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# The Impact of Corporate Governance Reform on Firms' Control Mechanisms and Performance: Evidences from Malaysia

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## ABSTRACT

In Malaysia, the majority of publicly listed companies are under the control of dominant shareholders (Claessens *et al*. 2000a), so-called 'ultimate owners'. This paper addresses how firm performance is affected by pyramidal firm structure and multiple control chains, two of the most common control mechanisms of ultimate owners in Malaysia. We further investigate how the Malaysian Code on Corporate Governance (MCCG) affects these control mechanisms. We analyze panel data of 295 firms from 2001 to 2012 using panel regression and several robustness analyses. We find that both control mechanisms have a significant negative effect on firm performance but that the MCCG 2007 has managed to minimize their negative effects significantly, especially in local family firms.

**JEL Classification** : G32, G34

**Keywords:** corporate governance, firm performance, CG code, ownership structure, multiple control chains

## INTRODUCTION

The downfall of WorldCom, Enron, and several giant corporations in 2001-2002 has led to the enacting of the Sarbanes-Oxley Act in the US. The corporate scandals in the US have raised serious doubts about corporate governance worldwide, resulting in similar regulatory reforms being put in effect in many countries around the world. The failures of these firms were primarily due to weaknesses in their corporate governance, including poor internal control systems and lack of accountability of directors (Mallin, 2007). According to Singam (2003), the most important factors that contribute to

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a sound corporate governance system are a corporate ownership structure and composition. When ownership is concentrated, the agency problem can be mitigated because the controlling shareholders will be more interested in monitoring management. However, agency problems arise when these controlling shareholders do not act in accordance with the objective of profit maximization but leverage their power over minority shareholders to channel firm resources for other purposes. With a highly concentrated ownership, the controlling shareholders could employ control mechanisms such as pyramidal structure, cross-shareholdings, and multiple control chains to mislead corporate decisions.

In Malaysia, the majority of the publicly listed companies are under the control of dominant shareholders (Claessens *et al*. 2000a). As a result, relative to companies in western countries, the separation of ownership and control is not as significant within Malaysian companies. Song (2007) finds that professional managers in dispersed firms may be deeply unreliable and opportunistic. There is also a differential effect in firm value between firms with controlling shareholders and firms with dispersed ownership. In other words, the increase in firm value as a result of an increase in concentration of ownership is expected to be higher in a firm with controlling shareholders than in a firm with dispersed ownership. Tam and Tan (2007) stressed that protection of minority shareholders was weak in Malaysia as large shareholders continue to exert dominant control via ownership concentration and representation on company boards. They further commented that "the self-seeking and self-gratifying attitudes of companies' owner-managers and/or those charged with governance appeared to be the main obstacle to fundamental reform of corporate governance practices in Malaysia". Thus, to address the issue of corporate governance in Malaysia, it is crucial to understand the context of ultimate owners and their corporate control mechanisms.

Since the 1997 Asian Financial Crisis, the Malaysian government has introduced a series of corporate governance reforms to revamp and strengthen the corporate governance of public corporations. Foreign investors were wary about the governance of Malaysian public corporations as lack of sound governance of local firms had been cited as one of the plausible reasons for the crisis (Lemmon and Lins, 2003; Claessens *et al*., 2000b; Khas, 2002). Initially, the government introduced the Malaysian Code of Corporate Governance in 2000 (MCCG 2000), the Capital Market Master Plan in 2001 (CMP), and the Financial Sector Master Planin 2001 (FSMP) to chart the future direction and development of the capital and financial markets. To further strengthen the standard of corporate governance, the MCCG was revised in 2007. The key amendments in the MCCG 2007 were the establishment of an Auditing Oversight Board, prohibition of executive directors becoming members of the audit committee, and mandating an internal audit function for all public listed companies (Wan-Hussin 2009). Corporate governance reforms in Malaysia were elevated to a higher level with the release of the Corporate Governance Blueprint in 2011. The main thrust of the Blueprint is to move towards the essence of good corporate governance by deepening the relationship of trust among companies, stakeholders, and regulators. The Blueprint consists of 35 recommendations that are meant to be implemented in five years. Following the Blueprint, the MCCG 2012 was released in 29 March 2012, along with amendments to Bursa Malaysia's Listing Requirements.

Since the first MCCG reforms in 2001, it is timely to study whether the MCCG reforms pose any impact on Malaysian firms in the context of ownership issues, control mechanisms,

and firm performance. This paper studies the impact of the MCCG 2007[1]. In short, our results shows that the two widely known control mechanisms, i.e., pyramidal firm structure and multiple control chains, have significant negative effects on Malaysian firm performance but the MCCG 2007 has managed to curb their negative effects significantly. The positive empirical evidence thus supports the policy reforms in the subsequent period.

The rest of this paper is organized as follows. Section 2 provides our research hypotheses and its arguments. Our research methodology and data are reported in Section 3. Section 4 reports the empirical analysis and discussion. In Section 5, we conclude.

## LITERATURE REVIEW

### Control Mechanisms, MCCG 2007 and Firm Performance

Corporate governance refers to the accountability and responsibility of company directors towards key stakeholders which include employees, consumers, suppliers, creditors, and the wider community (Bhasin, 2010). Corporate governance is also concerned with the control and direction of companies exercised by the directors or those holding power and authority (Ismail *et al*. 2010). Ownership structure is viewed as a very important corporate governance mechanism that explains the corporate control of a firm and the owners' control mechanisms. These include a pyramidal structure, cross-shareholdings, and multiple control chains, which are usually employed by controlling owners to maintain their control in a firm or a group of businesses.

Concentrated ownership is the most common form of business around the world (Mallin, 2007). In their analysis on a number of large firms in the 27 richest countries, La Porta *et al*. (1999) also found that concentrated ownership is the most common form of ownership structure, normally controlled by families or the state. The existence of a large shareholder is expected to play a key role in monitoring management (Loh & Mat Zin, 2007). However, companies with concentrated ownership structures are exposed to another type of agency problem as the large shareholders might not act in the best interest of other shareholders. In other words, these firms and their minority shareholders may face expropriation of funds by the large shareholder.

