and Vietnam. The table is based on the results reported in Table 7.11. Symbols (+), (–) represent positive and negative relationships, respectively. Asterisk (\*) indicates significance at the 10% level or better.

First, it is observed from this chapter that better national governance plays a positive role in determining the financial performance of firms in these two markets, thus supporting the hypothesis H<sub>VN\_SG7</sub>. Second, it is found that in Singapore, where the 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 firm performance is significantly stronger in Vietnam where national governance quality is poor. This finding provides support for the hypothesis **H<sub>VN\_SG8</sub>** regarding the moderating effect of national governance quality on the corporate governance–firm performance relationship. This finding also supports the view that the performance effects of the internal corporate governance mechanisms are country-specific, and therefore highlights the importance of incorporating country-level governance quality into studies on the corporate governance–firm performance relationship.

The next chapter summarises the contributions and implications of this study. Given that research limitations may hinder the interpretation and generalisation of this study’s findings, Chapter 8 also provides recommendations for potential future research.

## **CHAPTER 8**

# **CONCLUSIONS, IMPLICATIONS AND LIMITATIONS**

### **8.0 INTRODUCTION**

This chapter provides a summary of empirical findings, reported in Chapters 5, 6 and 7, concerning the relationship between corporate governance structures, national governance quality, and financial performance of publicly listed companies in Vietnam and Singapore. Relevant conclusions and implications for policy formulation in the two markets are noted in Section 8.1. Section 8.2 concludes the thesis with limitations and recommendations for potential future research.

### **8.1 CONTRIBUTIONS AND IMPLICATIONS**

#### **8.1.1 A summary of key findings and policy implications**

In this thesis, the relationship between corporate governance structures and financial performance of companies in Singapore and Vietnam is investigated in a dynamic modelling framework. By focusing on two different types of national governance systems (well-developed vs. under-developed), this study examines how the relationship is moderated by national governance quality. To the best of the author's knowledge, this study is the first attempt to document the interaction effect of national governance quality on the corporate governance–firm performance relationship by applying a dynamic modelling approach to a dataset that includes both mature and emerging markets in the Asian region.

Three key findings obtained from this study are: (i) corporate governance structures do matter to the financial performance of publicly listed companies in

Singapore and Vietnam, even after the dynamic nature of this relationship is taken into consideration; (ii) national governance quality is positively related to firm performance; and (iii) national governance quality does matter when explaining the ownership concentration–firm performance relationship. Several most noticeable findings together with corresponding implications are noted below. Table 8.1 also provides a summary of all the findings attained from this thesis.

Noticeably, it is found that female representation in the BOD has a significantly positive effect on the financial performance of listed companies in Vietnam where corporate governance is under-developed. In contrast, having a woman on the BOD leads to a significantly lower financial performance for listed companies in Singapore where corporate governance is well-developed. This is in line with Adams and Ferreira (2009) and Gul et al. (2011) who argue that higher gender-diverse boards may offer stronger monitoring, and therefore, may substitute for weak corporate governance mechanisms. This implies that poorly-governed companies may have potential to benefit from board gender diversification (Adams & Ferreira, 2009).

Although the abovementioned finding is in no way intended to support mandating a gender quota system for the BOD, it does offer an important implication for policy formulation. This study suggests that any efforts to rejuvenate corporate governance by increasing the number of women on Vietnamese boards of directors (and perhaps the BOD in other Asian markets sharing similar corporate governance characteristics) should take existing conditions of the corporate governance system into consideration.

