CHAPTER 7

RESULTS ON THE RELATIONSHIP BETWEEN GOVERNMENT OWNERSHIP AND CORPORATE PERFORMANCE: THE SINGAPOREAN PERSPECTIVE

7.0 Introduction

This chapter presents empirical evidence on the relationship between government ownership and the performance of Singaporean listed companies. In particular, this study investigates the governance structure of government ownership in Singaporean companies. The 177 Singaporean listed companies with complete data were chosen to identify whether government ownership has led to better performance after controlling for company specific characteristics. The study compares the financial and market performance of GLCs with non-GLCs; both of which have different sets of corporate structure, the key difference being government ownership. A sample of 25 GLCs was matched with another sample of 25 non-GLCs based on size (natural logarithm of total assets) and industry. All discussions are based on the analyses of different periods –the full period (1995-2005), pre-crisis (1995-1996), and post crisis (1999-2005). For every analysis, the discussion begins with the econometric issues such as stationary of the data, multicollinearity, heteroscedasticity, and auto-correlation. This is then followed by a descriptive analysis and comparison of statistics (using parametric t-test mean) of the GLCs with the matched non-GLCs.

7.1 Results of Data on Normality Test

From Table 7.1, the findings show that the mean of Tobin's Q for 177 Singaporean companies of 0.7237 is below 1.0 (cutting point for Tobin's Q). The results of ROA show that the average return of Singaporean listed companies is low even though positive at 2.3%. The findings of the normality tests are shown in Table 7.1. Results show that the variable is not normally distributed. Based on Jarque-Bera, Skewness and Kurtosis suggest that there is a problem of normality, therefore, it is likely that the utilisation of Ordinary Least Square (OLS) to analyse the data would produce biased and imprecise estimators.

Table 7.1: Normality Test Statistics of 177 Singaporean Listed Companies

	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
TOBINQ	0.7237	0.6131	0.8797	3.5680	28.5143	56912.46	0.0000
ROA	0.0233	0.0056	0.1298	2.1529	40.4049	114949.00	0.0000
GOWNED	0.1413	0.0000	0.3484	2.0594	5.2409	1782.66	0.0000
SIZE	12.9420	13.3228	3.3205	-2.6855	11.5791	8306.87	0.0000
Non-DUAL	0.1413	0.0000	0.3484	2.0594	5.2409	1782.66	0.0000
DEBT	02375	0.1953	0.2748	10.2736	223.0050	3958843.00	0.0000
AC	0.6289	0.5275	0.5514	1.5869	7.7850	2673.28	0.0000
GROWTH	0.0532	0.0292	0.0701	3.1849	18.4823	22725.75	0.0000

7.2 Correlation Matrix

In Table 7.2, the results for 177 Singaporean companies show that government ownership has a positive correlation with Tobin's Q, ROA, and non-duality, but negative with debt and growth (cash to assets). The positive correlation with both performances, Tobin's Q and ROA means that with government involvement, company performance increases. This indicates that the Singaporean government, through Temasek and their GLICs makes sure that its business activities run well and target profit maximisation for the purpose of increasing shareholders' wealth. A positive correlation between government ownership and size of company means that government involvement in company increases company size. The increment of size of the company at the same time leads to company growth, thus, reducing the company leverage.

Unfortunately, under company growth, results are negative and significant with government ownership at the 1% level. This shows that non-GLCs control and manage cash better than the government owned companies. This is supported by the positive results between government ownership and Agency Cost (but not significant), which indicate a greater expenditure by the government owned companies than the non-GLCs. The government monitors and keeps track of company leverage to decrease company debt. Therefore, results in Table 7.2 indicate a negative correlation between government ownership and debt. Finally yet importantly, besides Agency Cost, profit margin has no correlation and is significant with government ownership.

