Agency Problem and Expropriation of Minority Shareholders

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Abstract: Controlling shareholders who are normally also the executive directors tend to set their own levels of remuneration as a means of expropriating minority shareholders. This study tests the relationship between ownership concentration and executive remuneration, using panel data for a sample of 191 Malaysian public listed companies over the 2002-2007 period. This study finds a non linear relationship between share ownership of executive directors and their levels of salary by using the fixed-effects (FE) model. The model exhibits a negative, positive and negative relationship which corresponds to the occurrence of convergence-of-interests, managerial entrenchment, and convergence-of–interests effects. The positive relationship between 23 to 76 per cent between executive ownership and salary for levels of executive ownership indicates the existence of expropriation. Despite the occurrence of expropriation, salary and remuneration received by executive directors are positively related to market-to-book ratio. A positive association is also found between bonus paid to executive directors and firm's accounting profits. Independent non executive directors and the remuneration committee are able to exert a downward effect on directors' remuneration and bonus. But external blockholders do not possess such an influence in reining in the salary, bonus, or remuneration of executive directors.

Keywords: Agency theory, corporate governance, executive compensation
JEL classification: D23, G34, J33

1. Introduction

The agency problem arises from conflicts of interest between principal and agent as each party has different goals. In the case of publicly-owned firms, the separation of ownership and control may induce potential conflicts between the interests of managers (agent) and shareholders (principal). Shareholders are interested in maximising the value of the firm, but managers' objectives may also include enhancing personal wealth, job security, and prestige. Elston and Goldberg (2003) argued that the most direct benefit managers could obtain is increased monetary compensation, and this benefit is also the easiest one to measure as compared to non monetary benefits. They regarded the emergence of executive compensation

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as a prominent form of agency cost to dispersed ownership. Goldberg and Idson (1995) also shared the same opinion that agency problem may manifest itself in the compensation of top executives of corporations where management and ownership are separate. The conflicts of interests between shareholders and managers are further perpetuated by the existence of information asymmetry that makes it difficult for the principal to verify the behaviour of the agent (Dey 2008).

Due to the different situations and complexities that result in agency conflicts, Pedersen and Thomsen (2003) further classified agency conflicts as Type I and Type II Agency Conflicts. Type I agency conflicts occur between managers and shareholders under a situation where share ownership of firms is widely dispersed[1] and shareholders have little direct control over the management. When owners do not control corporations, managers are able to pursue their own economic interests. Dispersion of ownership reduces the ability of shareholders to remove bad managers and also reduces the incentive for and ability of shareholders to monitor managerial activity. It occurs when the costs of monitoring are to be borne by the particular shareholder who takes the initiative to monitor management but the benefits of monitoring are to be shared by all and sundry, which is termed as the free rider problem. Thus shareholders will leave the task of monitoring to others rather than taking it upon themselves (Alchian and Demsetz 1972). Type I agency conflicts are generally perceived to prevail in developed Western countries such as the United States and United Kingdom where share ownership of public corporations is quite widely dispersed.

Type II agency conflicts occur in firms with a concentrated ownership. Concentrated ownership refers to the situation where there is the presence of an owner with a large block of shares or an owner of several large blocks of shares in the firms. On the positive side, the existence of outside block holders could actually mitigate the agency problem as they have greater incentive to monitor the management as block holders bear a greater portion of the losses arising from managerial opportunism (Demsetz and Lehn 1985). Shleifer and Vishny (1997) also put forward the idea that the presence of block holders may overcome the free rider problem of monitoring managerial behaviour. On the negative side, in firms with concentrated ownership, conflict of interest also exists between controlling owners (or block holders) and minority shareholders (Fan and Wong 2005). Type II agency conflicts normally occur in European and East Asian countries where the ownership structure of public listed corporations is quite highly concentrated (Claessens *et al.* 2000).

In the face of these agency conflicts, several corporate governance mechanisms have been utilised to mitigate the agency problems. There are two types of corporate governance mechanisms – both internal and external. Internal mechanisms include board structure variables such as duality and the proportion of non executive directors, debt financing and executive director shareholdings (Weir *et al.* 2002); meanwhile the market for corporate control is regarded as the key external mechanism (Jensen 1986).

Executive director shareholdings are regarded as a mechanism to deal with the agency problem because it could help align the interests of managers with the shareholders. Jensen and Meckling (1976) proposed this convergence-of-interests hypothesis as a manager's

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[1] Dispersed ownership refers to the situation where there is no dominant or single owner holding enough shares to enable the owner to control the firm.

share ownership in a firm will provide them with the incentives to pursue wealth maximising policies. Based on this convergence-of-interests model, they argued that there is a linear relationship between director shareholding and firm performance – as the proportion of managerial equity ownership increases, so does corporate performance.

Nevertheless there is a negative underlying force that works behind director shareholdings in mitigating the agency problem. Beyond a certain shareholding, directors may prefer to pursue non wealth maximising goals, in particular when the private benefits of such behaviour outweigh the costs to managers in terms of value loss from suboptimal choices. This negative underlying force is termed managerial entrenchment hypothesis as proposed by Morck *et al.* (1988). Director ownership is thus regarded as both a boon and curse in mitigating agency conflicts with reference to these 'convergence-of-interests' and 'managerial entrenchment' hypothesis.

In this article, we attempt to investigate whether there is also a curvilinear relationship between executive ownership and directors' remuneration as that relationship has been observed between managerial ownership and firm performance. In particular, we want to examine whether the positive relationship found between executive ownership and directors' remuneration represents expropriation of minority shareholders by controlling shareholders due to the occurrence of managerial entrenchment.

The rest of this paper is organised as follows. Section 2 provides a brief description of remuneration of executive directors in Malaysian public corporations. Section 3 presents a brief review of literature and the proposition of a curvilinear relationship between ownership and remuneration. Section 4 describes the criteria used to select the sample. Section 5 discusses the model specification and methodology. Data descriptions and empirical findings are reported in Section 6. Section 7 deals with the endogeneity problem and Section 8 concludes the study.

2. Remuneration of Executive Directors in Malaysian Public Corporations

Like other South-east Asian countries, Malaysia is plagued with the problems of concentrated ownership, dominance of controlling shareholders, separation of voting and cash flow rights and limited protection of minority rights (Claessens *et al.* 2000). When ownership is concentrated, controlling shareholders could expropriate minority shareholders by enjoying excessive perks, stealing investment opportunities, and making inefficient investment and diversification (Shleifer and Vishny 1997).