According to Jensen and Meckling (1976), ownership concentration increases firm value as there is better alignment between the interests of managers and shareholders. In their view, minority shareholders would benefit from having a large shareholder who is active and influential even if the large shareholder is not involved directly in the management of the firm. This is supported by the study of many other empirical studies. However, the presence

[1] We do not possess sufficient sampling to analyse the impact of MCCG 2001 and MCCG 2012. To study MCCG2001, we will need to obtain comparable sample pre- and post-MCCG2001. However, year 1999-2000 is not a comparable sample, as Malaysian corporations were suffering from the 1997 Asian Financial Crisis. Therefore, the inclusion of the crisis period is unlikely to produce unbiased inferences. Thus, it is more sensible if a sample year before 1997 is used; unfortunately, given our resources, we are unable to extract a complete set of the needed data, especially on the ownership structure. Similarly, to study MCCG2012, we need to obtain sufficient sample years for the post-MCCG2012 period. As our sample collection was performed in 2014, during that time, firm annual reports for the financial year 2013 were yet to be completely released. We therefore decided to stop at with the 2012 financial year. Even if we were able to extend our research to 2013, the 2013 financial data is not expected to reflect the impact from MCCG 2012. Furthermore, a one-year dataset will not allow us to obtain robust inferences. Due to these data limitations, we can conduct robust tests only on MCCG2007. We leave the investigation on MCCG2012 for future research.

of controlling shareholders may also be detrimental to firm value when their interests are not aligned with other shareholders. They may expropriate firm resources for their own interests at the expense of minority shareholders and other stakeholders' interests. These include the consumption of perquisites, paying themselves higher salaries, and appointing their own family members to management positions even though they do not have the skills to handle the jobs (Shleifer & Vishny, 1986; Morck, Shleifer, & Vishny, 1988; Anderson & Reeb, 2003).

The use of control mechanisms permits the ultimate owners to reduce their cash flow rights while maintaining high control rights in a firm (Wiwattanakantang, 2001; Bany-Ariffin *et al*., 2010). According to Claessens *et al*. (2000a), cash flow rights refer to the actual rights on a firm's future cash flows through the purchase of shares. They provide owners the rights to cash payouts or dividends. On the other hand, control rights refer to the voting rights of the ultimate owners (Claessens *et al*., 2000a). With control rights, the owners have the ability to vote for the board of directors as well as influence or dictate decisions that require approval from shareholders. The control rights comprise of direct and indirect shareholdings of a shareholder. The indirect shareholdings arise when an entity directly owns shares of another entity which owns shares of a third entity.

In Malaysia, the common tools used by controlling shareholders to expropriate corporate assets involve the use of control mechanisms such as cross-shareholding and a pyramidal structure [2]. Previous studies provide evidence that the use of control mechanisms, especially the pyramidal structure, have a negative impact on firm value. However, for Malaysia, a recent study by Bany-Ariffin *et al*. (2010) found that the use of excess leverage by the pyramidal-structured Malaysian firms poses negative impact on firm value. Hence, we focus on pyramidal structure and develop our first hypothesis to be tested as:

> H1: Firms with a pyramidal structure have a significantly lower firm performance relative to other firms.

Claessens *et al*. (2000a) highlighted that multiple control chains are common to listed firms in East Asia. However, we found that this type of control mechanism has received little attention in the literature. Multiple control chains is a control structure in which the controlling owner has more than one chain of control on the subject firm. A pyramidal structure focuses on the vertical layer of control of a firm, and multiple control chains, on the other hand, focuses on the horizontal line of control of a firm. The effective control of the controlling owner then is the sum of control rights from every chain. Similar to the pyramidal structure, there is also a diversion of cash flow rights and control rights in multiple control chains, so there is naturally an issue of expropriation under this type of ownership structure. Thus, our hypothesis to be tested is:

> H2: Firms with multiple control chain structures have a significantly lower firm performance relative to other firms.

The practice of good corporate governance not only helps to increase share price and makes it easier for firms to obtain capital but also helps to minimize agency problems by instituting mechanisms such as a separate leadership structure (separation of the role between Chief

[2] Cross-shareholding involves the interlocking of ownership between two or more companies, and pyramidal structure refers to a group of companies whose ownership structure displays a top-down chain of control, with the ultimate owner located at the top of the structure (Bany-Ariffin et al., 2010)

Executive Officer (CEO) and board chairman), an independent board, and strategic information disclosure of public corporations (Htay, 2012), which promote goal congruence among principals and agents (Conyon and Schwalbach, 2000). The use of stock-based compensation also constitutes good corporate governance practice, as it simultaneously increases the level of alignment between managers and shareholders and lowers the agency costs (Lokman *et al*., 2011). Because the series of MCCG reforms recommended quite a number of best practices in corporate governance to Malaysian public corporations, we can expect that it will yield a positive impact by reducing the negative effect of control mechanisms on firm performance. Thus, we set up the following hypotheses to test whether the MCCG 2007 is able to curb the negative impact of both control mechanisms:

H3a: The introduction of the MCCG 2007 has reduced the negative effect of a pyramidal firm structure on firm performance.

H3b: The introduction of the MCCG 2007 has reduced the negative effect of multiple control chains on firm performance.

