

Empirical Research on Characterization of Pyramid Structure and Firm Performance

¹Irfah Najihah Basir Malan, ²Norhana Salamudin and ¹Noryati Ahmad

¹Arshad Ayub Graduate of Business School,
Universiti Teknologi MARA, Selangor 40450 Malaysia

²Institute of Business Excellence, Arshad Ayub Graduate of Business School,
Universiti Teknologi MARA, Selangor 40450 Malaysia

Abstract: The pyramid structure established by the ultimate owner becomes prevalent in Malaysian public listed firms. The typical characteristic of the pyramid structure is the divergence of cash flow rights and control rights which has significant impact on the firm performance. This study makes a contribution to the extant literature on governance issue and it provides an interesting perspective on a developing country specifically Malaysia. Therefore, the aim of this study is to examine further the interplay between the characterization of the pyramid structure and the firm performance effects among Malaysian public listed firms. This study adapts Attig Model and employs Panel Generalised Least Square on 136 Malaysian pyramid firms over a twenty one-year period from 1990 to 2010. The empirical results provide support for the hypotheses proposed that the emergence of pyramid structure are more observable for firms with low CFR ratio and bring adverse effect on the firm performance resulting from large differences between cash flow rights and control rights. Future research needs to focus on identifying the dynamic endogeneity issue through two-way fixed effects (FE) and the two-step system generalized method of moments (GMM) that improve the generalizability of research.

Key words: Pyramid structure • Cash flow rights and control rights divergence • Firm performance • Attig Model • Panel Generalised Least Square

INTRODUCTION

A pyramid structure is defined as a business entity comprising of a group of firms whose ownership structure displays a top-down chain of control [1]. states that, a firm is considered as affiliated to pyramidal firms if it is controlled through pyramidal structure and has at least one intermediary firm in its ownership chain. A direct result of the pyramid structure is a separation of actual ownership, (cash flow rights) from voting power (control rights) especially for firms placed in the lower level of the structure [2]. Cash flow rights represent owner's actual ownership in a firm [3]. Control rights is defined with respect to the majority voting rule where the control ratio of a shareholder is obtained by dividing the share of control he can exercise directly or indirectly over a given firm, by the percentage of shares he actually owns in that firm [4]. Logically, the owner's cash flow rights that arise from his actual

investment should represent owners' control rights in a firm. However, because of the pyramid structure effect, these two rights may not be equal.

This study is motivated by the phenomenon of highly concentrated ownership in Malaysia, as shown by [2, 5]. They report that concentrated ownership can encourage controlling shareholders to expropriate minority shareholders interest through a pyramid control structure. Expropriation is a process of using the control rights by controlling shareholder to maximize their own welfare by transferring corporate funds from other shareholders [6]. Furthermore, agency problem also occurs between controlling shareholder and minority shareholders due to the misconduct of the controlling shareholder and the existence of large differences between cash flow rights and control rights [7, 8]. The separation of these two rights exerts a negative impact on corporate performance. [9] find that large mismatch of cash flow rights and control rights encourage the

controlling shareholder to have strong controls to meet his interests rather than the interests of the other shareholders.

Another study by [10] empirically show that the separation of cash flow rights and control rights of the ultimate owner devalue the interest of other shareholders. Their studies conclude that the interest of other shareholders was adversely affected whenever cash flow rights and control rights divergence exists. This causes the ultimate owner to misuse his control rights over the company's resources without being penalized for misconduct. The motivation for this study also comes from the findings of [1] which focus on characterization of pyramid structure in Canadian listed firms' and the concern on dilution of minority interests issue respectively. In their studies, they analyse a sample of Canadian listed firms and find that there is dispersion between the cash flow rights and control rights in pyramidal affiliated firms that devalue the firm performance as well as dilution of minority interests. They also find that the length of layers of pyramidal firms contribute to the impervious veil for ultimate owner to expropriate the minority shareholders' interest.

The current importance of pyramidal ownership structure in the East Asian region encourages to examine on the interplay between the characterization of the pyramid structure and the firm performance effects among Malaysian public listed firms. Pyramidal firms have many attributes that may distinct them from non-pyramidal firms. Factors such as risk, size, free cash flow, capital expenditure (investment strategy), debt policy, liquidity, duality, financial institution as the second largest shareholder, ratio of cash flow rights over control rights and dividend policy may significantly distinguish pyramidal affiliated firms from others. These characterizations may provide some insight on how the pyramidal affiliated firms function. Moreover, dilution and ultimate owner misconduct are more obvious within the pyramidal structure rather than other types of firm [1].

This study is considers timely in order to ascertain whether the characterization of pyramid structure are similar in the Malaysian listed firms with the other part of the world and whether the pyramid structure in Malaysia have the same negative effect on firm performance as well as dilution of minority interests as report by previous studies. Besides that, research on the structure of ultimate ownership by tracking ownership in Malaysia is still relatively limited. Until now, researchers in Malaysia are still using immediate ownership to determine ownership of

the firm. Therefore, this study focuses on pyramid structure from Malaysian public listed firms with ultimate ownership.

