THE EFFECT OF COMPANY-SPECIFIC FACTORS ON FINANCIAL LEVERAGE: EVIDENCE FROM MALAYSIAN INDUSTRIAL SECTOR

NURUL NAJWA BINTI ROSLEE

MASTER OF SCIENCE (FINANCE)

UNIVERSITI UTARA MALAYSIA

DECEMBER 2016

THE EFFECT OF COMPANY-SPECIFIC FACTORS ON FINANCIAL LEVERAGE: EVIDENCE FROM INDUSTRIAL SECTOR MALAYSIA

By

NURUL NAJWA BINTI ROSLEE

Thesis Submitted to School of Economics, Finance and Banking, Universiti Utara Malaysia, in Partial Fulfillment of the Requirement for the Master of Sciences (Finance)

Pusat Pengajian Ekonomi, Kewangan dan Perbankan
SCHOOL OF ECONOMICS, FINANCE AND BANKING
Universiti Utara Malaysia

PERAKUAN KERJA KERTAS PENYELIDIKAN
(Certification of Research Paper)

Saya, mengaku bertandatangan, memperakukan bahawa
(I, the undersigned, certified that)
NURUL NAJWA ROSLEE (819821)

Calon untuk Ijazah Sarjana
(Candidate for the degree of)
MASTER OF SCIENCE (FINANCE)

telah mengemukakan kertas penyelidikan yang bertajuk
(has presented his/her research paper of the following title)

THE EFFECT OF COMPANY – SPECIFIC FACTORS ON FINANCIAL LEVERAGE: EVIDENCE FROM MALAYSIAN INDUSTRIAL SECTOR

Seperti yang tercatat di muka surat tajuk dan kulit kertas penyelidikan
(as it appears on the title page and front cover of the research paper)

Bahawa kertas penyelidikan tersebut boleh diterima dari segi bentuk serta kandungan dan meliputi bidang ilmu dengan memuaskan.
(that the research paper acceptable in the form and content and that a satisfactory knowledge of the field is covered by the dissertation).

Nama Penyelia (Name of Supervisor) : **Dr. Rusmawati Ismail**

Tandatangan (Signature) :

Tarikh (Date) : **09 Januari 2017**

PERMISSION TO USE

In presenting this dissertation/project paper in partial fulfillment of the requirements for a Post Graduate degree from the Universiti Utara Malaysia (UUM), I agree that the Library of this university may make it freely available for inspection. I further agree that permission for copying this dissertation/project paper in any manner, in whole or in part, for scholarly purposes may be granted by my supervisor(s) or in their absence, by the Dean of School of Economics, Finance and Banking where I did my dissertation/project paper. It is understood that any copying or publication or use of this dissertation/project paper parts of it for financial gain shall not be allowed without my written permission. It is also understood that due recognition shall be given to me and to the UUM in any scholarly use which may be made of any material in my dissertation/project paper.

Request for permission to copy or to make other use of materials in this dissertation/project paper in whole or in part should be addressed to:

Dean of School of Economics, Finance and Banking

Universiti Utara Malaysia

06010 UUM Sintok

Kedah Darul Aman

ABSTRACT

The main objective of this thesis is to examine the influence of company-specific on financial leverage of 88 industrial product companies listed in Bursa Malaysia. This study covers an observation period of 10 years (2005-2015) on panel data basis. Dynamic panel regression is applied as System General Method of Moment (S-GMM) suggesting that the research model is genuinely dynamic. The results of the study indicates that all variables Age ($SUSAge_{i,t}$), EPS Growth ($SUSEPSg_{i,t}$), Total Asset ($SIZETA_{i,t}$), Net Profit Margin ($PRONPM_{i,t,}$), ROE ($PROROE_{i,t}$), Quick Ratio ($LIQR_{i,t,}$), Cash ratio ($LICashR_{i,t)}$ and Prior Leverage ($LagLEV_{i,t-1}$) are significantly affecting the financial leverage ($LEV_{i,t}$). However, variables Age ($SUSAge_{i,t}$), Total Asset ($SIZETA_{i,t}$), Net Profit Margin ($PRONPM_{i,t,}$), and Quick Ratio ($LIQR_{i,t,}$) have a negative association with the leverage. Results of SUSEPSg, SIZETA, PRONPM, PROROE and LIQR support the pecking order theory while variables SUSAge, LICashR and $LagLEV_{i,t-1}$ support the trade-off theory. General outcome of this study reveals that company specific factors are affecting leverage.

Keywords: leverage, system-generalized method of moments (S-GMM), dynamic panel model, pecking order theory, trade off theory

ACKNOWLEDGEMENTS

First and foremost, praise to Allah for giving me the strength to complete this thesis. Secondly, my humblest gratitude to the Holy prophet Muhammad (Peace Be Upon Him) whose way of life has been a continuous guidance for me.

I would like to thank my thesis advisor Dr Rusmawati Bin Ismail, her guidance; continuous encourages with her precious experience and expert I manage to complete this research paper. She consistently steered me into the right direction whenever she thought I needed it. I would like to special thanks to Mrs Elliany Hawa and husband who always encourage, be referral and support me to further study. Special thanks to Mr Zailuddin who help me a lot in data process. A special dedication to my lecture, friends and families who have been kind, motivates and share knowledge and always give opinion if I lost. I learn a lot of things to complete this thesis.

To my four most precious people in this world- thanks you for providing me with unfailing support and continuous encouragement throughout my years of study and through the process of researching and writing this thesis. This accomplishment would not have been possible without them. My dear loving mothers-Jamaliah Binti Abd Manaff thank you for always understands, motivates your daughter and sacrificed your time to take care your grandchild. My father- Roslee bin Mohamad for always patient with me. To my one and only in sha Allah till Jannah love, best friends and fighters -Mohd Ruzawani Azrul a bunch of love sincerely from bottom of my heart for your support and sacrificed in order for me to complete my study. My dearest beloved son- Adam Haikal (Future captain and Islam fighters) is a journey for both of us, I'm really sorry my dear son because could not give you my 100 attention, pampered at the time you really need me, it's just like a blink of eye to see you from baby until currently you can walk and talk right. I always love you until Jannah. Thank you for this journey.

TABLE OF CONTENT

CHAPTER FIVE: CONCLUSION AND RECOMMENDATION

LIST OF TABLE

LIST OF FIGURE

LIST OF ABBREVIATIONS/NOTATIONS/GLOSSARY OF TERMS

Terms	Definition
BNM	Bank Negara Malaysia
GDP	Gross Domestic Product
IMF	International Monetary Funds
LEV	Leverage
$LEV_{i,t-1}$	Measure last year leverage
LICash	Cash Ratio
LIQR	Quick Ratio
POT	Pecking Order Theory
PRONPM	Net profit Margin
PROROE	Return on equity
S-GMM	System-Generalized Method of Moments
SIZETA	Measure Total Asset
SUSAGE	Measure Company Age
SUSEPSg	Measure Earnings Per share growth
TOT	Trade Off Theory

CHAPTER ONE

INTRODUCTION

1.0 Introduction

This study investigates the effect of company-specific factors on leverage of Industrial Product sector listed companies in Bursa Malaysia. This research is based on 968 firm-year observation for 10 years (2005-2015) on balance panel data. Financing is able to cover short term funding while giving the company to finance the growth of its business. Without financing, opportunities for a company to develop would be forgone and be taken over by those who have access to credit. Based on previous literature, (Ahmad & Ismail, 2012; Barakat, 2014; Mat Kila & Wan Mahmood, 2008; Myers, 1984; Titman & Wessels, 1988) the researchers claim that company debt policy is one of the crucial factor for a company to determine its survival through economic and financial crisis.

During the adverse economic conditions, it is important for a company to determine best strategies to manage their operation and debt liabilities. Leverage allows a company to borrow a large financial sum to invest into an infrastructure. A company can utilize the financed funds to make long-term investments, such as building a factory in order to free up cash. At the same time, company's retained income can be used for current expenditures like employees salary and creditor debts. Industries that imply the production of durable goods for example raw materials and heavy equipment have a tendency to be cyclical. Companies that are in cyclical industries such as industrial product can benefit from the process by locking the lower interest rates before the down cycle. This can be done by revolving the line of credit. Previous

research done by Alkhatib (2012) in determinants of leverage at the Jordanian Stock Exchange listed companies shows that in the industrial sector, there are significant relationships on liquidity and tangibility with leverage, whereas the service sector results showed that the growth rate, liquidity and tangibility have significant relationship with leverage. On the other hand, this study focuses on several important company specific factors such as sustainability, size, profitability, liquidity and prior leverage that effect company decision to determine its leverage.

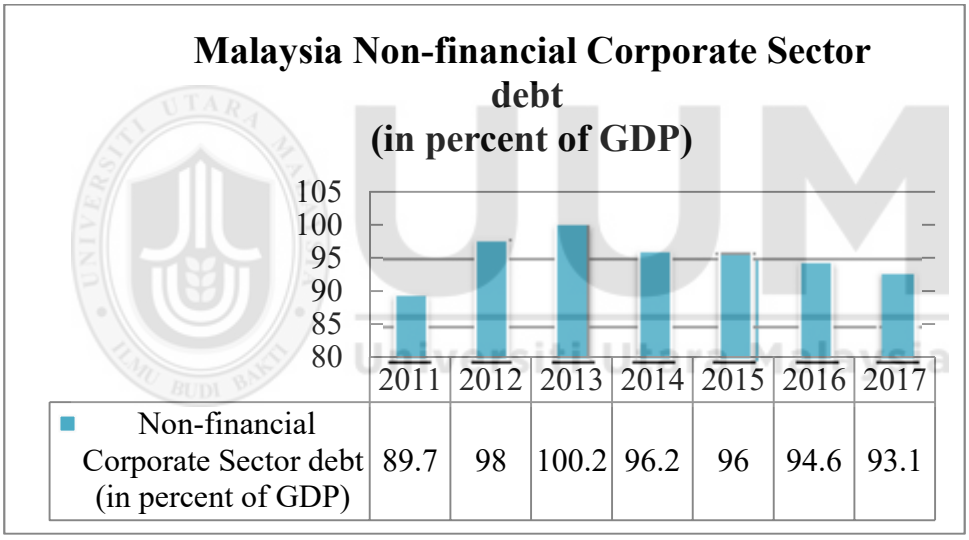
Numerous scholars came to a conclusion that emerging market is a promising area for economic and fundamental market research. The justification behind this is that emerging market offers significant out of sample test for remaining models (Bekaert & Harvey, 2002). Moreover, there is a significant move on international financial positions of emerging market economies since year 2005 until 2015. Consecutively, this has made emerging economies more exposed to a shift in international funding conditions and macroeconomic slowdown (Viral et al. 2015). Malaysia is one of the several countries that are listed in the emerging market. Looking specifically into Bank Negara Malaysia's (BNM) (2015) report, company leverage has increased but it remains within a sensible level. The average Malaysian non-financial company's debt-to-equity ratio rose to 46.8% as at end of September 2015. Even though there is a lower profitability in some business sectors that are more affected by lower commodity prices and weaker demands, overall debt servicing capacity of businesses remains comprehensive and continues to be maintained by adequate liquidity barriers.

Further evidence supporting report by BNM is found in the findings of International Monetary Fund Executive (IMF) (2016) which states that in 2016 Malaysia's corporate debt to gross domestic product (GDP) is 94.6%. The debt to GDP figure

shows a slight decrease of 1.4% in debt from the previous year. Despite the decrease, the percentage of debt is still considered high but it is moderately decreasing from year 2013 to 2016. A corporate debt risk measuring in terms of maturity, currency and exposure to commodities look controlled. IMF predicts that the corporate debt in Malaysia will continue to decrease in 2017. This is because the debts are for long and medium terms, thus it will slowly decrease from time to time. Leverage is proven as an important literary genre as it is important for the infrastructure of a company.