## METHODOLOGY AND DATA

### The Panel Models for Firm Performance

It is well documented that the corporate governance structure could dictate firm performance. In this study, we employed a common firm performance measure, ROA (performance henceforth), which is the ratio of net profit before interests and taxes to total assets. We controlled for a few important firm-specific characteristics as they were documented to have significant impact on firm performance. Our control variables include firm size (SIZE, logarithm of total assets), financial leverage (LEVERAGE, ratio of total debt to book value of total assets), sales growth (GROWTH, 2-year average percentage change in sales), and firm age (AGE, the number of years the firm is established).Another popularly used measure for firm performance is Tobin's Q (Tobin, 1969), the measure of firm assets in relation to a firm's market value. However, we decided not to use Tobin's Q, as it is a market-based forward-looking measure; instead, we used it as one of our controlled variables. To estimate the relationship of all of the explanatory variables with ROA, we pooled the annual data of all of the sample firms and estimate the following baseline model:

$$Performance_{it} = \alpha + \beta_1 SIZE_t + \beta_2 LEVERAGE_t + \beta_3 GROWTH_t + \beta_4 TOBINQ_t + \beta_5 AGE_t + f_i + \gamma_t + e_t \quad (1)$$

where $\beta$ are the parameters to be estimated; $f_i$ and $\gamma_i$ refer to the firm-fixed effect and year-fixed effect; and $e_{it}$ is the usual residual terms.

The two control mechanisms that we are investigating are the pyramidal firm structure and multiple control chain firm structure. Pyramidal firm structure refers to a firm structure in pyramidal shape in which a group of companies' ownership structure displays a top-down

chain of control with the ultimate owner located at the top of the structure (Bany-Ariffin *et al*.,2010). A firm is classified as controlled through a pyramidal structure when (1) the firm is indirectly owned by the ultimate owner through a firm or a chain of firms, (2) at least one firm in the middle of the chain is a publicly listed firm, and (3) the inter-company links along the chain is over a threshold of 33%. Following Faccio and Lang (2002), a firm is classified as controlled through multiple control chains when the ultimate owner controls the firm through more than one channel, and each of the chains has at least 5% of control rights. These two control mechanisms are represented by PYRAMID and MULTI.

To investigate whether the reforms in the MCCG 2007 affect firm performance, we put in a dummy variable, DMCCG2007 (take value of 1 in 2008 and onwards), into equation (1) to see whether firm value changes significantly after 2008.The main investigation of this paper is on the interaction of DMCCG2007 with PYRAMID and MULTI to see whether the MCCG 2007 affects the relationship of these two firm structures with ROA. Equation (2) is constructed with these interactive terms (in brackets) added:

$$Performance_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 LEVERAGE_{it} + \beta_2 GROWTH_{it} + \beta_4 TOBINQ_{it} + \beta_5 AGE_{it} + \beta_6 PYRAMID_{it} + \beta_7 MULTI_{it} + \beta_8 D_{MCCG2007,it} + \beta_9 (PYRAMID_{it} x \beta_8 D_{MCCG2007,it}) + \beta_{10} (MULTI_{it} x D_{MCCG2007,it}) + e_{it} \quad (2)$$

We provide a summary of all of the variables as shown in Table 1.

## Robustness Check On Adding Corporate Governance Control Variables

Corporate governance research has been very prolific over the last two decades. Several corporate governance variables have been documented to have a significant effect on firm performance. Among others, ownership structure is found to be the main dimension that is highly relevant in a corporate governance context. In this study, our focus is on the Type II agency issue, namely the ultimate owners' expropriation of funds at the cost of the minority shareholders. Thus, we would like to investigate whether our estimated results will still be consistent when we control for relevant corporate governance variables in relation to ownership.

Based on data availability, we added four variables: UO (degree of ownership by the ultimate owners), $UO^2$ (the square of UO), DUALITY (CEO duality), and BOARD (Board ownership). UO represents the ownership concentration in terms of control rights of the ultimate owner. Following La Porta *et al*. (1999), Wiwattanakantang (2001), and Song (2007), we trace the ultimate owner of the largest shareholder to provide more clarity on the impact of controlling shareholders or ultimate owners on the value of Malaysian-listed firms. It is appropriate to control for UO because pyramidal and cross-holding ownership structures among firms are pronounced in many East Asia countries where the control rights are not equal to cash flow rights. The separation of the control rights and ownership (or cash flow rights) is created to benefit the largest shareholders (La Porta et.al., 1999) where control rights consequently exceed cash flow rights. Following Claessens *et al*. (2002), we use the control rights of the ultimate owner of the largest shareholder which comprises direct and indirect shareholdings as a proxy for UO to determine the ownership concentration. The use of direct shareholdings may not be appropriate because there are a number of firms in Malaysia owned indirectly through a

chain of firms that are privately held (Song *et al*., 2007). A strand of literature on corporate ownership finds a non-linear association between ownership and firm performance (Morck *et al*., 1988; Short & Keasey, 1999; Davies *et al*., 2005). These studies suggest that the nature of the non-linearity depends on whether the ownership at certain level helps to align or entrench the interest between the managers, or major shareholders, and minority shareholders. Hence, we include $UO^2$ to address this issue.

CEO duality indicates that the CEO is also the Chairman of the Board. The CEO is entrusted with the job of carrying out the day-to-day running and operations of the company business, while the board chairman is appointed by the shareholders to supervise and monitor the CEO in carrying out his/her entrusted duties. When these two posts are held or assumed by the same person, he/she might have a greater influence on his/her own remuneration. As the board becomes under the control of the manager, this prevents it from effectively accomplishing its tasks of hiring, firing, and rewarding top executive officers, as well as ratifying and monitoring important decisions. In other words, duality puts the CEO in a position of evaluating his/her own performance, as well as deciding his/her own remuneration (Brickley *et al*., 1997). Another related variable is board ownership. Company board by definition is the internal governing mechanism that aligns the interest of the shareholders and the managers. When board members have high ownership, their incentive to act according to shareholders' interests will strengthen. Furthermore, the existence of independent board members could also play a significant role in influencing the managers on the board, which results in less fraud and earnings manipulation (Beasley *et al*., 2000 and Klein, 2002).