**Table 8.1: A summary of the empirical findings of the thesis**

Hypotheses	Tested relationships	The Vietnamese market		The Singaporean market	
		Expected sign	Empirical sign	Expected sign	Empirical sign
H <sub>VN1</sub> – H <sub>SG1</sub>	Board gender diversity–firm performance	+	+	–	–
H <sub>VN2</sub> – H <sub>SG2</sub>	Board composition–firm performance	∅	–	∅	∅
H <sub>VN3</sub> – H <sub>SG3</sub>	Board leadership structure–firm performance	–	∅	–	∅
H <sub>VN4</sub> – H <sub>SG4</sub>	Board size–firm performance	∅	∅	–	–
H <sub>VN5</sub> – H <sub>SG5</sub>	Ownership concentration–firm performance	+/-	+	+/-	+
H <sub>VN6</sub> – H <sub>SG6</sub>	Capital structure–firm performance	+	∅	+	∅
H <sub>VN_SG7</sub>	National governance quality–firm performance	+/-	+	+/-	+
H <sub>VN_SG8</sub>	Moderating effect of national governance quality on the corporate governance–firm performance relationship	+/-	–	+/-	–

Note: Symbols (+), (–) and (∅) represent positive, negative, and no significant relationships, respectively.

Based in the context of the Vietnamese market, this finding may also imply that in Asian developing countries where women are traditionally subordinate to men, female directors may have the potential to add value if there is a supportive institutional environment and if the advancement of women is consistently promoted. Therefore, this study suggests that a better institutional environment for women plays an important role in board gender diversification, which may have a positive effect on firm performance.

In line with the prediction of agency theory about the efficient monitoring effect of large shareholders in markets with highly concentrated ownership, this thesis also finds that ownership concentration has a positive effect on financial performance of listed companies in both Singaporean and Vietnamese markets. However, the performance effectiveness of ownership concentration is contingent upon the institutional environment in which firms operate. The positive effect of concentrated ownership on performance of firms operating in the under-developed national governance system (Vietnam) tends to be stronger than 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, this finding is robust when alternative proxies for national governance quality are employed, and still holds even after controlling for dynamic endogeneity, simultaneity, and unobserved time-invariant heterogeneity inherent in the corporate governance–firm performance relationship. Therefore, with reasonable confidence, it can be stated that the key findings of this study are not driven by potential sources of endogeneity.

The abovementioned findings 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 (Yabei & Izumida, 2008). Second, because national governance quality is a positive determinant of firm performance, regulatory bodies should put more effort into improving national institutional characteristics, such as investor protection or rule of law, all of which are ultimately good for business.

Finally, since 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 take national governance characteristics into consideration. As one example, given the poor national governance quality of Vietnam, the effort by the Vietnamese policy-makers to establish a new shareholding pattern, for example, the Anglo-Saxon model characterised by dispersed ownership, may be counterproductive.

### **8.1.2 The contributions of the thesis**

The contribution of this thesis to the corporate governance literature is twofold. First, unlike most prior studies examining the corporate governance–firm performance relationship in a static perspective, this study re-investigates the relationship in a dynamic modelling framework within which the possible impact of historical performance on current performance and corporate governance structures is fully controlled. By taking into account the dynamic endogeneity and other potential sources of endogeneity (including simultaneity, and time-invariant

unobserved heterogeneity), this study expects to achieve more reliable inferences about the causal link between corporate governance structures and firm performance.

Second, by providing robust empirical evidence from two typical kinds of national governance systems in the Asian region (well-developed vs. under-developed), this study supports 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, the findings are, to some extent, generalizable to markets having similar corporate-level and national-level governance characteristics.

## **8.2 LIMITATIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH**

Despite the abovementioned contributions, this study does have some limitations, many of which may indicate fruitful avenues for future research. First, given that the variables relating to board structure change slowly over time, which has the potential to reduce the efficiency of panel data estimations, the four-year dataset used in this study may render comprehensive explanations of governance–performance dynamics ineffective. Following Wintoki et al. (2012), the author suggests that datasets covering a longer period of time may enable future research

to overcome the highly persistent feature of board structure variables by using data at two-year intervals rather than annually.