This study selects Malaysian public listed firm because it has the most number of pyramidal firms and also report that tunneling is quite significant compared to the other countries [5]. Pyramidal firms generally tend to face severe expropriation as well as agency problems because ultimate owners often have significant discretion and the incentives to extract private benefits of controls. This incentive arises because the ultimate owner bears only a fraction of the costs from their private benefit activities but receives the full benefits from such ill practices [11]. The consequences of ultimate owner expropriation include highly ownership concentration [12] and lower firm performance [13, 3].

Whether studies conduct by Claessens *et al.* [2, 5] and Attig *et al.* [1] can be extended to the Malaysian public listed firms is still an empirical question. Studies which are reported by [14, 15, 11] have touched on the pyramidal structure of Malaysian public listed firms in various aspects such as ownership structure, financing, investment, dividend payout and their findings justify for further investigation on this issue. The issues might bridge gap in understanding characterization of pyramid structure emergence as a whole and its firm performance effects in Malaysia.

Literature Review

Characterization of Firm Affiliation to Pyramid Structure: A review of literature reveals that there are 10 determinants such as risk policy (Risk), firm size (Size), investment policy which is known as capital expenditure (CAPEX), dividend policy (DivR), leverage policy (DebtR), free cash flow (Cash), firm performance (TobinQ), stock liquidity (Liquidity), duality function (Duality) and financial institution as second largest shareholders (FIH) that contribute to firm affiliation to pyramid structure. Studies by [14, 16, 17] have explored the phenomenon in emerging countries and they find that pyramid ownership structure has an influence on these factors and the ultimate owner may undertake policies to facilitate his private benefits. From the perspective of risk policy (Risk), expropriation and other opportunistic behaviour are more probable within pyramid firms than other structure [1] and will probably invest in riskier projects to satisfy the interest of the ultimate owner. However, findings by [18] regarding the ownership structure claim that conglomerate

affiliation are risk averse due to the large voting rights which constitute large losses to bear if the investment failed. As for that, this study explores the context of risk policy whether it poses positive or negative relationship with pyramid firm.

Firm size (Size) and investment policy (CAPEX) are also considered as important characterization of firm affiliation to pyramid structure. [19] said that large firm size would allow the family to use affiliated firms to provide additional equity especially when the family is unable to subscribe for new equity out of its personal wealth. For investment policy which is known as capital expenditure (CAPEX), [20] claim that pyramid structure allows controlling owners to overinvest since they have access to a relatively inexpensive source of capital with lower requirements than the external capital markets. It means that highly leveraged control of internal cash flows provides firms with access to a large source of capital that is relatively inexpensive compared to external equity. Such a comparative financing advantage is particularly valuable for old firms in mature industries with large capital needs for long-term investments and low expected returns, the typical firm controlled by pyramids. Since such firms have limited growth opportunities, they are more likely to overinvest because of access to free cash flow [21]. Due to softer return requirements than on external capital, firms controlled by pyramids are more likely to be discounted because they make inferior acquisitions, overinvest in long-term research and development (R&D) projects with uncertain and unclear benefits in a distant future. This study tries to seek whether investment policy and firm size can either have positive or negative relationship with probability of firm affiliation to pyramid structure.

[22] in their study in China suggest that firms with bank ownership tend to invest irresponsibly in project with negative net present value due to the availability of cheap bank financing. Furthermore, it seems that banks do not exercise sufficient monitoring over the companies to avoid these unprofitable investment projects and hence they fail to provide the needed governance over the companies that they own. [23] model predicts that larger firms tend to adopt a pyramid structure which in turn is associated with high diversion levels. Basically, there is a positive relationship between firm size and investment policy with the probability of firm affiliation to pyramid structure. So, this study examines whether investment policy and firm size either have a positive or negative relationship with pyramid structure.

For dividend policy variable (DivR), [13] report that higher dividends paid in order to offset investor anticipation of expropriation because it is believed that dividend payout may limit cash flow diversion to generate benefits. Other opinion comes from [24] who suggest that dividends can either have positive relation with loosely affiliated firms or negative relation with tightly affiliated firms. Firms that are further away from the ultimate owner tend to have higher dividend yields and payout ratios [25] due to the concern of dilution of minority interest in the pyramid firms [1]. However, there is also argument that, lower dividends are paid in pyramid firms [1]. Thus, it is interesting to know whether the dividend payout ratio has positive or negative relationship with firm affiliation to pyramid structure. For leverage policy (DebtR), [1] report that leverage policy influences the existence of firm affiliation to pyramid structure. They argue that since ultimate owner avoid external control, he would likely rely more on internal capital to compensate for capital scarcity. However, ultimate owner may decide on debt financing to gain a reputation as a firm that can take care of its minority shareholders. [26] in their study find that pyramid firms will use internal capital to finance their projects due to the difficulty in obtaining external financing. Hence, it is vital to see the relationship between leverage policy with probability of firm affiliation to pyramid structure.

Besides that, free cash flow (Cash) is also assumed as another important factor for the emergence of pyramid structure. A firm with large free cash flow is highly correlated to pyramid structure [1]. These firms are usually 'cash cows' in order to support other financially constraint firms in the conglomerate. According to [27], ultimate owner at the apex of the pyramid are likely to use internal free cash flows to finance projects. Thus, firms endowed with larger free cash flows should display a higher probability of firm affiliation to pyramid structure. Such firms (cash cows) might satisfy the cash preference of the ultimate owners. In this case, the authors try to investigate whether free cash flow either posits positive or negative relationship with pyramid firm.

