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Performance of Government-Linked Firms Listed on Two Stock Exchanges of the United Arab Emirates: An Empirical Study

Md Hamid Uddin, Sawsan Halbouni, and Mahendra Raj

ABSTRACT: In the United Arab Emirates, the government holds ownership in 48 percent of all stock exchange-listed firms. However, prior evidence does not make clear whether the government linkage of a company via ownership holding is good or bad for the firm's performance. We propose two hypotheses. The agency hypothesis holds that government ownership negatively affects firm performance. The support hypothesis postulates that government ownership helps a firm to improve performance. Using a sample of 114 companies, we find that the government-linked companies (GLCs) have better accounting results than do the companies that are not linked to the government (non-GLCs), yet the GLCs are undervalued in the financial market. Subsample analyses reveal that the best accounting results are those of the GLCs in which the government holds 20 to 50 percent of the ownership. If the government takes control of a company by holding more than 50 percent ownership, the accounting results are not improved, yet, unlike other GLCs, these GLCs are overvalued.

KEY WORDS: corporate governance, firm performance, government-linked companies, government ownership.

A number of studies find that the governments of many transitional countries in East Asia hold a significant percentage of the ownership in many local corporate firms, which are usually known as government-linked companies (GLCs). Ang and Ding (2006) report that GLCs account for 24 percent of stock market capitalization in Singapore. Najid and Rahman (2011) find that 34 percent of Malaysian firms listed on the Kuala Lumpur Stock Exchange are GLCs. Tian and Estrin (2008) find that government has an ownership in 31 percent of all stock exchange-listed firms in China. Claessens et al. (2000) report that the governments of Hong Kong, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, Taiwan, and Thailand control 1.1 to 23.6 percent of all local corporate firms. We observe that the phenomenon of government shareholding in corporate firms is also widespread in the Arabian Gulf countries. In the United Arab Emirates (UAE), we find that the government has ownership in 48 percent of all local companies listed on the Dubai Financial Market (DFM) and Abu Dhabi Exchange (ADX). Although government ownership in corporate firms is found in many countries, whether the performance

Md Hamid Uddin (mduddin@sharjah.ac.ae, iba_hu@yahoo.com) is an associate professor of finance at the College of Business Administration, University of Sharjah, Sharjah, United Arab Emirates. Sawsan Halbouni (sawsanhalb@sharjah.ac.ae) is an assistant professor of accounting at the College of Business Administration, University of Sharjah, Sharjah, United Arab Emirates. Mahendra Raj (mrj@sharjah.ac.ae) is a professor of finance at the College of Business Administration, University of Sharjah, United Arab Emirates. The paper was developed based on a collaborative research conducted by the authors at the University of Sharjah. The authors acknowledge their colleagues and two anonymous referees who provided important feedback to improve the paper.

of firms is affected due to their ownership linkage with the government has not been adequately studied.

Shleifer and Vishny (1994) and Vickers and Yarrow (1988) suggest that government ownership may negatively affect firm performance since the ownership right is exercised through bureaucracy that works under political influence and lacks professional manpower to manage business firms in a competitive environment. However, He et al. (2009) suggest that the government extracts social and political benefits from ownership in corporate firms while monitoring activities of the firm management; hence, the firm performance may improve or decline depending on the individual strengths of the two effects. Among the empirical studies, Feng et al. (2004) find the Singapore GLCs are comparable to non-GLCs in terms of their profitability and market performance during the 1964–98 period. However, contradicting the earlier evidence, Ang and Ding (2006) report that Singapore GLCs have superior financial and market performance compared with non-GLCs over the period 1990 to 2000. Sun et al. (2002) and Tian and Estrin (2008) report that government ownership results in nonlinear inverted U-shaped effects on the valuation of Chinese GLCs. Using Indian data, Gupta (2005) finds that privatization has a positive effect on profitability, productivity, and investment if the government retains controlling ownership in the privatized firms. Using Malaysian data, Razak et al. (2011) find that the financial performance and market performance of GLCs are weaker than those of non-GLCs. However, Najid and Rahman (2011) find that although Malaysian GLCs have weaker financial performance compared to non-GLCs, the government linkage exerts positive effects on the valuation of GLCs. In Jordon, Zeitun and Tian (2007) find that government shareholding negatively affects firms' return on equity. In sum, the existing studies are not enough to clearly understand the effect of government shareholding on corporate performance.

The present study is implemented in the context of the United Arab Emirates because the UAE government has a share of ownership in 48 percent of all firms listed in the DFM and ADX. This is the highest proportion of government shareholding in stock market-listed firms in any country in the world. The UAE is the second-largest economy in the Middle East and North African (MENA) region, with a gross domestic product (GDP) of US\$360 billion in 2011. The country became a major economic hub of the region due to its openness toward international business, trade, and investments. Total foreign direct investment reached \$860 billion in 2011 (*The National*, April 18, 2012). One hundred thirty corporate firms have been listed on the DFM and ADX over the past decade, and their market capital reached \$93.77 billion in 2010. The UAE government became the major player in the local corporate sector by holding share ownership in 48 percent of all listed firms. Some of these UAE-registered firms in which the government has a controlling ownership are now internationally renowned. For example, Emirates Airlines ranks as the third largest in the world based on capacity, and it has contributed over \$1.2 billion to the Indian economy and \$1.3 billion to the Australian economy (see <http://centreforaviation.com> and www.arabianbusiness.com, June 2, 2011). Etisalat Telecom ranks 140th in the *Financial Times* top 500 companies (AMEInfo.com, May 2, 2012; *The Gulf News*, October 14, 2009). Therefore, the new evidence from the UAE will enhance the knowledge of government ownership's effect on firm performance.

In investigating the subject, we estimate three types of firm performance. First, accounting performance is estimated by the return on equity, return on assets, profit margin, and total assets turnover. Second, market performance is measured by the Tobin's Q ratio, earnings-price ratio, price-to-book ratio, price-to-revenue ratio, and price-to-cash flow

ratio. Third, economic efficiency performance is measured by the revenue per employee, net profit per employee, and revenue-cost ratio. A firm is classified as a GLC if the government holds a minimum 2 percent of the ownership. The empirical tests use 114 companies (62 GLCs and 52 non-GLCs) listed on the DFM and ADX over the period 2006 to 2010. We find that the GLCs perform better than the non-GLCs in terms of return on assets and total assets turnover. Despite good accounting results, however, the GLCs are undervalued compared to the non-GLCs. Results show that government ownership alone does not affect the economic efficiency of the GLCs. Nonetheless, GLCs earn more revenue and profit per employee and achieve high revenue-to-cost ratio, perhaps due to receiving government support in accessing key resources and getting strong market power to operate in a competitive environment.

We also find that the GLCs with government ownership from 20 to 50 percent of total shares have the best performance in terms of the return on assets and total asset turnover. If the government takes controlling ownership by holding more than 50 percent of the total shares, the accounting results are not better than those of the non-GLCs, yet these GLCs are overvalued, unlike GLCs in which the government has less than 50 percent ownership. These results imply that there is an optimal level of government ownership that may help improve the performance of corporate firms. Therefore, this study will be useful for determining the percentage of ownership to sell when privatizing government-owned enterprises. It will also be useful for determining ownership sharing if governments want to undertake joint venture projects with private entrepreneurs.

Literature Review and Hypotheses

The concentration of ownership and firm control and its impact on corporate performance are well documented in the literature (e.g., Demsetz and Lehn 1985; Earle et al. 2005; Himmelberg et al. 1999; Ma et al. 2010). We find that the earlier studies examine different issues related to corporate ownership and firm control across several dimensions: family ownership, institutional ownership, government ownership, public ownership, and miscellaneous ownership (Claessens et al. 2000; La Porta et al. 1999). Of these ownership categories, the government ownership in corporate firms is widespread in transitional and emerging economies. According to Ang and Ding (2006), this happens because the governments in these economies need to provide risk capital to many new ventures since the venture capital industries in their countries have not yet been fully developed. In addition, government ownership of corporate firms helps development of the capital markets in transitional and emerging economies provided that the government, being a firm owner, is able to deliver good corporate governance. Nonetheless, it remains to be determined whether the government can ensure good governance of the GLCs by holding ownership and thereby improving firm performance.

