

THE IMPACT OF CAPITAL STRUCTURE AND  
AGENCY COST ON FIRM'S PROFITABILITY OF  
INDUSTRIAL SECTOR IN MALAYSIA

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We hereby declare that:

(1) This undergraduate research project is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the research project.

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## LIST OF ABBREVIATIONS

AGC	Agency Cost
BHD	Berhad
BLUE	Best Linear Unbiased Estimator
BPLM	Breush-Pagan Lagrange Multiple
CB	Central Bank
CECD	Certified Economic Developer
CEO	Chief Executive Officer
CLT	Central Limit Theorem
CSE	Colombo Stock Exchange
DoSM	Department of Statistic Malaysia
ER	Equity Ratio
FEM	Fixed Effects Model
FS	Firm Size
GDP	Gross Domestic Product
GLC	Government Linked Companies
ICT	Information and Communications Technology
IJM	International Justice Mission
IPI	Index of Industrial Production
IPO	Initial Public Offering
ISO	International Organization for Standardization
JB	Jarque-Bera Test
LHS	Left Hand Side
LTR	Long Term Debt Ratio
NGLC	Non-Government Linked Companies
NSE	Nigeria Stock Exchange
K FEM	Number of Independent Variable of Fixed Effects Model
K POOL	Number of Independent Variable of Pooled Model

NYSE	New York Stock Exchange
OLS	Ordinary Least Squares
PLC	Public Listed Companies
POLS	Pooled Ordinary Least Square
POT	Pecking Order Theory
REM	Random Effect Model
RHS	Right Hand Side
ROA	Return on Assets
ROE	Return on Equity
R FEM 2	R-squared of Fixed Effects Model
R POOL 2	R-squared of Pooled Model
SG	Sales Growth
SRR	Statutory Reserve Requirement
STR	Short Term Debt Ratio
UTAR	Universiti Tunku Abdul Rahman

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## **PREFACE**

A firm's profitability is vital to both investors and shareholders nowadays in investment decisions as it could be used to forecast the firm's returns in long run and its probability of defaulting or bankruptcy. Hence, it is beneficial and useful to determine the factors affecting a firm's profitability. On the other hand, capital structure reveals the management's financing decision to either use debt financing or equity financing, while agency costs indicate the internal expenses incurred in order to prevent or solve the conflicts of interest in between shareholders and managements. Therefore, this study attempts to study the impact of capital structure and agency costs on firm's profitability.

It is noticeable that industrial sector has been one of the leading industries in Malaysia in enhancing the economic growth and stability. Thus, this research aims to study the factors affecting the Malaysian industrial firms' profitability. This research is interested on how the managements in said firms decide the asset financing method and how the shareholders determine the agency expenses needed in order to align the management's goals and interests with theirs.

The findings of this research are believed to be valuable in providing investors and shareholders the better understanding on evaluating the performance of the Malaysian industrial companies before making any investment decision. Besides, it also assists the internal users to determine the best financing method to have highest profitability. Next, policy makers could utilize this research's findings to improve existing regulations and develop new policies to improve the economic growth in the country.

## ABSTRACT

This study attempts to determine the impact of the capital structure and agency costs on the firms' profitability. In Malaysian industrial sector, it is uncertain that whether debt financing or equity financing is more appropriate in enhancing a firm's profitability. This is because both financing methods impose certain benefits and drawbacks to the companies as well. Besides, agency cost is believed to affect the company's performance directly. Yet, there are companies that do not commit the agency costs nor control the agency problems as well. Therefore, the findings of the study are essential in identifying the definite impact of both capital structure and agency costs on firm's profitability. This research has obtained and employed the secondary data which is yearly basis from the Bloomberg terminal. The sample period is from year 2009 to 2004. The sample size employed is 168 out of 302 listed companies in Bursa Malaysia under industrial sector. Long term debt ratio, short term debt ratio and equity ratio is used to explain the capital structure, while agency costs is measured by using total operating expenses divided by total annual sales. Meanwhile, firm's profitability is calculated using return on assets (ROA) and return on equity (ROE). On the other hand, firm's size and sales growth act as control variables in order to clarify the correlation between dependent and independent variables. By using E-views 8, only long term debt and equity are significantly positively related to ROA and ROE, while agency costs are significantly negatively related to only ROE. The short term debt, although is negatively correlated, has no significant impact on the firm's profitability. With these findings, improvements could be done to enhance companies' profitability and even the economy in a country as well.

## **CHAPTER 1: RESEARCH OVERVIEW**

### **1.0 Introduction**

A firm's profitability can be defined as the measure of shareholders' wealth and also as the firm's ability to earn profit. In the accounting methods, a firm's profit is the spread between its total generated sales and expenses. Capital structure reveals a firm's decision on the proportion of debt and equity financing in order to attain the cheapest cost and highest profitability it is capable to. Yet, there is a question: "what is the optimal proportion for capital structure?" Meanwhile, agency cost is the internal cost where the shareholders have to commit in order to solve the conflict of interest between them and the management. In other words, the principals (shareholders) have to pay agency costs to the agents (managements), so that the agents could perform in favor of the shareholders' interest.

In fact, investors nowadays would refer and emphasize on firm's profitability in making the investing decision. Hence, studying factors that influence the firm's profitability is vital and beneficial in the perception of investors and shareholders. This chapter would state the overview of capital structure and agency costs, the problem statements, objectives, hypotheses, and importance of this research.

### **1.1 Research Background**

#### **1.1.1 Overview of Capital Structure**

Brealey, Myers, and Marcus (2009) stated that capital structure is defined as 'the mix of debt and equity financing'. Having optimal capital structure is vital to accomplish short and long term business goals (Habib, Khan, & Wazir, 2016). It is also essential for the company to make a sound capital

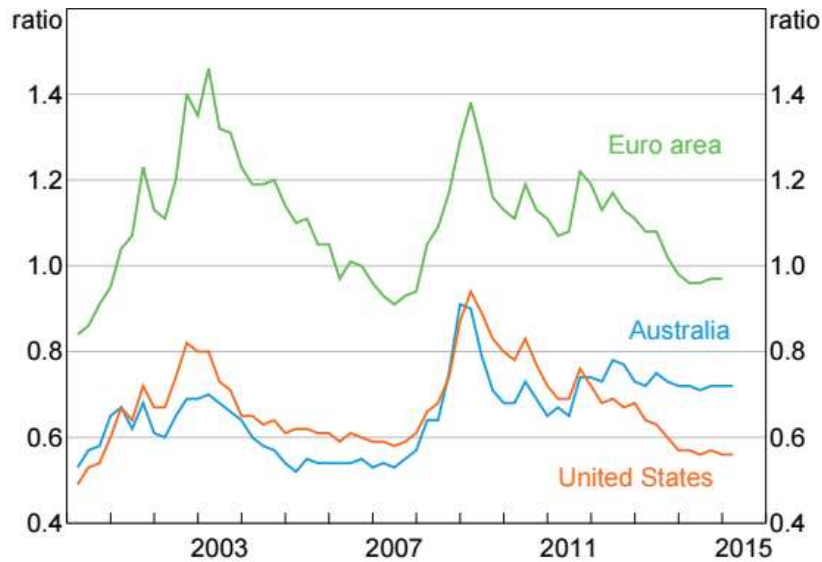
structure decision in order to maximize the organisation's profit and strengthen the organisation's position in the industry (Abor, 2005). According to Kennon (2017), the term capital structure could be defined as the money put up and owned by the stockholders. Capital can be sourced either from ownership contribution (equity capital) or debt (liability capital). Each of them has its own pros and cons.

Boodhoo (2009) claimed that capital structure acts as the financial structure of a firm. It is an essential decision as it is related to the firm's ability to confront the obligations and maximize returns for the shareholders. Besides, this decision is also important as it helps the firm in the competitive environment within which the business operates.

In year 1958, Modigliani and Miller, the first firm researchers to analyze capital structure, claimed that the capital structure could not determine the firm's value and its future performance (Boodhoo, 2009). Modigliani and Miller (1958) claimed that the 'optimal' capital structure exists when the bankruptcy risks is offset by the tax savings of debt. When the firm is having the optimal capital structure, its returns to the shareholders would be more than the firms that sourced capital from equity only. In year 1963, the same researchers affirmed that a firm should source its capital entirely from debt financing due to the tax deductions.

### 1.1.1.1 Global Trend of Capital Structure

Figure 1.1: Debt-to-equity Ratio of Private Non-financial Corporations



Source: Fang, Kosev, and Wakeling (2014) cited from CECD (Certified Economic Developer)

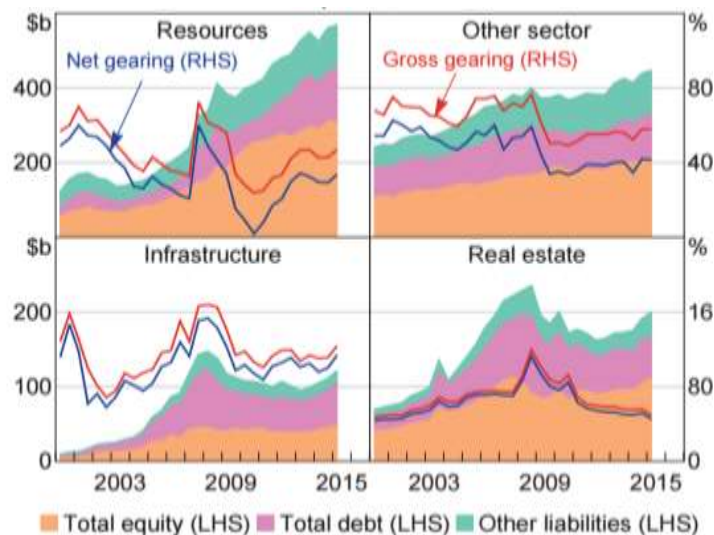
According to Figure 1.1, Fang, Kosev, and Wakeling (2014) stated that the leverage of Australian corporate sector remained stable after year 2012, while the leverage declined in many other developed countries including United States. In Australia, the financing's source of private non-financial corporations had been stable after the crisis.

Based on the figure, the debt-to-equity in Euro area was relatively higher than both Australia and United States since year 2000. This shows that the private non-financial corporations in Euro area arguably prefer debt financing over equity financing. The ratio fluctuated in all three regions in this period of a decade and a half. Nevertheless, the ratio in all three regions declined together since year 2003 until 2007. This sudden increment in year 2007 happened as the corporations accumulated high levels of debt caused by beginning of financial crisis in the late summer of year 2007 (Cecchetti,

Mohanty, & Zampolli, 2011). But the increase only lasted until year 2009 as the ratio declined again in all the three regions afterwards.

Gallo (2015) stated that debt to equity ratio measures how much debt a firm uses to run its business. In other words, it shows how much debt the firm has for every dollar it has of equity. For the firm with high debt-to-equity ratio, it is using more debt than equity to finance its operations. If the firm's earning can cover the finance cost, the shareholders can get more return. However, if the finance cost outweighs the earning, the share value would be affected and the company might even be led to bankruptcy.

Figure 1.2: Corporate Gearing and Balance Sheets of Listed Companies



LHS: Left Hand Side                      RHS: Right Hand Side

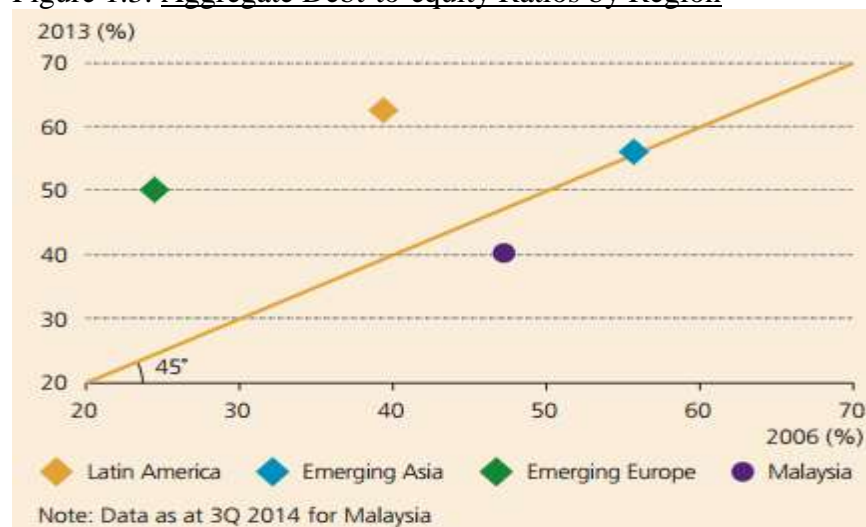
Source: Fang, Kosev, and Wakeling (2014)

Figure 1.2 shows the capital structure of Australian listed companies from different sectors. Fang et al. (2014) stated, “The aggregate capital structure of Australian listed companies has varied considerably over time, reflecting the investments cycle and shifts in the use of the different forms of capital structuring”. The figure also shows that throughout the timeframe from year 1999 to 2014, all the sectors have been using equity financing increasingly.

Based on the figure, during latest five years in the said timeframe, the Australian listed companies in resources sector had used the equity financing more than then other sectors. However, all the listed companies used nearly the same proportion of debt financing in the same period. The percentage of total debts in all sectors had been almost constant since year 2006 until 2014.

### 1.1.1.2 Trend of Capital Structure in Malaysia

Figure 1.3: Aggregate Debt-to-equity Ratios by Region



Source: Bank Negara Malaysia (2015)

Figure 1.3 was done by the central bank of Malaysia. It clearly shows that the aggregate corporate leverage of Malaysian firms was lower than the level observed prior to the Global Financial Crisis compared to the other emerging regions in year 2013. Meanwhile, in year 2006, Malaysian aggregate debt-to equity ratio was the second highest among the four regions, with the emerging Asia topped the figure. This shows that the Malaysian corporations would prefer to finance their operations using more

equity capital during post financial crisis period than they did before the financial crisis happened.

### **1.1.1.3 Overview of Debt Financing**

Debt is the external funding which could be classified into short term (less than a year) or long term (more than a year) (Awuah-Agyemen, 2016). Scholes and Wolfson (1988) highlighted the importance of short term loan that when the tax rate is expensive, the firms would opt to employ short term loan especially for those facing uncertainty in their tax status. This is because short term loan is the cheapest and easiest method to adjust debt level temporarily to the firm's optimal point. It can also avoid the potential cost of retiring remaining debt later. While long term debt will always incur finance cost as the interest is accrued, short term loan would provide a finer measure of the firm's need for cash as it will require payment in current asset in near future (Plesko, 2000).

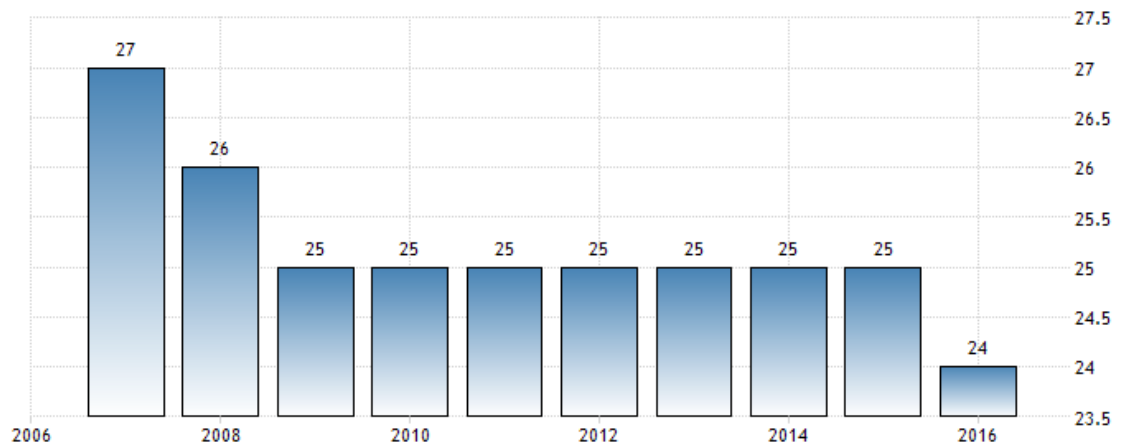
Bruhn (2015) stated that firms often prefer long term loan to finance long term investments such as purchasing fixed assets. It is because long term debt financing protects the firms from having credit supply shocks and the need to refinance afterwards. However, some firms opt to employ short term loan to refinance their debt frequently to get better loan terms. Besides, the researcher also stated that opting for long term debt would affect the firm performance positively as it enables the corporations to invest in projects which gain profits in a long period.

According to Myers (1984), some firms opt for debt financing to finance their company operations. There is a best capital structure where the firm value can be maximized if the management uses the financial leverage



wisely. Although higher debt will incur higher finance cost to the firm, most companies are paying the tax-deductible debt interest. Therefore, the firm's value is positively affected by the tax savings from the interest paid. Moreover, firms have more options of borrowings and lenders or creditors that are willing to supply funds. Firms prefer to use more debt instead of equity if they are run in the countries that have high local tax rates (Desai Foley & Hines, 2004).

Figure 1.4: Malaysia Corporate Tax Rate

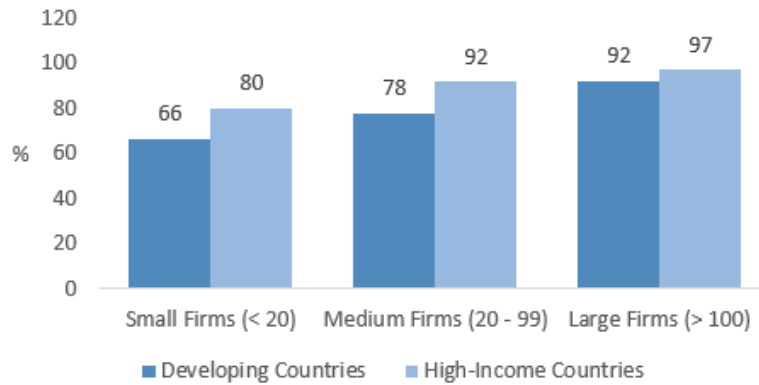


Source: 'Malaysia Corporate Tax Rate' (2017)

However, in Malaysia, the corporate tax rate has been decreasing gradually since year 2006 according the figure above. As what had been mentioned previously, firms would prefer to use more debt financing if it operates in the country with high tax rates. Therefore, this statement would not be applicable for the firms in Malaysia as the tax rate is declining and lower compared to other countries. Malaysia Corporate Tax Rate was last reported at 24% and ranked as the world's 75<sup>th</sup> lowest recorded corporate tax rate (Malaysia - Taxes, n.d.).

#### 1.1.1.4 Global Trend of Debt Financing

Figure 1.5: Median Percentage of Firms with Any Long-Term Liabilities from year 2004 to year 2011

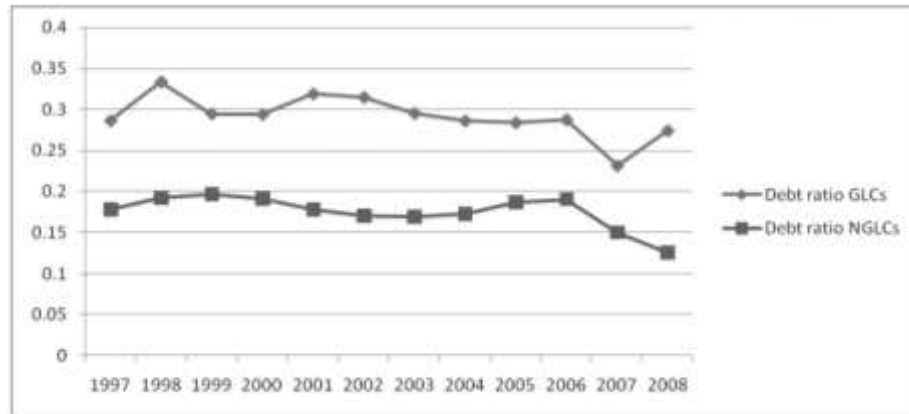


Source: Bruhn (2015) cited from Demirguc-Kunt, Martinez-Peria, and Tressel (2015)

Figure 1.5 shows that the firms in developing countries have fewer long term liabilities compared to the firms in high income countries. The size of the firm is determined by the total employees and categorized into three: small firms (less than 20 employees), medium firms (in between of 20 to 99 employees) and large firms (more than 100 employees). Bruhn (2015) stated that weakness in the contractual environment is a major factor of lower long term debt in developing countries. Furthermore, the lenders prefer to lend short term as they could not depend on the legal institutions to enforce their claims to loan repayment. Besides, the statistic also shows that smaller firms have lower long term liabilities compared to the larger firms

### 1.1.1.5 Trend of Debt Financing in Malaysia

Figure 1.6: Debt Ratio for Government Linked Companies and Non-government Linked Companies



Source: Adapted from Ting, & Lean (2011). 'Capital Structure of Government Linked Companies in Malaysia'

Figure 1.6 shows the debt ratio for government linked companies (GLCs) and non-government linked companies (NGLCs) in the period from year 1997 to year 2008. According to Ting and Lean (2011), GLCs are the companies that have a primarily commercial goal despite that the government holds a direct controlling stake.

The statistics proves that the GLCs rely on the debt capital more than NGLCs do. The debt ratio increased in year 1997 for both categories of companies. This increment was due to the reduction in the Statutory Reserve Requirement (SRR) which was imposed by the Central Bank of Malaysia in year 1998. This liquidity framework introduced a decrease in the cost of borrowing which then increased the incentive to borrow (Ting & Lean, 2011).

In year 2007, the debt ratio for both categories dropped massively. The ratio for GLCs rebounded in 2008; however, the ratio for NGLCs continued to

decrease. Ting and Lean (2011) claimed that this pattern was caused by the negative implications of the United States sub-prime crisis.

Government linked companies have higher debt ratio than non-government linked companies. According to Beuselinck, Deloof, and Xia (2017), companies with high government ownership have implicit and explicit guarantees to secure the debt financing. As government linked companies is backed by government, these companies' credit rating is high and thus, they have a lower credit risk. Furthermore, involvement of government also will lead to lower cost of debt and guarantee the companies' ability to meet their obligation as well as the bankruptcy protection.

#### **1.1.1.6 Overview of Equity Financing**

The concept of capital structure is defined as the combination of debt and equity. The optimal proportion of debt and equity is a significant managerial decision because it could affect the shareholders' risk and return. Companies prefer to finance their capital structure by utilizing internal sources of financing first if it is possible, then only go to debt financing such as bank loan or issuing bond. Equity financing is the last consideration way of financing because issuing new shares will bring in more partners or shareholders and this would result in weakening the current shareholding (Habib et al., 2016). However, as the stock market is growing big, firms opt for equity financing instead of employing debt (Ramakrishnan, 2012).

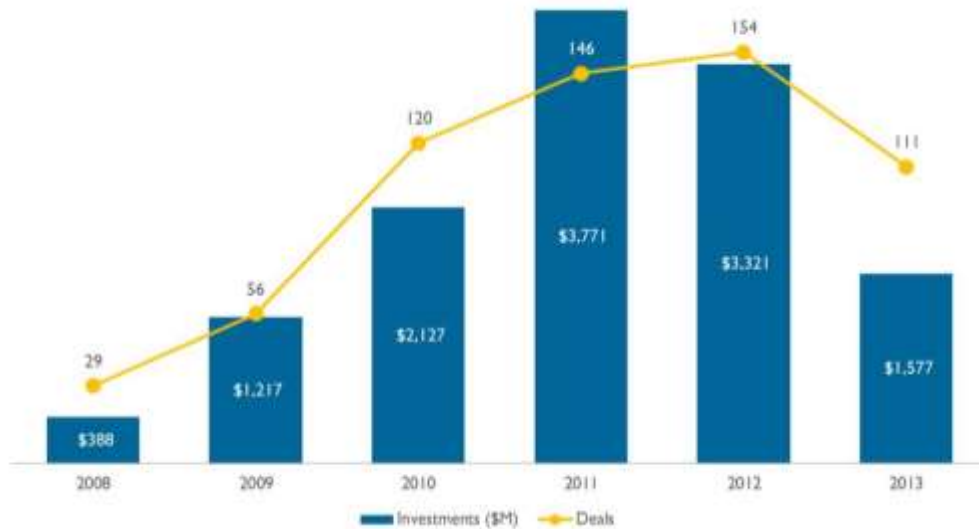
The use of debt financing and equity financing as the methods to raise capital is controversial. Some companies feel that using debt financing is better because equity financing has its disadvantages. By using equity financing, companies have to share profit with investors who have bought the shares. This may be more than what companies would have to repay for

a loan. If companies decide to use equity for raising fund, the shareholders must be willing to share the ownership. This could lead to potential conflict if there are difference in company's objectives, management style and ways of running business (Kunigis, 2012).

