

## **Determining the Key Factors of Corporate Leverage in Malaysian Service Sector Firms using Dynamic Modeling**

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### **ABSTRACT**

The prime objective of this paper is to investigate the relationship between company-specific factors and firm's leverage of 231 service sector companies of Bursa Malaysia for the period 2008-2018. This study employed dynamic panel regression by employing System Generalized Method of Moments (S-GMM) developed by Blundell and Bond (1998) as the results indicated that the model is genuinely dynamic. Findings reveal that firm size, profitability, liquidity, and growth opportunities are the determinants of corporate leverage in Malaysia service sector firms. Practically, the findings of the study embrace significant insights for corporate tycoons, regulatory bodies and practitioners. Meanwhile, theoretically, the study is important for embracing the predictions of pecking order theory and trade-off theory in terms of explaining the determinants of corporate leverage in Malaysian service firms.

### **ملخص**

يتمثل الهدف الرئيسي من هذه الورقة البحثية في دراسة العلاقة بين العوامل الخاصة بالشركات ورافعتها المالية بحجم 231 شركة تعمل في قطاع الخدمات في بورصة ماليزيا لفترة 2008-2018. ووظفت هذه الدراسة انحدار بيانات اللوحة الديناميكي من خلال استخدام نظام أسلوب اللحظات المعمم (S-GMM) الذي طوره بلونديل ويوند (1998) بحيث أشارت النتائج إلى أن النموذج ديناميكي حقاً. وتكشف النتائج

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## 214 Determining the Key Factors of Corporate Leverage in Malaysian Service Sector Firms using Dynamic Modeling

أن حجم الشركات، والربحية، والسيولة، وفرص النمو تعتبر العوامل المحددة للرافعة المالية للشركات الماليزية العاملة في قطاع الخدمات. ومن الناحية العملية، تتضمن نتائج الدراسة صورة عامة هامة بشأن الشركات، والهيئات التنظيمية، والجهات الممارسة. وفي الوقت ذاته، ومن الناحية النظرية، فإن الدراسة تتسم بالأهمية لاعتماد التنبؤات المتعلقة بنظرية النظام الضريبي ونظرية المقايضة من حيث شرح محددات الرافعة المالية للشركات الماليزية العاملة في شركات الخدمات.

### ABSTRAITE

Le principal objectif de cet article est d'étudier la relation entre les facteurs spécifiques à l'entreprise et l'effet de levier de 231 entreprises du secteur des services de Bursa Malaysia pour la période 2008-2018. Cette étude utilise la régression dynamique de panel en employant la méthode généralisée des moments du système (S-GMM) développée par Blundell et Bond (1998) car les résultats indiquent que le modèle est réellement dynamique. Les résultats révèlent que la taille de l'entreprise, la rentabilité, la liquidité et les opportunités de croissance sont les déterminants de l'effet de levier des entreprises du secteur des services en Malaisie. En pratique, les résultats de l'étude offrent des perspectives importantes pour les magnats de l'entreprise, les organismes de réglementation et les praticiens. Sur le plan théorique, l'étude est importante car elle tient compte des prédictions de la théorie de l'ordre hiérarchique et de la théorie des compromis pour expliquer les déterminants de l'effet de levier des entreprises du secteur des services en Malaisie.

**Keywords:** Bursa Malaysia, Emerging Market, Leverage, Service sector firms, System GMM

**JEL Classification:** C22, G32, G34, L22, L24

### 1. Introduction

The basic idea for a company to use financing sources is due to its ability to cover short-term and long-term fund and at the same time finance the growth of the company's business. Debt policy is one of the important factors of the company in the determination of its survival throughout economic and financial crisis and has a balance between leverage and return on equity due to the factor of risk exerted on the shareholders and company itself. Moreover, it is very important for companies to specify their best plans and strategies in managing their debt obligation and operation during the adverse economic condition because it will determine the future of the company's growth. In other words, leverage is

one of the best finance sources because it allows the company to borrow a substantial amount of money and invest it to expand the firm's operation, asset base and also generate returns on risk capital (Ni'mah *et al.*, 2020).

However, the uses of leverage would lead the company to have an excess amount of cash and this could trigger the misuse of excess free cash flow as it may cause conflicts of interest between shareholders and management (Karim *et al.*, 2019). Furthermore, in the context of Malaysia with a Gross Domestic Product (GDP) of RM 1,446.9 billion in 2018, Malaysia is classified as an emerging country and according to Bank Negara Malaysia's (BNM) (2018) report, the non-financial corporate (NFC) debt grew about 6.5 percent to 103.7 percent of GDP during the year of 2018 compare to the previous year and the business was primarily supported by domestic financing about 74 percent of total NFC debt. Even though the growth of debt generally would reflect a negative perception by the stakeholders, the overall business reported by BNM has maintained comfortable liquidity and debt servicing position during the year (Kazekami, 2017). The healthy financial gearing has supported debt servicing capacity thus resulted in increases of Malaysia's GDP (Indrawan and Rahman, 2020). According to Plecher (2020), the share of economic sectors in Malaysia's GDP was mostly contributed by service sectors about 52.96 percent followed by industrial sector around 38.3 percent and last but not the least agriculture around 7.54 percent.