Ang and Ding (2006) argue that when government ownership rights exert a monitoring role without any operational and managerial responsibilities, this may supplement or fill the gap in the external monitoring role if strong institutional investors are not yet available, as is often the case in transitional and emerging economies. Therefore, incentives for major shareholders to expropriate minority shareholders' interests can be checked. In addition, GLCs are able to operate in a less competitive business environment since competition is kept under control through the government's strong market power. Aljifri and Moustafa (2007) suggest that government ownership helps GLCs secure low-cost finance from different sources. The above studies generally indicate that GLCs benefit from the

government's ownership, which may help in improving their performance. Alternatively, some studies argue that government ownership and control can make a firm ineffective and inefficient. Among these, Boycko et al. (1996) find that government enterprises are highly inefficient because they pursue strategies such as excess employment that satisfy the political objectives of the politicians who control them. Shleifer (1998) finds that private ownership is better than public ownership if business innovation and cost control are needed to increase firm profitability. According to Shleifer, the government's social goals are also achieved more effectively through private ownership of business firms. According to Krueger (1990), GLCs are usually pressured to hire politically connected persons to perform tasks as desired by the government. Therefore, the GLCs often need to sacrifice their profit motives in order to achieve the social and political objectives of the government.

However, the existing empirical studies cannot determine unequivocally whether government ownership is good or bad for firm performance. For example, Boardman and Vining (1989) find that state-owned enterprises in the United States perform worse than do private enterprises. Using international data on the 500 largest companies, Dewenter and Malatesta (2001) find that government-owned firms are significantly less profitable compared to privately owned firms. Borisova and Megginson (2011) find that the financial risk of private firms increases due to the absence of government guarantee, uncertainty of ownership, and conflicting interests of the bondholders and shareholders. Government shareholding helps a firm secure low-cost capital by providing risk guarantee of the government.

The studies using Asian data also provide mixed results. For example, Najid and Rahman (2011) and Razak et al. (2011) find that the performance of Malaysian GLCs is weaker than the performance of Malaysian non-GLCs, yet the GLCs are valued more highly in the financial market. Similarly, Ang and Ding (2006) and Feng et al. (2004) find that GLCs in Singapore are valued more highly than non-GLCs although the two groups of firms are equally profitable. Dougherty et al. (2007), Xu (2010), and Zhang (2004) find that government-owned firms in China are less profitable than privately owned firms because government-owned firms are less productive. However, in terms of market performance results, the studies find that the firm value decreases as government ownership increases up to a certain level; beyond this level, however, the value increases with the increase in government ownership. This is possibly the case because large government shareholding reduces firm risk, which in turn helps increase firm value (Tian and Estrin 2008). Gürsoy and Aydoğan (2002) find that government-owned firms in Turkey have weak accounting performance, yet their market performance is very strong.

Using the above review of literature, we are unable to draw a definite conclusion as to whether government ownership has a positive or negative effect on firm performance. We suggest that government ownership may affect firm performance either positively or negatively subject to the circumstances of an economy. We therefore propose two hypotheses: the agency hypothesis and the support hypothesis. The agency hypothesis posits that government ownership represents the citizen stake in corporate firms. In the absence of effective monitoring systems, the government may not play a professional role in the management of corporate firms; therefore, the value of the firm is not maximized. The agency problems due to government ownership are aggravated since the government is usually represented in firm management by officials who are selected from the civil bureaucratic administration and who are trained for public administration; hence, they have inadequate knowledge of managing business enterprises in competitive markets.

Therefore, it is likely that multidimensional agency problems may arise between the public and the government, the government and its representative in the firm management, the government and the private shareholders, and the management board and shareholders. Therefore, the agency hypothesis is constructed as follows:

Hypothesis 1: The performance of GLCs is weaker than that of non-GLCs.

The support hypothesis posits that government ownership has a positive effect on the performance of corporate firms. This is because the GLCs have greater ease in securing low-cost finance from different sources with the governmental guarantee; the government can provide a monitoring role in the absence of strong institutional investors in transitional and emerging economies; and government ownership helps the GLCs to operate in a competitive market environment with strong market power due to the government supports. Therefore, the support hypothesis is constructed as follows:

Hypothesis 2: The performance of GLCs is stronger than that of non-GLCs.

We test these hypotheses in the context of the United Arab Emirates. Aljifri and Moustafa (2007) find that government ownership has a positive effect on the Tobin's Q ratios of UAE firms. Hence, we have a piece of evidence that is consistent with the support hypothesis although their study is not aimed at examining the government-ownership issue in particular and is based on only one year's (2004) data related to fifty-seven UAE firms. In this study, we use a large number of firms and five years of data in order specifically to examine the effect of government ownership on different kinds of firm performance.

Sample Characteristics

One hundred thirty companies were listed on the DFM and ADX as of December 2010. The general information of these companies is found in different electronic resources including stock market and company Web sites. After identifying the sample companies, however, the fundamental data regarding the performance of 114 firms are collected for empirical study from company annual reports published over five years from 2006 to 2010, resulting in a total of 541 observations. The sample classifications are presented in Panel A of Table 1. It shows that sixty-two firms are classified as GLCs; the remaining fifty-two firms are non-GLCs. The majority of GLCs belong to banking, manufacturing, and real estate sectors. As a whole, the distribution indicates that the majority of total samples belong to the banking, insurance, manufacturing, and real estate sectors. Only nineteen companies belong to the investments, transportation, and services sectors. It also shows that most companies including GLCs are listed on ADX.

The basic characteristics of the samples presented in Panel B of Table 1 show that, in terms of average total assets, the GLCs are approximately 5.72 times larger than the non-GLCs. In terms of average total revenue, the GLCs are about four times larger than the non-GLCs. Similarly, in terms of average annual operating income, the GLCs are about 6.41 times larger than the non-GLCs. In terms of number of employees, the GLCs are about 1.19 times larger than the non-GLCs. In addition, the majority of GLCs are managed by externally appointed CEOs. The difference is also observed between the GLCs and non-GLCs with respect to other factors such as the asset-to-equity ratio, firm age, and board size. Overall, the GLCs are larger than the non-GLCs, particularly in terms of total assets, revenue, profits, and employee size. Therefore, sample characteristics suggest that GLCs dominate the UAE stock markets.

Table 1. Classifications and characteristics of the sample firms

Panel A: Classifications of samples based on the industries and stock exchanges

Industries/exchange	GLCs		Non-GLCs		Total	
	Number of firms	Data observations	Number of firms	Data observations	Number of firms	Data observations
Banks	19	88	6	29	25	117
Insurance	8	40	21	92	29	132
Investments	3	15	4	19	7	34
Real Estate	10	50	3	9	13	59
Transportation	4	20	2	10	6	30
Manufacturing	14	69	14	70	28	139
Services	4	20	2	10	6	30
DFM	22	102	28	130	50	232
ADX	40	200	24	109	64	309
Total	62	302	52	239	114	541

(continues)

Table 1. Continued

Panel B: Basic characteristics of samples

	Total non-GLCs	Government ownership percentage across different ranges (upper limit excluded)							Total GLCs
		2-10	10-20	20-30	30-40	40-50	Above 50		
Number of firms	52	11	13	11	5	4	18	62	
Total assets (million AED)	3,991	16,732	7,332	13,713	12,639	4,457	49,337	22,824	
Asset to equity ratio	2.46	3.21	2.52	3.15	1.41	4.22	4.91	3.48	
Total revenue (million AED)	620	1,215	1,226	1,905	2,980	426	5,063	2,548	
Total operating income (million AED)	198	636	340	1,504	693	50	2,628	1,269	
Age of firms (years)	25.75	19.83	21.46	26.55	21.00	18.75	21.80	21.85	
Number of employees	1,074	425	1,106	8,022	1,406	413	2,136	2,351	
Board size (number of directors)	7.40	7.00	8.08	7.77	8.60	7.25	8.22	7.82	
CEO duality (yes = Y; no = N)	Y 29 N 23	Y 01 N 10	Y 05 N 08	Y 05 N 06	Y 00 N 05	Y 01 N 03	Y 02 N 16	Y 14 N 48	

Note: In panel B, the mean values of total assets, total revenue, total operating income, age of firms, number of employees, and board size are reported.

Methodology

Government-Linked Company

A company may be linked with the government in various ways, for example, ownership rights, business partnerships, and social activities. In this study, we consider government ownership in a company to be an important channel of linkage through which the government acquires voting rights. In the UAE, public companies disclose information about the persons and institutions holding at least 2 percent of ownership. Therefore, a firm is classified as a GLC if the UAE government (federal or state) holds at least 2 percent of the outstanding shares. We consider the government shows interest in a company's business by holding a minimum of 2 percent of the outstanding shares. Since the percentage of government ownership varies, we classify the GLCs in three groups: monitoring, managing, and controlling. A GLC is defined as GLC(Monitoring) if government ownership is below 20 percent of the outstanding shares. The designation "monitoring" is chosen because the government holds a block of shares that may not be sufficient to significantly influence important corporate decisions. However, the government, being a powerful owner with voting rights, is able to closely monitor and negotiate on the firm decisions. A GLC is defined as GLC(Managing) if government ownership is between 20 and 50 percent of the outstanding shares. The designation "managing" is chosen because the government holds a relatively large block of voting rights, which usually qualifies the government to sit on the board of directors and to play a role in decision making. A GLC is classified as GLC(Controlling) if the government owns more than 50 percent of the total shares. The designation "controlling" is chosen because the government can nominate majority directors and can effectively control all corporate decisions. Besides examination of the firm performance for three GLC categories, we test the robustness of results using both the proportion of government share (PGS) in total firm ownership and its squared term (PGS²).

