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THE SPEED OF ADJUSTMENT TOWARDS OPTIMAL CAPITAL STRUCTURE: DO OWNERSHIP CONCENTRATION AND BOARD DIVERSITY MATTER?

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ABSTRACT

Using a partial adjustment model of capital structure, this study examines the role of ownership concentration and board diversity on the speed of adjustment towards optimal leverage. While a degree of ownership concentration can create value, board diversity on the other hand, is vital for companies to endure shifting market conditions. Both components are necessary for leveraging the outcomes of recent Malaysian Corporate Governance Strategic Priorities (2017-2023). As such, recognizing factors that could hinder the adjustment process is important as firms may deviate from their optimal leverage. The analysis of this study includes the top 100 non-financial Malaysian listed companies from 2012 to 2017. Evidence from this study indicates large Malaysian firms have optimal leverage and adjust at a modest rate towards their target in the long-term. The results are robust when using two alternative measures of ownership concentration, which are the single largest shareholder (OC1) and five largest shareholders (OC5). This study reveals both proxies have negative impact on adjustment speed. In other words, large firms with high level of concentrated ownership adjust their leverage slower towards the optimal level. Likewise, a negative significant relationship is found between board diversity and adjustment speed with the presence of OC5. Firm size is also found to have a significant impact on adjustment speed. These results potentially have long-term ramifications for corporate governance, as specific prerogatives for minority shareholders and directors representing them are required to reduce the negative externalities brought by concentrated ownership. Firms should outweigh the cost and benefits of board diversity, as more diverse boards may hinder the adjustment process.

Keywords: Speed of adjustment, optimal capital structure, ownership concentration, board diversity.

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1. INTRODUCTION

Researchers have shown an increased interest in factors affecting capital structure adjustment speed. Based on the trade-off theory, a firm that has an optimal capital structure will adjust towards its optimum level to maximize firm value (Nguyen et al., 2020). The rate at which firm attempts to achieve the target is known as speed of adjustment (SOA). However, a firm may take longer to

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reach its optimal capital structure due to market imperfections and the presence of adjustment costs (Frank & Goyal, 2007). Hence, investigating factors that impede firm from reaching optimal capital structure is deemed essential. There has been a growing attention on the relationship between corporate governance and SOA. Studies on agency theory and capital structure have postulated that agency cost is a latent factor that affects the adjustment speed. For instance, Liao et al., (2015) relate capital structure adjustment to the intensity of agency conflicts between managers and shareholders and find that outside directors and institutional shareholders exhibit faster SOA. Similarly, Buvanendra et al. (2018) identify that CEO-Chairman duality and directors' compensation are among significant corporate governance factors that influence SOA. Whilst the scope of corporate governance mechanisms is wide-ranging, the effects of corporate governance on SOA remain equivocal. To date, less is known whether other significant mechanisms, like ownership concentration and board diversity can affect SOA.

Ownership concentration relies on the institutional conditions of the economies (La Porta et al., 2000). The level of concentrated ownership may affect the way shareholders exercise their rights (Claessens & Fan, 2002), which then determines the nature of agency conflicts. According to Short et al., (2002), the agency problem between management and shareholders is more prominent in western countries where firms have dispersed ownership structure. However, the nature of agency conflict differs in emerging countries due to the presence of controlling and minority shareholders stemming from concentrated ownership firms (La Porta et al., 2000). In East Asian firms, the problem is more acute following lack of minority shareholders protection, extensive business group structures and less developed market (Young et al., 2008).

Generally, Malaysian listed firms have high level of ownership concentration. According to Abdullah and Mohd-Nasir (2004), the top twenty shareholders possess an average of 73% of a company's stock. However, according to Paramanantham et al. (2018), the average ownership concentration of the top 100 Malaysian companies' largest shareholders is 41.50 %. Although it has changed over time, these findings demonstrate a continuous pattern of concentrated ownership in Malaysia. Furthermore, high separation between cash flow rights and control rights could worsen the agency conflicts between controlling and minority shareholders (Che-ahmad & Mustafa, 2017), leading to minority shareholders' wealth expropriation. There are also cases where certain large shareholders exerted their power on firm financing decisions (Bany Ariffin et al., 2010; Paramanantham et al., 2018).

Until recently, the relationship between ownership concentration and capital structure adjustment has remained ambiguous. A study by Kasbi (2009) finds firms with a greater level of ownership concentration are associated with a slower SOA following less incentive to adjust towards optimal leverage. Similarly, Kayo (2018) finds Brazilian firms with high levels of family block holders are linked to high leverage and slower SOA. A possible explanation for this is that family shareholders tend to use debt financing to prevent themselves from losing their control rights which then contribute to slower SOA. In the case of Malaysian firms, research on this subject has been mostly restricted to the comparison between ownership identities and speed of adjustment. A study by Saleh et al., (2018) reveals firms that are largely concentrated with family and government adjust their debt slower as compared to firms concentrated with management and foreign ownership. Such lacking in empirical predictions enables the current study to provide more understanding on the effect of ownership concentration on capital structure adjustment speed in Malaysian firms.