To prevent substantial or majority shareholders who assume the position of executive directors from expropriating minority shareholders by drawing excessive salaries, the Malaysian Code on Corporate Governance (MCCG) requires that directors' remuneration be appreciable and reflect the responsibility and commitment of the directors (Finance Committee on Corporate Governance 2001). In the case of executive directors, remuneration should link rewards to corporate and individual performance, while for non executive directors it should link rewards to experience and level of responsibility. The MCCG also recommended that there should be a remuneration committee formed in companies to recommend the remuneration of CEOs and directors in the companies.

Despite the existence of these corporate governance mechanisms, the actual or true situation of executive directors' remuneration in Malaysia is far from amiable. For instance, there are only a handful of listed companies that have stated the exact amount of remuneration

paid to each director. There is even a lesser number of companies which have included stock options in their disclosure of directors' remuneration (Kaur and Rahim 2005). Some critics have even commented that the determination of directors' remuneration in Malaysia is mostly opaque and does not relate much to the financial performance of firms (Barrock 2002). There are even cases where companies in the red make huge payouts to their key directors (Kaur and Rahim 2007). In terms of the remuneration structure, the chairman, the CEOs and directors are mostly paid by a fixed salary. There are only a few companies where CEOs and directors get a fixed salary plus performance-related pay including stock options (Singam 2003).

Since most companies and conglomerates in Malaysia are either family and/or institutionally owned, there is a tendency for bias and crony capitalism to occur in the determination of directors' remuneration. Based on these negative comments and criticisms in relation to directors' salaries, this study intends to examine empirically the role played by executive ownership in either mitigating or promoting expropriation of minority shareholders by controlling shareholders.

3. Literature Review and Proposition of Hypothesis Testing

3.1 Ownership Structure and Executive Remuneration

Several studies have been carried out to examine the relationship between executive pay and firm performance, but there is a relatively few studies on the relationship between ownership structure and directors' remuneration. It is especially so in terms of the convergence-of-interests and entrenchment effects of managerial ownership on the levels of directors' remuneration in East Asian countries.

Even among the studies that examined the relationship between ownership structure and directors' remuneration, conflicting findings have been reported. For instance, Holderness and Sheehan (1988) found that managers who are majority shareholders received marginally higher salaries than other officers.

However, in another study, Allen (1981) observed that as CEO equity holding increases, the level of CEO compensation decreases, which is in line with the prediction of Jensen and Meckling (1976) that agency costs increase with a reduction in managerial ownership. Santerre and Neun (1986) and Dyl (1988) also found similar result as that of Allen (1981) – a negative relationship between ownership concentration and executive compensation.

From the perspective of simultaneity, Chung and Pruitt (1996) recognised that the firm's Tobin's Q, executive stock ownership and executive compensation are jointly determined. They found a strong positive relationship between CEO ownership and Tobin's Q, and a positive correlation between Tobin's Q and executive compensation. In contrast, Goldberg and Idson (1995) found a negative relationship between executive compensation and ownership concentration, which they interpreted as concentrated ownership reduces agency costs of managerial discretion, since excessive compensation can be regarded as a manifestation of agency costs.

Studies have also been conducted in Asian countries to examine the effect of ownership structure on executive compensation. For instance, Cheung et al. (2005) found a positive relationship between managerial ownership and cash emoluments for levels of ownership of up to 35 per cent in small and family controlled firms, and up to 10 per cent in large firms.

They attributed these findings to the managers using their ownership rights to extract higher salaries for themselves in the presence of information asymmetry between entrenched managers and outside investors. However, in another study conducted by Cheng and Firth (2006) also in Hong Kong, they observed a negative relationship between executive directors' pay and directors' stockholdings in firms controlled by a single individual or a single family. External block holders and independent non executive directors were playing the positive role of persuading firms to base top management compensation on firm's profitability.

Similar studies have also been carried out in Malaysia. For instance, Abdullah (2006) has carried out a study to examine the determinants of directors' remuneration for a sample of 86 financially distressed firms listed in the KLSE. His findings were that managerial ownership does not have any significant positive effect on directors' remuneration, whereas board independence and the stockholdings of non executive directors have a significant negative effect.

Basariah and Wan Nordin (2009) have also conducted a study to examine the sensitivity of directors' remuneration to a firm's performance and its relations to directors' stockholdings. Their study showed that firms with high managerial ownership (more than 50 per cent) do not exhibit a statistically significant coefficient of pay-performance. Whereas for those firms with lower managerial ownership (less than 5 per cent, and between 5 per cent and less than 50 per cent), significant positive coefficients of pay-performance sensitivity are found. Their findings show that at those firms with higher managerial ownership, directors might have more say in setting their own salaries which does not commensurate with firm performance – a possible sign of expropriation.

3.2 Ownership Structure and Firm Performance

Besides its effects on executive remuneration, managerial ownership also has an impact on firm performance based on its role as portrayed by the convergence-of-interests and managerial entrenchment hypothesis. These two contrasting roles played by managerial ownership in resolving agency conflicts and problems have been observed in various empirical studies.

For instance, Morck *et al.* (1988) found a significant non monotonic relationship between ownership concentration and profit rates and ownership concentration and Tobin's Q – a measure of market valuation. As ownership concentration increases, Tobin's Q rises, falls, and then rises again. Several studies (McConnell and Servaes 1990; Hermalin and Weisbach 1991; Griffith 1999; Short and Keasey 1999) have also shown the existence of such a non linear relationship between director shareholding and firm performance.

3.3 Proposition of a Curvilinear Relationship Between Ownership and Remuneration

Based on the non monotonic relationship found between ownership and firm performance, this study aims to investigate whether such a relationship also applies to managerial ownership and directors' remuneration.

This proposition is obtained by combining the argument of Jensen and Meckling (1976) that agency costs increase with a reduction in managerial ownership and vice versa; and Morck *et al.* (1988) who argue that beyond a certain shareholding, directors may prefer to pursue a non wealth maximising goal which signifies higher agency costs.

Thus this study proposes that at a lower level of executive ownership, an increase in executive ownership will bring forth a better alignment of interests between managers and shareholders according to the convergence-of-interests hypothesis. The lesser extent of agency problem will result in better firm performance which corresponds to a lower level of agency cost – directors' remuneration.

At higher level of executive ownership, managers are entrenched in their positions and tend to indulge in behaviour that maximises their private benefits of control according to the managerial entrenchment hypothesis. The heightened agency problem between managers and shareholders will result in poorer firm performance which at the same time signifies an increase in agency costs in the form of directors' remuneration.

Thus a curvilinear relationship between executive ownership and directors' remuneration which takes the form of 'a negative relation' at a lower level of ownership and 'a positive relation' at a higher level of ownership is expected to occur.

