THE IMPACT OF DIVIDEND POLICY AND OWNERSHIP CONCENTRATION ON CAPITAL STRUCTURE: EVIDENCE FROM MALAYSIA'S INDUSTRIAL PRODUCT SECTOR

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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.

(4) The word count of this research report is 36,803.

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LIST OF ABBREVIATIONS

ADF	Augmented Dickey and Fuller
AMEX	American Stock Exchange
CLT	Central Limit Theorem
DIV	Dividend Pay-out Ratio
DPS	Dividend per Share
DW	Durbin-Watson
EPF	Employees Provident Funds
EPM	Eight Malaysian Plans
EPS	Earnings per Share
E-views 6	Electronic Views 6
FEM	Fixed Effect Model
GDP	Gross Domestic Product
GFC	Global Financial Crisis 2007
GLC	Government linked Companies
GLIC	Government Link Investment Corporation
GOP	Growth Opportunity
IPS	Im, Pesaran & Shin
JB	Jarque-Bera
LEV	Leverage
LIQ	Liquidity

LLC	Levin, Lin and Chu
MM	Modigliani and Miller
NASD	National Association of Securities Dealers
NDTS	Non-debt Tax Shields
NYSE	New York Stock Exchange
OC	Ownership concentration (Herfindahl Index 5)
OLS	Ordinary Least Squares
P/E	Price / Earnings
PP	Phillips-Perron
REM	Random Effect Model
ROA	Return on Assets
SIZE	Natural Logarithm of Total Assets
SOEs	State Owned Ownership
TANG	Tangibility

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PREFACE

Sustainable development of a company is closely related to how efficient managements finance their business activity. The decision concerning of capital structure are the most important for every company. In corporate world of business, management needs to make the capital structure decision efficiently in order to maximize firm value. Thus, this research project is aimed to examine the impact of the dividend policy and ownership concentration on capital structure in Malaysia's industrial product sector.

There are a lot of studies and researches conclude on the topic of capital structure, but there is less research about the impact of dividend policy and ownership concentration that affect the capital structure in Malaysia's public-listed industrial product firms. Due to this motivation, this research is conducted in order to provide the more meaningful evidence and knowledge to Malaysia's industrial product sector. This research can provide the contribution and significance to the public, investors, policy maker, academician and others to understand firms' capital structure decision process.

Of necessity, this research provides various types of information about capital structure in Malaysia's industrial product sector. This research paper touches on the background of industrial product sector's capital structure, research objective, the determinants and its effect, data analysis, empirical major findings and the recommendations for future research.

ABSTRACT

This research paper is aimed to examine the dividend policy, ownership concentration and other important control variables that influence the firm's capital structure choice in Malaysia' industrial product sectors. Due to the shock of global financial crisis 2007, pre-crisis model (2005-2007) and post-crisis model (2008-2010) are examined in order to detect the changes on the determinants of capital structure during financial crisis. The secondary data was collected from 193 Malaysia's public-listed industrial product firms from 2005 to 2010. Financial ratio techniques were used to calculate on these variables. The full, pre-crisis and post-crisis OLS models were employed by fixed effects method and controlled by white cross-sectional coefficient covariance estimator. The empirical result of full model found that dividend, ownership concentration, profitability, growth opportunity and liquidity are negatively significant to influence leverage while firm size and tangibility are positively significant to influence leverage. Compare the empirical result between pre-crisis and post-crisis models, dividend policy, firm size, non-debt tax shield (NDTS) and tangibility have different impacts on capital structure during financial crisis. Future researches are encouraged to enlarge the research areas and include other determinant factors in examining the effect on capital structure in order to provide more meaningful result in explaining the variation of capital structure.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

The purpose of doing this research is to investigate the factors that will affect capital structure of Malaysia's public-listed companies in industrial product industry, which includes of dividend policy, ownership concentration, financial crisis and other factors. This chapter will present the background of study, problem statements, objectives, research questions, significant of study and chapter layout.

1.1 Background of study

Nowadays, business organizations grow rapidly since decade ago. Sustainable and rapid development of a company is closely related to how efficient managements finance their business activity. Therefore, the decision concerning of capital structure are the most important for every company. In corporate world of business, management needs to make the capital structure decision efficiently in order to maximize firm value.

In today's business, corporate business organizations will use internal and external source of financing. For instances, the issuance of stock through initial public offering (IPO) is the internal source of financing; the borrowing of debt is the external source of financing. Thus, the selection of equity and debt securities with different level of costs and benefit in the balanced proportion is very important for company in order to obtain the maximization of firm value (Wahab, Amin & Yusop, 2012).

According to Citak and Ersoy (2012), capital structure is one of the most significant determinants of how it can withstand financial and economic crisis for every company. Thus, company need to determine the most suitable policies in order to survive and pursue their operation in the today's business market.

Thus, the objective of this project is to examine the major determinant of capital structure in Malaysia's industrial product industry during 2005-2010. This research will focus on how dividend policy, ownership concentration and financial crisis affect its capital structure. This research also will include other control factors, which are profitability, firm size, growth opportunity, liquidity, non-debt tax shield and firm size.

1.1.1 Capital Structure

Capital structure is viewed as one of the famous topics in finance sector, and usually it draws a lot researchers' attention then they start developing empirical and theoretical studies about it (Baharuddin, Khamis, Mahmood & Dollah, 2011; Miguel & Pindado, 2001; Mustapha, Ismail, & Minai, 2011; Sahudin et al. 2011). Usually, the common objective of studying capital structure is trying to figure out the decision made by a firm and how well it affects its own financial leverage.

The term capital can be referred as investor-supplied funds that include of debt, preferred stock, common stock, and retained earnings. Capital structure is the mix of debt, preferred stock and common equity that used to finance the firm's asset. A firm's capital structure can be defined as the percentage of each type of investor-supplied capital, with the total being 100%. The optimal capital structure is the capital structure that maximizes a stock's intrinsic value or a company's value (Brigham & Houston, pg 460, 2013).

According to Brigham and Houston (2013), as time passes, a firm's actual capital structures will change due to two different reasons:

- Deliberate actions: New money would be raised if a firm is not currently at its goal in order to push actual structure toward the goal.

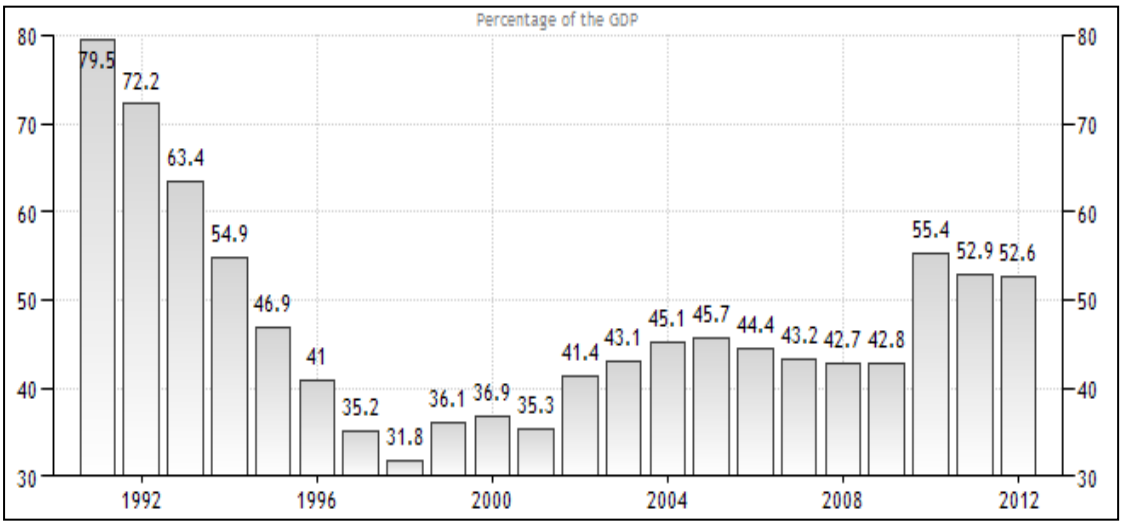
- Market actions: The firm may face high profits or losses that bring significant changes in book value equity, and the result is shown on its balance sheet and the stock price will decline. At the meantime, while the book value of its debt would probably be the same, interest rate changes caused by the general level of rates or firm's default risk that could bring significant changes in its debt's market value. The changes in the market value of the debt can be large changes in its measured capital structure.

Jensen (1986) has found that debt plays an important role, especially in motivating managers to be more efficient. D'Mello and Miranda (2010) show recent empirical evidence that debt issues is decreasing excessive cash ratios, lowering abnormal capital expenditures and increasing the firm's value. However, there are evidences that this disciplinary role of debt is more likely to occur in the absence of managerial entrenchment (Jong & Veld, 2001; Zwiebel, 1996). So, a firm must organize and keep their debt ratio in nice figure in order to keep the firm at the expected growth rate. Debt financing will bring some advantages to the firms (Brigham & Houston, pg 458, 2013). Interest paid can deduct the tax, whereas dividends are not deductible and this will decrease debts relative to equity. Stockholders don't have to share the firm profits if company makes a great profit because the return on debt is constant.

According to Stulz (1990), when the firm is in a high growth phase and investment opportunities with positive net present value are abundant, free

cash flow is low and manager and shareholder conflicts are less intense. In this phase, debt may lead to underinvestment problems which explain why firms tend to show high levels of equity rather than leverage.

Figure 1.1: Malaysia Government Debt to GDP from 1992 to 2012



Sources: www.tradingeconomics.com / International Monetary Fund

Figure 1.1 shows Malaysia government debt to gross domestic product (GDP). In this chart, Malaysia is having government debt to GDP of 52.6% of the country's GDP in year 2011. Malaysia's debt-to-GDP ratio, which is the amount of national debt, has in percentage of its GDP. Since 1990 until 2011, Malaysia is having averaged 47.4% of government debt to GDP in these years, highest record in December of 1990 which is 79.5% and lowest in December of 1997, which is 31.8%. The lower the debt-to-GDP ratio, the more likely the country will pay its debt back, and less likely the country is to default on its debt obligations. Usually, government debt to GDP can be the reference for investors to measure country ability and make decision whether to make investment or not because this ratio would affect the country's borrowing costs and government bond yields. Hence, it lead this research intend to explore more detailed information in Malaysia industry sectors.

Table 1.1: Descriptive Statistic of Leverage by Sectors (Average) in 2011

Average by industry	Consumer Product	Construction and Property	Trading and Services	Industrial Product
Total debt to total assets	0.4367	0.6322	0.4350	0.4025
Long term debt to total assets	0.0697	0.1699	0.1924	0.1125
Short term debt ratio	0.3670	0.4623	0.2426	0.2900
Total debt to market value ratio	0.4383	0.4623	0.4723	0.4371
Long term debt to market ratio	0.0724	0.2069	0.1964	0.1170
Total liabilities(RM)	159,327,203	1,128,228,387	2,365,411,083	233,007,995
Total long term liabilities (RM)	27,387,543	705,333,127	1,691,035,633	108,820,084
Total short term liabilities (RM)	132,745,176	439,298,356	674,375,449	124,498,997

Sources: Mustapha et al. (2011)

Table 1.1 presents that the descriptive statistic of leverage measures according to different industry sectors which includes of consumer sector, construction and property sector, trading and services sector, and industrial sector. In this research, the main focus sector will be industrial sector. Industrial sector is the one having lowest amount in total debt to assets and total debt to market value ratio, second lowest in long term debt to total assets and long term debt to market ratio. In overall, industrial sector is the one doing most well among all industries in managing and controlling their debt. This leads them to have more comparative advantages compared with others (Mustapha et al., 2011). As persecuted in Table 1.1, the different use in term of short and long term debt might be due to corporate use different kinds of debts policy to carry on their activities and each policy have their own advantage and disadvantage.

A new research dimension distinguishes between short-term and long-term debts (Glazer, 1994). Glazer shows that the prediction by Brander and Lewis (1986) that output increases changes if firms issue long-term debt. When rival firms issue long-term debt, their product market behavior is control by strategic considerations that would not be show if the firms had zero debt or the debt was short-term. The long-term debt induces firms not to act aggressively, because is far away from the maturity date. But if their debt is short-term, they will act more aggressively as the maturity date comes closer.

Campos (2000) examines both short-term and long-term debt; prove that limited liability firms with high short-term debt always act, ceteris paribus, more aggressively in the product markets by increasing their sales. A high proportion of long-term debt seems to decrease this effect. Campos's study evaluates no importance to the source of debt in either case whether it is bank or commercial debt.

According to Opler and Titman (1994), more highly leveraged firms in concentrated industries tend to lose market share and experience lower operating profits than do their more conservatively financed competitors. They show that firms in the top leverage deciles in industries that undergo output contraction see their sales drop by 26% more than do firms in the bottom leverage deciles. A same decline takes place in the market value of equity. These authors also discover that highly leveraged firms that engage in research and development feel the most in economically distressed periods. This finding emphasizes the fact that firms with specialized products are especially vulnerable to financial distress. Besides, they found out that in an effort to drive out (highly leveraged) vulnerable competitors, financially strong (unleveraged) firms may take advantage of these distress periods to aggressively advertise or price their products. Leverage firms experience bigger losses during industry recession. This happens because their unleveraged opponents which having the aggressive behavior are

trying to take advantage of the situation and weaken the firm's financial position. In order to against them, firms tend to have low debt levels.

1.1.2 Dividend Policy

Dividend policy is a puzzling and challenging subject in the world of finance (Black, 1996). It is definitely one of the most important issue remain unsolved in finance (Bhattacharyya, Mawani & Morrill, 2008; Subramaniam & Devi, 2011).

Dividend policy is a financing decision made by the board of directors on how they pay out the profits to shareholders or the owners of the company in form of dividend. Once the company makes profit, the board of director can actually choose to retain the profits for future expansion or distribute part of profit to the shareholders. A company's dividend policy gives investors and potential investor's information and perceptions in the markets (Garrison, n.d.). Dividend helps to address agency problems between managers and shareholders (Black, 1996).