Table 7.2: Correlation Matrix for 177 Singaporean Listed Companies

	Gowned	Size	TobinQ	nDual	Debt	ROA	AC	Growth
Gowned	1.0000	0.1832(***) 0.0000	0.1578(***) 0.0000	0.5501(***) 0.0000	-0.0605(***) 0.0076	0.3215(***) 0.0000	0.0270 0.2337	-0.0427(*) 0.0596
Size		1.0000	0.1388(***) 0.0000	0.1689(***) 0.0000	0.1747(***) 0.0000	0.1483(***) 0.0000	0.0759(***) 0.0008	0.06748(***) 0.0000
TobinQ			1.0000	0.0953(***) 0.0000	-0.0256 0.2591	0.1673(***) 0.0000	0.1360(***) 0.0000	0.1029(***) 0.0000
nDual				1.0000	-0.0013 0.9544	0.1916(***) 0.0000	- 0.00480(**) 0.0323	-0.0446(**) 0.0488
Debt					1.0000	-0.1568 0.0000	-0.0028 0.9024	-0.1114(***) 0.0000
ROA						1.0000	-0.0042 0.8527	0.0056 0.8040
AC							1.0000	0.2561(***) 0.0000
Growth								1.0000

***/**/* Correlation is significant at 1%/5%/10%

7.3 Analysis on Financial and Market Performance

Table 7.3 presents the mean difference of the characteristics of GLCs and non-GLC companies. The findings appear to suggest a significant difference exists between two groups based on type of performance, leverage and size. In both types of performance, the results show that GLCs outperform non-GLCs at the 1% level of significance. In detail, the results indicate that the performance of GLCs is better than non-GLCs from pre-crisis until post crisis (significant at 1% pre- and post-crisis). These results are consistent with the findings by Ang and Ding (2005) and Singh and Siah (1998). Compared to the non-GLCs, these findings indicate that government involvement leads to better company performance as a result of the government policies in place.

In comparing the non-GLCs and the GLCs in the context of the difference in leverage, the study finds that GLCs record lower debt ratios, a result of their efforts to repay and reduce their debts using their own cash. This result is followed by a negative significant relationship between GLCs and growth variable (cash to total assets) at the 5% level of significance. In relation to debt ratios, the study finds that non-GLCs show high increasing debts from 1997 onwards but for GLCs even though their debts increased during the crisis period, they were reduced or decreased from 1999 until 2005 (Refer to Tables 7.4 and 7.5). This decrease seems to have improved the GLCs handling of their cash even during the crisis period. Temasek Holdings and their GLICs make sure their companies are stable and always in good stead by monitoring their financial activities, especially the cash flow.

A positive and significant correlation between government ownership and size of company means that government involvement increases the size of company, which, in this situation,

implies total assets. This situation is the same with non-duality, which indicates a positive relationship with government ownership and is significant at the 1% level.

In summary, it can be concluded that GLCs tend to exhibit higher valuations than non-GLCs due to their ability to earn higher returns on their investments, to run more efficiently and at lower operating expenses than non-GLCs. The results support our hypothesis that GLCs outperform non-GLCs, not only in market-based valuation measures, but also in accounting-based measures of internal process efficiency.

Table 7.3: Market and Financial Performance throughout ALL PERIODS (1995 to 2005)

		Market Performances		Financial Performances	
Variable	**No. of Observations**	**Tobin Q**	**Stock**	**ROA**	**ROE**
GLCs	25	1.0667	0.0996	0.1259	-0.0088
nonGLCs	152	0.6681	0.0529	0.0060	0.8607
t-test		**7.0471**	1.8279	**14.9722**	-0.4167

Table 7.4: Market and Financial Performance throughout PRE-CRISIS (1995 to 1996)

		Market Performances		Financial Performances	
Variable	**No. of Observations**	**Tobin Q**	**Stock**	**ROA**	**ROE**
GLCs	25	1.0140	0.0000	0.0451	0.0396
nonGLCs	152	0.5087	0.0000	0.0242	0.0472
t-test		**1.9780**	0.0000	**2.2596**	-0.1675

Table 7.5: Market and Financial Performance throughout POST-CRISIS (1999 to 2005)

		Market Performances		Financial Performances	
Variable	**No. of Observations**	**Tobin Q**	**Stock**	**ROA**	**ROE**
GLCs	25	1.0141	0.1566	0.0451	0.0396
nonGLCs	152	0.5087	0.0831	0.0242	0.0472
t-test		1.9780	1.8403	**2.2596**	-0.1675

7.4 Panel and Pooled Regression Analysis

This study uses the same regression that was applied to the Malaysian companies on the 177 Singaporean companies. This model includes seven important variables to address corporate governance issues, size, role of CEO, leverage, growth opportunities, agency cost, and profitability issues to evaluate the impact of good governance as proxies by government ownership and control. Panel based regression (fixed effect) is run over a period from 1995 to 2005 for both. The findings are presented in the following Table.[12]