Firm Performance

We examine three categories of firm performance: pure accounting performance, market-related performance, and economic-efficiency performance. Accounting performance is measured by ROE, ROA, NPM, and TAT where ROE is return on equity, which is calculated as the net income divided by total equity; ROA is return on assets, which is calculated as the net income divided by total assets; NPM is net profit margin, which is calculated as the net income divided by total revenue; and TAT is total asset turnover, which is calculated as the total assets divided by total revenue. The market-related performance is measured by TBQ, EPR, PBR, PRR, and PCR where TBQ refers to Tobin's Q ratio, which is calculated as the market value of the equity plus the book value of debts divided by the book value of total assets; EPR denotes earnings-price ratio, which is calculated as the earning per share divided by market price of share; PBR means price-to-book ratio, which is calculated as market price per share divided by the book value per share; PRR means price-to-revenue ratio, which is calculated as the market price per share divided by the revenue per share; and PCR means price-to-cash flow ratio, which is calculated as market price per share divided by the cash flow per share. The economic-efficiency performance is measured by RPE, NPE, and RCR, where RPE refers to revenue per employee, which is calculated as the total revenue divided by the number of employees; NPE means net income per employee, which is calculated as the net profit divided by

the number of employees; and RCR means revenue-cost ratio, which is calculated as the total revenue divided by the total operating costs.

Test Models

If panel data are used for testing regression models, several techniques, such as pooled, fixed-effects, and random-effects regressions, can be applied. We want to examine whether government shareholding, irrespective of the characteristics of the firm and the period of data, has an effect on the performance of a firm. Hence, a fixed-effects regression is considered appropriate technique. There are different ways to estimate fixed-effects regressions, such as the least squares dummy variable (LSDV) model, the within-effects model, and the between-effects model. In this study, we do not use the LSDV model because degree of freedom is lost significantly if we include dummies for all 114 firms. Of the other two, the within-effects model has some disadvantages, for example, R^2 is not correct because intercept is suppressed. Therefore, we apply the between-effects model. In this approach, we first take the five-year firm-wise mean value for the dependent and relevant independent variables. Thereby, the variations within the firm-level data over five years are controlled, and regressions use firm-wise mean value for each variable across the samples ($n = 1$ through 114). Hence, the study estimates fixed-effects regressions at firm level. In this approach, the number of observations for each variable becomes equal to the number of firms ($n = 114$). The general form of the firm-fixed regressions is as follows:

$$\bar{y}_{i^*} = \alpha + \beta_1 GLC_i + \beta_2 CEO_i + \sum_{1=i}^n \bar{X}_{i^*} + e_i \quad (1)$$

$$\begin{aligned} \bar{y}_{i^*} = & \alpha + \beta_1 GLC(\text{Monitoring})_i + \beta_2 GLC(\text{Managing})_i \\ & + \beta_3 GLC(\text{Controlling})_i + \beta_4 CEO_i + \sum_{1=i}^n \bar{X}_{i^*} + e_i, \end{aligned} \quad (2)$$

where \bar{y}_{i^*} is the mean value of the dependent variables used in different regressions: *ROE*, *ROA*, *NPM*, *TAT*, *TBQ*, *EPR*, *PBR*, *PRR*, *PCR*, *RPE*, *NPE*, and *RCR* as defined earlier. \bar{X}_{i^*} is the mean value of relevant independent variables: *BRD*, *AGE*, *SIZE*, *LEV*, *REV*, and *AGN* as defined below. *GLC* is a dichotomous variable: $GLC = 1$ if the sample firm is a government-linked company as defined above, and 0 otherwise. $GLC(\text{Monitoring})$, $GLC(\text{Managing})$, and $GLC(\text{Controlling})$ are also dichotomous variables. $GLC(\text{Monitoring}) = 1$ if government ownership is below 20 percent of the total outstanding shares, and 0 otherwise. Similarly, $GLC(\text{Managing}) = 1$ if government ownership is between 20 percent and 50 percent of the total outstanding shares, and 0 otherwise. $GLC(\text{Controlling}) = 1$ if government ownership is above 50 percent of the total outstanding shares, and 0 otherwise. X_{it} denotes the control variable for the firm i in the year t . The control variables are *BRD*, *CEO*, *AGE*, *SIZE*, *LEV*, *REV*, and *AGN*. *BRD* denotes board size, which is the number of directors in the board; *CEO* is a dichotomous variable: $CEO = 1$ if the sample firm's chief executive officer also holds the position of company chairman, and 0 otherwise; *AGE* is the number of years a firm has been in operation on the date of data collection; *SIZE* is the log of total assets reported in the balance sheet; *LEV* refers to financial leverage of a firm calculated as the total assets divided by the total equity (equity multiplier); *REV*

is the total revenue as reported in the audited income statements; *AGN* refers to “agency cost” measured by the ratio of operating costs to total assets.

We select the above control variables because their effects on firm performance have been reported in the literature. Bennedsen et al. (2008), Guest (2009), and Jackling and Johl (2009) find that board size generally has a negative effect on firm performance. Chiang and Lin (2007), Lam and Lee (2008), and Peng et al. (2010) find that chief executive officer (CEO) duality affects firm performance, but the pattern of the relationship is as yet unclear. Loderer and Waelchli (2010) and Majumdar (1997) find that the age of the firm negatively affects corporate performance. Canback et al. (2006) and Ramasamy et al. (2005) suggest that the size of corporate firms may affect their performance due to resource acquisitions and economies of scale in the production process. Ghosh (2008), González (2013), and Opler and Titman (1994) find that corporate performance generally declines with the increase in financial leverage due to additional financial distress costs. We know economy of scale occurs when revenues are maximized, as fixed costs are spread over a large amount of revenues. This means the total revenue has an effect on the net profit; therefore, the total revenue is considered as a control variable in our test model. Finally, the effect of agency costs on firm performance has been studied by different researchers, who find that firm performance declines as the agency cost increases (Chen and Lin 2006; Florackis 2008; Ibrahim and Samad 2011; Xiao and Zhao 2012).

The models defined above are estimated using the five-year data for 114 firms listed on the DFM and ADX. The statistical properties of data are reported in Table 2. A general overview of the skewness and kurtosis values of the pooled data shows that the distributions of majority data sets are positively skewed and leptokurtic. We examine the normality of data sets at two levels: pooled data and five-year firm-wise mean data. The Jarque–Bera test for pooled data shows that the *p*-values of all data series except that of *BRD* are equal to zero, suggesting that all but one data series deviate from the normality assumption. Therefore, we have cleaned the data sets by removing the outliers. Last, the Jarque–Bera test for five-year firm-wise mean data shows the *p*-values for *ROA*, *TAT*, *PBR*, *GVS*, *BRD*, *LEV*, and *AGN* are greater than or equal to 0.05, suggesting these variables become normal if the five-year firm-wise mean values are used and outliers are removed. Hence, regressions based on the firm-wise mean data should produce consistent estimates of model parameters.

Results and Discussions

GLC and Non-GLC Performance

We measure three categories of firm performance: pure accounting performance, market-related performance, and economic-efficiency performance for the GLCs and non-GLCs. The results reported in Table 3 show that GLC performance generally is better than non-GLC performance, although some exceptions are observed. The pure accounting performance shows that the average *ROE* and average *ROA* of the GLCs are significantly higher than those of the non-GLCs; the average *TAT* of the GLCs is significantly lower than that of the non-GLCs. The findings generally indicate that GLCs are more profitable, although their average asset turnover is lower than that of the non-GLCs. This may be because the government holds firm ownership for strategic reasons, such as providing leadership in an industry through ownership engagement with the companies. The GLCs