Secondly, this research considers only the relationship between gender diversity on the BOD and firm performance. Given the two-tier board structure of listed companies in Vietnam, it might be useful for future research to treat gender diversity on the BOS as a factor driving firms' profitability. Besides, other observable diversity characteristics of directors, such as age, education, and experience, should be included in future research as long as the relevant data are available. Additionally, this study measures financial performance by employing the commonly-used Tobin's Q ratio. Although the Tobin's Q ratio has many advantages compared with other accounting-based metrics, using other alternative accounting-based performance measures could possibly lead to different conclusions. This may highlight the sensitivity of inferences drawn from empirical studies in which the observable variables are usually not the perfect proxies for the true phenomenon of interest. For example, it will be interesting to investigate the potential impact of corporate governance structures on operating performance metrics. The metrics for operating performance may be, among others: *sales revenue per employee* and *fixed-asset turnover ratios* which look at how well a firm uses its workers and fixed assets to generate sales, respectively. Another common operating performance metrics is the *operating cycle ratio* which measures a firm's ability to convert its inventory into cash.

Moreover, like most previous empirical studies on corporate governance, this study's sample selection process relies primarily on the availability of data, including firm annual reports and corresponding financial reports. It is likely that

the selected firms are the more transparent ones and therefore could actually be well governed and/or better performing firms. If that is the case, this research will suffer from selection bias which hinders interpretation and generalisation.

Thirdly, although this study does find a significant linkage between board gender diversity and the performance of Vietnamese listed companies, the channels through which female directors positively affect financial performance remain unclear. It is argued that if the presence of women on the BOD matters for firm outcomes, then there should be gender-based differences in behaviour and characteristics between female and male directors (Mohan, 2014).

A recent survey conducted by Adams and Funk (2012) confirms that this is indeed the case, i.e., female and male directors differ systematically in their core values and risk attitudes. Such gender-related differences may have an effect on firm performance through several potential channels (Mohan, 2014). For instance, they may enrich the directorial behaviours and improve the directorial task performance of the boards, all of which ultimately lead to better performance (Adams & Ferreira, 2009). Female representation on boards is also likely to add value if the market reacts positively to their presence, since they are usually considered to be free from overconfidence and have a lower tolerance for risk (for a review, see Mohan, 2014). The aforementioned findings imply that the issue here is probably not the gender difference of directors but the gender-based differences in leadership behaviour and style, and personality characteristics (Mohan, 2014; Mohan & Chen, 2004).

In agreement with Mohan (2014), therefore, this study suggests that understanding the personality traits of female directors, such as consensus-building ability,

management style, or attitude to risk, is essential to shed light on the potential channels through which director gender matters for firm performance. As suggested by Adams et al. (2011); and Mohan (2014), using an event study approach to investigate market reaction to the appointment of female directors, or a survey approach to grasp how gender-related behavioural differences affect board effectiveness and firm outcomes, may be possible directions for future research.

Additionally, in a recent review article, Mohan (2014) points out that there is empirical evidence that greater gender diversity on boards may promote better opportunities for women to be appointed to top management positions. Female representation on top management teams in turn provides a feminine managerial style (Mohan, 2014) and managerial expertise, and helps to improve managerial task performance (Dezsö & Ross, 2012). If this evidence is considered, female directors may also add value through their contribution in choosing the CEO and motivating women in senior management positions. For this reason, this study suggests that investigating the role of women at top management levels in interaction with the role of women on boards may offer potential for understanding another channel through which female directors add value.

Fourthly, due to the lack of data regarding corporate governance practices, this study, like most prior studies, only concentrates on observable corporate governance structures presented in annual reports, such as CEO duality, board size, or the presence of independent directors. As Mak and Kusnadi (2005) have noted, while establishing a corporate governance structure that meets the corporate governance code is important, it does not necessarily guarantee that the

corporate governance structure will operate effectively. For example, a board structured on the basis of international best practices probably does not successfully function if it does not meet regularly, or if the so-called independent directors are not independent in practice (Mak & Kusnadi, 2005).

Indeed, a study undertaken by Chuanrommanee and Swierczek (2007) posits that corporate governance as reported in Singaporean companies' documents is actually unlikely to reflect their real governance practices. It is noteworthy that the research of Chuanrommanee and Swierczek was conducted in a context in which corporate governance practices are considered to be consistent with international best practice (Chuanrommanee & Swierczek, 2007) and are recognised to be the best corporate governance practices in the Asian region (CLSA, 2010, 2012). Therefore, it is likely that observable corporate governance variables used in this thesis are not good proxies for real corporate governance practices even if in a near perfect research setting like the Singaporean market. If that is the case, it ultimately makes the estimates problematic. As a consequence, it will be seriously misleading to suggest that corporate governance structures have significant effects on firm performance. For this reason, more comprehensive data in terms of corporate governance practices will foster future research in deeply investigating the substance of corporate governance but not the form.