Dividend is kind of return to the investor who put his or her money on risk as investment in the company. Act as an important consideration for investment; corporations pay dividends to reward existing shareholders and to attract potential shareholder to purchase new issues of common stocks at the same time. Investors are paying attention to the dividends because it is a form of return or the chance to sell the shares at higher price (Black, 1996). Dividends taxed higher than capital gains, so as what commonly known is that dividends are less valuable than the capital gains. Thus, companies that pay dividend are at a competitive disadvantage because they have to pay a higher cost of equity then other company who do not pay dividend.

According to (Damodaran, pg 506, 2011), classification of dividend can be divided into several ways. Dividends can be paid in additional stock or cash. A stock dividend that paid out to the investors will increase outstanding shares and reduce the price per share of the stock. There are also regular dividends that pay to the investors at regular intervals in either quarterly, semiannually or annually. Special dividend, usually paid at irregular intervals, is an addition to the regular dividend. Lastly, a liquidating dividend, which will be viewed by the Internal Revenue Service, is firm that pay dividend that excess the recorded retained earnings. The author state that dividend can be measured in two ways, dividend yield and dividend payout ratio. Dividend yield is relates the dividend paid to price per share of the stock. Another way to measure a dividend policy is using dividend payout ratio. A dividend payout ratio relates the dividends that paid to the earning of the firm.

1.1.2.1 Trend in Dividend Policy

Young companies tend to be short on cash and long on investment opportunities than mature companies (Brockman & Unlu, 2010). To avoid flotation and underpricing costs, young firms have strong incentives to retain cash. While for mature companies, they tend to be short on investment opportunities and long on cash. To reduce agency cost associated with free cash flow, they prefer to pay out dividends.

A study of Fama and French (2001) on the nature of dividend payers firms, former payers firms and firms that never pay dividends shows that former payers firms tend to be distressed than the nature of dividend payers firm or firm that never pay dividends. Firms that never pay dividends are more profitable than former payers firms, while dividend payers firms are the most profitable among the three. It is all because former payers firms have low earning and less in investments. Firm that never pay dividend is

stronger because they have more growth opportunity. They do more research and development, invest at a higher rate and the market value of assets to book value ratio is higher. Dividend payers firms are 10 times as large as non-payers because they invest on the order of pre-interest earnings, while firms that never pay dividend invest exceed its earnings.

Table1.2: Largest dividend payers in the S&P 500 in 2010

Summary Description	**Total dividend ($bn)**	**Payout % of S&P 500 total**	**Dividend Yield**	**Dividend /2011 net income**	**Estimated long-term growth**
Telecommunication Service firm	9.9	4.6%	5.7%	67.2%	6%
Energy firm	8.3	3.8%	2.4%	26.6%	11.3%
Healthcare firm	5.8	2.7%	4.1%	31.4%	2.5%
Healthcare firm	5.7	2.6%	3.3%	41.3%	5.9%
Energy firm	5.6	2.6%	3.1%	28.2%	15.6%
Consumer Staples firm	5.5	2.6%	2.9%	42.1%	9.2%
Telecommunication Services firm	5.4	2.5%	5.3%	84.3%	4.3%
Industrials firm	4.6	2.1%	2.3%	32.6%	13.0%
Information Technology firm	4.5	2.1%	2.0%	20.4%	12.0%
Consumer Staples firm	4.4	2.0%	2.1%	25.8%	10.5%
Total	59.7	27.6			

Source: Morgan (2011)

Note : Market data as of 31/12/2010

Every firm has different dividend policy, depending on their size, growth profile, sector and some other factors. Sometimes, they do not pay any dividends (Morgan, 2011). Table 1.2 shows that the largest dividend payers in S&P 500. In 2010, S&P 500 firms are expected to pay out total dividends of about $200 billion dollar. The 10 largest dividend payers alone contribute almost 30% or around $60 billion of the total dividends. The table indicates some of these firms are high at earnings payout ratios and low at growth expectations. There is a pattern where low growth

expectations firms pay more dividends while higher growth expectations firms pay fewer dividends. Many S&P 500 companies actually pay modest or no dividends. These top 10 largest dividend payers not only pay out significant amount of dividend due to their size, but also have a high yield and payout ratio (Morgan, 2011).

Based on Table 1.2, some of the companies have a high dividend yield but relatively low on growth expectations. For example, a telecommunication services firm pays the highest dividend ($9.9 billion) among the S&P 500 firms. However, the estimated long-term growth (6.0%) is not among the highest. As a comparison, a consumer staples firm which is on the last of the list pay even lower dividends ($4.4 billion) but managed to have a higher estimated long-term growth with 10.5%.

1.1.2.2 Dividend Policy in Malaysia

There are no regulatory procedure and ideal policy of dividend payment in Malaysia (Chan & Devi, 2009). Section 365(1) of the Companies Act states that "No dividends shall be payable to the shareholders of any company except out of profits or pursuant to Section 60". Company can decide it owns when to pay and how much to pay dividend to their shareholders as long as they fulfill this act. From Companies Act (1963), it stated that "Nothing in this section shall be taken to prohibit the payment of a dividend properly declared by a company or the discharge of a liability lawfully incurred by it". Most of the Malaysia public listed companies (86%) do not recorded its dividend policy in the annual report (MSWG, 2009). In Malaysia, listed firms follow less stable dividend policies (Pandey, 2003). Paydar and Bardai (2012) state that manufacturing sector plays a vital role in the economy of the country as it account more than 80% of the total gross exports.

Table 1.3: Average Dividend per Share (DPS) – Ranking by Industry Sector, 2004-2008

No	Industry Sector	Dividend per Share (RM)					5-Year Average
		2004	2005	2006	2007	2008	DPS (RM)
1	Infrastructure	0.04	0.03	0.09	0.28	0.34	0.16
2	Finance	0.08	0.10	0.11	0.15	0.14	0.11
3	Plantation	0.07	0.06	0.07	0.06	0.11	0.07
4	Consumer	0.07	0.07	0.07	0.09	0.08	0.07
5	REITs	0.03	0.01	0.03	0.06	0.08	0.05
6	Trading/Services	0.04	0.05	0.04	0.05	0.06	0.05
7	Industrial	0.05	0.03	0.04	0.03	0.04	0.04
8	Construction	0.03	0.03	0.03	0.05	0.03	0.04
9	Properties	0.02	0.03	0.04	0.03	0.03	0.03
10	Hotel	0.02	0.02	0.02	0.02	0.03	0.02
11	Technology	0.02	0.01	0.01	0.01	0.02	0.01

Source: Dividend Survey Report (2009)

As shown in Table 1.3, infrastructure sector has the highest 5-years average dividend per share (DPS) from 2004-2008, at RM0.16. Finance sector spot at second place with RM0.11 followed by Plantation sector at RM0.07. These three sectors, Infrastructure, Finance and Plantation sectors are consistent on upward pattern within these 5 years in overall. Consumer sector ranks the forth at RM0.07 DPS and the rest of the sectors are having a quite consistence pattern, with slightly dip or merely increase on DPS. Technology sector, however, ranks the last on the list.

Below Table1.4 shows that companies in Malaysia are liberal on dividend policy, where they are free on decision to pay dividends (MSWG, 2009). Banking sector recorded a highest dividend yield in 2013. Malayan Banking, commonly known as Maybank, pays the highest dividend yield at 5.75%. Among the 10 highest dividend yield companies, most of them are from trading and service sector, consumer product sector and banking sector. The least dividend yield company on the list is also fall on a banking company, Public Bank, with a dividend yield at 3.13%.

Companies that pay higher dividend are relatively had less retained earnings for future expansion.

Table 1.4: KLCI 10 Highest Dividend Stocks by 15 February 2013

Stock Name	Price / Earnings (P/E)	Earnings Per Share (EPS)	Dividend Per Share (DPS)	Payout Ratio	Dividend Yield
MALAYAN BANKING	12.3	0.7	0.51	70	5.75
MAXIS	20.2	0.3	0.32	101	5.03
BRITISH AMERICAN TOBACCO MALAYSIA	21.2	2.61	2.61	95	4.52
DIGI.COM	27.6	0.18	0.18	105	3.84
SIME DARBY	13.5	0.35	0.35	51	3.80
TELEKOM MALAYSIA	12.6	0.20	0.20	47	3.73
AXIATA GROUP	21.6	0.23	0.23	79	3.67
GAMUDA	14.2	0.12	0.12	46	3.25
IOI CORP	14.8	0.16	0.16	47	3.18
PUBLIC BANK	14.5	0.50	0.50	45	3.13

Source: www.topyields.nl / Top Yields (2013)

1.1.3 Ownership Structure

Ownership structure is determined by the distribution of equity or property regarding to terms of voting and capital, but also by the position of the equity holders. In corporate governance, these structures are significant and very important due to they indicate managers' incentives and thus the economic effective and efficiency of the company they handle and control (Jensen & Meckling, 1976).

Zeitun (2009) indicated that ownership structure normally can be divided into four categories which are government ownership, managerial

ownership (Insider Ownership), foreign ownership and ownership concentration. Based on Demsetz and Lehn (1985), ownership is an endogenous result that balances the costs such as risk and ownership's interest (e.g. controlling or monitoring).

Agrawal and Nagarajan (1990) argue that ownership and control have an effect on debt market as managing director can regulate or revise the debt ratio and equity ratio to maximize their welfare because it will actually affect the company's cost of capital. Beside, ownership structure is a major part in the governance and performance of company due to it functions as controlling and managing the whole organization for the board of director and further improves the performance of the company (Fama & Jensen, 1983). Economic development has diversity histories, civilization and paths that only can better illustrate the differ structure than economic theories.

There are some East Asian nations like Singapore, South Korea, Thailand and Indonesia considerable similar with Malaysia on institutional circumstance that related with the ownership structure. Based on the past studies, there is a significant effect on corporate ownership and the payout policy of a company. Lemmon and Lins (2003) and Mitton (2002) and represent that ownership structure significance in defining monitoring shareholders with incentives to preserve their own benefits at the expenditure of the shareholders with a small number within crisis of East Asian is also focus in few previous researches. In emerging economies, past researches underline the need for an appropriate layout of corporate governance characteristic that can preserve the authority of a small number of shareholders (La Porta, Silanes, Shleifer & Vishny, 2000a, 2000b & 2002; Shleifer & Vishny, 1997).

1.1.3.1 Ownership Concentration in Malaysia

Ownership concentration can be defined as the shareholders whose own huge amount of company shares and normally can be classified as large shareholders. Ownership concentration can reduce the interest conflicts in the right of increased cash flow and will charge more for the owners of managing when they transfer cash flow from the corporation to themselves (Ding, Zhang & Zhang, 2007). Shleifer and Vishny (1997) mentioned that "large shareholders possess common interests in maximize profit and sufficient control beyond the company's assets to have their benefit esteemed".

As a result, interests of controlling owners are great aligned with interest of the company when there is a higher ownership concentration (Shleifer & Vishny, 1986). La Porta, Silanes, Shleifer and Vishny, (1996) indicated that in developing countries ownership concentration is endogenously formed, recommend its positive impact. Higher ownership concentration may also treat as a signal for managing owners to build up the reputation due to they recognize imposition will make small number of shareholders to reduce the prices of share and thus decrease their asset (Gomes, 2000).

Besides that, family ownership can be classifying under ownership concentration and defined as a company that is totally owned and controlled by own family members (Barry, 1989). The family member have to reside entirely by the ownership at least one of them had to be hired and also even they may not officially be hired but they also help into business like when some of the emergence event or important issues occurred in company (Lyman, 1991).

Recent studied underline that company with higher ownership concentration will lead to interest conflict increase between managers and

controlling shareholders. In Malaysia, the concentrated owners are significant as contrast to the dispersed owners which is unusual (Worldbank, 2005). Controlling shareholders with large share ownership have the incentive to affect value maximization, exert monitor and to preserve their company's interest. The rights to control enclose to own a huge portion of shares to reach a premium. Also, this premium is normally related with personal interest of control. For example, comprise investment in unrelated events to know whether for the objective of imperial building or for diversification, the capable to pick up rentals at the expenditure of other small number of shareholders (La Porta et al., 2000a). Then, this will embody the large investors' failure and to enforce their corporations of managers to profits maximization and disburse the profits as dividends term (Worldbank, 2005).

In Malaysia, those companies that irrelevant with agency conflict between shareholders and the board of director due to their ownership is highly concentrated in the hands of the major shareholders (Claessens, Djankov & Lang, 2000).

Beside, Shleifer and Vishny (1997) indicated that the right of monitoring shareholders in East Asian economies expropriate the minority shareholders' right and indisputable in a condition of a poor legal system and inefficient corporate governance. This phenomenon is most possible to happen as it has poor enforcement of the legal shareholders preservation (Krishnamurti, Sevic & Sevic, 2005). According to Agrawal and Knoeber (1996) argue that in Malaysia debt financing may be control management because of its immature financial market (Suto, 2003; Tam & Tan, 2007).

In Malaysia, the opportunistic managers discipline by the hostile takeovers is practically non-existent due to the major shareholder usually consists the CEO or those has an affiliation with top managers (Haniffa & Hudaib, 2006). Even there is less agency conflict between the shareholders and the

board of director in intently held company; they still deal with more serious conflict between the major and minor shareholders.

Ownership structure is use to decrease agency conflict that recommend by agency theories but agency conflict still not be solved till the end. According to Dargenidou, McLeay and Raonic (2007), the major shareholders can control agency conflict by monitoring; these shareholders will less entrust on financial statement and thereby use less conservative accounting.

1.1.3.2 Government Ownership in Malaysia

Government ownership is the shares of company that held by government but without any involvement in administration and operation of that company (Iskandar, Bukit & Sanusi, 2012). The existence of government ownership will bring the advantages to the company (Ang & Ding, 2006; Feng, Sun & Tong, 2004).

Government ownership also consist government privatization companies (Ramlee & Ali, 2012). Thus, the companies that possess shares and held by State Government Investment Brokers, Federal Pension Funds, and State Government Trust Broker that comprise Khazanah Nasional Berhad (the investment arm of the Ministry of Finance), Permodalan Nasional Berhad (manages various national unit trusts), Employees Provident Funds (EPF), pilgrimage board funds (Lembaga Tabung Haji), the military pension funds (Lembaga Tabung Angkatan Tentera) etc. For example Government Link Investment Corporation (GLICs) is one of the type of government ownership companies (Sulong & Nor, 2008).