7.4.1 Results Based on Market Measure

The findings from Table 7.6, based on Tobin's Q for all periods of study, show model fitness with an F-value of 61.3770, and are significant at any level; the adjusted R^2 is 34.53%. The joint null hypothesis that none of the variables is significant is rejected. The coefficients of the explanatory variables are consistent with the hypothesised objective in the Singaporean Context. Results strongly support the contention that government ownership (t = 11.6336), does have an important impact on performance in Singapore with significant at 1% level and this is found to be similar to our previous findings on 210 Malaysian companies. This is consistent with the findings by Ang and Dinget al. (2005), and Dyck and Wruck (1998) who documented that

[12]Fixed Effect Regression analysis is selected after checking robustness on Random Effect and OLS models.

government involvement through government agency leads to better company performance. When this analysis is broken down into three situations, only the post-crisis period shows that government involvement leads to better performance than non-GLCs at the 1% significant level (t= 14.5482). This situation occurred because the government had had an immediate impact by setting up a committee to monitor and control government companies. One of the actions was hiring outsiders or foreigners with considerable experience of handling multinational companies as CEOs. Therefore, it leads to more transparency and creates a level of confidence for investors, especially potential investors in government companies. Therefore, it will increase the market values of GLCs and perform better than the crisis and pre-crisis period.

Size seems an important determinant of company performance as results from all situations (except for post-crisis) indicate that size has a positive relationship with company performance, Tobin's Q, is significant at the 1% level. This shows that in Singapore, large companies (i.e. companies with large assets) perform better than small companies. The results also indicate a positive and significant ($p<0.01$) relationship between market performance and agency cost in all situations except post-crisis. The results show t-statistics of 4.5208 for all periods, t-stat of 3.8858 pre-crisis, and t-stat of 3.5121 post–crisis; this again shows that companies with higher expenses tend to perform better. It can be explained that companies need to pay more, such as for higher compensation or bonuses to management for them to make sure the company performs well and keeps improving year by year. However, this appears to be inconsistent with the findings of Ang and Ding (2000), who recorded a negative association between agency cost and company performance.

On company growth, the results show that companies with a large amount of cash in their hands perform better. This can be seen from the results of the t-statistic of 5.4263, which is positive and significant at the 1% level. Upon taking an in-depth look at this situation, it has been found that after crisis, companies made extra cash through their business activities through improving their cash inflow and reducing outflow. This explanation is supported by the positive and significant results of company performance and growth variable (t= 4.5189) during post crisis at the 1% significant level. Finally, non-duality (t=2.1644) shows a significant and positive relationship with market performance measurement at the 5% level.

Table 7.6: Fixed Panel Regression Results for Tobin's Q as Performance Measure of Singaporean Listed Companies

	ALL PERIODS (1995-2005)		PRE CRISIS (1995-1996)		POST CRISIS (1999-2005)	
Variable	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**
C	-0.0300	-0.4056	0.0974	0.9830	0.4598	3.5969(***)
Gowned	0.5438	11.6336(***)	0.1788	1.1597	0.7082	14.5482(***)
Size	0.0414	7.5606(***)	0.0606	4.8541(***)	-0.0051	-0.5690
Non-Duality	0.0977	0.8694	-0.1324	-0.8683	0.1056	2.1644(**)
Debt	0.0294	0.7346	-0.0453	-0.1357	0.0170	0.4484
Agency Cost	0.1118	4.5208(***)	0.4309	3.8858(***)	0.0247	0.9477
Growth	1.1013	5.4263(***)	0.1675	0.1638	0.8620	4.1589(***)
R-squared	0.3510		0.2784		0.3704	
Adj R-squared	0.3453		0.2617		0.3637	
F-statistics	61.3770		16.6411		25.4091	
Probability	0.0000(***)		0.0000(***)		0.0000(***)	

Notes 1: Value = $\beta_0 + \beta_1 Gowned + \beta_2 Size + \beta_3 nDual + \beta_4 Debt + \beta_5 AC + \beta_6 Growth$ ... (Eq.1)
*Notes 2: ***/**/* Correlation is significant at 0.01/0.05/0.1*