The board of directors is another core instrument of corporate governance since the board acts as the key decision-maker in a corporation. Board diversity has been highlighted to be another panacea to strengthen board leadership as companies are expected to survive and thrive in all economic conditions. Ferreira (2010) describes board diversity should comprise different directors in terms of age, gender, ethnics, education, nationality, and professional experience. Unlike most study setups that focus on individual elements of diversity, present paper analyzes board diversity as a 'group' unit (Harrison & Klein, 2007). There are four elements of diversity considered in this study which are gender, age, nationality and education. Utilizing the Blau's (1977) index, the multi-dimensional diversity index also offers some indication of whether a firm has a balanced board. Until recently, numerous studies have been done to understand how board diversity influences firm decisions, but limited research has magnified the role of board diversity in capital structure adjustment decisions.

Nisiyama and Nakamura (2018) emphasizes the relationship between board diversity and capital structure can be explained through agency theory (Jensen & Meckling, 1976) and resource dependence theory (Pfeffer & Salancik, 1978). Both theories augment the board's important roles in monitoring and advising financing decisions. Based on the agency theory, Ararat et al. (2012) argue that a diverse board should improve shareholder monitoring to reduce managerial entrenchment in underleveraged or overleveraged investment. Meanwhile, the resource dependence theory specifies diverse directors' background will strengthen board advising capabilities (Byoun et al., 2016). Taken together, it is therefore another interesting research question to examine the impact of board diversity on SOA. Whilst large shareholders can influence financing decisions through their voting rights, the monitoring and advising function of a board could protect firm from any potential moral hazards (Germain et al., 2014). Anderson et al. (2011) highlight shareholders favor diverse boards because they can tackle more complicated issues. Diverse board members prevent from the 'groupthink' (Abdullah, 2013), thereby, averting any possible coalition. However, Adams et al., (2015) argue board diversity may increase the possibility of conflicts and weaken board consensus.

Using Malaysian panel dataset, the objectives of this study are twofold; to assess the impact of ownership concentration on SOA and to investigate the impact of board diversity on SOA. By employing a partial adjustment model to measure the SOA toward optimal leverage, present paper assumes firms in Malaysia have flexible target leverage as supported by Mat Nor et al., (2012). Such flexible target leverage suggests that leverage shocks may cause firms to change their optimal leverage. The present paper contributes to current literature on capital structure adjustment in several ways. First, this study considers both agency theory and resource dependence theory, which provides new insights into the findings. Second, the present paper takes into account the latent factor of agency conflict between large shareholders and minority shareholders. Further, the findings of this study would address the gap in current literature of factors affecting SOA. Lastly, the results from this study could shed some light on the costs and benefits of adjusting leverage towards firm optimal leverage.

This study complements past literature that examines the impact of ownership concentration and board diversity on capital structure. Augmenting the dynamic trade-off theory using both corporate mechanisms, this study provides evidence that firms in Malaysia do have optimal leverage and adjust towards the target in the long term. In addition, the result from this study confirms prior research that ownership concentration is a significant factor that affects SOA (Kasbi, 2009; Kayo,

2018). Meanwhile, the impact of board diversity on adjustment speed is significantly negative with the presence of the five largest shareholders. Hence, corporate managers should thoughtfully consider the factors examined in this study as both factors affect SOA. The remainder of this paper is as follows. Section 2 reviews past literature which contributes towards hypotheses development, section 3 describes the data and methodology, section 4 discusses the empirical findings and section 5 provides conclusion of the study.

2. LITERATURE REVIEW

2.1. Dynamic Trade-Off Theory of Capital Structure

The trade-off theory of capital structure states that firms choose their capital structure by balancing the tax benefits and costs of debt (Kraus & Litzenberger, 1973). The theory suggests that company leverage should be adjusted when it deviates from the optimal level in order to maximize value. Although a static trade-off model has a solution for leverage, it does not attempt to specify the mean reversion of leverage (Frank & Goyal, 2007). The static model requires a firm constantly to be at its target leverage. Likewise, the dynamic trade-off model requires multiple debt and equity rebalancing (Drobetz & Wanzenried, 2006). The model is considered feasible as maintaining optimal leverage requires frequent adjustments. Past studies of capital structure dynamic employ a partial adjustment model to capture the incomplete adjustment between actual and optimal leverage (De Miguel & Pindado, 2001; Faulkender et al., 2012; Heshmati, 2001). Researchers have identified several factors that inhibit a firm from reaching optimal capital structure, including transaction cost (Faulkender, Flannery, Hankins, & Smith, 2010), agency cost (Morellec et al., 2012), business cycle effects (Mai et al., 2017), legal and regulatory environments (Öztekin & Flannery, 2012), macroeconomic factors and business risk (Baum, Caglayan, & Rashid, 2016).

2.2. Ownership Concentration

Ownership concentration has been widely discussed in previous literature. The concentration of ownership is described as the amount of stock held by individuals or large shareholders (Lean et al., 2015). Many studies have associated the Malaysian corporate sector with a high level of ownership concentration (Chee et al., 2016; Claessens et al., 2000; Paramanantham et al., 2018). Claessens et al., (2000) reveal on average 40.4% of ownership in Malaysian firms is concentrated with a single large shareholder. Likewise, Amran and Ahmad (2013) also find that ownership is concentrated with the state, families and large corporations. Other evidence discloses ownership concentration in the top 100 Malaysian listed firms by the largest five shareholders for the period between 2011-2015 is 54.90% (Paramanantham et al., 2018).