In Singapore, compared to Non-Government Linked Companies, Government Linked Companies (GLCs) possess more corporate

governance and valuations with higher rate (Ang & Ding, 2006). Feng et al. (2004) show that on thirty Singapore GLCs overcasting the phase from 1964 to 1998 illustrated that there are some positive influence by share-issue privatization on the performance of a company. However, there is insufficient evidence to conclude that GLCs have low profit than Non-GLCs that were matched by dimension and industry.

Beside, GLCs have less incentive to manage agency issues due to their financial performance had poorer accountability which is simplify access to finance but the corporate management and poorer controlling by shareholders are less exposure to the market (Mak & Li, 2001).

According to Eighth Malaysian Plan (EPM) (2001), Malaysia's listed companies, significant shares were held by government-controlled institution. In December 2000, government-controlled institution reserve approximately 49.5 per cent of shares in Malaysia's public-listed companies. Larger government share ownership may be pertained to citizen benefit and safety reasons embodied in the superiority of government ownership in firms managing such as telecommunications, power and carriage industries. The policy of government industrial favored in particular sectors by quote public benefit like automobiles, power, telecommunication and others. In country development policy, politically and impartial allocation of corporate wealth is an essential factor. In Malaysia, government ownership structure of the corporate industries has been creating by these considerations.

Beside, certain government-controlled institution held unit trust of shares for the interest of millions households, since portion of the policy intent of empowering indigenous citizen to take part in the economic development of the national. Thus, government ownership's intention consists of community objectives separate from maximize the profits (Iskandar et al., 2012). In Malaysia, the larger firms arise to be intently related to

influential political numbers. Besides, political linkages affect the collection and consistency of wealth in the trading of Malaysian (Ghazali & Weetman, 2006).

1.1.3.3 Foreign Ownership in Malaysia

The percentage of shares that held by the foreign investors is the definition of foreign ownership (Dahlquist & Robertson, 2001). Foreign ownership is a significant role in controlling management of the company. Also, foreign investor exist is to supplements the controlling furnished by non-foreign investors and prevents any impact on administrative upon the non-generative utilize of wealth.

According to Benfratello and Sembenelli (2006), foreign investors from others nations with intense governance institution and legislations have knowledge about the way to control the companies' management. Foreign ownership's existence is also prospected to decrease asymmetry information and thus reduce agency issues due to foreign ownership would conduct validity to manage and control the managers that tries to operate the accounts (Choi & Yoo, 2005; Dahlquist & Robertson, 2001).

Foreign investors play a role in their best benefits to perform their fiduciary responsibilities in assuring the fabric of financial inform to preserve the interest of shareholders in order to increase the profits that obtained from the investments (Choi & Yoo, 2005). Thereby, the shares of companies that the foreign investors owned will less or unlikely to undertake in opportunistic characteristic for example display utilization of assets. The administration decisions and operation will be control by a large foreign ownership in order to make sure that the free cash flow is applied effectively and efficiently (Iskandar et al., 2012).

In Malaysia, the company with foreign ownership can produce and export more than those countries that without foreign ownership (Hallward-Driemeier, Iarossi & Sokoloff, 2002). According to Doms and Jensen (1998), the companies with foreign ownership have capital intensive so that productive are more than others those without foreign ownership, and also the employees can pay more and higher salaries by the company. The participation of foreign ownership is significantly positive correlated on the corporate governance's better regulation and determining by low debt-ratio (Chevalier, Prasetyantoko & Rokhim, 2006).

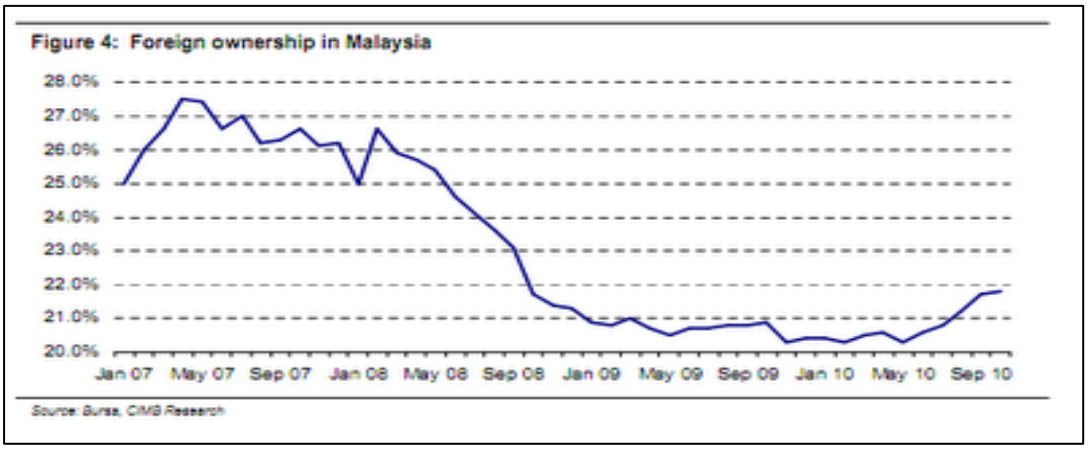
Boo (2003) indicates that investors of foreign institutional also known as necessary role in Malaysia due to those investors share ownership level is considerably significant. Foreign investors can be classified as the people who owned foreign ownership in Malaysia. As a whole, foreign investors who have owned a significant equity shares or even a plurality of shares are the part of strategic that use by foreign investors in their investment (Sulong & Nor, 2008). The subsidiaries of multinational corporations that listed in Bursa Malaysia owned a significant equity shares.

In recent, report on the ceremony with the standards and norms of corporate governance (Worldbank, 2005), it is also informed that a higher proportion of profits in term of dividends that already grant by foreign ownership corporations in Malaysia. In addition, through the foreign investors share ownership by offer capital, administrative experience and also exert activities of controlling on managers (Sulong & Nor, 2008). In emerging nations, foreign ownership can enhance corporate governance and also improve effective and efficiency.

Based on Figure 1.2, there is a sharply decline on foreign ownership in Malaysia in May 2008 to May 2010 from 26.8% to 20.1% and thus slightly increase back in September 2010 at 21.9%. In January 2007, foreign ownership represents 25% and the higher per cent of foreign

ownership in Malaysia represents around 27.5%. The volatility of foreign ownership is unstable within May 2007 and 2008 due to financial crisis. On overall, the Bursa CIMB research indicated that the percentage of foreign ownership represent between 20% and 30% in Malaysia.

Figure 1.2: Foreign Ownership in Malaysia



Source: Bursa CIMB Research

1.1.3.4 Managerial ownership in Malaysia

Definition of managerial ownership is the shares held percentage by the managing directors or insiders of a corporation. Managerial ownership standard varies; apply this standard as an organization collision measurement within the owner and managing director. The better the managerial ownership, the lower the possibility costs of agency being generated (Ang, Cole & Lin, 2000; Jensen & Meckling, 1976; Singh & Davidson, 2003).

Higher managerial ownership corporations are easier to utilize wealth efficiently with the goal of maximizing value of the shareholders. Managerial ownership assists decrease incentives of the managers in order to enhance their own benefits by endowing the shareholders' benefits.

Since managers are the owners so they would have intended more hard to work and become more efficiency, and conversely it would lead in a more generative and profitable assets' utilization (Iskandar et al., 2012).

Managerial ownership would actively take part in controlling the utilization of free cash flow of the corporation to assure that only value-added programs are implemented (Warfield, Wild & Wild, 1995). Managerial ownership would acts as an insider role to assure that the long term profit of corporation only applied by free cash flow and thus maximize interest of the shareholders (Iskandar et al., 2012). Theorist of agency recommends that inputs would be providing by managerial ownership into the process of policy decision (Jensen & Meckling, 1976).

On the other hand, Ang et al. (2000), Jensen and Meckling (1976) and Singh and Davidson (2003) indicate managerial ownership that specify by alignment theorists in order to assists align the benefits of administrative and proprietors. It is showed that managerial ownership would contribute directly in the utilization of asset by successfully. The shares of substantial corporation that own by the managers are able to affect decisions of the corporation that only use free cash flow for significant net present values' programs. Warfield et al. (1995) showed that free cash flow that control by these managers in order to assure the profitable programs that will bring benefits to the shareholders only can be approved. Besides, the management takes part in the decision free cash flow utilization in order to generate long term profits that maximize returns of the shareholders. The effective assets utilization contributes by managerial ownership immediately, especially when a huge number of free cash flow is available (Iskandar et al., 2012).

Managerial ownership also can classify as owner-managed ownership or insider ownership. It is general within Malaysian listed corporations (Sulong & Nor, 2008). Claessens et al. (2000) mentioned, at the 20 per

cent reduction of owner right, regarding 85 per cent of listed corporations in Malaysia have managerial ownership. Managerial ownership could assist decrease costs of agency due to a managing director who holds huge portion shares of the corporation undertake the effect and interests of managerial behavior that ruin and establish the firm's value (Jensen & Meckling, 1976).

While the minority amount of the corporation shares hold by the managers, they will have larger incentives to seek own interests and less or no incentive to maximize value of the company. In case, one approach to decrease the related rise in cost of agency is with the managers owns the shares of increased. In ownership structure, managerial ownership interests are prominent according to the hypothesis of interest convergence (Jensen & Meckling, 1976).

From below Table 1.5, family control in Malaysia represents 67.2 per cent. Compared to others country, Malaysia can be known as second large family control while the large family control is in Indonesia which is 71.5 per cent. Besides that, state control in Malaysia has same level with family control which represents second large percentage of ownership. State control show 13.4 per cent whereas Singapore are the larger control of state compared to others country which is 23.5 per cent. Japan has most large percentages in widely held control which is 79.8% compared to others control. While Malaysia only represents 10.3 per cent of widely held control compared to others control. Overall, family control is the larger ownership in Malaysia compares to others control and this results same with all country that include in the table except Japan due to Japan own more widely held control than others. The percentages of total assets of all sample firms in Malaysia represents 24.8 per cent and can be classified as second lower percentages compared to those company that with higher percentage of total assets.

Table 1.5: Ownership and Control in East Asian Corporations Based on Cut-off 20%

Country	**Number of Firms in sample**	**Control[a]**			**% of Assets[b]Controlled by Top10 families**
		Family	**State**	**Widely Held**	
Hong Kong	330	66.7%	1.4%	7.0%	32.1%
Indonesia	178	71.5%	8.2%	5.1%	57.7%
Japan	1240	9.7%	0.8%	79.8%	2.4%
Korea	345	48.4%	1.6%	43.2%	36.8%
Malaysia	238	67.2%	13.4%	10.3%	24.8%
Philippines	120	44.6%	2.1%	19.2%	52.5%
Singapore	221	55.4%	23.5%	5.4%	26.6%
Taiwan	141	44458.2%	2.8%	26.2%	18.4%
Thailand	167	61.6%	8.0%	6.6%	46.2%

[a]"Control" defined as ownership of shares with voting rights at least 20 per cent. There is not reported in percentages that controlled by widely held financial institutions or company.

[b]Percentage of total assets of all sample firms in each country.

Source: Claessenset al., (2000)

1.1.4 Financial Crisis

The financial crisis of 2007-2008 also is known as the global financial crisis. Many economists consider this global financial crisis is the worst financial crisis ever since the Great Depression of 1930s. A very big number of large financial institutions in different area collapse because of this financial crisis. This crisis not only affects the economy in US but also whole world. The growth in developing world is slowing dramatically. Global financial crisis turned $1 trillion of subprime loans into $20 trillion in losses for banks and this make many people lose their homes and jobs. Many governments used different policies to recover their financial system (Ding, Wu, & Chang, 2012).

1.1.4.1 History of Financial Crisis

The first housing crisis tales place in United States (US) in year 1925-1936. Home price drop about 30% over this interval and 25% increase in unemployment rate. Many people borrowed short-term mortgages of five years or less at that time. Slowly they found they are unable to refinance their mortgages as the crisis took hold and they start to lose their homes. At that time, there are no public institutions to stop them from ejecting from their homes owing to their inability to secure new mortgages. But at last many evictions were avoided and recover because of the effort of leaders make change of institution framework (Shiller, pg 7, 2008).

1.1.4.2 Cause and Impact of Financial Crisis in World Wide

The global financial crisis 2007 where start at US, has bring large impact for the world economy (Sarna, n.d.). What begin as an asset bubble caused by a set-up of financial derivatives that, inner alia, drove the sub-prime mortgage boom, exploded into housing and banking crisis with a cascading effect on consumer and investment demand. It quickly grew into a banking crisis from housing crisis result in affecting the investment, merchant banks and also commercial banks. US economy start to contract sharply and it then affect the Asian economies. This global financial crisis has effect on Malaysia's plan to achieve vision 2020 because of the failure in exports and slowdown in foreign direct investment. US economy is said to move into inflation period while the Asian are having slowdown. Economists expect the US to lead with a stimulus package of USD1 trillion. Japan's response is a USD 255 billion package to fight the financial tsunami while Australia has a total of AUD 15.1 billion for their nation-building plan. The unemployment rate increase and the world trade are expected to fall, especially in the finance industry. Bank of America

cuts off 35,000 jobs for the next 3 years while by 2009, about 52,000 jobs cuts by Citibank.

1.1.4.3 Impact of Financial Crisis on Malaysia

The global financial crisis also affects Malaysia's economy. Malaysia Government must take right action to counter the crisis. The Malaysian merchandise trade surplus drop to USD 22.9 billion (RM 82 billion) in 2009 from what estimated in 2008, USD 5.3 billion. The exports also decrease about 2.6 %. One of the economists from HSBC said that the export was the worst in more than 20 month. The credit crunch will cause loan to growth slower and profit will be reduced. Domestic bank are not directly subject to US subprime crisis because Malaysia Government limit the outflow of foreign investments. Sahamas said that Kuala Lumpur Stock Exchange (KLSE) has the least effect from the financial crisis because it is the best performing stock market in South East Asia (Sarna, n.d.).