Figure 1.1

Malaysia Non-Financial Corporate Sector Debt to GDP



	2011	2012	2013	2014	2015	2016	2017
Non-financial Corporate Sector debt (in percent of GDP)	89.7	98	100.2	96.2	96	94.6	93.1

Sources: International Monetary Fund Publication Services (May 2016)

1.1 Background of the study

Modigliani and Miller (1958) found the relationship between firm value and capital structure hence has motivated a massive literature from academic theories to practical realities. Leverage or debt to asset or debt to equity is recognized as a result of events that determine a company's financing resource to run its business. In this research leverage is defined as total debt to total asset. The debt to asset ratio measures risk bearing capacity or bankruptcy. It shows the norm of a business is making use of financial funds. A company with a high leverage may face a risk of bankruptcy, if the company is unable to compensate its debt. In addition the company may not be able to find for new creditors in the future. A greater a company debt to asset ratio means riskier for equity investors. When a company has a high debt to asset ratio, it indicates that the company is going to pay more interest on its debt before net earnings calculation. The increase in possibilities of leverage to failure of debt repayment, leads to a high degree of risk faced by shareholders (Barakat, 2014). For that reason the financial policy attempts to harmonize between the impact of borrowing and the return on equity, along with the degree of risk faced by shareholders. Thus it can be assumed that harmonization between debt and equity to achieve the optimal mix of financial structure leads to reduced funds rate. A company that relies too much on leverage would increase their financial stability risk.

This study investigates the company-specific factors that affect leverage. Specific factors that affect leverage in this report are defined in terms of company sustainability, size, profitability, liquidity and prior leverage. Previous research by RIS Nawaiseh (2015) claims that effective financial leverage is vital due to its significant effect on profitability of a company and thus the existence of the company

in the market. Meanwhile, the company management team may face liquidity problems due to less investment in working capital because of the insufficiency of liquidity. On the other hands, Onofrei, Tudose, Durdureanu and Anton (2015) explains that the leverage seems to have a negative correlation with the size of company. The results are similar in the studies done by Çitak and Ersoy, (2012), Ezeoha (2008) and Onofrei et al. (2015). Prime and Qi (2013), conducted a research on the determinants of company leverage in China by using sample of manufacturing companies between 2003 until 2006. The study claims that private company finances itself when the total amount of leverage is positively related to the firm size and average leverage ratio and negatively related to profits, liquidity, and age. On the other hand, Ting (2016) studied the effect of dynamic relationship for the existence of a lagged leverage decision to leverage decision. The researcher concluded that Malaysian public listed companies optimize their leverage by changing their leverage and financing options next temporary deviations from target. Despite of the long experimental accomplishment, only few researches has been done by using dynamic panel model.

1.2 Problem Statement

Leverage is an investment approach of using borrowed money to produce massive investment returns. In finance, leverage as a commercial word refers to debt or obtained loan of fund in order to finance the purchase of a material (Vijeyaratnam *et al*, 2015). Leverage is considered as a vital way to increase investor's confidence on the company by showing positive cash flow in future when the company issues credit. The impact of sign factors can be defined as the value of equity at an appropriate level

of leverage can increase a company's worth, whereas relying too much on leverage would increase a company's financial stability risk.

The important concern in the field of finance is about the analysis of leverage and the determinants of a company's financing decision. The pace and consideration of studies show that this issue interests more researchers progressively. Due to diverse situations, many affecting factors might rise simultaneously for a company thus making it difficult for them to determine the best capital structure. The shortage of homogeneceity, theoretical grounding and innovation modeling in the economic and financial field is crucial to be explored (Onofrei *et al*., 2015). Thus it is important to investigate the specific factors that affect leverage.

Although many researches has been conducted on leverage, previous researchers are focused more on developed countries, whereas the studies on leverage in developing countries are scarce. According to Fowdar and Lamport (2009), researchers have measured the level of leverage under various variables such as company asset tangibility, size, profitability and growth prospects but research in capital structure choices of developing countries is still narrow. Moreover little is known about how the companies are operating their financing activities in these countries. This study coincides with a lack of research in developing countries and Malaysia is considered as one of it.

There are number of studies that use regression analysis as their research model to examine data. Only few researches were done using dynamic panel model (Anandasayanan et al., 2015; Alkhatib, 2012; Baloch et al, 2015; Fowdar & Lamport, 2009). The previous researcher used dynamic panel model as the guideline in study as

dynamic model reflects to the previous leverage decision and the effects on leverage adjustments (Ting, 2016; Ebrahim et al, 2015).

Reviewing the current literature, the researcher found the following major gaps, first precise analysis is necessary to investigate on leverage and to determine a company's financing decision. Secondly, most literature focuses on developed countries compared to developing countries. Then, little is known about the dynamic panel model. The design of the model is to complete the measurement on one of the variable that is significant with prior leverage. Next the results of this research can show the way for a detailed and combined method approach to Malaysian listed companies' leverage decisions. Finally, there are many research conducted on leverage but it is still crucial to be studied in detail as leverage can either increase the value of a company or increase the risk of financial stability of a company.

1.3 Research Question

- Do sustainability factors (AGE and EPS Growth) affect corporate leverage?
- Do size factors (Total Asset) affect leverage?
- Do profitability factors (NPM and ROE) affect corporate leverage?
- Do liquidity factors (Quick Ratio and Cash Ratio) affect corporate leverage?
- Does prior leverage affect corporate leverage?

1.4 Research Objective

The main objective of this study is to analyze the specific factors affecting leverage.

While specific objective is shown as follows:

- To investigate the impact of sustainability factors (AGE and EPS Growth) on corporate leverage.
- To investigate the impact of size factors on corporate leverage.
- To investigate the impact of profitability factors (NPM and ROE) on corporate
- To investigate the impact of liquidity factors (Quick Ratio and Cash Ratio) on corporate leverage.
- To investigate the impact of prior leverage factors on corporate leverage.

1.5 Significance of Study

From a company's perspective, the significant finding of this study will show the positive or negative impact the company's asset and its risk level. From the investor's perspective, this research finding will give a better idea to decide on investments in a company's fund. Furthermore the findings of this study will contribute to academicians, as the method that is being used in this study is advanced than using the normal regression. This study uses dynamic panel model and it can be used as a reference for further research under the field of specific factors that affect leverage. This study also enables managers to establish optimal liquidity and leverage levels and use healthier working capital management policies. Furthermore this research will stimulate policy makers to develop new standards in establishing a suitable level of liquidity for industries and to come up with more effective methods of managing liquidity level sectors, markets and firms. In addition, this research will enlighten the importance of information distribution and development of the capital market in order

to decrease the level of market failure. Finally, detailed understanding on the effect of specific factors and leverage on financial performance will also provide a base for further research especially in the areas of sustainability, size, profitability liquidity, prior leverage and leverage.

1.6 Scope and Limitation of Study

This study will focus on the factors affecting the leverage of Malaysian Industrial Product Sector companies. The data collected are retrieved from data Stream. The data obtained from year 2005 until year 2015. This data involves all the industrial sector companies that are listed in Bursa Malaysia. The limitations of this study are the measurement of leverage is done only for total debt to total asset. However, in future the measurement can be changed. Besides that, due to time constrain the data that have been used to measure the company-specific affect to leverage is only done for Industrial Product sector. In future the measurement can be increased to all companies listed in Bursa Malaysia.

1.7 Organization of the Thesis

The study is organized into five sections; section one is introduction, section two is reviews on the related literature on financial leverage and specific factors that influence leverage. Section three described the data, the research methodology, and the explanatory variables employed in the paper. Section four shows the results and discussion of data, and section five are conclusion and recommendations.

CHAPTER TWO

LITERACTURE REVIEW

2.0 Introduction

This chapter reviews the literature on which this research is based. Two relevant theories in explaining the relationship of leverage namely, trade off order theory and pecking order theory which is explained in Section 2.1. Then, Section 2.2 discusses the development of leverage followed by review on independent variable in Section 2.3. Section 2.4 shows previous empirical work. Lastly Section 2.5 concludes the literature discussed.

2.1 Underlying Theory of Research

A large and growing body of literature have been investigating the theories in capital structure that are the theory of trade off (TOT) and Pecking Order Theory (POT) (Ahmad *et al,* 2015; Ezeoha, 2008; Fowdar & Lamport, 2009; Iliev & Welch, 2010; Myers, 1995; Ting, 2016; Ebrahim *et al*, 2015). These theories explain the factors that impact the finance level in the capital structure by increasing or decreasing the debt capacity of companies. Both Trade off theory and Pecking order theory have their own perspective to explain the impact on the debt level. Another critical theory in capital structure is agency theory. Agency theory asserts an agent-type relationship which happens among shareholders and managers. Shareholders will instruct managers to act as agents and the managers need to act on behalf of shareholders.

2.1.1 Pecking Order Theory

Pecking order theory was introduced by Myers (1984) and Myers and Majluf (1984). They argue either company should follow a financing hierarchy to reduce the problem of information asymmetry among the company's managers-insiders or the outsiders-shareholders. Corporate leverage's most leading theory of capital structure is the Pecking Order theory. Based on the theory, either the company chooses internal or external financing and debt to equity when the company issues securities (Myers,1984). In asymmetric information, pecking order theory prioritizes companies to fund their new business through self-financing, then followed by debt and then by issuing common share. If a company has insufficient internal capital, second option is to finance the investment by obtaining external financing, and if the company does so, the company could select between the diverse external finance sources to minimize their asymmetric information cost. Outside investors wisely discount the company's common stock price when managers issue equity as an alternative to the risk-free debt. This model was introduced by Myers and Majluf (1984). To stay away from this discount, managers stay away from equity as possible. The Myers and Majluf (1984) model expects that managers will follow the pecking order. Firstly the company will use internal funds, then by using risky debt and finally make use of the equity. Company needs to maintain their profits and repair financial slack to keep away from increase of external finance in the future, this occurs when there are no new investment opportunities. The pecking order theory favors the market-to-book ratio as a measure of investment chances. With this explanation in mind, Myers (1984) and Fama & French (2000) noted that a simultaneous relationship between the market-to-book ratio and capital structure is difficult to make up the static pecking order model. Leverage will be greater towards a debt capacity when there is a duplication of the

static version on large investment opportunities. To the extent that great past market-to-book actually happens together with high past investment but, results propose that duration tend to push leverage poorer. The pecking order and the trade-off theory are being kept empirically proven. Empirical tests analyze whether the pecking order or the trade-off theory are best predictors to observe capital structures and it was found that both theories support the capital structure (Sunder & Myers, 1999; Fama & French, 2002). Studies done by previous researchers Ahmad and Ismail (2012), Çitak and Ersoy (2012), Ezeoha (2008) and Onofrei *et al.*, (2015) claim that company specific factors such as growth, liquidity, age and profitability explains the pecking order theory.

2.1.2 Trade off Theory

Trade-off theory which takes company trade off as the advantage, costs of debt and equity financing, and discovers an ideal capital structure after accounting for market imperfections such as taxes, bankruptcy costs and agency costs. The meaning of trade-off theory is used by separate authors to report the related theories. Among all the theories, an administration running a company analyzes the numerous costs and benefits of different leverage strategies. The theory normally expects an internal resolution to make sure the marginal costs and marginal benefits are balanced. The earliest version of the trade-off theory is established from the debate of Modigliani-Miller theorem. When corporate income tax is included in the original as not relevant, it shapes an advantage for debt so it is present as a shield to earnings from taxes. As the company's objective role is direct, and there is no balance out cost of debt, this suggests 100% debt financing. A few types of Myers' explanation on the trade-off merit have been debated:

i. The target is not straight obvious. It may be attributing from evidence, but that is based on adding a structure. Different papers improve structure in different manner.

ii. The tax code is more complex to propose than the proposed theory. It is depending on which type of the tax code are incorporated; different conclusions regarding the target can be achieved.

iii. Bankruptcy costs need to be deadweight costs rather than transfers from one claimant to another. The essence of these costs is very important based on conclusion by Rajan and Zingales (1995) that obvious candidate is bankruptcy.