4. Selection of Sample Firms

A total of 191 sample firms were selected from firms listed in the main board of Bursa Saham Malaysia Berhad for this study. The business activities of these firms relate to five main sectors, namely consumer products, industrial products, construction, trading and services, and properties. The analysis uses panel data from 2002 to 2007.

Table 1 shows the sectoral composition of these sample firms. Based on the Stock Performance Guide Malaysia (2007), there were a total of 464 firms listed on the main board. Of these 464 firms, 374 originate from the five sectors of consumer products, industrial products, construction, trading and services, and properties. Thus these 191 sample firms comprise approximately 41 per cent of the total number of firms listed in the main board. In terms of firms whose business activities are related to these five sectors, these sample firms constitute approximately 51 per cent of all the firms listed.

The main criterion used to obtain these sample firms is that the single largest shareholder should at least own 10% of the outstanding equities of these firms. This 10% cut-off in ownership is used to identify the presence of controlling shareholders who have a greater tendency to expropriate minority shareholders. To determine effective control at any intermediate as well as the ultimate level, Claessens *et al.* (2002) used a cut-off point above which they assumed the largest shareholder has effective control over the intermediate and

Table 1. Sectoral composition of sample firms 2007

Sector	Number of firms listed	Number of firms selected
Consumer products	68	37
Industrial products	108	59
Construction	31	18
Trading and services	104	39
Properties	63	38
Total	374	191

Table 2. Distribution of shares owned by the single largest shareholder

Share ownership (%)	Frequency	Percent
10 – 33	88	46
> 33 – < 50	56	29
50 and more	47	25
Total	191	100

final corporations. They used 10 per cent as the cut-off point in their empirical analysis because that level is commonly used by other studies.

Table 2 shows that 46 per cent of the sample firms are owned by substantial shareholders who have between 10 to 33 per cent of the company's shares. In Malaysia a substantial shareholder is a person who owns 5 per cent or more of the outstanding shares of the company (Company Act 1965). It is then followed by 29 per cent of the sample firms where the single largest shareholder owns between more than 33 but less than 50 per cent of the company's shares. The other 25 per cent of the sample comprised of firms owned by shareholders having more than 50 per cent of the company's shares.

The mean value of share ownership (single largest shareholder) for these 191 sample firms is 37 per cent. This percentage of share ownership shows that the typical firm of this sample is being controlled by a controlling shareholder; in fact it is reported that controlling shareholders of most Malaysian firms hold between 30 and 40 per cent of the firm's outstanding shares (The Edge Malaysia 2006).

5. Model Specification and Methodology

To test the relationship between level of executive remuneration and share ownership in firms, as well as determining the critical level of ownership which prompts the occurrence of convergence-of-interests and managerial entrenchment effects, this study uses the following model:

$$\ln(REM_{i,t}) = \beta_0 + \beta_1 OWN_{i,t} + \beta_2 OWN_{i,t}^2 + \beta_3 OWN_{i,t}^3 + \beta_4 \ln(DIV_{i,t-1}) + \beta_5 DUAL_{i,t}$$
$$+ \beta_6 INED_{i,t} + \beta_7 REMCOM_{i,t} + \beta_8 EXTBLOCK_{i,t} + \beta_9 \ln(MBV_{i,t-1}) + \beta_{10} ROA_{i,t-1} +$$
$$\beta_{11} RET_{i,t-1} + \beta_{12} DEBT_{i,t-1} + \beta_{13} \ln(ASSET_{i,t-1})$$

$$+ \mu_i + e_{it} + year\ dummy\ variables + sector\ dummy\ variables \quad (1)$$

Descriptions for the dependent and independent variables are given in Appendix 1.

In this study, three types of executive remuneration, namely salary, bonus, and total cash remuneration (REM) will be tested against the independent variables as shown in Equation (1). There are four sets of independent variables: variables related to ownership, board characteristics, firm performance, and control variables. Ownership variables consist of two types – shares owned by executive directors of firm (OWN) and external block holder

(EXTBLOCK). Board characteristics include CEO duality (DUAL), fraction of independent non executive directors on the board (INED), and remuneration committee (REMCOM).

Firm performance is measured by variables such as return on assets (ROA) which is a measure for accounting performance, stock returns (RET), and market-to-book ratio (MBV). Stock returns and market-book-ratio are variables used to measure a firm's stock market performance. On the other hand, market-to-book ratio is also considered a proxy for a firm's investment opportunity set (Ho *et al.* 2004). Control variables comprise variables such as total asset (ASSET) which is the proxy for firm size, debt levels of firm (DEBT), and dividend paid to executive directors (DIV).

Equation (1) comprises both contemporaneous and lagged independent variables. Contemporary variables are used for ownership and board characteristics whereas lagged variables are used for firm performance and control variables. Firth *et al.* (1999) suggest the use of lagged variables for firm performance and size as directors' pay may be related to performance and size measures from the previous year. Their rationale is that annual reports often take up to four months to be published, thus top management pay that is based on performance measures may relate to the previous year's numbers. Another reason for using lagged performance variable is that current top executive compensation and shareholder return might be considered jointly determined (Gregg *et al.* 1993), in which case using the lagged return makes the causality issue less ambiguous.

Equation (1) is to be estimated by using the fixed effects (FE) and random effects (RE) model of panel data. The general fixed-effects model may be written as:

$$y_{it} = \beta x_{it} + \mu_i + e_{it}$$

where $i = 1, …, N$ firms, $t = 1, …, T$ time period with k regressors in x_{it} and e_{it} is the normal error term and y_{it} is directors' remuneration measured in terms of salary, bonus, and total cash remuneration.

The constant u_i represents unobservable individual firm-specific effects which differ between firms and are time invariant. In a random effects model, however, the constant μ_i is a random outcome variable which has a cross-section specific error component which is uncorrelated with the errors of the regressor variables. Thus

$$\mu_i = \mu + e_{it}$$

and e_{it} has a zero conditional mean.

Following the methodology of McKnight and Weir (2009), the Hausman specification test will be utilised to differentiate between random and fixed effects models by testing for the correlation between the x variables and the individual random effects . It is a test of strict exogeneity. If there is no correlation, random effects should be used but if correlation exists, fixed-effects should be used.