Table 2. Descriptive statistics of data set

Variables	Minimum	Maximum	Median	Mean	Standard deviation	Skewness	Kurtosis	Jarque - Bera <i>p</i> -value (pooled data)	Jarque-Bera <i>p</i> -value (firm-wise mean data)
ROE	-3.00	6.08	0.11	0.11	0.39	5.41	126.87	0.00	0.03
ROA	-1.15	1.60	0.04	0.05	0.12	1.79	67.11	0.00	0.09
NPM	-43.03	461.72	0.19	2.74	27.82	13.05	185.32	0.00	0.01
TAT	-0.17	2.91	0.22	0.34	0.43	2.94	10.94	0.00	0.06
TBQ	-112.10	60.22	1.17	1.38	5.67	-12.76	319.89	0.00	0.00
EPR	-2.74	1.85	0.10	0.11	0.34	-2.62	22.32	0.00	0.00
PBR	0.17	42.46	0.96	1.69	2.91	7.80	85.37	0.00	0.05
PRR	-207.54	6577.44	2.31	44.26	373.39	13.64	211.51	0.00	0.00
PCR	-26,974.49	495.39	4.09	-52.45	1,166.06	-22.89	529.09	0.00	0.00
RPE	-1,007.39	103,759.33	1,081.45	2,931.19	9,357.30	7.77	66.54	0.00	0.00
NPE	-11,944.83	38,470.52	213.93	795.20	3,411.35	7.53	72.14	0.00	0.01
RCR	-42.57	131.90	1.16	1.94	8.34	12.59	191.46	0.00	0.00
GLC	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
GVS	0.03	0.80	0.27	0.33	0.22	0.47	-0.93	0.00	0.15
BRD	2.00	16.00	7.00	7.66	1.99	0.56	2.32	0.29	0.29
CEO	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
AGE	-1.00	941.00	27.00	23.58	41.47	20.11	445.59	0.00	0.00
AST	10.37	286,215.89	1,830.13	14,469.07	36,552.78	4.40	23.35	0.00	0.04
LEV	0.19	19.23	1.97	3.02	2.66	2.12	5.26	0.00	0.12
REV	-492.61	31,929.49	458.74	1,692.91	3,853.11	4.76	27.02	0.00	0.03
AGN	0.00	3.04	0.19	0.30	0.39	3.20	13.66	0.00	0.05

Notes: N/A = not applicable. Because of space limitations, all results cannot be reported in a single table. We report the descriptive statistics for pooled data and Jarque-Bera *p*-values for both pooled and firm-wise mean data. Definitions of the variables are provided in the Methodology section.

Table 3. Performance comparisons between different samples

Panel A: Performance of different types of firms (mean value)

Samples	Pure accounting performance					Market-related performance					Economic-efficiency performance		
	ROE	ROA	NPM	TAT	TBQ	EPR	PBR	PRR	PCR	RPE	NPE	RCR	
1 Non-GLC (<i>n</i> = 239)	0.09	0.04	0.26	0.32	1.47	0.10	1.56	7.67	2.87	1,514.77	323.62	1.24	
2 GLC(All) (<i>n</i> = 302)	0.12	0.06	0.40	0.26	1.32	0.13	1.14	3.30	6.22	2,013.18	676.19	1.61	
3 GLC(Monitoring) (<i>n</i> = 119)	0.11	0.06	0.59	0.19	1.13	0.20	0.91	3.13	10.68	2,827.71	795.04	1.57	
4 GLC(Managing) (<i>n</i> = 92)	0.14	0.08	0.32	0.31	1.12	0.17	1.03	16.06	4.56	998.82	267.54	1.49	
5 GLC(Controlling) (<i>n</i> = 91)	0.12	0.04	0.23	0.21	1.29	0.11	1.41	2.73	3.39	1,904.86	549.88	1.51	

(continues)

Table 3. Continued
Panel B: The *t*-statistic for mean difference between different groups of GLCs

Comparison between	Pure accounting performance					Market-related performance					Economic-efficiency performance		
	ROE	ROA	NPM	TAT	TBQ	EPR	PBR	PRR	PCR	RPE	NPE	RCR	
1 GLC (All) - non-GLC	2.06**	2.56**	0.76	-4.31***	-1.14	2.80***	-3.80***	-1.16	0.90	2.34**	3.38***	2.38**	
2 GLC(Controlling) - non-GLC	1.79*	-0.30	0.59	-4.20***	-2.08**	0.50	-1.05	-1.31	0.14	2.01**	2.19**	1.89*	
3 GLC(Managing) - non-GLC	2.95***	2.85***	0.63	-0.09	-4.26***	2.95***	-4.42***	0.85	0.37	-3.22**	-0.87	0.92	
4 GLC(Monitoring) - non-GLC	1.19	2.13**	1.19	-4.64***	-4.07***	3.73***	-5.70***	-1.20	1.60	2.52**	2.50**	2.16**	
5 GLC(Controlling) - GLC(Managing)	1.14	-3.01***	-0.61	-2.85***	2.54**	-2.55**	3.10***	-1.46	-0.34	4.86***	2.92***	0.10	
6 GLC(Controlling) - GLC(Monitoring)	0.27	-2.31**	-1.38	0.75	2.35**	-3.36***	4.27***	-0.83	-1.90*	-1.74*	-1.21	-0.10	
7 GLC(Managing) - GLC(Monitoring)	1.32	0.51	-1.08	4.40***	-0.11	-0.90	1.31	1.41	-1.29	-3.58	-2.85***	-0.30	

Notes: We test whether the mean performances of two samples are the same ($H_0 = \bar{X}_i - \bar{X}_j = 0$), where \bar{X}_i is the mean performance of sample i and \bar{X}_j is the mean performance of sample j . Panel A reports the mean performance of different samples of firms; Panel B reports the t -statistic measuring the significance of difference between the different pairs of mean performance across different samples. The definitions of the different GLCs and non-GLCs and their performance measures are given in the Methodology section. * Significance at the 10 percent level; ** significance at the 5 percent level; *** significance at the 1 percent level.

are able to earn high profits with low asset turnover, possibly because they have strong market power.

The market-related performance shows that GLCs are generally valued lower than non-GLCs. This is evident from the findings of Tobin's Q ratio (TBQ), EPR, PBR, and PRR. An exception is observed with respect to PCR results: the PCR of the GLCs is higher than that of the non-GLCs. Of the five market-related performance measures, at least two (EPR and PBR) confirm based on the statistical tests (in Panel B of Table 3) that GLC stocks are significantly priced lower than non-GLC stocks. One explanation is that the UAE financial market has an abundant supply of GLC stocks relative to non-GLC stocks, since the government-linked firms are about six times larger than the other firms in the market. However, this needs more investigation because we cannot rule out other possibilities such as the government influencing the GLCs to achieve its political agenda by spending a significant part of the profits in social activities, thereby sacrificing the dividend payments. We leave these possibilities for future study.

Although GLCs are priced relatively lower, they outperform non-GLCs in economic efficiency. This is evident from the findings that show GLCs significantly outperformed non-GLCs with respect to three measures of economic efficiency: revenue per employee (RPE), net profit per employee (NPE), and revenue-cost ratio (RCR). Therefore, results indicate that GLCs are more efficient in utilizing their human resources. However, we do not yet know why or how the GLCs are able to utilize their human resources efficiently. It is likely that GLCs have strong market power and easy access to financial and technical resources that may help them generate more revenues and profits. Considering the pure accounting and economic efficiency performances, we can draw a preliminary conclusion that GLCs perform better than non-GLCs, providing *prima facie* support for the "support hypothesis" proposed with respect to government ownership in corporate firms.

Next, we examine whether firm performance varies due to the degree of government ownership in corporate firms. We classify the GLCs in three categories: monitoring, managing, and controlling, based on the government-ownership percentage. The accounting results show that GLC(Managing), where government owns 20 to 50 percent ownership, has the highest average ROE and ROA of all groups. The total asset turnover (TAT) of GLC(Managing) is almost the same as that of the non-GLCs but is significantly higher than those of the other subgroups of GLCs. It is also found that GLC(Monitoring), where government owns 2 to 20 percent ownership, has the highest average net profit margin (NPM), yet this is not significantly different from that of the other GLC groups. As a whole, the pure accounting performance indicates that the firms are able to generate more profit when government holds a relatively large block (about 20-50 percent) of their ownership. With a large block of ownership holding, the government can nominate board members to play a role in corporate decisions. The agency problems due to government ownership are not a serious issue since the majority ownership still belongs to the private entrepreneurs and public investors. In fact, due to active involvement of the government in firm management, the firms are able to obtain sufficient governmental support where required.

Although the pure accounting performance indicates that GLC(Managing) firms perform better than other GLCs, the market-related performance measures display a different result. Based on the Tobin's Q results, the GLC(Controlling) firms seem to be valued more highly than the other two GLC subgroups, yet the average market value of these firms is significantly lower than that of non-GLCs. The results show that GLC(Monitoring) has the highest EPR among the different groups of sample firms, indicating that these firms are priced lower than the other firms. However, comparing EPRs of the three GLC groups

only, we find that the lowest EPR belongs to GLC(Controlling) firms, which suggests that these GLCs are priced higher than the other two categories of GLCs. We also find that PBR of GLC(Controlling) firms is significantly higher than that of all other firms except the non-GLCs. The results further show that the highest PRR belongs to GLC(Managing) firms, but it is not significantly different from that of the other groups of firms. Similarly, no significant difference is found among the average PCRs of the different groups of GLCs and non-GLCs. In summary, the market-related performance tends to suggest that GLC(Controlling) firms are generally valued higher than the other GLCs, although their accounting results are not better than those of the other firms.