Moreover, the study emphasized on the service sector companies in Malaysia due to the sector's performance in Second Industrial Master Plan (IMP2) which states that service sector in Malaysia has become popular thus contributes to the development of Malaysian economy. In addition, the Third Industrial Master Plan (IMP3) for year 2006 to 2020 has been laid out by the policymakers in an effort to improve and build a dynamic service sector to acknowledge this sector as the next Malaysia's economy prime driver (Ministry of International Trade and Industry [MITI], 2010). Furthermore, service sector of Malaysia has recorded the highest percentage share in GDP during 2018 and according to World Bank Data (2019), from 2008 to 2018, domestic credit by banks to private sector in Malaysia (% of GDP) has surge from 96.61% in year 2008 to 120.35% in 2018.

A number of researches have been conducted on leverage but most of them focused more on developed countries rather than developing

countries (Kayo & Kimura, 2011; Roslee, 2017; Silva, 2020). Moreover, studies analyzing the choice of capital structure and determinant of leverage in developing countries is limited even though many researchers have examined it using various kind of variables such as profitability, size, growth prospect and asset tangibility to name a few (Faris, 2011). The statement also supported by Vo (2016), where the author states that there is no single theory specifically defining on the choice of capital structure. Additionally, Mramor and Črnigoj (2009) also mentioned that capital structure in emerging markets or in developing county are still in an open investigation. Moreover, the interest of this research paper to focus on Malaysia is also because of the structure of companies in Malaysian market is distinct from most of developed countries due to the dependency and close relationships with banking sector (Alam *et al.*, 2021; Suto, 2003), heavy and strong political support (Johnson & Mitton, 2003) and significant family controls factors (Wiwattanakantang, 1999). Meanwhile, most of prior studies focused on the static rather than dynamic nature of capital structure of a company and majority of the research papers have not been done in emerging market (Nejad & Wasiuzzaman, 2015). Moreover, the determinant of leverage or capital structure of a company may differ not only from developed to developing country or one country to another country but also from sector to another sector within the country itself (Rabbani *et al.*, 2021a,b; Sabir & Malik, 2012). The selection of service sector in this research is not only due to the highest percentage share in GDP during 2018 (World Bank Data, 2019) but also due to the confrontation in difficulty of securing funds especially when the companies' nature of business is based on their intangible assets (Ahmad & Aris, 2015).

Briefly, findings indicate that firm size, profitability, liquidity, and growth opportunities determine corporate leverage of Malaysian service firms. However, sustainability (company age), net profit margin and liquidity are not related to company's leverage in Malaysia. Empirically, results embrace the predictions of pecking order theory and trade-off theory in terms of explaining the determinants of corporate leverage in Malaysian service firms. For practitioners, the study is important for Malaysian service firms to maintain their optimal financial stability, capital structure and company-specific factors. In the same vein, findings of the study are significant for corporate tycoons, regulatory bodies and practitioners.

The remaining paper is assorted in the following manner: Section 2 reviews the earlier empirical studies along with hypothesis development;

Section 3 states the methodology of the study. Section 4 provides empirical results and analysis whereas Section 5 gives the discussion on empirical results. In the end, research paper concludes with brief summary and theoretical and practical implications.

## **2. Literature Review**

### ***2.1 Empirical Evidence on Determinants of Corporate Leverage***

Owners of the company face a high degree of risk when they decide to use financial leverage due to the increased level of inability and burden to the company to service the debt (Roslee, 2017). This would make the optimal structure between equity and debt become harmonized thus leads to reduce the cost of fund in a company (Barakat, 2014). Various kinds of sensible definitions and descriptions have been used in an effort to monitor the factors which are correlated with leverage. Among the factors that have been discussed by previous researchers, the first things that becomes the main concern is regarding on the measurement of leverage whether to use book leverage (total debt to total asset) or market leverage (total debt to sum of book debt plus market value of equity). According to George *et al.*, (2020), market leverage is better measurement since it is incorporated with the updated market view on companies' growth opportunities and its value. The literature was based on Borio (1990), where he states that economic analysts usually employ market leverage as proxy due to its behavior as forward-looking while book leverage been seen as backward looking which do not entirely reflect on company's debt capacity and financial health with respect to the current market economic condition. The suggestion by Borio (1990) also became the base argument in selecting the market leverage instead of book leverage as dependent variable by Harford *et al.*, (2009). Moreover, the selection of market leverage rather than book leverage was because of book value of company can be negative which may lead to problems in the measurement of leverage (Welch, 2004).