7.4.2 Results Based on Accounting Measure

In Table 7.7, ROA is used as company performance (accounting measurement); the model appropriateness with the F-value of 16.0931 is significant at any level of significance and the adjusted R^2 is 11.65%. The joint null hypothesis of all variables being significant is rejected at the 1% significance level. These variables seem to be consistent with the hypothesised objective in the Singaporean context. For example, the results show a positive relationship between size of company and performance (t- 7.4368 and significant at the 1% level). This indicates that companies with larger assets have business activities and show stability in their financial health compared to the smaller sized companies. Because of this, investor confidence in these companies is higher, and, at the same time, it increases returns on company assets. This result is consistent with the findings by Ang and Ding et al. (2005) and Ros Haniffa (2000). Looking at the pre-crisis periods, we find that results in debt ratios are negative (t = -7.7390 and significant at the 1% level); this means that companies with lower debts show better performance. This finding concurs with the findings of McConnell and Servaes (1995), and Weir et al. (2002).

In Table 7.7, the results support the contention that government ownership does have an important impact on performance in Singaporean companies, with a (t = 8.0662), significant at the 1% level. This is consistent with findings by Ang and Ding et al. (2005), and Dyck and Wruck (1998) who documented that government involvement through government agency leads to better performance by the company. For agency costs, the results appear to document a significant negative association between agency cost and company performance at the 10% level (which t = 0.0703), which appears to be consistent with Ang and Ding (2000) who recorded a negative association between agency cost and company performance.

Table 7.7: Fixed Effect Regression Results for ROA as Performance Measure of Singaporean Listed Companies

	ALL PERIODS (1995-2005)		PRE CRISIS (1995- 1996)		POST CRISIS (1999-2005)	
Variable	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**
C	-0.0229	-3.0022(***)	-0.0038	-0.7180	-0.1283	-4.832(***)
Gowned	0.0609	8.0662(***)	0.0156	1.8980(*)	0.1305	11.5430(***)
Size	0.0044	7.4386(***)	-0.0005	-0.8227	0.0109	0.1305(***)
Non-Duality	0.0022	0.2986	0.0033	0.4044	-0.0023	-0.2034
Debt	-0.0656	-7.7390(***)	-0.0719	-2.0814(**)	-0.0392	-4.2197(***)
Agency Cost	-0.0079	-1.8108(*)	0.0256	4.3107(***)	0.0012	0.1931
Growth	0.0277	0.6220	0.2055	3.7855(***)	-0.0577	-0.1239
R-squared	0.1242		0.4492		0.2124	
Adj R-squared	0.1165		0.4366		0.20420	
F-statistics	16.0931		35.1949		25.4091	
Probability	0.0000(***)		0.0000(***)		0.0000(***)	

Notes 1: Value = $\beta_0 + \beta_1 Gowned + \beta_2 Size + \beta_3 nDual + \beta_4 Debt + \beta_5 AC + \beta_6 Growth$ ... (Eq.1)
*Notes 2: ***/**/* Correlation is significant at 0.01/0.05/0.1*

7.5 RESULTS AND DISCUSSION – SINGAPOREAN MATCHED SAMPLES

In determining which is better, this study uses matching analysis of samples between 25 GLCs and 25 non-GLCs from a total sample of 177 Singaporean listed companies. The companies are matched based on company size (ln(total Assets)) and industry. This study applies the same analysis from the previous chapter that compared Malaysian GLCs to non-GLCs.

7.5.1 Descriptive Statistics

To examine the impact of corporate governance and government control on company value in the context of Singaporean companies, the analysis compares the financial performance of GLCs

with non-GLCs to determine whether government ownership and various governance measures contribute to company performance. Table 7.8 presents the descriptive statistics and results of the test of normality assumption. The results suggest that observations are not normally distributed based on Jargue-Bera.

Table 7.8: Normality Test Statistics of 50 Singaporean Matched Companies

	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Probability
Gowned	0.5000	0.5000	0.5005	0.0000	1.0000	91.6667	0.0000
Tobin's Q	0.9271	0.7489	0.7541	2.7804	16.1711	4684.1850	0.0000
ROA	0.0146	0.0342	0.8822	-12.8673	178.9782	724868.0000	0.0000
Size	14.2755	14.2261	2.9552	-2.6299	14.3698	3596.4740	0.0000
Non-Dual	0.3200	0.0000	0.4669	0.7717	1.5956	99.7958	0.0000
Debt	0.2082	0.1694	0.1793	0.8579	3.7699	81.0501	0.0000
Agency Cost	0.8530	0.9024	0.2564	0.4113	17.6510	4934.5860	0.0000
Growth	0.0490	0.0255	0.0697	3.1394	14.4593	3912.8130	0.0000