Trade-off theory dynamic version clearly states that the adjustment behavior of the leverage ratio where adjustments happen when the cost of deviation from the target exceeds the cost of adjustment towards the target (Abdeljawad *et al.* 2013)

Furthermore, previous researchers Abdeljawad et al. (2013), Ahmad and Ismail (2012) and Çitak and Ersoy (2012) claim that company specific factors such as size and adjustment of leverage could explain the trade off theory.

2.1.3 Agency Cost Theory

An agent type relationship exists between shareholders and managers are known as Agency Theory. Based on the theory managers act as agents of shareholders and are required to act in the interest of the latter. Sometimes managers do not perform their job based on the interests of shareholders, the managers seek a chance to get more benefits such as higher salaries, additional earnings, job security and occasionally acquiring assets or cash flow. Based on most up-to-date research has been done, the perfect way to monitor managers still could not be achieved even though shareholders prevent such transfers of value (through the control mechanism, monitoring and

oversight). Leverage is one of the key elements of the capital structure of most of the firms which may be taken as an opportunity to maximize the shareholders' wealth. Yet, if leverage is not carefully used, it may end in bankruptcy, jeopardizing the survival of the company. On the helpful side, the use of leverage can act as a control for managers to prudently use the financial funds and to pay obligations on time. Therefore, the managers tend to act in line with the shareholders' interests as failing to do so may call for their replacement by the new managers. This may build up the principal and agent relationship in view of the agency theory (Baloch et al., 2015).

2.2 Empirical Evidence Relating to Leverage

High degree of risk faced by shareholders is led by financial leverage; therefore it raises the chance of its inability to service the debt. Thus a great financial policy attempts to harmonize between the effect of borrowing and the return on equity, as well as the degree of risk faced by shareholders. As a result, the optimal mix between debt and equity harmonize the financial structure thus lead to reduced funds cost (Barakat, 2014).

In effort to control the factors that are correlated with leverage, defining the leverage is crucial. Difference sensible definitions have already been used. One of the main concerns that have been investigated is whether to use market leverage (debt divided by the sum of book debt plus the market value of equity) or book leverage (debt divided by total assets). Initial empirical work has a tendency to focus on book leverage. The study of leverage by Myers (1977) suggests debt is preferable to be retained by asset in the place that have growth opportunities therefore managers focus on book leverage. Book leverage is also chosen due to financial markets fluctuation

which is a big deal. Thus, managers are said to consider market leverage numbers which are unreliable guidance to corporate financial procedures.

Market based measure is the focus on the next literature. According to Welch (2004), in order to balance the left hand side of a balance sheet, a plug in number is being used instead of a managerially relevant number. Based on this matter, book value of equity could even be negative. Ideally market and book leverage ratios are not identical. This is because the book value is measured in backward looking. In other words, book value measures by historical data. Generally, market value is predictable as it tends to be forward looking. Thus, it is a reason why these two concepts does not match (Frank & Goyal, 2007). In this research, book value leverage (debt to asset), is being used as dependent variable.

2.3 Empirical Evidence relating to the effect of Company-specific factors on Leverage

This section discusses the effect of company-specific factors on financial leverage. Based on previous literature, a number of company-specific factors were identified as independent variables for this research. They are sustainability, size, profitability, liquidity and prior leverage.

2.3.1 Sustainability (Age and EPS Growth)

The word sustainability refers to the capacity of managements to preserve a company over a long period of time. In this research, sustainability is being referred as the company age and company growth in earning per share (EPS). Older companies have a greater capacity to retain and accumulate earnings as claimed by Pecking order theory. On contrast the existence of a positive relationship between age and debt ratio

is claimed by Trade off Theory, the fact that mature firms have better reputation and more experience can reduce agency costs through a positive signal on the quality of potential investments (Adair, Adaskou, & McMillan, 2015). Investigation of relationship among financial performance and age of company is important for both practice and theory. As the company grows older the performance of company also declines, this would describe why most of the company in the end is being taken over (Loderer & Waelchli, 2009). In fact age could help company become more competent. However, age also makes the company's knowledge, abilities, and skills dated to induce organizational waning. Agarwal & Gort (2002), argues that company age actually gives impact to company performance. The organizational inertia operating in old companies is further being debated by the researchers. The argument states that old company tends to make them fixed and incapable to appreciate changes in the environment. According to Liargovas and Skandalis (2008), older company enjoy the benefit of learning as older company is more skilled and not subjected to the liabilities due to a superior performance compared to amateur companies. Zare *et al*. (2013) studied the firm size, asset structure and age effects on financial leverage on the companies listed in Tehran stock exchange. Result from the studies indicates that the company's financial leverage is influenced by company age. This view is supported by Ezeoha (2008) that leverage is positively significant to company-age.

In this study growth is defined as the annual percentage growth in the company earning per share between two continuous years divided by the preceding year. An indication of a company earning is strong when there is rise in growth rate. As stated by Pecking Order Theory, companies with high growth opportunities must accept major investment projects to produce greater needs for finance. Previous studies have reported that leverage and EPS are positively related and when the earnings of the

company are higher than the fixed financial charges it is to be paid for the lenders (Marmangalam & Govindasamy 2010). The higher growth companies should prefer debt finance rather than equity finance as being proposed by pecking order theory. This is because the internal funding is insufficient due to high asymmetric information (Ali, 2011). Therefore, it will have a positive relationship between debt level and growth opportunity. Other researchers have found that there is opposite relationship between financial leverage and earning per share. The findings are in contrary (Barakat, 2014; Haron, 2014; Mat Kila & Wan Mahmood, 2008) with the researchers who found an opposite and negative relationship between financial leverage and earning per share. Companies which have future growth opportunity tend to be formed of more intangible assets be likely to borrow less debt as compared to companies that have more tangible assets (Yusuf *et al*., 2013). Consequently, a negative relationship between leverage and growth opportunities is suggested by trade off theory (Niu (2008) as cited in Miras, Hamza, & Hussain (2015)

2.3.2 Size (Total Asset)

In this study, size is being measured by the natural logarithm of total assets. Small companies will face higher risk therefore it becomes a drawback when the company wants to raise capital through debt issue. So the company will utilize its retained earnings, equity capital and short term debt to finance the activities. Consistent with the trade-off theory, risks in large companies are lower due to diversification done by various sectorial or industrial activities and trading in specialized products thus low possibility of being bankrupt. Due to this, there is a positive relationship between the size of company and leverage. The amount of leverage in a company's capitalization has been revealed to be directly related to its relative return on growth of earnings, common equity, market valuation and price appreciation.

Company will decide on how much debt to equity financing it needs to weight the cost and get benefit from the decision, as explained in the trade-off theory. Usually, bigger size companies will have a better credit ratings, constant cash flow, and lower risk of bankruptcy compared to small business companies. Furthermore transaction costs could be lower for issuing long-term debt at a favorable small rate of interest for a bigger company. As a result, since it is easier for larger companies to raise funds from creditors, a positive sign is expected between firm size (Alkhatib, 2012; Prime *et al.* 2013; Yusuf *et al*., 2013). In addition, pecking order theory cites that the company size and leverage level has negative relationship. The result is supported by (Onofrei *et al*., 2015; Rajan & Zingales, 1995). It conveys that the greater the company, the lower the leverage level of the company (Yusuf *et al*., 2013).

2.3.3 Profitability (Net Profit Margin and ROE)

Return on company total asset is being measured as the company profitability. Pecking order theory recommends that company will reduce their external funding when the company becomes more profitable. Thus it is an ultimate signal to creditors that they have lower bankruptcy risk (Ali, 2011; Rajan *et al*, 1995; Titman *et al*, 1988). The theory suggests a negative relationship between leverage and profitability (Miras *et al*., 2015). In other cases, an approval to the company is less risky to the creditors; highly profitable companies can issue debt at low rates of interest. Furthermore, profitable company generates more income and uses a lower amount a debt capital compared to small profit companies (Rajan *et al*, 1995; Titman *et al*, 1988). Moreover, advantage of being a profitable company is that the company uses its profitability to lower the asymmetry information to investors, creditors and interested users (Myers & Majluf, 1984). Hence, there is relationship between leverage and profitability. Based on hypothesis, financial leverage and company

profitability have a significant negative relationship. The previous research done by Ahmad *et al*. (2015) claims that based on statistical test, there is a negative significant relationship between leverage and profitability among firms in cement manufacturing sector of Pakistan. Previous studies support the test result (Ezeoha, 2008; Haron, 2014; Titman *et al*. 1988). More likely profitable companies rely on their internal capital to finance their operations. Thus, a negative relationship between profitability and financial leverage is highly significant and has been confirmed. On the other hand, there is positive correlation between leverage and profitability as suggested by trade-off theory. To gain tax shield, a high-profitable company will borrow money from financial institutions. Taxable income will be reduced when debt interest acts as tax-deductible expense. For that reason, an indicator of management efficiency is measured by using company profitability. The growth demand shares in the financial market by investors show the increase of market value. Therefore, return on equity (ROE) and net profit margin (NPM) is selected as an indicator of company profitability in this study.

2.3.4 Liquidity (Quick Ratio and Cash Ratio)

Extreme amount of current assets owned by a company would perhaps grow the chances of internal funding resulting in a relation between leverage and liquidity (Myers, 1977). Liquidity is calculated by dividing current assets to current liability. Liquidity signifies the capital amount that is available for use as an investment and expenditure. It also shows the ability of a company to meet its current liabilities as it matures. The relationship between liquidity and leverage has been widely investigated by (Alkhatib, 2012; Barakat, 2014; Mustapha & Chyi, 2011; Onofrei *et al*., 2015; Rabiah, Mohd Sabri, & Khairudin, 2012; Šarlija & Harc, 2012; Shamaileh & Khanfar, 2014). Some studies have found that there is a positive significant relationship

between liquidity and leverage (Alkhatib, 2012; Marete, 2015; Šarlija & Harc, 2012). Contrarily other empirical studies have shown that there is a negative correlation (N. Ahmad & A. Ismail, 2012; Haron, 2014; Mat Kila & Wan Mahmood, 2008; Onofrei *et al*., 2015; Sibilkov, 2009; Titman *et al* 1988). As stated by trade-off theory, companies with great liquidity assets should borrow more because the companies are able to meet contractual responsibilities on time (Miras, Hamza, & Hussain, 2015). Unlikely, the pecking order theory proposes high asset liquidity companies should prefer internal funding rather than going for external funding (Mat Kila *et al*, 2008; Mustapha *et al*, 2011). So, the companies have to create liquidity reserve from retained earnings and use those funds for their operations and investments. Thus, pecking order theory states that liquidity and debt level has negative relationship (Mustapha *et al*, 2011).

Findings also reveal that liquidity of a firm proxy by quick ratio is having the most significant effect on the debt ratios. Mat Kila *et al*.(2008) highlights the result from their research that quick ratio is significantly negative to leverage. Company with high liquidity tends to use less debt and provides an indication that firms generally finance their activities by following "pecking order" theory. Companies with high liquidity are able to generate high cash inflows and in turn, can employ the excess cash inflow to finance their operations and investment activities. Therefore, they use less debt compared to firms with low liquidity as suggested in "pecking order" theory.