In contrast to the arguments mentioned above, there are several studies suggesting that book leverage is better than market leverage as stated by Myers (1984), which focuses and prefers to use book leverage because debt is more suitable to be retained by asset already in place. Author also states that significant part of most firms' market value is valued for by assets which are not yet in place for example present value of future growth opportunities (Atif *et al.*, 2021; Yahaya *et al.*, 2020). Moreover,

the definition of leverage as debt ratio also been claimed to be more appropriate as it is viewed of what is left for shareholders in the event of liquidation of a company (Rajan and Zingales, 1995). Furthermore, in term of short-term debt especially in case of developing countries, the short-term debt represents a significant portion of a company's total debts (Sheikh and Wang, 2011). The short-term debt includes bank overdraft which at the time could be converted into source of long-term financing, even though it is said to have more risk in the company perspective due to the repayable factor in demand (Omran and Pointon, 2009). Besides, book leverage is more suitable to be used in this research paper as this research used secondary data from DataStream and financial statement of a company which are more relevant to the historical data provided with the characteristic of book leverage (backward looking). Thus, this study employs book value leverage (total debt to total asset) as a dependent proxy to represent leverage of a company.

## ***2.2 Hypotheses Development***

This study determines the causality between firm's leverage and associated variables (sustainability, profitability – net profit margin and return on equity, firm size, liquidity – cash ratio and quick ratio, and growth opportunities), that are hypothesized below:

### ***2.3.1 Sustainability***

In this study, the proxy used to represent sustainability is company's age. Previous studies explained firm age as the total number of years the firm is established or came into existence and found some positive significant effects (Archer and Faeber, 1966) while there are also studies that have negative and significant effect on age when it is defined as number of years since incorporation. Pecking order theory asserts that an older company has better and greater capacity to accumulate and retain their earnings over time. Moreover, the older the company is, the larger is its information being recorded from time to time. Trade-off theory assumes a positive relation between age and debt ratio (leverage) of a company in the fact that mature firms have bigger experience and better reputation that can reduce agency costs via positive signal from the quality of potential investment (Adair *et al.*, 2015). An analysis and investigation on the relationship between company leverage and its age is very crucial for the use of management to monitor their company historical for future

growth and sustainable factors in the market. Meanwhile, it is asserted that as the company grows older, the performance of the company would also decline thus eventually causing most of the companies to be taken over. The statement was supported by Kwarbai *et al.* (2016), which states that as a company gets older, the company becomes more focused with their core competencies which then eventually limits their activities thus lower the growth rate of the company. However, the theoretical relationship between age and company capital structure is still in an ambiguity.

A study by Ahmad and Aris (2015) found that age has a negative relationship to debt ratio and able to aid in firm's decision to seek debt financing. The result is also similar with Viviani (2008), and Caneghem and Campenhout (2012), where they also found a negative relationship between age and debt ratio. Moreover, a study by Uyar and Guzelyurt (2015), also found the same result which is negative and significant when they investigated on the influence of firm characteristic to the capital structure in Turkey and it was also supported by Ogbulu and Emeni (2012). Furthermore, Kumar and Rao (2016) found that a negative relationship between firm age and leverage of the companies. All these research papers were in line with Pfeffermayr, Stockl, and Winner (2008), where they states that a company that sustains in the market for a long period of time might have build a strong foundation and reasonable amount of retained earnings and reserves which could serve as a better alternatives to debts. Contrarily, Bajagai *et al.*, (2019) examined the effect of ownership structure and corporate governance to the capital structure in Nepalese listed companies showed that the relationship for the age of the company is positive and significant with leverage as the older the company, the higher the leverage incurred. Furthermore, in the study of capital structure determinants in India by Chadha and Sharma (2016) with sample of 422 manufacturing companies between year 2003-2013 showed that firm age have positively significant relationship with the company's leverage and this study was also supported by Zare, Farzanfar and Boroumand (2013) and Sanusi (2014).