Finally, this study considers ownership concentration as an effective corporate governance strategy employed by shareholders to influence managerial behaviour, mitigate agency problems, and enhance performance. It should also be noted that the ownership identity may have a 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 capability that, in turn, have different impacts on firm performance (Holderness, 2009). However, the lack of data for the Vietnamese market has meant that the role of ownership identity noted by Thomsen and Pedersen (2000) could not be investigated in this thesis. For this reason, in line with Judge (2012); and Munisi et al. (2014), 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 the performance of firms in Singapore, Vietnam and other markets in the Asian region.

As mentioned in Section 3.3 of Chapter 3, the high concentration of ownership by government is one of the key characteristics of corporate governance systems in Singapore (Kimber et al., 2005). A common type of fully or partly state-owned firm in Singapore is 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.

### **8.3 SUMMARY**

This chapter concludes the thesis with a summary of findings, contributions, and policy implications. The major interest of this thesis is twofold: (i) whether the relationship between corporate governance structures and financial performance of listed companies in Singapore and Vietnam persists when the dynamic nature inherent in this relationship is taken into consideration; and (ii) whether this relationship varies according to the quality of national governance systems within which firms operate.

Using a dynamic modelling approach to investigate a panel dataset of 1064 firm-year observations collected from Singapore and Vietnam, this thesis documents that: (i) corporate governance structures do have impacts on financial performance of publicly listed companies in Singapore and Vietnam, even after controlling for the dynamic nature of this relationship; (ii) better national governance quality is good for firm performance; and (iii) national governance quality has a significant moderating effect on the ownership concentration–firm performance relationship.

This thesis contributes to the corporate governance literature in at least two dimensions: (i) applying a better model specification and estimation approach to two typical corporate governance systems in the Asian region; and (ii) enriching the understanding of the interaction between corporate-level and national-level governance mechanisms. Of course, no study is without limitations and this study is no exception. The limitations for which the current study suffers are highlighted in this chapter. Given that there is still much one can do and there is always some room for improvement, this thesis suggests several endeavours for potential future research.

## APPENDIXES

### **Appendix 1: Some illustrations of the differences in corporate governance regulations between the financial industry and other industries in the Vietnamese and Singaporean markets**

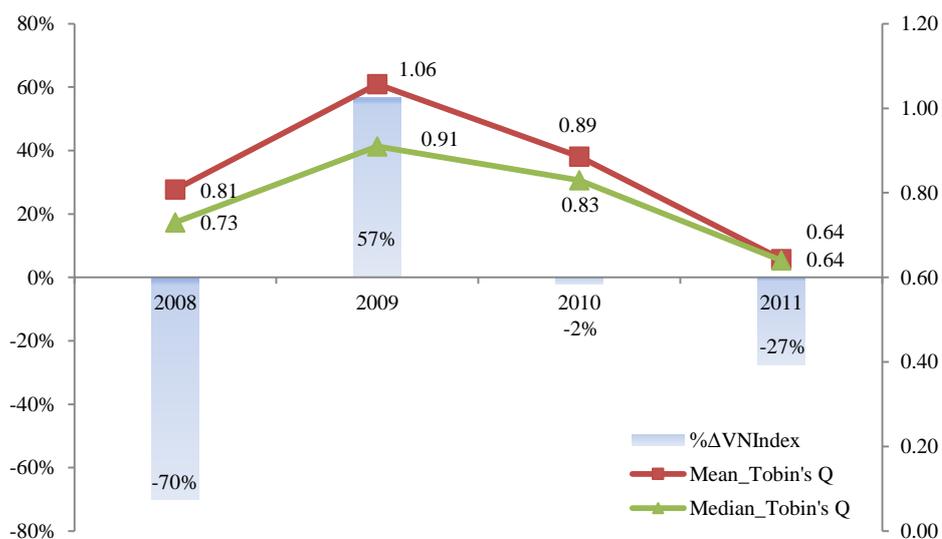
In the Vietnamese market, financial firms and banks are governed not only by the Law on Enterprises 2005 (the LOE), but also by the Law on Credit Institutions (the LOCI) (2010). Article 34.1 of the LOCI stipulates that a Vietnamese bank's chairperson of the BOD must not be simultaneously an executive director. Whereas, the Vietnamese Code (2007) applying to publicly listed companies does not have this requirement. This implies that the BOD chairperson in other industries can also be CEOs. Articles 41.1 and 43.6 of the LOCI also require credit institutions to establish inside audit bodies, risk management committees and personnel committees in order to assist the BOS and the BOD in implementing their functions.