7.5.2 Correlation Matrix

Results of the correlation matrix are listed in Table 7.9; the findings suggest that there is a significant positive relationship between ROA and Tobin's Q with government ownership at the 1% level. Thismeans government-owned companies perform better than non-GLCs for both measurements. This shows that the government seems to control and monitor companies to perform well in both accounting and market situations. Therefore, shareholders' wealth can be maximised and the country's economic growth increased. Meanwhile, in agency cost proxies, non-duality and agency cost show a positive correlation with government-owned companies (GLCs) at the 1% and 10% levels of significance. This explains that since in GLCs the Chairperson is a separate person from the directors, the company needs to expand more on administrative expenses such as executive remuneration, which includes fringe benefits, since

the management mostly consists of foreigners from multinational companies (MNCs). This separation of control between manager and chairperson and the higher expenses, however, seem to have led companies to better performance for both measurements. This is shown from the results of the positive relationship between the performance measures, Tobin's Q and ROA, with the two agency proxies.

The results have also identified those companies with large total assets perform better than smaller sized companies. This is supported by the positive correlation between size and Tobin's Q at the 5% level of significance. Companies with large total assets seem to have potential for growth or expanding the business activities to achieve their target, that is, to increase the value of their company. In relation to the size of company, the results also find that the larger the size of company, the higher the potential of the company to increase their debts. A positive correlation between size and debt at the 1% level of significance indicates that large companies have the potential to obtain borrowings or loans from financial institutions, and to produce long-term debts such as bonds to expand their business.

Table 7.9: Correlation Matrix for 50 Matched Singaporean Listed Companies

	Gowned	Tobin's Q	ROA	Size	Non-Dual	Debt	Agency Cost	Growth
Gowned	1.0000	**0.1853(***)** **0.0000**	**0.1263(***)** **0.0030**	0.0558 0.1915	**0.6002(***)** **0.0000**	-0.0635 0.1371	**0.0757(*)** **0.0761**	-0.0431 0.3134
Tobin's Q		1.0000	**0.1048(**)** **0.0140**	**0.0969(**)** **0.0230**	**0.1493(***)** **0.0004**	**-0.1206(***)** **0.0046**	**0.1922(***)** **0.0000**	0.0558 0.1913
ROA			1.0000	0.0242 0.5716	**0.0894(**)** **0.0361**	-0.0529 0.2158	0.0426 0.3186	0.0109 0.7994
Size				1.0000	**0.2391(***)** **0.0000**	**0.2213(***)** **0.0000**	**-0.0971(**)** **0.0228**	-0.0339 0.4277
Non-Dual					1.0000	0.0046 0.9149	**-0.1793(***)** **0.0000**	**-0.1073(**)** **0.0118**
Debt						1.0000	-0.0394 0.3569	**-0.2378(***)** **0.0000**
Agency Cost							1.0000	**0.1574** **0.0002**
Growth								1.0000

***/**/* Correlation is a significant at 0.01/0.05/0.1 level

7.5.3 Financial and Market Performance of GLCs and Non-GLCs

This study investigates the source of superior GLC performance by comparing various measures of financial and market performance of GLCs and non-GLCs. The mean of the financial and performance of GLCs and non-GLCs is taken from the results of this study. Performance analysis was further divided based on all periods, pre- and post-crisis to isolate the crisis on performance. These are presented in Tables 7.10, 7.11 and 7.12, respectively. Based on the findings, it appears that GLCs outperform non-GLCs on performance, Tobin's Q and ROA. Tables 7.10 and 7.12 show that the mean performance of GLCs is higher than that of non-GLCs for all periods and post-crisis at any level, however, for pre-crisis it does not appear to be so, indicating that GLCs perform better, however, the finding is not significant. Meanwhile, the ROE results do not show significance in all periods of study, however, the findings, when broken down into several periods, indicate that GLCs outperform non-GLCs during post-crisis.

During crisis there is a negative relationship (but not significant), which means that GLCs' performance dropped dramatically to negative. This indicates that the net income of GLCs through Temasek Holding and other GLICs decreased tremendously during the Asian crisis, due to the drop in sales and business activities. After 1998, GLCs recovered from the crisis by aggressively increasing their profits; this can be seen in the post crisis positive results that are significant at every level. For market book ratios, the findings are negative but significant, meaning that non-GLCs perform better than GLCs; this is supported by the post crisis negative results.