Existing research has documented that high ownership concentration instigates agency conflict between large shareholders and minority shareholders (Young et al., 2008). The weak protection of investors and lack of corporate governance quality further exacerbate opportunistic behaviour among large shareholders (La Porta et al., 2000; Chang et al., 2014). In the case of Malaysia, Che Ahmad and Mustafa (2017) found controlling shareholders in the listed firms use a wedge mechanism to separate the cash flow and control rights. The wedge mechanism allows large shareholders to maximize their interest at the expense of minority shareholders. Meanwhile, Bany Ariffin et al. (2010) find high separation of cash flow and control rights contributes to the use of

additional debt in a way to maintain large shareholders' control. The authors also conclude such firms tend to have lower corporate valuation and potential financial difficulties.

Despite previous findings on opportunistic behaviour among large shareholders in Malaysian firms, Chee et al., (2016) recognized that the relationship between ownership concentration and firm leverage is U-shaped. Such non-linear relationship suggests that not all levels of high ownership concentration permit large shareholders in Malaysian firm to consume private benefits from minority shareholders. According to the authors, firms with less than 42% of ownership concentration are considered favourable as it is associated with less firm leverage thereby emphasizing greater monitoring role by large shareholders. Supporting this result, previous studies also report a negative relationship between ownership concentration and firm leverage (Lean et al., 2015; Paramanantham et al., 2018). To a certain extent, a high level of ownership concentration can be beneficial for firms since large shareholders can exert their control in monitoring high-risk decisions. Such monitoring conducted by large shareholders can also increase the trust of minority shareholders (Claessens & Fan, 2002).

Chang et al. (2014) argue deviation from the optimal debt ratio diminishes firm value, thus, exposing higher risk to shareholders. Even worse, this condition may produce more externalities in terms of wealth distribution among large and minority shareholders as large shareholders tend to engage more with the firm as they face greater risk. Several literatures have shown ownership concentration leads to a slower SOA. Earlier study by Kasbi (2009) finds firms with high levels of ownership concentration have less tendency to adjust towards optimal capital structure, hence, slower adjustment speed. Similarly, in a related study based on Brazillian family firms, Kayo (2018) revealed firms with high ownership concentration are associated with high firm leverage and face slower adjustment speed. The author further argues such a high level of debt ratio might prevent firms from using more debt financing as it will jeopardize firm financial flexibility. Drawing on previous expositions, little is known about the association between ownership concentration and SOA in Malaysian firms. Assuming the trade-off theory holds, it can be hypothesised as follows:

H1: There is a significant negative association between ownership concentration and capital structure adjustment speed.

2.3. Board Diversity

Research on board diversity has concentrated largely on the cost and benefits of component effects across different diversity elements. In a study of gender diversity, researchers discover higher level of women representation on board is associated with low level of leverage due to risk-averse behaviour among women directors (Adusei & Obeng, 2019; Smith, 2014). However, Emoni et al., (2017) reveal the opposite relationship between gender diversity and debt ratio which then suggests that the stereotype risk attitudes among men and women should be reframed. Besides, age diversity refers to the mix of directors' ages (Mishra & Jhunjhunwala, 2013). From a finance perspective, age diversity highlights directors' behaviour on risk-taking. Bertrand and Schoar (2003) report that executives from the older birth group are associated to conservative financial policy as compared to younger executives. Yet, recent study reports age diversity reduces corporate risk-taking behaviour (Bhat, Chen, Jebran, & Memon, 2019). This is because uniting both old and young directors could provide balance of perspectives and moderate board decisions.

According to Hambrick et al. (1998), nationality influences values, attributes, and skills in group functioning. Masulis et al. (2012) argue foreign directors can help firms enter overseas market using their experience and business networks. As such, different director's nationalities can act as resource providers in board discussion. On the other hand, Masulis et al. (2012) also exhibit foreign directors as poor monitors of management. This is because foreign directors are unfamiliar with local regulations, laws and accounting standards. In contrast, Frijns et al. (2016) show that foreign directors on boards reduce corporate leverage. Likewise, education diversity promotes unique problem-solving talents, improving team effectiveness (Horwitz & Horwitz, 2007). King et al. (2016) find education levels and quality affect bank performance. Similarly, Darmadi (2013) found that directors with postgraduate degrees, especially from top universities, boost firm performance. In a related study, Bertrand and Schoar (2003) exhibit CEOs with MBA are associated with a greater level of debt and perform better as compared to those without MBA.