The cubic function in terms of executive ownership in Equation (1) will allow this study to compute the two inflection points which indicate the occurrence of convergence-of-interests and managerial entrenchment effects. To do so, the following methodology is used, as employed by Short and Keasey (1999) and Farinha and De Foronda (2005). In Equation (1), the REM variable is first differentiated with respect to OWN:

$$\frac{\partial \ln(REM)}{\partial OWN} = \beta_1 + 2\beta_2 OWN + 3\beta_3 OWN^2 = 0 \tag{2}$$

Solving Equation (2) by using the quadratic formula ($\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$) gives:

$$OWN_1 = \frac{-2\beta_2 - \sqrt{4\beta_2^2 - 12\beta_1\beta_3}}{6\beta_3}$$

$$OWN_2 = \frac{-2\beta_2 + \sqrt{4\beta_2^2 - 12\beta_1\beta_3}}{6\beta_3}$$

where OWN_1 or OWN_2 may indicate the executive ownership levels which is associated with the occurrence of alignment-of-interests effect (where the second partial derivative of REM on OWN is equal to more then 0 (positive value) which indicates a relative minimum) or managerial entrench-ment effect (where the second partial derivative of REM on OWN is equal to less then 0 which indicates a relative maximum).

After determining these critical levels of executive ownership, piecewise linear regression will be utilised to determine the degree of expropriation in terms of executive remuneration. This regression method estimates the relationship between two variables by constructing linear splines (segments) at various strategic levels of the regressors. These linear splines allow estimating the relationship between y (executive remuneration) and x (executive ownership) as a piecewise linear function, which is a function composed of linear segments. The two inflection or turning points of executive ownership which indicate the occurrence of convergence-of-interests and managerial entrenchment effects are used to form these linear splines or segments.

6. Data Descriptions and Findings

6.1 Data Sources and Descriptions

Data on directors' remuneration, ownership, and board characteristics were collected from the annual reports of the respective companies in particular from the sections on Corporate Governance Statement and Shareholding Statistics. These sections provide information on the various components of directors' remuneration, remuneration committee and its composition, fraction of independent non executive directors, directors' shareholdings and list of substantial shareholders. Raw data used to compute firm's performance and financial variables such as profitability, stock returns, market-to-book ratio, assets, and debt levels were extracted from the data base of Data Stream and computed according to the definitions provided for these variables in Appendix 1.

Descriptive statistics about the sample firms are reported in Table 3. On the average executive directors earned approximately RM2.57 million per annum in terms of total cash remuneration between 2002 and 2007. About 70 per cent of their earnings are in the form of fixed salary – RM1.82 million. Bonus earned (RM0.25 million) constituted only about 10 per cent of total remuneration. The rest of the remuneration earned is in the form of fees, allowances, contributions to retirement funds, and other pecuniary benefits. Table 3 also shows that the biggest source of income to executive directors actually comes from the dividend earned from their shareholdings. Dividends received by executive directors are approximately 2.5 times the amount of their total cash remuneration.

Table 3. Descriptive statistics on dependent and independent variables (2002 – 2007)

	Mean	Median	Standard deviation	Minimum	Maximum
Salary (RM million)	1.82	1.05	5.02	0	68.9
Bonus (RM million)	0.25	0.046	0.62	0	7.67
Remuneration (RM million)	2.57	1.41	6.78	0	101
Dividend (RM million)	6.61	1.43	26.3	0	482
Ownership (%)	34.4	37.9	22.68	0	84.65
CEO duality	0.40	0	0.49	0	1
INED (%)	40.5	37.5	9.89	14.29	87.5
Remuneration Committee	1.7	2	0.83	0	3
Ownership of external block holder (%)	5.87	5.35	6.54	0	30.6
Market-to-book	0.91	0.72	0.81	0	13.5
Return on assets	0.04	0.042	0.069	-1.15	0.31
Stock return	0.119	0.1	0.405	-1.31	1.63
Debt to total asset ratio	0.39	0.39	0.195	0.006	0.98
Total assets (RM million)	1160	460	2790	53.7	33900

Executive directors on average held approximately 34.4 per cent of the sample firms' outstanding share equities. But as shown in Table 4, approximately 20 per cent of the sample firms' executive directors hold less than 5 per cent of share equities. These executive directors are not the substantial or controlling shareholders; they might be the professional managers employed to manage the firms.

If 30 to 40 per cent share ownership is used as the guideline to identify controlling shareholders, approximately 37 per cent of the sample firms belong to the case where their executive directors are actually the controlling shareholders. The rest of the sample firms, approximately 30 per cent, have executive directors who are dominant shareholders sit on the board.

In terms of board characteristics, Table 3 shows that 40 per cent of sample firms have a CEO who is also the chairman of board. These sample firms do not fulfill the requirement of separating the job function of CEO and chairman as recommended by the MCCG. On average, the sample firms fulfill the requirement that at least 1/3 of board members comprise of independent non executive directors (INED) – 40.5 per cent of board members belong to this category of directors. The sample firms also have more than 50 per cent of INED sit in the remuneration committee. Nevertheless, the single largest external block holder only holds approximately 6 per cent of the sample firms' share equities.

Table 4. Distribution of executive ownership for overall period from 2002 to 2007

Executive ownership (%)	Distribution percentage
0 – < 5	20.07
5 – < 25	12.22
25 – < 50	37.43
50 and more	30.28
Total	100

In terms of financial performance, the sample firms achieved, on average, a 4 per cent return on assets over this 6-year time period but stock return is much higher at 11.9 per cent. The sample firms have a market-to-book ratio of approximately 1 and a low leverage or debt to total asset ratio of approximately 0.4. The size of these sample firms are relatively large with average total assets of about RM1,160 million.

Generally there is a relatively low correlation between independent variables as shown by the correlations between the variables in Table 5. High correlations are found between salary, bonus, and executive remuneration as the first two variables are the major components that make up the remuneration of Malaysian executive directors. Nevertheless, these three remuneration variables are treated as dependent variables and will be entered separately in the regression analysis.

A high correlation also appeared in executive ownership, and in its squared and cubed terms. Nevertheless, these three variables are needed for the purpose of determining the inflection points which indicate the occurrence of convergence-of-interests and managerial entrenchment effects. Thus the correlation figures in Table 5 show that multi-collinearity is not a serious problem among independent variables of this study.

6.2 Findings

6.2.1 Regression Analysis for Executive Directors' Salary, Bonus, and Total Remuneration

To determine the critical levels of executive ownership which trigger the occurrence of convergence-of-interests and managerial entrenchment effects, executive directors' salary, bonus, and total cash remuneration were regressed against executive ownership, its squared and cubed terms and other regressors respectively as shown in Table 6.