For agency cost, the findings show positive results for all periods, supported by post crisis results. Due to the hiring of foreigners to run the companies, expenses, especially for administrative matters, such as manager remuneration, bonuses and others, need to be borne by the GLCs. Foreigners were hired for their multinational experience and for transparency in their decision-making. It can be seen from the results when broken into three periods, that GLCs incur higher expenses than non-GLCs. Results on sales turnover show that GLCs have better sales turnover compared to non-GLCs over all periods; this is supported by the positive and significant results on all periods and post-crisis. Other periods, such as pre-crisis and during crisis show positive but not significant results. High turnover leads to better company performance because the more sales turnover, the more business activities, which results in more profit. Other financial and market performance measures for all and other periods do not show any significance.

Table 7.10: Market and Financial Performance throughout ALL PERIODS (1995 to 2005)

		Market Performances		Financial Performances	
Variable	**No. of Observations**	**Tobin Q**	**Stock**	**ROA**	**ROE**
GLCs	25	1.0667	0.0996	0.1259	-0.0088
nonGLCs	25	0.7876	0.0262	-0.9680	0.0431
t-test		**4.4132**	**3.7190**	**2.9809**	-0.3804

Table 7.11: Market and Financial Performance throughout PRE-CRISIS (1995 to 1996)

		Market Performances		Financial Performances	
Variable	**No. of Observations**	**Tobin Q**	**Stock**	**ROA**	**ROE**
GLCs	25	1.2965	0.0000	0.0451	0.0396
nonGLCs	25	1.0106	0.0065	0.0402	0.0185
t-test		1.3510	1.8214	0.4570	**4.0674**

Table 7.12: Market and Financial Performance throughout POST-CRISIS (1999 to 2005)

		Market Performances		Financial Performances	
Variable	**No. of Observations**	**Tobin Q**	**Stock**	**ROA**	**ROE**
GLCs	25	1.0140	0.1566	0.1761	0.1840
nonGLCs	25	0.6975	0.0362	-0.1690	0.0320
t-test		**5.2535**	3.9935	**2.9549**	**3.0942**

7.6 Panel and Pooled Regression Analysis

Tables 7.13 and 7.14 summarise panel fixed regression for the relationships between performance and company specific characteristics.[13] The two measurements of performance used are Tobin's Q for market performance and ROA for accounting performance. These results seem to show that the selected model is fit and significant for both measurements. For Tobin's Q, F-statistics of 6.0215 and adjusted R^2 of 13.46%, while for ROA, F-statistics of 7.5686 and adjusted R^2 of 16.90% indicate that there are other factors, which may be equally important in explaining the values of both measurements.

Government ownership in Singapore, led by Temasek Holdings and other bodies such as Singapore Technologies (ST) and the Ministry of National Development (MND) Holdings have a great impact on the performance of companies in Singapore. Tables 7.13 and 7.14 show positive significant relationships between government ownership and performance on both measurements (t=3.9891 for Tobin's and t=3.1952) at the 1% level. This positive relationship is also found in the post-crisis analysis and is significant at every level. Following that, results also indicate a positive correlation between growth and Tobin's Q in all periods and post-crisis,

[13]After checking robustness between Fixed Effect (FE), Random Effect (RE) and GLCS, this study identifies that FE is the best model in analyzing this data.

though at different levels of significance. However, unfortunately, although the ROA results are positive they are not significant.

Non-duality is only significant in market performance, positive at 10% in all periods and 1% post-crisis, but not significant at all in the accounting measurement, ROA. In relation to other corporate governance factors such as agency cost, the results show that agency cost is not significant for all periods. However, further study of the details finds a positive significant relationship between Tobin's Q and agency cost at the 1% level for both pre and post-crisis periods. These results also apply to the accounting performance, ROA. Meanwhile, size is only positive and significant with ROA post crisis at the 1% level, which explains that large companies in Singapore lead better than small companies. There is a negative relationship between debt/leverage with company performance, which indicates that companies with lower debts perform better than those with higher debts.