Nonetheless, Engelen et al., (2012) and Baker et al., (2020) contend the findings of a single component effect on firm outcomes may ignore other significant diversity elements, thereby resulting inconsistent results. Motivated by this notion, present study adopts the Blau index to measure board diversity as an organizational unit (Harrison & Klein, 2007). Bernile et al. (2018) examined gender, board size, ethnicity, education level, and financial expertise and concluded that firms with diverse boards have less debt capital. Byoun et al. (2016) observed that board gender diversity negatively affected leverage. Ezeani et al. (2022) also discovered that gender diversity negatively impacts European companies' debt usage. All of these results imply that board diversity helps to prevent boards from taking a risky financial policy. However, Nisiyama and Nakamura (2018) report a significant positive relationship between board diversity and firm leverage. Their finding shows that board diversity improves monitoring activities through greater board experience and expertise. On top of that, the authors also report companies with a diverse board in Brazil attempt for more aggressive capital structure policy as managers may use less debt to avoid being monitored. Similarly, Ahmed and Atif (2021) also discovered that board gender diversity increased firm leverage as female directors are not conservative to use debt financing.

Empirical studies by far are only limited to the effect of board diversity on firm leverage, yet little is known whether board diversity can enhance SOA. Realizing that suboptimal capital structure will affect firm value (Chang et al. 2014), a diversified board should encourage firm to rebalance the capital structure regularly. This is because a corporate board should govern on behalf of shareholders and assists company in financial decisions (Ferreira, 2010). Based on the monitoring hypothesis which is reflected by agency theory (Ahmed & Atif, 2021; Ararat et al., 2012; Nisiyama & Nakamura, 2018) and the greater resources realized by a diverse board to improve firm decision (Hillman & Dalziel, 2003), board diversity is expected to improve board monitoring to mitigate suboptimal leverage and managerial entrenchment. Taken together, present study infers a positive relationship between board diversity and SOA. The positive impact is reflected through enhanced monitoring and greater sources of Information that could contribute to better capital structure adjustment decision. Hence, the following hypothesis is developed:

H2: There is a positive significant effect between board diversity and capital structure adjustment speed.

3. METHODOLOGY

3.1. Data Source & Sample

The sample of this study involves top one hundred Bursa Malaysia non-financial companies. Financial firms are excluded from the sample because these firms have different regulations and accounting practices (Bernile et al., 2018). This study ranks non-financial listed firms by 31 December 2017 market capitalization to obtain the final sample. Market capitalization represents corporate size. This study only retains the top 100 non-financial companies as large companies have greater resources to adopt board diversity policy (Abdullah, 2013). The selection of the top 100 companies is consistent with the recent Malaysian Codes on Corporate Governance (MCCG) that defined large companies as FTSE Bursa Malaysia top 100 (Securities Commission Malaysia, 2021). Under recent MCCG, large corporations must disclose board diversity policy. The data used in this study is from 2012 to 2017. Such period of observation is chosen due to the availability of data and the establishment of diversity policy in the corporate sector back in 2011 (Ku Ismail et al., 2019). Data on ownership concentration is obtained directly from annual reports. Other financial data are obtained from Datastream and Thomson Reuters Eikon. Meanwhile, data on director identities are gathered from the annual report.

3.2. Measurements of Variables

Leverage measurement remains debatable. Haron et al. (2013) suggest considering two considerations when determining company leverage: which ratio to employ and whether to use book or market value. Rajan and Zingales (1995) propose using debt-to-firm value ratio to quantify leverage in debt-agency conflict studies. Frank and Goyal (2007) argue that leverage's book value comes from balance sheets and prior data. Chang et al. (2014) argue that leverage market value is "forward-looking" and can relate both shareholder and creditor ownership. Following Flannery and Rangan (2006) and Chang et al. (2014), this analysis employs market value of leverage, which can be calculated by dividing total debt by firm market value.

The independent variable in this study is ownership concentration. According to Rozeff (1982), a high level of ownership concentration in a firm is generally associated with several numbers of shareholders. As such, this study measures ownership concentration through the percentage of the largest shareholders (OC1) and the percentage of five largest shareholders (OC5) which is similar to the previous study by Paramanantham et al. (2018). To capture how board diversity affects the SOA, this study uses a board diversity index comprising four diversity elements which are gender, age, nationality, and education. Gender diversity is measured by looking at two categories of director's gender which is either male or female. As for national diversity, this study measures the index by using two categories involving directors that were born in Malaysia and those that were born overseas. Such approach is used to encapsulate the combination of local and foreign directors in Malaysian boardrooms. To measure age diversity, this study adopts four generational cohorts suggested by Treuren and Anderson (2010) since it provides unique information as compared to age groups, possibly, relating to the work values of directors. These four generations are the silent generation with directors that were born from 1928 to 1945, baby boomers with directors that were born from 1946 to 1961, generation X with directors that were born from 1962 to 1976 and lastly, generation Y with directors that were born from 1977 to 1992. Educational diversity is classified based on the level of education. Motivated by the upper-echelons theory (Hambrick & Mason,

1984), present study implies five categories of education diversity which include doctoral degree (Phd), master, accreditation by professional bodies (eg. ACCA, CFA), undergraduate degree and no degree.

$$\text{Blau index } = 1 - \sum_{i=1}^{k} p_i^2 \quad (1)$$

P_i = Proportion of directors in the 'i' category
k = the number of categories for each element of diversity

The Blau index has been used in a number of studies to measure board diversity. Engelen et al., (2012) utilize the index to measure five types of board diversity (i.e gender, nationality, human capital, socioeconomic background and age) in Dutch listed firms. Meanwhile, Yap et al., (2017) use the index to measure gender diversity in the boardroom of Malaysian listed firms. Enthused by past studies, this study composes board diversity index (DI) using the Blau index formula above. The total of all standardized Blau values that range 0 to 1 for each diversity element is captured below.