According to Kunigis (2012), equity financing is more preferable in some perspectives. There is no loan needed to be repaid if equity financing is used to finance the company capital structure. This method is more suitable for companies that are newly built and yet to generate a profit. This is important because companies do not have to bear a monthly loan payment and the money could be utilized on growing the business. This would make the company less burden and can be more focus on core business. Besides, if creditworthiness is one of the issues that companies need to consider, then equity financing will be one of the best choices that can use to raise fund. Equity financing is more preferable than debt financing for the companies with a poor credit or lack of financial track record.

### 1.1.1.7 Global Trend of Equity financing

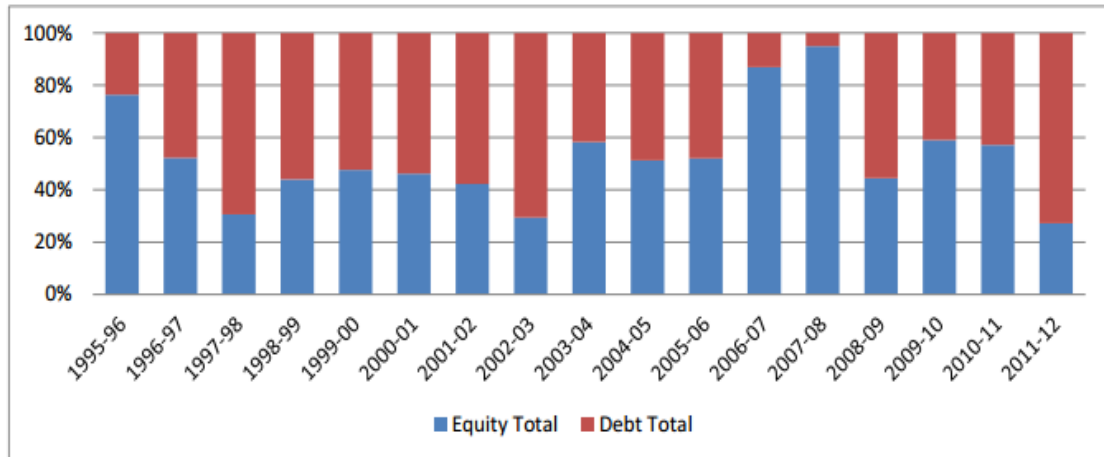
Figure 1.7: Growth Equity Investments and Deal Volume Trend in US from year 2008 to 2013



Source: The Growth Equity Financing Report (n.d.)

Figure 1.7 shows the trend of growth equity investments and deal volume in United State from year 2008 to 2013. The total growth equity investments over the 6 years are \$12.4 billion across 616 deals. In year 2011 and 2012, the growth equity investments have achieved \$3,771 and \$3.321 respectively. The bar chart shows that it was an upward trend since 2008 until 2012 but the trend has slowdown when enter 2013. From this figure, it shows that equity financing is quite preferable in US corporate in 2008 until 2011. However, after 2011, the trend has started to turn down. The decline might be due to the August 2011 stock market fall. In finance and investing, it is also known as the Black Monday 2011 (Hargreaves, 2011). The author added that investors have lost about one trillion dollars in the stock market due to the debt crisis in Europe and a credit rating downgrade by Standard and Poor's of the United States sovereign debt from AAA, or "risk free", to AA+. All of these have sparked fears of a double-dip recession.

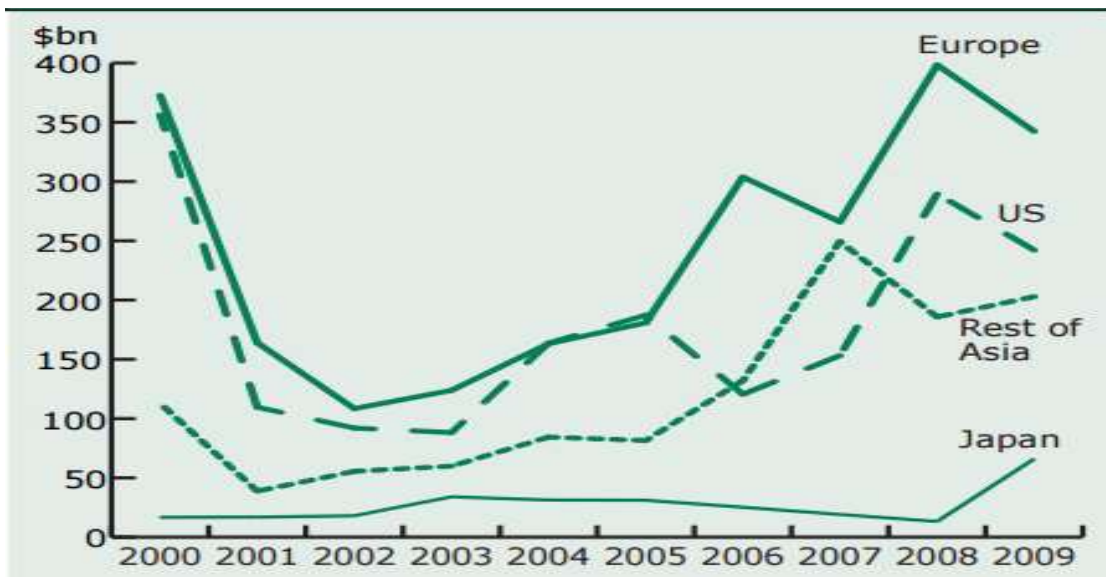
Figure 1.8: Fund raised from primary market in India from year 1995 to 2012



Source: Shukla (2015)

Figure 1.8 shows the fund raised from primary market in India from year 1995 to 2012. In general, the figure shows the proportion between debt financing and equity financing are different throughout the years. In year 2006 and 2007, the percentage that corporate use equity to finance their capital is about 85% and 90% respectively compared to debt financing which is only about 15% and 10%. In overall, equity financing and debt financing are also suggested for corporate in India as the method to raise fund.

Figure 1.9: New equity capital raised from year 2000 to 2009 in US, Europe, Japan and rest of Asia.



Source: McKenzie (2011)

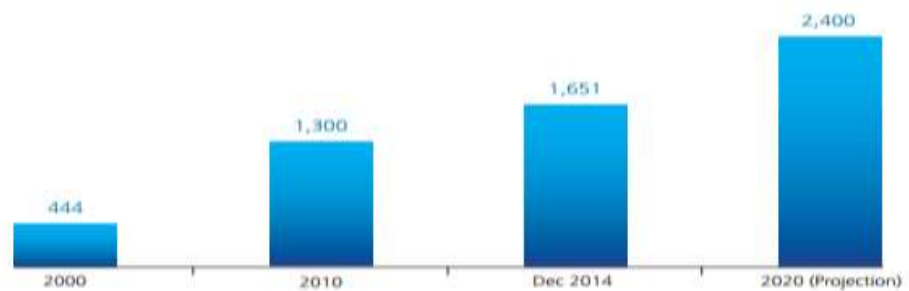
Figure 1.9 shows the trend of new equity capital raised from year 2000 to 2009 in US, Europe, Japan and rest of Asia. From year 2000 until 2001, Europe, US and rest of Asia experienced a dramatic drop in the new equity capital raised. In the same period, there is no change in the new equity capital raised in Japan. However, the trends have bounced back and become an uptrend from 2001 until 2009 even there are some fluctuation during 2006 to 2009. The instability of the trend is due to the global financial crisis happened in 2007 to 2008. According to Ahn, Bhagat, Honda, Kwan, Lind, Pandit, Pouillet, Roy, and Ye (2011), the equity market in Asia appears to have bottomed out and have begun to bounce back in 2010 after the great recession of 2008 and 2009. Financial institutions have currently improved their balance sheets and made more credit available so that corporate can have more funds to do operation, expansion, production and other activity. Corporations are recovering the amount and type of risk that they are willing to take in order to meet their strategic objectives putting cash to work in an improving Merger and Acquisition environment. For examples, the acquisitions of Lihir Gold by Newcrest Mining for \$8.8 billion, Gotransit



Media by AMI Advertising for \$11 billion, and the proposed purchase of Cairn India by Vedanta Group for \$8.5 billion. Through the activity, investors expected that the equity markets have started to recover.

#### 1.1.1.8 Equity financing: Trend in Malaysia

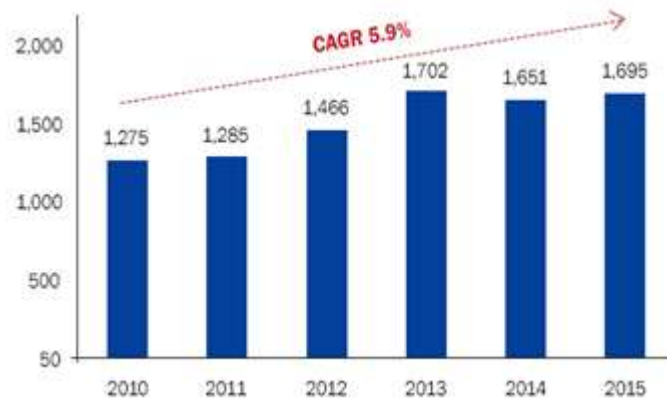
Figure 1.10: Equity Market Capitalization in Malaysia (RM Billion)



Source: Capital Markets Malaysia (2015)

Figure 1.10 shows that the equity market capitalization in Malaysia increases from year to year. The stability and development of the equity market in Malaysia is consolidated due to the high economic growth rates and the presence of huge retirement fund and other funds over many years in Malaysia (Capital Markets Malaysia, 2015). Besides, there is also a strong domestic fund management industry acts as a defensive wall against market volatility. As the market grows, it shows that equity financing is more preferable in Malaysia.

Figure 1.11: Market Capitalization (RM billion)



Source: Capital Markets Malaysia (2015)

Figure 1.11 shows the market capitalization in Malaysia from year 2010 until 2015. According to Capital Markets Malaysia (2015), the Malaysian equity market is a fast growing market in Asia. Malaysia has a total of 903 public listed companies (PLCs) which having the highest number of PLCs in the ASEAN. Besides, the total equity market capitalization for Malaysia is at RM1.70 trillion which is around US\$383 billion and the largest funds raised from secondary markets in ASEAN was US\$4.352 trillion in Malaysia in year 2015.

Figure 1.12: IPO Approval Process in Malaysia



Source: Capital Markets Malaysia (2015)

Figure 1.12 shows the Initial Public Offering (IPO) Approval process in Malaysia. Malaysia is an emerging market to launch Initial Public Offers (IPO). It is probable to go to listing in just 28 weeks. Deloitte (2014) stated

that as compared to IPO process in Singapore, listing of a company requires at least 29 weeks. The processes include submissions, review of application, registration of prospectus, IPO prospectus launches and also listings. Companies with offshore operations and with little or no businesses in Malaysia can also be listed here. This result in the increasing of the use of equity financing as method of capital financing in Malaysia due to the time consuming is short.

### **1.1.2 Overview of Agency Costs**

In business world, agency costs are an expense of disagreement between a company's shareholders (principal) and its managers (agents) who do not perform the actions that are best for the business (Peavler, 2016). Agency costs are considered as internal expenses that lead to the conflicts of interest between the principals and the agents in a company. Singh and Davidson III (2003) stated that the agency costs can be defined as discretionary expenses because it is under the selling, general and administrative expenditures.

According to Emenyi (2013), agency costs could be occurred in the decline of productivities, loss of firms worth and free cash flow inefficiencies. Based on the agency theory which stated by Jensen and Meckling (1967), zero agency cost could be incurred only in the firm that is possessed solely by a single proprietor. According to Chrisman, Chua, and Lits (2004), the researchers claimed that agency costs have influence on the financial performance of an organization with family involvement in the business field. In addition, Negasa (2016) stated that in agency cost theory, free cash flows could trigger the disagreements between managements and shareholders.

As stated by Baker and Anderson (2010), moneychangers face the difficulties of agency issues in ensuring that the firm's funds are being used in proper ways and not spent on the worthless projects. This may strongly increase the agency costs in which would eventually lead to decrease in the firm's earnings. Since the firm's shareholders expect to earn higher financial returns from the equity investments of its proprietary, agency costs could assist the shareholders in mitigating the agency issues.

According to Islam, Islam, Bhattacharjee, and Islam (2010), the agency costs include costs of monitoring, bonding and residual claims. But in the business perspective, agency costs are occurred from the lack of information regarding to the agents' activities, costs of monitoring, the analysis of management's performance, costs to reward the agents for realizing principals' goals, and costs to determine and execute the policy rules. This is the origin of agency issue between the principal and the agents. For an example, the agents have a shorter finite working period in the organization compared with the principal. The earnings of agents are fixed, excluding the incentive payments while the principals act as the residual claimants. Consequently, agents tend to maximize their own best profits at prior, instead of focusing to maximize the principals' welfare. Yet, the agency cost is somehow limited by the option of selling the enterprise.

Islam et al. (2010) and Hansmann and Kraakman (2004) found that the agency issues between the principal and agents could be occurred in the conflicts between the shareholders and managers, shareholders controlling the firm interest and the non-controlling owners, and the firms itself and the parties that the firm contracts (creditors, employees and even customers). In specific field, agency issue could exist in any contractual relationship in which a party (agent) promises to perform any actions to another party (principal). Agency costs will be restricted by the laws that are against those irresponsible agents. Hence, diminishing the costs of agency is actually beneficial to all the parties principal.

### 1.1.2.1 Agency Problems in Foreign Nations

Based on the research done by Kim and Lee (2003), agency issues could be more severe during a financial distress period depending on the firm's corporate governance structure. The research's objective is to identify the impact of the agency costs problems in different corporate governance constructions during the financial crisis. In their study, they stated that there is a significant relationship between agency issues and returns of stock, while the agency issues and operating performance are not closely associated. The researchers then added that ineffective corporate governance structure contributes to the agency problems. Therefore, they suggested that the investors and shareholders should spotlight the importance of having optimal corporate governance structure especially during a financial crisis.

In the journal of Young (2016), Lehman Brothers is an example of corporate governance management failures due to oversight lacking. Richard Fuld is the Chief Executive Officer (CEO) of Lehman Brothers. The author stated that the agency problem in the company has not been solved as the Lehman's employees do not own sufficient company stocks. They faced the agency issue where their agent did not perform well in making best profits for the principal. The core problem lies in the asymmetrical information between the agents and principals. The author also added that the board of directors should have monitored the management on the strategy and risk control more precisely. Besides, debts should not be employed excessively and product portfolio should not be diversified either. The author suggested some effective methods to minimize the agency issues which are director stock ownership and independent directors. Firstly, director stock ownership is to align the interest of both agent and principal together. Requiring the directors to acquire company stock would motivate them to act in the company's interest instead of theirs. Secondly, for mandatory engagement

of independent directors, the New York Stock Exchange (NYSE) requests the company directors to become independent and not have any material relationship with the listed company. However, the author believed that this method could not prevent the directors from acting in their own interests. Having independent directors could only minimize the probability that the director would make decision based on his own immediate financial gain. For an example, even when 8 out of the 10 directors in Lehman Brothers are independent, they were short of the financial expertise and still failed to monitor Lehman effectively.

In addition, Kasum, Oyebola, and Abdulrasheed (2011) analyzed the agency issue in the banking sector in Nigeria. The Nigerian bank was established with African Banking Corporation in the year 1892 and its first banking legislation was in 1952. In the year 1959, Nigeria's Central Bank had been established as an apex regulatory authority. The researchers found out that agency issues and poor corporate governance were the main cause of the crisis occurred in Nigeria were after recapitalization in the year 2006 and also caused the removal of top management of the nine major local banks. Central Bank in Nigeria then revealed that the banks were involved in unethical and fraudulent practices which could possibly harm the interests of shareholders and depositors.

Last but not least, Carlos and Nicholas (1990) analyzed that the agency issues faced by Hudson's Bay Company due to the acquisition operations was around Hudson Bay in Canada, while the directors was located in London. The company recognized that the agency issue arose in early where the multinational company was facing trouble in supervising overseas management. Then, this problem had become more serious due to the company's chiefs were involved in private trade which would create interlopers and spoil the company stock.

### 1.1.2.2 Agency Problems in Malaysia

Nazlina (2011) reported that the two previous directors of Transmile Group Berhad, Chin Keem Feung and Shukri Abdul Taward, were being caught under the section 122B (b) (BB) of the Securities Industry Act 1983. They were jailed due to publishing the fallacious information in financial statement to the Bursa Malaysia. The group had reported unaudited revenue of RM 989 million to Bursa Malaysia in the fourth quarter of the year 2006. These incidents or mistakes done by the directors (agents) would directly impact on the company value and shareholders' wealth.

In the other hand, Perwaja Steel, a government owned heavy industrial company, invested 1 billion ringgit in a project in Terengganu to supply local requirement of steel outputs and unfortunately, the company had to bear big losses up to RM10 billion (The Perwaja Steel Scandal, 2011). As the news had been published, Perwaja Steel had to shoulder huge debts in Japanese dollar (yen) with the higher interest costs. It caused the joint venture partner, Nippon Steel Corporation, to abort the project in the year 1987. Meanwhile, Eric Chia is appointed by Tun Dr. Mahathir Mohamed to become Perwaja's principal. Eric Chia used 7 years to solve this issue successfully and resigned in year 1995. According to The Perwaja Steel Scandal (2011), Eric took away around RM 860 million from Bank Bumiputera and EPF of RM 130 million without permission of Perwaja's shareholders. In this situation, he made the company losses up to RM 2.49 billion and additional debt close to RM 5.7 billion. It caused agency problem to arise due to their conflicts. This matter was reported to police in 1999 and Eric Chia was accused regarding to a payment of RM 76 million for dishonestly authorization in 2004 but the actual total loss was expected to be more than RM 10 billion.

Sime Darby Berhad is a multinational company with more than 120,000 employees in Malaysia. In the year 2010, The Malaysian Insider (Aurora, 2010) indicated that the company faced a huge loss up to approximately RM 2.5 billion due to the unwise investments made by their board of director, Datuk Seri Ahmad Zubir Murshid in utilities and energy sector in Qatar. In addition, the delayed development of Bakun Dam in Sarawak was another reason that made losses to Sime Darby. After that, the company had Datuk Seri Ahmad Zubir Murshid instructed to take a leave of absence in relation to the losses. Besides of these, the company also faced billions ringgit law suits as the company had to terminate some of its joint ventures abruptly. The company lost around RM 6 billion after the news announced in public (Lim, 2010).

### **1.1.3 Overview of Industrial Sector**

Industrial sector is an important element that drives the economic growth in Malaysia as it contributed about 41.6% of Malaysia's total GDP in year 2010. Malaysia has the world's 37th highest industrial growth rate which is 7.5%. The main industries in Peninsular Malaysia are pharmaceuticals, rubber and oil palm processing, tin mining and smelting, medical technology, electronics, logging, and timber processing. On the other hand, the key industries in East Malaysia include logging, petroleum producing and refining and agriculture processing. According to the Department of Statistics Malaysia (2017), Malaysia's index of industrial production (IPI) raised moderately by 3.5% in January 2017.



Table 1.1: Growth of average long term debt for each Malaysian sector from year 2010 to 2014 with base year = 2009

	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Basic Materials</b>	0.13	0.18	0.23	-0.12	0.04
<b>Consumer Goods</b>	0.12	0.18	0.60	0.67	0.56
<b>Consumer Services</b>	0.34	0.31	0.70	0.85	0.58
<b>Financials</b>	-0.02	0.44	0.73	1.19	1.25
<b>Health Care</b>	-0.22	-0.42	1.71	1.45	3.36
<b>Industrials</b>	0.07	-0.17	-0.02	0.06	0.20
<b>Oil &amp; Gas</b>	-0.21	0.29	0.62	0.71	2.15
<b>Technology</b>	0.06	-0.15	-0.09	0.49	-0.14
<b>Telecommunications</b>	0.19	0.08	-0.06	0.08	0.09
<b>Utilities</b>	-0.05	-0.19	-0.14	0.23	0.27

Source: Bloomberg

Table 1.1 compares the growth of average long term debt of industrials sector with others 9 sectors in Malaysia from 2010 to 2014 in which the base year is 2009. It can be clearly see that the growth of long term debt in industrial and telecommunication were both performing in a similar trend, which was declining at beginning, but climbing back after that.

According to the table, industrials sector was not the one who employed the most long term debt compared to other sectors in year 2010. In that particular year, the growth of average long term debt in industrial sector was 0.07. The lowest growth in long term debt was the health care sector (-0.22) and it was followed by the oil and gas sector (-0.21), utilities sector (-0.05), financials sector (-0.02) and technology sector (0.06).

However, industrial sectors showed negative value which is -0.17 in the growth of average long term debt and it was ranked third place among all the sectors which use the lowest long term debt in year 2011 after the health

care sector (-0.42) and utilities sector (-0.19). In year 2012, the growth of average long term debt of industrial sector was -0.02 which in the ranking of number 4 to use the lowest long term debt provided the front ranking of utilities sector (-0.14), technology sector (-0.09), and telecommunication sector (-0.06).

Meanwhile, the growth of average long term debt of industrial sectors became positive in year 2013 which was 0.06. It was the second lowest sector that used the long term long and the sector that used the lowest long term debt was Basic Materials sector (-0.12). The increasing trend of using long term debt for industrial sector achieved its highest value in year 2014 which was 0.20 and it was ranked number 4 among all the sectors that use the lowest long term debt.

Table 1.2: Growth of short term debt for each Malaysian sector from year 2010 to 2014 with base year = 2009

	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Basic Materials</b>	0.07	0.13	0.24	0.21	0.38
<b>Consumer Goods</b>	-0.04	0.12	0.24	0.16	0.57
<b>Consumer Services</b>	0.06	0.06	0.40	0.52	0.51
<b>Financials</b>	0.11	0.44	0.43	0.48	0.54
<b>Health Care</b>	-0.07	0.03	0.25	0.36	0.44
<b>Industrials</b>	-0.09	-0.16	0.03	0.08	0.18
<b>Oil &amp; Gas</b>	0.06	0.10	0.13	0.41	0.42
<b>Technology</b>	-0.35	-0.42	-0.35	-0.36	-0.16
<b>Telecommunications</b>	-0.48	-0.89	-0.48	-0.45	-0.39
<b>Utilities</b>	0.31	1.21	1.48	0.30	0.32

Source: Bloomberg

Table 1.2 compares the growth of short term debt among 10 sectors in Malaysia from year 2010 to 2014 with a base year of 2009. Over the 5 years, industrial sector remains at the third place that least relied on short term debt compared to other sectors.

According to the table, the growth of short term debt for industrials sector in year 2010 was -0.09. It can be considered as one of the lowest use of the short term debt and the previous one was Telecommunications sector (-0.48) and Technology sector (-0.35). In year 2011, it even achieved lower value than last year which is -0.16.

After that, the increasing trend of using short term debt for Industrials sector was started in year 2012. In year 2013, the growth of using short term debt increased to 0.08 but it still remained as the third sector that used the lowest short term debt. Lastly, the increasing trend of using short term debt for Industrials sector achieved its peak value at the growth of 0.18 in year 2014.