In the last quarter of 2008, the overall GDP growth rate slowed down to 0.1% and contracted by -6.2% in the first quarter of 2009. It then drop by -3.9% in the second quarter of 2009. This fall will further lead to decrease Malaysia capacity to achieve the 2020 per capita income of US$ 15,341 (Abidin & Rasiah, 2009). Compared to other developed countries, Malaysia GDP growth took longer time to absorb the contagion. The further contraction projected by Bank Negara Malaysia over the whole year suggest that Malaysia will recover later than many other East Asian countries. The contraction will result in continued fall in export leading to weaken the industrial production in export-oriented sector.

Table 1.6: Gross Domestic Product, Selected Economies, 2007-2009 (% Annual Change)

Country	2007				2008				2009	
	Q1	*Q2*	*Q3*	*Q4*	*Q1*	*Q2*	*Q3*	*Q4*	*Q1*	*Q2*
United States	1.2	3.2	3.6	2.1	-0.7	1.5	-2.7	-5.4	-6.4	-1.0
United Kingdom	2.4	2.6	2.7	2.4	2.5	1.8	0.5	-1.8	-4.9	-5.6
Germany	3.7	2.5	2.5	1.6	2.9	2.0	0.8	-1.8	-6.7	-5.9
Japan	3.4	2.2	1.9	1.9	1.3	0.6	-0.3	-4.3	-8.7	-6.4
Hong Kong	5.6	6.1	6.8	6.9	7.3	4.1	1.5	-2.6	-7.8	-3.8
Malaysia	5.4	5.6	6.5	7.2	7.4	6.6	4.8	0.1	-6.2	-3.9
Singapore	7.6	8.6	9.5	5.5	6.7	2.5	n.a.	-4.2	-9.5	-3.5
Republic of Korea	4.5	5.3	4.9	5.7	5.5	4.3	3.1	-3.4	-4.2	-2.5
Taiwan, Province of China	3.8	5.5	7.0	6.4	6.3	4.6	-1.1	-8.6	-10.1	-7.5
Indonesia	6.0	6.6	6.6	5.9	6.3	6.4	6.4	5.2	4.4	4.0
Thailand	4.4	4.4	5.1	5.7	6.0	5.3	3.9	-4.2	-7.1	-4.9
Philippines	7.0	8.3	6.8	6.3	3.9	4.2	4.6	2.9	0.4	1.5

Source: Bank Negara Malaysia, Monthly Statistical Bulletin, July 2009.

Table1.6 is the list of countries GDP. Indonesia and Philippines have positive GDP growth rate over the first two quarters of 2009. In second quarter of 2009, the US GDP slowed down by -1%, suggesting that the world's leading economy may be coming out of a recession and could lead a potential recovery across the world through increased imports.

Based on Table 1.6, Malaysia GDP has a positive growth rate in year 2007. In the first quarter of 2007, it shows 5.4 % and slowly increases until the end of the year. In year 2008, it starts to drop. First quarter of the year state 7.4 % and drop to 6.6 % in second quarter, 4.8% and 0.1% in third and fourth quarter of the year. In year 2009, GDP slowed down by -6.2% and -3.9% in the first and second quarter.

1.2 Problem Statement

This research paper is attempted to examine the determinant of capital structure in an emerging market, Malaysia. According to Paydar and Bardai (2012), the author

found that the literature reviews about the determinant of capital structure is sparse in Malaysia. Therefore, this circumstance stimulates this research to examine Malaysia's capital structure in attempt to provide some significance and contribution to Malaysia's firms.

Most of the past researchers are likely to examine the determinant of capital structure in listed property and construction companies in Malaysia. According to Baharuddin et al. (2011) and Sahudin et al. (2011), both researchers examine the capital structure in Malaysia's construction companies by using panel data. In addition, Ong and Teh (2011) also focused on 49 public-listed construction firms in Malaysia in order to examine the relationship between firm performance and capital structure during financial crisis. Besides, Wahab et al. (2012) investigate the determinant of capital structure on 10 public listed property companies in Malaysia from 2001 to 2010. Thus, previous researches prove that the research of capital structure is popular in these two industries. Besides, Malaysia's researchers also examine the companies' capital structure by using public-listed companies from various industries. For instance, Pandey (2004) conducted a study about the relationship between market structure and capital structure on 208 Malaysia's public listed companies. Besides, Mustapha et al., (2011) also explores the debt structure of public listed companies in Malaysia from various sectors by using cross sectional data. Based on the pass studies, fewer researchers investigate the determinant of capital structure on industrial product sector in Malaysia. This research is attempted to examine the determinant of capital structure in Malaysia public-listed industrial product sector in order to make differential with past researchers.

According to Jensen (1986), debt and dividends known as an alternative mechanism to reduce the agency costs when manage the under-and over-investment. According to Aggarwal and Kyaw (2010), there is a positive relationship between leverage and dividend payout ratios significantly. Higher dividend payout will reduce its income retention, thus firms will depend on debt borrowing more. In opposite, according to Higgins (1972) and Rozeff (1982),

these studies showed that the companies with higher leverage pay a lower dividend payment in order to evade the cost of increasing external capital of the companies. Hence, past researchers are still puzzling about the relationship between dividend policy and capital structure in Malaysia's industrial product sector.

Malaysia is a developing country associated with emerging market, Malaysia is chosen in this research because of the unique of ownership concentration business environment. Kean and Cheah (2000) showed that public listed firms evolved from family owned firms in Malaysia, some firms still continue to be managed, so the owner-managed firms are popular in Malaysia. Unlike firms with diversified ownership, ownership concentration firms have reduced the agency cost and agency problem because of a better control and the cash flow right of stockholders (Rahman& Ali, 2006). Because of the power of the largest shareholder, firms need to do more appropriate capital structure policy to fulfill their requirement to obtain their loyalty. Thus, the argument about the relationship between capital structure and ownership concentration is occurring. Hence, researchers are still puzzling about the relationship between ownership concentration and capital structure in Malaysia's industrial product sector.

In Malaysia, more than 80% of the total gross exports are provided by industrial product sector. Thus, industrial sectors suffered the most damage during the period of financial crisis. During financial crisis, Malaysian exports reduced by 28% in January 2009 and it showed a largest drop in Malaysia history since 1982 (Paydar & Bardai, 2012). Thus, the understanding about the capital structure in Malaysia's industrial product sector is very important due to this sector plays an important role in Malaysia economy. In addition, Deesomsak, Paudyal and Pescetto (2004) found that less research determine the impacts of financial crisis on corporate capital structure decision making. Based on the fact in Thailand, the authors also state that 1997 East Asian financial crisis affect capital market seriously, the outflow of foreign direct investment increase due to the foreign investors lost of confident in the affected countries. Raising capital is more costly

in these countries due to higher risk premia, compounded by the high interest rate in order to support home currencies. People still puzzling whether financial crisis will affect capital structure in Malaysia's industrial product sector. Thus, this research is attempted to examine the determinant of capital structure before and after financial crisis respectively.

1.3 Research Objective

After reviewing the problem statement from this research, the general and specific objectives have been derived.

1.3.1 General Objective

- To examine the certain factors that will affect the capital structure in public-listed industrial product companies in Malaysia

1.3.2 Specific Objective

- To examine the relationship between dividend policy and capital structure in Malaysia's industrial product sector
- To examine the relationship between ownership concentration and capital structure in Malaysia's industrial product sector
- To examine the relationship between profitability and capital structure in Malaysia's industrial product sector

- To examine the relationship between firm size and capital structure in Malaysia's industrial product sector

- To examine the relationship between growth opportunity and capital structure in Malaysia's industrial product sector

- To examine the relationship between liquidity and capital structure in Malaysia's industrial product sector

- To examine the relationship between non-debt tax shield (NDTS) and capital structure in Malaysia's industrial product sector

- To examine the relationship between tangibility and capital structure in Malaysia's industrial product sector

1.4 Research Question

- Is there a significant relationship between dividend policy and capital structure in Malaysia's industrial product sector?

- Is there a significant relationship between ownership concentration and capital structure in Malaysia's industrial product sector?

- Is there a significant relationship between profitability and capital structure in Malaysia's industrial product sector?

- Is there a significant relationship between firm size and capital structure in Malaysia's industrial product sector?

- Is there a significant relationship between growth opportunity and capital structure in Malaysia's industrial product sector?

- Is there a significant relationship between liquidity and capital structure in Malaysia's industrial product sector?

- Is there a significant relationship between non-debt tax shield (NDTS) and capital structure in Malaysia's industrial product sector?

- Is there a significant relationship between tangibility and capital structure in Malaysia's industrial product sector?

1.5 Hypothesis of the Study

There are some hypotheses to examine the significance of certain factor that will influence capital structure in Malaysia public-listed industrial product industry.

The first hypothesis is to test whether dividend policy will influence corporate capital structure significantly in Malaysia's industrial product sector.

The second hypothesis is to test whether ownership concentration will influence corporate capital structure significantly in Malaysia's industrial product sector.

The third hypothesis is to test whether profitability will influence corporate capital structure significantly in Malaysia's industrial product sector.

The forth hypothesis is to test whether firm size will influence corporate capital structure significantly in Malaysia's industrial product sector.

The fifth hypothesis is to test whether growth opportunity will influence corporate capital structure significantly in Malaysia's industrial product sector.

The sixth hypothesis is to test whether liquidity will influence corporate capital structure significantly in Malaysia's industrial product sector.

The seventh hypothesis is to test whether non-debt tax shield (NDTS) will influence corporate capital structure significantly in Malaysia's industrial product sector.

The last hypothesis is to test whether tangibility will influence corporate capital structure significantly in Malaysia's industrial product sector.

1.6 Significance of Study

The purpose of this research is to analyze the determinant of the capital structure by using different independent variables in Malaysia industrial product sector. The finding of this research is pertinent to the Malaysia industrial product sector due to less explicit research in this sector has been conducted. The variables applied in the research are determined based on empirical and theoretical studies. Besides, this research also considers the unique of business environment in Malaysia to specify the variables. Thus, it can assist industrial product firms to build up the groundwork in order to explore the determinants of capital structure. On overall, it also can provide some evidence about the factors affecting the capital structure in the industrial product sector as identified in properties or construction sectors in Malaysia.

This research will provide the results about the effect of independent variables, which are dividend policy, ownership concentration, profitability, firm size, liquidity, growth opportunity, non-debt tax shield and tangibility on the capital

structure in industrial product sector. Through the results of this research, policy maker can specifically clarify the extent of the optimal debt and equity level applied in the financing decision of the industrial product firms' activity in Malaysia. Then, policy maker can encourage industrial product firms to apply the most appropriate policies in order to manage financing decision making. Thus, the understanding of the capital structure can contribute the firms to do the selection of equity and debt securities with different level of costs and benefit in the balanced proportion in order to obtain the maximization of firm value. Besides, the firms also can reduce the risk and the cost about the capital structure decision.

According to Jensen (1986), debt and dividends known as an alternative mechanism to reduce the agency costs when manage the under- and over-investment. Based on literature reviews about the related researches, dividend policy is related with capital structure decision making. This research is attempted to examine the relationship between dividend policy and capital structure in Malaysia's industrial product sector from 2005 until 2010. Thus, it may make a contribution to policy maker to encourage industrial product firms to improve their capital structure choice by using dividend policy.

According to Guo, Ding and Sun (2010), the effect of ownership concentration on leverage is negative. Large shareholders are likely to decrease the debt level because of the risk of financial distress and bankruptcy. Besides, in companies with low ownership concentration the impact is positive. Kean and Cheah (2000) showed that public listed firms evolved from family owned firms in Malaysia, some firms still continue to be managed, so the owner-managed firms are popular in Malaysia. Due to the argument from prior research, the present research also examines the impact of ownership concentration on capital structure due to the nature of ownership structure in Malaysia. This research can assist policy maker to understand the ownership structure in order to predict a better capital structure decision.

According to Paydar and Bardai (2012), the exports of industrial product sector suffer the most losses during global financial crisis 2007. After financial crisis, they will make different capital structure decision in order to obtain sufficient fund to finance its assets. This research also tries to examine the determinant of capital structure before and after financial crisis. Hence, it may help the policy maker by providing more in depth analysis to firms to deal with capital structure matter after financial crisis.

By examining the determinant of capital structure with different explanatory variables in Malaysia industrial product sectors, this research also will reveal the validity of the pecking order theory and trade-off theory based on the finding result. Thus, policy maker can apply more powerful theory to make the capital structure's decision.

On overall, the topic of the determinant of capital structure can be considered as one of the significant issues in financial area since it can help the firm to achieve optimal capital structure level. Thus, this research can provide some significance and contribution to managers, investors, academicians, and policy maker in order to form and apply the best financing policy in the deciding process.

1.7 Chapter Layout

This paper is divided into five sections. Chapter 1 introduces the background of research, problem statement, research objectives, hypotheses and significant of the study. Chapter 2 will present the literature review on capital structure of Malaysia companies in industrial products sector, determinants is reviewed to justify selected dependent and independent variables. Chapter 3 will present the methodology used in testing the effect of independent variables on capital structure in Malaysia's industrial product companies. Chapter 4 will present the

description and analysis of the data. Lastly, Chapter 5 will present the discussion of major finding and conclusion.

1.8 Conclusion

The paper is to investigate the factors that will affect capital structure of Malaysia public listed companies in industrial products industry. The determinants have been focused in this paper and result this research may obtain different from previous researches as this research use different factors and other factors may also affect the empirical result.

CHAPTER 2: LITERATURE REVIEWS

2.0 Introduction

This chapter will begin with the discussion of MM Proposition, trade-off theory and pecking order theory. Then, this chapter will explain about the relation between capital structure and the variables which include of dividend policy, ownership concentration, profitability, firm size, liquidity, growth opportunity, tangibility, non-debt tax shield and financial crisis. The main concern of this study is to examine which independent variables will bring significant effect to the dependent variable. Lastly, this chapter will discuss about the review on literatures of previous studies which related to this study in this chapter.

2.1 Review of Relevant Theoretical Models

2.1.1 MM Proposition

According to Modigliani and Miller (1958), companies issued securities that are traded in a perfect capital market. Capital market is a market which is without any transaction costs and no restriction to access the free flow of information. In this market, all the firms are expected to have the same risk characteristics in expected operating profile under the homogeneous risk class theory. Investors and firms will trade at the same amount of securities at competitive. Besides, everyone can take the loan at the same interest rate and there will be no taxes charged, every investment decisions are not going to be affected by the financing decisions, and the

financing decisions will not affect the generated cash flows from its investments (Peirson, Brown, Easton & Howard, pg 384, 2009).