2.3.5 Prior Leverage

There is no identified method to assist financial managers in selecting the optimal leverage level although there are theories and empirical researches suggesting there is an ideal capital structure (Eriotis *et al.* 2007). Mostly, finance managers express less concern about the accurate optimal level of debt instead they are concerned whether their company is overleveraged or underleveraged. Based on previous researchers, they could not find any evidence on how a company can adjust its debt ratio against target debt ratio. Research done by Ting (2016) discovers a presence of lagged leverage decision to leverage decision by using dynamic panel model. The results are shown using the System-Generalized Method of Moments (S-GMM) to justify that Malaysian public listed companies are adjusting debt and the speed of adjustment is approximately 21% to 26% per year. This indicates that Malaysian public listed firms adjust their leverage and change their financing following temporary deviations from target in order to return leverage towards its optimum. The research on lagged leverage decision is scarce. By adding the lagged leverage as another variable as it could help to contribute a small portion on the study of capital structure. Previous researchers found evidence that companies adjust their leverage by using system GMM approach (Abdeljawad *et al*. 2013; Haron, 2014). Through dynamic model, it allows the identification of target capital structure and the approximation of the magnitude of adjustment speed if these industrial sector companies are diverged from their target. The dynamic trades off theory explains adjustment towards targeted leverage (Abdeljawad *et al.*, 2013; Haron, 2014).

2.4 Previous Empirical Research

There are large numbers of researchers focusing on the study to determine the effect of financial leverage. The debt-to-asset ratio measure reflects solvency, that is, the risk-bearing ability. To determine the effects of leverage, Zare, Farzanfar and Boroumand (2013) have compared firm age, size and asset structure in the firms listed in Tehran stock exchange. Data were gathered from 69 firm members of Tehran stock exchange in the years ranging from 2001–2010. The study was conducted by using regression and Wald's test and proofs indicated that financial leverage is influenced by the three variables namely the firm age, size and asset structure for the firms listed in Tehran stock exchange. Also a company's life cycle influences the manager's decisions to secure finance.

To determine the effects of leverage, Alkhatib (2012) compared industrial and service sectors by using regression method. The study found that when the sector regress separately, the industrial sector showed that liquidity and tangibly have significant relationship with leverage, whereas the results for the service sector revealed that the growth rate, liquidity, and tangibility have significant relationship with leverage. This finding is supported by Barakat (2014) in the Saudi industrial sector companies, by using multiple regression analysis it is presented that the strongest relationship is between capital structure and company's stock value.

In Malaysia, studies regarding determinacies of leverage factors such as firm size, profitability, tangibility, non-debt tax shields, growth opportunities, liquidity, business risk and effective tax rate, prior leverage are being conducted. By using regression, the research period from 2007-2009 showed that size, profitability, tangibility, non-debt tax shields and growth opportunities affect leverage positively while business risk and effective tax rate have negative relationships with leverage (Rabiah, Mohd

Sabri & Khairudin, 2012). Similar study was done by Mat Kila *et al*. (2008) but the researcher used pooled ordinary least squares (OLS) valuations. The result shows that the size, liquidity and interest coverage ratio have significant negative relation to total debt. On the other hand, the study finds insignificant negative relation between capital structure and growth of the company, stated by the annual changes of earnings.

In addition, another study investigated the factors that affect leverage such as (i) profitability, (ii) tangibility, (iii) liquidity, (iv) size, and (v) growth opportunity based on the country Iasi in Romania (Onofrei *et al*., 2015). The researchers claim that leverage is negatively correlated to tangibility, profitability and liquidity. The size of the firm and the growth opportunities can also have a negative impact on the leverage, but to a lower extent.

Furthermore, Ting (2016) provides in-depth analysis of the method, presenting evidence of the dynamic relationship by the presence of a lagged leverage decision to leverage decision by using (S-GMM) method. Dynamic panel model is established to find the possible effect of previous leverage decision on leverage adjustments speed of publicly listed companies in Malaysia for the period of 2004-2013. The findings reveal that Malaysian public listed companies adjust their leverage and change their financing following temporary deviations from target in order to return leverage towards its most favorable state.

2.5 Conclusion

As a summary, this chapter provides the definition of underlying theories, financial leverage, specific factors that affects leverage and the existence of literature that discusses in depth about the previous empirical research studies. This section is discussed based on the keywords that relates to the studies on relationship between leverage and the company-specific factors.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

There are numerous studies done on factors that affect leverage money as described in chapter 2. Each study has different approach or method to measure the causality relationship. This study employs the method from Ting (2016). This study implements system-generalized method of moments (S-GMM) method which is described in this chapter. This chapter is divided into two sections namely, research design and research methodology. The first section discusses about research design which includes data description and model of research, while the second section discusses the research methodology of this study including the models applied in this research such as Multicorllinerity test and Dynamic Model, to examine the causality relationship between leverage and the specific factors.

3.1 Data

This sub- section discusses on the sources of data and the structure arrangement for collecting, as well as data selection that desired information can be properly obtained.

3.1.1 Data and sources of data

The data set used in this analysis comes from the annual balance sheet and income statement of industrial product companies listed in Bursa Malaysia. The data were extracted from the DataStream database system.

3.1.2 Sample of study

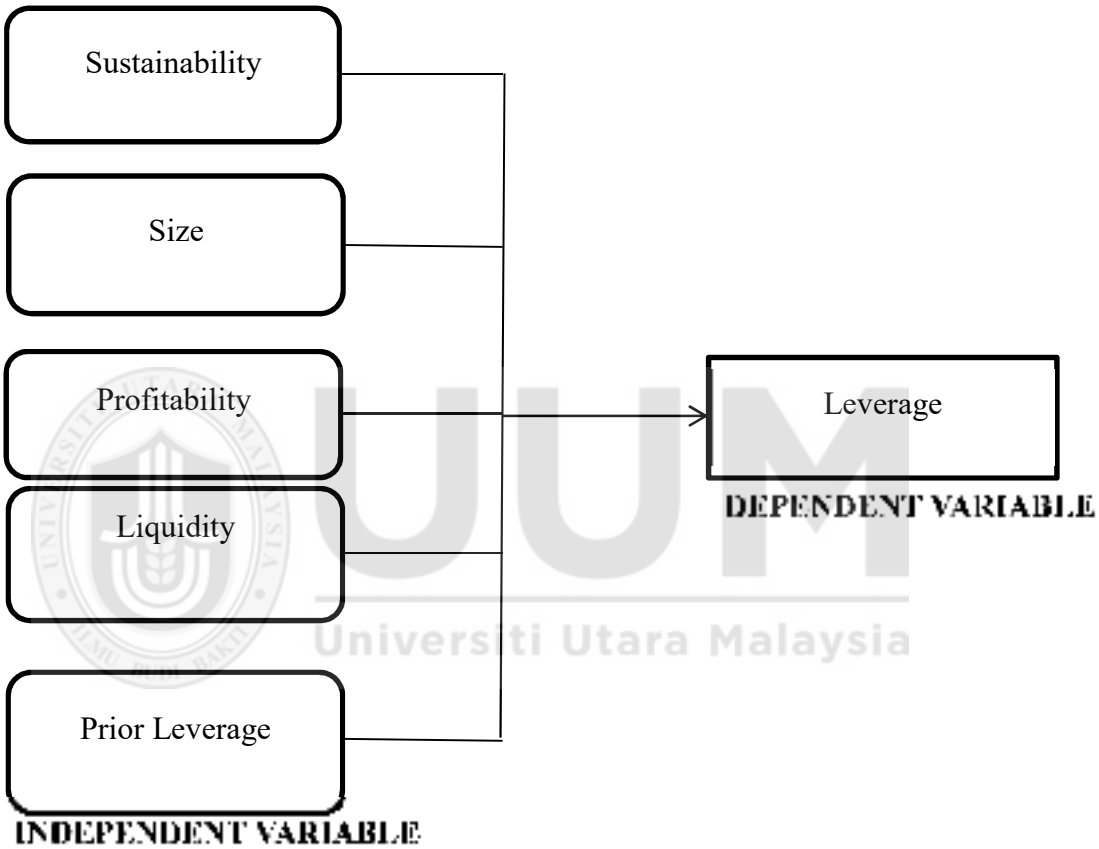
This empirical test of this study is based on a sampling frame of all companies in Industrial product sector listed in Bursa Malaysia. The industrial sector companies were chosen because this sector contributes to eighty percent of country's export and it is an important sector for economic growth. This study covers 10 years (2005-2015) observation period on panel data. The sample data is constructed according to the following sample selection criteria:

a) Only public listed companies on industrial product sector were selected due to the accessibility of related information.
b) All companies that have been listed on industrial product sector after year 1998 were chosen. This first stage of data screening is done to meet the requirements for leverage calculation based on 5 years rolling data (examples: 2000-2004, 2005-2009, 2010-2014). Based on this criterion, 143 companies were selected.
c) The second data screening was done by excluding companies that have age less than 10 years from year 2005. Companies with plenty of data errors were also eliminated. Based on this screening process, the dataset was reduced to 88 companies. This final sample represents panel data set of 968 firm-year observation for ten years (2005 until 2015).

3.2 Conceptual Framework

The theoretical view and literature discusses in chapter two motivate the development of leverage and specific-factors model for this study. The theoretical framework for the effect of company-specific factors to debt to asset is presented in Figure 3.1.

Figure 3.1
Research Framework



The theoretical framework in figure 3.1 is the structure used to analyse the effect of company specific factors on leverage. The motivation to this research is the importance an appropriate level of leverage for company. Leverage can increase the company value but too much leverage can also increase the risk level of company financial stability.

3.2.1 Dependent Variables

The dependent variable used in this research is leverage (LEVi,t) or total debt to asset as shown in the theoretical framework.

3.2.2 Independent Variable

The independent variables used in this research are the company-specific factors. Based on the theoretical framework the specific factors were categorized into sustainability, size, profitability, liquidity and prior leverage. Sustainability is referring to age ($SUSAge_{i,t}$) and growth of earning per share ($SUSEPSg_{i,t}$). Size is referring to logarithm of total asset ($SIZEA_{i,t}$). Profitability is referring to net profit margin ($PRONPM_{i,t}$) and return on equity ($PROROE_{i,t}$). Liquidity is referring to quick ratio ($LIQR_{i,t}$) and cash ratio ($LICashR_{i,t}$).The last variable is prior leverage ($LagLEV_{i,t-1}$)

Table 3.1
List of Variable and Acronym

DEPNDENT VARIABLE		**ACRONYM**	**Definition**
Leverage %		$LEV_{i,t}$	Total Debt /Total Asset
INDEPENDENT VARIABLE		**ACRONYM**	**DEFINATION**
1	Sustainability (AGE) Year	SUSAgei,t	Company age of business
2	Sustainability (EPS Growth) %	SUSEPSgi,t	(Earning per share this year-Earning per share last year)-1
3	Size (Total Asset) Times	SIZETAi,t	Natural Logarithm Of Total Assets
4	Profitability (NPM)%	PRONPMi,t	Net Profit /Revenue
5	Profitability (ROE)%	PROROEi,t	Earnings before interest, tax, and depreciation/ Total Equity
6	Liquidity (Quick Ratio) Times	LIQRi,t	(Current Asset-Inventories) /Current Liabilities
7	Liquidity (Cash Ratio) Times	LICashRi,t	All Cash /Current liabilities
8	Prior Leverage %	LagLEVi,t-1	Leverage of last year

3.3 Hypothesis Development

Based on the study objective to determine the relationship between the financial leverage and associated variables, this research addresses these issues: Five control variables are included in the dynamic panel model, to determine their effect on leverage;

Leverage is positively significant to company age (Ezeoha, 2008; Zare *et al*., 2013). There is a negative relation between leverage and age (Prime *et al*. 2013). Leverage and EPS are positively related (Marmangalam & Govindasamy (2010). There is negative relationship between financial leverage and earning per share (Barakat, 2014; Haron, 2014; Mat Kila *et al*. 2008).