Table 1.3: Growth of average of total equity for each Malaysian sector from year 2010 to 2014 with base year = 2009

	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
<b>Basic Materials</b>	0.64	0.61	0.66	0.57	0.66
<b>Consumer Goods</b>	0.11	0.25	0.37	0.42	0.46
<b>Consumer Services</b>	0.12	0.27	0.36	0.52	0.55
<b>Financials</b>	0.11	0.25	0.43	0.68	0.88
<b>Health Care</b>	0.09	0.27	3.57	4.30	5.03
<b>Industrials</b>	0.003	0.01	0.07	0.13	0.26
<b>Oil &amp; Gas</b>	0.11	0.19	0.27	0.63	0.95
<b>Technology</b>	-0.05	-0.07	-0.07	-0.07	0.02
<b>Telecommunications</b>	0.28	0.22	0.12	0.10	0.07
<b>Utilities</b>	0.10	0.18	0.29	0.43	0.69

Source : Bloomberg

Table 1.3 compares the growth of total equity among 10 sectors in Malaysia from year 2010 to year 2014 with a base year of 2009. It can be clearly seen that the industrial sector is increasingly relied on total equity from year 2010 until year 2014. The growth of average total equity in industrial sector is 0.003. It was the second lowest among other sectors and the lowest growth of average total equity was the Technology sector (-0.05).

In year 2011 and 2012, the growth of average total equity in industrial sector increased to 0.01 and 0.07 respectively and remained in ranked of number 2 that have a least usage of total equity compared to others sector. Meanwhile, the growth of average total equity in industrial sector increased to 0.13 in year 2013 and the highest use of the total equity in that particular year was the Health Care sector (4.30).

In addition, the growth of average total equity in industrial sector achieved its highest value in year 2014 which is 0.26. Compared to the highest use of total equity which is health care sector (5.03), the difference of growth of industrial sector with it was 4.77.

Table 1.4: List of top five out of the 30 listed companies in Malaysia's KLCI

COMPANIES	Net Income RM ('000)	Long term debt RM ('000)	Short term Debt RM ('000)	Total Equity RM('000)	ROE = Net Income/Total Equity
<b>ASTRO MALAYSIA HOLDINGS</b>	920,181	3,809,438	2,207,674	714,215	1.28838095
<b>DIGI.COM</b>	2,354,468	3,757,267	385,689	519,362	4.533385192
<b>HAP SENG CONSOLIDATED BERHAD</b>	691,987	2,079,124	3,114,414	4,841,394	0.142931354
<b>IOI PROPERTIES GROUP BERHAD</b>	1,005,846	2,661,088	2,240,256	13,539,154	0.074291643
<b>PETRONAS GAS BERHAD</b>	2,016,963	1,959,042	2,787,071	11,594,936	0.17395206

Sources: Bursa Malaysia, 2015.

The table above shows the net income, long term loan, short term loan, equity and return on equity (ROE) from top 5 out of 30 listed companies in Malaysia. The table shows that Digi.com has the highest net income which is RM2,354,468,000. This is because of it has the lowest equity of RM519,362,000 and also the lowest short term debt of RM385,689 as well. Although Digi.com has the high value of long term debt which is RM3,757,267, but it won't affect it as the company that has the highest return on equity (ROE) which is 4.533 among these top five listed companies.

In addition, Astro Malaysia Holdings company has the highest long term debt which is RM3,809,438,000, while Petronas Gas Berhad has the lowest long term debt which is RM1,959,042,000. Moreover, Petronas Gas Berhad has highest short term debt which is RM2,797,071,000 , while the lowest one goes to Digi.com which is RM385,689,000.

Among these top five listed companies, the lowest return on equity (ROE) was the IOI Properties Group Berhad which is 0.074. The reason is that it has the highest total equity which is RM13,539,154,000 among that top five companies and its net income was not high enough which is RM1,005,846,000. Furthermore, the value of its long term and short term debt was quite high which is RM2,661,088,000 and RM2,240,256,000 respectively

Table 1.5: Five listed companies in industrial sector in Malaysia in year 2014

	<b>ROE (%)</b>	<b>ROA (%)</b>	<b>Long term debt</b>	<b>Short term debt</b>	<b>Total equity</b>
GAMUDA BHD	13.90	7.66	1,998,032,000	792,158,976	6,161,687,040
SIME DARBY	12.04	6.75	8,255,099,904	3,072,199,936	29,465,300,992
MISC BHD	9.10	5.44	6,826,205,184	3,392,624,128	25,757,368,320
MALAYSIA AIRPORT	8.35	3.90	3,789,255,936	200,000,000	4,678,367,232
IJM CORP BHD	13.44	4.95	3,273,900,032	2,331,556,096	8,950,272,000

Source: Bloomberg



Table 1.5 presents the return on equity (ROE), return on assets (ROA), total long term debt, total short term debt, and total equity of five listed companies of industrial sector in Malaysia in year 2014. According the table, Sime Darby possessed the highest total long term debt (RM8,255,099,904) and also the highest total equity (RM29,465,300,992) in year 2014 among the five companies. However, its ROE and ROA were relatively lower than Gamuda Berhad's. This might show that Sime Darby did not fully utilize their capital to generate a higher profitability as compared to Gamuda Berhad. Hence, total capital acquired might not be positively related to the company profitability.

In the same period, Gamuda Berhad achieved the highest value for ROE (13.90%) and ROA (7.66%) among the five companies. Yet, its total long term debt, total short term debt and total equity were not the highest compared to the rests. This probably reflects that a company can still finance the business effectively using less long term debt, short term debt or equity.

Besides, IJM has a high return on assets (ROA), but also a low return on equity (ROE). This might show that IJM employed more equity compared to assets in order to generate the same amount of profit. Therefore, the company's profitability might be relied much more on its equity rather than its asset.

Lastly, Malaysia Airport has employed the least total short term debt and equity, and simultaneously achieved the least ROE and ROA among the five listed company in year 2014. Its low profitability ratios might be caused by the insufficient capital that the company possesses. Hence, this shows that having a low total capital might reduce the company profitability.

## 1.2 Problem Statement

### 1.2.1 Capital Structure

Brealey et al. (2009) stated that capital structure is defined as ‘the mix of debt and equity financing’. It is also essential for the company to make a wise capital structure decision in order to achieve the organization’s objectives (Abor, 2005). According to the table 1.4, Digi.com was able to generate the highest ROE (4.53) among the five companies with implementing a debt financing larger than equity financing strategy. At the same time, Hap Seng Consolidated Berhad which was utilizing equity financing more than debt financing strategy performed badly in generating income and had the lowest profitability among the five companies. This could be concluded that the debt financing will be more appropriate in enhancing a firm’s profitability.

In addition, Table 1.5 shows that Gamuda BHD is able to generate the highest ROE (13.90) among the five listed companies of industrial sector in Malaysia in year 2014. This phenomenon is consistent with the conclusion in previous paragraph that debt financing will be more suitable in boosting a firm profitability. However, the three other listed companies in industrial sector such as Sime Darby, Misc BHD and IJM Corp BHD are able to generate a ROE of 12.04%, 9.10% and 13.44% respectively. These listed industrial companies are able to generate a ROE which is almost at the same level with Gamuda BHD even though they are using an equity financing strategy. This phenomenon is obviously inversed with the conclusion stated from the last paragraph. Therefore, in order to further clarify the effect of capital structure on firm’s profitability, this research is carried out to identify the relationship between both debt financing variable (long-term debt and

short-term debt) and equity financing variable (equity) with firm profitability of industrial sector.

### **1.2.2 Agency Cost**

Agency costs are considered as internal expenses to solve the conflicts of interest between the principals and the agents in a company or an organization. According to Young (2016), Lehman Brothers is an example showing that their agent did not perform well in making best profits for the principal and cause the company an agency issue. The core problem lies in the asymmetrical information between the agents and principals. Meanwhile, another issue is reported by Nazlina (2011) about the previous directors of Transmile Group Berhad were caught under the section 122B (b) (BB) of the Securities Industry Act 1983 due to publishing the fallacious message of the income statement to the Bursa Malaysia. Thus, the profits of the company were affected due to the cases.

In the year 2010, The Malaysian Insider (Aurora, 2010) indicated that Sime Darby Company faced a huge loss due to the unwise investments made by their broad of director. Other than that, the delayed business project of Bakun Dam and abrupt termination of some international joint ventures had boosted the losses to Sime Darby. In fact, agency issues could influence the company's performance directly. Some of the companies may be well-managed involving principal-agency relationship by bearing the agency costs. Yet, there are companies that may not commit the agency costs nor control the agency problems as well. Thus, in order to identify the impact of agency cost on profitability, this research is carried out to determine the relationship between agency cost and profitability of companies under industrial sector listed in Bursa Malaysia.

## **1.3 Research Objectives**

### **1.3.1 Main Objectives**

The research generally aims to investigate and provide deep understanding of how the capital structure and agency cost would influence the profitability of industrial companies in Malaysia. The purpose of this study is to show how the long-term liability, short-term liability, equity and agency cost influence the firm's profitability. Based on these variables, a model that explains the factors of firm profitability will be developed.

### **1.3.2 Specific Objectives**

The specific goals of this research are to:

- i. Study the influence of long-term liability on firm's profitability of Malaysian industrial sector.
- ii. Study the influence of short-term liability on firm's profitability of Malaysian industrial sector.
- iii. Study the influence of equity on firm's profitability of Malaysian industrial sector.
- iv. Study the influence of agency cost on firm's profitability of Malaysian industrial sector.

## 1.4 Research Questions

Four research questions as the fundamental core of the research are developed as follows:

1. Can firm's long-term debt influence the firm's profitability of Malaysian industrial sector?
2. Can firm's short-term debt influence the firm's profitability of Malaysian industrial sector?
3. Can firm's equity influence the firm's profitability of Malaysian industrial sector?
4. Can firm's agency cost influence the firm's profitability of Malaysian industrial sector?

## 1.5 Hypotheses of the Study

Based on the research questions, the following alternative hypotheses are formulated:

*H<sub>1a</sub>*: There is a relationship between total long term debt and profitability (ROA).

*H<sub>1b</sub>*: There is a relationship between total long term debt and profitability (ROE).

*H<sub>2a</sub>*: There is a relationship between total short term debt and profitability (ROA).

*H<sub>2b</sub>*: There is a relationship between total short term debt and profitability (ROE).

*H<sub>3a</sub>*: There is a relationship between total equity and profitability (ROA).

*H<sub>3b</sub>*: There is a relationship between total equity and profitability (ROE).

*H<sub>4a</sub>*: There is a relationship between agency cost and profitability (ROA).

*H<sub>4b</sub>*: There is a relationship between agency cost and profitability (ROE).

## **1.6 Significance of Study**

The present research strives to contribute as a future guide by identifying the determinants on the industrial listed companies' profitability in Malaysia. As this study investigates the influence of different variables on the firm profitability, the theoretical contribution could potentially benefit the firms, industries, investors and even the whole economies.

This study also aims to reaffirm the relationship between the chosen independent variables (capital structure and agency costs) and the dependent variable (firm profitability). Each of the independent variables is calculated using a fixed formula to get accurate figures ensuring a reliable result. On the practical contribution of this research, the result of this investigation is beneficial for investors, shareholders and government when it comes to decide either on choosing the investment or implementing a new policy. The findings would be a valuable input for the firms to have a deeper understanding on the factors affecting industrial firm's profitability since it could help firm in evaluating which factor had affected firms' performance and thus those firm is able to improve firms' overall performance.

### **1.6.1 Investors**

This research aims to provide a general understanding for all the users who are participating in the industrial activities such as investors who are engaging in the investment activities. As for the investors, it is crucial to know how well the listed companies in industrial sector is performing before they make decision in order to acquire desirable return with lesser risk. In another aspect, their investment can become more valuable if they invest in the right firm.

### **1.6.2 Internal Users**

From the perspective of internal users such as managers and employees, this research is valuable where they can evaluate the proper distribution of liability, equity and agency cost to make improvement on the profitability. In the meanwhile, managers are able to plan the proper strategies to either expand the firm business or improve their operational activities.

### **1.6.3 Policy Maker**

Other than that, government can find themselves benefit from this research too where they can implement a new policy or amend the existing policy to better improve the economic growth of the country. Hence, this study will provide deep understanding for policy makers on the relationship between capital structure and agency cost, and firm profitability of Malaysian listed industrial sector firms. The results will be valuable for the policy makers to implement and evaluate regulations, policies and institutional framework in improving firm profitability.

### **1.6.4 Future Researchers/ Academicians**

Last but not least, this research will provides a sufficient information and knowledge on the variables affecting firm profitability, it can contribute to the future researchers and academicians if they are attempt to do the similar research. Meanwhile, future researchers and academicians can use empirical and theoretical facts as the reference for their research especially on industrial sector in Malaysia.

## **1.7 Chapter Layout**

In short, chapter 1 (research overview) is the preliminary chapter which presents the background of variables that affect firm's profitability. Problem statements, objectives of the study, research questions, hypotheses and significance of this study are provided as well. In chapter 2 (literature review), reviews and analyses on the previous researches will be discussed. Theoretical framework and hypotheses development will be presented. Meanwhile, chapter 3 (research methodology) emphasizes on the research design, sampling design and the techniques of data collection, data processing and data analysis. In chapter 4, the data has been used to run the analysis by using E-Views 8. The statistical results are analyzed and discussed thoroughly in this chapter. Last but not least, chapter 5 concludes all the findings and results comprehensively. Limitations, recommendations and implications of study will also be highlighted in this chapter.

## **1.8 Conclusion**

In short, this chapter covered the general review of all the explanatory variables (capital structure and agency costs) in a broad view and then narrowed down to the Malaysian industrial companies. In the following chapter, a brief review and discussion of relevant theoretical models that are applied in this research will be presented for understanding how the independent variables would impact the firm profitability.



## **CHAPTER 2: LITERATURE REVIEW**

### **2.0 Introduction**

Throughout the chapter, the literature review on the other researches related to the selected topic of this study is outlined. The discussions and findings are then reviewed and analyzed. It focuses on the theoretical framework and research methodology with the research approach, hypothesis development as well as the use of the types of statistical method.

### **2.1 Review of Relevant Theoretical Models**

#### **2.1.1 Trade-Off Theory**

Trade-off theory indicates the canceling out the costs against benefits of debt. According to Myers (1984), trade-off theory are focusing on balancing the tax saving arising from debt and leading in decrease the agency cost and reduce cost for financial distress (Şen & Oruç, 2009). In fact, by cancelling out the cost of debt against benefits from interest saved from tax can lead the financial activity to an optimal level (Jahanzeb, Bajuri, Karami, & Ahmadimousaabad, 2014). Meanwhile, Sheikh and Wang (2010) introduced that Trade Off theory are selecting an optimal capital structure in order stimulate the value of firm by reducing the operational cost in market. Trade off theory also named as tax based theories and bankruptcy cost. It presumes that every inflow of capital has their cost and return and these inflows of capital are associated with the earning capacity and systematic risk (Awan & Amin, 2014). Hence, the more debt used by a firm

will help the firm gain more tax saving advantage in financing business daily operation and also the cost pay on financial distress will be balanced by the tax saving benefit (Chen & Chen, 2011).

The additional cost of debt financing is usually the cost prevention on financial distress and bankruptcy. These costs can be separate into direct and indirect bankruptcy costs (Graham & Tucker, 2006). Bankruptcy cost standing with a meaning that a directly incurred cost which can be used in perceiving the defaulting probability on financing of a firm when the index is greater than zero. In the meantime, liquidation cost can also be consider as bankruptcy costs as liquidation cost is representing the losses incurred in the process of liquidating assets of the firm. Distress cost is also one of the bankruptcy cost and it will be incurred when stakeholders decide to liquidate and stop investing in a bad perform company (Chen & Chen, 2011). In addition, according to Awan and Amin (2014), financial distress and agency cost theories presume that high debts will lead a firm to bankruptcy as the financial distress issue force the firm be liquidated. Therefore, this is indicating the financial distress cost and advantages from tax shields are balanced. Therefore, the firms which contain high financial distress cost would decrease the volume of debt financing in capital structure.

In fact, there are further elements can be considering as debt in a capital structure also. Debt actually provides several advantages to the firms other than the advantage of tax shield. Firstly, debt can be a valuable equipment in advertising firms. This is due to the increase in the leverage level of firm will enhance a firm's value, since the market's realization of value can be enhanced by leverage level (Ross, 1977). Secondly, agency costs issue which related to equity can be reduced by debt. The agency costs issue are such as free cash flow issue or named investment issue (Jensen, 1986). Thirdly, agency cost of management can be reduced by debt as managers who acting as shareholder. They may have an interest in shifting the investment to riskier assets which the costs are incurred by debt holders. In addition, the managers may lend to meet the short term obligation of

shareholders; hence, the debt holder will be the one who bear the cost for the investment eventually. Meanwhile, lending too much debt will leads to an underinvestment problem. This condition is indicating that the firm might be restricted from signing good projects as the firm cannot obtain more debt due to the present debt (Mostafa & Boregowda, 2014).

Although various literatures show criticism on this theory, the trade-off theory is still well supported by both empirical and theoretical studies (Titman & Tsyplakov, 2007; Flannery & Rangan, 2006; Hennessy & Whited, 2005). Therefore, trade-off theory remains one of the predominant theories in showing the part of picture of capital structure.

### **2.1.2 Pecking Order Theory**

In the study of Myers and Majluf (1984), it suggested that Pecking Order Theory (POT) was established based on the asymmetry information between external providers and internal stakeholders of the firm. A financial policy was introduced by business leaders which aiming at diminishing the cost on asymmetric information, hence, internal financing will be more preferable than external financing in this condition, especially adverse selection. Meanwhile, this theory presumes that a business leader should consent with some behavior such as equity issuance, non-risky and risky debt issuance and self-financing as last resort. These behaviors will prevent a reduction in the shares value of the firm. Business leaders are also restricted from distributing the dividends to promote the cash flow without incurring the cost of capital for issuing a debt. Hence, the firm may enjoy more internal funds equity financing.

In contrast, Trade Off theory did not introduce the concept of information asymmetry. This issue was later proposed by Pecking Order theory which considering the information asymmetry issue between insider and outsider of a firm. But, Pecking Order theory does not take the optimal capital

structure concept under consideration (Mostafa & Boregowda, 2014; Luigi & Sorin, 2009). Based on the study of Mostafa and Boregowda (2014), it claims that the prime factors that affect the debt ratios in the capital structure of a firm are supply and demand factors. But, the decision made on selecting the sources of capital could be based on the preference sequences which are internal financing such as retain earning and reserves, debt and then equity (Chen & Chen, 2011). According to Sheikh and Wang (2010), firms can boost the firm value by financing new investments with cheapest available capital. For instant, if the firm does not have the financial capability in financing an investment opportunities, the firm may choose to acquire among the different external finance capital to diminishing the extra costs of asymmetric information (Luigi & Sorin, 2009). In fact, the scale which involved in deciding the corporate financing model is driven by the financing cost (Danso & Adomako, 2014).

According to the study of Myers and Majluf (1984), it argues that a firm should adopt internal sources fund such as retain earning and reserves in financing a new project instead of issuing a new debt from bank. This is due business leader cannot simply issue new shares to improve the firm financing capability. If it does happen, it will only happen at a market down price (Mostafa & Boregowda, as cited in Myers, 1984). The business leader will always hope in cancelling off net present value of new investment or growth opportunity by issuing new shares although this will leads to a decline in the value of share. Therefore, this can be a bad news to the firm. This matter can be worse in the event of information asymmetry. Regarding to investment, small companies will always have better growth opportunity than a matured companies since the price is affected by growth opportunity value but not the volume of asset.

Moreover, transaction costs also play a critical role in capital structure decision of a company. The transaction costs are incurred during the process of getting new external equity financing and the cost is always more expensive compare to internal equity financing (Chen & Chen, 2011). Based

on the study of Baker and Wurgler (2002), it indicates that market-to-book ratio can be used as a measurement for the pecking order theory in calculating the investment opportunities. Pecking order theory presumes that a firm which financing the projects with internal equity financing will be more profitability instead of obtaining liability. At the same time, Mostafa and Boregowda's study in 2014 (as cited in Myers, 1984) introduce that the firm should not ignore the benefit from filling up the financial instability in the market by using equity financing when the information asymmetry issue is less. Therefore, the firms can issue loan or debt within a more flexibility position and this is also the reason why some firms are able to maintain low debt issue with some growth opportunity.

Moreover, a firm which works with liability capacity will issue equity financing also even though debt financing is preferred. This is because of the matter of exceeding debt over the debt capacity point will diminishing the value of firm. Therefore, it will be challenging in identifying between trade off and pecking order theories of capital structure. In the study of Myers (1984), he suggested a way in identifying which firms are choosing pecking order or trade off theories is that identifying whether the firm has used all internal sources or not. If the firm adopts all internal equity capital in investment, then it is indicating that the firm is actually following the pecking order theory.

### **2.1.3 Agency Theory**

As stated by Negasa (2016) and Jensen and Meckling (1976), agency theory is used in identifying the segmentation of possession and management in corporations which established from arguments of interest between the corporation's shareholder and managers. Jensen (1986) commended that the corporation's manager focus on expanding the business from corporation's

resources which is against the interest of shareholders' wealth maximization. In the view of Johnson and Droege (2004), agency theory was presumed as a series of social life of agreement and ignorance which exist in the community connection. But, Ekanayake (as cited in Mustapha & Che Ahmad, 2011) claimed that agency theory has the limited experiential investigation that directly tests its theory in different culture context.

### **2.1.3.1 Agency Costs**

In the study of Jensen and Meckling (1976), agency costs are established by three components which are monitoring expenses, bonding disbursement and residual losses. The monitoring expenses are defined as an expenditure that paid for observing and administrating the behavior of agents. Bonding expenses are the cost incurred on maximizing the agency performance in the best interests for shareholder and also compensating the shareholders in the failure cases. While in term of residual losses, it is a loss that incurred other than the cost for both monitoring and bonding costs which appear from the conflicts of interest. Jensen and Meckling (1976) also assumed that monitoring and bonding costs will be the major cost in maintaining the good relationship between principals and agents.

Baker and Powell stated that agency costs are established from 2 components which are direct agency cost and indirect agency cost (Emenyi, 2013). Direct agency cost refers to cost incurred in potential collision with corporation's managers such as bonus or incentives paid to manage the corporation's managers. Indirect agency costs are the failure of manager in process of generating profit from investment, for instance free cash flow mismanagement.

Business leader will not pay out the excess capitals or funds to their shareholders if there is consistent agency expense needed from the issue of free cash flow (Jensen, 1986). Besides, Abdul Rahman and Mohamed Ali (as cited in Mustapha & Che Ahmad, 2011) published that some Malaysian companies are trusted to have lower agency expense and problems since the shareholders in Malaysia companies have a better match in manipulating and the stronger rights in managing the cash flow.

## **2.2 Literature Review**

### **2.2.1 Independent Variable**

#### **2.2.1.1 Relationship between debt and profitability**

By using descriptive statistics, profitability ordinary least squares, multiple regression analysis, analysis of variance and coefficient of determination, Muchugia (2013) proved that during the year of study from year 2008 to year 2012, a significant positive relationship between short term debt and firm profitability was found within 38 commercial banks in Kenya as at 31<sup>st</sup> December 2012, licensed and registered under the Banking Act. Short term debt has a relatively lower cost compared to long term debt. Thus, an increment in short term interest rate will lead to an increment in profit. However, there is a significantly negative relationship between long term debt and firm profitability as higher cost will be charged on issuing long term debt. Hence, the bank's management worry that acquiring high long term debt would lead them to lower profitability.