The fixed effects model is chosen for both executive directors' salary and cash remuneration as the Hausman's specification test is significant which implies the existence of correlation between the regressors and the error term. On the other hand, the random effects model is more appropriate for executive directors' bonus as correlation does not exist between regressors and error term as indicated by an insignificant Hausman's test.

In terms of executive directors' salary, the model exhibits a statistically significant negative relationship with executive ownership, $Ownex_{i,t}$, and a significant positive relationship with $Ownex^2_{i,t}$. However, no significant relationship is found between salary and $Ownex^3_{i,t}$. This pattern of significant relationship implies the occurrence of convergence-

Table 5. Correlations between the variables

Variables	lnexrem	lnsalary	lnbonus	ownex	ownex²	ownex³	lndiv	ceodual
lnexrem	1.0000							
lnsalary	0.9557**	1.0000						
lnbonus	0.8347**	0.7191**	1.0000					
ownex	0.2079***	0.1845***	0.1578**	1.0000				
ownex²	0.1997***	0.1739***	0.1608***	0.9503**	1.0000			
ownex³	0.1866***	0.1618***	0.1546*	0.8695***	0.9774**	1.0000		
lndiv	0.3308***	0.3047***	0.2899***	0.6525***	0.5334***	0.4488**	1.0000	
ceodual	0.2001***	0.1862***	0.1666***	0.2780***	0.2730**	0.2524***	0.2379***	1.0000
ined	-0.1456**	-0.1305**	-0.2248***	-0.0137	-0.0066	-0.0034	0.1371**	-0.0048
remcom	-0.0387	-0.0187	-0.1698***	-0.0140	-0.0397	-0.0396	0.0290	-0.1003
extblock	-0.0537	-0.0538	0.0045	-0.0490	-0.0828	-0.1076*	-0.0266	-0.0183
lnmktbk	0.0486	0.0064	0.0919	0.0056	0.0105	0.0074	0.1529**	-0.0108
roa	0.1788***	0.1429**	0.2271**	0.0759	0.0612	0.0435	0.1036	-0.0205
ret	0.1037	0.0909	0.1511*	0.0116	0.0144	0.0129	0.0963	-0.0193
debt	0.0422	0.0731	0.0521	-0.0031	-0.0337	-0.0438	-0.0199	-0.0503
lntotasset	0.4063***	0.4328***	0.4207***	-0.1225**	-0.0877	-0.0621	0.1811**	0.1213**

Variables	ined	remcom	extblock	lnmktbk	roa	ret	debt	lntotasset
ined	1.0000							
remcom	0.2282**	1.0000						
extblock	-0.0836	-0.1504**	1.0000					
lnmktbk	-0.0386	-0.1248***	0.1163**	1.0000				
roa	-0.1405***	-0.1470***	0.0201	0.0201	1.0000			
ret	-0.0269	-0.0677	-0.0340	0.2474**	0.2639***	1.0000		
debt	0.1123*	0.1182**	-0.0396	0.2506**	-0.2743***	-0.0652	1.0000	
lntotasset	0.0495	-0.0371	-0.1096*	0.1298***	-0.1075*	-0.0778	0.3215**	1.0000

The table reports correlations of the variables used in the multivariate analysis for a sample of 191 Malaysian firms over the 2002-2007 period. **, * denote significance at 1 and 5 % levels (two-tailed) respectively.

Table 6. Regressions of executive directors' salary, bonus, and remuneration on executive ownership and other variables

Independent variables	Dependent variable:		
	$\ln(\text{Salary}_{i,t})$ - Fixed effects	$\ln(\text{Bonus}_{i,t})$ -Random effects	$\ln(\text{Remuneration}_{i,t})$ -Fixed effects
$\text{Ownex}_{i,t}$	-2.6476 (0.064)*	3.2160 (0.236)	-2.5041 (0.084)*
$\text{Ownex}^2_{i,t}$	7.4003 (0.076)*	-6.8726 (0.384)	7.2725 (0.088)*
$\text{Ownex}^3_{i,t}$	-4.9458 (0.145)	6.0299 (0.384)	-5.2780 (0.134)
$\ln(\text{dividend})_{i,t-1}$	-0.0146 (0.596)		-0.0100 (0.728)
CEO duality$_{i,t}$	0.0532 (0.471)	0.0113 (0.945)	0.0968 (0.170)
Fraction of INED$_{i,t}$	-0.4341 (0.11)	-0.4217 (0.555)	-0.7847 (0.026)**
Remuneration committee$_{i,t}$	-0.0074 (0.857)	-0.1894 (0.08)*	0.0167 (0.792)
External block holder$_{i,t}$	0.0025 (0.685)	0.0050 (0.542)	0.0012 (0.826)
$\ln(\text{market-to-book})_{i,t-1}$	0.0978 (0.013)**	0.0203 (0.799)	0.0808 (0.025)**
ROA$_{i,t-1}$	0.1359 (0.425)	2.9970 (0.06)*	0.5013 (0.135)
RET$_{i,t-1}$	-0.0288 (0.344)	0.0610 (0.488)	0.0011 (0.974)
Debt$_{i,t-1}$	0.1481 (0.625)	-0.2544 (0.562)	0.1532 (0.593)
$\ln(\text{total assets})_{i,t-1}$	0.2144 (0.007)***	0.5497 (0.000)***	0.2017 (0.014)**
Intercept	10.1222 (0.000)***	1.4786 (0.386)	10.6759 (0.000)***
Observations	710	526	715
Year dummies	Included	Included	Included
Sector dummies	Dropped	Included	Dropped
R^2 (overall)	0.1935	0.3427	0.2138
F value/Wald χ^2	5.92 (0.0000)***	184.86 (0.0000)***	6.19 (0.0000)***
Hausman's specification test (χ^2)	27.84 (0.0331)**	10.27 (0.8519)	27.01 (0.0414)**

The table reports results of regressions of executive directors' salary, bonus, and cash remuneration for a sample of 191 Malaysian firms over the 2002-2007period in relation to executive ownership and other control variables. Reported *p*-values in parentheses are based on Huber (1967) and White (1980) robust standard errors. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels respectively.

of-interests effect at a low level of executive ownership, and managerial entrenchment effect at a medium level of ownership.

In order to determine the two inflection points which denote the occurrence of convergence-of-interests and managerial entrenchment effects, OWN_1 and OWN_2 are determined by solving Equation (2) using the quadratic formula. OWN_1 and OWN_2 are found at executive ownership level of 23.4 per cent and 76.4 per cent respectively. Subsequently to determine whether OWN_1 and OWN_2 is a relative minimum or maximum, the second partial derivative of natural log of salary is taken with respect to executive ownership. OWN_1 is a relative minimum ($= 7.8691 > 0$) and OWN_2 is a relative maximum ($= -7.8691 < 0$). These numbers show that for executive ownership of up to approximately 23 per cent, convergence-of-interests effect is taking place. Between ownership levels of more than 23 per cent to approximately 76 per cent, managerial entrenchment effect is said to be present.