The augmented model is basically equation (2) with four more controlled variables, as below:

$$Performance_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 LEVERAGE_{it} + \beta_2 GROWTH_{it} + \beta_4 TOBINQ_{it} + \beta_5 AGE_{it} + \beta_6 UO_{it} + \beta_7 UO2_{it} + \beta_8 D_{Duality,it} + \beta_9 BOARDOW_{it} + \beta_{10} PYRAMID_{it} + \beta_{11} MULTI_{it} + \beta_{12} D_{MCCG2007,it} + \beta_{13}(PYRAMID_{it} \times D_{MCCG2007,it}) + \beta_{14}(MULTI_{it} \times D_{MCCG2007,it}) + e_{it} \quad (3)$$

## Robustness Check On Endogeneity Problem

Endogeneity has always been a serious concern when conducting an empirical estimation in a performance model e.g., Hermalin and Weisbach (1988), Bhagat and Black (1999), Denis and Sarin (1999), and Coles *et al*. (2008). To address the endogenous relationship between corporate control and firm performance, we employ a two-step dynamic system GMM modelling proposed by Roodman (2009a, b) to estimate the augmented model with, and without, the corporate governance control variables. The endogeneity problem arises when there is a possibility that the impact of the control mechanisms themselves is dependent on firm performance, which may cause serious consequences for inference. A dynamic panel estimator not only addresses the endogeneity issue but also allows us to control for unobservable heterogeneity and simultaneity issues. To circumvent the endogeneity problems, the GMM estimation uses pass information on firm performance as valid instruments for the model of firm performance in both first differences and levels equations. Wintoki *et al*. (2012) strongly support the dynamic GMM approach as a valid and powerful approach to address the endogeneity issue in the firm performance model.

Table 1 Variable Description

| Variable Name | Variable Description |
|---|---|
| Dependent Variables | |
| Return on assets (ROA) | Earnings before interest, taxes, and depreciation (EBIT) over book value of total assets |
| Control Variables | |
| Firm size (Size) | Natural logarithm of total asset of firm *i* in year *t*. |
| Leverage ratio (LEVERAGE) | Total debt over total asset of firm *i* in year *t*. |
| Sales Growth (GROWTH) | 2-year average percentage changes in sales of firm *i* in year *t*. |
| Tobin's Q (TOBINQ) | Market value of assets over replacement value of assets |
| Firm Age(AGE) | The years of incorporation of firm *i* in year *t*. |
| Ultimate Ownership (UO) | Percentage of control rights of the ultimate owner |
| Board Ownership (BOARDOW) | Total of percentage shares holds by all the members of the board |
| CEO Duality ($D_{Duality}$) | Dummy variable that equals one if CEO holds the post of board chairman |
| Main Variables of Interest | |
| $D_{Pyramid}$ | Dummy variable that equals one if the firm has a pyramid structure. |
| $D_{Multi}$ | Dummy variable that equals one if the firm has a multiple control chain structure. |
| $D_{MCCG07}$ | Dummy variable that equals one from 2008 and onwards |

Note: This table describes the key variables used in this study

## DATA AND SAMPLE

Our study covers a sample of 295 firms listed in Bursa Malaysia for the period of 2001 to 2012. Most of our data were downloaded from the DataStream database, except for ownership information, which was collected from annual reports of the listed firms. We exclude financial firms due to different rule in income measurement. Also, firm which has insufficient disclosure on ultimate owner were excluded. Our data are unbalanced panel as we also covered some firms that already delisted during the sample period.

Following the suggestion of Wiwattanakantang (2001), the controlling shareholder in this study is defined as a person or a group of persons who are together entitled to control at least 33% of the company's voting shares. Thus, the ownership in this study is defined based on voting rights, which includes direct and indirect shareholding, consistent with Wiwattanakantang (2001), Song (2007), and Bany-Ariffin *et al*. (2010). When a firm's shares are held by a chain or several chains of firms, the ultimate owner is identified by tracing through the chain or chains of firms. An ultimate owner who controls at least 33% of a firm's shares is treated as the controlling shareholder of the firm. Firms with a controlling shareholder were further categorized into pyramidal and non-pyramidal firms as well as firms with and without multiple control chains. The purpose is to enable us to test whether the controlling shareholder

extracts private benefits through these mechanisms, causing the firms' performance to decline.

The control rights of the ultimate owner were obtained from the list of substantial shareholders in annual reports. If we find that the largest shareholder is another listed company, we continue to find the owner identity of that listed company. In the situation of the owner being a privately held firm, we will see if they provide the identity of the owner in the notes under the list of substantial shareholders; in many cases, they do provide that information. Consistent with other empirical studies, firms in the financial industry were dropped due to the different income measuring rules (Short and Keasey, 1999). Firms without precise information disclosure on the controlling ownership and financial data were excluded.

Table 2 reports the summary of descriptive statistics for our sample as well as in the sub-sample before and after the MCCG 2007. The overall sample consists of a maximum of 3537 firm-year observations. The ROA of an average firm in the full sample is 6.94%, close to the median value of 6.41%. The average ROA value prior to MCCG 2007 is below the mean, but the average ROA increased to 7.14% post-MCCG 2007.In addition to ROA, we also observed an improvement in firm size and firm age, but a drop in firm leverage, firm growth, and Tobin's Q in the post-MCCG 2007 era. As for the CG-related variable, there is a drop in UO from 45.67% to 44.82%, as with the squared term $UO^2$. Board ownership also goes down from 28.54% to 27.92%. CEO duality, however, increased overall from 13.02% to 13.88%. As for our subject variables $D_{Pyramid}$ and $D_{Multi}$,we find that both variables have a significant drop in value after the MCCG 2007.