During the years from 1998 to 2002, Abor (2005) reported that there is a significantly positive association between total debt and firm profitability

of all the listed firms in Ghana. The researcher suggested that profitable firms relied more on debt financing as their main capital source. Contrarily, Shubita and Alsawalhah (2012) also reported that there is a significantly negative relationship between debt and profitability of 39 industrial shareholding companies in Jordan from year 2004 to 2009. When the industrial shareholding companies in Jordan use high proportion of debt to finance firm operations, it could lead to low firm profitability as debt tends to be relatively more costly than equity financing. Therefore, the author suggested that firms should use equity financing more as their main capital source.

Tifow and Savilir (2015) conducted a research on the relationship of capital structure and firm performance of manufacturing firms in Turkey from year 2008 to year 2013. The results indicate that there is a significantly negative association between short term debt ratio and firm profitability. However, a negative association was found between long term debt ratio and return on equity ratio and a positive correlation on return on asset ratio. The author stated that using debt financing rather than equity financing may cause a lower firm performance. Moreover, the author suggested that firms should opt to use long term debt rather than short term debt to increase the profitability.

Studying the impact of capital structure on profitability of American service and manufacturing firms from year 2005 to year 2007, Gill, Biger, and Mathur (2011) reported that there is a significant positive relationship between short term debt ratio and profitability in both manufacturing and service industries. The author stated that short term debt is relatively cheaper and hence, taking short term debt with low interest rate will increase the firm profitability. Besides, long term debt ratio also has a positive relationship with firm profitability in manufacturing industry. The author suggested that it might be due to the decline in economic in United States and the low interest rates on the long term debt during the study period.



Addae, Nyarko-Baasi, and Hughes (2013) studied the effect of capital structure on profitability of listed firms in Ghana from year 2005 to 2009. The authors stated that there is a significantly positive relationship between short term debt and firm profitability. However, the results showed that there is no significant relationship between long term debt and firm profitability in majority of industry sectors. Still, the long term debt is statistically negatively related to firm profitability. The long term is rather expensive; therefore, using more long term liability would result in lower profitability. Alternatively, the authors also suggested that using long term liability would not affect the firm profitability for most of the industries.

For the non-financial listed firms in Kenya, Mwangi, Makau, and Kosimbei (2014) studied the impact of capital structure on firm performance in the period from year 2006 to 2012. The results proved that there is a significant positive relationship between current liabilities and firm profitability. This implies that the firm profitability could be reduced by employing more current liabilities or short term debt.

Hence, by referring to the previous studies, this study expects that short term debt and firm profitability are positively correlated, and a negatively correlation between long term debt and firm profitability.

#### **2.2.1.2 Relationship between equity and profitability**

Salawu (2009) has done a research related to the impact of capital structure on profitability of listed firms in Nigeria during 2009. The chosen sample is 50 listed Nigerian Stock Exchange non-financial companies within a period of year 1990 to year 2004. In addition, Pooled Ordinary Least Squares (OLS) model, Fixed Effect Model and Random Effect Model were tested in investigating the relevancy of capital structure and profitability. Based on

the result, the study found that there is an insignificant positive impact of capital structure on the profitability. However, the result shows that the relationship between profitability and short-term debt are positively correlated. The study also concluded that there is a positive relationship between total equity in the capital structure and profitability.

Raude, Wesonga, and Wawire (2015) had investigated the effect of equity financing strategy on the performance of small and medium enterprises in Kenya. The sample size of this study is 95 of the target population out of 2,713 enterprises. The research has a 5-year sample period from year 2009 to year 2013. Panel data analysis and parametric statistical techniques is chosen as the methodology to carry out the investigation. A significantly positive result was generated from the regression model of equity financing strategy and the small and medium enterprises performance. However, the study indicated that debt and retained earnings financing strategies were more preferable than equity financing in Kenya.

Foyeke, Olusola, and Aderemi (2016) studied the relationship between financial structure and the profitability of manufacturing companies in Nigeria. The study period is from 2008-2012 and the sample involves 25 manufacturing companies listed on the Nigerian Stock Exchange. Pearson's Product Moment Correlation Coefficient and the regression analysis were employed to determine the degree of relationship between the variables used. Besides, non-probability sampling method is used to generate the sample. Finding of this study showed there is a positive significant relationship between equity finance and profitability of manufacturing companies in Nigeria. The higher the equity finance of manufacturing companies in Nigeria, the higher the likelihood of the profit of such companies increasing.

Chechet and Olayiwola (2014) proposed a study in agency cost theory perspective which is about capital structure and profitability of Nigerian

quoted firms. The sample consists of 70 out of 245 firms listed on the Nigerian exchange (NSE) with a 10 years period from year 2000 to year 2009. The method of fixed-effects, random-effects and Hausman Chi Square estimations were used in this study to carry out the regression result. The finding showed that there is a positive relationship between equity finance and Nigerian firms' profitability. It indicates that the profitability of the Nigerian firms increase significantly as equity in finance structure increases.

Equity contain the elements of retained earnings, surplus, reserves and share-premium or paid-up share capital (Maxwell & Kehinde, 2012). Maxwell and Kehinde (2012) refer paid-up capital as part of the called-up capital which investors have fully paid the payment in exchange for shares of stock. The study also describes reserves as a part of the retained earnings that is appropriated for a designated purpose and it is not actually designed to meet any contingency or liability in the value of assets which exist in balance-sheet. Share premium is defined as an excess amount when there is an excessive price of shares over its par value while retained earnings are the percentage of net earnings of dividends that are not paying out. Retained earnings are reinvested into company to expand its core business operations and perpetually increase in the value of the firm. This indicates that there is a positive relationship between equity and firm value. Besides, Antwi, Mills, and Zhao (2012) that studied the capital structure and firm value from Ghana shows that long term debt and equity capital have the same positive impact on firm value.

In contrast, Maxwell and Kehinde (2012) reveals that equity sources can act as one of the element in capital structure which is unrelated to a firm value, while long-term debt is the major cause of the value of firm in emerging country like Nigeria. From the study, it shows that company's managerial leaders are recommended to issue more of long-term debt rather applying equity financing as the results shows that long term debt have positive impact on firm value. The result is in line with Maxwell and Kehinde (2012)

where long-term debt is certainly relevant to the firm value, while equity capital does not have positive impact on the firm value. Thus, firms are recommended to apply more of long-term debt than equity financing as method of capital financing as long term debt will promote firm value. Business leaders are also recommended in comparing the marginal benefit and costs of long-term debt before applying long-term debt as the technique of financing. This is due long-term debt is proved that long-term debt have positively impact on firm value.

### **2.2.1.3 Relationship between agency cost and profitability**

In a study of Zakaria, Purhanudin, Chong, and William (2016), it claimed that there is a possibility in reducing the risks on managers wasting fund if the excess fund of the company are returned to the shareholders. The study also commented that manager would possibly perform some actions that only benefit to him but not to the shareholders and this would eventually lead to a serious agency conflict. Shareholders are suggested to use some form of equity to compensate the manager in order to prevent the disagreement between managers and shareholders. Datta, Iskandar- Datta, and Raman (2001) stated that letting managers to own some form of ownership would make shareholders at an advantage position because the managers might perform with the objective to enhance the firm value. The paper adopted the asset turnover and return on equity (ROE) as the measurements to determine the relationship between the agency cost and company profitability. The result shows that there was a positive correlation between the agency costs and ROE. It is indicating that agency cost increases when the profits of company increased.

In the study of Wang (2010), researcher analyses the influence of free cash flows and agency costs on firm performance. These studies use the data of 505 public listed companies on Taiwan Stock Exchange within a period from year 2002 to year 2007. There are six proxy variables can be used to

measure of agency costs which are total asset turnover, operating expense ratio, and administrative expense ratio, total asset turnover and operating expense ratio. It is suggested that total asset turnover and operating expense ratio will be more suitable to be used as the measurement of agency cost. The researchers found that agency cost is significantly negative related to firm performance and stock return.

Based on the study of Berger and Hann (2007), it examined the impact of agency and proprietary cost on firm's profitability. The study shows that a firm with higher agency cost and lower proprietary cost will have lower profitability in the firm. This is because the proprietary cost is more appropriate in motivating manager to generate profit for the firm. Thus, a negative relationship of agency cost and profitability is found especially when the agency cost is relatively higher than the proprietary cost in a firm. In overall, the paper claimed that a firm which possesses higher agency cost will have lower profitability of a firm.

Furthermore, Emenyi (2013) examined the relationship between agency cost and financial leverage of a firm. The paper shows a result in which reducing the agency costs will lead to a higher profitability to a firm. This result was also agreed by Grossman and Hart (1982) and Ang, Cole, and Lin (2000). However, the agency costs might be decreased by the cost incurred for management ownership of a firm. It means that managerial ownership can be applied in motivating manager instead of using agency cost only. This study concludes that agency cost is negatively correlated to firm's profitability.

Based on the studies above, it is found that most of the studies claim that there is a negative relationship between the agency cost and firm's profitability. Thus, this study expects that the agency cost is a negative correlated to firm's profitability in Malaysia list industrial company.

## **2.2.2 Control Variables**

### **2.2.2.1 Relationship between firm size and profitability**

Based on a study of Iqbal, Mulani, and Kabiraj (2013), they conducted a research that showed the firm size is positively related to firm profitability. It indicates that greater size of firm would have greater firm's profitability. Lawrence, Diewert, and Fox (2004) reported that a large firm size will have more resource and high production capacity in boosting the firm to obtain higher earnings. The study found out that the firm size could directly influence the profitability of a firm. Thus, the study concluded that firm size is positively correlated to the firm's profitability.

Furthermore, Amato and Burson (2007) studied that the relationship of firm size and profitability in the financial services sectors. The result showed that a larger the firm size will tend to have a higher value in the firm than smaller firms. Thus, the research claims that there is a positive relationship between the size of firm and its profitability which also supported by Smyth, Boyes, and Peseau (1975); Shepherd (1972); Marcus, (1969); Hall and Weiss (1967).

In this study of Babalola (2013), it stated that firm size is important in influencing firm's profitability. This study is determining the influence of firm size on firm profitability in country Nigeria. Panel data was implemented in the study within a period from year 2000 to year 2009. Two alternative measurements are used in computing the firm size which are natural logarithm of total assets and natural logarithm of total sales. The result shows that the both measurements of firm sizes are positively correlated to firm's profitability in Nigeria manufacturing firms.

In addition, Banafa (2016) conducted a study on non-financial listed firms in Kenya on the effect of leverage, liquidity, and firm size on financial performance. Panel data analysis was implemented to examine the effect of leverage, liquidity, and firm size on financial performance of non-financial listed firms in Kenya. The authors reported that firm size is positively correlated on listed non-financial firm's performance in Kenya. Meanwhile, Majumdar (1997) studied the effect of the company size and the company age on company's profitability level by using 1020 samples of Indian companies. The result shows that a larger size of firms has a greater profitability compared to smaller size of firms.

Niresh and Thirunavukkarasu (2014) examined the relationship of firm size and profitability of Sri Lanka listed manufacturing firms. In this study, 15 companies which are active in Colombo Stock Exchange (CSE) in the years 2008 until years 2012 were selected as the sample in generating the result. Beside, multiple regression and correlation methods had been used by researcher in determining the relationship of firm size and profitability. The study found that there a firm size is positive correlated with listed manufacturing firm's profitability in Sri Lanka. The major reasons of the positive relationship are the change of organization structure, technology used and separation of ownership from management in companies. Thus, it will lead to managers more focusing on profit maximization instead of maximizing managerial utility. Additionally, Devi and Devi (2014) revealed that when the company has more assets, the more income can be generated and this will eventually lead to higher profitability.

Meanwhile, the study conducted by Khatab, Masood, Zaman, Saleem, and Saeed (2011) which investigate the relation between Corporate Governance and Firm Performance. The sample of this study obtains 20 listed firms in Karachi Stock Exchange in the years of 2005 until 2009. The result has proved that total assets are positively correlated to return on asset (ROA). In contrast, based on 100 qualified manufacturing companies listed in India,

Kartikasari and Merianti (2016) find negative relationship between firm size and profitability. This could be logically accepted as ROA's denominator is total assets. When the firm has more assets, its ROA would be lower assuming a constant net income.

According to Stekler (1964) study which applied the measurements of firm size by using assets size and the measurement of profitability by using profit ratios. It proved that the profitability of the firm was negatively correlated to the firm size. Therefore, the profitability of both small and large size firms will be less than the profitability of medium size firm. Besides, Jang and Park (2011) state that firm size is negatively correlated with the profitability of 70 non-financial companies listed at Karachi stock exchange from year 2001 until year 2010.

Olubukunola, Uwalomwa, Kingsley, and Oluwatobiloba (2016) studied the influence of corporate attributes on business success in Nigeria. The result of study is generated from 30 companies from Nigeria Stock Exchange (NSE) within a period from year 2007 until year 2011. The researchers point out that there is insignificant relationship between profitability and the firm size of corporate in Nigeria.

Based on the above journals and researches, most of them agree that there is a positive relationship between the firm size and profitability. Hence, this study expected that the firm size is positively significant to profitability of listed company in Malaysia industrial sector.

#### **2.2.2.2 Relationship between sales growth and profitability**

Uwuigbe, Uwalomwa, and Egbide (2011) reported that the sales growth was positively correlated with the profitability with a coefficient of 0.245 and



significant level at 10% in the study. It is agreed by the Markman and Gartner (2002) and Dess and Robinson (1984) that the growing of sales or revenues may increase the firm's profitability and the value of creation for its shareholders.

According to the Malik and Iqbal (2012), sales growth is one of the variables which can be used in calculating the investment growth opportunities. It shows a positive relationship and it is highly significant to firm's profitability. Higher sales growth will incur greater firm's profitability. It is concluded that the sales growth was having a direct association with profitability. Its result was similar with the researches of Deloof (2003) which claimed that a firm's working capital is significantly influence the firm's profitability.

Sam, Fazli, and Hoshino (2013) conducted a research of Japanese ICT industrial with three ASEAN countries in term of sales growth, profitability and performance. This study used 69 companies from Japan and 24 companies from the 3 ASEAN countries (Phillipine, Thailand and Malaysia) which data obtained from Orbis Bureau Van Dijk Database (OBVD). The research is studying the relationship of sales growth ratio and profitability ratio in ICT industry between Japan and three ASEAN countries. The finding of this study shows that the sales growth rate of Japan is perform better than the ASEAN but ASEAN ICT industry perform better in terms of profitability.

Moreover, Goddard, Molyneux, and Wilson (2004) conducted a research on the effect of growth on firm profitability in banking sector. 5 major European countries which are Spain, Germany, France, United Kingdom and Italy are selected in investigating the relationship within a period from year 1992 to year 1998. It shows that the profit is taking an important qualification for future growth in banking sector. Therefore, the larger the

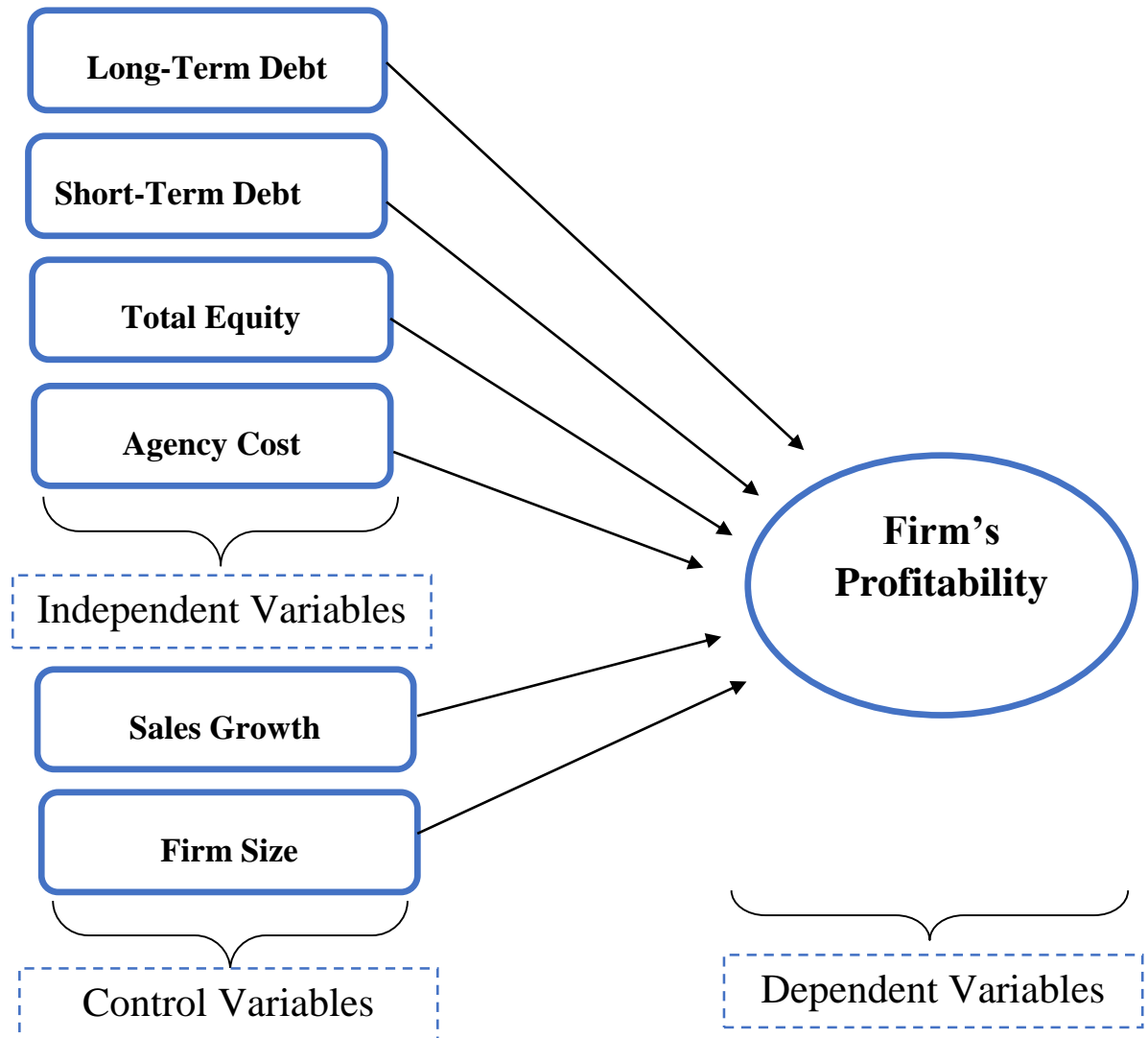
growth rate, the better the performance of the bank's profitability. It is expressing that there is a significant positive correlation between the growth and the bank's performance.

Markman and Gartner (2002) conducted a study in determining the relationship of firm growth and profit growth by using employment growth and sales growth as a measurement for firm growth. The result of study shows that there is an insignificant negative relationship between both firm growth and profitability. The reason behind is that there may be a lag effect which more than the five-year data providing for these firms. This supported by Gschwandtner (2005) which indicated that there insignificant relationships between firm growth and profitability for American companies from year 1950 until year 1999.

To conclude the relationship between the sales growth and its profitability, this study expected that the firm growth is positively correlated with firm's profitability in Malaysian industrial firms.

## 2.3 Theoretical Framework

Figure 2.1: The Effect of Capital Structure and Agency Cost on Firm's Profitability of Industrial Sector in Malaysia from Year 2010 To Year 2015



This research attempt to determine the relationship of capital structure and agency cost on firm's profitability. It included two independent variables which are firm's profitability as known as return on asset (ROA) and return on equity (ROE). While, long term debt, short term debt, total equity and agency cost are chosen as independent variables. Meanwhile, firm's size and sales growth are chosen as the control variables.

## 2.4 Hypothesis Development

### 2.4.1 Debt and Profitability

Mwangi et al. (2014), Addae et al. (2013), Muchugia (2013) and Gill et al. (2011), reported that short term debt is significantly positive to firm profitability. Short term debt has a relatively lower cost compared to long term debt. This indicates that an increase in lower interest short term debt will enhance company's profit. However, Tifow and Savilir (2015), Addae et al. (2013) and Muchugia (2013) suggested that long term debt is significantly negative related to firm profitability as long term debt demanding a higher cost.

Hence, by referring to the previous studies, this study expects a negative correlation between long term debt and firm profitability and a positive correlation between short term debt and firm profitability.

H<sub>1a</sub>: There is a negative relationship between total long term debt and profitability (ROA) in industrial sector.

H<sub>1b</sub>: There is a negative relationship between total long term debt and profitability (ROE) in industrial sector.

H<sub>2a</sub>: There is a positive relationship between total short term debt and profitability (ROA) in industrial sector.

H<sub>2b</sub>: There is a positive relationship between total short term debt and profitability (ROE) in industrial sector.

### **2.4.2 Equity and Profitability**

It is assumed that if a company is using equity to finance its capital structure, the firm value of the company is more likely to increase (Foyeke et al., 2016). From the result of Chechet and Olayiwola (2014), it can be said that there is a positive relationship between equity financing and firm value. The same result is obtained by Salawu (2009) also shows that equity financing affect a company firm's value positively. According to the most reviewed article, this study expects that the equity financing is significantly positive to firm value.

H<sub>3a</sub>: There is a positive relationship between total equity and profitability (ROA) in industrial sector.

H<sub>3b</sub>: There is a positive relationship between total equity and profitability (ROE) in industrial sector.

### **2.4.3 Agency Cost and Profitability**

As previous researcher majority such as Zakaria et al. (2016) and Wang (2010) shown that agency cost and profitability is negative related. This is indicating that high agency cost will lead to a low profitability of a firm (Berger and Hann, 2007). Furthermore, Emenyi (2013) claimed that the agency cost are negative correlated with firm profitability. This is also proven by Ang et al. (2000) and Grossman and Hart (1982). Hence, this study presumes that profitability of listed industrial companies in Malaysia and agency cost are negatively related.

H<sub>4a</sub>: There is a negative relationship between agency cost and profitability (ROA) in industrial sector.

H<sub>4b</sub>: There is a negative relationship between agency cost and profitability (ROE) in industrial sector.

#### **2.4.4 Control Variables and Profitability**

In the study of as Babalola (2013) and Amato and Burson (2007), the authors stated that the firm size is positively correlated to firm profitability. This is due to higher production capacity of a firm will lead in generating higher earning when firm size growth bigger (Lawrence et al., 2004). In addition, Iqbal et al. (2013) conducted a study which proved that there is a significant positive relationship between firm size and firm profitability. The result was also agreed by Dogan (2013) and Majumdar (1997). Thus, this study also expected that firm size and profitability of industrial listed companies in Malaysia are positively related.

There are a lot of studies have proved that sales growth is significantly positive correlated to a firm's profitability (Akinlo, 2012; Malik & Iqbal, 2012; Olubukunola et al., 2011; Whittington, 1980). According to Markman and Gartner (2002) and Dess and Robinson (1984), sales growth will lead to increase value of creation for its shareholder in one firm and its profitability. Hence, this study expected that sales growth and profitability of industrial listed companies in Malaysia are positively related.

### **2.5 Conclusion**

In particular, this chapter has presented all the relevant theoretical model and other related literature review on the profitability and the four independence variable (long-term liability, short-term liability, equity and agency cost). Meanwhile, the theoretical framework was established by the relevancy of dependent variables and independent variables. In fact, this analysis aims to identify the correlation of each independence variable with firm profitability. The relevant hypothesis and test were stated and will be discussed further in both Chapter 3 and 4 respectively.

## **CHAPTER 3: METHODOLOGY**

### **3.0 Introduction**

The methodology used in this research will be demonstrated in this chapter. There are total four variables which include long-term liability, short-term liability, equity and agency costs are examined to study the relationship with firm's profitability in Malaysia industrial sector. 168 companies from this sector are to be examined for those variables from the year of 2010 to 2015. The data used in this study is secondary data and this chapter lays out the research design, data collection method, sampling design, data processing and analysis.