As routed from previous studies, it is hypothesized that;

H1: *There exists a significant nexus between the sustainability and company's leverage.*

### 2.3.2 *Size of the Companies*

The investigation of relationship between size and company's leverage has also been widely discussed in previous researchers as size is commonly related with the risk of the company when considering leverage. However, there is an inconsistency in findings about the relationship, for instance, Ahmad and Aris (2015) and Bajagai *et al.* (2019) found a significant positive relationship between size and leverage, while Masor (2017) and Rouf (2018) found a significant negative relationship with leverage. The negative relationship is also similar with Dinlersoz *et al.* (2018), where they argue that firm size and leverage are inversely related as public firms are usually independent of their size. Due to these various results, its hypothesized that;

H2: *There exists a significant nexus between the size and company's leverage.*

### 2.3.3 *Profitability*

The investigation between profitability and companies' leverage also had been given a big attention throughout the globe as the profitability is very much related with the performance of the companies and it is also believed to be one of the features that could affect the company's capital structure (Masor, 2017; Hassan *et al.*, 2020). Similar to previous relationship results, profitability also had both positive and negative relationship with leverage. The significant positive relationship showed in Kumar and Rao (2016), and Gweyi and Karanja (2014). On the other hand, a negative relationship showed in Ting (2016), Balios *et al.* (2016), Masor (2017), and Nisha and Ghosh(2018). Therefore, it is hypothesized that;

H3a: *There exists a significant nexus between the profitability ( $ROE_{it}$ ) and company's leverage.*

H3b: *There exists a significant nexus between the profitability ( $NPM_{it}$ ) and company's leverage.*

### 2.3.4 *Liquidity*

The liquidity of the company is believed to play an important role for the businesses to being able in settling its shot-term obligation. A pros and cons have been shown in previous literature regarding the importance of liquidity in the determining the leverage. Thus, different results by



Alkhatib (2012) have shown a significant positive relationship with companies' leverage, while Dakua (2018) showed an insignificant positive relationship while using current ratio as a proxy of liquidity. The other majority researchers with current ratio as proxy, agreed with the significant negative relationship between liquidity and leverage such as in Ahmad et al., (2012), Ahmad and Aris (2015), Vo (2016), and Khemiri and Noubhigh (2018). Moreover, Roslee (2007) using both quick and cash ratio, and Kila et al., (2008) using quick ratio, also agreed with the significant negative relationship with leverage. Thus, it is hypothesized that;

H4a: *There exists a significant nexus between the liquidity ( $CR_{it}$ ) and company's leverage.*

H4b: *There exists a significant nexus between the liquidity ( $QR_{it}$ ) and company's leverage.*

### 2.3.5 Growth Opportunities

The literature on growth opportunities and leverage revealed both positive and negative effect on companies' leverage. Most of the literature agreed with the insignificant relationship between growth opportunities and companies' leverage whereas negative relationships are reported in Pouraghajan *et al.* (2012), and Nisha and Ghosh (2018), and positive relationships are reported in Vo (2016), and Matias and Serrasqueiro (2017). However, there is only one study of Nejad and Wasiuzzaman (2015) which found the significant negative relationship between growth opportunities and leverage. Therefore, it is hypothesized that;

H5: *There exists a significant nexus between the growth opportunities and company's leverage.*

## 3.0 Methodology

### 3.1 Data and Variables

The empirical test in this research paper is based on the sampling frame service sector companies listed on Bursa Malaysia. The service sector companies were chosen because this sector was the highest percentage share in GDP during 2018 (52.96%) and it is an important sector that the government would like to focus on for economic growth in the future ahead. This research paper covers 11 years (2008-2018) of observation period on panel data. All of the samples data were constructed according to the sample selection criteria: Only service sector companies listed on

Bursa Malaysia were selected rather than industrial and agriculture sector. The first stage in data screening is done by meeting the requirements of companies' age of establishment (must establish before year 2008) to avoid inadequate in data screening. The third data screening is by excluding the companies with a lot of data errors to avoid any imbalance data between companies and all the active and non-active companies were included in the sample data to avoid survivorship bias. Based on the screening process, this study manages to collect 231 out of 314 companies that met all of the requirements needed. This final collection samples represent panel data set of 2,541 firm-year observation for eleven years (2008-2018).

Table 1 indicates the operationalization of the key variables used in the study.

<b>Table 1 Operationalization of the Key Variables</b>			
<b>Dependent Variable</b>	<b>Unit</b>	<b>Proxied By</b>	<b>Definition</b>
Leverage	(%)	$LEV_{it}$	Total Debt /Total Asset
<b>Independent Variables</b>			
Sustainability (AGE)	(Year)	$SUSAge_{it}$	Company age of business
Profitability (NPM)	(%)	$NPM_{it}$	Net Profit /Revenue
Profitability (ROE)	(%)	$ROE_{it}$	Earnings before interest, tax, and depreciation/ Total Equity
Size (Total Asset)	(USD'000)	$SIZETA_{it}$	Natural Logarithm Of Total Assets
Liquidity (Quick Ratio)	(Quick Times)	$LIQ(QR)_{it}$	(Current Asset- Inventories) /Current Liabilities
Liquidity (Cash Ratio)	(Times)	$LIQ(CR)_{it}$	All Cash /Current liabilities
Growth Opportunities	(%)	$GROP_{it}$	Market value of firm/ Total Asset

For estimations purpose, the following regression is used for the analysis.