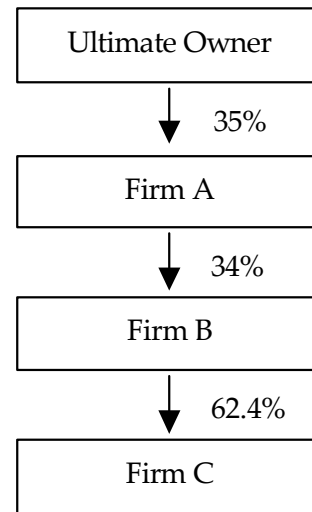
In terms of firm performance (TobinQ), previous study such as [10] report that there is a negative relationship between separation of cash flow rights and voting rights with firm performance in East Asian countries. Ultimate owner may acquire low performance firms and place them at the lower layer of pyramid structure to be utilised for rent extraction by taking risky investment and in case of failure the negative effect towards the ultimate owner is limited by the cash flow right [1]. Some previous studies by [28, 26] claim that

pyramid firms with greater use of internal capital may lead to higher performance rather than non pyramid firms. Therefore, this study seeks the result between the firm performance and pyramid structure.

The other variable such as stock liquidity (Liquidity) is also seen as an essential characterization for firm affiliation to pyramid structure. Stock liquidity displays negative correlation with the probability of firm affiliation to pyramid structure. Given that small investors are alert to dilution and they care about their portfolio's turnover, they will avoid stocks of firms where the risk of private benefit extraction is large. According to [29], firms with less liquid stock give the owner larger private benefits of control and as a result, small investors tend to choose liquid stock. Investors will avoid stocks in which the probability of private benefit is large. Therefore, they will choose liquid stock as they are easily disposed of whenever they sense that the particular firm is in chaos [30]. While based on [31], they state that stock-trading frequency is a proxy for the speed with which information is captured in stock prices. Meanwhile, [32] argue that stock liquidity should be an indicator of disagreement among shareholders, as less active stocks face a greater risk of informed trading. Thus, stock liquidity might be useful for small shareholders as a signal providing protection against eventual expropriation. In this circumstance, this study identifies whether the stock liquidity either posit a positive or negative relationship with pyramid affiliated firm.

The final variables which need to be taken into consideration are duality function (Duality) and financial institution as second largest shareholders (FIH). For duality variable, it is defined as combined CEO / chairman functions where the CEO is also the chairman of the board. Duality is expected to have positive relationship with firm affiliation to pyramid structure. As reported by [33], duality has a positive relationship with pyramid firm. Based on [34], an independent director will be better as he will be able to give unbiased views over issues concerning the firms. To summarize, it is essential to observe whether the presence of duality bring about positive or negative relationship with firm affiliation to pyramid structure.

Meanwhile, elements of control from financial institution as the second largest shareholder will limit expropriation activities, thus it is negatively related with firm affiliation to pyramid structure. Financial institution as the second largest shareholder in a firm may effectively act as monitoring agent [35]. Moreover, identifying the second largest shareholder is important to reduce the



Adapted from: [37]

Fig. 1: Pyramidal Structure

possibility of expropriation in the pyramid firm [36]. Therefore, the authors concern with whether the existence of second largest shareholder either gives negative or positive relation with pyramid firm.

So, the foregoing review of literature forms a basis for examining the characterization of firm affiliation to pyramid structure specifically in Malaysia. All the firms can be cataloged to these 10 factors which trigger the emergence of pyramid structure. The significance of this study provides clear-cut characterizations that contribute to firm affiliation to pyramid structure, so that this issue could be addressed effectively. The result could possibly prevent the phenomenon of the discrepancy between the ultimate owner's cash flow rights and control rights in pyramid firms due to high ownership concentration. Thus, it is interesting to examine the antecedents that cause the probability of firm affiliation to pyramid structure in Malaysian public listed firms from a micro perspective[37].

Separation of Actual Ownership and Control Issue:

Figure 1 shows the separation of ownership (cash flow right) and control (control right) issue in Malaysian case. Ultimate owner, owns 35% of shares of firm A, making him the majority shareholder and ultimate owner of the firm. At the same time, the corporation owns 34% of shares in firm B. Thus, firm A becomes the controlling shareholder of firm B. The fact that ultimate owner controls firm A which in turn is a major shareholder of firm B; this gives ultimate owner the right to also control firm B.

In this pyramid group, ultimate owner has a direct ownership of firm A only while for the rest of the firms, the ownership comes indirectly. For instance, ultimate owner's ownership in firm B comes through firm A. For firm C, ultimate owner's ownership arises from his share in firm A and firm B. Resulting from this particular arrangement, ultimate owner's actual ownership (CFR) in firm C is 7.43%, which is determined in the following manner:

$$\begin{aligned} \text{Actual ownership (CFR) in firm C} &= 35\% \times 34\% \times 62.4\% \\ &= 0.07426 \sim 7.43\% \end{aligned}$$

Since, theoretically, ownership arises from one's investments, if the amount of ultimate owner's ownership in firm C is 7.43%, this means that his investment in firm C is also 7.43%. Assuming that firm C is worth RM 10,000,000, an investment worth RM 743,000 (7.43% x RM10,000,000), enables ultimate owner to control a firm worth RM10,000,000.