They come out with two findings under these conditions in a perfect capital market, which are MM (Modigliani and Miller) proposition I and MM proposition II. MM proposition I is mainly about the value of a company will stay not affected as independent of its capital structure, exclude from the effect of tax, the increase interest rate, or the increased debt may raise the average cost of borrowed funds. In the other way, it means that when a company with a given set of assets, the net operating cash flows will be changed by the changes of company's ratio of debt to equity, but the changes will not affect the total value of cash flow, which keeps the value of company safe. The authors prove their theory with investors can create homemade leverage which will be a perfect substitute for the firm leverage.

For MM Proposition II, it serves the purpose of analyzing the effect of capital structure on rates of return to investors. The cost of equity of a leveraged firm will be equal with the constant total cost of capital with extra premium for financial risk. As leverage goes up, the load of individual risks will be transferred among different levels of investors, the overall risk is restraint and the value will remain constant, hence the financial leverage will be irrelevant. This implies that the cost of equity must increase when the financial risk increase.

2.1.2 Trade-off Theory

It is a theory which proposes that firms have an optimal capital structure based on a trade-off between the advantages and costs of using debt by Myers (1984). Existence of an optimal capital structure may bring the

possibility of a trade-off between the opposing costs of financial distress effects of the advantages of debt finance. This theory brings an overview of relationship between capital structure and company value, which includes of Modigliani and Miller (1958), has argued that the net effects of taxes on company value can be zero when both corporate and personal taxes are considered. Company finance includes debt and equity as sources and it has the potential to neutralize the imputation tax system. If it is not neutral, the system is unbiased towards debt, not equity. There is evidence proven that the direct costs of bankruptcy are small relative to company value (Warner 1977). Companies in US used debt finance earlier than the introduction of income taxes. Debt finance suggests that whether or not the tax advantages of debt are real, there must be other non-tax advantages of debt (Peirson et al., pg 405, 2009).

Trade-off theory state that positive relationship between leverage and bankruptcy cost. Bankruptcy cost will affect the leverage and also dividend policy. Rozeff (1982) says that there is a negative relation between riskier firms and dividends. Trade-off theory states that the relationship between leverage and dividend payout ratio is negative. This is because the payout ratio and leverage both are affected by profitability. A company will have lower earnings to retain if their pay high dividend and this may lead to call for extra financing. Thus, a negative relationship is expected between dividend payout ratio and leverage (Adedeji, 1998).

According to Jensen (1986), debt and shareholder ownership has negative relationship. High indebtedness increase bankruptcy risk and large shareholders may reduce their holding for decrease their losses. Ellul (2008) found that the relationship is negative which advise that debt may work as substitute mechanism for capital ownership by the controlling shareholders. In France, trade-off theory states that the relationship between ownership and leverage is positive because at low levels of controlling shareholders' ownership, the entrenchment effect dominates.

Trade off theory assumes that there is a positive relationship between leverage and profitability (Paydar & Bardai, 2012). According to Wahab et al. (2012), they find a positive relationship between leverage and profitability. This is because there is high probability of using the use of debt and thus provides the advantages of tax shield on interest payments. According to Frank and Goyal (2009), they argued that there is a negative relation between profitability and leverage because firms do not adjust capital structures immediately after there is an increase in equity and decrease in debt; this will lead to problem of transaction costs and then negative result. Besides, according to Rajan and Zingales (1995), Titman and Wessels (1988) and Wald (1999), they find out there is most empirical studies confirm the negative relation between profitability and leverage while the positive relation are less likely supported by empirical studies.

Trade-off theory states that firm size is positively correlated with leverage. Size may have the chance to be an inverse proxy for the probability of bankruptcy. Large firms are usually more diversified and with more stable cash flow so the probability of large firms facing problem of bankruptcy is lesser than the smaller ones. In addition, large firms are more likely to issue long-term debt while small firms prefer the short-term debt in carrying out their projects. Due to the advantage of economies of scale and negotiating power with creditors, large firms take lesser costs in issuing debt and equity compare with those small firms (Michaelas, Chittenden & Poutziouriset, 1999).

Trade-off theory assumes that a firm may have decides a target debt to its value and trying to achieve it gradually (Chen, 2004; Karadeniz, Kandir, Balcilar & Onal, 2009). In this theory, growth opportunity should have negative relationship with debt leverage due to firm with high growth opportunities tend to face more risk and higher financial distress costs. Rajan and Zingales (1995) found out that growth opportunities are negatively related with leverage through using market-to-book ratio as the

proxy of growth opportunities. His theory is supported by two reasons which are firms are suffering higher costs of financial distress due to the high market-to-book ratios and when the stocks are overvalued, firms usually will issue stock.

According to Wahab et al. (2012), trade-off theory assumes a positive relationship between leverage and liquidity. Firms with high liquidity ratios are encouraged to borrow more debt because they are able to meet their liabilities obligations. In the other hand, they find a negative relation between leverage and growth opportunities. Firms are holding future growth opportunities. It can be in form of intangible assets. Due to tangible assets cannot be collateralized; firms are tending to borrow less than holding more tangible assets.

Trade-off theory suggests that there is a negative relationship between leverage and non-debt tax shields. Myers (1977) says that assets that create growth option will increase the agency costs of debt, so the firms will use less debt and it will be a negative relationship between leverage and non-debt tax shield. Bradley, Jarrell and Kim (1984) say that debt policy that included the volatility of earnings, non-debt tax shields and costs of financial distress. They measure non-debt tax shields as the total of depreciation charges and also investment tax credits. They include the sum of research & development and advertising expenses in their measurement. They find out that these expenses will affect the tax effects and decrease the need for debt, so there will be a negative relationship between leverage and non-debt tax shields.

Trade-off theory suggests that there is positive relationship between leverage and tangibility of assets. Ratio of fixed assets to total assets has been used as the measurement to measure tangibility of assets. Tangible assets are easier to collateralize and they face a smaller amount of loss when firms are having difficulty. Therefore, it tells that trade-off

perspective tangibility brings significant effect on the costs of financial problem. Besides that, tangibility also caused a difficulty for shareholders to substitute high-risk assets for low-risk ones (Scott, 1977).

2.1.3 Pecking Order Theory

Pecking order theory is the theory which proposes that companies follow a hierarchy of financing sources in which internal funds are preferred and, if external funds are needed, borrowing is preferred to issuing riskier securities by Myers and Majluf (1984) and proposed by Myers (1984). In contrast to the trade-off theory, the pecking order theory is dynamic in that it attempts to explain financial decisions over time and does not use the concept of a leverage target (Peirson et al., pg 419, 2008).

Myers (1984) says that dividend payout ratio has negative relationship with leverage. Pecking order theory also states that the relationship between dividend and leverage is negative. Same result goes for Allen and Mizuno (1989). In short term, variation in net cash flows will absorbed largely by debt. Frank and Goyal (2009) make a conclusion say that firm that pay dividend tends to have lower leverage.

Pecking order theory states that there is a positive relationship between leverage and ownership concentration. Firm with concentrated ownership have higher debt ratio than diffuse ownership firms. Managers of those firms will try their best to keep the leverage low because they take risky projects. According to Mehran (1992), leverage ratio has positive relationship with percentage of managerial equity ownership and also percentage of equity that big personal investors have. Chen and Steiner (1999) found negative relationship between the ratio of long term debt to the market value of equity and managerial ownership.

Profitability can be defined as the ratio of earnings before interest, tax and depreciation to total assets. Pecking order theory assumes that managers are more likely to finance projects internally because of informational asymmetry between managers and outside investors. Other than that, profitable firms usually not willing to raise external funds to prevent potential dilution of ownership, so a negative relation between profitability and leverage is expected by Rajan and Zingales (1995).

Titman and Wessels (1988) say that there is a positive relation between firm size and leverage under the pecking order theory. They argued that larger firms usually will be more diversified and failed less often, so the size of a firm can be considered as a proxy for information asymmetry between firms and capital markets. Furthermore, the larger firms should gather more accurate credit risk information because usually the lenders are watching and observing them closely.

Based on pecking order theory, information asymmetry exists among the investors. Generally, insider will have more information than investors, thus resulted in the undervalued of the companies' common shares. This would lead to positive relation between growth opportunities and debt level, which mean when the companies have more growth opportunities than the assets they owned. According to Um (2001), a growing company needs more sources to carry out their growing investments since their retained earnings are not sufficient. Thus, the firm will use debt financing to solve the insufficient funds problem so a positive relationship between growth opportunity and leverage is expected.

Pecking order theory suggests a negative relationship between leverage and liquidity (Mazur, 2007; Viviani, 2008). This is because of firms with high liquidity are more likely to use internal sources to launch their projects. Firms are more likely to create liquid reserves from retained earnings. Firms have no reason to raise external funds when their liquid

assets are sufficient to carry on the investment projects. So, liquidity is expected to be negatively related with leverage.

Pecking order theory assumes that there will be a positive relationship between leverage and tangibility. Jensen and Meckling (1976) find out that the agency cost of debt occurs when the firms are making riskier investment. Assets can minimize the lender's risk of taking high agency costs of debt if they have high tangible assets. According to Harris and Raviv (1991), they say that the low information asymmetry linked with tangible assets causes equity cheaper in cost; hence there will be positive relationship between leverage and tangibility.

2.2 Review of the Literature

2.2.1 Capital Structure and Dividend Policy

According to Aggarwal and Kyaw (2010), prior study of the firm's capital structure is usually less focus on the simultaneity of capital structure and dividend policy. Using the data of 3988 companies from COMPUSTAT database with the assets that is equal or greater than $250million from 1996 to 2005, they find that the higher the dividend payout, the lower the income retention and the higher the debt ratios. Since capital structure and dividend policy are closely related, simultaneous equation model are used to examine the determinants of the two. Previous researchers, Noronha, Shome and Morgan (1996) find that there is simultaneity between dividend policy and capital structure.

Jensen, Solberg and Zorn (1992), they have a study which based on 565 firms in 1982 and 632 firms for 1987, find that debt ratio and dividend

payout ratio is negatively related. Allen and Mizuno (1989) state that it is expected that there is an insignificant negative relationship between dividend payout ratio and debt ratio. Chen and Steiner (1999) conclude that long-term debt ratio to market value of equity and dividend payout ratio have a negative relationship.

The capital structure can be either positively or negatively affect dividend policy (Esfahani & Jaffar, n.d.). Result from 202 Malaysia companies that are listed on Bursa Malaysia for 2009 and 2010 shows insignificantly negative effect of capital structure to dividend policy. They suggest that if the agency problem is low, investors willing to wait future dividend payout in case of increase in debt.

Based on 7642 sample of listed in NYSE and AMEX between 1967 to 1993, Gullon, Michaely and Swaminathan (2002) find the firm that pay dividend increasingly will significantly reduce their debt and vice versa. The researchers suggest that increase in debt that cause the reduction of dividend payment, does not really send out a negative signal to the investors, they willing to receive either low dividend in short term or to receive dividend in future. This is because they are aware to the management and strong financially firms.

Result from Frank and Goyal (2009) and Fama and French (2002) also find similar result that there is a negative relationship between capital structure and dividend policy. Fama and French (2002) state firms that have less investment and more profitable firms will have a higher dividend payout policy. More profitable firms have lower debt. Firms with more short-term investment will have a lower long-term dividend payment.

Easterbrook (1984) comments that dividend exists they influence the firm's financing decisions. So, a firm's payout ratio will determine its income retention ratio and its capital structure. Thus, there is a

considerable evidence to conclude the interdependence between capital structure and dividend policy. If firms are facing earnings shortages but unwilling to cut dividends and tend to borrow to pay dividends, capital structure may affect dividend payout ratio positively. However, relationship between capital structure and investment are either positive or negative are depending on whether a firm borrow to invest or postpone the investments (Adedeji, 1998). This results that a company's high dividend payout ratio will come with a lower level of retain earning and may source more external financing. Thus, there is a positive interaction between leverage and long-term dividend payout ratio.

Debt and dividend are used as substitute mechanisms to minimize the agency costs of underinvestment and overinvestment (Jensen, 1986). In other words, dividend and debt are replacement for controlling agency costs. Agrawal and Jayaraman (1994) support this finding which is the dividend payout ratios of full-debt firms are significantly higher than a control group of levered firms. A higher dividend payout firms might more interested on equity financing than debt financing. Thus, this will lead to negatively relationship between dividends and debt (Jensen et al., 1992). According to the survey on U.S industrial firms by Allen and Michaely (2002), when a firm are obligated to pay more on other fixed finance charges, it might pay relatively lower dividends to its shareholders.

Esfahani and Jaffar (n.d.) indicate that there is negative interaction result between capital structure and dividend policy. It happens when agency conflict is less occurs between the investors and managers. Investors are confidence with the managers that they will not use the excess cash flows for their own self-interest. Thus, firms that increase in debt are able to pay a relatively lower dividend. However, firms that having a high agency problems, any increasing in the debt will give a negative signal to its investors. Thus, investors will demand more dividend policy. So, there is a

positive relationship between capital structure and dividend policy (Chae, Kim & Lee, 2009).

Gul and Kealey (1999) did a survey on a Korean giant conglomerate, Chaebol that is likely to encourage debt financing and find out that the growth options of a firm are negatively related to capital structure and dividend. Other case for emerging market in China (Tong & Green, 2005), Malaysia (Al-Twaijry, 2007) and Jordan (Al- Malakawi, 2008) show a significantly positive relationship between current capital structure and past dividend. As Mitton (2004) mentioned, when the shareholders are under protection, firms act to issue debt instrument is limited. Investor protection by the regulations and corporate governance by firms will affected the dividend payment to be pay in a higher amount. These will help to reduce the agency problem in emerging market.

In conclusion, this research expects that dividend is negatively related with capital structure. When Malaysia industrial product firms distribute higher dividend to shareholders, they will have lower debt level.