According to the Vietnamese Code, it is not compulsory for other sectors' listed companies to meet these LOCI requirements. In addition, Article 62.1 of the LOCI requires that the BOD of joint stock credit institutions must have at least one independent director, and that at least 50% directors are independent and/or non-executive directors. While the Vietnamese Code and the LOE do not distinguish between independent directors and non-executive directors, the LOCI details the standards for an independent director.

In terms of ownership structure, Article 55 of the LOCI specifies that an individual stockholder of credit institutions must not hold over 5% of total capital recorded in their charter, whereas an institutional stockholder is not allowed to own over 15%.

Similarly, in the Singaporean market, higher standards of corporate governance are also imposed on banks and financial firms. Indeed, while all Singaporean listed companies conform to the Singaporean Code on the basis of the “comply or explain” principle, locally incorporated banks and financial firms must comply with the Corporate Governance Regulations (the Regulations) which are compulsory and more stringent. For example, the Regulations require the BOD to have at least one-third independent directors, and the chairperson must not be an executive director.

## Appendix 2: Changes in the Vietnamese stock index (%) vs. Tobin’s Q 2008–2011



Source: %ΔVN-index and the mean and median values of Tobin’s Q are based on data collected from the HOSE website and *Thomson One Banker* (Worldscope database)

**Appendix 3: Case-wise correlation matrix for the variables used for the Vietnamese market**

	<i>lnq</i>	<i>female</i>	<i>nonexe</i>	<i>dual</i>	<i>lnbsize</i>	<i>block</i>	<i>lnfage</i>	<i>fsize</i>	<i>lev</i>	<i>laglnq</i>
<i>lnq</i>	1.00									
<i>female</i>	0.14	1.00								
<i>nonexe</i>	-0.07	-0.02	1.00							
<i>dual</i>	0.10	0.09	-0.31	1.00						
<i>lnbsize</i>	0.15	0.10	-0.11	0.05	1.00					
<i>block</i>	0.09	-0.03	0.11	-0.12	-0.22	1.00				
<i>lnfage</i>	-0.24	-0.07	0.15	-0.03	0.03	-0.04	1.00			
<i>fsize</i>	0.15	0.03	-0.04	0.01	0.25	0.10	0.01	1.00		
<i>lev</i>	0.03	-0.07	-0.13	-0.10	0.05	0.08	-0.18	0.37	1.00	
<i>laglnq</i>	0.57	0.13	-0.03	0.07	0.12	0.11	0.08	0.26	-0.03	1.00

Note: This table reports case-wise correlation coefficients which are based on the common sample of 352 firm-year observations in the Vietnamese market. The variables are as defined in Table 4.6. This table 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* (accessed in December 2011).