Table 2 Descriptive Statistics

| stats | Mean | | | Standard deviation | Min | Percentile | | | Max | N |
|---|---|---|---|---|---|---|---|---|---|---|
| | Overall | Before MCCG07 | After MCCG07 | | | 25% | 50% | 75% | | |
| ROA | 0.0694 | 0.0680 | 0.0714 | 0.1027 | -1.6070 | 0.0310 | 0.0641 | 0.1041 | 0.9384 | 3501 |
| SIZE | 13.3376 | 13.1800 | 13.5634 | 1.3168 | 8.2388 | 12.4156 | 13.1137 | 14.0514 | 18.2982 | 3505 |
| LEVERAGE | 0.1952 | 0.1990 | 0.1898 | 0.1768 | 0.0000 | 0.0333 | 0.1678 | 0.3113 | 2.0284 | 3504 |
| GROWTH | 0.1433 | 0.1626 | 0.1166 | 0.3793 | -0.4729 | -0.0078 | 0.0806 | 0.2005 | 2.8054 | 3419 |
| AGE | 3.1443 | 3.0178 | 3.3249 | 0.6754 | 0.0000 | 2.6391 | 3.2581 | 3.6636 | 4.6540 | 3509 |
| TOBIN'S Q | 1.0396 | 1.0496 | 1.0243 | 1.0028 | -0.7349 | 0.5524 | 0.8234 | 1.2096 | 24.0057 | 3424 |
| UO | 0.4567 | 0.4482 | 0.4690 | 0.1681 | 0.0389 | 0.3250 | 0.4691 | 0.5684 | 0.9842 | 3495 |
| $UO^2$ | 0.2368 | 0.2279 | 0.2497 | 0.1602 | 0.0015 | 0.1056 | 0.2201 | 0.3231 | 0.9686 | 3495 |
| BOARDOW | 0.2854 | 0.2792 | 0.2941 | 0.2542 | 0.0000 | 0.0004 | 0.2975 | 0.5088 | 0.9057 | 3391 |
| $D_{Duality}$ | 0.1302 | 0.1388 | 0.1181 | 0.3365 | 0 | 0 | 0 | 0 | 1 | 3511 |
| $D_{Pyramid}$ | 0.1309 | 0.1293 | 0.1332 | 0.3373 | 0 | 0 | 0 | 0 | 1 | 3537 |
| $D_{Multi}$ | 0.3412 | 0.3254 | 0.3639 | 0.4742 | 0 | 0 | 0 | 1 | 1 | 3505 |
| $D_{MCCG07}$ | 0.4162 | 0 | 1 | 0.4930 | 0 | 0 | 0 | 1 | 1 | 3537 |

Table 3 presents the Pearson rank of correlations between the variables. From the correlation coefficients, we deduce that there is no concern of the multicollinearity problem between the explanatory variables because none of the pairwise correlation values exceeded 0.4.

Table 3 Correlation

| | ROA | SIZE | LEVERAGE | GROWTH | AGE | TOBINQ | UO | BOARDOW | $D_{Duality}$ | $D_{Pyramid}$ | $D_{Multi}$ | VIF |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ROA | 1 | | | | | | | | | | | 1.64 |
| SIZE | 0.0757 | 1 | | | | | | | | | | 1.53 |
| LEVERAGE | -0.1601 | 0.3115 | 1 | | | | | | | | | 1.23 |
| GROWTH | 0.0913 | 0.0333 | 0.0447 | 1 | | | | | | | | 1.03 |
| AGE | -0.0376 | 0.2217 | -0.004 | 0.0187 | 1 | | | | | | | 1.20 |
| TOBINQ | 0.5903 | -0.0019 | -0.2069 | -0.0079 | 0.0026 | 1 | | | | | | 1.69 |
| UO | 0.1356 | 0.2812 | -0.063 | 0.0027 | -0.0408 | 0.0932 | 1 | | | | | 1.40 |
| BOARDOW | -0.0314 | -0.2234 | -0.0128 | 0.0014 | -0.1549 | -0.1379 | 0.0514 | 1 | | | | 1.44 |
| $D_{Duality}$ | 0.0176 | 0.0237 | -0.0138 | -0.0117 | -0.0208 | 0.0177 | -0.059 | 0.1574 | 1 | | | 1.05 |
| $D_{Pyramid}$ | -0.0426 | 0.1663 | 0.0205 | 0.0289 | 0.1964 | -0.0071 | 0.2528 | -0.0767 | -0.0347 | 1 | | 1.22 |
| $D_{Multi}$ | -0.047 | -0.0307 | 0.012 | 0.0035 | 0.0201 | -0.1084 | 0.0986 | 0.2648 | 0.0643 | 0.061 | 1 | 1.13 |
| $D_{MCCG07}$ | 0.0469 | 0.1304 | -0.038 | -0.0613 | 0.1991 | -0.0175 | 0.0628 | 0.0331 | -0.0295 | -0.0094 | 0.0353 | 1.08 |

## RESULTS AND FINDINGS

### Baseline Firm Performance Model, The Impact Of Control Mechanism, And The MCCG 2007

Table 4 reports the estimates of our baseline firm performance model. We controlled for firm heterogeneity with firm-fixed effect on the baseline model (1). We then controlled for year effect, industry effect, and both, as reported in model (2), model (3), and model (4), respectively. Here, we can see that the sign and magnitude of the estimates are stable across the different settings, except for model (4). All of these regressions are estimated with White-adjusted standard error and the results indicate that all of the estimated coefficients are statistically significant except for AGE. The R-squared ranges from 26% to 29% which is low but acceptable. To ensure more robust statistical inferences, we next incorporate within-cluster corrections as highlighted by Petersen (2009), but instead of comparing single-clustered standard errors, we compare White-adjusted standard errors with two versions of double-clustered standard errors that allow the other dimension to be controlled by a fixed effect in the residuals. We set the standard errors, clustered by firm, as the base and add another clustering by time and one by industry, and reported the double-clustered standard errors results in model (5) and (6), respectively. Although the estimated signs of the coefficients are consistent across all models, the magnitude of coefficients estimated by both the clustering models is quite different. As well, for both models, all of the coefficients are statistically significant, including AGE. Compared with the White-adjusted standard errors in column (4), we find that the clustering standard errors of most coefficients have declined more than two times, a rule of thumb prescribed by Petersen (2009). Thus, the double-clustered standard errors should provide more robust estimates. Generally, the results for the control variables are as expected: SIZE, GROWTH, and TOBIN'S Q all have a positive and significant coefficient implying that firm performance tends to be better for larger, higher sales growth, and higher value firms; while LEVERAGE and AGE have a negative and significant coefficient indicating high leveraged and older firms tend to have lower ROA or firm performance.