$$\begin{aligned}
 LEV_{i,t} = & \alpha_0 + \alpha_1 SUSAge_{i,t} + \alpha_4 NPM_{i,t} + \alpha_5 ROE_{i,t} \\
 & + \alpha_3 SIZETA_{i,t} + \alpha_6 QR_{i,t} + \alpha_7 CR_{i,t} + \alpha_8 GROP_{i,t} \\
 & + \alpha_9 LEV_{i,t-1} + e_{i,t} \dots \dots \dots (1)
 \end{aligned}$$

### 3.2 Descriptive Statistics of Variables and Correlation Matrix

Table 2 indicates the overall mean values of the variables used in the study over the period of 2008 to 2018. The result represents both active and inactive companies with the total of 231 which are categorized under non-

financial service sector. The mean value of leverage indicates that Malaysian service firms owe 0.62 cents against worth to total assets counted as single Malaysian Ringgit. Moreover, sustainability indicates the mean value of 16.48 years; net profit margin yields average value of 0.0298 percent whereas return on equity reveals average value of 3.8445. The average size of service sector firms in Malaysia is 12.78. Meanwhile, the liquidity ratios indicate average values of 2.08 and 1.14 times for quick ratio and cash ratio respectively. Finally, growth opportunities show the mean value of 1.0668 percent for service sector firms of Malaysia over the period 2008-2018.

Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
$LEV_{it}$	2541	0.6279	0.5632	0.1201	0.7462
$SUSAge_{it}$	2541	16.48	9.137	0.0185	22.387
$NPM_{it}$	2541	0.0298	18.2130	-27.287	27.098
$ROE_{it}$	2541	3.8445	21.379	-10.489	11.269
$SIZETA_{it}$	2541	12.7843	2.2890	0.1369	18.379
$QR_{it}$	2541	2.0816	2.7444	0.0321	17.893
$CR_{it}$	2541	1.1408	2.0613	0.0032	18.166
$GROP_{it}$	2541	1.0668	7.3387	0.0687	34.218

In addition, Table 3 gives the correlation of variables used in the study and values of each correlated variables indicate no serious problem of multicollinearity.

Variables	$LEV_{it}$	$SUSAg_{it}$	$NP_{M_{it}}$	$ROE_{it}$	$SIZET_{A_{it}}$	$QR_{it}$	$CR_{it}$	$GRO_{P_{it}}$
$LEV_{it}$	1							
$SUSAg_{it}$	0.12** *	1						
$NP_{M_{it}}$	0.15** *	0.24***	1					
$ROE_{it}$	-0.14	0.15***	0.22*	1				
$SIZETA_{it}$	-0.13	0.16***	0.13*	0.15** *	1			

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$QR_{it}$	-0.12	0.15***	0.23*	0.17** *	0.12***	1	
$CR_{it}$	0.19** *	0.16***	0.11** *	0.14** *	0.23***	0.21** *	1
$GROP_{it}$	- 0.24** *	-0.18***	0.13	-0.12*	-0.11*	-0.19*	-0.12 1

Significant at: \*10, \*\*5, and \*\*\*1 percent levels.

#### 4.0 Data Analysis, Empirical Results and Discussion

##### 4.1 Diagnostic Tests

It is crucial to run a diagnostic test before presenting the results estimation on the determinant factors of firm leverage in Malaysian service sector listed companies. A standard diagnostic test is required for all variables to ensure the consistency, reliability and effectiveness of the GMM estimation which also depends on the instruments' validity and the non-existence of serial correlation of the residual. Table 4 shows the result obtained from the diagnostic test. First and foremost, test of misspecification by Sargan's (1964) is being used to ensure the validity of the instrument. Moreover, to assure the instruments in the particular model are not redundant and validity of over-identifying restrictions, the null hypothesis for Sargan test is needed. Therefore, by accepting the null hypothesis which has been created, it shows that the group of instruments is valid and the model specification is appropriate.

The final result shows in the Table 4 are in line with the findings by Arellano and Bond (1991), where the two-step S-GMM has been applied. Since, one-step S-GMM Sargan test is sensitive to heteroskedasticity (p-value < 0.05), which then lead to the instruments' validity being rejected. The presence of heteroskedasticity of unknown form has made the Sargan diagnostic test to be repeated for the two-step S-GMM and it shows that the Sargan diagnostic test for the model does not reject all of the set over-identifying restriction (p-value > 0.05) which means that the over-identifying restrictions are valid. The high p-value of the Sargan diagnostic test which is more than 0.05 indicates that the instruments used are exogenous and the model is suitable and appropriate. Moreover, the result also shows that the model is well specified because there is no autocorrelation problem and thus the estimator chosen are consistent.