### **3.1 Research Design**

Research design will be the primary direction of this study. From the book of Creswell (2013), quantitative research defined as standard formal, objective and systematic procedures in which numerical data are collected to acquire the quantifiable information. The quantitative research of this study is to depict the explanatory and explained variable. It is adopted to examine the impact of the independent variable on the dependent variables. Causes and effects of the test relationships will be discovered by using quantitative research in the study.

In this study, there were total 302 companies listed in industrial sector Bursa Malaysia in year 2015 but the final sample of 168 industrial sector companies listed under Bursa Malaysia had been chosen as target population in this research. This study determines the relationship between the dependent variables which are ROA (return on asset) and ROE (return on equity) and the independent variables which include long term debt, short term debt, agency cost and equity together with the control variable which are the firm size and sales growth.

A global financial crisis was happened during the period of the years 2007 to 2008 (Murphy, 2008). Hence, this research attempt to study the firm's value under influenced of capital structure and agency cost after the post financial crisis with a range periods for 2010 to 2015. These six years range of the periods applied to determine the relationship between variables.

Panel data analysis applied in this research and 168 industrial companies for six years period are selected to be investigated in this research. The study applied a quantitative research design by using the secondary data. Secondary data were assembled from Bloomberg which provided in Universiti Tunku Abdul Rahman (UTAR) Library. The diagnostic tests for normality, multicollinearity and autocorrelation and the panel data analysis involves pooled ordinary least square (OLS) model, poolability hypothesis test, fixed effects model (FEM) and random effect model (REM), Hausman test are carried out to observe the regression model. The quantitative research is adopting software to perform the analysis by using E-Views 8 in this paper.

### **3.2 Data Collection Method**

The purpose of this research is to examine the impact of capital structure and agency cost on its firm profitability of the industrial companies listed in Malaysia. The chosen dependent variable in this research is firm's profitability. For independent variables, there are capital structure (which consists long term debt, short term debt and total equity) and the agency cost in this research with sales growth and firm size as the control variable. The secondary data is adopted to carry out in this study.



The secondary data were obtained from Bloomberg for the time period of sample within the year of 2010 to 2015. The data assembled will be applied into various formulas which will be show in 3.4 data processing section for further discussion.

Table 3.1: Variables, Proxies, Descriptions, Unit Measurements & Sources

Variables	Proxy	Description	Unit Measurement	Sources
<b>1. Independent Variable</b>				
Return on Asset	ROA	An accounting-based measurement used to indicate the firm's profitability performance relative to its total assets (Daines, 2001; Sundgren & Wells, 1998; Berger & Ofek, 1995).  <b>Return on Asset (ROA)</b> $= \frac{\text{Net Profit}}{\text{Total Asset}}$	Ratio	Bloomberg
Return on Equity	ROE	An accounting-based measurement used to reflect the firm's profitability performance relative to its total equity (Tifow & Savilir, 2015).  <b>Return on Equity (ROE)</b> $= \frac{\text{Net Profit}}{\text{Total Equity}}$	Ratio	Bloomberg

2. Dependent Variable				
Long-term Debt Ratio	LTR	<p>This ratio present the percentage of the company's assets financed with the financial obligations which are payable after more than a year (Habib et al., 2016).</p> <p style="text-align: center;"><b>Long Term Debt to Asset Ratio</b>  <math display="block">= \frac{\text{Total Long Term Debt}}{\text{Total Asset}}</math></p>	Ratio	Bloomberg
Short-term Debt Ratio	STR	<p>This ratio indicates the percentage of the total assets that is represented by current debts less than a year (Shubita &amp; Alsawalhah, 2012).</p> <p style="text-align: center;"><b>Short Term Debt to Asset Ratio</b>  <math display="block">= \frac{\text{Total Short Term Debt}}{\text{Total Asset}}</math></p>	Ratio	Bloomberg
Agency Cost	AGC	<p>Operating expense to annual sales ratio measures how effectively the firms manage the operating expense and other direct agency costs (Ang et al., 2000).</p> <p style="text-align: center;"><b>Agency Cost</b>  <math display="block">= \frac{\text{Total Operating Expense}}{\text{Total Annual Sales}}</math></p>	Ratio	Bloomberg

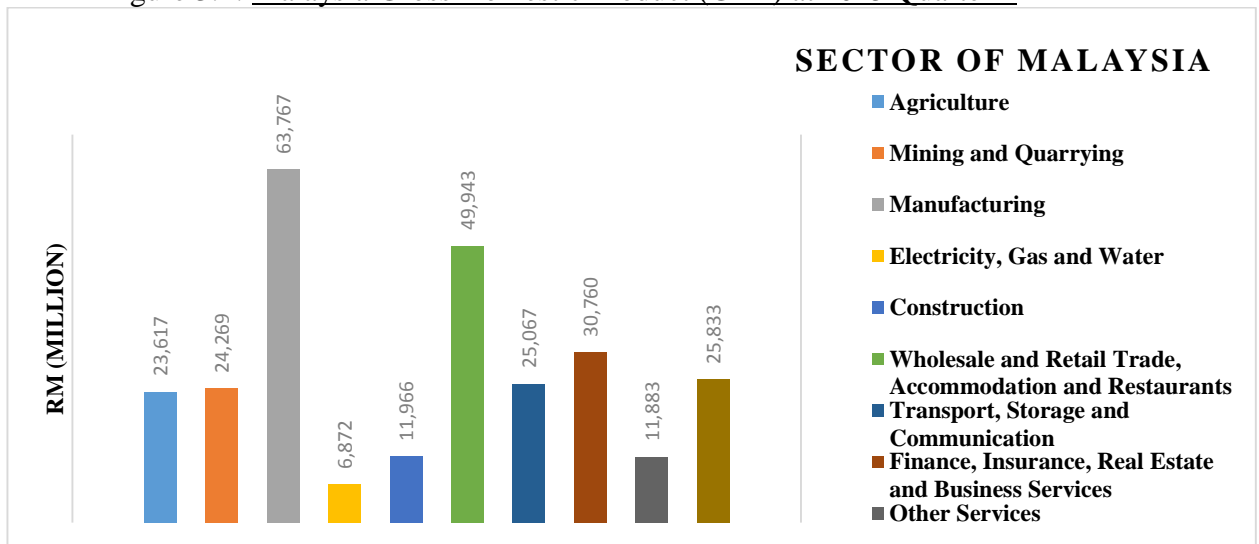
Equity Ratio	ER	Equity ratio computes the percentage of the total assets that is financed by the shareholders' investments (Huang & Ratnovski, 2009).  <b>Equity Ratio</b> = $\frac{\text{Total Equity}}{\text{Total Asset}}$	Ratio	Bloomberg
3. Control Variable				
Firm Size	FS	Total volume or size of a firm (Tifow & Savilir, 2015; Biger & Mathur, 2011; Abor, 2005).  <b>Firm size</b> = <b>Log (Total Annual Sales)</b>	Natural Log	Bloomberg
Sales Growth	SG	Sales growth is the rate of change in annual revenues (Tifow & Savilir, 2015; Shubita & Alsawalhah, 2012; Biger & Mathur, 2011; Abor, 2005).  <b>Sales Growth</b> = $\frac{\text{Total Sales}_t - \text{Total Sales}_{t-1}}{\text{Total Sales}_{t-1}}$	Ratio	Bloomberg

### 3.3 Sampling Design

#### 3.3.1 Target Population

Target population is a group of samples the researcher is interested to examine in the study (Patton, 1990). This study aims to study the influence of long term debt, short term debt, equity and agency cost on firm's profitability by focusing on the Malaysia listed companies in the industrial sector from the year of 2010 to 2015. This study has chosen the industrial sector in Malaysia as target population. As mentioned in the data collection method, industrial sector in Malaysia consists of total 302 companies listed under Bursa Malaysia in year 2015. These companies were been used to examine the relationship on how capital structure and agency cost influence the firm's profitability.

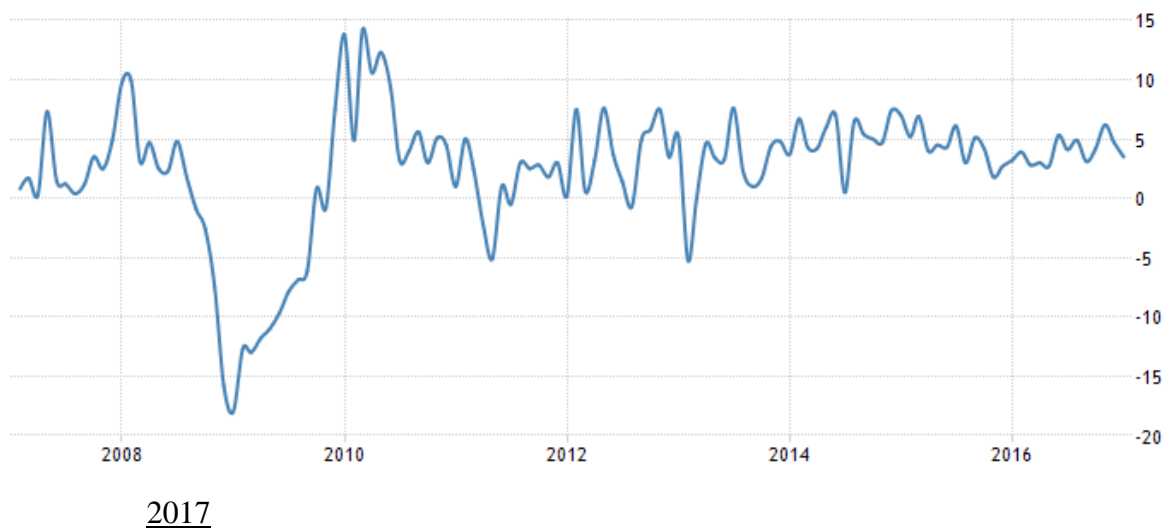
Figure 3.1: Malaysia Gross Domestic Product (GDP) at 2015 Quarter 4



Source: Bank Negara Malaysia

Figure 3.1 shows the Malaysia Gross Domestic Product (GDP) by sector at 2015 quarter 4. Industrial sector is a combination of four main subsectors. There are mining and quarrying sector, manufacturing sector and electricity, gas and water sector which contributing RM24,269 million, RM63,767 million and RM6,872 respectively. Industrial sector were contributed a total of RM94,908 million to Malaysia GDP. Hence, this study was inspired in selecting industrial sector as target sector since industrial sector has becomes the largest contribution sector in Malaysia gross domestic products (GDP).

Figure 3.2: Malaysia Industrial sector to Malaysia GDP (%) from 2007-



Source: Department of Statistic Malaysia

Figure 3.2 shows industrial sector in Malaysia from year 2007 until 2017 reached an average of 2.49 percent. In March 2010, it records that the industrial reached an all-time high around 14.20 percent and a record low around -18 percent in January of 2009. The sharp drop and rise in year 2009 might be caused by the Asian financial crises. Hence, this research attempt to study the firm's profitability under influence of capital structure and agency cost after the downturn of industrial performance with a range

periods for 2010 to 2015. These six years range of the periods is applied to determine the relationship between variables.

Table 3.2: Gross Domestic Product (GDP) of Industrial Sector from 2013 to 2016

<b>Quarter/Year</b>	<b>Mining and Quarrying RM (million)</b>	<b>Manufacturing RM (million)</b>	<b>Electricity, Gas and Water RM (million)</b>	<b>Total</b>
<b>Q1/2013</b>	22,588	51,322	6,097	80,007
<b>Q2/2013</b>	21,993	54,767	6,376	83,136
<b>Q3/2013</b>	20,845	55,425	6,353	82,623
<b>Q4/2013</b>	22,364	57,637	6,409	86,410
<b>Q1/2014</b>	22,578	54,912	6,295	83,785
<b>Q2/2014</b>	22,408	58,781	6,565	87,754
<b>Q3/2014</b>	21,262	58,344	6,677	86,283
<b>Q4/2014</b>	24,592	60,753	6,661	92,006
<b>Q1/2015</b>	24,761	57,983	6,528	89,272
<b>Q2/2015</b>	23,750	61,272	6,821	91,843
<b>Q3/2015</b>	22,354	61,183	6,885	90,422
<b>Q4/2015</b>	24,269	63,767	6,872	94,908
<b>Q1/2016</b>	24,823	60,616	6,969	92,408
<b>Q2/2016</b>	24,356	63,814	7,192	95,362
<b>Q3/2016</b>	23,030	63,724	7,227	93,981
<b>Q4/2016</b>	25,461	66,796	7,181	99,438

Source: Bank Negara Malaysia

Besides, from the Table 3.2 of the year 2013 to 2016, it shows there were a continuously increase trend of the contribution in gross domestic product by the industrial sector which increase from RM 80,007 million in year 2013 to RM 99,438 million in year 2016. This increase trend would prove that the expansion of this sector in Malaysia and possible increase the interest of investor or shareholder to invest in this sector. Therefore, it becomes a need to investigate the influence of capital structure and agency cost on firm's value in the companies of industrial sector.

### **3.3.2 Sampling Technique and Size**

#### **3.3.2.1 E-Views**

E-Views also known as Electronic Views is used in this study for sampling technique in running the regression analysis for this study. E-Views are generally used by the econometrics researcher for the function of predicting, forecasting and providing analysis result of data. E-Views 8 had been employed in this research for diagnostic checking of normality, multicollinearity, heteroscedasticity and autocorrelation. In addition, panel data analysis of poolability test (POLS), fixed effects model test (FEM), random effect model test (REM) and Hausman Test are conducted by using E-Views 8 as well. This research obtains the empirical results by using this software through T-Test, F-Test, R statistic,  $R^2$  statistic and adjusted  $R^2$  statistic too.

#### **3.3.2.2 Sampling Size**

Sampling size is the total observations in a population used to conduct research. A consistent estimation that closer to truth and less dispensed around the truth will happen if the sample size is large enough to conduct

investigation (Gujarati & Porter, 2009). There is 302 companies on industrial sector are listed in Bursa Malaysia Main Market in 2015. Due to missing data, there is only 168 consumer product companies are included in this study. The time period in this study is start from 2010 to 2015. As a whole, the panel data is comprises of 168 companies with the time period from 2010 to 2015. Therefore, the total observation that used to determine the relationship between dependent variables and independent variables is 1008 observations. The details of number of observations are listed in Table 3.2.

Table 3.3: Total Observations

	<b>Total Company</b>	<b>Total Observation</b>
<b>Original Data</b>	302	$302 \times 6 = 1812$
<b>Missing Data</b>	134	$134 \times 6 = 804$
<b>Final Data</b>	168	$168 \times 6 = 1008$

## 3.4 Research Instrument

### 3.4.1 Dependent Variables

#### 3.4.1.1 Firm Profitability

$$\text{Return on Asset (ROA)} = \frac{\text{Net Profit}}{\text{Total Asset}}$$

$$\text{Return on Equity (ROE)} = \frac{\text{Net Profit}}{\text{Total Equity}}$$



In order to measure the firm profitability effectively, this study employs two measurements which are return on asset (ROA) and return on equity (ROE). ROA is calculated by dividing the net profit by total asset, while ROE is dividing the net profit by total equity. According to Eisenberg, Sundgren, and Wells (1998), ROA can be used to measure firm performance. The industry median measures of ROA can control for the effect of industry conditions and general economic conditions as well. On the other hand, Berger and Ofek (1995) used two industry-adjusted measures of profitability which are operating margin and ROA. Daines (2001) used ROA to measure firm value as the researcher believes that a firm's profitability could directly affect its value. Besides, Soutes and Schvirik (2006) stated that there are three concepts of reporting income on ROA: using current operating income, comprehensive income, and net income. The concept of net income would be most advisable form for investors to use as it is considered as a mixed form of current operating income and comprehensive income. According to Mesquita and Lara (2003), ROE can show the rate of return proportional to the total equity. Tifow and Savilir (2015) also used ROA and ROE to measure the firm performance of manufacturing sector in Turkey.

### **3.4.2 Independent Variables**

#### **3.4.2.1 Long Term Liability**

$$\text{Long Term Debt to Asset Ratio} = \frac{\text{Total Long Term Debt}}{\text{Total Asset}}$$

This research measures the companies' long term liability by using long term debt to asset ratio. According to Habib et al. (2016), this ratio can present the percentage of the company's assets financed with the financial obligations which are payable after more than a year. This ratio has been

used by them to measure the impact of debt on the firm profitability in Pakistan. The same ratio is used by many other researchers to measure capital structure on previous studies as well (Tifow & Savilir, 2015; Shubita & Alsawalhah, 2012; Gill et al., 2011).

#### **3.4.2.2 Short Term Liability**

$$\text{Short Term Debt to Asset Ratio} = \frac{\text{Total Short Term Debt}}{\text{Total Asset}}$$

This study uses the short term debt to asset ratio in order to measure the companies' short term liability. According to Shubita and Alsawalhah (2012), this ratio indicates the percentage of the total assets that is represented by current debts less than a year. The said authors used this ratio to identify the relationship between capital structure and profitability of the industrial companies in Jordan. Similarly, there are authors that used the same ratio to measure short term liability (Habib et al., 2016; Khan & Wazir, 2016; Tifow & Savilir, 2015; Rouf, 2015; Gill, Biger, & Mathur, 2011).

#### **3.4.2.3 Equity**

$$\text{Equity Ratio} = \frac{\text{Total Equity}}{\text{Total Asset}}$$

Equity ratio measures the percentage of the total assets that is financed by the shareholders' investments. According to Huang and Ratnovski (2009), this ratio has some setbacks to measure capital structure as it is not risk-weighted and does not take the off-balance sheet exposures into account.

But it is somehow well comparable across countries. Samad (2004) stated that this ratio provides the percentage protection afforded by the firms to its investment in asset. This ratio has been used by many other researchers on the similar area as well (Bonin, Hasan, & Wachtel, 2005; Naceur, 2003; Carpenter & Petersen, 2002).

#### 3.4.2.4 Agency Cost

##### **Operating Expense to Annual Sales Ratio**

$$= \frac{\text{Total Operating Expenses}}{\text{Total Annual Sales}}$$

This ratio has been used by Ang et al. (2000) to measure the agency cost the firms. The authors believed that it could measure how effectively the firms manage the operating expense and other direct agency costs. The difference in the ratios of firms has a certain ownership and management structure and the no-agency-cost base case firm provides the additional agency cost related expense. According to Hall (1998), agency cost is defined as costs of conflict between shareholders and managers to maximize shareholder wealth instead of acting in manager's self-interest. The conflict of interest can be the appropriation of corporate resources in the form of excessive levels of perks, excessive levels of management remuneration, manager avoiding investing potentially profitable ventures to the detriment of the shareholders, pursuit of sales growth at the expense of profit or shareholder wealth, or any empire building expenses used by managers. Therefore, total operating expenses to annual sales ratio are used in determining the agency cost in order to capture the whole picture of agency cost.

### 3.4.3 Control Variables

#### 3.4.3.1 Firm Size

$$\text{Firm size} = \text{Log} (\text{Total Annual Sales})$$

In this research, firm size is used as a control variable. It is measured by using the natural logarithm of the firm's total annual sales. This measure is used by many researchers to indicate the firm size (Habib et al., 2016; Tifow & Savilir, 2015; Shubita & Alsawalhah, 2012; Gill et al., 2011; Abor, 2005).

#### 3.4.3.2 Sales Growth

$$\text{Sales Growth} = \frac{(\text{Current Year Total Sales} - \text{Previous Year Total Sales})}{\text{Previous Year Total Sales}}$$

Sales growth is the second control variable in this research. According to Habib et al. (2016), sales growth is the rate of change in annual revenues. Many studies have used the same calculation to measure the sales growth (Habib et al., 2016; Tifow & Savilir, 2015; Shubita & Alsawalhah, 2012; Abor, 2005).

### 3.5 Data Analysis

The objective of this study is to determine the relationship of capital structure variable and agency cost – long-term debt, short-term debt, equity and agency cost, and the control variables – firm size and sales growth on the profitability (return on asset and return on equity) of companies from industrial sector within the year of 2010 to 2015. E-Views 8 is employed to perform the estimated panel data regression model and diagnostic inspection for econometric problems. The regression model of this research is shown as below:

$$\text{Model 1: } ROA = \beta_0 + \beta_1 LTR_{it} + \beta_2 STR_{it} + \beta_3 AGC_{it} + \beta_4 ER_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \mu_{it}$$

$$\text{Model 2: } ROE = \beta_0 + \beta_1 LTR_{it} + \beta_2 STR_{it} + \beta_3 AGC_{it} + \beta_4 ER_{it} + \beta_5 FS_{it} + \beta_6 SG_{it} + \mu_{it}$$

Where:

*ROA* = Return on Assets

*ROE* = Return on Equity

$\beta_0$  = Intercept for regression model

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$  = Partial regression coefficients

*LTR* = Long-term Debt

*STR* = Short-term Debt

*AGC* = Agency Cost

*ER* = Equity

*FS* = Firm Size

*SG* = Sales Growth

$\mu_{it}$  = Error Term

### 3.5.1 Panel Data Techniques

In this research, panel data are collected and used to perform the analysis. Panel data are the data which allow multiple variables such as households, firms and governments that are observed at two or more time periods. Thus, the observation involves two dimensions which are cross-sectional data and time series data. In this study, cross sectional data will be the companies which represented by  $n$ , and time series data will be time period from year 2010 to year 2015 which represented by  $t$  (Gujarati, 2003).

The process in collecting data for running panel data analysis will be costly and time consuming due to a large amount of observation data are needed. However, the data can be easily collect from Bloomberg because it is widely used and available worldwide. Panel data provides a more simplified and accurate computation on model parameters, and is able to capture the complexity of human behavior (Hsiao, 2007).

#### 3.5.1.1 Pooled OLS Model

Pooled ordinary least square (POLS) is the combination of cross sectional and time series data. Pooled OLS model is employed to estimate the regression model (Awuah-Agyeman, 2016). The advantages of using this model are it helps the researcher to detect effects that could not have been simply detected by using pure time-series data or pure cross-section. Besides, there is lower possibility of getting collinearity among variables. Pooled OLS also enhanced the degree of freedom with more variability and efficiency as well as the data being more informative. The model assumes that intercepts and slopes and constants across the companies and it are time invariant which means there is no time effect. Furthermore, the model must meet the condition where independent variables are uncorrelated with the error term. The model can be mathematically represented as follow:

$$Y_{i,t} = \alpha + \beta X_{i,t} + \varepsilon_i$$

Where:

Y = Dependent variable of company i at time t

$\alpha$  = intercept

$\beta$  = Coefficient of X

X = Independent variable of company i at time t

$\varepsilon$  = error term

### 3.5.1.2 Fixed Effect model (FEM)

Fixed effect model (FEM) controls any possible correlation that might exist among those independent variables and omitted variable by considering the  $\mu_i$  as company fixed effect. Dummy variables are added to the model to estimate. Least squares dummy variable (LSDV) estimation is used to estimate the fixed effect model (Nilssen, 2014). Company fixed effect in the model acts as a crucial role in addressing the omitted variable problem. Omitted variable may lead to a bias result. The model can be mathematically represented as follow:

$$Y_{i,t} = \alpha + \beta X_{i,t} + \mu_i + \varepsilon_i$$

Where:

Y = Dependent variable of company i at time t

$\alpha$  = Intercept

$\beta$  = Coefficient of X

X = Independent variable of company i at time t

$\mu$  = Company fixed effect

$\varepsilon$  = Error term

### 3.5.1.3 Random Effect model (REM)

Random Effect Model is also known as the error components model assuming that the intercept of an individual unit is a random drawing from a much larger population with a constant mean value (Gujarati & Porter, 2009). Random error terms can determine the different of personality for different observations in a period of time. Unlike FEM, REM excludes the dummy variables. At the time using REM, the probability of getting multicollinearity problem is reduced because the number of unknown parameter in REM has been decrease. This result from the numbers of independent variables has been reduced (Habib et al., 2016). The model can be mathematically represented as follow:

$$Y_{it} = \beta_{1i} + \beta_2 X_{it} + u_{it}$$

$$Y_{it} = (\beta_1 + \varepsilon_i) + \beta_2 X_{it} + u_{it}$$

$$Y_{it} = \beta_1 + \beta_2 X_{it} + \varepsilon_i + u_{it}$$

Where:

$\beta_1$  = Mean for intercept

$\beta_2$  = Slope of independent variable X

$X_{it}$  = Independent variable X

$\varepsilon_i$  = Cross-section or individual-specific error component is random or not constant

$u_{it}$  = Combination between time series and cross sectional error component



### 3.5.1.4 Poolability Hypothesis Testing

Poolability hypothesis testing or known as likelihood ratio test is used to examine whether the pooled OLS model or fixed effect model is most suitable for estimating the equation. It is also used to test whether the panel data is poolable and slopes of independent variables are the same across the time periods (Chuah, Cha, Ho, Ku, & Ng, 2015). The null and alternative hypothesis as:

$H_0$ : There is a common intercept on all the companies.