Board diversity index = Blau value (gender) + Blau value (national) + Blau value (generational) + Blau score index (education) (1)

As for control variables, this study uses five determinants of capital structure specifically, firm size, growth, profitability, tangibility, and GDP growth. Following is the summary of variables and measurements used in this study.

Table 1: Summary of Variables and Measurements

Variables	Measurements
Firm Leverage	Total debt / (Total debt + Total equity)
Largest shareholders (OC1)	Percentage of the largest shareholding from Top 30 shareholders (in annual report)
5 largest shareholders (OC5)	Percentage of 5 largest shareholdings from Top 30 shareholders (in annual report)
Gender	Blau value of gender diversity
Generation	Blau value of generational diversity
Nationality	Blau value of national diversity
Education	Blau value of education diversity
Firm size	Natural logarithm of total assets
Profitability	Return on assets
Tangibility	Net fixed assets / Total asset
Growth	Market value of equity / Book value of equity
GDP	Annual growth of real GDP

3.3. Model Specification

To estimate the SOA towards optimal capital structure, this study adopts a partial adjustment model of leverage as exhibited in Equation 1. LEV_{it}* is the optimal leverage of a firm i, at time t, LEV_{it} is the actual leverage for firm i, at time t, LEV_{it-1} is the lagged leverage for firm i, and ε_{it} is the error term. The optimal leverage, LEV_{it}* is unobservable and it can be estimated based on $\sum_{k=1}^{N} \beta_k X_{it}$ which is assumed to be a function of firm and country specific determinants of leverage. This study derives the following equations:

$$LEV_{it} - LEV_{it-1} = \delta_{it}(LEV^*_{it} - LEV_{it-1}) + \varepsilon_{it} \quad (1)$$
$$LEV_{it} = LEV_{it-1} + \delta_{it}(LEV^*_{it} - \lambda\, LEV_{it-1}) + \varepsilon_{it} \quad (2)$$
$$LEV_{it} = (1-\delta it)LEV_{it-1} + \delta_{it}\, LEV^*_{it} + \varepsilon_{it} \quad (3)$$
$$LEV_{it} = (1-\delta it)LEV_{it-1} + \delta_{it}\,(\sum_{k=1}^{N} \beta_k X_{it}) + \varepsilon_{it} \quad (4)$$
$$LEV_{it} = \lambda_0 LEV_{it-1} + (\sum_{k=1}^{N} \delta_{it}\, \beta_k X_{it}) + \varepsilon_{it} \quad (5)$$

The SOA, λ_0 is calculated as $(1-\delta_{it})$, where δ_{it} indicates the value of coefficient estimates for lagged debt ratio. Full adjustment will take place when δ_{it} equals to 1 and no adjustment takes place when δ_{it} is 0. The higher the δ_{it} would indicate the higher SOA towards the target and vice versa. As ownership concentration is proxied by the largest shareholder (OC1) and five largest shareholders (OC5), model 1 presents an estimation of the basic leverage adjustment model, where firm leverage is a function of lagged leverage, ownership concentration, board diversity and several determinants of target leverage.

$$LEV_{it} = \lambda_1 LEV_{it} + \lambda_1 \mathrm{OC_{it}} + \beta_1 \mathrm{DI_{it}} + \beta_2 \mathrm{Firm\ size_{it}} + \beta_3 \mathrm{Firm\ growth_{it}} + \beta_4 \mathrm{Firm\ tang_{it}} + \beta_5\ \mathrm{Firm\ profit_{it}} + \beta_6 \mathrm{GDP_t} + \varepsilon_{it} \quad \text{(Model 1)}$$

To explore the impact of ownership concentration and board diversity on capital structure adjustment speed, variables that relate to determinants of adjustment speed is known as Z_it, which is a vector of time and firm-specific determinants. Subsequent equation is further developed to estimate factors affecting SOA.

$$LEV_{it} = (1 - \alpha_0)\, \mathrm{LEVit} - 1 - \alpha_k Z_{it} \mathrm{LEVit} - 1 + \alpha_0 \sum_{n=1}^{N} \beta_k X_{kit} + \alpha_k \sum_{n=1}^{N} \beta_k Z_{it}\, X_{kit} + \varepsilon_i \quad (6)$$

Model 2 is derived from equation 6 to test the hypotheses in this study. The impact of ownership concentration and board diversity on SOA are represented in the interaction terms of factors affecting SOA and leverage, $Z_{it}\mathrm{L_{it-1}}$. The focal point lies in the α_k parameters, where if $\alpha_k = 0$, the null hypothesis cannot be rejected and the explanatory variables have no impact on the SOA. Likewise, if the null hypothesis is rejected, the explanatory variables have some impact on SOA. Another important feature in the model is the negative sign of the coefficient estimates for the interaction terms between factors affecting SOA and lagged leverage (- $\alpha_k Z_{it} \mathrm{LEV_{it-1}}$). If the interaction terms coefficient deduced by the regression output is a negative sign, it indicates there is a positive relationship and vice versa.