Table 7.13: Fixed Panel Regression Results for Tobin's Q as Performance Measure of Singaporean Matched Samples

	ALL PERIODS (1995-2005)		PRE-CRISIS (1995-1996)		POST-CRISIS (1999-2005)	
Variable	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**
C	0.4315	2.2683(**)	0.0369	0.1372	0.5648	2.4890(**)
Gowned	0.2495	3.9891(***)	0.1166	0.4872	0.2218	3.4021(***)
Size	0.013	1.0264	-0.0073	-0.2598	-0.0006	-0.0393
nDual	0.1239	1.7528(*)	0.264	0.9537	0.2155	2.9043(***)
Debt	-0.1745	-1.241	0.2369	0.3386	-0.1201	-0.8512
Agency Cost	0.1195	0.6615	0.9895	4.3977(***)	0.1324	2.6143(***)
Growth	0.9439	2.5352(**)	1.9463	0.839	0.632	1.6585(*)
R-squared	0.1614		0.3126		0.2184	
Adj R-squared	0.1346		0.2521		0.1881	
F-statistics	6.0215		5.172		7.2205	
Probability	0.0000(***)		0.0000(***)		0.0000(***)	

Notes 1: Value = $\beta_0 + \beta_1 Gowned + \beta_2 Size + \beta_3 nDual + \beta_4 Debt + \beta_5 AC + \beta_6 Growth$ ..... (Eq.1)
*Notes 2: ***/**/* Correlation is significant at 0.01/0.05/0.1*

Table 7.14: Fixed Panel Regression Results for ROA as Performance Measure of Singaporean Matched Samples

	ALL PERIODS (1995-2005)		PRE CRISIS (1995-1996)		POST CRISIS (1999-2005)	
Variable	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**	**Co-efficient**	**t-statistics**
C	-0.0552	-1.9019(*)	0.0030	0.2328	-0.4034	-3.8648(***)
Gowned	0.0479	3.1952(***)	0.0107	0.9524	0.1314	4.2538(***)
Size	0.0000	0.0120	-0.0003	-0.1957	0.0181	2.7069(***)
nDual	0.0016	0.0910	-0.0087	-0.6660	0.0273	0.7766
Debt	-0.0826	-2.1801(**)	-0.0555	-1.6890(*)	-0.0075	-0.1068
Agency Cost	0.0496	0.9698	0.0444	4.2033(***)	0.0771	3.1120(***)
Growth	0.1034	1.1098	0.0320	0.2920	0.1432	0.9376
R-squared	0.1948		0.3894		0.2474	
Adj R-squared	0.1690		0.3358		0.2183	
F-statistics	7.5686		7.2556		8.4982	
Probability	0.0000(***)		0.0000(***)		0.0000(***)	

Notes 1: Value = $\beta_0 + \beta_1 Gowned + \beta_2 Size + \beta_3 nDual + \beta_4 Debt + \beta_5 AC + \beta_6 Growth$ .. (Eq.1)
*Notes 2: ***/**/* Correlation is significant at 0.01/0.05/0.1*

7.7 Comparison of Matched Samples of GLCs and Non-GLCs

In addition to the analysis below, a sample of non-GLCs is included for analysis in which each GLC is paired with a non-GLC based on size and industry. Tables 7.15 and 7.16 summarise panel based fixed regression in estimating the relationship between performance and specific characteristics for GLCs and non-GLCs. First, results from both tables are found to be similar as the profit margin is positive and significant with performance at the 1% level except with Tobin's Q for non-GLCs. In Table 7.15, the finding shows a negative relationship between debt and performance of GLCs at the 5% significance level for Tobin's Q and 1% for ROA. This shows that besides having a positive profit margin, GLCs also reduce their debt/leverage to achieve better performance. Agency cost is not a major contributor to company performance

since it is only positive and significant at the 10% level for Tobin's Q and not significant at any level for ROA.

In Table 7.16, besides growth, size indicates significance but with a different relationship for ROA. Size shows a negative correlation with ROA at 10%, which shows that small non-GLCs provide better performance than large ones.