Furthermore, there is another diagnostic test for dynamic panel data estimation which is Arellano-Bond (1991)'s test where it tests for autocorrelation between the residuals (AR). According to Arellano and Bond (1991), the diagnostic test is important to be implemented as to

analyze the instruments' validity in the dynamic nature of data. The assumption of the first-order serial correlation (AR(1)) model means that for the current period (period t), all the residuals in the model are associated to their respective residuals of previous period (period t-1). Next, the assumption of second-order serial correlation (AR(2)) shows that the residuals in period t relies on the residual of period t-1 and t-2. According to the theory, if the normal distribution is approached by the Arellano-Bond test, the zero autocorrelation's test in first difference residual must (must not) reject the null in the no first-order (second-order) serial correlation (Wooldridge, 2002). Apparently, the AR(2)'s test of residuals in first-difference equation is better than AR(1)'s test of residuals (Karim *et al.*, 2020a,b,c; Karim, 2021a,b). The reason behind this result is due to the test for AR(2) is to detect the existence of the first different residuals in period t-1 and t-2 (Roodman, 2009). Overall, the results of the diagnostic test for both AR(1) and AR(2) are reported in the Table 4 and the test for AR(2) meets the requirement to accept the no second order serial correlation of the first-difference residuals (p-values > 0.05). Since, two-step S-GMM gave appropriate measurements for model specifications and autocorrelation, thus, the final estimator chosen for this study is two-step S-GMM where further analysis is carried out to investigate the determinants of corporate leverage in Malaysian service sector firms.

**Table 4: Diagnostic Tests based on Two-Step S-GMM**

$$\text{Model 1: } LEV_{i,t} = \alpha_0 + \alpha_1 SUSAge_{i,t} + \alpha_4 NPM_{i,t} + \alpha_5 ROE_{i,t} + \alpha_3 SIZETA_{i,t} + \alpha_6 QR_{i,t} + \alpha_7 CR_{i,t} + \alpha_8 GROP_{i,t} + \alpha_9 LEVi, t - 1 + e_{i,t}$$

Sargan test of over-identifying restrictions (p-value)	42.64 (0.529)
1 <sup>st</sup> order autocorrelation Test (p-value)	-6.47 (0.0000)
2 <sup>nd</sup> order autocorrelation Test (p-value)	-0.22 (0.826)
Sargan test for over-identifying restriction (p-value)	Pass

2 <sup>nd</sup> order autocorrelation Test (p-value) (>0.05)	Pass
Firm-year observation	2541
T	9
No. of groups	231
No. of instruments	53

#### 4.2 Empirical Results

As shown in the Table 4, the dynamic model of one-step S-GMM, two-step S-GMM and two-step S-GMM with  $p$  lags of dependent variable indicates that the dependent variable is affected by most of the independent variables except for  $SUSAge_{i,t}$ ,  $NPM_{i,t}$ , and  $CR_{i,t}$ . As overall, the analysis has been done by using one-step, two-step and two-step with robust standard errors to show the differences between steps estimator. The differences between step-one and step-two S-GMM is due to the presence of heteroskedasticity of unknown form in the step-one estimator. While the results of two-step estimator are more efficient in large sample as it has a consistent estimation of variance-covariance matrix which then relax the presumption of independence and homoskedasticity (Arellano & Bond, 1991). The implementation of two-step S-GMM with robust standard error was to correct the finite-sample bias.

As indicated in Table 5, the differences between both one-step and two-step S-GMM are of the amount of its coefficients and significant confidence level. The important difference is focused on the variables'  $NPM_{i,t}$  where in on-step S-GMM, the result shows a significant levels of 10 percent but when the same data was run with two-step S-GMM, the result shows an insignificant level of confidence. The same goes to  $CR_{i,t}$  variable where in one-step S-GMM, the result shows a significance level of 5 percent but in two-step S-GMM, the result becomes completely insignificant. Moreover, in contrast to the results obtained which is significant to insignificant, the results of  $GROP_{i,t}$  variable shows an insignificant confidence level in step-one S-GMM but in the two-step S-GMM it became significant to the level of 5%. The two-step S-GMM VCE robust was applied to strengthen the results of two-step S-GMM without VCE robust. The result shows that the  $QR_{i,t}$  variable changes from 1 percent to 5 percent significance level and  $GROP_{i,t}$  turn from 5 percent

to 10 percent significance level. Therefore, this study focused and analyzed on the two-step S-GMM as it depicts a more efficient and robust results.