**Appendix 4: Case-wise correlation matrix for the variables used for the Singaporean market**

	<i>lnq</i>	<i>female</i>	<i>nonexe</i>	<i>indep</i>	<i>dual</i>	<i>lnbsize</i>	<i>block</i>	<i>lnfage</i>	<i>fsize</i>	<i>lev</i>	<i>laglnq</i>
<i>lnq</i>	1.00										
<i>female</i>	0.02	1.00									
<i>nonexe</i>	0.06	-0.15	1.00								
<i>indep</i>	0.17	-0.02	-0.45	1.00							
<i>dual</i>	0.04	0.06	-0.29	0.07	1.00						
<i>lnbsize</i>	0.17	-0.06	0.28	-0.14	-0.22	1.00					
<i>block</i>	0.04	-0.11	0.28	-0.07	-0.20	0.25	1.00				
<i>lnfage</i>	-0.12	0.03	0.02	0.15	0.03	0.14	0.12	1.00			
<i>fsize</i>	0.12	0.01	0.10	0.19	-0.11	0.55	0.25	0.28	1.00		
<i>lev</i>	0.16	0.08	-0.12	0.02	0.06	0.06	0.08	-0.13	0.28	1.00	
<i>laglnq</i>	0.75	0.01	0.02	0.21	0.06	0.09	-0.01	-0.10	0.07	0.14	1.00

Note: This table reports case-wise correlation coefficients which are based on the common sample of 712 firm-year observations in the Singaporean market. The variables are as defined in Table 4.6. Raw data are downloaded from *Thomson One Banker Database* and the website of *Singapore Exchange Ltd. Company*, including listed companies' annual reports (accessed in December 2011).

**Appendix 5: The relationship between corporate governance structures and performance of Singaporean listed companies: Static models**

Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]		
Explanatory variables [ <i>notation</i> ]	OLS	FE
	b/[p]	b/[p]
	(1)	(2)
Intercept	-0.643** [0.044]	2.772*** [0.008]
Percentage of female directors (%) [ <i>female</i> ]	0.001 [0.529]	0.000 [0.913]
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	0.001 [0.461]	0.000 [0.790]
Duality [ <i>dual</i> ]	0.095*** [0.007]	0.244*** [0.005]
Board size [ <i>lnbsize</i> ]	0.380*** [0.000]	-0.041 [0.811]
Ownership concentration (%) [ <i>block</i> ]	0.000 [0.599]	0.002*** [0.003]
Firm age [ <i>lnfage</i> ]	-0.097*** [0.000]	-0.041 [0.503]
Firm size [ <i>fsize</i> ]	-0.005 [0.741]	-0.176*** [0.001]
Leverage (%) [ <i>lev</i> ]	0.004*** [0.000]	0.007*** [0.000]
Industry dummy variables [ <i>industry</i> ]	yes	no
Firm fixed-effects	no	yes
Year dummy variables [ <i>year</i> ]	yes	yes
Number of observations	931	931
R-squared	0.151	0.164
<i>F</i> statistic	11.701***	14.114***

Note: This table reports the result of static OLS (column 1) and fixed-effects (column 2) regressions of firm performance (*lnq*) on corporate governance structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *p*-values are reported in brackets and are based on cluster-robust standard errors (cluster on firm) corrected for potential heteroskedasticity and serial correlation in the error term. *Industry* and *year* dummy variables are not reported.

**Appendix 6: The relationship between corporate governance structures and performance of Singaporean listed companies: A dynamic OLS estimation**

Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]		
Explanatory variables [ <i>notation</i> ]	b/[ <i>p</i> ]	<i>t</i>
	(1)	(2)
Intercept	-0.861***	(-3.960)
	[0.000]	
One-year lagged Tobin's Q [ <i>laglnq</i> ]	0.657***	(20.369)
	[0.000]	
Percentage of female directors (%) [ <i>female</i> ]	0.001	(0.833)
	[0.405]	
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	0.001	(0.901)
	[0.368]	
Duality [ <i>dual</i> ]	0.034	(1.318)
	[0.188]	
Board size [ <i>lnbsize</i> ]	0.174***	(2.852)
	[0.004]	
Ownership concentration (%) [ <i>block</i> ]	0.001**	(1.988)
	[0.047]	
Firm age [ <i>lnfage</i> ]	-0.036*	(-1.870)
	[0.062]	
Firm size [ <i>fsize</i> ]	0.006	(0.542)
	[0.588]	
Leverage (%) [ <i>lev</i> ]	0.001	(1.443)
	[0.149]	
Industry dummy variables [ <i>industry</i> ]		yes
Firm fixed-effects		no
Year dummy variables [ <i>year</i> ]		yes
Number of observations		712
R-squared		0.625
<i>F</i> statistic		43.847***

Note: This table reports the result of a dynamic OLS regression of firm performance (*lnq*) on corporate governance structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *t*-statistics are reported in parentheses and are based on cluster-robust standard errors (cluster on firm) corrected for potential heteroskedasticity and serial correlation in the error term. The *p*-values are presented in brackets. *Industry* and *year* dummy variables are included in the regression but not reported.