$$L_{it} = (1 - \alpha_0)\, L_{it-1} - \alpha_1 oc_{it} L_{it-1} - \alpha_2 di L_{it-1} - \alpha_3 fsize_{it} L_{it-1} - \alpha_4 fgro_{it} L_{it-1} - \alpha_5 ftan_{it} L_{it-1} - \alpha_6 fpro_{it} L_{it-1} - \alpha_7 gdp_t L_{it-1} + \alpha_0 \beta_1 oc_{it} + + \alpha_0 \beta_2 di_{it} + \quad \text{(Model 2)}$$

$$\alpha_0\beta_3 fsize_{it} + \alpha_0\beta_4 fgro_{it} + \alpha_0\beta_5 ftan_{it} + \alpha_0\beta_6 fpro_{it} + \alpha_0\beta_7 gdp_{it} + \alpha_k\beta_k (oc_{it} + fsize_{it} + fgro_{it} + fpro_{it} + ftan_{it} + gdp_{it})(oc_{it} + di_{it} + fsize_{it} + fgro_{it} + ftan_{it} + fpro_{it} + gdp_{it}$$

To address the endogeneity problems and potential autocorrelation in the residual, both GMM estimators (difference and system) introduced by Rajan and Zingales (1995) and Blundell and Bond (1998) are tested in this study. Yet, the estimation output from two-step difference GMM is chosen in this study based on the procedure by Bond (2002). Further, post-estimation results are presented to ensure the validity of the instruments and to detect serial correlation.

4. RESULTS AND DISCUSSION

Table 2 shows the descriptive statistics of variables employed in this study. The mean leverage ratio of our sample is 34% which is higher than Lean et al. (2015) who found debt in Malaysian firms was 31%. Meanwhile, the average ownership concentration for the largest shareholders (OC1) is 37% and for the five largest shareholdings (OC5) is 62%. The results are consistent with previous studies by Paramanantham et al. (2018) and Lean et al. (2015) albeit with small differences. As for the board diversity index, the total score for four elements is four. The present study found the average board diversity index is half of the total score with 2.05. This result suggests large companies in Malaysia still face challenges in delivering through diversity policy. The average firm size is 15.39 whilst the mean of firm profitability shows a low value of 6.16. The mean of firm tangibility is 0.45 whereas firm growth is reported to have a low average of 2.86. Subsequently, the average industry median leverage is 36% and the mean value for GDP growth is 5.23.

Table 2: Descriptive Statistics

Variable	n	Mean	Std. Dev.	Min	Median	Max
Lev	600	0.34	0.20	0.00	0.34	1.01
OC1	600	0.37	0.19	0.04	0.38	0.75
OC5	600	0.62	0.18	0.15	0.65	0.92
DI	600	2.05	0.54	0.71	2.01	3.38
Firm size	600	15.39	1.18	12.36	15.01	18.79
Profitability	600	6.16	6.77	-31.00	5.36	51.16
Tangibility	600	0.45	0.23	0.00	0.44	0.93
Growth	600	2.86	8.45	0.14	1.35	116.63
GDP	600	5.23	0.64	4.22	5.28	6.01

The coefficients of Pearson correlation for all variables are reported in Table 3. The preliminary result indicates the degree of association among all independent variables are weak due to significant low correlation coefficient values. The mean variance inflation factor (VIF) shows 1.23 which is less than 5. Nevertheless, there is a negative correlation between ownership concentration (OC1, OC5) and firm leverage (Lev). In addition, the correlation coefficient sign between board diversity and leverage is negative thereby verifies the likelihood of board diversity as a monitoring mechanism. Thus, these determinant variables are appropriate to model the existing optimal debt ratio.

Table 3: Correlation Matrix

	Lev	OC1	OC5	Div	FSize	Pro	Tan	Gro	GDP
Lev	1.00								
OC1	-0.14**	1.00							
OC5	-0.08*	0.88**	1.00						
DI	-0.16**	0.26**	0.26**	1.00					
FSize	0.21**	0.22**	0.13**	0.07	1.00				
Pro	-0.09*	0.21**	0.18**	0.17**	-0.08	1.00			
Tan	-0.01	0.16**	0.22**	-0.01	0.04	0.06	1.00		
Gro	0.16**	0.13**	0.14**	0.22**	-0.01	0.57**	0.06	1.00	
GDP	-0.01	0.01	0.01	-0.04	-0.04	0.03	-0.01	-0.03	1.00

Note: ** and * indicates correlation coefficients are significant at 1 and 5 percent levels.