$H_1$ : There is no common intercept on all the companies.

Restricted F test is the test statistics for poolability test where the formula is defined as:

$$F = \frac{(R^2_{FEM} - R^2_{POOL}) \div (K_{FEM} - K_{POOL})}{(1 - R^2_{FEM}) \div [n - (K_{FEM} + 1)]}$$

Let,

$R^2_{FEM}$  = R-squared of fixed effects model

$R^2_{POOL}$  = R-squared of pooled model

$K_{FEM}$  = Number of independent variable of fixed effects model

$K_{POOL}$  = Number of independent variable of pooled model

$n$  = Total observations

The decision rule is when F-statistics is lower than the significant level (0.10), and then the null hypothesis is rejected. Otherwise, do not reject null hypothesis. Reject null hypothesis mean the pooled OLS model is invalid and FEM is more suitable.

### 3.5.1.5 Breusch and Pagan Lagrange Multiplier Test

Breusch-Pagan Lagrange Multiple (BPLM) Test decides to use either pooled ordinary least squares regression or random effect regression (Sia, Ong, Tan, Teo, & Wong, 2016). The null hypothesis of Breusch and Pagan Lagrange Multiplier test is that variances across the entities are zero. There is no significant difference across the units. The null and alternative hypothesis as:

H<sub>0</sub>: There is no random effect,  $\sigma_i^2$ , where  $i=1, 2, 3, \dots$

H<sub>1</sub>: There is random effect,  $\sigma_i^2$ , where  $i=1, 2, 3, \dots$

The decision rule is if probability value (p-value) is less than 0.10, null hypothesis is rejected. Otherwise, do not reject null hypothesis. Reject null hypothesis mean that random effect model (REM) is more appropriate than OLS model.

### 3.5.1.6 Hausman Test

Hausman test was established by Hausman in 1978. Hausman test is applied to test the empirical model to select between a Fixed or Random effect specification is suitable for estimating the equation and to examine the moderateness of the fixed effects and random effects models (Hasan, Ahsan, Rahaman, & Alam, 2014). The null and alternative hypothesis as:

H<sub>0</sub>: REM is consistent and efficient.

H<sub>1</sub>: REM is inconsistent and inefficient. (FEM will be always consistent)

The test use is H-test and the formula as:

$$H = (\hat{\beta}^{FE} - \hat{\beta}^{RE})[VAR(\hat{\beta}^{FE}) - VAR(\hat{\beta}^{RE})]^{-1}(\hat{\beta}^{FE} - \hat{\beta}^{RE})$$

The decision rule is if the probability value of H- test statistic is less than significant level (0.10), then null hypothesis will not be accepted. Otherwise, do not reject null hypothesis. Reject null hypothesis indicate that FEM is more appropriate than REM whereby REM is correlated with any of the dependent variables.

### 3.5.2 Diagnostic Test

#### 3.5.2.1 Normality test

As stated by Gujarati & Porter (2009), normality detects whether the model meet the normality assumption or not on error term. Its assumption is vital to confirm OLS estimators has achieved best linear unbiased estimator (BLUE). Therefore, Jarque-Bera test was employed to investigate if the residual meet the assumption of normality. Hence, the hypothesis testing for Jarque-Bera test is as below:

$H_0$ : The distribution of error terms is normal.

$H_1$ : The distribution of error terms is not normal.

Decision rule: Reject null hypothesis ( $H_0$ ) if the probability value of Jarque-Bera test statistic is less than critical value (0.10), otherwise, do not reject null hypothesis ( $H_0$ ).

Formula of Jarque-Bera test as below,

$$JB = n \left[ \frac{S^2}{6} + \frac{(K - 3)^2}{24} \right]$$

Where,

n= Number of observation

k= Number of regressors

S= Sample of skewness

K= Sample of kurtosis

### 3.5.2.2 Multicollinearity test

On the other hand, Jayakumar (2014) pointed out that multicollinearity occurs when one of the independent variables are highly correlated with other independent variables in the regression model. Thus, it will affect the parameter estimates which lead to difficulty of identifying which independent variable is influencing the dependent variable.

Gujarati and Porter (2009) stated that if there is multicollinearity problem in regression model, it will lead to several consequences of OLS estimators such as large variances and covariance, 'insignificant' t ratio, a high R-squared but few significant t ratio, wider confidence intervals and sensitivity of OLS estimators and their standard errors to small changes in data. Hence, the highly correlated independent variable must be dropped from the regression model (Koop, 2008).

According to Gujarati & Porter (2009), there are some rules of thumb can be used in order to detect the multicollinearity. Firstly, multicollinearity can be detected by high R-squared but few significant t ratios. Secondly, pair wise correlation coefficient can also be used to detect the multicollinearity.

If the results show that there is a higher R (larger than 0.80), it means that multicollinearity problem does exist. Thirdly, the other way to detect multicollinearity is by using variance inflation factors (VIF). The formula for calculating *VIF* is as below:

$$VIF = \frac{1}{(1 - r_{23}^2)}$$

As a rule of thumb, if VIF between two independent variables is equal or exceeds 10, which means the variables show a highly serious multicollinearity. In contrast, if VIF between two independent variables is equal to one, it means that there is no multicollinearity between variables (Gujarati & Porter, 2009).

### **3.5.2.3 Autocorrelation test**

By referring Gujarati & Porter (2009), the authors stated that there is a relationship between the error term in an observation and other observation that causes the autocorrelation problem to exist. The autocorrelation problem can be happened in cross sectional data and time series data. In addition, there are two types of autocorrelation (pure and impure autocorrelation). Pure autocorrelation means that the data itself consists of problems, while impure autocorrelation indicates that there might be problems of omitting important variable, including too many irrelevant variables or missing specification bias. With the existence of autocorrelation problem, OLS estimators will be still unbiased and consistent. This will lead to OLS estimators to be no longer BLUE which is inefficient. Therefore, this study uses Durbin Watson test to determine autocorrelation problem. Hence, the hypothesis testing for autocorrelation problem is as following:

$H_0$ : There is no autocorrelation problem.

$H_1$ : There is autocorrelation problem.

As the rule of thumb is applied, if the value of Durbin Watson test falls in between 1.5-2.5, there is no autocorrelation problem. According the researchers of Cheng, Tzeng, and Kang (2011), when the Durbin Watson value falls in between 1.5–2.5, null hypothesis( $H_0$ ) should not be rejected. Hence, this can be concluded that there is no autocorrelation problem arises. This is also supported by some researchers in their study such as Al-Matari, Al-Matari, and Saif (2017), Khalili and Jangi (2016) and Al-Matari, Fadzil, and Al-Swidi (2014).

### **3.6 Conclusion**

The data of dependent variable, independent variables and control variables are acquired from Bloomberg for the observation period of year 2010 to year 2015. Two empirical tests which are Poolability Hypothesis Test and Hausman Test are going to be performed to examine the appropriate model to be used for the panel data collected. E-Views 8 software is employed to perform the diagnostic checking. The analysis of each result will then be discussed in the following chapter.

## **CHAPTER 4: DATA ANALYSIS**

### **4.0. Introduction**

This chapter contains several analyses which are descriptive analysis, panel data regression analysis and inferential analysis. The results are obtained from 168 industrial companies listed in Malaysia. E-Views 8 is used to carry out all the analysis testing mentioned above. Descriptive analysis is to present the mean, median, maximum and minimum value as well as the standard deviation of all the variables in either tables or graphs form. At the same time, inferential analysis provides an overall conclusion on the characteristic of the analyzed variables as well as to examine the relationships between each of them. Panel data regression analysis is used to test the significance of the independent variables.

## 4.1 Descriptive Analysis

Table 4.1: Descriptive Analysis (2010 – 2015)

	Mean	Median	Maximum	Minimum	Std. Dev.
ROA	2.185224	2.785277	36.38328	-70.7499	8.319562
ROE	3.435199	5.484395	55.39619	-155.917	16.02673
LTR	0.090190	0.057995	0.523353	0.0000337	0.091971
STR	0.124419	0.094730	0.602488	0.0000300	0.109709
ER	0.584648	0.592371	0.966375	0.137899	0.177064
AGC	0.372532	0.169667	27.34400	0.013379	0.972251
FS	8.021794	7.951793	10.77403	6.123438	0.662646
SG	10.46715	5.165382	747.3087	-99.8482	46.53603

*Notes:* 1. The sample company's panel data runs for six years period, from years 2010 to 2015. N= 168 companies. Number of panel data observations for six years = 1008.  
2. ROA = Return on Asset, ROE = Return on Equity, LTR = Long-term debt to total asset ratio, STR = Short-term debt to total asset ratio, AGC = Agency Cost, ER = Total Equity to Total Asset Ratio, FS = Firm's Size, SG = Sale Growth.

Table 4.1 presents the summary of descriptive statistics for both dependent and independent variables, which are return of assets (ROA), return of equity (ROE), long term debt ratio (LTR), short term debt ratio (STR), equity ratio (ER), agency costs (AGC), firm size (FS) and sales growth (SG), in the period from year 2010 to year 2015. The sample covers 168 listed companies under industrial sector in Malaysia.

### 4.1.1 Return on Assets (ROA)

In table 4.1, the ROA has a mean of 2.1852 and a median of 2.7853. In addition, the ROA reaches the maximum of 36.3833 and also the minimum



of -70.7499. However, Jaisinghani and Kanjilal (2017) stated that in the study period from year 2005 to year 2014, the ROA of 1194 publicly listed manufacturing firms in India has higher mean of 13.6310 and median of 12.8000 with the maximum and minimum are 76.1000 and -26.9000 respectively. Meanwhile, Arslan, Phil, and Zaman (2014) reported that in the period of year 2006 until 2009, the companies under textile sector and also non-textile sectors in Pakistan has the average ROA of 0.0712 and it is rather lower compared to this study. Based on the result, India is more efficient in using total assets to generate earnings compared to Malaysia. However, when compare between Malaysia and Pakistan, Pakistan is less efficient at using its assets to generate earnings.

#### **4.1.2 Return on Equity (ROE)**

The mean of ROE is 3.4352, while the median is 5.4844. Furthermore, the maximum and minimum value of ROE is 55.3962 and -155.9170 respectively. The mean value of this study is relatively higher compared to the research done by Masum (2014) on the commercial banks listed in Dhaka Stock Exchange from year 2007 to year 2011, where the mean is 0.1959 and standard deviation of 0.1127. Besides, the result of this study shows ROE is also averagely higher than the result (0.202) done by Ting, Kweh, and Chan (2014) with the sample size of 240 public listed companies under the period of year 2001 to 2016. It showed that Malaysian company generate earning more efficiency using its equity.

### **4.1.3 Long Term Debt Ratio (LTR)**

From year 2010 to year 2015, the industrial companies in Malaysia have a lower average long term debt to total asset (0.0902) compared to the 130 manufacturing listed firms in Turkey from year 2008 to year 2013 reported by Tifow and Sayilir (2015) and 342 manufacturing listed American firms from year 2005 to 2007 reported by Gill et al. (2011), which is 0.14 and 0.281 respectively. However, this sample's average LTR is relatively higher than the industrial Jordanian companies' from year 2004 to year 2009 reported by Shubita and Alsawalhah (2012), which is 0.05. The maximum and minimum value of LTR for this sample is 0.5234 and 0.0000337 respectively. The maximum value is much lower than the value reported by Tifow and Sayilir (2015), Shubita and Alsawalhah (2012) and Gill et al. (2011). Based on the comparison of the statistics, industrial companies in Malaysia have relied less on the long term debt compared to the companies under same sector in Turkey and America.

### **4.1.4 Short Term Debt Ratio (STR)**

The ratio of average short term debt over total asset in the sample of this study is 0.124419. Based on the value reported by Tifow and Sayilir (2015), Shubita and Alsawalhah (2012) and Gill et al. (2011), the sample has shown a relatively lower average STR. This would imply that under the industrial sector, the companies in Malaysia has spent averagely less short term debt to finance total asset compared to the companies in Turkey, America and Jordan. The maximum and minimum value of STR for this sample is 0.602488 and 0.00003 respectively. This sample's maximum value is much lower than the values reported by Tifow and Sayilir (2015) and Shubita and Alsawalhah (2012) which are 8.62 and 0.86 respectively, but relatively higher than 0.483 reported by Gill et al. (2011). On the other hand, the minimum value of STR for this sample is almost on par to the value reported

by Tifow and Sayilir (2015), Shubita and Alsawalhah (2012) and Gill et al. (2011).

#### **4.1.5 Equity Ratio**

Equity ratio is used to measure the proportion of the total assets that are financed by shareholders in term of percentage (Samad, 2004). It noted that the mean value is 0.5846 and the value of standard deviation is 0.1771 from the result of this study. Besides that, the value of the median for equity ratio in this result is 0.5924 with a minimum value of 0.1379 and maximum value of 0.9664. From year 2010 to year 2015, the industrials product companies in Malaysia have a lower average equity ratio compared to the 177 firms from manufacturing and agriculture sectors in Malaysia reported by Saad, Ghani, Ahmad, and Salim (2014) which is 6.6780. This indicates that the equity financing activities in industrials product sectors is lower than the manufacturing and agriculture sectors. By comparing with the article of Bonin et al. (2005), the entire observation came out of 856 samples with 225 banks from the years of 1996 until 2000. Therefore, the outcome revealed that the mean and standard deviation values which are 0.127 and 0.072 respectively which are lower than the data of this study (0.5846 and 0.1771).

#### **4.1.6 Agency Costs**

Moreover, AGC named as agency cost in this research paper. As a dependent variable, Ang et al. (2000) stated AGC measured by the operating expenses to annual sales. The median for agency costs in this result is 0.169667 where there is a minimum value of 0.013379 and a maximum value of 27.34400. From the results, AGC has the value of 0.372532 as mean and 0.972251 as standard deviation. Besides, in the study of Rashid (2016), it reported with a 100 selected firms with 1099 observations over eleven years for the results. It shows a mean of 0.146 and a median of 0.092 which are lower than the mean (0.3725) and median (0.1700) of this study.

#### **4.1.7 Firm size (FS)**

In general, firm size has a maximum of 10.77403 and a minimum of 6.123438. The firm size has an average (median) of 7.951793. Compared to the study done by Salim and Yadav (2012) which use panel data procedure for a sample of 237 listed companies obtain from Bursa Malaysia Stock exchange in Malaysia for the year of 1995 to 2011. The result showed that the maximum firm size of 18.452 is slightly higher than this study but the minimum of firm size is 4.5643 is slightly lower than the result in this study. The firm size has a median of 12.246 which is higher compare to the result of this study. In addition, result of maximum and minimum of firm size reported by Siddik, Kabiraj, and Joghee (2017) who used the panel data of 22 banks in Bangladesh for the period of 2005–2014 is lower than this study's which are 6.425046 and 2.038187 respectively. On the other hand, Basit and Hassan (2017) that use 50 companies listed from Karachi Stock exchange as sample between the period of 2010-2014 reported an even higher outcome as compared to this study with maximum and minimum of 352.28 and 141.85 respectively.

#### **4.1.8 Sales Growth (SG)**

This study has a maximum of sales growth of 747.3087 and a minimum of sales growth of -99.8482. Result from this study also shows that sales growth has a median of 5.165382 which is much lower than the median of sales growth of 16.4161 reported by Javed, Younas, and Imran (2014) which use 63 companies listed from Karachi Stock Exchange in the period ranging from year 2007 until year 2011. The value of maximum for sales growth is 587.0531 is lower than the outcome in this study same goes to the minimum of sales growth which record negative sales growth of 233.9018. Moreover, this study has lower sales growth in maximum and minimum compared to the study done by Dada and Ghazali (2016) which use 100 non-financial firms of listed Nigerian companies under Nigerian Stock Exchange (NSE) in the period of year 2010 to year 2014 which has a maximum of sales growth of 1058.15 and record a negative sales growth of 90.47. In the study reported by Otieno (2015) has a lower maximum sales growth of 11.38 compared to this study but only has a negative minimum sales growth of 0.89 which is better than this study.

## 4.2 Panel Data Analysis and Diagnostic Checking

### 4.2.1 Poolability Test

Table 4.2: Likelihood Ratio Test Result

	Cross-Section Chi Square Statistic	Decision
Model 1: Return on Asset (ROA)	708.5521***	Proceed to BPLM Test
Model 2: Return on Equity (ROE)	581.2515***	Proceed to BPLM Test

*Notes:* 1. \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.  
 2.  $H_0$ : There is a common intercept on all the companies.  
 $H_1$ : There is no common intercept on all the companies.  
 3. BPLM test = Breusch-Pagan Lagrange Multiple Test

The poolability test that based on likelihood test is to examine either the regression model is pooled OLS model or fixed effect model (FEM). According to Table 4.2, the cross-section chi-square value of ROA and ROE are 708.5521 and 581.2525 respectively. Both models are significant at 1% significance level. The null hypothesis ( $H_0$ ) will be rejected and concluded that both models have no common intercept on all the companies in this study. So in this research, FEM is more appropriate in the regression model rather than pooled OLS model. Thus, the study will proceed to BPLM Test to bring out further determinant in selecting pooled OLS model or random effect model (REM) as the most appropriate method to continue the research.

### 4.2.2 Breusch-Pagan Lagrange Multiple Test

Table 4.3: Breusch-Pagan Lagrange Multiple (BPLM) Test Result

	Value	Decision
Model 1: Return on Asset (ROA)	355.4928***	Proceed to Hausman Test
Model 2: Return on Equity (ROE)	206.4969***	Proceed to Hausman Test

*Notes:* 1. \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.  
2.  $H_0$ : There is a common intercept on all the companies.  
 $H_1$ : There is no common intercept on all the companies.

Regarding to result on table 4.3, it shows that BPLM test for Model 1 and Model 2 are 355.4928 and 206.4969 respectively. It indicates significant at level of 1% significance level. Hence, null hypothesis is rejected whereby the REM is most suitable at 1 % significance level. Hausman Test is going to be used in order to decide either employing FEM or REM.

### 4.2.3 Hausman Test

Table 4.4: Hausman Test Result

	Chi Square Statistic	Decision
Model 1: Return on Asset (ROA)	32.0277***	Fixed Effect Model
Model 2: Return on Equity (ROE)	44.4104***	Fixed Effect Model

*Notes:* 1. \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.  
2.  $H_0$ : REM is consistent and efficient.  
 $H_1$ : REM is inconsistent and inefficient.

This study employs Hausman Test to test whether Fixed Effects Model or Random Effects Model is appropriate to be used. According to Table 4.4, Model 1 and Model 2 shows that the chi-squares statistics value of 32.0277 and 44.4104 respectively which both is significance at 1% significant level. In this research, null hypothesis ( $H_0$ ) will be rejected and both models indicate that Fixed Effects Model is fit to the regression. Hence, in the following test and analysis, FEM model will be used.

#### 4.2.4 Normality Test

Table 4.5: Normality Test Result

	Jarque-Bera Value	Outcome
Model 1: Return on Asset (ROA)	7535.195***	Not normally distributed
Model 2: Return on Equity (ROE)	11856.10***	Not normally distributed

*Notes:* 1. \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.  
2.  $H_0$ : The error term are normally distributed.  
 $H_1$ : The error term are not normally distributed.

Jarque-Bera test is used to determine the normality of the error terms. Based on Table 4.5, Jarque-Bera value of Model 1 and Model 2 showed 7535.195 and 11865.10 respectively which both are significant at 1% significance level. The probability value of Jarque-Bera test is 0.0000 (lesser than 1% significance level) and thus rejects the null hypothesis ( $H_0$ ). It shows that the distribution of the residual is not normal. Yet, regarding to Central Limit Theorem (CLT), if the sample size in research is over 100 observations, the sample size is considered to be normally distributed (Gujarati & Porter, 2009). The sample contains of 1008 observations which fulfills the Central Limit Theorem. Hence, both model regardless ROA or ROE are normally distributed.



### 4.2.5 Multicollinearity

Table 4.6: Correlation Matrix for the Variables

	ROA	ROE	LTR	STR	ER	AGC	FS	SG
ROA	1.0000							
ROE	0.9373	1.0000						
LTR	-0.0587	-0.0128	1.0000					
STR	-0.1979	-0.1764	-0.0710	1.0000				
ER	0.2320	0.1856	-0.4025	-0.5864	1.0000			
AGC	-0.1188	-0.1240	0.0233	-0.0400	0.0909	1.0000		
FS	0.3299	0.3339	0.2024	-0.1663	-0.0356	-0.0637	1.0000	
SG	0.1752	0.1992	0.0601	-0.0655	-0.0378	-0.1098	0.0433	1.0000

Notes: 1. ROA = Return on Asset, ROE = Return on Equity, LTR = Long-term debt to total asset ratio, STR = Short-term debt to total asset ratio, ACG = Agency Cost, ER = Total Equity to Total Asset Ratio, FS = Firm's Size, SG = Sale Growth.

Multicollinearity test is conduct to detect whether the linear relationship exists among some or all of the independent variables (Gujarati & Porter, 2009). The Pearson correlation is to identify each pair of explanatory variables whether there are serious multicollinearity problem exist (Gujarati, 2003) and the results are tested with a benchmark of 0.80 or 80%. If the result is higher than 0.80 or 80%, then there is a serious multicollinearity problem exist. According to Table 4.6, the highest pair wise correlation coefficient is ROA and ROE which is 0.9373 or 93.73%. Both ROA and ROE are the dependent variable in this study represents Model 1 and Model 2.

The second highest pair wise correlation coefficient is ER and STR which is 0.5864 or 58.64% and the lowest pair wise correlation coefficient is LRT and ROE which is 0.0128 or 1.28%. Therefore, the result concludes that each pair of explanatory variables has no serious multicollinearity problem. This is due to highest pair wise is 58.65% lesser than benchmark of 80%.

Table 4.7: VIF for Every Explanatory Variable

Independent Variable	R <sup>2</sup>	$VIF = \frac{1}{1 - R^2}$	Result
LTR	0.3219	1.4747	Multicollinearity does not exist.
STR	0.4761	1.9088	Multicollinearity does not exist.
AGC	0.0305	1.0315	Multicollinearity does not exist.
ER	0.5520	2.2321	Multicollinearity does not exist.
FS	0.0738	1.0797	Multicollinearity does not exist.
SG	0.0245	1.0251	Multicollinearity does not exist.

- Notes:*
- 1.. The sample company's panel data runs for six years period, from years 2010 to 2015. N= 168 companies. Number of panel data observations for six years = 1008.
  2. ROA = Return on Asset, ROE = Return on Equity, LTR = Long-term debt to total asset ratio, STR = Short-term debt to total asset ratio, ACG = Agency Cost, ER = Total Equity to Total Asset Ratio, FS = Firm's Size, SG = Sale Growth.
  3. VIF=variance inflation factors.