- Hypothesis 1: There is relationship between the sustainability ($SUSAge_{i,t}$) (SUSEPSgi,t) and financial leverage ($LEV_{i,t}$)

There is a positive relationship between firm sizes (Alkhatib, 2012; Prime *et al.* 2013; Yusuf *et al*., 2013). The size of the firm shows that there is a negative correlation with leverage, a finding that is consistent with previous research carried out (Onofrei et al., 2015; Rajan *et al*, 1995).

- Hypothesis 2: There is a relationship between the firm size ($SIZETA_{i,t}$) and financial leverage ($LEV_{i,t}$)

There is a significant negative relationship existing between financial leverage and the profitability (N. Ahmad *et al*., 2015; Ezeoha, 2008; Haron, 2014; Titman *et al.* 1988).

- Hypothesis 3: There is a relationship between the profitability (PRONPMi,t) (PROROEi,t) and financial leverage (LEVi,t)

Some studies found there is significant relationship between liquidity and financial leverage (Alkhatib, 2012; Marete, 2015; Šarlija & Harc, 2012). Contrarily, other empirical studies have shown that there is negative correlation (N. Ahmad *et al*. 2012; Haron, 2014; Mat Kila *et al.* 2008; Onofrei *et al.*, 2015; Sibilkov, 2009; Titman *et al*. 1988).

- Hypothesis 4: There is a relationship between the liquidity (LIQR i,t) (LICashi,t) and financial leverage (LEVi,t)

There is a significant positive relationship existing between financial leverage and the lagged leverage (Abdeljawad et al., 2013; Haron, 2014; Ting, 2016).

- Hypothesis 5: There is a positive relationship between the prior leverage (LEV-i,t) and financial leverage (LEVi,t)

3.4 Research Design

This sub section begins with descriptive data structure followed by selecting the statistical estimator approach for accounting as well as market-based data.

3.4.1 Data Structure

This study handles panel data. The application of this type of multi-dimensional data set has an extra advantage compared with conventional cross-sectional data set. By pooling a set of repeated time-series observation (T) on multiple entries, i.e companies (N), it creates more total observation (NT). A huge number of information data points can promote more degree of freedom, and reduce multi-collinearity among continuous independent variables and enhancing the accuracy of econometric estimates. The above mentioned qualities allow the dynamic nature of bidirectional relationship between risk and return to be successfully analyzed.

The panel dataset was created by using MS-Excel 2010. Firstly the ready used data and raw data related to the selected variables were saved into Excel spreadsheet. After selected variable were chosen, the calculation of mean, standard deviation as well as lower limit and upper limit were done using Excel. Outliers were selected and altered using 3-sigma method. To avoid the data from being loose, winsorization process was used. After the panel data was wholly ready, it was moved into economic software (Stata) version 12.0 where the analysis for this study has been inserted for multiple regression equation. Multicollinearity test between independent variables using the Pearson's correlation was inserted to all models. Besides that, variance inflation factor (VIF) was applied to check the survival of no serious multicollinearity problems between independent variables.

3.5 Econometric Model Specification and Statistical Method

Based on the hypothesis, it is necessary to set up a regression model that focuses on the determination and estimation of the relationship between dependent variable and independent variables. An econometric model for this study is presented in the general dynamic empirical model as shown below:

$$\boldsymbol{LEV_{i,t}} = \boldsymbol{\alpha_0} + \boldsymbol{\alpha_1 SUSAge_{i,t}} + \boldsymbol{\alpha_2 SUSEPSg_{i,t}} + \boldsymbol{\alpha_3 SIZETA_{i,t}} + \boldsymbol{\alpha_4 PRONPM_{i,t}} + \boldsymbol{\alpha_5 PROROE_{i,t}} + \boldsymbol{\alpha_6 LIQR_{i,t}} + \boldsymbol{\alpha_7 LICashR_{i,t}} + +\boldsymbol{\alpha_8 LagLEV_{i,t-1}} + \boldsymbol{e_{i,t}} \quad \textbf{(3.1)}$$

Where i=1, N represents the company and t=1, T represents time period. Variable $LEV_{i,t}$ is leverage i's leverage in year t respectively. The company specific variable $SUSAge_{i,t}$ refers to sustainability company age i's in year t. $SUSEPSg_{i,t}$ refers to sustainability earning per share growth i's in year t. $SIZETA_{i,t}$ refers to the size of total asset i's in year t. $PRONPM_{i,t}$ refers to profitability net profit margin i's in year t. $PROROE_{i,t}$ refers to profitability measure return on equity i's in year t. $LIQR_{i,t}$ is liquidity measuring quick ratio i's in year t, $LIRCashR_{i,t}$ is liquidity measuring cash ratio i's in year t. $LAgLEV_{i,t-1}$ is lagged leverage i's in year t. $\varepsilon\_{i,t}$ the error terms. Time dummies are included in the specification (where appropriate) and total asset variable is transformed into logarithms.

This study implements the most common dynamic panel model that is the GMM variation. The method is known as system-GMM (S-GMM) estimator (Arellano and Bond, 1991; Blundell and Bond, 1998). This dynamic panel data estimation approach is a continuation of the earliest GMM estimator by Arellano and et al. (1991), that is well known as different GMM (D-GMM) estimator. The fundamental principal of the D-GMM is to remove the unobserved individual specific effect by fulfilling first-differenced equation with suitable lagged levels of the dependent and endogenous

variable as tools. Despites that, execute first differencing lessen the variation in all regressors which leads to weak problem recognition and increases the evaluation of errors. As a result, S-GMM is employed.

The S-GMM method consolidates moment condition for model in the first difference with moment condition for model in levels. Regressor in the level is kept while the process is completed by using lagged variable at levels as instrumental variable in the transformed equation whereas lagged difference variable is used as instrument. Hence the procedure agrees the introduction of more instruments, further decreasing the finite sample bias and substantially expanding the estimation efficiency (Baltagi, 2008; R Blundell, Bond, and Windmeijer, 2000). The overall identifying narrow is tested using Sargan's (1958) test incorrect description. In the meantime, Arellano - Bond (1991) tested for first serial correlation (AR(1)) and second order serial correlation (AR(2)) of the residual which are applied to verify GMM model competence.

The S-GMM estimation procedure is performed in two variation steps which are:

i. The procedure starts by computing the one-step GMM estimates. Homoskedasticity and independent residual are assumed in the first step. After that, by using the one-step residual, a more successful two step GMM estimator is calculated.

ii. Two step S-GMM estimator method is recognized as an advanced and effective approach since this estimator uses optimum weighted matrices. The modification is completed by obtaining an estimated variance covariance matrix (VCM) which is more robust to heteroskeadasticity. The modification will not change the point evaluations. Only evaluation of VCE and standard error are changed.

By alterating the standard errors of the two-step GMM estimates, this estimator is more fit in dealing with the issue of endogeneity for some explanatory variable and misses variable bias. Most essential, the method is efficient in offering acceptable and consistent estimator under the above mentioned issues.

3.6 Chapter summary

This chapter clarifies the research methodologies for this study. The independent and dependent variables of this study are explained in detail in this chapter. Hence, the estimator of the coefficients for the models in this study is carried out from short panel data by using dynamic panel estimation approach. The common estimation of GMM estimator known as system generalized method of moments (S-GMM) estimator (Arellano and Bond, 1991; R Blundell et al., 2000) was used to reveal the company specific factors effecting leverage. Equation 3.1 was applied to achieve the objective of this research.

CHAPTER FOUR

ANALYSIS OF RESULT AND DISCUSSION

4.0 Introduction

This chapter covers data analyses and findings of the empirical test based on the research process in chapter three. Firstly this chapter begins with descriptive statistics and continues variables. Then, the correlations between the independent variable for every model will be illustrated. Subsequently, the research models will be tested using dynamic panel data analysis. In order to explain the importance of dynamic issue, the system generalized method of moments (S-GMM) is used. In the following section, the standard diagnostic test is executed to evaluate the reliability and consistency of the S-GMM estimation procedure in determining the most qualified dynamic specification. Then the research finding is shown in dynamic specification. At the end of this chapter the overall view of analyses of results and findings are presented.

4.1 Descriptive Statistic of Variable

Descriptive statistic is used to describe in general about the total descriptive data variable. Table 4.1 presents descriptive statistics for the variables in this model. In this chapter, the standard statistical data analysis such as number of observation, mean, standard deviation, minimum and maximum values are used to estimate and explain the general statistical attributes of all samples and all selected variables.

Table 4.1

Descriptive Statistics of Continues Variables over the Period 2005-2015

Variable			Obs (N)	Mean	STD	Min	Max
Dependent Var	$LEV_{i,t}$		957	0.76	3.86	0	79.74
Independent Var	Sustainability	$Age_{i,t}$	968	19.65	6.75	10	33
		$EPSg_{i,t}$	749	0.54	8.04	-2.07	214.11
	Size	$TA_{i,t}$	965	2024758	5581536	29587	103000000
	Profitability	$NPM_{i,t}$	968	5.49	23.86	-310.83	191.4
		$ROE_{i,t}$	965	278.74	160.18	1	535
	Liquidity	$QR_{i,t}$	963	1.68	1.86	0.08	15.48
		$CashR_{i,t}$	967	0.25	0.35	0	3.32
	Prior Leverage	$LagLEV_{i,t-1}$	870	0.78	4.03	0	79.74

The dynamic panel model includes 968 observations over ten years (2005 -2015) for 88 industrial product sector listed companies in Bursa Malaysia. Based on Table 4.1 above, the descriptive statistic is presented on the independent variables, namely $SUSAge_{i,t}$ $SUSEPSg_{i,t}$, $SIZETA_{i,t}$, $PRONPM_{i,t}$, $PROROE_{i,t}$, $LIQR_{i,t}$, $LICashR_{i,t}$ and $LagLEV_{i,t-1}$ while $LEV_{i,t}$ as dependent variable. The number of observation is not at the optimum level for $LEV_{i,t}$, $SUSEPSg_{i,t}$, $SIZETA_{i,t}$, $PROROE_{i,t}$, $LIQR_{i,t}$, $LICashR_{i,t}$ and $LagLEV_{i,t-1}$ because of missing data provided by Datastream.

All variables have positive means. In addition, mean statistics produce important results. The mean of $LEV_{i,t}$ (total debt to asset) and $LagLEV_{i,t-1}$ (previous year leverage) shows that industrial product sector listed companies in Bursa Malaysia depend on debt to grow.

4.2. Multicollinearity Test between Independent Variable

Multicollinearity refers to the existence of correlation between independent variables in the model. The existence of high multicollinearity increases the standard error of the evaluated parameters resulting in rejection of the null hypothesis due to insignificant values of the parameters. Multicollinearity is an extent to which a variable can be explained by other variables in the analysis. It can detect the existence of fake values in the model. Hence, it is important to test the presence of multicollinearity among independent variables. The existence of multicollinearity could be tested by using Pearson's correlation and variance inflation factors (VIF). Multicollinearity problem rule of thumbs for Pearson correlation above 0.80 indicates that there is a multicollinearity problem.

VIF measures the degree to which each independent variable is explained by the other independent variables. A common cutoff threshold is a tolerance value of 0.10, which corresponds to VIF value above 10. Thus any variable with tolerance value below 0.19 (or above a VIF of 5.3) will have a correlation of more than 0.90 (Hair, Anderson, Tatham, and Black, 1998). If the VIF value is more than 10, it indicates that there is multicollinearity problem.