2.2.2 Capital Structure and Ownership Concentration

Based on seven Latin American companies (Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela) from the year 1996 to 2005, (Cespedes, Gonzalez & Molina, 2010) examine the relationship between leverage and ownership concentration They argued that ownership control is vital for decision on capital structure, where represent that Latin American companies have higher ownership concentration. They find that there is a U-shape relationship among the leverage and ownership concentration. U-shape relationship shows that there is both positive and negative relationship between leverage and ownership concentration. The

lower ownership concentration will have higher leverage and this shows the negative relationship. Also, the positive relationship is that the higher ownership concentration will lead to higher leverage. This U-shape relationship is persistent with the contention that companies with ownership concentration will prevent equity issuing, due to those company not willing to share or even lose authority to control. And, this impact is opposite if the ownership construction of company possess sufficient dispersion and there is not a matter when losing control.

Driffield (2005) used the Worldscope company-level panel from the year 1993 to 1998 to explore the relationship between capital structure and ownership structure within Indonesia and Korea companies. In Indonesia, there is a lower leverage in the period of pre-crisis; even it increases thoroughly in the period of post-crisis. There is a u-shaped relationship for the companies in Indonesia specific such that the lower ownership concentration will result lower leverage due to the existing shareholders do not care about the dilution of their own advantage. Adversely, leverage increase when there is higher ownership concentration. This is because large controlling shareholders concern the dilution of the dominance. While the higher leverage level within the companies of Korea in the period of post-crisis, the distinct in the leverage level before and during crisis were limited. In the period of pre-crisis, higher ownership concentration in Korea always correlative with the highest leverage, while the medium level of ownership concentration associated with the highest leverage in Indonesia

Besides, Guo et al. (2010) utilized a sample of 365 UK companies from year 1997 to 2009 to test whether ownership concentration affect leverage level of the companies. They find that the impact of ownership concentration have a negative relationship with market leverage, which is persistent with the contention that larger shareholders are avoid increasing the level of debt due to the bankruptcy's risk and financial suffering. Thus,

companies with lower ownership concentration will have a positive effect on leverage in UK companies. The ownership concentration does have significant effect on leverage level of companies and the effect is non-monotonic, altering across the each level of ownership concentration. The companies with lower ownership concentration, there is a positive effect but it is absent in companies with ownership concentration level exceed 25 per cent. Companies with higher ownership concentration are more likely to select more debt and issue less equity than the companies with lower ownership concentration. This result persistent with the analysis of Lundstrum (2009) that using the sample solely by bond and equity issuances of American Stock Exchange (AMEX), New York Stock Exchange (NYSE) and National Association of Securities Dealers (NASD) firms from the Corporate Finance Directory, published by Investment Dealer's Digest.

Huang and Song (2006) using the database which included market and accounting data over thousand Chinese listed firms up to the year 2000 to examine the relationship between capital structure and ownership structure. They reveal that there is a negative relationship between leverage and ownership concentration of company stocks in China listed companies. These companies have altered into profit-maximizes and fundamental economic forces are also valid in Listed Companies of China. It means that it is desirable to list State Owned Enterprises (SOEs) although its authority control does not give up by the country. Beside, by comparing listed firms in China and firms in other economies, the authors find listed firms in China have low leverage due to the bond market is very less and slower developing. Extremely higher Tobin's Q cause the publication of bond and even listed companies in China less intention borrow form bank. Therefore, stimulate the bond market development to extend the listed companies' financial channel may be appropriate.

Based on S&P 500 index in the year 1996, Nam, Ottoo and Thornton (2003) indicated that there is a negative relationship between ownership concentration and leverage. The higher ownership concentration structure companies have lower level of leverage than the dispersed ownership's companies. Mishra and McConaughy (1999) argued that there is a negative impact of ownership concentration on leverage of companies. The control risk exposure the controlling shareholding supposes to decrease. The companies with higher ownership concentration tend to keep the leverage with lower rate, because they are more unfavorable to the financial distress's risk and bankruptcy that follows the higher level of leverage. So that to decrease the control risk exposure, they tend to maintain leverage with lower level.

Grossman and Hart (1986) and Anderson, Mansi and Reeb (2003) indicate that there is positive relationship between ownership concentration and leverage. They find that the companies with higher ownership concentration structure have higher level of leverage than the companies with lower ownership concentration. Debt to equity financing normally preferable by controlling shareholders due to they tend to keep their voting control for a given equity's level. In addition, higher level of debt can decrease the risk of the companies and leading to target takeover.

Mehran (1992) using a random sample of 124 manufacturing companies from year 1979 to 1980 in order to investigate the relationship between leverage and ownership. This author argues that there is a positive relationship between leverage and ownership which is higher ownership will have higher leverage. The companies with higher leverage will more attractive due to leverage can affect the share price increase and the holdings of managers' value. Beside, managers will not keep a portfolio with well-diversified at ownership that with adequately high levels and leverage growing can impose higher cost on human capital. Thus, the company's risk may reduce by them firm (Smith and Stulz, 1985).

In conclusion, this study expects that the relationship between the capital structure and ownership concentration in industrial product companies is negative. The higher ownership concentration will lead to the lower debt and adversely lower ownership concentration will have higher debt.

2.2.3 Capital Structure and Profitability

Based on the pecking order theory, profitable companies are able to use retained earnings rather of debt or external equity. The relationship between profitability and debt ratio is usually inverse relationship. A positive relationship is expected within the framework of trade-off theory. There are a significant inverse relationship between profitability and corporate debt ratio (Allen & Mizuno, 1989; Hovakimian, Opler & Titman, 2001; Jensen et al., 1992; Toy, Stonehill, Remmers, Wright & Beekhuisen, 1974; Tong & Green, 2005)

Fama and French (2002) say that more profitable firms have less debt. Garvey and Hanka (1999) find out that there is a negative relationship between capital structure and profitability. Profitable firms able to finance their growth by using retained profit and maintaining a fixed debt ratio (Booth, Aivazian, Demirgue-Kunt & Maksimovie, 2001).

There will be a negative relationship between profitability and debt because of the pecking order model (Myers, 1984). The author states that firm would like to finance new investment with internal funds rather than debt. Jensen (1986) supports a positive relationship between profitability and capital structure because the tendency of managers with ample-free cash flows to plow how much cash into mature business or ill ad-vised acquisitions. A positive relationship between profitability and capital structure had proved by Haugen and Baker (1996) also.

On the other hand, Cassar and Holmes (2003) based on Malaysia's sample that there is a significant effect and negative relationship between profitability and capital structure. This is because Malaysia's firms prefer to use internal sources of funding when their profit is high. According to Bevan and Danbolt (2002), there is a negative relationship between profitability and capital structure because high profitable firms should use less debt since high level of profits provide high level of internal funds.

Trade-off theory states that there is positive relationship between profitability and capital structure due to firm with high profitability will use debt financing because it will provides the benefits of tax shield on interest payment. Titman and Wessels (1988) conclude that negative relationship between profit and capital structure. Their study is based on pecking order theory which sat that firm prefers use profit earned when available and choose debt over equity when external financing is required.

In conclusion, this research expects negative relationship between profitability and capital structure in Malaysia industrial product industry. The higher profitability will lead to the lower debt and adversely lower profitability will lead to higher debt.

2.2.4 Capital Structure and Firm Size

Generally, every company is expected to call for less debt, that's why a negative relationship is supposed to happen. According to Titman and Wessels (1988), they had analysed the influence of time, firm, industry and country-level determinants capital structure and they found out that time and firm sizes can explain 78% of firm leverage. They gain the result through randomly include certain intercepts and random coefficients; intend to analyze the influences of firm/industry or country characteristic

on firm leverage from 40 countries. Titman and Wessels (1988) find an inverse relationship between the size of firms and the use of short-term debt. Mazur (2007) finds an inverse relationship of leverage with size.

But, there are many studies suggest there is a positive relationship between leverage and size. Citak and Ersoy (2012) did a study to analyse the determinants of leverage in Turkish corporations. They used 48 non-financial Istanbul Stock Exchange listed companies during the period between 1998 and 2007. Barclay and Smith (1995)'s findings reveal that the effect of firm size on leverage ratio is relatively small. Empirical studies usually get positive relationship between firm size and leverage as result (Crutchley & Hansen, 1989; Frank & Goyal, 2003; Huang & Song, 2006; Rajan & Zingales, 1995). Hall, Hutchinson and Michaelas (2004) find positive relationship of size with long-term debt but negative relationship with short-term debt. Fraser, Zhang and Derashid (2006) and Pandey (2004) found that there is a significant positive relationship between firm size and total debt ratio. Larger firms tend to be more diversified and less chance in facing bankruptcy. Marsh (1982) found that large firms more likely will choose long-term debt, while small firms will go for short-term debt. Large firms may enjoy the benefits of economies of scale in issuing long-term debt; they may have the power to bargain over creditors.

In conclusion, this study expects that firm size is positively related with capital structure. Thus, it expects larger firms tend to borrow more than smaller firms in Malaysia industrial product industry.

2.2.5 Capital Structure and Growth Opportunity

According to Myers (1977), growth opportunities can be considered as the proportion of firm value accounted for assets-in-place; the greater the fraction of firm value means the firm's growth opportunities while the lower value represented by assets-in-place. Mason and Merton (1985) said that firm with growth options are more applicable on those firms having expansion projects, new product lines, maintenance of existing assets and acquisition of other firms.

Firms will have more debts if having lower levels of growth opportunities. According to (Gaver & Gaver, 1993; Long & Malitz, 1985; Smith & Watts, 1992), firms are less likely to issue debt when they are having more growth opportunities for two reasons. First, the underinvestment problem recommends that firms issue only risky debt that can backed up by assets-in-place, else the managers may decide not to undertake positive net present value investments in order to avoid payoffs going to debt holders. Secondly, the asset-substitution problem will happen if managers acting on behalf of shareholders while the debt is issued through substitute the higher variance assets for lower variance assets. If the debt was issued and priced on the basis of low variance assets, then wealth will be transferred to shareholders. However, asset substitution is more likely since outside supervising of these assets is harder if a firm having more intangible growth opportunities. This is why firms with more growth opportunities are less likely to issue debt.

Firms will have higher dividends if having lower levels of growth opportunities. According to Easterbrook (1984), he said that high quality firms may commit to larger dividends in order to show the market their better quality. Bhattacharya (1980) argued that high quality firms can reduce information disparities between managers and investors through

paying higher dividends, thus the dividends can be linked with high investment opportunities.

In conclusion, this study expects that there is a negative relationship between capital structure and growth opportunity. Firms will have more debts if having lower levels of growth opportunities. Adversely, firms will have less debt if having higher levels of growth opportunities.

2.2.6 Capital Structure and Liquidity

According to pecking order theory, there is a negative relationship between liquidity and capital structure. High liquidity firm tends to borrow more. Besides that, manager also can influence liquid assets in favor of shareholders against the interest of debt holders, increasing the agency costs of debt. Wiwattanakantang (1999) study that in all countries, for example Thailand, Malaysia, Singapore and Australia. Liquidity has a negative and significant relationship with capital structure. This is due to firms use their liquid assets to finance their investment because they want to raise the external debt and when share price are rising, they also prefer equity to debt. Increase ownership share will affect firm performance because it increases the firm's cost of capital due to decreased market liquidity (Fama & Jensen, 1983).

Firms with high liquidity rely fewer on debt because they can make high cash inflows (Suhaila & Mahmood, 2008). According to trade-off theory, there is a positive relation between capital structure and liquidity. This is because high liquidity firms need to borrow more debt to meet their liabilities obligation. Regression analysis of Wahab et al. (2012) study show liquidity has a positive relationship with capital structure of the firms. This result is same with trade-off theory. Besides that, pecking order

theory shows a negative relationship between liquidity and capital structure. This is due to higher liquidity firm like to use internal sources of funds to finance new investment.

In conclusion, this study expects that liquidity is negatively related with capital structure in Malaysia industrial product industry. High liquidity will lead to lower debt ratio and adversely low liquidity will lead to higher debt ratio.

2.2.7 Capital Structure and Non-debt Tax Shields

By using 59 industrial listed companies in Jordan during period from 2004 to 2007. Al-Shubiri (2010) finds that there is a positive relationship between non-tax shields with leverage. According to Schwartz and Aronson (1967), they find that there is a positive relation between firm leverage and non-debt tax shields. The result is based on their comparison on empirical measures to the 20-year average of debt to value in order to reduce the effects of transient variations.

Huang and Song (2006) studied 1200 publicly listed companies in china from 1994 to 2003 and result shows that there is a negative relationship between leverage and non-debt tax shields. Qian, Tian and Wirjanto (2009) re-examine the study with 650 publicly listed Chinese companies for the period of 1999 to 2004 and got the result there is a negative relationship between non-debt tax shields with leverage. DeAngelo and Masulis (1980) find out that the tax benefits of debt financing can be substitute by non-debt tax shields. A firm is expected to use less debt with they have larger non-debt tax shields.

In conclusion, this study expects that there will be a negative relationship between leverage and non-debt tax shields (NDTS). High NDTS's firm will have lower leverage; adversely low NDTS's firm will have higher leverage.

2.2.8 Capital Structure and Tangibility

Witwattanakantang (1999) has proven that there is positive relationship between leverage and tangibility for Thai firms. Based on Malaysia firms, Prasad, Green and Murinde (2003) and Suto (2003) have found that there is a positive significant relationship exists between leverage and tangibility. Myers (1984) reveals that there is a positive relationship between leverage and tangibility. Um (2001) also confirmed that tangibility has positive significant effect on leverage. High tangibility firms are able to exercise more debts due to them having sufficient tangibles assets as collateral to secure debts.

Under pecking theory, Harris and Raviv (1991) argued that the low information asymmetry linked with tangible assets causes equity cheaper in cost. Hence, there will be negative relationship between leverage and tangibility.

This study expects there is a positive relation exits between leverage and tangibility. Firm with more tangibility assets can exercise more debt due to they are having more collateral to secure debts.

2.2.9 Capital Structure and Financial Crisis

The 1997 financial crisis has important impact on firm's capital structure decision at the different level of firm-specific and country-specific

determinants (Deesomsak et al., 2004). The financial activity of the stock market and capital structure is significant and has negative relationship. The interest rate variable has an insignificant relationship with capital structure over the whole sample period and before the crisis. The interest rate variable become significant and has positive relationship after the crisis.