Ultimate owner's indirect control of firm C is proxied by the control right (CR). The control arises from his controlling share in firm A which then controls firm B and finally the control of firm C by firm B. [33] and [3] define the weakest link in the line of control as the control ratio (CR). Based on this definition, the control ratio (CR) that ultimate owner has over firm C is 34% (i.e., the weakest link in the chain of ownership).

The structure provides ultimate owner the rights to influence (indirectly through firm A and firm B) matters such as firm policy and board of director (BOD) appointments in firm C. Evidently, because of the pyramid structure, with 7.43% ownership or RM 743,000 worth of investment, ultimate owner has 34% control ratio (CR) in a firm (firm C) worth RM10,000,000. This significant separation of ownership (CFR) and control (CR) clearly deviates from the traditional idea of one share - one vote [38]. Crucially, the incentives to expropriate other shareholders may also arise from this separation [3].

As indicated by [33] and [3], the separation can be measured by looking at both the ratio of cash flow right (CFR) to control right (CR) and the difference between cash flow right (CFR) and control right (CR). The following illustrates how such separation can be measured using ownership data in Figure 1.

The separation of cash flow right (CFR) and control right (CR) in firm C can be measured in two forms:

- Using the ratio of cash flow right (CFR) to control right (CR):
= Cash flow right (CFR) / Control right (CR)
= 7.43% / 34%
= 0.2185
- Using the difference between cash flow right (CFR) and control right (CR):
= Control right (CR) - Cash flow right (CFR)
= 34% - 7.43%
= 26.57%

Based on these techniques of computation, the smaller the ratio of cash flow right (CFR) to control right (CR) indicates wider separation between actual ownership (CFR) and control (CR) in the hand of the ultimate owner. Similarly, the larger difference between cash flow right (CFR) and control right (CR) also indicates wider separation between actual ownership (CFR) and control (CR).

It can be conjectured that pyramid firms allow the ultimate owner to retain control of many firms while holding only a small fraction of their cash flow right (CFR). Indeed, this study has presented an example in which the cash flow rights (CFR) of the controlling ultimate owner in some of the pyramid firms are comparable to the small share of the managers of the most diffusely held corporations. By allowing cash flow right (CFR) and control right (CR) to diverge, pyramid firm permits the same divergence of interest problem as well as agency problem in dispersed firms [39]. It is essential to emphasize emphasizing interest alignments and issuing corporate policy which can provide incentives for firms' managers or an executive to enhance firm's performance, so that the interest of owners is well taken care of.

Investigating Malaysian pyramid control firm and ownership concentration seems to be an interesting study. Practically, less attention has been placed on this particular issue especially in Malaysian pyramidal affiliated firms. Previous studies by [5, 10, 40] empirically show that the ultimate owner gives no regard to the interests of other shareholders in firms when there is separation of actual ownership and control. Hence, this study is a useful contribution to the existing literature, in which the characterization of pyramid structure emergence and firm performance effects, are explored in depth to indicate whether any indirect expropriation (agency problem) potential within such structures and therefore provides additional insights into corporate finance and governance.

MATERIALS AND METHODS

Data on the number of Malaysian pyramidal firms are collected based on cash flow rights, control rights, duality function and financial institution as second largest shareholders. The data are gathered from firms listed in Main Market of Bursa Malaysia Berhad (BMD) and Datastream database. While the data for ownership information is manually extracted from firms' annual reports and OSIRIS database. The research design incorporates balanced panel approach and estimated the equation using pooled Generalised Least Square (GLS) method to estimate the regression. The advantage of pooled Generalised Least Square (GLS) is that more reliable estimates of the parameters in the model can be obtained. It is a valid procedure where the relationship between the variables is quite stable. Proxies for the variables used in the study are shown in Table 1.

Example Measurement of Cash Flow Rights and Control Rights: In Malaysian case, the incidence of pyramid structure is quite high. Pyramid structure enables the ultimate owner to establish control disproportionately to the amount of ownership in each of the successive firms. Consequently, with such a pyramid structure, the ultimate owner's actual ownership position needed for control

becomes smaller at each succeeding layer of the pyramid structure [5]. For instance, amongst the prominent Malaysian corporate groups, Yahya Ahmad, Lim Thian Kiat, Kuok Brothers and Vincent Tan Chee Yioun used a pyramid structure consist of two layers of listed firms to control a third layer of listed firms. The divergence between cash flow rights and control rights is more pronounced when there is a greater the number of layers of listed firms which can be seen in Table 2. All these firms used pyramidal structure to exercise control over certain listed firms.

The Empirical Model: In this empirical study, there are two equation models are used. The first equation model is used to identify the characterization of firm affiliation to pyramid, which explain the probability of how a firm is affiliated to the pyramidal structure, which can be described as follows:

Model 1:

$$PAFF = \hat{y} \Delta + \eta \tag{1}$$

$$(Pyramid) = f(\text{Risk, Cash, Size, Capex, TobinQ, DebtR, DivR, Duality, FIH, Liquidity}) \tag{1a}$$