Based on Table 4, the estimated coefficients of lagged leverage ratio (Levit-1) are significant at 1% level in both model 1(a) and 1(b) for both proxies of ownership concentration. This finding corroborates the argument by Matemilola et al. (2015), who argue that such significant coefficient of lagged leverage indicates the presence of optimal debt ratio and firms do adjust their leverage towards the optimum level. As mentioned in the literature review, the actual leverage ratio of a firm tends to deviate from its optimum level due to adjustment cost (Drobetz & Wanzenried, 2006). As such, firms would take some time to adjust the leverage ratio towards their target. Accordingly, when OC1 is considered in the model, the coefficient of lagged leverage ratio appears to be 0.455 at 1% significance level. Hence, the SOA is computed as 1 minus 0.455 (1- β1) which is 0.545. This finding further suggests that large Malaysian firms with the largest shareholder close the deviation between actual and optimal leverage by 54.5% per year. In addition, model 1(b) with OC5 as proxy reveals almost similar results which then confirms that our findings are robust with different proxies for ownership concentration. The coefficient of lagged leverage ratio in model 1(b) is 0.453 at 1% significance level, which produced an adjustment speed of 54.7% annually. Both results are consistent with previous study by Haron et al. (2013) who found the adjustment speed is 57% per year. Besides, as this study focuses on top 100 companies in Malaysia, it signifies large firms tend to adjust quickly since they have more access to financing resources and bear a lower cost of adjustment (Flannery & Hankins, 2013).

Table 4: Results of Average SOA Towards Optimal Leverage Using Two-Step Difference GMM Estimator

	Model 1(a) - OC1		**Model 1(b) - OC5**	
Variables	Coefficient	p-value	Coefficient	p-value
Lev (-1)	0.455***	0.0882	0.453***	0.0884
OC1	-0.390***	0.106		
OC5			-0.241**	0.106
DI	-0.0333**	0.0154	-0.0302**	0.0143
Tangibility	0.127*	0.0763	0.132*	0.0791
Profitability	-0.00388**	0.0016	-0.00391**	0.00153
Size	0.109***	0.0231	0.104***	0.0242
Growth	0.00931***	0.00279	0.00912***	0.00266
GDP	0.00295***	0.00296	0.0168***	0.00397
Year effect	Yes		Yes	
Industry effect	Yes		Yes	
Sargan test		0.1567		0.1320
AR1		0.0016		0.0017
AR2		0.7106		0.8286
No. of instruments	19		19	

Note: ***, ** and * indicate coefficient are significant at 1, 5 and 10 percent levels. The AR (2) verifies null hypothesis of no second order correlation in the residuals. The Sargan test (*p*-value) for the null hypothesis of overidentifying restrictions is valid.

As for ownership concentration, both proxies OC1 and OC5 suggest a negative relationship between ownership concentration and leverage ratio. The result somehow lends support to the monitoring hypothesis as large shareholders tend to exert their control in monitoring firm risk (Lean et al., 2015). Likewise, such monitoring activities among large shareholders could improve minority shareholders' confidence (Claessens & Fan, 2002). Besides, this study adopts the definition of board diversity as variety which was used in Kang et al. (2007) and Ararat et al. (2015). Such definition specifies that board through variation of cognitive styles and backgrounds may widen the knowledge supply which can improve the quality of decision-making (Harrison & Klein, 2007). Table 4 presents a significant negative relationship between board diversity and firm leverage may suggest that greater diversity of directors would enhance board monitoring on debt financing more effectively as proposed by Ararat et al. (2015). The results in both models are also consistent with Bernile et al. (2018) who found greater board diversity leads to less reliance on firm debt financing.

Meanwhile, other determinants of firm leverage controlled in this study reveal significant association towards firm debt ratio. Firm tangibility is found to be positively associated with firm leverage as companies with greater tangible assets can use them as collaterals for debt financing (Zou & Xiao, 2006). Likewise, firm profitability shows a negative impact on firm leverage which suggest profitable firms prefer to use internal funds derived from past profits, thereby, less dependence on external financing like debt (M'ng et al., 2017). The positive relationship between firm size and firm leverage in Table 4 indicates that large firms have easier access to the credit market and require more debt to gain the benefit from tax shield (Deesomsak, Paudyal, & Pescetto, 2004). The case of positive effect of firm growth on leverage is also observed in this study. Such scenario may exist if high-growth firms face more information asymmetry and follow the pecking order by using less risk debt as opposed to equity issuance (Zou & Xiao, 2006). Consequently, the positive relationship between GDP and firm leverage is consistent with previous studies like De

Jong et al. (2008) and Frank and Goyal (2009) as companies tend to borrow more during the boom period because of business expansion.

Table 5: The Impact of Ownership Concentration and Board Diversity on SOA

	Model 2(a) - OC1		Model 2(b) - OC5	
Variables	Coefficient	P-value	Coefficient	P-value
Lev-1	0.00276***	0.00224	0.00269***	0.00223
Lev-1 x OC1	0.0735***	0.0260		
Lev-1 x OC5			0.0548**	0.0234
Lev-1 x DI	0.00854	0.00676	0.0123**	0.00603
Lev-1x Firm size	0.0613***	0.00113	0.0601***	0.00111
Lev-1x Firm profit	7.88e-05	0.000223	0.000210	0.000213
Lev-1x Firm growth	-0.000232	0.000676	-0.000226	0.000711
Lev-1x GDP	0.000566	0.000613	0.000545	0.000598
Sargan		0.1900		0.1033
AR1		0.0058		0.0069
AR2		0.9323		0.9727
Observations	499		499	
No of instruments	20		20	

Note: ***, ** and * indicate coefficient is significant at 1, 5 and 10 % levels. The AR(2), null hypothesis of no second order correlation in the residuals. The p-value of Sargan test verifies z is valid hence do not reject the null hypothesis of overidentifying restrictions.