After the 1997 Asian crisis, the positive findings for the period advice that firm may have been more concerned about the effect of future inflation on their cost of capital, than the immediate risk of default, and support existing empirical evidence (Thies and Klock, 1992). In Australia, financial crisis have a significant impact on Australia companies' capital structure (Deesomsak et al., 2004). Based on 17 countries sample study, Bris, Koskinen and Pons (2001) found that firms have an increasing capital structure when having financial crisis.

Bongini, Ferri and Hahm (2000) investigate the Korean companies and they find that highly leverage firms have a bigger impact than less leverage firms during the 1997 Asian financial crisis. Higher leverage firms more likely to become bankrupt because there is a strong negative effect of capital structure on firm's profitability. However, Kim, Heshmati and Aoun (2005) find that there was a decrease in debt ratio of Korean firms after the financial crisis 1997. This is because the structure of the Korean firms. Korean economy is focusing on big corporations firms and interacting with each other's. When there is a financial crisis, debtors will not always provide financial support to firm. So, there is a negative relationship between leverage ratio and financial crisis (Balsari & Kirkulak, n.d.).

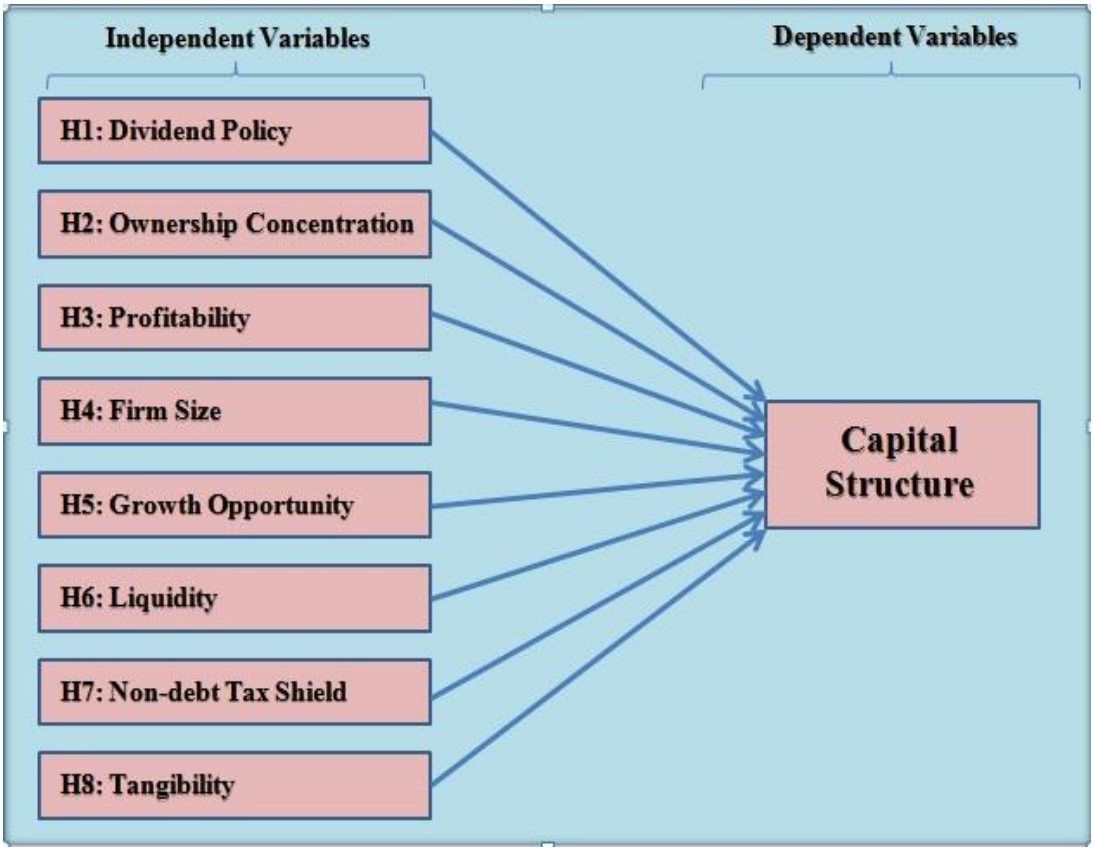
Financial crisis caused bank failure, collapse of financial institution, general downturn in stock markets and also economic activity. As

conclusion, this study expects that global financial crisis has effect on capital structure.

2.3 Proposed Theoretical/ Conceptual Framework

Through literature review, readers can get some basis knowledge about the theory on the relationship between capital structure and each determinant. In this part, theoretical framework will be proposed to examine the relationship between capital structure and each variable in Malaysia Industrial Product Industry from 2005-2010. The dependent variable for this research is leverage; the independent variables are dividend policy, ownership concentration, profitability, firm size, liquidity, growth opportunity, non-debt tax shields and tangibility.

Figure 2.1: Determinant of Capital Structure in Malaysia's Industrial Product Industry



2.4 Hypotheses Development

H1: Dividend policy is negatively significant with capital structure in Malaysia's industrial product sector.

Allen and Mizuno (1989), Frank and Goyal (2009) and Jensen et al. (1992) find out that that there is a negative relationship between capital structure and dividend policy. When the higher the debt of company, the lower they pay dividend.

H2: Ownership concentration is negatively significant with capital structure in Malaysia's industrial product sector.

Guo et al. (2010), Huang and Song (2006) and Nam et al. (2003) find out that there is a negative relationship between capital structure and ownership concentration. When the higher the concentration of ownership, they will use less in debt and use more in equity.

H3: Profitability is negatively significant with capital structure in Malaysia's industrial product sector.

Allen and Mizuno (1989), Jensen et al. (1992) and Toy et al. (1974) find out that there is a negative relationship between capital structure and profitability. When the profit is higher, they tend to borrow less external financial sources, which mean consume lesser debt.

H4: Firm size is positively significant with capital structure in Malaysia's industrial product sector.

Crutchley and Hansen (1989), Frank and Goyal (2003) and Rajan and Zingales (1995) and find out that there is a positive relationship between capital structure and firm size. When the firm size is bigger, they tend to borrow more debt.

H5: Growth opportunity is negatively significant with capital structure in Malaysia's industrial product sector.

Gaver and Gaver (1993), Long and Malitz (1985) and Smith and Watts (1992) find out there is a negative relationship between capital structure and growth opportunity. When the growth opportunity is higher, they will more retained earnings and consume lesser debt.

H6: Liquidity is negatively significant with capital structure in Malaysia's industrial product sector.

Suhaila and Mahmood (2008) and Wahab et al. (2012) find out there is a negative relationship between capital structure and liquidity. When the higher the liquidity, they tend to spend lesser debt.

H7: Non-debt tax shield is negatively significant with capital structure in Malaysia's industrial product sector.

Al-Shubiri (2010), Huang and Song (2006) and Qian et al. (2009) find out that there is a negative relationship between capital structure and non-debt tax shields. When non-debt tax shields increase, they will have lower leverage and use lesser debt.

H8: Tangibility is positively significant with capital structure in Malaysia's industrial product sector.

Prasad et.al (2003), Um (2001) and Wiwattanakantang (1999) find out that there is a positive relationship between capital structure and tangibility. When the higher the tangibility, they tend to spend more on debt.

2.5 Conclusion

This chapter provides a discussion on capital structure and several determinants used throughout the study and continued by detailed discussion on the relation between each determinant with capital structure. Based on the review of past literature, the relation between the determinants isn't having same result. Some of the researchers have found positive relation and there might be other researchers come out with the opposite result. Finally, reviews on the literatures of previous studies on capital structure topics are presented. The next chapter is going to cover the methods employed for this research.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter will describe the overview of research's methodology. The research design, data collection method and sampling design will be discussed in this chapter. This research is conducted by secondary data which obtained from DataStream and companies' annual report. Data processing is carried out in this research in order to provide the knowledgeable details of the dependent and independent variables. Data will be analyzed by Electronic View 6 (E-view 6) software with ordinary least squares (OLS) regression. Under panel data techniques, Pooled OLS model, Fixed Effects Model, Random Effect Model, Poolibility Hypothesis Test and Hausman Test will be introduced. Lastly, econometric problems (normality of error term, multicollinearity, and autocorrelation) will be examined by conducting Unit Root Test and diagnostic checking.

3.1 Research Design

In this research, the impact of dividend policy, ownership concentration and other variables on capital structure, quantitative data will be used in the term of secondary data. In order to conduct this research, full sample consists of six years' time series data (2005-2010) and 193 industrial product firms (Public-listed Firms in Bursa Malaysia Main Market). Thus, the total number of observations is 1158. The secondary data are collected from the DataStream and companies' annual report. The data set can be applied to analyze the impact of the explanatory variables (dividend policy, ownership concentration, profitability, firm size, growth opportunity, liquidity, non-debt tax shield (NDTS) and tangibility on the

capital structure of Malaysia's industrial product firms in order to provide the stronger and reliable evidences and prove the significance of this research.

In this research, the full sample is sub divided to become pre-crisis sample (2005-2007) and post-crisis sample (2008-2010) in order to detect the difference of the determinants of capital structure between pre-crisis period and post-crisis period. This method is based on the suggestion by Zarebski and Dimovski (2012), they states that global financial crisis 2007 (GFC) shock arises to influence the market after December 2007 only. Therefore, three samples (full, pre-crisis and post-crisis) will be used to detect the impacts of the explanatory variables on capital structure.

3.2 Data Collection Method

This research is tried to investigate the factors that will affect the capital structure of Malaysia public listed companies in industrial product sector. All of the independent variables have been chosen to use, which are dividend policy, ownership concentration, profitability, firm size, growth opportunities, liquidity, non-debt tax shield and tangibility. Thus, this empirical research is conducted in term of secondary data. The data are collected from DataStream to calculate the ratios of dividend payout ratio, return on assets, firm size, growth opportunity, liquidity, non-debt tax shield and tangibility and from companies' annual report to calculate Herfindahl Index 5 (ownership concentration).

3.3 Sampling Design

3.3.1 Target Population

Target population is defining as a researcher try to study the group(s) of youth (Godwin et al., 1998). The target population that mainly focuses by this research is the industrial product sector in Malaysia. In Malaysia, industrial product industry consists of 243 companies. At the end, only 193 companies have been chosen to conduct this research due to data missing problem. The reason of choosing industrial product industry is because fewer researchers do the same research in this industry. For Malaysian evidence, past researchers are likely to examine the determinant of capital structure in listed property and construction companies in Malaysia. According to Sahudin et al. (2011) and Baharuddin et al. (2011), both researchers examine the determinants of capital structure in Malaysia's construction companies. Also, Wahab et al. (2012) also investigate firm's capital structure by using 10 public-listed property companies.

3.3.2 Sampling Technique

In this research, Electronic-view 6 (E-view 6) software will be applied in order to run regression analysis. E-view 6 known as a tool that normally applied in econometric research and its function is used to forecast, predict and also can provide data analysis. Some of the analyses can be carried out by E-view 6. For example, Unit Root test, Ordinary Least Square (OLS), Jarque-Bera Tests and others. Thus, E-view 6 will be used to analyze the ordinary least square regression in order to obtain the empirical result of this research and detect the econometric problem.

3.3.3 Sampling Size

Sampling size can be referring as the amount of units in a population to be included in this research. Panel data are used in this research, which combines cross-sectional data and time series data. In Malaysia, 243 industrial product firms are listed in Bursa Malaysia Main Market. Due to the problem of data missing, 193 industrial product firms are to be used in this research. The times periods is from 2005 to 2010. At the end, the panel data are based on 193 industrial product firms from 2005 to 2010 and the 1158 final observations will be carried out to determine the relationship between independent variables and dependent variable. The detailed of the number of observations are summarized in below Table 3.1.

Table 3.1 Number of Observations

	Number of Firms	Number of Observations
Original Data	243	243x6=1458
Missing Data	50	50x6= 300
Final Data	193	193x6=1158

3.4 Data Processing

3.4.1 Dependent Variable

Leverage, the dependent variable is used to measure firms' capital structure (Paydar & Bardai, 2012). Leverage is commonly defined as total debt to total assets (Mustapha et al., 2011; Paydar & Bardai, 2012; Wei & Hooi, 2011) or total debt to total equity (Sahudin et al., 2011). In this study, leverage is measured by the total debt divided by total asset. Total debt is used since it is common for firms to finance their business by both long-term debt and short-term debt (Paydar & Bardai, 2012).

Formula to calculate leverage,

$$LEV = \frac{Total\ Debt}{Total\ Asset}$$

3.4.2 Independent Variables

Total of eight independent variables were chosen to measure the capital structure of firms listed in Bursa Malaysia. The definitions of each independent variable are shown in Table 3.2.