Table 1: Method of Variables Calculation

Variables	Description	Formula
Risk	Standard deviation of daily stock returns	$SD = \sqrt{1/N \sum_{i=1}^n (x_i - \mu)^2}$
Performance	Show the firm's performance	(Market Value of Equity + Total Debt)/Total Assets
Debt Ratio	Measure firm's financial leverage	Total Debt/Total Assets
Cash	Cash availability within the firm	Natural log of cash
Size	Represented by the total asset	Natural log of total asset
Duality	The same person serving as both the CEO and the chairman of the company	1 = Act as both CEO and Chairman of Board 0 = Otherwise
Financial Institution		
Holding	Elements of control from financial institution as the second largest shareholders that act as monitoring agent to help reduce the possibility of expropriation in the pyramid structure	1 = Status 0 = Non Status
Dividend Payout Ratio	Represent how much earnings are distributed to shareholders	Cash Dividends / (Pre Tax Income - Income tax)
Stock Liquidity	Yearly average of daily bid ask spread (BASP)	$BASP = (Ask - Bid) / [(Ask + Bid) / 2] * 100$
Capital Expenditure	Measure for firm's investment	Total Fixed Assets / Total Assets
Cash Flow Rights (CFR)	Actual ownership in a company	Multiplication of ownership stake along the pyramid ownership chain
Control Rights (CR)	The control a shareholder can exercise directly or indirectly over a given company	The weakest ownership link along the pyramid ownership chain

Table 2: Cash Flow Rights and Control Rights of Selected Malaysian Corporates

	Pyramidal Firms	Control Rights	Cash Flow Rights
I	Kuok Brothers		
	PPB Group Bhd (Perlis Plantations)	0.39	0.12
	Shangrila Hotels (M) Bhd	0.7	0.55
	FFM (Federal Flour Mills)	0.53	0.34
II	Lim Thian Kiat		
	Multi-Purpose Holdings Bhd	0.09	0.03
	Magnum Corporation Bhd	0.09	0.01
	E&O Property Development Bhd (Kamunting Corporation Bhd)	0.32	0.16
III	Vincent Tan Chee Yioun		
	Berjaya Land Bhd (Berjaya Leisure)	0.14	0.1
	Berjaya Capital Bhd	0.32	0.12
	Cosway Corporation Bhd (Berjaya Singer Bhd)	0.41	0.3
IV	Yahya Ahmad Estate		
	Diversified Resources Bhd	0.66	0.51
	Gadek Malaysia Bhd	0.65	0.54
	Hicom Holdings Bhd	0.32	0.17
	Proton Holdings Bhd	0.26	0.05
V	Yeoh Tiong Lay		
	YTL Cement Bhd (Buildcon Bhd)	0.52	0.32
VI	Tan Chee Sing		
	Dijaya Corporation Bhd (Jasa Megah Industries Bhd)	0.34	0.22
VII	Yap Sing Hock		
	Lien Hee Corporation Bhd	0.12	0.08
VIII	Yong Soon Chow		
	Crest Builder Holdings Bhd (MGR Corporation Bhd)	0.24	0.12

Δ stands for a set of variables that influence the pyramidal affiliation and η is an error term. It is interesting to know the dominant variables that differentiate pyramidal affiliated firm (PAFF) from non pyramidal affiliated firm (NAFF) in Malaysia.

The following second equation model is employed to capture the next issue discussed in this study that is how firm affiliation to pyramidal structure affects the firm performance. In this model, a dummy variable for pyramidal affiliated firm (PAFF) is included. The number of control variables is also considered to capture the potential dilution effects associated with pyramidal firm in the Tobin's Q regressions.

Model 2:

$$TOBQ = \alpha + \beta \Gamma + \delta * PAFF + \epsilon \tag{2}$$

$$(TobinQ) = f(\text{Pyramid, Risk, Cash, Size, Capex, DebtR, DivR, Duality, FIH, Liquidity}) \tag{2a}$$

TOBQ is a measure for firm performance which is also known as Tobin Q. Γ is a set of firm specific control variables and the variables are the same as the variables used in the first equation model. In this model, pyramidal affiliated firm (PAFF) is a dummy variable for firm that has

an affiliation with pyramidal structure and is assigned a value of one (1) and zero (0) if otherwise. α , β and δ are estimated parameters and ϵ is an error term. δ measures the relation between firm's pyramidal affiliation to TOBQ.

RESULTS AND DISCUSSIONS

Descriptive Statistics: Data description on concentration of cash flow rights and ultimate control for selected Malaysian pyramid firms is discussed in this section. The descriptive statistics of variables used in this study are presented in Table 3. Pyramids create discrepancies between ownership and control rights. The amount of increased control rights (CR) from cash flow rights (CFR) appears in the variable cash flow rights leverage (CFRL). Cash flow rights leverage (CFRL) represents the difference between cash flow rights (CFR) and control rights (CR). The cash flow right (CFR) and control rights (CR) basically held by each ultimate owner. To make the distinction between cash flow rights (CFR) and control rights (CR), the authors document pyramid structures for each firm. When control rights (CR) increase and become greater than cash flow rights (CFR), controlling shareholders are more likely to expropriate in such a situation.