**Appendix 7: The relationship between corporate governance structures and performance of Singaporean listed companies: A fixed-effects estimation**

Dependent variable: Tobin's Q ratio [ <i>lnq</i> ]		
Explanatory variables [ <i>notation</i> ]	b/[ <i>p</i> ]	( <i>t</i> )
	(1)	(2)
Intercept	3.952***	(2.746)
	[0.006]	
One-year lagged Tobin's Q [ <i>laglnq</i> ]	-0.050	(-1.146)
	[0.253]	
Percentage of female directors (%) [ <i>female</i> ]	-0.003	(-0.612)
	[0.541]	
Percentage of non-executive directors (%) [ <i>nonexe</i> ]	0.002	(0.591)
	[0.555]	
Duality [ <i>dual</i> ]	0.242*	(1.866)
	[0.063]	
Board size [ <i>lnbsize</i> ]	0.038	(0.283)
	[0.777]	
Ownership concentration (%) [ <i>block</i> ]	0.002*	(1.916)
	[0.057]	
Firm age [ <i>lnfage</i> ]	-0.129	(-1.277)
	[0.203]	
Firm size [ <i>fsize</i> ]	-0.220***	(-2.975)
	[0.003]	
Leverage (%) [ <i>lev</i> ]	0.004*	(1.775)
	[0.077]	
Industry dummy variables [ <i>industry</i> ]		no
Firm fixed-effects		yes
Year dummy variables [ <i>year</i> ]		yes
Number of observations		712
R-squared		0.219
<i>F</i> statistic		14.000***

Note: This table reports the result of fixed-effects regression of firm performance (*lnq*) on corporate governance structure variables and other control variables. The variables are as defined in Table 4.6. Asterisks indicate significance at 10% (\*), 5% (\*\*), and 1% (\*\*\*). The *t*-statistics are reported in parentheses and are based on cluster-robust standard errors (cluster on firm) corrected for potential heteroskedasticity and serial correlation in the error term. The *p*-values are presented in brackets. *Year* dummy variables are included in the regression but not reported.

**Appendix 8: Case-wise correlation matrix for the variables (combined dataset of Singapore and Vietnam)**

	<i>lnq</i>	<i>female</i>	<i>indep_nonexe</i>	<i>dual</i>	<i>lnbsize</i>	<i>block</i>	<i>lnfage</i>	<i>fsize</i>	<i>lev</i>	<i>laglnq</i>
<i>lnq</i>	1.00									
<i>female</i>	0.07	1.00								
<i>indep_nonexe</i>	0.07	-0.14	1.00							
<i>dual</i>	0.05	0.06	-0.23	1.00						
<i>lnbsize</i>	0.13	-0.06	0.15	-0.12	1.00					
<i>block</i>	0.06	-0.06	0.14	-0.18	0.10	1.00				
<i>lnfage</i>	-0.17	-0.09	0.28	0.04	0.26	0.03	1.00			
<i>fsize</i>	0.08	-0.06	0.27	-0.05	0.54	0.15	0.40	1.00		
<i>lev</i>	0.13	0.06	-0.19	-0.01	-0.03	0.10	-0.26	0.15	1.00	
<i>laglnq</i>	0.71	0.07	0.07	0.05	0.05	0.03	-0.13	0.05	0.12	1.00

Note: This table reports case-wise correlation coefficients which are based on the common sample of 1064 firm-year observations in the Singaporean and Vietnamese markets. The variables are as defined in Table 4.6. 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* (accessed in December 2011).

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