4.2.1 Pearson Correlation Tests

The relationship between the variables is tested using Pearson correlation. Pearson correlation decides how strong and significant relation between the two variables (Taylor, 1990). The results of correlation analysis use to examine the magnitude among the regressors are shown in Table 4.2. The result shows that $LIQR_{i,t}$ (0.1179), $LICashR_{i,t}$ (0.1143) and $LagLEV_{i,t-1}$ (0.0698) has positive week relationship with $SUSAge_{i,t}$. While $LIQR_{i,t}$ (0.1869) and $LICashR_{i,t}$ (0.1144) also has weak relationship with $PRONPM_{i,t}$. However $LICashR_{i,t}$ (0.4660) has a moderate positive relationship with $LIQR_{i,t}$ respectively.

Table 4.2
Pearson Correlation Tests between Independent Variables of Study

Independent variables	$SUSAge_{i,t}$	$SUSEPSg_{i,t}$	$SIZETA_{i,t}$	$PRONPM_{i,t}$	$PROROE_{i,t}$	$LIQR_{i,t}$	$LICashR_{i,t}$	$LagLEV_{i,t-1}$
$SUSAge_{i,t}$	1							
$SUSEPSg_{i,t}$	-0.0113	1						
$SIZETA_{i,t}$	0.0357	-0.0093	1					
$PRONPM_{i,t}$	0.0113	0.0217	0.0455	1				
$PROROE_{i,t}$	-0.0031	0.0371	-0.0002	0.0105	1			
$LIQR_{i,t}$	0.1179**	-0.0159	-0.0501	0.1869**	0.0354	1		
$LICashR_{i,t}$	0.1143**	-0.0027	-0.0324	0.1144**	0.0187	0.4660*	1	
$LagLEV_{i,t-1}$	0.0698*	-0.0173	-0.0498	-0.0309	-0.0779	-0.0056	0.0104	1

Notes: ** and * indicate the respective 1% and 5% significance level

4.2.2 VIF Test

The result of multicollinearity test by using VIF is representing in Table 4.3. The test results confirmation that all of the variable VIF values are less than 10. This indicates no existence of multicollinearity problem. Assuming that, all the independent variables are not related to each other.

Table 4.3
Variance Inflation Factor (VIF) for Multicollinearity Assumption of Model

Independent Variables	VIF	1/VIF
$SUSAge_{i,t}$	1.03	0.96912
SUSEPSgi,t	1.00	0.99714
$SIZETA_{i,t}$	1.03	0.97112
$PRONPM_{i,t}$	1.18	0.84720
$PROROE_{i,t}$	1.02	0.99714
$LIQR_{i,t}$	1.32	0.75555
$LICashR_{i,t}$	1.23	0.84720
$LagLEV_{i,t-1}$	1.02	0.97830
Mean VIF	1.11	

4.3 Result of Diagnostic Test

It is importance to run the standard diagnostic test for all model before presenting the estimated result for the effect of company-specific factors to the leverage in industrial product sectors in Malaysian listed companies. This is because the reliability and stability of the GMM valuation processes is based on the validity of the instrument and the absence of serial correlation in residual. Table 4.4 show the result of diagnostic test. The model which has been regress is leverage against the company-specific factors.

Firstly, Sargan (1958) test has been used to measure the validity of the instrument. The null hypothesis for Sargan test shows that all instrument in the specific model are not redundant and over-identifying limitations are valid. As a result, by accepting the null hypothesis it indicates validity of the group instrument and the appropriate model specification. Based on Arellano and Bond (1991)finding the column (1) of Table 4.4 in all panel shows that the one-step S-GMM version of Sargan-test are sensitive to heteroskedasticity (p-value is 0.05), leading to rejection of the validity of instrument for all models. In line with the presence of heteroskedasticity of unknown form, the result of repeated Sargen-test analysis based on two step GMM estimator (column 2), two step GMM estimator with robust standard error (column 3), Two-Step S-GMM with time dummies and maximum p lag dependent variable in (column 4) are presented.

Table 4.4
Diagnostic Test

	One-Step S-GMM	Two-Step S-GMM	Two-Step S-GMM with Robust SE	Two-Step S-GMM with Time Dummies and Maxldep
	-1	-2	-3	-4
$$LEV_{i,t} = \alpha_0 + \alpha_1 SUSAge_{i,t} + \alpha_2 SUSEPSg_{i,t} + \alpha_3 SIZETA_{i,t} + \alpha_4 PRONPM_{i,t} + \alpha_5 PROROE_{i,t} + \alpha_6 LIQR_{i,t} + \alpha_7 LICashR_{i,t} + +\alpha_8 LagLEV_{i,t-1} + e_{i,t}$$				
Sargan test of over-identifying restrictions (p-value)	92.12 (0.0005)	62.88 (0.14)	-	58.84 (0.15)
1st order autocorrelation Test (p-value)	-	-2.77 (0.0056)	-2.24 (0.02)	-2.72(0.006)
2nd order autocorrelation Test (p-value)	-	-0.29 (0.76)	-0.28 (0.77)	-0.27 (0.78)
# of lags	-	-	-	7

The implementation of several two-step S-GMM estimators for diagnostic tests is to have a more comprehensive valuation thus the best technique is carefully chosen. Results show that the final estimator chosen is two-step S-GMM with time dummy and p lag dependent variable. Overall, column (4) discloses that the Sargan-test for model did not reject the entire set of over-identifying restriction (p-value is larger than 0.05). The high p-value of Sargan statistics reflect that the instrument which relates to the model is suitable. For that reason, the results suggest that this model is specified and estimator chosen is dynamic.

Another diagnostic test in dynamic panel data is the Arellano-Bond (1991) test for autocorellation between residual (AR). This test is used to examine the validity of instruments due to the dynamic nature of data (Arellano et. al., 1991). When the p-value is more than 0.05, it indicates the presence of insignificant heteroscedasticity:

- The standard assumption in first-order serial correlation (AR(1)) model is the residual for every model in current period (t) is related to their respective residual in the previous period (period t-1).
- The second–order serial correlation (AR(2)) model assumes that the residual in the period (t) depend upon the residual in both period t-1 and t-2.
- In theory, if the Arellano-Bond test statistics approaches normal distribution, the test for zero autocorellation in first different residual should or should not reject the null of no first-order or second order serial correlations (Wooldridge, 2002). Generally, the result of diagnostic test AR(2) for model reported in Table 4.4 meets the requirement of acceptance that is no second order serial correlation in the first-difference residual (p-value is larger than 0.05)

Furthermore, model in Table 4.4 achieved the requirement to keep the number of instruments less than or equal to the number of groups. Based on the above normal diagnostic test result, it can be concluded that system GMM is the favorable panel estimator, proposing that the research assessment for model fulfills the p-value needed. For that reason, research findings on specific factors that affect leverage, from estimation of model based on two-step S-GMM with the time dummies and p lags of dependent variable will be discussed in the next section.

4.4 Discussion on the research objective

Discussion regarding panel estimation of dependent variable began with the model that was proposed in chapter one. Generally, the dynamic panel model on financial leverage is regressed against company-specific factors. Discussion based on the dynamic model is to justify the main objective which is to analyze the specific factors affecting leverage. In line with the main objective, the aim of this model is specifically to analyze whether $LEV_{i,t}$ is influenced by $SUSAge_{i,t,}$ $SUSEPSg_{i,t,}$ $SIZETA_{i,t,}$ $PRONPM_{i,t,}$ $PROROE_{i,t,}$ $LIQR_{i,t,}$ $LICashR_{i,t,}$ and $LagLEV_{i,t-1}$. All the regressors specified in model are used to measure leverage. Based on discussions concerning diagnostic test in the previous section, the model has good statistical properties to produce valid estimation on the dynamic models. The positive and significant (at 99% confidence level) coefficient of lag dependent variable is used as explanatory variable in the model in Table 4.5. This confirms the relevance of dynamic S-GMM application as the panel estimator. The main objective is achieved by confirming that company-specific factors are affecting leverage.

4.5 Discussion of Result

As shown in Table 4.5, the dynamic model based on the two-step S-GMM with the time dummies and p lags of dependent variable denotes that all the independent variables affect the leverage. The results of all independent variables Age, EPS Growth, Total Asset, Net Profit Margin, ROE, Quick Ratio, Cash ratio and Prior Leverage are significantly affecting the financial leverage. However, variable age, total asset, net profit margin and quick ratio have a negative association with the leverage.

Table 4.5

Dynamic Model: The Impact of Company-Specific Factors on Financial Leverage based on Two-Step S-GMM with Time Dummies and p Lags of Dependent Variable

Financial Leverage Indicator	LEVi,t
Constant	785.65(13.92)***
Sustainability	
Age (*SUSAgei,t)*	-21.15(-10.54)***
EPS growth (SUSEPSgi,t)	0.07(5.24)***
Size	
Total Assets (SIZETAi,t)	-0.40(-7.12)***
Profitability	
Net Profit Margin (PRONPMi,t)	-1.98(-7.25)***
Return on Equity (PROROEi,t)	-0.029(-4.41)***
Liquidity	
Quick Ratio (LIQRi,t)	-12.87(-13.16)***
Cash Ratio (LICashRi,t)	0.04(4.18)***
Prior Leverage (LagLEVi,t-1)	0.38(35.05)***
Sargan test of over-identifying restrictions (p-value)	Pass
2nd order autocorrelation Test (p-value)	Pass
Firm-year observation	734
T	10

Notes: *(1) Only the final models are reported.*

(2) The lagged dependent variables used as explanatory variables in this model is positive and has highly significant effect (at 99% confidence level), implying that the model is genuinely dynamic.

*(3) *** and ** indicate the respective 1% and 5% significance level.*

The result of age shows negative significant relationship to the leverage which is similar to the research conducted by (Prime *et al.* 2013). This suggests that an increase in 1% in leverage decreases the age of company by -21.14%. The result for $SUSEPS_{gi,t}$ shows positive relationship to leverage parallel to the research conducted by Marmangalam and Govindasamy (2010). This suggests that, when there is an increase of 1% in leverage, the SUSEPSg will increase by 0.07%. The result for sustainability supports the pecking order theory, proposing that the higher growth

companies should prefer debt finance rather than equity finance when the internal funding is insufficient due to high asymmetric information (Ali, 2011).

Size shows a significant negative relationship with leverage at 99 percent level of confidence. The negative relationship shows that large companies in industrial product sector are using less debt finance. An increase of 1% leverage decreases the SIZETA by 0.40%. This result shows similar outcome as Onofrei *et al*. (2015) and Rajan *et al*. (1995). This result also supports the pecking order theory that company size and leverage level has negative relationship.

Based on Table 4.5, profitability variable result shows significance with leverage at level 0.01. This indicates that profitability is one factor that determines the leverage of industrial product sector listed companies in Malaysia. The negative relationship between profitability and leverage explains why Malaysian companies do not prefer debt finance instead prefer to use internal financing. The result of this study supports the pecking order theory, that highly profitable companies tend to reduce their external funding thus it is the end signal to creditors that they have lower bankruptcy risk (Ali, 2011; Rajan *et al*, 1995; Titman *et al*, 1988). The previous researches claim that higher leverage firms have lower profitability and lower leverage firms have higher profitability (Ahmad et al., 2015; Ezeoha, 2008; Haron, 2014; Titman & Wessels, 1988).

Liquidity on the other hand, has both positive and negative significance with leverage at level 0.01. The significant values prove that liquidity is the determining factor for leverage of Malaysian listed companies under industrial product sector. LIQR has negative relationship which show that firms in Malaysia's industrial product sector with high liquidity prefers using internal funding rather than going for debt finance,

obeying the pecking order theory assumption. The result also reveals that liquidity of a firm proxy by quick ratio is having the most significant effect on the debt ratios (Mat Kila *et al*. 2008). The high liquidity companies will maintain high levels of current asset and will generate high cash inflows. The companies will use those inflows to fund their investments and business operations as explained by past researchers such as N. Ahmad et al. (2012), Haron, (2014), Mat Kila and Wan Mahmood, (2008), Onofrei et al. (2015), Sibilkov (2009) and Titman et al (1988). Cash ratio on the other hand, shows a positive relationship between leverage and liquidity. This result confirms the finding from Alkhatib (2012), Marete (2015) and Šarlija and Harc (2012). Cash ratio variable result follows trade-off theory, as the theory indicates a positive relationship between leverage and liquidity. The companies with great liquidity assets should borrow more because the companies are able to meet contractual responsibilities on time (Miras *et al*. 2015).