Besides executive ownership, the other two regressors that are statistically significant are lagged market-to-book ratio and lagged total assets. Table 6 shows that a one-percent increase in lagged market-to-book ratio will lead to approximately 0.1 per cent increase in salary paid to executive directors. This positive relationship could be interpreted as firms with high growth opportunity tend to reward their executive directors more than those with low growth opportunity. Larger size firms also tend to pay a higher salary to their executive directors. Total assets, which is the proxy for firm size, exhibits a significant positive coefficient of 0.2144 which implies that a one-percent increase in firm's size will lead to an approximately 0.2 per cent increase in directors' salary. It seems that a firm's ability to pay which is estimated by its size has greater impact on directors' salary than firm's growth opportunity.

Table 6 also shows that board characteristics or corporate governance variables such as CEO duality, fraction of independent non executive directors (INED), remuneration committee, and external block holder do not have any statistically significant relationship with executive directors' salary. These findings show that the inherent internal and external corporate governance mechanisms are incapable of influencing the salary of executive directors in a significant manner.

For the case of bonus paid to executive directors, Table 6 shows that three variables are statistically significant, namely remuneration committee, return to assets, and total assets. Executive ownership does not have any significant influence on bonus which is considered an encouraging phenomenon as bonus paid should not be anyway related to the power or influence of executive directors which is estimated by their ownership in the firm.

INEDs who sit on the remuneration committee are able to bring about a lower bonus paid to executive directors. Bonus paid to executive directors in those firms with a higher proportion of INEDs is lower by approximately 0.2 per cent compared to those with a lower proportion of INEDs. This downward effect wielded by the remuneration committee is for the betterment of the minority shareholders.

Lagged return on assets (ROA) has a significant positive relationship with bonus. The regression coefficient shows that a one-unit increase in lagged ROA will increase the bonus paid by approximately 3 per cent. It implies that bonus paid to executive directors depend on the lagged profitability of firms in terms of accounting profits.

Bonus paid is also influenced by firm size which is estimated by lagged total assets. A one percent increase in lagged total assets will lead to an approximately 0.55 per cent increase in bonus paid. By comparing the regression coefficient between ROA and total assets, it could be said that accounting profitability has a larger positive impact on bonus than firm size. It is a commendable practice of linking bonus paid more to firm's performance rather than ability to pay.

In terms of regression results for cash remuneration, the regressors that have a statistically significant influence on cash remuneration mostly resembled that of salary. The possible reason for this similarity is that approximately 70 per cent of cash remuneration is made up of salary paid to executive directors. Executive ownership and its squared term exhibit a negative and a positive influence on cash remuneration; subsequently by solving Equation (2), the two inflection points obtained are at ownership levels of 23 per cent and

70 per cent respectively. These inflection points are rather similar to that obtained for executive directors' salary.

As for the case of directors' salary, market-to-book ratio and total assets continue to exhibit significant positive relationship with cash remuneration. In terms of corporate governance mechanism – the fraction of independent non executive directors (INEDs), a higher fraction of INEDs is associated with a lower level of cash remuneration. Since INEDs are unable to exert any effect on directors' salary (insignificant regression coefficient of salary on INED), this negative influence on remuneration might come from their ability to affect the fees, allowances, bonus, and other pecuniary benefits paid to executive directors.

Although some of these INEDs also sit in the remuneration committee (REMCOM), it is unable to have any significant effect on cash remuneration. This is in contrary to REMCOM's significant negative effect on bonus discussed earlier. The inability of INEDs in REMCOM to affect remuneration might probably be due to the fact that bonus only constituted about 10 per cent of total cash remuneration but the major portion of remuneration is comprised of salary. Thus INEDs as a whole are more effective in influencing directors' remuneration rather than via their role as members of REMCOM.

6.2.2 Piecewise Linear regression Analysis for Executive Directors' Salary and Remuneration

In order to determine the extent of expropriation via salary and cash remuneration which is associated with managerial entrenchment effect, piecewise linear regression was performed by regressing directors' salary and cash remuneration on three levels of executive ownership. These ownership levels are determined from the two inflection points calculated by solving Equation (2). For directors' salary, executive ownership is divided into three separate levels – OWN1 (0 to < 23%), OWN2 (23 to < 76%), and OWN3 (76 to 100%) but for cash remuneration, it is divided into OWN4 (0 to < 23%), OWN5 (23 to < 70%), and OWN6 (70 to 100%).

Besides determining the extent of expropriation, analysis was also conducted to test the hypothesis that pay-performance sensitivity will vary according to the levels of executive ownership. Cheng and Firth (2006) hypothesised that firms with higher executive ownership will place more emphasis on the use of firm performance measures in determining directors' pay. In this study, market-to-book ratio has been used as the measure for firm performance as it is the only variable related to firm performance which is significant in determining directors' salary and remuneration.

This hypothesis will be tested by forming interaction terms between executive ownership (DOWN2 and DOWN3 for salary; DOWN5 and DOWN6 for cash remuneration) and lagged market-to-book ratio. Interaction terms are formed by multiplying lagged market-to-book ratio with DOWN2 and DOWN3 for the case of salary; and lagged market-to-book ratio with DOWN5 and DOWN6 for the case of remuneration, where DOWN2 and DOWN5 is coded 1 if executive ownership is greater than 0.23, and DOWN3 and DOWN6 are coded 1 if executive ownership is greater than 0.76 and 0.7 respectively.