Having established that the estimates with double-clustered standard errors are more robust, we next proceed to Table 5 of the estimates of the baseline model augmented with our subject variables, $D_{Pyramid}$, $D_{Multi}$, and $D_{MCCG07}$. We can see that the estimates of all models in Table 5 are highly consistent with their counterparts in Table 4. For the subject variables, we see that all of the estimated signs are according to our expectations, i.e., control mechanisms have a negative impact on firm performance, while the MCCG 2007 had a positive impact to correct the adverse effects. However, we do not obtain any statistical evidence to claim that control mechanisms affect firm performance in model (1) and (2). However, in model (3), the MCCG2007 poses a significant positive impact in reducing the adverse effect of multiple control chains, while in model (4) $D_{Pyramid}$ is negative and significant, and the MCCG2007 also shows a significant positive effect on the adverse effect of pyramidal structure on firm performance. At this stage, we have not yet made any conclusions on the impact of control mechanisms and the MCCG2007 on firm performance. We will address a few more issues in the coming sections, including controlling for corporate governance profile of the firm and also the issue of endogeneity, to see if the results are still consistent.

Table 4 Various Estimates of the Baseline Firm Performance Model

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| Intercept | -0.3639** | -0.4235* | -0.3661** | -0.4232*** | -0.1405*** | -0.0799*** |
| | (0.1433) | (0.2478) | (0.1432) | (0.0674) | (0.0330) | (0.0172) |
| SIZE | 0.0363** | 0.0375** | 0.0363** | 0.0374*** | 0.0111*** | 0.0100*** |
| | (0.0155) | (0.0182) | (0.0155) | (0.0042) | (0.0029) | (0.0016) |
| LEVERAGE | -0.1921*** | -0.1936*** | -0.1920*** | -0.1934*** | -0.0777** | -0.0748** |
| | (0.0678) | (0.0716) | (0.0679) | (0.0133) | (0.0366) | (0.0327) |
| GROWTH | 0.0351*** | 0.0341*** | 0.0351*** | 0.0341*** | 0.0280*** | 0.0267*** |
| | (0.0055) | (0.0054) | (0.0055) | (0.0036) | (0.0058) | (0.0072) |
| TOBINQ | 0.0458*** | 0.0474*** | 0.0457*** | 0.0472*** | 0.0581*** | 0.0602*** |
| | (0.0039) | (0.0044) | (0.0040) | (0.0027) | (0.0061) | (0.0051) |
| AGE | -0.0206 | -0.0119 | -0.021 | -0.0126 | -0.0119*** | -0.0127*** |
| | (0.0195) | (0.0157) | (0.0195) | (0.0113) | (0.0045) | (0.0034) |
| N | 3336 | 3336 | 3336 | 3336 | 3336 | 3336 |
| R2 | 0.2758 | 0.2747 | 0.2624 | 0.2986 | 0.3679 | 0.3675 |
| R2-Adjusted | 0.1923 | 0.1972 | 0.1922 | 0.119 | 0.3657 | 0.3645 |
| Firm cluster | No | No | No | No | Yes | Yes |
| Year cluster | No | No | No | No | Yes | No |
| Industry cluster | No | No | No | No | No | Yes |
| Firm Effect | Yes | Yes | Yes | Yes | No | No |
| Year Effect | No | Yes | No | Yes | No | Yes |
| Industry Effect | No | No | Yes | Yes | Yes | No |

Note: This table estimates the baseline pooled and panel model as stated in Eq.(1). The descriptions for all the variables listed above are given in the notes to Table 1. The dependent variable is ROA. Standard errors are reported in the parentheses. Column (5) and (6) reports the double-clustered standard errors on firm-year, and firm-industry, respectively. Time, year and industry dummies are in turn included in the regressions but their estimates are suppressed due to space constraint. N denotes the number of observations. The asterisk ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

Table 5 Various Estimates of the Baseline Firm Performance Model with Control Mechanism and the Impact of MCCG2007

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Intercept | -0.1487*** | -0.0903*** | -0.1436*** | -0.0912*** |
| | (0.0336) | (0.0211) | (0.0357) | (0.0238) |
| SIZE | 0.0115*** | 0.0105*** | 0.0112*** | 0.0106*** |
| | (0.0029) | (0.0015) | (0.0030) | (0.0015) |
| LEVERAGE | -0.0777** | -0.0750** | -0.0760** | -0.0756** |
| | (0.0364) | (0.0327) | (0.0373) | (0.0327) |
| GROWTH | 0.0281*** | 0.0267*** | 0.0288*** | 0.0267*** |
| | (0.0058) | (0.0071) | (0.0057) | (0.0072) |
| TOBINQ | 0.0584*** | 0.0605*** | 0.0586*** | 0.0605*** |
| | (0.0061) | (0.0049) | (0.0061) | (0.0049) |
| AGE | -0.0110** | -0.0118*** | -0.0122*** | -0.0115*** |
| | (0.0045) | (0.0036) | (0.0045) | (0.0036) |
| $D_{Pyramid}$ | -0.0108 | -0.0107 | -0.0135 | -0.0139** |
| | (0.0087) | (0.0079) | (0.0109) | (0.0070) |
| $D_{Multi}$ | 0.0067 | 0.0052 | 0.002 | 0.0003 |
| | (0.0048) | (0.0052) | (0.0055) | (0.0075) |
| $D_{MCCG07}$ | | | 0.0037 | -0.0042 |
| | | | (0.0077) | (0.0087) |
| $D_{Pyramid}$ x $D_{MCCG07}$ | | | 0.0083 | 0.0074* |
| | | | (0.0088) | (0.0043) |
| $D_{Multi}$ x $D_{MCCG07}$ | | | 0.0108* | 0.0118 |
| | | | (0.0062) | (0.0080) |
| N | 3334 | 3334 | 3334 | 3334 |
| R2 | 0.3699 | 0.3691 | 0.3722 | 0.37 |
| R2adj | 0.3672 | 0.3657 | 0.369 | 0.3662 |
| Firm cluster | Yes | Yes | Yes | Yes |
| Year cluster | Yes | No | Yes | No |
| Industry cluster | No | Yes | No | Yes |
| Firm Effect | No | No | No | No |
| Year Effect | No | Yes | No | Yes |
| Industry Effect | Yes | No | Yes | No |