Finally, the economic efficiency performance results reveal that GLC(Monitoring) is the best performer among the three GLC subgroups according to RPE, NPE, and RCR. Based on the same measures, the GLC(Managing) firms are found to be the worst performers. Comparing the results of three GLC subgroups, we find that the economic performance of GLC(Monitoring) is significantly higher, but that of GLC(Managing) is significantly lower than that of GLC(Controlling). In summary, the economic performance of the GLCs is generally better than that of the non-GLCs except for GLC(Managing). It is interesting to note that GLC(Managing) firms are less efficient, yet their accounting results are better than those of the other firms. Therefore, it is difficult to draw any firm conclusion about the effect of the level of government ownership on the economic efficiency of corporate firms. The accounting performance of GLCs is generally better than that of non-GLCs. However, the better accounting performance does not help increase share price, perhaps due to an abundant supply of GLC shares and government influence in spending the profits for achieving social agenda, thereby sacrificing payments to shareholders.

Regression Results

Given the above findings, we examine the issue using several fixed-effects regressions to find out whether government ownership in corporate firms has a significant effect on the different categories of firm performance. The results presented in Table 4 show that the coefficients of *GLC* are significantly positive with respect to the dependent variables measuring accounting performance (*ROA* and *TAT*), suggesting that government ownership in corporate firms helps increase accounting performances such as the return on assets and assets turnover. These results are consistent with the support hypothesis discussed earlier, confirming that government support is useful for a corporate firm in the UAE. For market-related performance measured by *TBQ*, *EPR*, *PBR*, *PRR*, and *PCR*, the *GLC* coefficients are significantly positive with respect to *EPR* only. A positive *GLC* coefficient with respect to *EPR* suggests that market prices of the government-linked companies are relatively low for the level of profits they earn. However, we need to see the *GLC* subgroup regression results for further analysis because other measures of market-related performance are not affected by government shareholding. Table 4 also shows that none of the coefficients of *GLC* with respect to the economic efficiency variables (*RPE*, *NPE*, and *RCR*) are statistically significant. Therefore, we cannot say that government ownership in corporate firms in and of itself has any effect on the level of economic efficiency. The better economic performance displayed by the GLCs (see Panel A in Table 3) could be due to the other reasons. In this regard, we suggested earlier that GLCs have more market power in the UAE economy and that they are able to get easy access to financial and technical resources that may help them generate more earnings. As a whole, the results reported in Tables 3 and 4 support the contention that UAE corporate firms are able to earn more revenue and profits if government takes an ownership stake.

Table 4. Fixed-effects regressions at firm level determining the effect of government linkage on performance of firms ($n = 114$)

Explanatory variables	Pure accounting performance					Market-related performance					Economic-efficiency performance				
	ROE	ROA	NPM	TAT	TBQ	EPR	PBR	PRR	PCR	RPE	NPE	RCR			
Intercept	-0.114	0.013	3.923	0.085	0.480	-0.032	-0.867	5.144	7.651	6.871	9.212	3.019			
	-2.118**	0.582	140.65***	2.011**	6.530***	-0.679	-6.87***	87.59***	132.55***	48.593***	186.85***	95.58***			
GLC	0.027	0.023	-0.010	0.033	0.007	0.032	0.067	0.016	0.001	-0.002	0.001	-0.002			
	1.570	3.177***	-1.093	2.461**	0.340	2.104**	1.635	0.806	0.007	-0.042	0.048	-0.155			
BRD	-0.001	-0.002	-0.001	-0.002	0.001	-0.007	0.010	0.001	0.000	0.002	0.002	0.000			
	-0.215	-0.982	-0.554	-0.659	0.118	-1.96**	1.047	0.137	0.044	0.148	0.433	0.104			
CEO	0.020	0.003	0.006	-0.005	-0.012	0.020	0.020	0.001	0.010	-0.035	-0.006	0.006			
	1.152	0.390	0.694	-0.347	-0.562	1.311	0.501	0.066	0.540	-0.775	-0.387	0.593			
AGE	0.018	0.010	0.000	0.007	-0.014	0.014	0.036	0.026	0.004	0.016	0.006	-0.003			
	1.991**	2.758***	0.099	0.967	-2.191**	1.803*	3.68***	2.506**	0.377	0.651	0.735	-0.647			
SIZE	0.015	0.001	-0.004	-0.012	-0.040	0.005	-0.021	0.034	0.005	0.040	-0.001	-0.004			
	2.037**	0.349	-0.983	-1.969**	-1.698*	0.748	-1.165	3.963***	0.588	1.970**	-0.073	-0.925			
LEV	-0.015	-0.020	-0.021	-0.019	0.026	-0.025	0.187	0.003	-0.001	0.077	-0.007	-0.013			
	-0.829	-2.83***	-2.30***	-1.361	2.163**	-1.651*	4.50***	0.159	-0.056	1.664*	-0.423	-1.268			
REV	-0.007	0.000	0.011	0.016	-0.005	0.009	-0.039	-0.030	0.000	0.051	-0.004	0.005			
	-1.096	0.142	3.142***	3.09***	-0.574	1.842*	-2.55***	-3.95***	0.057	2.98***	-0.634	1.364			
AGN	0.112	0.050	-0.057	0.368	0.142	-0.004	0.051	0.141	-0.038	-0.204	-0.011	0.000			
	2.435**	2.618***	-2.36***	8.315***	2.409**	-0.089	0.463	2.70***	0.758	-1.679*	-0.267	0.017			
F-value	2.360**	9.462***	5.233***	63.150***	2.507**	2.438**	8.64***	4.87***	0.756	2.45***	0.121	1.11			
Adjusted R^2	0.022	0.081	0.041	0.509	0.055	0.051	0.112	0.091	-0.003	0.171	-0.001	0.000			

Notes: The above results are based on the five-year (2006–10) panel data for 114 UAE firms listed on the DFM and ADX and estimated using fixed-effects regressions. The upper numbers in each row are the coefficient estimates; the lower numbers denote the corresponding t -values. The variance inflation factor (VIF) values for all explanatory variables are less than 5.0; hence, the relationships between the variables have insignificant effect on the coefficient estimates. * Significance at the 10 percent level; ** significance at the 5 percent level; *** significance at the 1 percent level.

Next, we examine whether the level of government ownership plays a role in firm performance. The results presented in Table 5 show that none of the coefficients of *GLC(Controlling)* are statistically significant with respect to the accounting and economic-efficiency performance measures. This finding indicates that if government takes full control of the firm by holding more than 50 percent of the outstanding shares, the multidimensional agency problems are aggravated. This is mainly because the management teams of the *GLC(Controlling)* firms are composed of government officials selected from the civil bureaucratic administration who are trained for public administration and have inadequate knowledge in managing business enterprises. In addition, government often uses these *GLCs* to achieve various social objectives, such as providing more employment to citizens, taking projects for social benefits, and so on. Therefore, the additional agency problem due to absolute government control negates the benefits of governmental supports. However, it is interesting to observe that the coefficients of *GLC(Controlling)* are positive and statistically significant with respect to *PBR*, indicating that *GLC(Controlling)* stocks are usually priced more highly than other stocks. This may be due to investors considering the *GLC(Controlling)* stocks less risky, as the government has majority ownership and the probability of bankruptcy and liquidation is low.

The results related to *GLC(Managing)* firms, in which government holds about 20 to 50 percent of the total ownership, show that the *GLC(Managing)* coefficients with respect to the accounting performance measures are significantly positive for *ROA* and *TAT*. Therefore, it can be suggested that *GLC* revenues and profits are increased if government holds a relatively large block (about 20 to 50 percent) of corporate ownership. This is possibly because the government, being one of the large owners, takes a more active interest in these firms and helps them access required financial and nonfinancial resources and stay ahead in the competitive markets. For the market-related performance measures, the *GLC(Managing)* coefficients are significantly positive with respect to *EPR* only, similar to the results of *GLC* in general reported earlier in Table 4. A positive *GLC(Managing)* coefficient with respect to *EPR* suggests that market prices of the *GLCs* with government ownership between 20 and 50 percent are relatively low for the level of profits they earn. The regression results for the economic efficiency measures show that none of the *GLC(Managing)* coefficients are significant.