By including interaction terms between executive ownership and market-to-book ratio, we are examining the sensitivity of directors' remuneration to performance as a function of executive ownership. A positive coefficient for the interaction term would be consistent

Table 7. Supplementary piecewise linear regression of salary and remuneration on executive ownership and other control variables: fixed effects

Independent variables	Dependent variable:	
	$\ln(\text{Salary}_{i,t})$	$\ln(\text{Remuneration}_{i,t})$
$\text{Own1}_{i,t}$ [0.00, 0.23]/	-1.1397 (0.094)*	
$\text{Own4}_{i,t}$ [0.00, 0.23]		-0.8937 (0.227)
$\text{Own2}_{i,t}$ [0.23, 0.76]/	0.8066 (0.015)**	
$\text{Own5}_{i,t}$ [0.23, 0.70]		0.4959 (0.172)
$\text{Own3}_{i,t}$ [0.76, 1.00]/	-5.5547 (0.086)*	
$\text{Own6}_{i,t}$ [0.70, 1.00]		2.1464 (0.354)
$\ln(\text{dividend})_{i,t-1}$	-0.0156 (0.577)	-0.0106 (0.717)
CEO duality$_{i,t}$	0.0362 (0.600)	0.0903 (0.187)
Fraction of INED$_{i,t}$	-0.4479 (0.103)	-0.7879 (0.027)**
Remuneration committee$_{i,t}$	-0.0048 (0.905)	0.0244 (0.697)
External block holder$_{i,t}$	0.0018 (0.759)	0.0013 (0.814)
$\ln(\text{market-to-book})_{i,t-1}$	0.0597 (0.224)	0.0503 (0.268)
$\ln(\text{market-to-book}_{i,t-1})\bullet\text{Down2}_{i,t}/$	0.0476 (0.352)	
$\ln(\text{market-to-book}_{i,t-1})\bullet\text{Down5}_{i,t}$		0.0353 (0.495)
$\ln(\text{market-to-book}_{i,t-1})\bullet\text{Down3}_{i,t}/$	0.1913 (0.040)**	
$\ln(\text{market-to-book}_{i,t-1})\bullet\text{Down6}_{i,t}$		0.2263 (0.273)
ROA$_{i,t-1}$	0.1805 (0.296)	0.5664 (0.091)*
RET$_{i,t-1}$	-0.0279 (0.360)	0.0009 (0.978)
Debt$_{i,t-1}$	0.2151 (0.482)	0.2088 (0.463)
$\ln(\text{total assets})_{i,t-1}$	0.1959 (0.012)**	0.1883 (0.017)**
Intercept	10.4407 (0.000)***	10.8746 (0.000)***
Observations	710	715
Year dummies	Included	Included
Sector dummies	Dropped	Dropped
R^2	0.2111	0.2063
F value	6.24 (0.0000)***	5.72 (0.0000)***

The table reports results of piecewise linear regressions of executive directors' salary and cash remuneration for a sample of 191 Malaysian firms over the 2002-2007 period on executive ownership and other control variables. Reported *p*-values in parentheses are based on Huber (1967) and White (1980) robust standard errors. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels respectively.

with higher directors' remuneration being the result of higher effort.[2] In contrast, a negative coefficient would show that executive directors receive higher remuneration irrespective of performance.

Table 7 shows that there is a significant negative, positive, and negative relationship between the three levels of executive ownership and executive directors' salary. This

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[2] This argument originated from Cheung *et al.* (2005: 525) who postulate that if firms that grant stock to their managers have better performance and there is a link between compensation and performance, then the positive relationship between managerial ownership and executive compensation that we observe may be the result of compensation proxying for managerial effort.

pattern of relationship signifies the occurrence of 'convergence-entrenchment-convergence' effects between executive ownership and their level of salary.

For executive ownership levels between 0 to less than 23 per cent, a unit increase in ownership will lead to approximately a 1.1 per cent fall in salary, which is attributed to the occurrence of convergence-of-interests effect. Managerial entrenchment effect sets in between ownership levels of 23 per cent to less than 76 per cent, where a unit increase in ownership will bring about approximately a 0.8 per cent increase in salary. As a result, expropriation of minority shareholders by controlling shareholders who are the executive directors is said to have occurred. A similar pattern of expropriation has also been found in Hong Kong, but the regression coefficient between directors' emoluments and executive ownership is higher at 1.599 and 6.791 for small and large firms respectively (Cheung *et al.* 2005). When compared to the regression coefficient of 0.8066 for OWN2, it shows that despite the occurrence of expropriation for these samples of Malaysian firms, its extent is smaller when compared to those in Hong Kong.

The regression coefficient for interaction term between DOWN2 and lagged market-to-book ratio is positive but not significant. It implies that for ownership levels which are above 23 per cent, higher managerial efforts which result from larger ownership do not result in higher remuneration in the form of executive salary. This finding lends some support to the occurrence of managerial entrenchment effect which is postulated to occur between ownership levels of 23 to 76 per cent.

On the other hand, for ownership levels that are above 76 per cent, greater emphasis is being given to firm performance in determining salary of executive directors. It is shown by the significant positive coefficient for interaction term between DOWN3 and lagged market-to-book ratio. This positive relationship augurs well with the convergence-of-interests effect which is postulated to occur for ownership levels above 76 per cent.

But for the case of cash remuneration, the piecewise linear regression results show that cash remuneration is not related to any of the three levels of executive ownership. It is in contrast to the regression results in Table 6 which indicate the occurrence of convergence-of-interests and managerial entrenchment effects for cash remuneration at certain executive ownership levels. The disappearance of these two effects might probably be due to the fact that cash remuneration also includes bonus paid to directors. As shown in Table 6, bonus received by directors is not influenced by executive ownership but determined by firm performance which is measured in terms of ROA. Inclusion of bonus as part of cash remuneration might introduce enough variability that drives the significance of executive ownership out.

To further investigate the issue whether the positive relationship between salary and executive ownership signifies expropriation, rather than a positive relationship between managerial efforts and firm performance, a piecewise linear regression was performed by regressing market-to-book ratio on executive ownership as shown in Table 8. A significant positive relationship between market-to-book ratio and ownership implies that the positive relationship between salary and ownership is due to a higher reward being given for better performance rather than expropriation.

Table 8 shows that none of the regression coefficients for executive ownership are statistically significant. It indicates the absence of a positive relationship between executive ownership, efforts, and firm performance. For ownership level between 23 to 76 per cent,

Table 8. Supplementary piecewise linear regression of market-to-book ratio on executive ownership and other control variables: fixed effects

Independent variables	Dependent variable: $\ln(\text{market-to-book})_{i,t-1}$
$\text{Own1}_{i,t}$ [0.00, 0.23]	0.6815 (0.439)
$\text{Own2}_{i,t}$ [0.23, 0.76]	-0.3317 (0.504)
$\text{Own3}_{i,t}$ [0.76, 1.00]	-1.2328 (0.781)
$\text{CEO duality}_{i,t}$	0.0910 (0.367)
$\text{Fraction of INED}_{i,t}$	-0.2623 (0.514)
$\text{Remuneration committee}_{i,t}$	0.0097 (0.898)
$\text{External block holder}_{i,t}$	0.0172 (0.013)**
$\text{Debt}_{i,t-1}$	0.0656 (0.869)
$\ln(\text{total assets})_{i,t-1}$	0.1394 (0.293)
Intercept	-3.4034 (0.186)
Observations	953
Year dummies	Included
Sector dummies	Dropped
R^2	0.0926
F value	11.45 (0.0000)***

The table reports results of regressions of market-to-book ratio for a sample of 191 Malaysian firms over the 2002-2007 period on executive ownership and other control variables. Reported *p*-values in parentheses are based on Huber (1967) and White (1980) robust standard errors. ***, **, * denote statistical significance at the 1%, 5%, and 10% levels respectively.

the regression coefficient has even become negative which signifies the occurrence of managerial entrenchment effect. Thus we could conclude that at executive ownership levels of between 23 to 76 per cent, there is expropriation of minority shareholders by executive directors in terms of directors' salary.