**Table 5: Dynamic Model Regression based on S-GMM**

Financial Leverage Indicator	One-Step S-GMM (1)	Two-Step S-GMM (2)	Two-Step S-GMM (Robust) (3)
Constant	-15.073 (-7.04) ***	-11.684 (-4.86) ***	-11.684 (-3.24) ***
$SUSAge_{it}$	-0.043 (-0.71)	-0.059 (-1.09)	-0.058 (-0.89)
$NPM_{it}$	0.002 (1.79) *	0.002 (1.52)	0.002 (0.75)
$ROE_{it}$	-0.084 (-6.40) ***	-0.086 (-6.26) ***	-0.086 (-3.77) ***
$SIZETA_{it}$	1.879 (13.82) ***	1.563 (8.16) ***	1.563(5.38) ***
$QR_{it}$	-0.099 (-3.97) ***	-0.757 (-3.45) ***	-0.757 (-2.33) ***
$CR_{it}$	0.631 (18.31) ***	0.653 (17.84) ***	0.653 (10.71) ***
$GROP_{it}$	-0.029 (-0.96)	-0.021 (-2.16) **	-0.021 (-1.94) **
$L$	0.631 (18.31) ***	0.653 (17.84) ***	0.653 (10.71) ***

Significant at: \*10, \*\*5, and \*\*\*1 percent levels.

### 4.3 Discussion on Empirical Results

Focusing the empirical results given in column(s) 2 and 3 of Table 5, sustainability shows a negative coefficient of -0.059 ( $z = -1.09$ ) (column 2) and 0.058 ( $z = -0.89$ ) (column 3) with an insignificant level to the dependent variable of leverage. The results for sustainability support the pecking order theory where it indicates that the older the company, the greater the capacity to accumulate and retain their earnings over time. The relationship is in line with the studies by Viviani (2008), Caneghem and Campenhout (2012), Ahmad and Aris (2015), Uyar and Guzelyurt (2015), Kumar and Rao (2016), and Masor (2017).

Correspondingly,  $NPM_{i,t}$  shows a positive coefficient of 0.002 ( $z = 1.52$ ) (column 2) and 0.002 ( $z = 0.75$ ) (column 3) but it was insignificant. This

shows that  $NPM_{i,t}$  does not significantly affect the decision in incurring leverage in listed service companies of Malaysia. On the other hand,  $ROE_{i,t}$  shows an inverse relationship where a negative coefficient of -0.086 ( $z = -6.26$ ) (column 2) and -0.086 ( $z = -3.77$ ) (column 3) with significant at 99 percent confidence level. The first proxy of profitability ( $NPM_{i,t}$ ) supports the trade-off theory where the positive relationships is due to the assumption of the more profit of the company, the lower the probability of the company to become bankruptcy (Fama & French, 2002) and also supports Frank and Goyal (2009) and La Rocca et al., (2009), a profitable company is more likely to borrow compared to a less profitable company in order to have benefit from the tax shield. But unfortunately, the  $NPM_{i,t}$  does not apply in listed service companies of Malaysia because the results shows an insignificant level of confidence which implies that net profit margin is not one of the factors that significantly impact in the decision of incurring companies' leverage. The service companies in Malaysia may not solely depends on the net profit margin factor in obtaining debt financial resources. The positive relationship alone regardless of proxy been used as profitability are in line with the studies by Gweyi and Karanja (2014), and Dakua (2018). Conversely, the second proxy ( $ROE_{i,t}$ ) shows opposite results where it supports the pecking order theory that companies which are more profitable are more likely to exchange debt for internal funds. This indicates that service companies in Malaysia prefer to use internal funds rather than debt finance. This could support the argument by Myers and Majluf (1984), where most of the companies prefer internal sources over external sources of financing because high profitability boost the availability of company's internal funds thus increase the adjustment capital structure speed towards optimal. The significant negative relationship is in line with the studies by Sheikh and Karim, (2016), Ting (2016), Balios *et al.*, (2016), Masor (2017), Roslee (2017) and Nisha and Ghosh (2018).

Notably, size ( $SIZETA_{i,t}$ ) shows a positive coefficient of 1.563 ( $z = 8.16$ ) (column 2) and 1.563 ( $z = 5.38$ ) (column 3) with a significant at the 99 percent confidence level. The significant positive relationship supports the studies by Ahmad and Aris (2015) and Bajagai *et al.* (2019). The positive relationship shows that the public listed service companies in Malaysia align with trade-off theory where the theory suggested that a big company is more fond to use more debt compare to small companies and this is also in line with Sheikh and Wang, (2011), Sheikh and Karim, (2015), Sheikh and Kareem, (2015), where they believe that bigger companies in term of size may have bigger capabilities and could enjoy



economies of scale which in turn would influence the productivity and return of the companies.

Furthermore, out of liquidity ratios, quick ratio ( $QR_{i,t}$ ) shows a negative coefficient of -0.757 ( $z = -3.45$ ) (column 2) and -0.757 ( $z = -2.33$ ) (column 3) with significance at 99 percent confidence level. The first proxy of  $QR_{i,t}$  support the pecking order theory where a high level of liquidity may give a favorable choice to the companies in using their own assets as financing sources rather than issuing debt to finance their business operations (Nisha & Ghosh, 2018). The significant negative relationship supports the literature by Kila *et al.*, (2008), which also use the same proxy and indicates that firms with high liquidity could finance their businesses using excess cash inflow due to being able in generate high in cash and this result also is in line with the research by Roslee (2007). The other literature also found a significant negative relationship but with different proxy (current asset) as shown by Ahmad & Aris (2015), and Vo (2016).