Table 3: Descriptive Statistics for Concentration of Cash Flow Rights and Ultimate Control for Malaysian Pyramidal Firms

	Mean	Maximum	Minimum	Variance	Standard Deviation
Control Rights	0.33	0.54	0.12	85.46	9.244
Cash Flow Right	0.19	0.40	0.05	62.71	7.919
Cash Flow Rights Leverage	0.13	0.31	0.04	38.17	6.178
Ratio Cash Flow Right / Control Right	0.592	0.857	0.156	0.024	0.154

For the whole sample, the mean amount of control rights is 33% (standard deviation: 9.244), with mean cash flow rights standing at 19%. The deviation in these figures means that the ultimate owners receive 19% of the cash flow rights generated by the firms, but control a larger proportion of the firms' voting rights (33%). These averages are computed over firms where at least one owner owns at least 5% of the control rights. The average value of increased control or cash flow rights leverage (CFRL) accounted for 13%. Meanwhile, the average ratio of cash flow right (CFR) to control right (CR) is small which amounted to 0.592. To measure the concentration of corporate control in pyramid firms, cash flow rights and control rights are incorporated in this study. Cash flow rights represent the ultimate ownership stake held by the largest controlling shareholder. Meanwhile, control rights represent the percentage of voting rights controlled by the largest controlling shareholder.

Based on a description of this data, the result for all of the ownership variables have mean value of less than 1. There is evidence of divergence between cash flow rights and control rights for ultimate owners. This divergence is even larger for ultimate owners who are individuals or families, which can trigger agency problems with minority shareholders. Agency problem in Malaysia is quite serious when the pyramid firms of under developed market have concentrated shareholding. The mean of control rights reported (33%) is high compared to the results obtained by [7] and [2] who report 30.7% and 28.3% respectively for Malaysian firms. It is because they economized on data collection by terminating the tracing of owners once the voting rights reached 50%. Thus, their statistics for control rights are lower than those reported in this study.

Overall, the result implies that the ultimate owners tend to control the firm once their voting power exceeds their cash flow rights. The existence of excess control rights has a negative effects on firm performance. The result is also similar to those of [9] and [41] studies who both document a negative effect of excess control rights on Canadian firm performance. Their results tend to create the entrenchment effect as described by [42].

So, the result in this study is consistent with the view of [43] that once "large controlling owners gain nearly full control of the firm, they prefer to generate private benefits of control that are not shared by minority shareholders". Moreover, this result is also supportive of the arguments put forward by [27] who report that incentives for expropriation are even stronger when control rights exceed cash flow rights. The result of this study is also supported by [2] that distinguish between cash flow rights (CFR) and control rights (CR). By means of a pyramid structure, the ultimate owners gain control rights in excess of their cash flow rights.

Regression Analysis for Equation Model One: Characterization of Firm Affiliation to Pyramidal Firms:

Table 4 presents the results of regression analysis of equation model one that is the characterization of firm affiliation to pyramidal firms. Results from the equation show that size and debt ratio have significant positive relationship with firm's pyramidal affiliation at 1% level.

It seems that pyramidal firm tend to use external financing to finance its investment or undertake new projects. This result is supported by the previous studies which claim that pyramidal firms have high tendency to externalize external capital rather than using internal financing.

Duality variable is also significantly positive at 1% level with the firm pyramidal affiliation and this is consistent with the view that most of pyramidal firms have the owner who acting as the manager as well [33]. On the other hand, stock liquidity has negative relationship with firm pyramidal affiliation. Generally, higher (lower) stock liquidity of the firm tends to lessen (increase) the probability of the firm being affiliated to pyramidal firms. This result concurs with study done by [31] who report that information flows in pyramidal firms are more distorted compared to non pyramidal firms. For the rest of variables such as risk, capital expenditure and TobinQ, they are statistically significant at 1% level. Their coefficient results are also in line with the hypothesis of the characterization of firm affiliation to pyramid structure.

Table 4: Results of Regression Analysis (Model 1: Firm Affiliation to Pyramid) (Dependent Variable: Pyramidal Firm)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Risk	0.007590	0.001525	4.978115	0.0000***
Cash	0.000136	0.000248	0.054935	0.9562
Size	0.000221	0.000394	5.606909	0.0000***
CAPEX	0.000515	0.000480	10.73780	0.0000***
TobinQ	-0.000202	0.000138	-14.57363	0.0000***
Debt Ratio	0.000202	0.000138	14.66558	0.0000***
Div Ratio	0.000899	0.000118	0.761541	0.4469
Duality	0.999276	0.000108	9279.123	0.0000***
Fin. Inst. Holding	-0.000575	0.000305	-1.884856	0.0604*
Liquidity	-0.000228	0.000374	-6.104057	0.0000***
Weighted Statistics				
R-squared	0.203380	Mean dependent var	1.255244	
Adjusted R-squared	0.191773	S.D. dependent var	2.138083	
S.E. of regression	0.835217	Sum squared resid	224.0765	
Durbin-Watson stat	1.923588			

*significant at 10%, **significant at 5% and ***significant at 1%

Table 5: Results of Regression Analysis (Model 2: Firm Performance) (Dependent Variable: TobinQ)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PF	-0.139106	0.054368	-2.558630	0.0106***
Risk	-0.348095	0.179632	-1.937822	0.0529**
Cash	0.003306	0.010064	0.328478	0.7426
Size	0.070217	0.011956	5.872990	0.0000***
CAPEX	-0.178782	0.062067	-2.880489	0.0040***
Debt Ratio	0.745349	0.027750	26.85967	0.0000***
Div Ratio	0.060664	0.022542	2.691185	0.0072***
Duality	0.097442	0.053008	1.838243	0.0663
Fin. Inst. Holding	0.020238	0.021099	0.959229	0.3376
Liquidity	-0.016179	0.005905	-2.739658	0.0062***
Weighted Statistics				
R-squared	0.252771	Mean dependent var	1.052867	
Adjusted R-squared	0.221421	S.D. dependent var	1.225338	
S.E. of regression	0.794240	Sum squared resid	288.4862	
Durbin-Watson stat	1.894872			