Prior leverage result is positively significant with leverage at significance level of 0.01. This show that industrial product listed companies adjust past year's leverage to fit with leverage. The result is equivalent with findings from Abdeljawad *et al.* (2013), Haron (2014) and Ting (2016) that there is a positive relationship between lagged leverage and leverage.

4.6 Summary Report of Hypothesis Testing

Table 4.6
Summary of Hypothesis

Hypotheses	Significant Level	Result	Explanation
H1: There is a relationship between the sustainability (SUSAgei,t) and financial leverage (LEVi,t).	0.00	Accept	The p - value is 0.000 which is less than 0.01 significant level. This shows that sustainability age of the companies is significant with leverage.
H2: There is a relationship between the firm size (SIZETAi,t)and financial leverage (LEVi,t)	0.00	Accept	The p - value is 0.000 which is less than 0.01 significant level. This show size of total asset is significant with leverage of the companies.
H3: There is a relationship between the profitability (PRONPMi,t) (PROROEi,t) and financial leverage (LEVi,t).	0.000 and 0.032	Accept	The p - value for NPM is 0.000 which is less than 0.01 significant level. The p-value for ROE is 0.032 which is less than 0.01 significant level. This shows that profitability net profit margin and return on equity are significant with leverage of the companies.
H4: There is a relationship between the liquidity (LIQR i,t) (LICashi,t) and financial leverage (LEVi,t).	0.000	Accept	The p-value is 0.000 which is less than 0.01 significant level. This shows that liquidity quick ratio and cash ratio are significant with leverage of the companies.
H5: There is a positive relationship between the prior leverage (LEV-i,t-1) and financial leverage (LEVi,t).	0.00	Accept	The p-value is 0.000 which is less than 0.01 significant level. This shows that prior leverage is significant with leverage of the companies.

Tables 4.6 conclude that result of this research are accepting the entire hypothesis that made in previous chapter.

4.7 Chapter Summary

This chapter provides the empirical results on the effect of company-specific factors to leverage in Malaysian listed companies based on panel data structure. The first sub-section describes the basic descriptive analysis of data which is used to analyze and interpret the statistical attributes of the continuous variable over the period of 2005 until 2015. Next sub-section discusses about Multicollinearity test between independent variables followed by sub-section 4.3 which discusses the result of diagnostic test. Sub-section 4.4 discusses the research objective then the results are discussed in sub-section 4.5. Finally sub-section 4.6 presents the summary of hypothesis.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.0 Introduction

The final chapter is structured into four sections. It begins with the recapitulation of the main issue of this study in Section 5.1 and briefly summarizes the findings of the study based on dynamic panel regression. Subsequently, Section 5.2 which discusses the implication of the findings in relation to relevant economic conditions. In the last section of this chapter, limitations of the study are highlighted, leading to some recommendations for future research.

5.1 Overview of the study

This study examines the company-specific factors that affect leverage of industrial product sector listed companies in Bursa Malaysia. This study is conducted with the purpose to investigate the relationship between leverage and specific factor variables namely sustainability, size, profitability, liquidity and prior leverage. The time period used is from year 2005 until 2015 involving industrial product sector companies in bursa Malaysia.

This study seeks to complement the previous study that was carried out by Ting (2016) regarding the influence of prior leverage to leverage by using dynamic panel model. The research also found a significance at 1% on the ownership concentration 5 (OC5), return on assets (ROA), firm size (SIZE), tangibility (TANG) and growth (GROWTH) by using S-GMM model. Besides that, this study also attempts to complement the research undertaken by N. Ahmad and A. Ismail (2012) which

examines the influence of firm size, profitability, tangibility, non-debt tax shields, growth opportunities, liquidity, business risk and effective tax rate on the leverage.

The results show that all of the independent variables namely age, EPS growth, total asset, net profit margin, ROE, quick ratio, Cash ratio and Prior Leverage are significantly affecting the financial leverage. EPS growth, ROE, cash ratio and prior leverage influence the financial leverage in a positively significant manner. The output states that profitability's and liquidity's effect to the leverage is in agreement with previous research conducted by Ahmad *et al*. (2012). The findings of prior leverage concludes the same remarks by Ting (2016) that there is a positive relationship between leverage and prior leverage. The summary of the findings are explained in table 5.1.

Table 5.1
Summary of Findings

	SUS		SIZE	PRO		LI	LEVi,t-1
	Age	EPSg	TA	NPM& ROE	QR	CashR	
Assumed relations between IV and DV	+/-	+/-	+/-	+/-	+/-	+/-	+
TOT suggestions	+	-	+	+	+	+	+
POT suggestions	-	+	-	-	-	-	None
The findings of this study in relation to LEV	-Sig	+Sig	- Sig	- Sig	-Sig	+Sig	+ Sig
Explanatory theory (TOT or POT)	POT	POT	POT	POT	POT	TOT	TOT

(+) Positively significant. (-) Negatively significant. (TOT) Trade-off Theory. (POT) Pecking Order Theory.

Table 5.1 shows that the study has negative relationship significant with SUS, SIZE, PRO and LI. Explanatory theory research that this research follows SUS, SIZE, PRO and LIQR follow the pecking order theory. While, LICashR and LEVi,t-1 follow trade-off theory.

5.2 Implication of Study

For the companies, the results of this research can be used as a reference to maintain the optimal financial stability of financial structure and specific factor variables. This is because the variables such as prior leverage and age of company have great influence on the leverage. For investors (public and financial institutions), they can use the findings of this study to select the best financing measure as to maximize financial funds to the optimum level. For academicians, the results of this study can be used for citing literature on dynamic panel model.

5.3 Recommendation for the Future Research

This section provides several recommendations for the future research. Similar with other studies, this study also have limitations. First of all, the measurement that was used in this study for leverage could be changed from total debt to total asset to total debt to equity. As a replacement for that financing choice, the companies can choose their capital structure either in terms of external equity financing or internal financing. Therefore, it will be easier to eliminate those companies who are in this category. Again it decreases the overall observation. Second, the sample of this research is obtained from the industrial product sector of Bursa Malaysia (Stock Exchange of Malaysia) and thus disqualifies other sectors listed companies in the Bursa Malaysia. As a result, the findings of this research can be a benchmark to all other listed companies in Malaysia. It is suggested for future studies to increase the number of

samples. It is proposed that in order to obtain the most accurate results, finding the best specific factors that affect leverage is crucial.

REFERENCES

Abdeljawad, I., Nor, F. M., Ibrahim, I., & Abdul, R. (2013). Dynamic Capital Structure Trade-off Theory : Evidence from Malaysia. *Proceedings of 3rd Global Accounting, Finance and Economics Conference*, *9*(6), 1–10.

Adair, P., Adaskou, M., & McMillan, D. (2015). Trade-off-theory vs. pecking order theory and the determinants of corporate leverage: Evidence from a panel data analysis upon French SMEs (2002–2010). *Cogent Economics & Finance*, *3*(1), 1006477. https://doi.org/10.1080/23322039.2015.1006477

Agarwal, R., & Gort, M. (2002). Firm and Product Life Cycles and Firm Survival. *American Economic Review*, *92*(2), 184–190. https://doi.org/10.1257/000282802320189221

Ahmad, N., Salman, A., & Shamsi, A. F. (2015). Impact of Financial Leverage on Firms ' Profitability : An Investigation from Cement Sector of Pakistan. *Research Journal of Finance and Accounting Online)*, *6*(7), 2222–2847.

Ahmad1, N. binti, & Aniz binti Ismail1. (2012). Determinants of Capital Structure: An Empirical Investigation onMalaysian Property PLCs. *The 3rd International Conference on Technology and OperationsManagement*, 978–979.

Ali, L. (2011). The Determinants of Leverage of the Listed-Textile Companies in India. *European Journal of Business and Management*, *3*(12), 54–60. Retrieved from http://www.iiste.org/Journals/index.php/EJBM/article/view/722/621

Alkhatib, K. (2012). The Determinants of Leverage of Listed Companies Khalid Alkhatib. *International Journal of Business and Social Science*, *3*(24), 78–84.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, *58*(2), 277. https://doi.org/10.2307/2297968

Baloch, Q. B., Ihsan, A., Kakakhel, S. J., & Sethi, S. (2015). Impact of Firm Size, Asset Tangibility and Retained Earnings on Financial Leverage: Evidence from Auto Sector, Pakistan. *Abasyn Journal of Social Sciences*, *8*(1), 143–155.

Baltagi, B. H. (2008). Econometric Analysis of Panel Data. *Econometric Theory*, *13*(5), 351. https://doi.org/10.1017/S0266466600006150

Barakat, A. (2014). The Impact of Financial Structure, Financial Leverage and Profitability on Industrial Companies Shares Value (Applied Study on a Sample of Saudi Industrial Companies). *Research Journal of Finance and Accounting*, *5*(1), 2222–2847.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *Journal of Econometrics*, *87*(1), 115–143. https://doi.org/10.1016/S0304-4076(98)00009-8

Blundell, R., Bond, S., & Windmeijer, F. (2000). Estimation in dynamic panel data models: improving on the performance of the standard GMM estimator. *Fiscal Studies*, *15*, 53–91. https://doi.org/10.1016/S0731-9053(00)15003-0

BNM. (2015). Economic and Financial Developments in Malaysia ECONOMIC AND FINANCIAL DEVELOPMENTS IN MALAYSIA IN THE SECOND QUARTER OF 2015 The Malaysian economy grew by 4 . 9 %, (May), 1–43.

Çitak, L., & Ersoy, E. (2012). The Determinants of Corporate Debt Ratio: An Empirical Analysis on Turkish Corporations. *International Research Journal …*, *95*(95), 151–162. Retrieved from http://www.internationalresearchjournaloffinanceandeconomics.com/ISSUES/IRJFE_95_12.pdf

Eriotis, N., Vasiliou, D., & Ventoura-Neokosmidi, Z. (2007). How firm characteristics affect capital structure: an empirical study. *Managerial Finance*, *33*(5), 321–331. https://doi.org/10.1108/03074350710739605

Ezeoha, A. E. (2008). Firm size and corporate financial-leverage choice in a developing economy: Evidence from Nigeria. *The Journal of Risk Finance*, *9*(4), 351–364. https://doi.org/10.1108/15265940810895016

Fowdar, S., & Lamport, M. J. (2009). Factors affecting Leverage : An empirical analysis of Mauritius companies, *15*, 230–243.

Frank, M. Z., & Goyal, V. K. (2007). Trade-Off and Pecking Order Theories of Debt. *Handbook of Empirical Corporate Finance SET*, *1*, 135–202. https://doi.org/10.1016/B978-0-444-53265-7.50004-4

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate Data Analysis*. *International Journal of Pharmaceutics* (Vol. 1). https://doi.org/10.1016/j.ijpharm.2011.02.019

Haron, R. (2014). Key factors influencing target capital structure of property firms in Malaysia. *Asian Social Science*, *10*(3), 62–69. https://doi.org/10.5539/ass.v10n3p62

Iliev, P., & Welch, I. (2010). Reconciling Estimates of the Speed of Adjustment of Leverage Ratios. Retrieved from http://ssrn.com/abstract=1542691

Liargovas, P. G., & Skandalis, K. S. (2008). Motives and Marketing Strategies of Greek Companies Exporting to South-East European Markets. *South-Eastern Europe Journal of Economics*, *2*, 227–244.