On the other hand,  $CR_{i,t}$  shows an insignificant positive relationship between the variable and ( $LEV_{i,t}$ ). The positive coefficient shows a 0.381 ( $z = -2.16$ ) (column 2) and 0.0381 ( $z = 0.69$ ) in the Table 4.3.2. The result is in line with trade-off theory where companies with high level of liquidity may have high in debts due to the greater ability of the companies in meeting their short-term debt thus makes it relevant in having a positive relationship between liquidity and debts (Khan, 2012). The insignificant positive relationship is in line with the research by Dakua (2018). The positive relationship alone can be supported by Alkhatib (2012).

Finally, growth opportunities ( $GROP_{i,t}$ ) depict a negative relation coefficient at -0.021 ( $z = -2.16$ ) (column 2) and -0.021 ( $z = -1.94$ ) (column 3) with a significant confidence level at 95%. The negative relationship supports the trade-off theory where growth company could incur higher financial distress costs and also lower in cost of agency of free cash flow. This also supported the statement by Nisha and Ghosh (2018) where they stated that companies with higher growth opportunities are likely to use equity financing instead of debt financing because they refuse to pass up future positive earning investment opportunities. The negative results alone are in line with the previous studies by Nisha and Ghosh (2018), while the significant negative relationship supports the result by Nejad and Wasiuzzaman (2015).

In sum, it can be concluded that the use of two-step S-GMM varies the results due to endogenous nature of data. S-GMM caters the problems of endogeneity, simultaneity, and reverse causality, thus, gives concrete and reliable results. In this way, this study is unique in providing the evidence on determinants of corporate leverage using the dynamic modelling.

## 5. Conclusion

This study investigated the determinant factors that affect leverage of service listed companies in Bursa Malaysia. The purpose of the study is to identify whether the selected company-specific factors could impact the decision of company's leverage. The independent variables namely sustainability, size, liquidity, profitability, prior leverage and growth opportunities were retrieved from DataStream during 2008 to 2018. The data comprised of 231 public listed service companies with 2,541 firm-year observations.

In this study, the results show that company's leverage is determined by profitability (ROE), size, liquidity (Quick Ratio), and growth opportunities. This shows that most of the listed service companies in Malaysia used these company-specific factors to determine their future company's leverage. The other company-specific factor such as sustainability (age), profitability (NPM) and liquidity (Cash ratio) was found as an insignificant influence to the listed service companies of Malaysia probably due to the public listed companies in Malaysia using leverage regardless of these factors because the age of the company is not a big concerning matters to the financial institution as long as the company provide a good proposal and a clean history of loan, while the net profit margin was not a big deal when the companies have a promising total assets as a collateral and a good return on equity.

On grounds of methodological novelty of the study, this study provided unique contribution by using the S-GMM estimator to investigate and analyze the dynamic relationship between leverage and its company-specific factors within the context of Malaysian listed service companies. There are many researchers who used different regression method such as multiple regression (Kwarbai *et al.*, 2016; Nisha & Ghosh, 2018; Dakua, 2018; Bajagai *et al.*, 2019), Pooled OLS regression (Nejad & Wasiuzzaman, 2015; Ting, Azizan & Kweh, 2015; Balios *et al.*, 2016) and threshold regression (Ibhagui & Olokoyo, 2018) but this study used S-GMM estimator which could strengthens the results in increasing of reliability and validity of the findings. The dynamic panel regression

(multiple-period approach) is preferred to evaluate accounting-based and risk-return relationship which suggests that each association was not immediate but realized over the historical data. Due to this reason, managers and corporations can rely on this method since the accounting-based variables and accounting measurement could be controlled directly to make decision at the firm-level. Furthermore, the relationship of company-specific factors with company's leverage is also applicable to the used of various stakeholders such as investors in the level of capital market.

On the other hand, the results also could be used as a reference for service companies in Malaysia to maintain their optimal financial stability, capital structure and company-specific factors. The reason is because most of the variables tested such as size, profitability (ROE), liquidity (Quick ratio), and growth opportunities have great influence on the decision of company's leverage. Meanwhile, for the investors (retailers, financial institution, corporate investment and international investors), they could use these findings as a guideline or precautionary measures to select the best valuable companies as to maximize their stakeholder wealth maximization. In the end, for the academicians, these results could be used as a reference for developing new ideas to improve future investigation in determining the factors of firm leverage by employing the dynamic panel model.

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