If we look at the regression results related to *GLC(Monitoring)* presented in Table 5, we find that the coefficient of *GLC(Monitoring)* with respect to the accounting measures is significantly positive for *ROA* but negative for *NPM*. The finding may suggest that *GLC(Monitoring)* firms are able to earn more return on assets but need to sustain market competition by lowering their net profit margin. Despite *GLC(Monitoring)* firms being able to increase their *ROA* compared to non-*GLCs*, the return on equity (*ROE*) is not better than that of the non-*GLCs*. Although *GLC(Monitoring)* firms are able to post better accounting results—at least in terms of *ROA*—the regression results related to market performance show that these firms are not valued higher compared to the non-*GLCs*, as none of the *GLC(Monitoring)* coefficients related to market performance are significant. Finally, like other *GLCs*, the *GLC(Monitoring)* group is not better than the non-*GLCs* in terms of economic efficiency because the coefficients of the *GLC(Monitoring)* variable with respect to *RPE*, *NPE*, and *RCR* are statistically insignificant.

In summary, the results presented in Tables 3, 4, and 5 show that *GLCs* generally perform better than non-*GLCs* in terms of accounting performance, yet the *GLC* stocks are priced lower than the non-*GLC* stocks, possibly due to the abundant supply of *GLC* stocks and the *GLCs*' spending of profits for social activities rather than dividend payments. The economic efficiency measures display better results for the *GLCs* compared

Table 5. Fixed-effects regressions at firm level examining the effect of different degrees of government ownership ($n=114$)

Explanatory Variables	Pure accounting performance					Market-related performance					Economic-efficiency performance				
	ROE	ROA	NPM	TAT	TBQ	EPR	PBR	PRR	PCR	RPE	NPE	RCR			
Intercept	-0.092	0.014	3.905	0.055	0.500	-0.052	-0.750	5.203	7.652	6.746	9.227	3.005			
	-1.776*	0.629	142.87***	1.333	6.921***	-1.149	-6.09***	86.74***	136.85***	49.15***	193.42***	98.28***			
<i>GLC(Monitoring)</i>	0.017	0.022	-0.019	0.015	0.001	0.031	0.024	0.023	0.001	0.035	-0.012	0.003			
	0.769	2.497**	-1.669*	0.884	0.040	1.603	0.468	0.936	0.039	0.609	-0.583	0.229			
<i>GLC(Managing)</i>	0.036	0.032	-0.001	0.057	0.000	0.041	0.062	-0.001	0.004	-0.083	0.009	-0.009			
	1.579	3.426***	-0.100	3.256***	0.003	2.066**	1.151	-0.020	0.167	-1.373	0.442	-0.676			
<i>GLC(Controlling)</i>	0.032	0.010	-0.004	0.031	0.030	0.022	0.142	0.015	-0.002	0.069	0.008	0.003			
	1.290	0.963	-0.281	1.626	0.944	1.011	2.431**	0.529	-0.069	1.051	0.363	0.176			
<i>BRD</i>	-0.002	-0.002	-0.001	-0.002	0.000	-0.007	0.007	-0.001	0.000	0.006	0.001	0.000			
	-0.393	-1.032	-0.341	-0.485	0.035	-2.124**	1.708*	-0.301	0.035	0.553	0.301	0.089			
<i>CEO</i>	0.023	0.001	0.001	-0.013	-0.007	0.014	0.045	0.016	0.10	-0.046	-0.005	0.004			
	1.330	0.126	0.142	-0.983	-0.331	0.941	1.110	0.835	0.524	-1.016	-0.286	0.447			
<i>AGE</i>	0.017	0.010	0.002	0.009	-0.014	0.016	0.030	0.019	0.003	0.030	0.006	-0.002			
	1.850*	2.637***	0.409	1.305	-1.746*	1.977**	2.426**	1.871*	0.359	1.219	0.665	-0.438			
<i>SIZE</i>	0.009	0.001	0.005	-0.020	-0.009	0.013	-0.055	0.010	0.005	0.077	-0.004	0.000			
	1.759*	0.585	1.729*	-4.141***	-2.244**	2.637***	-4.331***	1.645*	0.791	5.075	-0.745	-0.043			
<i>LEV</i>	-0.017	-0.021	-0.021	-0.017	0.024	-0.024	0.173	0.000	-0.001	0.091	-0.009	-0.012			
	-0.983	-2.84***	-2.67***	-2.270**	2.075**	-1.532	4.161***	-0.013	-0.061	1.955**	-0.573	-1.127			
<i>REV</i>	-0.004	-0.000	-0.001	0.023	-0.011	0.011	-0.071	-0.054	0.002	0.081	-0.002	0.012			
	-0.637	-0.019	0.751	5.008***	-1.127	1.977**	-2.901***	-7.111***	0.555	2.777***	-0.207	3.35***			
<i>AGN</i>	0.081	0.048	-0.020	0.413	0.122	0.029	-0.110	0.033	-0.040	0.009	-0.030	0.024			
	2.079***	2.980***	-0.967	9.816***	2.468**	0.860	-1.182	0.731	-0.945	0.082	-0.831	1.026			
<i>F-value</i>	3.161***	6.213***	2.777***	45.254***	4.321***	25.169***	9.005***	3.21***	0.677	3.11***	1.653*	2.105**			
Adjusted R^2	0.045	0.10	0.044	0.494	0.063	0.155	0.123	0.090	-0.004	0.191	-0.000	0.021			

Notes: The above results are based on the five-year (2006–10) panel data for 114 UAE firms listed on the DFM and ADX and estimated using fixed-effects regressions. The upper numbers in each row are the coefficient estimates; the lower numbers denote the corresponding t -values. The variance inflation factor (VIF) values for all explanatory variables are less than 5.0; hence, the relationships between the variables have insignificant effect on the coefficient estimates. * Significance at the 10 percent level; ** significance at the 5 percent level; *** significance at the 1 percent level.

to those of the non-GLCs, but regressions do not confirm that government ownership alone has any effect. Therefore, the better accounting results for the GLCs could be due to reasons other than government ownership. We observe that a GLC generally earns better revenues and profits, perhaps due to receiving government support in obtaining easy access to financial and nonfinancial resources and gaining more market power in the economy. The results related to the different classes of GLCs show that GLC(Controlling) firms do not perform significantly better than all other firms in terms of profits and revenues, yet the market provides a higher price for their stocks compared to the others. The GLC(Managing) firms have significantly better accounting results than do all other firms, but the economic efficiency results are similar. Despite better accounting results, the GLC(Managing) stocks do not attract a higher market price than a non-GLC price. Finally, we find that the GLC(Monitoring) firms, in which government ownership is low, depict no significantly good accounting results except for the *ROA*. However, the economic efficiency results of these GLCs are better than those of the non-GLCs, but regressions do not confirm this. Setting aside the market and economic efficiency results, we generally find that the effect of government ownership is reflected through the revenue and profit increase when the government owns a significantly large block of shares but does not take absolute control of the firms. As a whole, in addition to other factors (age, size, leverage, revenue, and agency cost), government ownership affects the accounting, market, and economic performances of the UAE corporate firms.

Robustness Tests

The panel data used in this study have different dimensions that may affect the research findings. The firm-level data are collected over a period of five years from 2006 to 2010. To control for variations within the firm-level data over the sample period, we use the five-year firm-wise mean value in the earlier firm-fixed regressions, but it is important to recheck whether the results remain consistent once the time and other dimensions of data are explicitly controlled in a setting of pooled-data regression. Broadly, the data contain three explicit dimensions: (1) year of data, (2) industry classification, and (3) listing stock exchange. Therefore, we test robustness of the findings presented above by estimating new fixed-effects models with respect to three data dimensions. The fixed-effects models that control the effects of data year, industry, and listing exchange are defined in Panel A of Table 6. In addition, we check the existence of a nonlinear effect of government ownership in corporate firms. This is important because profitability and market performance of firms vary across the three levels of government ownership examined earlier. The nonlinear test models are presented in Panel B of Table 6.