*significant at 10%, **significant at 5% and ***significant at 1%

Regression Analysis for Equation Model Two: Affiliation of Pyramidal Firms to Firm Performance: Table 5 shows the result of regression analysis for the affiliation of pyramidal firms effects on firm performance (TobinQ). The result indicates that pyramidal firms have a negative relationship with firm performance (TobinQ) which is statistically significant at 1% level. The negative effect means that higher pyramid ownership provides the controlling shareholder with more opportunity and incentive to expropriate firm’s resources at the expense of minority shareholders. The result support the expropriation hypothesis and consistent with the findings by [44, 45].

As reported by [46] and [47], firm’s size displays significant positive relationship with TobinQ at 1% level. A bigger firm can perhaps devise better ways and means to fight the market risks and uncertainties and has better chances to offset random losses [48]. For capital expenditure, it gives negative effects on firm performance (TobinQ). In this case, the coefficient for capital expenditure is significantly negative at 1% level.

Dividend payout ratio and debt ratio show positively significant relationship with firm performance (TobinQ) at 1% level. Higher dividend indicates that the ultimate owner does not retain larger amount of earnings that can be expropriated later for the benefits of ultimate owner. The result signifies that those pyramidal firms which have positive significant relationship between debt ratios and firm performance imply that pyramidal firms have high tendency to borrow externally.

Pyramidal affiliated firm is associated with value discount [1]. Pyramidal firms may destruct value since the private benefits are not equally distributed to the minority shareholders Ultimate owners tend to make pervasive use of opportunistic practices which strip assets from subsidiaries and redeploy cash flows from “affiliated cash cows” to insure private benefits. Therefore, pyramidal firm turn to depress firm performance (TobinQ).

Prior studies documented that group pyramidal holdings are associated with expropriation of minority shareholders, tunneling of cash flows and suboptimal decision making [26, 2, 49, 50, 51]. Hence, it can be conjectured that minority shareholders face costs that link to expropriation risk which can more than offset the benefits that come with such pyramidal affiliated firm. As a result, pyramidal affiliated firm is associated with a value discount which particularly also give negative effects for the minority shareholders.

Meanwhile, in Malaysian scenario, the potential of expropriation is high when the function of owner and manager is united. The regression result of this study shows that Malaysian firm performance (TobinQ) is devalued when the owners of the firms are not independent [52]. The other variable is stock liquidity. The stock liquidity might be useful for small investors as a signal providing protection against eventual expropriation. [31] state that stock-trading frequency is a proxy for the speed with which information is captured in stock prices. According to [32], stock liquidity should be an indicator of disagreement among shareholders, as less active stocks face a greater risk of informed trading. Bid ask spread is used as a proxy in this study to measure the stock liquidity.

Table 6: Results of Regression Analysis (Equation Model 2: High CFR Ratio) (Dependent Variable: TobinQ)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PF	0.163089	0.127625	1.277879	0.2024
Risk	-0.311061	1.235389	-0.251792	0.8014
Cash	0.015010	0.021138	0.710079	0.4783
Size	-0.037148	0.018583	-1.998986	0.0466**
CAPEX	1.645116	0.080308	20.48498	0.0000***
Debt Ratio	0.316429	0.223774	1.414055	0.1585
Div Ratio	-0.001749	0.006183	-0.282840	0.7775
Duality	0.324107	0.132734	2.441778	0.0153***
Fin. Inst. Holding	-0.037326	0.100251	-0.372326	0.7099
Liquidity	-0.634315	0.083470	-7.599345	0.0000***
Weighted Statistics				
R-squared	0.270990	Mean dependent var	0.775679	
Adjusted R-squared	0.251108	S.D. dependent var	1.203877	
S.E. of regression	0.981058	Sum squared resid	317.6165	
Durbin-Watson stat	1.908019			

*significant at 10%, **significant at 5% and ***significant at 1%

Table 7: Results of Regression Analysis (Equation Model 2: Low CFR Ratio) (Dependent Variable: TobinQ)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
PF	0.674240	0.150079	4.492568	0.0000***
Risk	-4.762557	3.802597	-1.252448	0.2140
Cash	-0.025208	0.051088	-0.493416	0.6230
Size	0.160493	0.051544	3.113719	0.0025***
CAPEX	-0.606385	0.231441	-2.620042	0.0105***
Debt Ratio	0.966493	0.007818	123.6230	0.0000***
Div Ratio	0.114842	0.043938	2.613736	0.0107***
Duality	-0.661693	0.059274	-11.16332	0.0000***
Fin. Inst. Holding	0.133394	0.082517	1.616556	0.1098
Liquidity	0.209282	0.061831	3.384719	0.0011***
Weighted Statistics				
R-squared	0.288502	Mean dependent var	1.300336	
Adjusted R-squared	0.274799	S.D. dependent var	1.070549	
S.E. of regression	0.924152	Sum squared resid	162.2706	
Durbin-Watson stat	1.939339			

*significant at 10%, **significant at 5% and ***significant at 1%

As shown in this study, stock liquidity is significantly negative correlated with pyramidal firm at 1% level; given that small investors are alert to dilution that they will avoid stocks of firms where the risk of private benefit extraction is large. As stock liquidity become low, thus the probability of emergence pyramidal affiliated firm tends to be low. This finding supports the study by [31] who said that information flows in pyramidal firms are more distorted. The affiliation of pyramidal firms effects on firm performance (TobinQ) appears to be more pronounced when the pyramidal firms are classified into high CFR ratio firms and low CFR ratio firms as indicated in Table 6 and Table 7 respectively. For that purpose, the ratio from the cash flow rights over control rights is derived.