Note: This table estimates Eq.(2) to investigate two issues: (1) whether pyramid structure and multiple control chain structure affects ROA; and (2) whether the effect of these control mechanism changes after the introduction of MCCG 2007. The descriptions for all the variables listed above are given in the notes to Table 1. The dependent variable is ROA. Two models are estimated for each investigation, they are: model with double clustered standard errors on firm-year and industry fixed effect and double clustered standard errors on firm-industry with year fixed effect, respectively. N denotes the number of observations. The asterisk ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

## Augmented Firm Performance Model With Corporate Governance Control Variables

In this section, we add four more control variables related to corporate governance: degree of ultimate ownership (UO) and its squared term ($UO^2$), Board ownership (BOARDOW), and duality (DUALITY) to the baseline model. We estimate by only the two versions of double-clustered standard errors, as in the previous section, and report the results in Table 6. With the corporate governance related control variables, the estimated coefficients for the other variables are still quite consistent with the previous estimates and they are all statistically significant. Again, pyramidal structure shows a negative and significant effect on ROA, and the implementation of the MCCG2007 has a positive effect on the relationship of pyramidal structure with ROA. However, there is no statistical evidence to claim that the multiple control chain affects neither ROA nor its interaction term with $D_{MCCG07}$.

Table 6 Estimates of Baseline Performance Model with Control Mechanism and the Impact of MCCG2007 Additional CG Control Variables

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Intercept | -0.2126*** | -0.1481*** | -0.1578*** | -0.1578*** |
| | (0.0402) | (0.0490) | (0.0473) | (0.0473) |
| SIZE | 0.0099*** | 0.0086*** | 0.0087*** | 0.0087*** |
| | (0.0026) | (0.0026) | (0.0027) | (0.0027) |
| LEVERAGE | -0.0447*** | -0.0399*** | -0.0404*** | -0.0404*** |
| | (0.0163) | (0.0149) | (0.0150) | (0.0150) |
| GROWTH | 0.0256*** | 0.0247*** | 0.0246*** | 0.0246*** |
| | (0.0053) | (0.0077) | (0.0078) | (0.0078) |
| TOBINQ | 0.0583*** | 0.0598*** | 0.0598*** | 0.0598*** |
| | (0.0057) | (0.0043) | (0.0043) | (0.0043) |
| AGE | -0.0066 | -0.0081** | -0.0077** | -0.0077** |
| | (0.0042) | (0.0036) | (0.0035) | (0.0035) |
| UO | 0.3034*** | 0.3175*** | 0.3175*** | 0.3175*** |
| | (0.0578) | (0.0542) | (0.0550) | (0.0550) |
| $UO^2$ | -0.3019*** | -0.3059*** | -0.3057*** | -0.3057*** |
| | (0.0582) | (0.0543) | (0.0554) | (0.0554) |
| BOARDOW | 0.0205** | 0.0118 | 0.0125 | 0.0125 |
| | (0.0089) | (0.0083) | (0.0088) | (0.0088) |
| $D_{Duality}$ | -0.0067 | -0.0027 | -0.0025 | -0.0025 |
| | (0.0066) | (0.0062) | (0.0059) | (0.0059) |
| $D_{Pyramid}$ | -0.0193* | -0.0204** | -0.0265*** | -0.0265*** |
| | (0.0102) | (0.0097) | (0.0096) | (0.0096) |
| $D_{Multi}$ | -0.0005 | -0.0017 | -0.0057 | -0.0057 |
| | (0.0048) | (0.0048) | (0.0071) | (0.0071) |

Table 6 (Cont.)

| | | | | |
|---|---|---|---|---|
| $D_{MCCG07}$ | | | 0.0038 | 0.0038 |
| | | | (0.0042) | (0.0042) |
| $D_{Pyramid}$ x $D_{MCCG07}$ | | | 0.0151* | 0.0151* |
| | | | (0.0081) | (0.0081) |
| $D_{Multi}$ x $D_{MCCG07}$ | | | 0.0093 | 0.0093 |
| | | | (0.0068) | (0.0068) |
| N | 3185 | 3185 | 3185 | 3185 |
| R2 | 0.4004 | 0.4004 | 0.4015 | 0.4015 |
| R2adj | 0.397 | 0.3962 | 0.397 | 0.397 |
| Firm cluster | Yes | Yes | Yes | Yes |
| Year cluster | Yes | No | Yes | No |
| Industry cluster | No | Yes | No | Yes |
| Firm Effect | No | No | No | No |
| Year Effect | No | Yes | No | Yes |
| Industry Effect | Yes | No | Yes | No |

Note: This table estimates Eq.(3) to investigate the two issues as stated in Table 6 with the addition of corporate governance related control variables: (1) whether pyramid structure and multiple control chain structure affects ROA; and (2) whether the effect of these control mechanism changes after the introduction of MCCG 2007. The descriptions for all the variables listed above are given in the notes to Table 1. The dependent variable is ROA. Two models are estimated for each investigation, they are: model with double clustered standard errors on firm-year and industry fixed effect and double clustered standard errors on firm-industry with year fixed effect, respectively. N denotes the number of observations. The asterisk ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

## Augmented Firm Performance Model Accounted For Endogeneity

To verify whether the dynamic system GMM estimates is a valid methodology for our model, we performed some post-estimation tests for autocorrelation and instrument validity. According to Arellano and Bond (1991), we can examine the first difference errors of the model with first-order and second-order autocorrelation tests, AR (1) and AR (2) tests. If the regression errors are independent and identically distributed, the first difference errors are by nature autocorrelated in the first order but not in the second order. Another standard post-estimation test for dynamic system GMM is the Hansen J test on the validity of the instrumental variables employed in the dynamic system GMM. The Hansen test allows us to see if our chosen model is robust and not subject to the over-identification problem due to too many instruments. The J test should be insignificant if the model is valid.