The new fixed-effects regression results presented in panel A of Table 6 are similar to earlier results reported in Tables 4 and 5. Therefore, the effect of government ownership on firm performance as presented earlier stands over the different periods and across the industries and stock markets. The nonlinear test results reported in Panel B of Table 6 show that *ROE* and *ROA* increase significantly if the proportion of government share (*PGS*) is increased. However, *ROA* is decreased if *PGS* is increased beyond a certain level. For market-related performance, *EPR* increases and *PBR* decreases significantly with the increase of *PGS*, while *EPR* decreases and *PBR* increases significantly with the increase of *PGS*². For economic efficiency measures, *RPE* decreases significantly with the increase of *PGS* and increases significantly with the increase of *PGS*². These tests suggest that there is a certain level of government ownership that helps firms achieve maximum returns on assets, yet the market price of share does not improve significantly until the

Table 6. Robustness test results

Panel A: Testing fixed-effects models controlling for the year, industry, and stock market ($n = 541$)

$$(1) \quad Y_{it} = \alpha + \beta_1 GLC_{it} + \sum_{j=1}^n \beta_2 X_{jt} + \sum_{i=1}^{YR10} \beta_3 YR_{it} + \sum_{i=1}^3 \beta_4 IND_{it} + \beta_5 DFM_{it} + \epsilon_{it}$$

$$(2) \quad Y_{it} = \alpha + \beta_1 GLC(Monitoring)_{it} + \beta_2 GLC(Managing)_{it} + \beta_3 GLC(Controlling)_{it} + \sum_{j=1}^n \beta_4 X_{jt} + \sum_{i=1}^{YR10} \beta_5 YR_{it} + \sum_{i=1}^3 \beta_6 IND_{it} + \beta_7 DFM_{it} + \epsilon_{it}$$

Explanatory variables	Pure accounting performance					Market-related performance					Economic-efficiency performance				
	ROE	ROA	NPM	TAT	TBQ	EPR	PBR	PRR	PCR	RPE	NPE	RCR			
GLC	0.033	0.019	-0.006	0.012	0.034	0.037	-0.087	0.051	0.020	-0.037	0.016	0.006			
GLC(Monitoring)	1.817*	2.671***	-0.560	0.867	1.159	2.172**	-1.228	2.010**	0.966	-0.685	0.935	0.485			
GLC(Managing)	0.020	0.021	-0.010	-0.007	0.027	0.053	-0.260	0.051	0.019	0.041	0.014	0.019			
GLC(Controlling)	0.906	2.381**	-0.743	-0.413	0.769	2.561**	-3.077***	1.640*	0.728	0.625	0.652	1.331			
	0.050	0.029	-0.001	0.039	-0.016	0.048	-0.085	0.064	0.020	-0.172	0.018	-0.004			
	2.129**	3.115***	-0.054	2.127**	-0.421	2.157**	-0.935	1.929*	0.718	-2.461**	0.791	-0.280			
	0.030	0.001	-0.007	0.007	0.124	-0.009	0.235	0.032	0.024	0.024	0.018	-0.004			
	1.190	0.111	-0.465	0.376	2.999***	-0.388	2.396**	0.880	0.814	0.318	0.738	-0.247			

(continues)

Table 6. Continued

Panel B: Testing nonlinear effect of government ownership on firm performance

$$(3) \quad Y_{it} = \alpha + \beta_1 GLC_{it} + \beta_2 GLC_{it}^2 + \sum_{i=1}^n \beta_{3i} X_{it} + \sum_{i=PRO7}^{YR10} \beta_{4i} YR_{it} + \sum_{i=1}^3 \beta_{5i} IND_{it} + \beta_6 DFM_{it} + \epsilon_{it} \quad (\text{based on pooled data: } n = 541)$$

$$(4) \quad \bar{Y}_{i*} = \alpha + \beta_1 GLC_i + \beta_2 GLC_i^2 + \sum_{i=1}^n \beta_{3i} \bar{X}_{i*} + \sum_{i=1}^2 \beta_{4i} IND_i + \beta_5 DFM_i + \epsilon_{it} \quad (\text{based on firm-wise mean data: } n = 114)$$

Explanatory variables	Pure accounting performance				Market-related performance				Economic-efficiency performance			
	ROE	ROA	NPM	TAT	TBQ	EPR	PBR	PRR	PCR	RPE	NPE	RCR
PGS	0.249	0.124	-0.031	0.073	-0.241	0.363	-1.956	0.268	0.098	-1.664	0.085	-0.049
	1.771*	2.219**	-0.369	0.671	-1.063	2.735***	-3.650***	1.345	0.604	-4.037***	0.633	-0.538
PGS ²	-0.268	-0.170	0.040	-0.042	0.668	-0.543	3.666	-0.357	-0.079	2.426	-0.039	0.068
	-1.343	-2.142**	0.337	-0.271	2.084**	-2.887***	4.823***	-1.264	-0.344	4.150***	-0.205	0.538

Notes: In Panel A, the coefficients of *GLC* are from Model 1, and those of *GLC(Monitoring)*, *GLC(Managing)*, and *GLC(Controlling)* are from Model 2. In Panel B, the coefficients of *PGS* and *PGS*² are from Model 4. In Models 1, 2, and 3, we include four dummies (YR07–YR10) for five data observation years (2006 to 2010). Industries are categorized into three homogeneous groups. Banks, Insurance, and Investment are categorized as IND1; Transportation, Communications, and Services are categorized as IND2; Real Estate and Manufacturing are categorized as IND3. Firms are categorized into two groups according to their listing on the exchanges. Accordingly, we include two industry dummies (*IND1* and *IND2*) for three industry groups and one market dummy (*DFM*) for two stock markets (DEM and ADX). *GLC*, *GLC(Monitoring)*, *GLC(Managing)*, *GLC(Controlling)*, and *CEO* are defined earlier (see the Methodology section). The *X* variables are *BRD*, *CEO*, *AGE*, *SIZE*, *LEV*, *REV*, and *AGN* as defined earlier (see the Methodology section). The upper numbers in each row are the coefficients; the lower numbers denote the *t*-values. Model 3 produces results similar to Model 4, except that the *PGS* and *PGS*² coefficients related to *RPE* are insignificant. Detail results are not reported in this table because of space limitations. * Significance at the 10 percent level; ** significance at the 5 percent level; *** significance at the 1 percent level.

proportion of government ownership surpasses that level. In addition, the nonlinear test reveals that revenue per employee increases if government ownership increases beyond a certain level. However, the earlier tests find that none of the economic efficiency measures are affected by different levels of government ownership.

Conclusions

A number of prior studies find that government ownership in corporate firms is significantly high in transitional economies such as Singapore, Malaysia, and China. Such a phenomenon is also observed in the UAE, where government holds an ownership in 48 percent of all stock exchange–listed firms. This may be the highest percentage record of government ownership according to earlier studies. However, we do not know whether government ownership in the firms affects their performance. Based on a literature review, we propose two hypotheses. First, the agency hypothesis suggests that government ownership negatively affects firm performance because the government may not play a professional role in firm management as the ownership right is exercised through civil bureaucrats working under political leaders. Therefore, multidimensional agency problems arise due to the conflicts of interest between the citizens and the government, the government and its representative in firm management, the government and private shareholders, and the management board and firm shareholders. Second, the support hypothesis suggests that government ownership may ensure strong monitoring of corporate management in the absence of alternative effective monitoring mechanisms, provide risk capital in the absence of venture capitalists, help in obtaining easy access to financial and other resources, and provide strong market power to effectively operate in a competitive economy. We examine the performance of 114 firms listed on two stock markets of the UAE over 2006–10. Three types of firm performance are estimated: (1) pure accounting performance, (2) market-related performance, and (3) economic-efficiency performance. Test results show that the accounting performance of GLCs is generally better than that of the non-GLCs. In particular, compared with the non-GLCs, the GLCs earn more revenue and profits relative to the size of their total investments. However, according to market-related performance, GLCs are undervalued relative to non-GLCs. The results also show that government ownership has no effect on GLC economic efficiency. Therefore, we conclude that GLCs are better than non-GLCs only with regard to accounting performance. As a whole, the finding is consistent with the support hypothesis in the context of the UAE economy.

The results further show that the GLC(Managing) firms, in which the government holds between 20 and 50 percent of ownership, are the best performers in terms of revenues and profits, suggesting that the benefit of government ownership is strongly visible through increased revenues and profits when the government owns a significantly large block of shares but does not control the firms by holding more than 50 percent of outstanding shares. If the government has more than 50 percent ownership, all accounting performance indicators are very similar to those of the non-GLCs. This implies that, in the UAE environment, the agency problem negates the benefit of government ownership if the absolute control of firm management is retained by the government. Interestingly, although the GLC stocks are generally undervalued compared to the non-GLC stocks, the GLC(Controlling) stocks are significantly overvalued according to the price-to-book ratios, suggesting that investors consider GLC(Controlling) stocks to be relatively less risky. Finally, the nonlinearity test indicates that a certain level of government ownership is needed to exert significantly positive effects on the account-

ing, market, and economic performance of the UAE corporate firms listed on the DFM and ADX. As a whole, the results of this study have important research and practical implications. For example, there may be an optimal level of government ownership that may help significantly improve the performance of corporate firms. This can be investigated in the future. The optimal ownership retention by the government is an important issue for the privatization programs being pursued in many countries. The governments need to determine the percentage of total firm ownership to be sold to the private sectors. Moreover, if the governments want to undertake joint venture projects with private entrepreneurs, ownership sharing becomes an important issue.