Based on the Table 4.7, all the explanatory variables showed the value of VIF are less than 10. This indicates that there is no any serious multicollinearity problem exists in this regression model. Therefore, the performance of these estimators can be concluded as unbiased, efficient, and consistent.

## 4.2.6 Autocorrelation

Table 4.8: Durbin-Watson Test

	Durbin-Watson Statistic	Decision	Result
Model 1: Return on Asset (ROA)	2.0635	Do not reject $H_0$	No autocorrelation
Model 2: Return on Equity (ROE)	2.1147	Do not reject $H_0$	No autocorrelation

*Notes:* 1. Non-rejection range of null hypothesis fall within 1.5 to 2.5.  
2.  $H_0: \rho = 0$   
 $H_1: \rho \neq 0$

According to the Table 4.8 above, Model 1 and Model 2 show a Durbin-Watson Statistic value of 2.0635 and 2.1147 respectively. Therefore, do not reject the null hypothesis since the values are falling between the ranges of 1.5 to 2.5 that indicated that no autocorrelation in the model (Cheng et al., 2011).

## 4.3 Inferential Analysis

### 4.3.1 R-Squared

Table 4.9: Result of R-squared

	R-squared	Adjusted R-squared
Model 1: Return on Asset (ROA)	0.608317	0.527068
Model 2: Return on Equity (ROE)	0.549504	0.456056

#### **4.3.1.1 Coefficients of Determination, R-squared**

The function of coefficient of determinant, R-squared is to determine the degree of variation in the dependent variable which can be explained by independent variables. The range of the degree of variation is within 1% to 100%. Lower range indicates the difference in dependent variable which is less likely caused by variation in the independent variables. Nevertheless, if the R-squared is zero, it shows there are none of the variation in dependent variable can be illustrated with the independent variables variation. The result in Table 4.9 shows that R-squared of return on asset (ROA) and return on equity (ROE) are 0.608317 and 0.549504 which indicating 60.83% of total volatility in ROA and 54.95% of total volatility in ROE is explained by changes in long term debt, short term debt, agency cost, total equity, firm's size, and sales growth.

#### **4.3.1.2 Coefficients of Determination, Adjusted R-squared**

Adjusted R-squared is employed to adjust the total number of the variables in the model for the modification of R-squared. In Table 4.9, it showed the results which are 0.527068 and 0.456056 for ROA and ROE adjusted R-squared respectively. This is indicating that 52.71% of total variation in ROA and 45.61% of total variation in ROE can be interpreted by the variation in long term debt, short term debt, agency cost, equity ratio, firm's size and sales growth.

### 4.3.2 F-Test

Table 4.10: Result of F-Test

Model	Hypothesis	F-Test Statistic	Decision
Model 1: Return on Asset (ROA)	$H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$  $H_1$ : At least one of the $\beta_i \neq 0$ where $i = 1, 2, 3, 4, 5$	44.06338***	Reject $H_0$ .
Model 2: Return on Equity (ROE)	$H_0 : \beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = 0$  $H_1$ : At least one of the $\beta_i \neq 0$ where $i = 1, 2, 3, 4, 5$	41.21347***	Reject $H_0$ .

Notes: 1. \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.  
2. Decision Rule: Reject  $H_0$  if  $\rho$ -value  $< 0.10$ , otherwise, do not reject  $H_0$ .

The purpose of F-test is to check any independent variables possible to affect the dependent variable. By referring the decision rule,  $H_0$  should be rejected if the value of probability is less than significant level which is 10%. The model of return of asset (ROA) and return on equity (ROE) has an F-test statistics of 44.06338 and 41.2135 respectively which are significant at 1% significant level. Both models also contain of a P-value of 0.0000 and it is smaller than 1% significant level. Thus, the  $H_0$  is rejected and the result can be concluded that both models have at least one significant relation between both independent variables and dependent variable in explaining the relationship of capital structure and agency cost in influencing profitability of Malaysian industrial companies from year 2010 to year 2015.

### 4.3.3 T-Statistics

Table 4.11: Result of T-Test

Independent Variables Model 1 : Return on Asset (ROA)	Hypothesis	$\rho$ -value	Decision	Conclusion
Long-Term Debt Ratio (LTR)	$H_0 : \beta_1 = 0$ $H_{1a}: \beta_1 \neq 0$	0.3599	Do not reject $H_0$	Long-Term Debt does not significantly influence the firm probability.
Short-Term Debt Ratio (STR)	$H_0 : \beta_2 = 0$ $H_{2a}: \beta_2 \neq 0$	0.7989	Do not reject $H_0$	Short Term Debt does not significantly influence the firm probability.
Agency Cost (AGC)	$H_0 : \beta_3 = 0$ $H_{3a}: \beta_3 \neq 0$	0.0004***	Reject $H_0$	Agency Cost does significantly influence the firm probability.
Equity Ratio (ER)	$H_0 : \beta_4 = 0$ $H_{4a}: \beta_4 \neq 0$	0.0000***	Reject $H_0$	Equity does significantly influence the firm probability.
Firm Size (FS)	$H_0 : \beta_5 = 0$ $H_{5a}: \beta_5 \neq 0$	0.0000***	Reject $H_0$	Firm Size does significantly influence the firm probability.
Sales Growth (SG)	$H_0 : \beta_6 = 0$ $H_{6a}: \beta_6 \neq 0$	0.0000***	Reject $H_0$	Sales growth does significantly influence the firm probability.

Notes: 1. \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.

2. Decision Rule: Reject  $H_0$  if  $\rho$  -value < 0.10, otherwise, do not reject  $H_0$  .

Table 4.12: Result of T-Test

Independent Variables Model 2 :	Hypothesis	$\rho$ -value	Decision	Conclusion
Return on Equity (ROE)				
Long-Term Debt Ratio (LTR)	$H_0 : \beta_1 = 0$ $H_{1b}: \beta_1 \neq 0$	0.8921	Do not reject $H_0$	Long-Term Debt does not significantly influence the firm probability.
Short-Term Debt Ratio (STR)	$H_0 : \beta_2 = 0$ $H_{2b}: \beta_2 \neq 0$	0.6095	Do not reject $H_0$	Short Term Debt does not significantly influence the firm probability.
Agency Cost (AGC)	$H_0 : \beta_3 = 0$ $H_{3b}: \beta_3 \neq 0$	0.0004***	Reject $H_0$	Agency Cost does significantly influence the firm probability.
Equity Ratio (ER)	$H_0 : \beta_4 = 0$ $H_{4b}: \beta_4 \neq 0$	0.0000***	Reject $H_0$	Equity does significantly influence the firm probability.
Firm Size (FS)	$H_0 : \beta_5 = 0$ $H_{5b}: \beta_5 \neq 0$	0.0000***	Reject $H_0$	Firm Size does significantly influence the firm probability.
Sales Growth (SG)	$H_0 : \beta_6 = 0$ $H_{6b}: \beta_6 \neq 0$	0.0000***	Reject $H_0$	Sales growth does significantly influence the firm probability.

Notes: 1. \* Significant at 10%, \*\* Significant at 5%, \*\*\* Significant at 1%.  
2. Decision Rule: Reject  $H_0$  if  $\rho$  -value < 0.10, otherwise, do not reject  $H_0$



In order to investigate if there is any significant relationship between every independent variable and explained variable, t-statistics is used. By referring to the Table 4.11 (Model 1) and Table 4.12 (Model 2), the result revealed that both long term debt (LTR) and short term debt (STR) do not significantly bring impact to the firm profitability (ROA and ROE respectively). Meanwhile, the result implied that the agency cost (ACG), equity ratio (ER), firm size (FS) and sales growth (SG) is significantly influences the firm profitability (ROA and ROE) respectively.

Table 4.13: T-statistic for Model 1 and 2

Variable	Model 1 : Return on Asset (ROA)	Model 2 : Return on Equity (ROE)
	Coefficient	Coefficient
Constant	-47.4100*** (8.2444)	-83.4571*** (20.0508)
LTR	8.5997* (4.7126)	29.1038** (12.1069)
STR	-1.7093 (6.6626)	4.6975 (13.3363)
ER	27.7522*** (8.1812)	60.1503*** (20.4710)
ACG	-0.3834 (0.2482)	-0.6330* (0.3705)
FS	4.0689*** (0.6985)	5.9831*** (1.8401)
SG	0.0296*** (0.0048)	0.0721*** (0.0116)
R-squared	0.608317	0.549504
Adjusted R-squared	0.527068	0.456056
F-statistic	44.06338***	41.21347***
Poolability-statistic	708.5521***	581.2515***
Breusch-Pagan Lagrange Multiple Statistic	355.4928***	206.4969***
Hausman-statistic	32.0277***	44.4104***
Durbin-Watson Test	2.0635	2.1147

- Notes:*
1. Figures in parentheses are standard errors.
  2. The sample company's panel data runs for six years period, from years 2010 to 2015. N= 168 companies. Number of panel data observations for six years = 1008.
  3. \* Significance level at 10%, \*\* Significance level at 5%, \*\*\* Significance level at 1%.
  4. ROA = Return on Asset, ROE = Return on Equity, LTR = Long-term debt to total asset ratio, STR = Short-term debt to total asset ratio, ACG = Agency Cost, ER = Total Equity to Total Asset Ratio, FS = Firm's Size, SG = Sale Growth.

#### **4.3.3.1 Long-term debt (LTR)**

In the Model 1, long-term debt and firm profitability is significantly positive with the coefficient of 8.5997. It indicates that an increasing in the long term debt will tend to raise the profitability of the firm. For instance, firm performance will be enhanced by 8.5997% if the long term debt increases by 1%, holding other variables constant. In parallel, the result also reveals a significantly positive relationship with the coefficient of 29.1038 in Model 2. This shows that there is an increase in profitability if the long term debt increases. There will have an increase of 29.1038% if the long term debt increases by 1%, holding other variables constant.

#### **4.3.3.2 Short-term Debt (STR)**

Short term debt and profitability show an insignificantly negative correlation with the coefficient of 1.7093 in the Model 1. Higher short term debt causes lower firm profitability. 1% increment in short term debt will lead to 1.7093% reduce in the firm profitability, *ceteris paribus*. Meanwhile, there are positive and insignificant relationships in Model 2 with the coefficient of 4.6975. According to the result in Model 2, it indicates that the increment in short term debt of the firm will lead the firm profitability to increase. The firm profitability will grow by 4.6975% if the short-term debt increases by 1%, *ceteris paribus*. Yet, the short term debt does not bring any influence toward firm profitability from both Model 1 and Model 2.

#### **4.3.3.3 Total Equity (ER)**

Refer to the Table 4.13, the results for the Model 1 showed that the total equity and profitability of firm has a significantly positive correlation. The coefficient of the total equity is 27.7522 in Model 1. It is showing the firm profitability will increase by 27.7522% when volume of total equity increased by 1%, *ceteris paribus*. Simultaneously, there is also significantly positive correlation with a coefficient of 60.1503 in Model 2. Thus, the firm profitability will increase by 60.1503% if the volume of the total equity increases by 1%, *ceteris paribus*.

#### **4.3.3.4 Agency Cost (AGC)**

The result shows that the agency cost and firm profitability have an insignificantly negative association in Model 1 and significantly negative correlation in Model 2. In both Model 1 and Model 2, the coefficient for agency costs is -0.3834 and -0.6330 respectively. However, the higher volume in agency cost may lead to the lower of profitability in a firm. When the agency cost increased by 1%, it tend to reduce the firm profitability by 0.3834% in Model 1, holding other variables constant. In term of Model 2, the profitability will be declined by 0.6330% due to an increasing of 1% in agency costs, holding other variables constant. Hence, the agency cost has no any impact on firm profitability from Model 1.

#### **4.3.3.5 Firm Size (FS)**

The result of Model 1 revealed that there is a positive and significant association between firm size and firm profitability. The coefficient for firm size is 4.0689 in Model 1. It implies that the firm profitability will increase when the size of the firm increases. For instance, with 1% increment in the firm size will lead to 4.0689% increase in the firm profitability, remains other variables constant. In the meantime, result of Model 2 showed positive significantly correlation between both firm size and firm profitability. In term of Model 2 showed the coefficient of the firm size is 5.9831. It means that the firm size may bring effect to profitability in the same direction, vice versa. For instance, if the firm size increased by 1%, the profitability of firm will rise by 5.9831%, vice versa.

#### **4.3.3.6 Sales Growth (SG)**

Regarding to Table 4.13, the results of both Model 1 and Model 2 found that there is positive significant between the relationship of sales growth and firm profitability at 1% significant level. The coefficient for sales growth in Model 1 and Model 2 are 0.0296 and 0.0721 respectively. This indicates that the higher the sales growth, the higher the firm profitability. There will have an increment of 0.0296% for Model 1 while 0.0721% for Model 2 in the firm profitability if the sales growth increased by 1%, vice versa.

## 4.4 Conclusion

The relationship between firm profitability with the explanatory variables which are measured by long term debt, short term debt, total equity and agency cost and two control variables (firm size and sales growth) of listed industrial firms in Malaysia is discussed in this chapter. Long term debt and total equity has significant impact toward the firm performance whereas short term debt has insignificant outcome toward the firm performance in Model 1 (ROA). At the meantime, there is a significant correlation between the independent variables (long-term debt, total equity and agency cost) and firm profitability. Yet, there is only short term debt insignificant impact on firm profitability in Model 2 (ROE). In short, major findings, implication of this research, limitations and recommendations will be highlighted in the following discussion.

## **CHAPTER 5: DISCUSSIONS, CONCLUSION AND IMPLICATIONS**

### **5.0 Introduction**

In the previous chapter, empirical tests and analyses have been done precisely using E-views 8. This chapter will further discuss and summarize the empirical results and major findings of this research. Implications of this study would be proposed to the firms, policy makers, investors, shareholders and future researchers as the results of this study could be handy information for them. The limitations and recommendations will also be presented for improvements.

### **5.1 Summary of Statistical Analyses**

The primary goal of this study is to determine the relationship of capital structure and agency cost on profitability of 168 Malaysian listed companies in industrial sector during the research period starting from year 2010 to 2015. The inputs were collected and analysed by using panel data. In the final sample, the number of firm-year observations is 1008 over a six-year period. The two measurements of dependent variables in this research are return on asset (ROA) and return on equity (ROE). The measurements of independent variables are long term debt ratio, short term debt ratio, equity ratio and agency costs, while the fixed variables are firm size and sales growth. Table 5.1 presents the summary of the regression results and major findings.

Table 5.1: Summary Table of the Decision of the Hypothesis

Hypothesis	Expectation Sign & Significance	Decision	Regression Result
<p><i>H<sub>1a</sub></i>: There is a negative relationship between total long term debt and profitability (ROA) in industrial sector.</p> <p><i>H<sub>1b</sub></i>: There is a negative relationship between total long term debt and profitability (ROE) in industrial sector.</p>	*Negative and significant	<p>Do not reject H<sub>0</sub>.</p> <p>Do not reject H<sub>0</sub>.</p>	<p>Positive and significant.</p> <p>Positive and significant</p>
<p><i>H<sub>2a</sub></i>: There is a positive relationship between total short term debt and profitability (ROA) in industrial sector.</p> <p><i>H<sub>2b</sub></i>: There is a positive relationship between total short term debt and profitability (ROE) in industrial sector.</p>	*Positive and significant.	<p>Do not reject H<sub>0</sub>.</p> <p>Do not reject H<sub>0</sub>.</p>	<p>Negative and insignificant.</p> <p>Positive and insignificant.</p>



<p><i>H<sub>3a</sub></i>: There is a positive relationship between total equity and profitability (ROA) in industrial sector.</p> <p><i>H<sub>3b</sub></i>: There is a positive relationship between total equity and profitability (ROE) in industrial sector.</p>	<p>*Positive and significant.</p>	<p>Reject H<sub>0</sub>.</p> <p>Reject H<sub>0</sub>.</p>	<p>Positive and significant.</p> <p>Positive and significant.</p>
<p><i>H<sub>4a</sub></i>: There is a negative relationship between agency cost and profitability (ROA) in industrial sector.</p> <p><i>H<sub>4b</sub></i>: There is a negative relationship between agency cost and profitability (ROE) in industrial sector.</p>	<p>*Negative and significant.</p>	<p>Do not reject H<sub>0</sub>.</p> <p>Reject H<sub>0</sub>.</p>	<p>Negative and insignificant.</p> <p>Negative and significant.</p>

## 5.2 Major Finding

### 5.2.1 Long Term Debt and Profitability

*H<sub>1a</sub>*: There is a negative relationship between total long term debt and profitability (ROA) in industrial sector.

*H<sub>1b</sub>*: There is a negative relationship between total long term debt and profitability (ROE) in industrial sector.

From the results, long term debt and profitability (both ROA and ROE) have a significantly positive relationship. Therefore, this study does not reject the both null hypotheses.

The results are consistent with Tifow and Savilir (2015), Gill et al. (2011), Berger and Di Patti (2006) and Frank and Goyal (2003), that the long term debt is positively associated to the profitability. Gill et al. (2011) stated that the reason could be due to the economic decline in the country which eventually causes the falling interest rates on long term debt. Ahmad, Abdullah, and Roslan (2012) believed that higher long term debt should be associated with higher firm profitability as the tax shield of interest and disciplinary roles imposed by long term debt could lower the financial cost.

The result is contradict with previous researches proving that long term debt and profitability should have negative relationship (Addae et al., 2013; Muchugia, 2013; Ahmad et al., 2012 ; Abor, 2005). Ahmad et al. (2012) also suggested that the relationship could be negative if the firm's earning power is lower than the average cost of firm's debt. Addae et al. (2013) and Muchugia (2013) believed that long term debt is a relatively more expensive

financing tool where employing higher long term debt could lower the firm's profitability.

Mat Nor and Yatim (2000) reported that for Malaysian firms, long term bank debt is relatively more vital as a source of funds in their capital financing decision. As this study's results suggest that long term debt is significantly positive related to industrial firms' profitability in Malaysia, the firms is believed to utilize the funds on the machinery or fixed assets for operations and productions in long run. What is more, the result is consistent to the trade-off theory which suggests the companies to utilize debt financing rather than issuing new equities. By employing the long term debt, a firm can counterbalance the costs of financing with the benefits of debt. The more long term debt employed by the firm, the more tax saving benefit the firm will gain. Hence, this research could presume that the trade-off theory supports the results stating that there is a significantly positive relationship between total long term debt and firm profitability.

### **5.2.2 Short Term Debt and Profitability**

*H<sub>2a</sub>*: There is a positive relationship between total short term debt and profitability (ROA) in industrial sector.

*H<sub>2b</sub>*: There is a positive relationship between total short term debt and profitability (ROE) in industrial sector.

The results have shown that short term debt is associated negatively with profitability (ROA), but positively with profitability (ROE). Nonetheless, according to the results, short term debt is insignificantly related to the firm

profitability (both ROA and ROE). Hence, both null hypotheses would not be rejected.

The finding pointing out the negative relationship between short term debt and profitability (ROA) is consistent with Admassu (2016), Tifow and Savilir (2015) and Zeitun and Tian (2007). Zeitun and Tian (2007) claimed that since short term debt impacts the firm profitability negatively, it will expose the firms to the risk to refinance. Afza and Nazir (2007) deduced that aggressive financing policy and firm profitability are negatively associated.

Besides, this study would claim that there is a positive relationship between short term debt and profitability (ROE). This result is consistent with many previous researchers as well (Mwangi et al., 2014; Addae et al., 2013; Muchugia, 2013; Ahmad et al., 2012; Gill et al., 2011; Abor, 2005). Addae et al. (2013) stated that short term debt is relatively lower cost for Ghanaian listed companies; therefore, utilizing it may induce a higher profitability. Furthermore, when the short term debt's tax benefit is able to help to boost the firm performance as its interest payments are tax deductible.

Yet, the results imply that there is no significance in the relationship between short term debt and profitability (both ROA and ROE). This result is supported by Mwangi et al. (2014) and Addae et al. (2013). Addae et al. (2013) stated that according to their results, for most of the industries in Ghana, the short term debt structure does not affect the firm's profitability, although they are positively correlated. They believed that when the tax benefit and the risk associated with short term debt are offset, it has no significance effect on firm's profitability.

Based on the statistics, the short term interest rate in Malaysia has been continuously increasing from 2.2% in year 2010 to 4.8% year 2015 (Malaysia Short Term Interest Rate, n.d.). Short term interest rate represents the firm's cost of borrowing. In this case, borrowing more short term debt would create a heavier burden or cost to the firm in which will directly reduce the firm's profitability. Hence, the increasing of short term interest rate would divert the firms from choosing to employ short term debt. However, the value of short term debt in Malaysia has been growing steadily and year in 2014, it reached the highest value over the past forty four years (Malaysia – Short term debt, n.d.). This has shown that Malaysian companies have been more preferring on utilizing the short term debt to finance their operation although the higher finance costs cause the companies to have a lower profitability.

However, the result of this study contradicts the trade-off theory as the theory suggests that debt is preferable due to its tax shield advantages. The result of this study shows that the total short term debt is insignificantly related to the firm profitability. On the other hand, it is consistent to the pecking order theory which suggests using internal funding first, then debt and lastly followed by new equity issuance. Since the results suggest that employing short term debt does not enhance the firm profitability, the firm should always choose to source fund from internal financing.

### **5.2.3 Equity and Profitability**

*H<sub>3a</sub>*: There is a positive relationship between total equity and profitability (ROA) in industrial sector.

*H<sub>3b</sub>*: There is a positive relationship between total equity and profitability (ROE) in industrial sector.

Based on the results from chapter 4, there is a significantly positive relationship between equity and profitability since it has the p-value 0.0000 which is lower 0.05. Therefore, H<sub>3a</sub> and H<sub>3b</sub> are accepted in this result.

The result is supported by past researches done by (Foyeke et al., 2016; Raude et al., 2015; Chechet & Olayiwola, 2014; Antwi et al., 2012; Maxwell & Kehinde, 2012; Salawu, 2009). When a company is employing more equity to finance, the profit gained by the company will increase as well. If the company finances their activities through borrowed capital, they have to be charged with interest expenses and it becomes a financial burden to the company (Yogendrarajah & Thanabalasingam, 2011). Salazar, Soto, and Mosqueda (2012) stated that employing equity capital is positively associated to the firm's financial performance. This statement is supported by Booth, Aivazian, Demirguc-Kunt, and Maksimovic (2002) who argued that the firm performance can be improved if the firm uses equity financing since there is a direct control and equity holders are residual claimants, they must ensure that the allocation of resources must be efficient in order to maximize shareholder wealth.

According to the study on Malaysian firms, Saad et al. (2014) proved that by using equity financing, firm's profitability can be improved as compared to use debt financing. This is because cost of debt financing is high, extra premium cost is incurred and thus firm's profitability will be affected. The researchers added that equity financing is not charged by interest and will not affect business profitability.

Recommending for equity financing is contradicted with the both pecking order theory and trade-off theory. This is because both theories also suggest that equity financing should be the last resort of financing. If the firm issues more equity to finance its operation, investors would percept that the firm might have financial problems and the managers are attempting to gain from

the stock's over-valuation. Hence, new equity issuance would lead to a drop in company's share price.

#### **5.2.4 Agency Costs and Profitability**

*H<sub>4a</sub>*: There is a negative relationship between agency cost and profitability (ROA) in industrial sector.

*H<sub>4b</sub>*: There is a negative relationship between agency cost and profitability (ROE) in industrial sector.

Based on the result of the Chapter 4, agency cost is found to be insignificant negatively related to the firm's profitability (ROA) in the sector of industrial. However, the regression result shows that the association between agency costs and firm profitability (ROE) is significantly negative in the Malaysia's industrial sector. Hence, the first alternative hypothesis is turned down, while the second alternative hypothesis is believed to be valid.