We find that the dynamic system GMM estimates passed the entire post-estimation requirement in Table 7. As shown in the bottom panel of Table 7, these GMM estimated models show no indication of autocorrelation and over-identification at conventional levels of significance. Additionally, the lag of ROA that is added to the model is statistically significant, thus providing further support to address the endogeneity issue.

Again, the estimates are all highly consistent with the previous sections, and there is an improvement in the inferences. We can now see that both the control mechanisms have a significant negative effect on ROA, as the MCCG2007 dummy variable, and the interaction terms of both control mechanisms with $D_{MCCG07}$. These results provide strong support to all of the hypotheses.

Table 7 Robustness Checking with GMM Estimates

| | GMM1 | GMM2 |
|---|---|---|
| Intercept | -0.4683*** | -0.1449*** |
| | (0.0227) | (0.0198) |
| Lag(ROA) | 0.0272*** | 0.0617*** |
| | (0.0021) | (0.0018) |
| SIZE | 0.0407*** | 0.0150*** |
| | (0.0014) | (0.0015) |
| LEVERAGE | -0.1917*** | -0.0657*** |
| | (0.0036) | (0.0029) |
| GROWTH | 0.0351*** | 0.0322*** |
| | (0.0007) | (0.0004) |
| TOBINQ | 0.0478*** | 0.0342*** |
| | (0.0009) | (0.0006) |
| AGE | -0.0045 | -0.0132*** |
| | (0.0035) | (0.0022) |
| UO | - | 0.1397*** |
| | | (0.0088) |
| $UO^2$ | - | -0.1069*** |
| | | (0.0078) |
| BOARDOW | - | -0.0041*** |
| | | (0.0014) |
| $D_{Duality}$ | - | -0.001 |
| | | (0.0010) |
| $D_{Pyramid}$ | -0.0235*** | -0.0361*** |
| | (0.0030) | (0.0011) |
| $D_{Multi}$ | -0.0074*** | -0.0028*** |
| | (0.0013) | (0.0006) |
| $D_{MCCG07}$ | -0.0257*** | -0.0113*** |
| | (0.0018) | (0.0008) |
| $D_{Pyramid}$ x $D_{MCCG07}$ | 0.0162*** | 0.0147*** |
| | (0.0019) | (0.0008) |
| $D_{Multi}$ x $D_{MCCG07}$ | 0.0129*** | 0.0085*** |
| | (0.0015) | (0.0008) |
| N | 3104 | 2973 |
| AR(1) | -3.27*** | -3.21*** |
| | [0.0010] | [0.0010] |
| AR(2) | 1.61 | 1.64 |
| | [0.1070] | [0.1010] |
| Hansen Test | 227.94 | 264.48 |
| | [0.1880 ] | [0.9880] |

Note: This table re-estimates Eq.(3) with dynamic system GMM to investigate the two issues as stated in Table 6, with and without the corporate governance related control variables. The descriptions for all the variables listed above are given in the notes to Table 1. The dependent variable is ROA. The 2-step dynamic system GMM panel includes the lagged value of ROA as a regressor. Year and industry dummies are included in the regressions but not reported for brevity. Figures in parentheses are standard errors while figures in the square bracket for the diagnostic AR(1), AR(2) and Hansen test are probability value or p values. AR(1) and AR(2) tests are under the null of no first-order and second-order serial correlation, respectively, in the first-differenced residuals. The Hansen tests of over-identification are under the null that all instruments are valid. N denotes the number of observations. The asterisk ***, ** and * denote statistical significance at the 1%, 5% and 10% levels, respectively.

## CONCLUSION

The Malaysia Code on Corporate Governance (MCCG) has gone through three stages of improvement since its inaugural launch in 2001. The subsequent revision in 2007 (MCCG2007) and 2012 (MCCG2012) were well received in the market, but there is no formal study on how these reforms in the corporate governance landscape have affected firm performance. This study aims to provide some understanding on this issue with special focus on the effects of control mechanisms of the controlling shareholder i.e., the ultimate owners. The issue of control mechanisms is a common governance issue in the Malaysian corporate landscape.

In this study, we focus on the MCCG2007. We do not have a complete dataset to examine the MCCG2001 and it is still too early to obtain meaningful data to test the MCCG 2012. Our main intention is to examine whether a pyramidal firm structure and multiple control chains, two of the most common control mechanisms, affect firms' ROA. We also examine whether their impact changes after the introduction of the MCCG 2007. We employed panel data of 295 firms from2001 to 2012 to examine how firm performance is affected by the MCCG2007. In short, after control for endogeneity problem with GMM estimation, we find that both control mechanisms have significant negative effects on firm performance. The effect were not detected before endogeneity problem is addressed. In this regards, we also documented that MCCG2007 has help to curb the negative effects of the control mechanism by the ultimate owners significantly. Our results are robust in the context of adding control variables on firm corporate governance and controlling for the endogeneity issue.

Along with the possible benefits of the MCCG in terms of firm performance, various weaknesses have been identified by researchers, especially in the areas of insider trading, legal remedies for shareholders, and independency of the independent directors, as well as lack of disclosure on directors' remuneration. The MCCG 2012 revision aims to address some of these issues. While this paper has documented some of the positive impacts of the MCCG2007 in the context of ownership concentration on firm performance, further study on the MCCG2012 would provide additional insight on the holistic impact of this policy evolution.

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