Table 7.15: Fixed Panel Regression Results for Tobin's Q and ROA as Performance Measure for ALL PERIODS (1995-2005) – 25 Singaporean GLCs

	TOBIN'S Q			RETURN ON ASSETS (ROA)		
Variable	**Co-efficient**	**t-statistics**	**Probability**	**Co-efficient**	**t-statistics**	**Probability**
C	0.0996	0.3170	0.7515	0.0816	3.5614	0.0004(***)
Size	0.0162	0.8394	0.4020	0.0015	0.7524	0.4525
nDual	0.2120	2.4135	0.0165(**)	-0.0117	-1.3069	0.1924
Debt	-0.5113	-2.2976	0.0224(**)	-0.0897	-3.6126	0.0004(***)
Agency Cost	0.7253	1.9578	0.0513(*)	0.0371	1.0162	0.3105
Growth	-0.0403	-0.0727	0.9421	0.0424	0.5256	0.5996
R-squared	0.1851			0.4606		
Adj R-squared	0.1346			0.4272		
F-statistics	3.6626			13.7701		
Probability	0.0000(***)			0.0000(***)		

Notes 1: Value = $\beta_0 + \beta_1$ Size + β_2nDual + β_3Debt + β_4 AC + β_5 Growth + β_6PM ..... (Eq.2)
*Notes 2: ***/**/* Correlation is significant at 0.01/0.05/0.1*

Table 7.16: Fixed Panel Regression Results for Tobin's Q and ROA as Performance Measure for ALL PERIODS (1995-2005) – 25 Singaporean Non-GLCs

	TOBIN'S Q			RETURN ON ASSETS (ROA)		
Variable	**Co-efficient**	**t-statistics**	**Probability**	**Co-efficient**	**t-statistics**	**Probability**
C	0.3750	1.9248	0.0554(*)	0.0300	1.6306	0.1042
Size	0.0136	0.9222	0.3573	-0.0029	-1.7424	0.0826(*)
nDual	-0.2161	-1.3560	0.1763	0.079	0.5644	0.5730
Debt	0.1246	0.7398	0.4601	0.0242	1.3301	0.1847
Agency Cost	0.1080	0.5801	0.5624	0.0302	1.2397	0.2162

Growth	1.8233	3.8907	0.0001(***)	0.1100	2.7692	0.0060(***)
R-squared	0.1815			0.1716		
Adj R-squared	0.1308			0.1203		
F-statistics	3.5766			3.3410		
Probability	0.0000(***)			0.0000(***)		

Notes 1: Value = $\beta_0 + \beta_1$ Size + β_2nDual + β_3Debt + β_4 AC + β_5Growth ..... (Eq.2)
*Notes 2: ***/**/* Correlation is significant at 0.01/0.05/0.1*

7.8 CHAPTER SUMMARY

In this chapter, the study investigates the ownership or control structure of Singaporean listed companies, specifically examining Singaporean government owned companies through Temasek Holdings and two other bodies. The investigation of Singapore's GLCs is important because GLCs play a significant and active role in the country's economy. Until 2005, GLCs owned about 50% of market capitalisation in the Singaporean Stock Exchange (SX). This study finds that government involvement in companies leads to better performance after controlling for company specific characteristics. This happened, especially after the financial crisis hit Asia.

The Singaporean government has taken drastic action to make sure their companies perform for the sake of their shareholders, who are its citizens. One of its actions is hiring outsiders to run and manage the companies. Outsider means those who have worked in multinational companies (MNCs) or foreigners with extensive experience in controlling or managing corporations. The reasons for hiring foreigners are their experience in leading multinational organisations and for transparency in their decision-making. As a result of the greater expenses to attract outsiders or foreigners to join GLCs

as directors to run or manage, these companies' expenses to sales ratios are, therefore, higher, as found by this study.

The importance of this study to compare the financial and market performance of GLCs with non-GLCs is that each has a different set of governance structure, the key difference being government ownership. The findings show that GLCs provide superior results in market performance, Tobin's Q and for both returns, ROA and ROE. This shows that GLCs are more highly valued. Since GLCs are generally correlated with better governance practices, the findings support the view that investors in the Singaporean market do value the higher standards of corporate governance found in the GLCs.

The findings for Singapore show a difference from the Malaysian findings because GLCs in Singapore perform better than non-GLCs for both measurements, Tobin's and ROA. The main reason is because GLCs implement better corporate governance than in Malaysia by hiring outsiders or foreigners as CEO of their GLCs. With considerable experience in handling multinational companies and separating role duality, it enables them to control and manage GLCs towards better performance. Since GLCs are generally correlated with better governance practices, the results support the view that investors in the Singaporean market do value the higher standards of corporate governance found in the GLCs.