7. Endogeneity of Executive Ownership

Executive ownership which is the focal variable of this study might suffer from the problem of endogeneity. There might be reverse causality or a bidirectional relationship between directors' salary and executive ownership as there is the possibility of simultaneous determination between these two variables.

To cater for this endogeneity problem, 2-stage least square (2SLS) fixed effects regression technique was used to regress salary on executive ownership, its squared and cubed terms, and other regressors as shown in Equation (1). Two sets of instrument variables (IVs) for executive ownership have been used which include firm risk, firm size, ratio of long term assets to sales, ratio of capital expenditure to the stock of hard capital, foreign ownership, institutional ownership, public spread of the firm's shareholdings, and intangible assets.

However, the Hansen J statistic shows that these IVs are valid but are weakly correlated with executive ownership. The consequence of using weak IVs is increased bias in the estimated IV coefficients and worsening of the large sample approximation to the finite-

sample distributions. Hence the bias of the IV estimators is the same as that of the OLS (ordinary least square) which suffers from the problem of endogeneity and IVs becoming inconsistent.

Before resorting to other estimation techniques to cater for the endogeneity problem, this study intends to examine the more fundamental question of whether executive ownership and its squared and cubed terms are truly endogenous regressors. This examination was carried out by using the endogeneity test which is implemented like the *C*-statistic which is also known as a 'GMM distance' or 'difference-in-Sargan' statistic. Failure to reject the null hypothesis implies that the suspected endogenous regressors can actually be treated as exogenous.

Both the endogeneity test and Davidson-MacKinnon's test of exogeneity show that executive ownership and its squared and cubed terms can actually be treated as exogenous regressors. Thus this study does not suffer from the problem of endogeneity which makes the OLS estimation biased and inconsistent.

8. Conclusion

Our analysis shows that controlling shareholders of Malaysian public corporations who normally assume the position of executive directors expropriate shareholders by setting their own levels of salary at ownership levels of between 23 to 76 % per cent. This indicates the existence of Type II agency conflicts. However, at a lower level of executive ownership, convergence-of-interests effect is found to have taken place.

Corporate governance mechanisms such as a remuneration committee and external block holders are found to be ineffective in influencing the salary and remuneration of executive directors. But on the positive front, the remuneration committee and independent non executive directors are able to rein in the bonus and cash remuneration paid to executive directors.

The allegation that top management remuneration of Malaysian public corporations is insensitive to firm's performance is partially proven as this study finds that firm's accounting profitability (ROA) is not a significant determinant of executive directors' salary. Nevertheless the bonus paid to directors is determined by the firm's ROA.

On the other hand, a firm's growth opportunity which is measured by market-to-book ratio does have a significant positive effect on executive directors' salary and remuneration. But much still has to be done to increase the magnitude of its linkage as it is still minute when compared to firms in other East Asian countries like Hong Kong.

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Appendix 1. Definitions of dependent and independent variables

1. ln(Executive directors cash remuneration)/ln($REM_{i,t}$): measured as natural logarithm of the cash remuneration received by the executive directors, where cash remuneration include salary, bonus, fees, allowances and other pecuniary benefits.

2. Executive directors' ownership/($OWN_{i,t}$): measured as ownership fraction of the firm's outstanding shares owned by executive directors.

3. Executive directors' ownership squared/($OWN^2_{i,t}$): measured as squared of the executive directors' ownership variable.

4. Executive directors' ownership cubed/($OWN^3_{i,t}$): measured as cubed of the executive directors' ownership variable.

5. ln(Dividend)/ln($DIV_{i,t-1}$): measured as natural logarithm of the dividend received by the executive directors; lagged one year.

6. CEO duality/($DUAL_{i,t}$): defined by dummy variable equal to one when the CEO also serves as Chairman of the board; or the chairman of board is also an executive director of the firm, 0 otherwise.

7. Fraction of Independent Non-Executive Directors/($INED_{i,t}$): measured as fraction of independent non-executive directors on the board.

8. Remuneration committee/($REMCOM_{i,t}$): defined by indicator variable where: 0 = no remuneration committee, 1 = ≤ 50% of INED in REMCOM, 2 = > 50% of INED in REMCOM, 3 = all INED in REMCOM.

9. External block holder/($EXTBLOCK_{i,t}$): measured as the percentage of stockholdings of the largest single external block holder (party other than the CEO, the CEO's family, directors and officers of the firm) with holdings that exceed 5% of the outstanding shares, 0% otherwise.

10. ln(Market-to-book)/ln($MBV_{i,t-1}$): measured as natural logarithm of market value of equity divided by book value of equity. Market value of equity is the market price per share; book value of equity is book value per share. Book value per share is computed by dividing the amount of total shareholders' equity or net worth (assets – liabilities) by the number of shares outstanding; lagged one year.

11. Returns on assets/($ROA_{i,t-1}$): measured as net income divided by total assets. Net income is earnings before interest and taxes (EBIT) minus interest paid and taxes paid (Net income = EBIT – Interest paid – Taxes paid); lagged one year.

12. Stock return/($RET_{i,t-1}$): measured as annual stock market return, including capital gain plus dividend; lagged one year.

13. Debt level of the firm/($DEBT_{i,t-1}$): measured as ratio between the book value of debt and the book value of total assets. Debt = Total assets – Total equity; lagged one year.

14. ln(total assets)/ln($ASSET_{i,t-1}$) : measured as natural logarithm of the firm's total assets; lagged one year.

15. μ_i: defined by unobservable individual or firm effects.

16. e_{it}: defined by idiosyncratic error term.

17. Year dummy variables: defined by dummy variable equal 1 if year = 2003; or year = 2004; or year = 2005; or year = 2006; or year = 2007; 0 otherwise.

18. Sector dummy variables: defined by dummy variable equal 1 if sector = IP (industrial products), or sector = CN (construction); or sector = TS (trading and services); or sector = PR (properties); 0 otherwise.