Marete, D. (2015). the Relationship Between Firm Size and Financial Leverage of Firms Listed At Nairobi Securities Exchange a Research Project Submitted in Partial Fulfillment of the Requirements for the Award of the Degree of Master of Business Administration , School of B, (October 2015).

Mat Kila, S., & Wan Mahmood, W. M. (2008). Capital Structure and Firm Characteristics: Some Evidence From Malaysan Companies. *Mpra*, (14616), 1–17.

Miras, H., Hamza, S., & Hussain, S. (2015). The Determinants of Capital Structure for Malaysian Food Producing Companies. *International Journal of Accounting, Business and Management*, *1*(1), 1–25. Retrieved from http://www.ftms.edu.my/journals/images/Document/IJABM/April2015/24-The Determinants of Capital Structure for Malaysian Food Producing Companies.pdf

Modigliani, F., & Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. *American Economic Review*, *48*(3), 261–297. https://doi.org/10.4013/base.20082.07

Mustapha, M., & Chyi, N. H. (2011). Determinants of Firm Leverage and Cash Flow Relationship: The Developing Country Evidence.

Myers, C. (1977). DETERMINANTS OF CORPORATE Stewart C. MYERS. *Journal of Financial Economics*, *5*, 147–175.

Myers, S. C. (1984). The Capital Structure Puzzle Revisited. *The Review of Financial Studies*, *39*(3), 575–592. https://doi.org/10.1093/rfs/8.4.1185

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, *13*(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Onofrei, M., Tudose, M. B., Durdureanu, C., & Anton, S. G. (2015). Determinant factors of firm leverage: An empirical analysis at Iasi county level. *Procedia Economics and Finance*, *20*(15), 460–466. https://doi.org/10.1016/S2212-5671(15)00097-0

Prime, P. B., & Qi, L. (2013). Determinants of Firm Leverage. *Chinese Economy*, *46*(2), 74–106. https://doi.org/10.2753/CES1097-1475460204

Rajan, R. G., & Zingales, L. (1995). What Do We Know About Capital Structure - Some Evidence From International Data. *The Journal of Finance*, *50*(5), 1421–1460. https://doi.org/10.2307/2329322

Rami Ibrahim Suleiman Nawaiseh. (2015). DO PROFITABILITY AND SIZE AFFECT FINANCIAL LEVERAGE OF JORDANIAN INDUSTRIAL LISTED COMPANIES? *European Centre for Research Training and Development UK (Www.eajournals.org)*, *3*(5), 1–12.

Report, S., By, S., & Executive, T. H. E. (2016). 2016 Article Iv Consultation — Press Release; Staff Report; and Statement By the Executive Director for Nigeria, (16).

S. Chandrakumar Mangalam & P. Govindasamy (2010). Leverage: an analysis and its impact on profitability with reference to selected cement companies in India. Journal of Economics, Finance and Administrative Science, 27,50-75.

Sargan, J. D. (1958). The estimation of economic relationships using instrumental variables. *Econometrica*, *26*(3), 393. https://doi.org/10.2307/1907619

Šarlija, N., & Harc, M. (2012). The impact of liquidity on the capital structure: a case study of Croatian firms. *Business Systems Research*, *3*(1), 30–36. https://doi.org/10.2478/v10305-012-0005-1

Shamaileh, M. O., & Khanfar, S. M. (2014). The Effect of the Financial Leverage on the Profitability in the Tourism Companies (Analytical Study- Tourism Sector-Jordan). *Business and Economic Research*, *4*(2), 251. https://doi.org/10.5296/ber.v4i2.5546

Sibilkov, V. (2009). Asset Liquidity and Capital Structure. *Journal of Financial and Quantitative Analysis*, *44*(5), 1173–1196. https://doi.org/10.1017/S0022109009990354

Ting, I. W. K. (2016). Estimating Dynamic Panel Model of Leverage Decision: Evidence from Malaysia. *Procedia Economics and Finance*, *35*(October 2015), 267–273. https://doi.org/10.1016/S2212-5671(16)00033-2

Titman, S., & Wessels, R. (1988). The Determinants of Capital Structure Choice. *The Journal of Finance*, *43*(1), 1–19. https://doi.org/10.2307/2328319

Viral Acharya, Stephen G. Cecchetti, J. D. G., & Şebnem Kalemli-Özcan, Philip R. Lane, and U. P. (2015). corporate debt in emerging economies. The Brookings Institution and the Centre for International Governance Innovation. Retrieved from www.cigionline.org.

Vijeyaratnam, Hanitha and Anandasayanan, Saratha (2015). The Determinants of Leverage of Sri Lankan Manufacturing Companies Listed on Colombo Stock Exchange. Research Journal of Finance and Accounting, 6(5), 189–196

Williams, Jonathan, M. Shahid, Ebrahim, Sourafel Girma, M. Eskand, M. E. S. (2015). INCEIF — International Centre for Education in Islamic Finance, *44*(April). Retrieved from http://www.gostudymalaysia.com.my/institution/inceif-—-international-centre-for-education-in-islamic-finance

Wooldridge, J. M. (2002). Econometric Analysis of Cross Section and Panel Data. *Booksgooglecom*, *58*(2), 752. https://doi.org/10.1515/humr.2003.021

Yusuf et al. (2013). Determinants of Capital Structure in Malaysia Electrical and Electronic Sector. *International Journal of Social, Human Science and Engineering*, *7*(6), 675–680.

Zare, R., Farzanfar, F., & Boroumand, M. (2013). Examining the Firm Age , Size and Asset Structure Effects on Financial Leverage in the Firms Listed in Tehran Stock Exchange. *International Journal of Economy, Management and Social Sciences*, *2*(6), 256–264.

APPENDIX

	LIST OF COMPANY		
1	ALUMINIUM CO.OF MAL.	45	KYM HOLDINGS
2	AMALGAMATED INDL.STEEL	46	LAFARGE MALAYSIA
3	ANN JOO RESOURCES	47	LB ALUMINIUM
4	APM AUTOMOTIVE HDG.	48	LCTH
5	A-RANK	49	MIECO CHIPBOARD
6	ASTINO	50	MINHO (M)
7	BOON KOON GROUP BHD.	51	PA RESOURCES
8	BOUSTEAD HEAVY INDS.	52	PERSTIMA.MAL.(PERSTIMA)
9	BP PLASTICS HOLDING	53	PETRON MAL.REFN.& MKTG.
10	CAHYA MATA SARAWAK	54	PETRONAS GAS
11	CAN-ONE	55	PIE INDUSTRIAL
12	CB INDL.PRODUCT HOLDINGS	56	POLY GLASS FIBRE (M)
13	CENTURY BOND	57	PRESS METAL
14	COMFORT GLOVES	58	PRESTAR RESOURCES
15	CSC STEEL HOLDINGS	59	RAPID SYNERGY
16	CYL	60	RUBBEREX
17	DAIBOCHI PLASTIC & PACK. INDUSTRY	61	SCIENTEX
18	DOMINANT ENTERPRISE	62	SHELL REFINING CO.FOM
19	DRB-HICOM	63	SKP RESOURCES BERHAD
20	DUFU TECH.CORP.BHD.	64	SMIS
21	EKSONS	65	SOUTHERN ACIDS (M)
22	EP MANUFACTURING	66	SOUTHERN STEEL
23	EVERGREEN FIBREBOARD	67	SUBUR TIASA HOLDINGS
24	FACB INDUSTRIES	68	SUCCESS TRANSFORMER
25	FAVELLE FAVCO	69	SUPERMAX
26	FIMA	70	TA ANN HOLDINGS
27	GOLDEN PHAROS	71	TASEK
28	GPA HOLDINGS	72	TECK GUAN PERDANA
29	HEVEABOARD	73	TEKALA
30	HIAP TECK VENTURE	74	THONG GUAN INDS.
31	HIL INDUSTRIES	75	THREE-A RES.
32	HO WAH GENTING	76	TIEN WAH PRESS HOLDINGS
33	HUME INDUSTRIES	77	TOMYPAK HOLDINGS
34	IMASPRO	78	TOYO INK GROUP
35	JADI IMAGING HDG.	79	UNITED U-LI
36	JASA KITA	80	VS INDUSTRY
37	JAVA	81	WAH SEONG
38	JAYA TIASA HOLDINGS	82	WATTA HOLDINGS
39	JOHORE TIN	83	WEIDA (M)
40	KECK SENG (MALAYSIA)	84	WELLCALL HOLDINGS

41	KEIN HING INTL.	85	WHITE HORSE
42	KIAN JOO CAN FACTORY	86	YI-LAI
43	KINSTEEL	87	YLI HOLDINGS
44	KOBAY TECHNOLOGY	88	YUNG KONG GALVANISING INDS.

Gap Table

No	Authors/ Year	Variable Used	Method	Finding
1	Ting (2016)	DV: Leverage IV: Ownership concentration, ROA, Firm Size, Tangibility, Growth	Dynamic panel model	The result appears to support the concept of lagged firm leverage as determinants of firm leverage decision. Others IV result shows a significant with leverage at level 0.01
2	Onofrei *et al*.(2015)	DV: Debt Ratio IV: Profitability, tangibility, liquidity, size, and growth opportunity	Fixed effects regression model	Leverage is negatively related to tangibility, profitability and liquidity. The size of the firm and the growth opportunities can also have a negative impact on the leverage, but to a lower extent.
3	Miras *et al*. (2015)	IV: Total Debt Ratio DV: Profitability, size, growth opportunity, asset tangibility and liquidity	Pearson correlation coefficient and multiple linear regressions	The findings shows profitability, size and liquidity are negatively significant related to total debt ratio. Tangibility is founds positively related to total debt ratio and growth opportunity is found positively insignificant with total debt ratio
4	Haron (2014)	DV: Leverage IV: Non-debt tax shield (NDTS), asset structure, profitability, firm size, growth opportunity and liquidity	Dynamic panel model	The study finds that there exists target leverage for property firms in Malaysia and take into account factors like NDTS, asset structure, profitability, firm size, growth opportunity and liquidity in their capital structure and also appear to time their security issuance.
5	Prime and Qi (2013)	DV: Leverage IV: Profit, Sales, Size, Asset, Average Leverage, Age	Fixed effects regression model	The amount of leverage is negatively related to profits, liquidity, and age, and positively related to firm size and average leverage ratio.
6	Ahmad and Ismail (2012)	DV: Long Term Debt Ratio (LTDR) IV: Size, profitability, tangibility, non-debt tax shields (NDTS), growth	Multiple regression model	Findings indicate that SIZE, PROF, TANG, NDTS and GROWTH affect LTDR positively. LTDR has positive and statistically significant correlations with size and profitability, but a negative

		opportunities, liquidity, business risk (BR) and effective tax rate (ETR).		and statistically significant correlation with LIQ. BR and ETR have negative relationships with LTDR.
7	Alkhatib (2012)	DV: Leverage ratio IV: Firm liquidity, size, growth rate, profit, and tangibility	Multiple regression model	The results show that for both industrial and services sectors; there were no statistical significant relationship. When the two sectors were separated, the results for the industrial sector revealed that liquidity and tangibly have significant relationship with leverage, whereas the results for the services sector revealed that the growth rate, liquidity, and tangibility have significant relationship with leverage.
8	Mat Kila and Wan Mahmood (2008)	DV: Debt Ratio IV: Size, Liquidity, Interest Coverage Ratio, EPS Growth	Pooled OLS estimations model	The result shows that the size, liquidity and interest coverage ratio is significantly negatively related to total debt. However, the study finds insignificant negative relation between capital structure and growth of the firm, expressed by the annual changes of earnings.