To interpret factors affecting the SOA, Drobetz and Wanzeriad (2006) highlighted it is important to note the negative sign of coefficient on interaction terms (eg, - β1 LEVit-1. OC1it-1) as well as the coefficient of lagged leverage denoted as (1-λ) for β0. Accordingly, when a negative sign of β1 in the interaction term is reported, a positive relationship between determinants and adjustment speed towards optimal leverage is expected (Drobetz & Wanzenried, 2006; Haron et al., 2013). Meanwhile, a positive sign of coefficient estimates implies a negative relationship.

Table 5 shows that both proxies of ownership concentration, OC1 and OC5 influence SOA. The results confirm that large firms with concentrated ownership adjust slower towards the optimal leverage (Kasbi, 2009; Kayo, 2018). Both negative interaction terms of ownership concentration suggest that firms take longer to adjust with the presence of large shareholders, hence, supporting the hypothesis proposed in this study. According to Kasbi (2009), large shareholders may possess undiversified investment portfolios, making them less likely to settle with firms that employed more risk like debt financing. Paligorova (2011) argues firms with high ownership concentration tend to adopt a conservative financial policy which resulting in suboptimal leverage. As a consequence, it inhibits the growth of firm value and may cause adverse externalities to the minority shareholders' rights in terms of wealth distribution. Besides, Harrison and Klein (2007) argue that an organization with a diverse board may struggle to adopt and manage differences. Therefore, board diversity can cause challenges in decision-making, slowing the capital structure adjustment process.

Interestingly, board diversity only affects SOA with the presence of the five largest shareholders. The interaction term for OC1 appeared to have consistent negative signs although with no significant impact. Contrary to previous conjecture that argues board diversity complements the control of agency problem through greater monitoring and aggressive financial policy (Nisiyama & Nakamura, 2018), the findings of this study imply that greater board diversity in Malaysian firms

may hamper the SOA towards optimal capital structure. Thus, the hypothesis developed earlier cannot be accepted. This negative effect is in line with earlier evidence by Bernile et al. (2018) as boards with greater diversity tend to use less debt financing due to its risky nature. Such conservative financial policy may contribute towards slower adjustment speed as boards may attempt to conform to large shareholders' expectations on limiting risk attached to debt. Ferreira (2014) also argues firms hire directors based on firm characteristics. As such, if a conservative financial policy is one of the firm practices, there is a tendency for board members to follow as directors are the key people that hold shareholders' trust.

With regards to control variables, both models have shown that only firm size has significant negative effect on the SOA. The results indicate that larger firms adjust more slowly towards optimal leverage. Consistent with previous study, Flannery and Rangan (2006) argue large firms depend more on public debt which is more costly to adjust than the private bank's debt used by a smaller firm. The authors further contend public debt is subjected to less intense covenants which thereby contributes to less external pressure for a large firm to rebalance their leverage. Elsas and Florysiak (2011) also find a negative relationship between firm size and SOA. Such a relationship is observed mainly because larger firms face lower opportunity cost of deviation from optimal debt ratio, thus, contributing to a slower adjustment speed.

5. CONCLUSION

Present study is motivated by the unique environment of the Malaysian corporate sector where firms with high ownership concentration is prevalent. Besides, major development of board diversity in Malaysian listed firms has been documented in past literature. Given these scenarios, this study sets out to determine factors affecting capital structure adjustment speed, particularly, involving two elements of corporate governance which are ownership concentration and board diversity.The results from this study contribute to past literature on dynamic capital structure of Malaysian firms in several ways. First, the finding depicts firms in Malaysia do have optimal leverage and adjust towards it in the long-term. The adjustment speed for Malaysian large firms is 0.573 which further implies that firms on average close the gap between actual and optimal leverage by 57.3% annually. Second, the result of this study stresses the important relationship between ownership concentration and capital structure adjustment in Malaysia context. The analysis is robust to use two alternative measures of ownership concentration which are the largest shareholder (OC1) and the largest five shareholders (OC5). The evidence revealed the interaction terms of both proxies have negative impact on the adjustment speed which is consistent with the hypothesis postulated in the study. This case has shown that a degree of ownership concentration may generate suboptimal leverage, putting a constraint on creating firm value and causing negative externality on minority shareholders' wealth.

Contrary to previous inference, present study finds board diversity has a negative impact on the SOA. The result does not appear to be driven by the benefit of having a diverse board, as a more diversified board allows better monitoring and greater confidence in financial policy. This finding implies that Malaysian large firms with greater board diversity tend to adopt conservative debt policy which may hamper the adjustment speed towards optimal capital structure. This study also does not rule out that greater board diversity can cause challenges in obtaining consensus as different conflicts may emerge during the capital structure adjustment process. Likewise, this study

only limits to the top 100 non-financial listed firms. Hence, the generalizability of the findings should be interpreted with caution as the results may not represent the whole population of Malaysian listed companies.

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