Regression Analysis for Equation Model Two:

Affiliation of Pyramidal Firms to Firm Performance:

Table 6 demonstrates the result of analysis of model for the high CFR ratio firms. However, only four variables are significant which are size, capital expenditure, duality and stock liquidity. For size and liquidity, these variables are significantly negative at 5% and 1% levels respectively. It means that high CFR ratio firms which are smaller and less liquid tend to have higher firm performance (TobinQ). It can be conjectured that even though high CFR ratio firms in Malaysia can be smaller in size and less liquid, they can still perform well.

Meanwhile, for capital expenditure and duality, the coefficients show positive relationship. The results suggest that higher capital expenditure and duality leads to higher firm performance (TobinQ) of the firms. For high CFR ratio firms, the results is true because the issue separation of actual ownership and control as well as agency problems are less in these firms and the firms can easily made investment for firms' growth without worrying for the ultimate owner intentions of expropriation. The other variable is duality function which is significantly positively related to firm performance (TobinQ) at 1% level. The duality function of the owner actually helps the high CFR ratio firms to make proper decisions on firms' operations especially during crisis period [52].

Regression Analysis for Equation Model Two:

Affiliation of Pyramidal Firms to Corporate Performance:

Table 7 presents the results of regression analysis which focus on low CFR ratio firms. The low CFR ratio firms open up possibilities for the ultimate owner to conduct wealth expropriation or rent-seeking behaviour which leads to agency problems [2]. The results reveal that only pyramidal firm, size, capital expenditure, debt ratio, dividend payout ratio, duality and stock liquidity are significantly related to firm performance at 1% level.

For the variables such as size, debt ratio, dividend payout ratio and stock liquidity are significantly positive related to the firm performance (TobinQ) at 1% level whereas capital expenditure and duality variables are significantly negative related to firm performance (TobinQ) at 1% significance level. Low CFR ratio firms' analysis results are more consistent and in line with the prior literature of pyramidal structure effects on firm performance (TobinQ).

For instance, the results show that low CFR ratio firms are underperforms due to the separation of cash flow rights and control rights of the ultimate owner which

devalue the firm performance (TobinQ) and the interest of other shareholders [1]. This finding is supported by [53] who also provide similar findings that firm devaluation is more apparent in low CFR ratio firms. It is because endowed with a motive due to non-matching significant control rights with lower cash flow rights, the ultimate owner proceeds to entrench and pursue private benefits at the expense of minority shareholders interests [2].

Firms with less capital spending are unable to perform well probably because they over invest to fulfil the intention of ultimate owner utility function such as empire building. The negative relationship of duality and firm performance (TobinQ) indicates that for low CFR ratio firms, the duality functions as owner and also manager may have lower value rather than those firms with separate owner-manager function. Thus, it can be concluded that the pyramidal firm effects on firm performance (TobinQ) is more observable in low CFR ratio firms rather than high CFR ratio firms.

CONCLUSION

The expropriation of the minority interest becomes more prominent when there is wide separation between the cash flow right and control right. Finding from the estimated equation model 1, all variables with exception to financial institution holding are significant at 1% level. Meanwhile, the other variables such as cash and dividend payout ratio are insignificant. For equation model 2, the results of analysis depict that pyramidal structure, risk, size, capital expenditure (CAPEX), debt, dividend payout ratio and liquidity are among the factors that significantly affect the firm performance (TobinQ) at 1% and 5% level respectively. The affiliation of pyramidal firms effects on firm performance (TobinQ) is more pronounced when the pyramidal firms are segregated into high CFR ratio firms and low CFR ratio firms. For high CFR ratio pyramidal firms, only four variables are significantly related to firm performance (TobinQ). These variables are size, capital expenditure, duality and stock liquidity. As for the low CFR ratio pyramidal firms, pyramidal firm, size, capital expenditure, debt ratio, dividend payout ratio, duality and stock liquidity have significant relationship with firm performance. The other three variables such as risk, cash and financial institution holding are found insignificant. The finding implies that for low CFR ratio firms, there is a possibility for the ultimate owner to create private benefit for self-interest without regards to the minority shareholders. This result supports the rent-extraction

hypothesis that postulate ultimate owner of pyramidal firms who creates private benefit of controls and devalue the firm performance (TobinQ). Further research in this area can be extended to include the identification of various groups of ultimate owner for Malaysian pyramidal firms and to use other statistical method such as Generalized Method of Moments (GMM) to strengthen the empirical results and that could provide a robustness check on the results. It is essential to have the effective governance of pyramid structure which requires the monitoring of the key actors in the pyramids starting with ultimate owners.

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