References

- Aljifri, K., and M. Moustafa. 2007. "The Impact of Corporate Governance Mechanisms on the Performance of UAE Firms: An Empirical Analysis." *Journal of Economic & Administrative Sciences* 23, no. 2: 71–93.
- Ang, J.S., and D.K. Ding. 2006. "Government Ownership and the Performance of Government-Linked Companies: The Case of Singapore." *Journal of Multinational Financial Management* 16, no. 1: 64–88.
- Bennedsen, M.; H.C. Kongsted; and K.M. Nielsen. 2008. "The Causal Effect of Board Size in the Performance of Small and Medium-Sized Firms." *Journal of Banking & Finance* 32, no. 6: 1098–1109.
- Boardman, A.E., and A.R. Vining. 1989. "Ownership and Performance in Competitive Environments: A Comparison of the Performance of Private, Mixed, and State-Owned Enterprises." *Journal of Law and Economics* 32, no. 1: 1–33.
- Borisova, G., and W.L. Megginson. 2011. "Does Government Ownership Affect the Cost of Debt? Evidence from Privatization." *Review of Financial Studies* 24, no. 8: 2693–2735.
- Boycko, M.; A. Shleifer; and R.W. Vishny. 1996. "A Theory of Privatisation." *Economic Journal* 106, no. 435: 309–319.
- Canback, S.; P. Samouel; and D. Price. 2006. "Do Diseconomies of Scale Impact Firm Size and Performance? A Theoretical and Empirical Overview." *Journal of Managerial Economics* 4, no. 1: 27–70.
- Chen, C.J., and W.H. Lin. 2006. "Agency Cost and Firm Performance: The Moderating Effect of Budget Function." Paper presented at the American Association of Accounting 2007 Management Accounting Section (MAS) Meeting, Fort Worth, TX, January 5–7.
- Chiang, M.-H., and J.-H. Lin. 2007. "The Relationship Between Corporate Governance and Firm Productivity: Evidence from Taiwan's Manufacturing Firms." *Corporate Governance: An International Review* 15, no. 5: 768–779.
- Claessens, S.; S. Djankov; and L.H.P. Lang. 2000. "The Separation of Ownership and Control in East Asian Corporations." *Journal of Financial Economics* 58, nos. 1–2: 81–112.
- Demsetz, H., and K. Lehn. 1985. "The Structure of Corporate Ownership: Causes and Consequences." *Journal of Political Economy* 93, no. 6: 1155–1177.
- Dewenter, K.L., and P.H. Malatesta. 2001. "State-Owned and Privately Owned Firms: An Empirical Analysis of Profitability, Leverage, and Labor Intensity." *American Economic Review* 91, no. 1: 320–334.
- Dougherty, S.; R. Herd; and P. He. 2007. "Has a Private Sector Emerged in China's Industry? Evidence from a Quarter of a Million Chinese Firms." *China Economic Review* 18, no. 3: 309–334.
- Earle, J.; C. Kucsera; and A. Telegdy. 2005. "Ownership Concentration and Corporate Performance on the Budapest Stock Exchange: Do Too Many Cooks Spoil the Goulash?" *Corporate Governance: An International Review* 13, no. 2: 254–264.
- Feng, F.; Q. Sun; and W.H.S. Tong. 2004. "Do Government-Linked Companies Underperform?" *Journal of Banking & Finance* 28, no. 10: 2461–2492.
- Florackis, C. 2008. "Agency Costs and Corporate Governance Mechanisms: Evidence for UK Firms." *International Journal of Managerial Finance* 4, no. 1: 37–59.

- Ghosh, S. 2008. "Leverage, Foreign Borrowing and Corporate Performance: Firm-Level Evidence for India." *Applied Economics Letters* 15, no. 8: 607–616.
- González, V.M. 2013. "Leverage and Corporate Performance: International Evidence." *International Review of Economics & Finance* 25: 169–184.
- Guest, P.M. 2009. "The Impact of Board Size on Firm Performance: Evidence from the UK." *European Journal of Finance* 15, no. 4: 385–404.
- Gupta, N. 2005. "Partial Privatization and Firm Performance." *Journal of Finance* 60, no. 2: 987–1015.
- Gürsoy, G., and K. Aydoğan. 2002. "Equity Ownership Structure, Risk Taking, and Performance." *Emerging Markets Finance & Trade* 38, no. 6: 6–25.
- He, P.; K. Wang; and X. Xiao. 2009. "On the Dual Agency Problems of State-Controlled Firms in China." Working paper, Tsinghua University, Beijing.
- Himmelberg, C.P.; R.G. Hubbard; and D. Palia. 1999. "Understanding the Determinants of Managerial Ownership and the Link Between Ownership and Performance." *Journal of Financial Economics* 53, no. 3: 353–384.
- Ibrahim, H., and F.A. Samad. 2011. "Agency Costs, Corporate Governance Mechanisms and Performance of Public Listed Family Firms in Malaysia." *South African Journal of Business Management* 42, no. 3: 17–25.
- Jackling, B., and S. Johl. 2009. "Board Structure and Firm Performance: Evidence from India's Top Companies." *Corporate Governance: An International Review* 17, no. 4: 492–509.
- Krueger, A.O. 1990. "Government Failures in Development." *Journal of Economic Perspectives* 4, no. 3: 9–23.
- Lam, T.Y., and S.K. Lee. 2008. "CEO Duality and Firm Performance: Evidence from Hong Kong." *Corporate Governance* 8, no. 3: 299–316.
- La Porta, R.; F. Lopez-de-Silanes; and A. Shleifer. 1999. "Corporate Ownership Around the World." *Journal of Finance* 54, no. 2: 471–517.
- Loderer, C.F., and U. Waelchli. 2010. "Firm Age and Performance." Working paper, University of Berne–Institute for Financial Management.
- Ma, S.; T. Naughton; and G. Tian. 2010. "Ownership and Ownership Concentration: Which Is Important in Determining the Performance of China's Listed Firms?" *Accounting and Finance* 50, no. 4: 871–891.
- Majumdar, S.K. 1997. "The Impact of Size and Age on Firm-Level Performance: Some Evidence from India." *Review of Industrial Organization* 12: 231–241.
- Najid, N.A., and R.A. Rahman. 2011. "Government Ownership and Performance of Malaysian Government-Linked Companies." *International Research Journal of Finance and Economics* 61: 42–56.
- Opler, T., and S. Titman. 1994. "Financial Distress and Corporate Performance." *Journal of Finance* 49, no. 3: 1015–1040.
- Peng, M.W.; Y. Li; E. Xie; and Z. Su. 2010. "CEO Duality, Organizational Slack, and Firm Performance in China." *Asia Pacific Journal of Management* 27, no. 4: 611–624.
- Ramasamy, B.; D. Ong; and M.C.H. Yeung. 2005. "Firm Size, Ownership and Performance in the Malaysian Palm Oil Industry." *Asian Academy of Management Journal of Accounting and Finance* 1, no. 1: 81–104.
- Razak, N.H.A.; R. Ahmad; and H.A. Joher. 2011. "Does Government Linked Companies (GLCs) Perform Better Than Non-GLCs? Evidence from Malaysian Listed Companies." *Journal of Applied Finance & Banking* 1, no. 1: 213–240.
- Shleifer, A. 1998. "State Versus Private Ownership." *Journal of Economic Perspectives* 12, no. 4: 133–150.
- Shleifer, A., and R.W. Vishny. 1994. "Politicians and Firms." *Quarterly Journal of Economics* 109, no. 4: 995–1025.
- Sun, Q.; W.H.S. Tong; and J. Tong. 2002. "How Does Government Ownership Affect Firm Performance? Evidence from China's Privatization Experience." *Journal of Business Finance and Accounting* 29, nos. 1–2: 1–27.
- Tian, L., and S. Estrin. 2008. "Retained State Shareholding in Chinese PLCs: Does Government Ownership Always Reduce Corporate Value?" *Journal of Comparative Economics* 36, no. 1: 74–89.

- Vickers, J., and G. Yarrow. 1988. "Regulation of Privatised Firms in Britain." *European Economic Review* 32, nos. 2–3: 465–472.
- Xiao, S., and S. Zhao. 2012. "How Do Agency Problems Affect Firm Value? Evidence from China." *European Journal of Finance* iFirst: 1–26.
- Xu, G. 2010. "State-Owned Enterprises in China: How Profitable Are They?" World Bank blog, East Asia and Pacific on the Rise (available at <https://blogs.worldbank.org/eastasiapacific/state-owned-enterprises-in-china-how-profitable-are-they/>).
- Zeitun, R., and G. Tian. 2007. "Does Ownership Affect a Firm's Performance and Default Risk in Jordan?" *Corporate Governance* 7, no. 1: 66–82.
- Zhang, L.-Y. 2004. "The Roles of Corporatization and Stock Market Listing in Reforming China's State Industry." *World Development* 32, no. 12: 2031–2047.