There are many previous researches (Nur Syuhada Wahida, 2014; Noronha, Shome, & Morgan, 1996; Bathala, Moon, & Rao, 1994) stating that ROA could not be influenced by agency cost which is consistent with the regression result of this study. Nur Syuhada Wahida (2014) used five variables (firm's size, expense, efficiency, debt ratio and growth) to represent the agency costs in order to determine the correlation between agency costs and firm performance. Throughout the study, the researcher stated that only firm's size does not have relationship with ROA, while the rests of the proxies significantly affect the ROA. This means that ROA will, ceteris paribus, increase when either one of expense, efficiency debt ratio or growth (a proxy for agency cost) increases. Moreover, in order to reduce the

agency costs and enhance shareholder wealth, the firm should reform and redesign the monitoring system.

The regression result of this study between the agency costs and the profitability (ROE) is significant and negative in the Malaysia's industrial sector. According to Nur Syuhada Wahida (2014), the relationship between firm's size (a proxy for agency cost) and ROE is significantly negative. This is identical with regression result of this study in Malaysia. The author also pointed out that the profitability is inversely associated with the direction of agency costs movement. Therefore, reducing the costs of investing agency may prevent the losses faced by a firm. Berger and Di Patti (2006) and Li and Cui (2003) agreed that the agency costs tend to bring impact toward firm's profitability. Li and Cui (2003) proposed that higher agency costs would decrease the ROE in selected firms in China. A firm may face a lower return due to higher risk in facing agency conflicts. The researchers also claimed that Chinese listed firms' debts may bring impacts on mitigating the free cash flow balance in agency cost and preventing its manager from misusing the funds. It is supported by the agency theory which in Jensen (1986).

This study's regression outcome is against the agency theory specified by Jensen in 1986. According to the agency theory, higher leverage will tend to lower down agency cost. Abor (2005), Wald (1999) and Rajan and Zingales (1995) reported there is an opposite direction between the leverage and firm's profitability. Hence, when the agency costs increases, the leverage will be reduced and lastly, the firm's profitability will increase as well. This would support the positive relationship between agency cost and ROE. Besides, Zakaria et al. (2016) stated that ROE is positively related to the agency costs. When the cost of mitigating the disagreement between principals and agents increases, the firm profits will grow as well. And since ROE measures the profitability generated by managers and owned by the



shareholders, the managers might be unsatisfied and shareholders have to bear the more costs to monitor.

According to the regression result in this study, the paper shows that the agency costs significantly influence ROE but not influence ROA. Berger and Di Patti (2006) reported that a firm's profitability is significantly influenced by agency costs. The equity may be related to the agency costs regarding to generating the interests and incentives for firm's shareholders and managers. Based on ROA, Zhang and Li (2008) confirmed that firm profitability is insignificantly negative related to agency costs. Thus, an increment in firm performance tends to come with a decrease in the agency costs, although there is no direct relationship between the two variables.

### **5.2.5 Control Variables and Profitability**

By referring to the results obtained from the empirical tests, a positive relationship was proven in between firm size and profitability (both ROA and ROE). In other words, the profitability of a firm in industrial sector is significantly influenced by the firm's size.

The result is consistent with other researches as well (Banafa, 2016, Babalola, 2013; Dogan, 2013; Iqbal et al., 2013; Amato & Burson, 2007; Lawrence et al., 2004). The researchers proposed that when a size of a firm is large enough, the firm will have sufficient resources in generating profits throughout the year and allow the firm size to be developed and grew continuously (Iqbal et al., 2013).

Besides that, Lawrence et al. (2004) stated that firm's size plays an important role in boosting the production capacity of a firm in order to gain

more profits. This is also agreed by Jermias' study in 2008 (as cited in Mule, Mukras, & Nzioka, 2015) which proposed that bigger firm size may bring positive impact toward the firm's profitability as larger firms have more capability in enjoying economies of scale which could positively stimulate their financial position. Meanwhile, more assets allocated in a firm will provide the firms a capability in getting the investment opportunity and therefore can boost the firms' profitability to a higher level (Devi and Devi, 2014).

According to Chi (2004) and Gedajlovic and Shapiro (1998), large firms could achieve better profitability compared to small firms. This is because most of the small firms do not have enough capacity or resources to compete with larger firms. The larger firms enjoy higher possibility to get credit loan at lower rates from financial institutions. Once a firm obtained a favorable interest rate, the firm will have a lower probability in the event of bankruptcy or default.

Generally, bigger size of a firm has a positive impact in the aspects of enhancing profitability. For an example in the industrial sector economics, the firms with larger firm size and capital structure will definitely have stronger competitive advantage compared to smaller firms. In economic terminology, larger firms have more advantages in their scale of production, output or operation. These are the key indicators in determining and affecting the efficiency and profitability of a firm. In addition, large firms might have a possibility in monopolizing the price and output decisions. Thus, it might become an important factor in maximizing the profit for that firm. Other than that, firm size may also be affected by some other factors like marketing, technological and entrepreneurial factors in industry product sector (Kumar & Kaur, 2016).

Asma'RashidahIdris, Asari, Taufik, Salim, Mustafa, and Jusoff (2011) proved that the size of Islamic banking institution has a significant positive

effect toward profitability in Malaysia. The researchers realized that the larger bank size could get a lower cost of lending and create a high income more easily. Thus, this will indirectly bring benefit to Malaysia's economy. The study from Serrasqueiro and Caetano (2015) proved that there is a positive relationship between firm size and debt. This is because larger firms can diversify their business easier than smaller firms. By investing in a diversify way, a firm can reduce its probability of bankruptcy. Firms with bigger size tend to have more stable profit and enjoy more advantages of debt tax shield. Therefore, larger firm should increase the use of debt to enhance the firm profitability which is consistent with the trade-off theory.

Next, as the results show, there is a significantly positive relationship between sales growth and profitability (both ROA and ROE). In other words, the sales growth moves corresponding to the profitability of industrial sector in Malaysia.

The results are supported by researchers (Malik & Iqbal, 2012; Uwuigbe et al., 2011; Goddard et al., 2004; Whittington, 1980). The researchers, Malik and Iqbal (2012), pointed out that sales growth is one of the variables which can be used to calculate the investment growth opportunities. When the sales growth increases, the firm's profitability also will increase. Thus, sales growth is directly proportional to the profitability of a firm.

In the few recent decades, Malaysian economy has undergone a speedily development and experienced a changeover from agriculture sector to industry sector. As reported by the Department of Statistics, Malaysia (2017), the growth of index of industrial production (IPI) in Malaysia is 4.2% in April 2017 where it is mainly attributed by manufacturing (6.7%), mining (-0.2%) and electricity (-1.5%). Mokhtar and Muda (2012) pointed out that the sales growth significantly influences the financial performance (ROA and ROE) of ISO 9000 listed companies and it is greater than non-ISO 9000

registered listed companies in Malaysia. In short, firms with favourable sales growth will end up with a better firm profitability. Thus, a continuous growing firm will not only achieve their objectives which includes increasing sales, maximizing profits and increasing market share to build up their good reputation but also can lower down the level of financial distress and corruption obstacles. Firms with higher sales growth would have higher assets turnover. Hence, the firms have to expand the assets consistently compared to other firms with lower sales growth. High growth firms demand more funds in the future to expand their business and tend to retain more earnings. In order to maintain the target debt ratio, Pandey (2011) suggests that firm should issue more debt rather than use retained earnings as using debt financing, a firm can take the advantages of debt tax shield. This is similar as what the trade-off theory suggests.

## **5.3 Implications of Study**

### **5.3.1 Companies**

The results could contribute to the Malaysian industrial companies to have a better understanding on the factors affecting firm profitability. Thus, based on this research's outcomes, the companies can make improvements in order to enhance the profitability. As reported in this research, employing long term debt or equity has a significantly positive relationship with firm profitability. This indicates that employing more of either long-term debt or equity will enhance the firm profitability. As stated by Boodhoo (2009), capital structure acts as an essential element affecting the firm's financial ability to meet the obligations and maximize returns for the shareholders. According to Bruhn (2015), utilizing long term debt could improve firm profitability since financing projects using long term debt is able to protect the firms from credit supply shocks. In addition, the study of Yan (2009) stated that although higher long-term debt will have higher financial costs

to the firm, most companies are paying the tax-deductible debt interest. Hence, the firm profitability could be enhanced by the tax savings from the interest paid. In the study of Kunigis (2012), the author claimed that there is no loan needed to be repaid if the company employs equity financing to finance the company capital structure. This would cause the company to be less burdened and more focus on the core business to improve the firm profitability. Therefore, this research could guide the companies on how to improve the firm profitability.

### **5.3.2 Policy Makers**

This study will provide policy makers with a deep understanding on the relationship between capital structure and agency cost, and firm profitability of Malaysian listed industrial sector firms. The results will be valuable for the policy makers to implement and evaluate regulations, policies and institutional framework in improving firm profitability. Furthermore, the policy makers and regulators can refer to this study to improve the existing regulation reformation and development of new policies in the future to ensure that the industrial firms could improve their profitability safely and soundly.

In the study of Scholes and Wolfson (1988), the authors highlighted that since short term debt is less risky and easier in adjusting debt to an optimal level, short term debt should be more preferred compared to long term debt. Short term debt can also prevent the potential cost of retiring outstanding debt in the future. However, the result of this study shows that long term debt and total equity have a positive and significant impact on the firm profitability and yet, the short term debt has insignificant impact on the firm profitability. It is indicating that long term debt and equity financing will be more advantageous than the short term debt among the firms in Malaysian industrial sector. The industrial firms in Malaysia are actually taking higher risk and perform against the theories in the study of Scholes and Wolfson

(1988). Hence, policy makers should take this debt financing issue into consideration in order to ensure that the existing regulations and policies are proper and suitable enough in order to improve the firm profitability and also the Malaysian economy.

Policy makers should also revise the existing equity and debt financing legislations and improve the policies to secure a better performance of Malaysian industrial companies in order to attain higher firm value and contribute to the local economy eventually.

### **5.3.3 Investors/Shareholders**

The findings conclude that the high volume of total equity and low volume of agency cost will enhance company profitability. Generally, shareholders or investors are always concerned about the profitability of the invested company. Thus, they should emphasize more on the agency problem as the company performance is managed and monitored by executive manager on behalf of shareholders. Yet, conflict may exist between shareholders and executive manager as they have different interests and objectives. Eventually, this problem will affect shareholders or investors' wealth. According to the agency theory, a board that consists of high proportion of non-dependent directors is able to eliminate the problem of earnings management (Habbash, Xiao, Salama, & Dixon, 2014). This finding provides a significant investment guideline to the shareholders or investors that lower agency expense will cause a higher firm profit.

### **5.3.4 Academician and Future Researcher**

Last but not least, owing to the fact that this research provides a sufficient information and knowledge on the factors affecting firm profitability, it can contribute to the future researchers and academicians since there are not many studies on the relationship of firm profitability with capital structure and agency cost in Malaysian industrial sector. Meanwhile, future researchers and academicians can obtain empirical and theoretical facts and information of the firm profitability especially on industrial sector in Malaysia.

## **5.4 Limitation of Study**

Along the way to conduct this research, some limitations have been encountered. Among all the limitations, the first one is the scope of study in which the sample size focuses only on the industrial sector excluding the involvement of the other sectors such as consumer product, service, transportation and communication sectors. From this research, researchers could learn how the independent variables can affect the firm profitability in industries sector in Malaysia from year 2010 until year 2015. However, this research will restrain the generalizability of the obtained results as it cannot be used to generalize all the sectors in Malaysia.

In this study, data is important as it is used to test the econometric model. Six years data in the industrial sector from the year 2010 to year 2015 is collected from the Bloomberg terminal. However, some companies do not have adequate data recorded in the Bloomberg terminal. Hence, there is a difficulty to increase the sample size. Only 168 companies is selected after 302 companies had been filtered. Besides, there are some companies in industrial sector having different closing accounting period for their company annual financial reports. Therefore, the accuracy of the data could still be improved.

## **5.5 Recommendation for Future Researcher**

Based on the shortcomings given above, there are some suggestions that could improve the future researches. One of them is that some other sectors in Malaysia should be included in the study. This is due to the reason of future researchers can compare and evaluate the consistency of the result in industrial sector with other sectors or other countries. Hence, the future researchers can maximize the accuracy of the data obtained from the study as the sample size increases.

This study suggests that future researchers should not only use the balance panel data but also consider the unbalanced data. Unbalanced panel data should include the companies which do not have sufficient data. By considering the unbalanced panel data, it could expand the sample size and hence a more accurate result. This study also recommends that future researchers should use the same accounting period for their data collection. This will make the result become more accurate and efficient.



## 5.6 Conclusion

The general purpose of this study is to determine the relationship of firm profitability with capital structure and agency cost. The total 168 listed companies in Malaysian industrial sector were chosen as research sample within a six-year period from year 2010 to 2015.

The result shows that when the firm profitability is computed by using return on asset (ROA), long term debt and total equity have significantly positive influence on the firm profitability. Yet, short term debt and agency cost has insignificant influence on the firm profitability. On the other hand, when return on equity (ROE) is employed to measure the firm profitability, long term debt and total equity has significantly positive influence on the firm profitability while agency cost has negatively significant impact on firm profitability. The short term debt has insignificant impact on the firm profitability. In addition, some limitations are outlined and few recommendations are suggested and discussed in this chapter for the better of future studies.

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APPENDICES

Appendix 4.1a: Poolability test for Return on Asset (ROA)

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.092189	(167,834)	0.0000
Cross-section Chi-square	708.552059	167	0.0000

Appendix 4.1b: Poolability test for Return on Equity (ROE)

Redundant Fixed Effects Tests

Equation: Untitled

Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	3.895552	(167,834)	0.0000
Cross-section Chi-square	581.251508	167	0.0000

Appendix 4.2a: Hausman test for Return on Asset (ROA)

Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	32.027650	6	0.0000

Appendix 4.2b: Hausman test for Return on Equity (ROE)

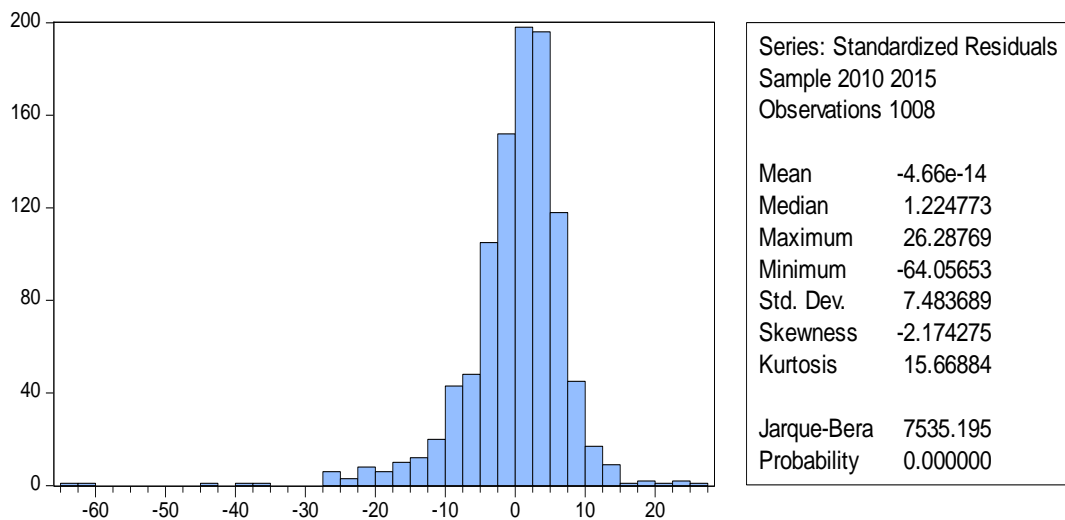
Correlated Random Effects - Hausman Test

Equation: Untitled

Test cross-section random effects

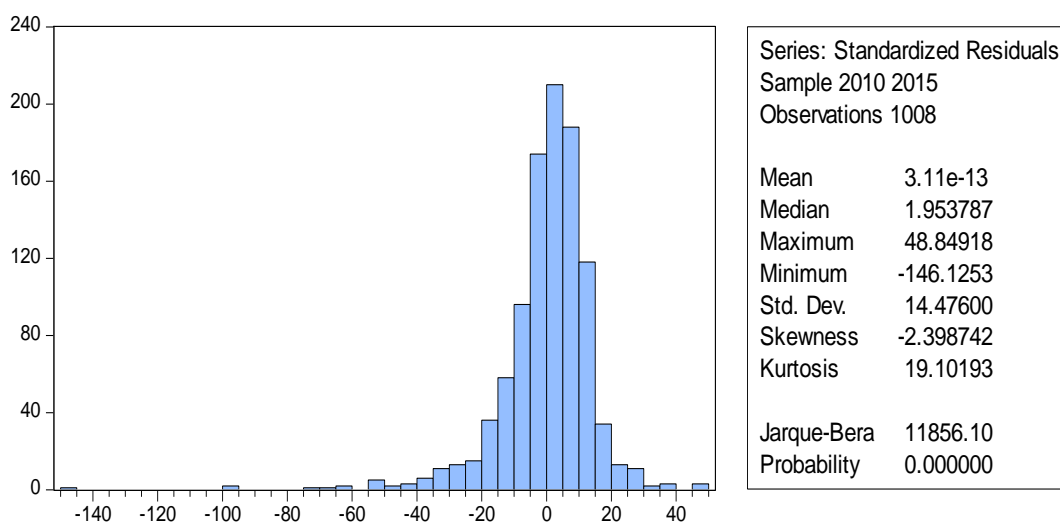
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	44.410473	6	0.0000

Appendix 4.3a: Normality test for Return on Asset (ROA)





Appendix 4.3b: Normality test for Return on Equity (ROE)



Appendix 4.4.: Multicollinearity test (VIF)

Dependent Variable: AGC

R-squared	0.030494	Mean dependent var	0.372532
Adjusted R-squared	0.025656	S.D. dependent var	0.972251
S.E. of regression	0.959698	Akaike info criterion	2.761538
Sum squared resid	922.8619	Schwarz criterion	2.790798
Log likelihood	-1385.815	Hannan-Quinn criter.	2.772655
F-statistic	6.303102	Durbin-Watson stat	1.813033
Prob(F-statistic)	0.000009		

Dependent Variable: ER

R-squared	0.551971	Mean dependent var	0.584648
Adjusted R-squared	0.549735	S.D. dependent var	0.177064
S.E. of regression	0.118813	Akaike info criterion	-1.416592
Sum squared resid	14.14483	Schwarz criterion	-1.387332
Log likelihood	719.9626	Hannan-Quinn criter.	-1.405476
F-statistic	246.8926	Durbin-Watson stat	0.514654
Prob(F-statistic)	0.000000		



Dependent Variable: FS

R-squared	0.073778	Mean dependent var	8.021794
Adjusted R-squared	0.069156	S.D. dependent var	0.662646
S.E. of regression	0.639323	Akaike info criterion	1.949120
Sum squared resid	409.5510	Schwarz criterion	1.978380
Log likelihood	-976.3564	Hannan-Quinn criter.	1.960236
F-statistic	15.96284	Durbin-Watson stat	0.444145
Prob(F-statistic)	0.000000		

Dependent Variable: LTR

R-squared	0.321921	Mean dependent var	0.090190
Adjusted R-squared	0.318538	S.D. dependent var	0.091971
S.E. of regression	0.075923	Akaike info criterion	-2.312266
Sum squared resid	5.775792	Schwarz criterion	-2.283006
Log likelihood	1171.382	Hannan-Quinn criter.	-2.301150
F-statistic	95.14087	Durbin-Watson stat	0.616491
Prob(F-statistic)	0.000000		

Dependent Variable: SG

R-squared	0.024491	Mean dependent var	10.46715
Adjusted R-squared	0.019623	S.D. dependent var	46.53603
S.E. of regression	46.07719	Akaike info criterion	10.50445
Sum squared resid	2127353.	Schwarz criterion	10.53371
Log likelihood	-5288.242	Hannan-Quinn criter.	10.51556
F-statistic	5.031130	Durbin-Watson stat	2.099145
Prob(F-statistic)	0.000147		

Dependent Variable: STR

R-squared	0.476144	Mean dependent var	0.124419
Adjusted R-squared	0.473529	S.D. dependent var	0.109709
S.E. of regression	0.079603	Akaike info criterion	-2.217590
Sum squared resid	6.349348	Schwarz criterion	-2.188329
Log likelihood	1123.665	Hannan-Quinn criter.	-2.206473
F-statistic	182.1475	Durbin-Watson stat	0.593409
Prob(F-statistic)	0.000000		

Appendix 4.5a: Durbin-Watson test for Return on Asset (ROA)

R-squared	0.608317	Mean dependent var	2.185224
Adjusted R-squared	0.527068	S.D. dependent var	8.319562
S.E. of regression	5.721365	Akaike info criterion	6.482040
Sum squared resid	27300.17	Schwarz criterion	7.330588
Log likelihood	-3092.948	Hannan-Quinn criter.	6.804423
F-statistic	7.487119	Durbin-Watson stat	2.063484
Prob(F-statistic)	0.000000		

Appendix 4.5b: Durbin-Watson test for Return on Equity (ROE)

R-squared	0.549504	Mean dependent var	3.435199
Adjusted R-squared	0.456056	S.D. dependent var	16.02673
S.E. of regression	11.82013	Akaike info criterion	7.933233
Sum squared resid	116522.6	Schwarz criterion	8.781780
Log likelihood	-3824.349	Hannan-Quinn criter.	8.255615
F-statistic	5.880306	Durbin-Watson stat	2.114690
Prob(F-statistic)	0.000000		

Appendix 4.6a: Inferential Analysis for Return on Asset (ROA)

Method: Panel Least Squares

Date: 06/23/17 Time: 17:04

Sample: 2010 2015

Periods included: 6

Cross-sections included: 168

Total panel (balanced) observations: 1008

White cross-section standard errors & covariance (d.f. corrected)

WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTR	8.599739	4.712551	1.824858	0.0684
STR	-1.709349	6.662565	-0.256560	0.7976
ER	27.75215	8.181217	3.392178	0.0007
AGC	-0.383390	0.248230	-1.544495	0.1228
FS	4.068913	0.698509	5.825142	0.0000
SG	0.029607	0.004815	6.148729	0.0000
C	-47.41000	8.244475	-5.750517	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.608317	Mean dependent var	2.185224
Adjusted R-squared	0.527068	S.D. dependent var	8.319562
S.E. of regression	5.721365	Akaike info criterion	6.482040
Sum squared resid	27300.17	Schwarz criterion	7.330588
Log likelihood	-3092.948	Hannan-Quinn criter.	6.804423
F-statistic	7.487119	Durbin-Watson stat	2.063484
Prob(F-statistic)	0.000000		

Appendix 4.6b: Inferential Analysis for Return on Equity (ROE)

Method: Panel Least Squares

Date: 06/23/17 Time: 17:04

Sample: 2010 2015

Periods included: 6

Cross-sections included: 168

Total panel (balanced) observations: 1008

White cross-section standard errors & covariance (d.f. corrected)

WARNING: estimated coefficient covariance matrix is of reduced rank

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LTR	29.10380	12.10688	2.403906	0.0164
STR	4.697549	13.33633	0.352237	0.7247
ER	60.15034	20.47102	2.938316	0.0034
AGC	-0.632997	0.370514	-1.708430	0.0879
FS	5.983072	1.840142	3.251418	0.0012
SG	0.072097	0.011586	6.222862	0.0000
C	-83.45471	20.05084	-4.162156	0.0000

Effects Specification

Cross-section fixed (dummy variables)

R-squared	0.549504	Mean dependent var	3.435199
Adjusted R-squared	0.456056	S.D. dependent var	16.02673
S.E. of regression	11.82013	Akaike info criterion	7.933233
Sum squared resid	116522.6	Schwarz criterion	8.781780
Log likelihood	-3824.349	Hannan-Quinn criter.	8.255615
F-statistic	5.880306	Durbin-Watson stat	2.114690
Prob(F-statistic)	0.000000		