Table 3.2: Definition of Independent Variables

	Independent Variables	Definition	Symbol Used
1.	Dividend Policy	Dividend payout ratio as measure of dividend policy, where dividend per share divided by earning per share.	DIV
2.	Ownership Concentration	Herfindahl Index 5 as a measure of ownership concentration, where the sum of squares of the percentage of each top 5 shareholders in total number of voting rights.	OC
3.	Profitability	Return on asset as a measure of profitability, where earnings before interest and tax divided by total asset.	ROA
4.	Firm Size	The natural logarithm of total sales.	SIZE
5.	Liquidity	Current ratio as measure of liquidity, where current asset divided by current liability.	LIQ
6.	Growth Opportunity	Market value of firm divided by total asset.	GOP
7.	Non-debt Tax Shield	Depreciation divided by total assets.	NDTS
8.	Tangibility	Fixed asset divided by total asset.	TANG

3.4.2.1 Dividend Policy

Aggarwal and Kyaw (2010) measure dividend policy by using dividend payout ratio. John and Muthusamy (2010) suggest dividend policy is an essential factor to influence the firms' capital structure. Fama and French (2002) reveal the dividend policy is related with the profitability of a firm which a higher profitability firm usually pays higher dividend and have lower debt. Thus, there is negative relationship between capital structure and dividend payout ratio. This relationship also can be explained by a high leverage firm tend to pay lower dividend to avoid from paying the raising external capital (Rozeff, 1982). Dividend payout ratio is measure by dividend per share to earnings per share (Ramli, 2010).

$$DIV = \frac{Dividend\ per\ Share}{Earning\ per\ Share}$$

3.4.2.2 Ownership Concentration

The relationship between ownership concentration and capital structure is expected to be negative in which a lower ownership concentration firm tends to have high leverage and vice versa (Cespedes et al, 2010; Guo et al., 2010; Huang & Song, 2006). To measure ownership concentration, Jiang, Habib and Smallman (2009) use Herfindahl Index by calculates the sum of squares of the percentage of each top 5 shareholders in total number of voting rights.

$$Herfindahl\ Index = \sum_{i=1}^{n} S_i^2$$

3.4.2.3 Profitability

A profitable firm has less capital structure. This shows there is an overall negative relationship between the profitability and capital structure. When a firm's profit is high, they tend to use more internal sources (Cassar & Holmes, 2003). Several researches (Aggarwal & Kyaw, 2010; Citak & Ersoy, 2012; John & Muthusamy, 2010) have chosen return of asset as a measure of profitability. Similarly in this study, return of assets (ROA) is used to measure a firm's profitability. ROA is measure by earnings before interest and tax divided by total assets (Huang & Song, 2006; La Bruslerie & Latrous, 2012; Mustapha et al., 2011).

$$ROA = \frac{Earning\ before\ Interest\ and\ Tax}{Total\ Asset}$$

3.4.2.4 Firm Size

Previous researches (Fraser et al., 2006; Pandey, 2004) get a significant positive result of relationship between firm size and total debt ratio. While Titman and Wessels (1988) find a negative relationship with the use of short-term debt. Since leverage is measured by total debt, this research expects the result will be positive related between firm size and firm's capital structure. According to Huang and Song (2006), they use natural logarithm of total sales to measure the firm size. Comparatively, Mustapha et al. (2011) and Sahudin et al. (2011) measure firm size by using the natural logarithm of total assets.

$$SIZE = \ln(Total\ Asset)$$

3.4.2.5 Growth Opportunity

There is an expectation of negative relationship between capital structure and growth opportunity in this study. In other words, a firm will need more debt if it having a lower level of growth opportunity. A firm are less likely to borrow when they having more growth opportunity (Long and Malitz, 1985; Smith and Watts, 1992). There are two way to calculate growth opportunity, which is market value of the firm divided by total assets (Mustapha et al., 2011) or market value of common stock divided by total liabilities (Sahudin et al., 2011). In line with Mustapha et al. (2011), this study use market value of firm to total asset to proxy firm's growth opportunity.

$$GOP = \frac{Market\ Value\ of\ Firm}{Total\ Asset}$$

3.4.2.6 Liquidity

The studies from previous researchers show a mix result of the relationship between liquidity and firm's capital structure. Positive result from John and Muthusamy (2010) explained a high liquidity firms need to borrow more debt to meet their liabilities obligation. Since Wiwattanakantang (1999) study in Malaysia liquidity has a significant negative relationship with capital structure, this research expects that there is a negative relationship between them in Malaysia industrial product industry. According to Suhaila and Mahmood (2008), high liquidity firm tend to rely fewer on debt because they can make high cash inflows. Liquidity is measure by current ratio where the current asset divided by current liability (Paydar and Bardai, 2012).

$$LIQ = \frac{Current\ Asset}{Current\ Liability}$$

3.4.2.7 Non-debt Tax Shield

Non-debt Tax Shield (NDTS) is count in determinants of firm's capital structure since a higher non-debt tax shield firm tends to have lower leverage. We expect there will be a negative relationship between NDTS with leverage (Huang & Song, 2006; Qian et al., 2009). NDTS is measured by the depreciation divided by total assets, the same measurement from Bruslerie and Latrous (2012) and Huang and Song (2006).

$$NDTS = \frac{Depreciation}{Total\ Asset}$$

3.4.2.8 Tangibility

Tangibility is expected to be positively related to the firm's capital structure. Prasad et al. (2003) and Suto (2003) have found a positive significant relationship between tangibility and capital structure in Malaysia. Um (2001) explained firms with high tangibility can exercise more debt since them having more collateral to secure debts. Tangibility will be measure by using fixed asset divided by total asset (Huang & Song, 2006; Mustapha et al., 2011; Paydar & Bardai, 2012; Wei & Lean, 2011).

$$TANG = \frac{Fixed\ Asset}{Total\ Asset}$$

3.5 Data Analysis

In this research, the objective is to examine the impact of dividend policy, ownership concentration and other control variables on the capital structure in 193

Malaysia's industrial product firms from 2005 to 2010. The research framework is created in order to achieve research's objective.

The regression model in this research:

$$LEV_{i,t} = \beta_0 + \beta_1 DIV_{i,t} + \beta_2 OC_{i,t} + \beta_3 ROA_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 GOP_{i,t} + \beta_6 LIQ_{i,t} + \beta_7 NDTS_{i,t} + \beta_8 TANG_{i,t} + \varepsilon_{i,t}$$

LEV = Leverage Ratio

B_0= Intercept for the regression model

B_1, β_2, β_3, β_4, β_5, β_6, β_7, β_8= Partial regression coefficients

DIV = Dividend Pay-out Ratio

OC = Ownership Concentration (Herfindalh Index 5)

ROA= Return to Asset (%)

SIZE= Natural logarithm of Total Assets

GOP= Growth Opportunity Ratio

LIQ= Liquidity Ratio (Current Ratio)

NDTS= Non-Debt Tax Shield Ratio

TANG= Tangibility Ratio

ε= Error terms of the regression model

3.5.1 Panel Data Technique

Panel data also named as longitudinal data or cross sectional time series data. These data have space and time dimensions (Brooks, pg 487, 2008). Many different cases were observed at two or more time periods. In this study, panel data technique is used and different empirical models are considered. It gives more information data, more variability, less collinearity among independent variables, more degree of freedom and more efficiency. It also can reduce multicollinearity problem (Brooks, pg 489, 2008). The assumption of zero unobservable individual effect is too strong and there is a serious heterogeneity. To control this problem, pooled OLS model, random effect and fixed effect model will be attempted to apply in this research.

3.5.1.1 Pooled OLS Model

This model is also known as time constant model because the characteristics for given observation is constant over time. Panel data are used in this research to estimate this model when this research assume the intercept and coefficient values for each observation across time are same. This model is simple and easy to interpret. The model will be used when there is homogeneity. The pooled regression may twist the true picture of the relationship between dependent variable and independents variables.

3.5.1.2 Fixed Effects Model (FEM)

Fixed effect model (FEM) is applied to dominate for omitted variables that are constant over time but vary between cases (Brooks, pg 490, 2008). FEM is also applying for the purpose of examine the firm individual effect

for each observation in the sample based on the intercept term regardless of time effect.

There are five assumptions under this model:

i. Assumed that there is different intercept for each observation and same slope for each observation in time invariant.
ii. Assumed that there is different intercept for each observation and same slope for each observation in time variant.
iii. Assumed that there are different intercept and slope for each period in time invariant.
iv. Assumed that all coefficients differ over individuals.
v. Assumed there are different intercept and coefficients over individuals and time.

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + e_{i,t}$$

$Y_{i,t}$ = dependent variable

β_{1i} = unobserved random variable characterizing each unit of observation

β_2 = vector of parameter of interest

X_{2it} = vector of observable random variables

$e_{i,t}$ = stochastic error uncorrelated with x

3.5.1.3 Random Effect Model (REM)

Random effect model (REM) use when there are some omitted variables vary between cases but constant over time or some omitted variables maybe constant between cases but vary over time. This model are unique, time constant attributes of individuals that are the result of random variation and do not correlate with the individual regresses. If this model is

adequate, it cannot only draw the examined sample, but it need to draw inferences about the whole population. If the cross section data are drawn from a big population, they will not perform in a same way with respect to the independent variables (Brooks, pg 498, 2008).

Start with the basic panel data model:

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + u_{it}$$

β_1 represents the mean value of the entire cross-sectional intercept. It is not treated to be fixed and assumes that it is a random variable with a mean value of β_1, and the intercept value for an individual firm can be expressed as:

$$\beta_{1i} = \beta_1 + \varepsilon_i \qquad i = 1, 2...$$

ε_i = A random error term with a mean value of zero and variance of σ_e^2 .

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + \varepsilon_i + u_{it}$$

$$Y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + w_{it}$$

w_{it} = Composite error term (Consists of two components, ε_i and u_{it})

ε_i = The individual-specific or cross section error component, represent the random deviation of the individual intercept from its mean value.

u_{it} = Combine time series and cross section error component.

3.5.1.4 Poolibility hypothesis test

Poolibility hypothesis testing was conducted to test which empirical model between Pooled OLS or FEM is most suitable for estimating the equation.

H_0: There is a common intercept on all the companies.
H_1: There is no common intercept on all the companies.

Decision Rule: Reject H_0 if the probability of F-statistic is less than 10% significant level; otherwise, do not reject H_0.

Reject H_0 mean that pooled OLS model is not valid and FEM is more appropriate.

3.5.1.5 Hausman Test

Hausman specification test (1978) was conducted to test which empirical model between FEM or REM is suitable for estimating the equation.

H_0: There is no correlation between firm individual effect and X_{it} (consistency)
H_1: There has correlation between firm individual effect and X_{it} (consistency)

Decision Rule: Reject H_0 if the probability of test statistic (H) is less than 10% significant level; otherwise do not reject H_0.

Reject H_0 mean that firm individual effects is important and then FEM is more appropriate than REM.

3.5.2 Unit Root Test

Stationarity can be known as the variance, covariance and mean are constant across different periods (Levin et al., 2002).To test the stationarity of every single variable by applying four different panel unit root test which are Levin, Lin and Chu (LLC), Im, Pesaran and Shin (IPS), Augmented Dickey and Fuller (ADF)-Fisher Chi-Square, and Phillips-Perron (PP)-Fisher Chi-Square.

H_0: Panel data is non-stationarity (unit root), $p = 0$
H_1: Panel data is stationarity (no unit root), $p < 0$

Decision rule: Reject H_0 if probability of test statistic is less than 10% significant level. Otherwise, do not reject H_0.

3.5.3 Diagnostic Test

Some diagnostic checking is conducted to make sure the estimated results are reliable. There are three econometric problems that maybe will occur in this research's model, which are normality of error term, multicollinearity, and autocorrelation.

3.5.3.1 Normality

Jarque-Bera (JB) test is used to check the error term is whether normally distributed or not. The test first computes the skewness and kurtosis measures of the OLS residual. The test statistic is as below:

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

n = sample size

S = Skewness coefficient

K = Kurtosis coefficient

H_0: Error term is normally distributed

H_1: Error term is not normally distributed

Decision rule: Reject H_0 if the probability of JB statistic is less than 10% significant level. Otherwise, do not reject H_0.

Central Limit Theorem is that if there is a large number of a sample size, the distribution of the error term can be assumed to become normally distributed. Thus normality test is not so important for large sample (Gujarati, pg 177, 2006).

3.5.3.2 Multicollinearity

Multicollinearity problem means that there is a relationship or correlation between independent variables in the model. In this research, covariance analysis is used to test multicollinearity problem. If the pair-wise correlation is more than 80 % means that multicollinearity exists in the model. (Gujarati, pg 428, 2006).

3.5.3.3 Autocorrelation

Autocorrelation mean correlation between independent variables ordered in time. There is relationship between the error terms. Autocorrelation mostly happen in time series data because of the model specification errors and model miss-specification errors. These problems may due to omitted relevant independent variables, incorrect functional form and data manipulation (Gujarati, pg. 428, 2006).

We use Durbin-Watson Test to test autocorrelation problem.

H_0: There is no autocorrelation problem
H_1: There is autocorrelation problem.

Based on rule of thumb, if DW test statistic value of estimated regression model is within 1.50 to 2.50, then do not reject H_0; otherwise, reject H_0 (Prusty, pg 55, 2010).

3.6 Conclusion

In a nutshell, this research is using secondary data from193 companies from 2005 to 2010 by using DataStream and companies' annual report. The ordinary Least Squares (OLS) regression will be applied in this research to conduct the data analysis. Besides, the diagnostic checking will be conducted in order to detect the econometric problems. For the further chapter, the result of the statistical test and regression model will be discussed.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

This chapter introduces the results and its interpretation of this research. The first part of this chapter expresses the descriptive analysis for leverage and the variables that found to be potentially affecting leverage for the 1158 observations. The second part of this chapter will present the tests and analysis of the assumption underlying panel data. Third part is to determine the best method (Pooled OLS, FEM or REM) in running the panel regression model by employing Poolibility test and Hausman test, check the unit root of the panel data by applying LLC, IPS, ADF and PP test, and evaluate the validity of the model through appropriate diagnostic checking. The last part of this chapter is to examine the result and figure out which variables are significant for the determinants of the capital structure in Malaysia industrial product sector from 2005 to 2010.

4.1 Descriptive Analysis

The analysis of descriptive statistic has been performed in order to find out the properties of the data. In addition, the hypothesis regarding the normality of leverage and the explanatory variables also can be investigated. The data sample applied in this research is yearly fiscal observations of 193 industrial product firms listed on Bursa Malaysia over the period of 2005 to 2010. Table 4.1 shows the descriptive statistic for leverage and the explanatory variables used in this regression model with mean, median, maximum, minimum, standard deviation, Skewness and Kurtosis.

Table 4.1: Descriptive Statistic for Leverage and Explanatory Variables (2005-2010)

No. of Firms =193 **No. of Obs. =1158**	**Mean**	**Median**	**Maximum**	**Minimum**	**Std. Dev.**	**Skewness**	**Kurtosis**
LEV	0.233930	0.227140	1.326689	0.000000	0.180580	0.829673	5.015207
DIV	0.282535	0.105937	38.57143	-11.000000	1.707416	17.38063	373.6816
OC	0.122732	0.090871	0.755623	0.001741	0.103285	1.547361	6.156437
ROA	4.089142	4.808748	44.84914	-71.10049	9.187342	-1.698015	13.40089
SIZE	19.29051	19.06835	25.35950	16.94665	1.171028	0.990134	4.234095
GOP	0.472598	0.362559	4.736167	0.004661	0.432611	3.803594	27.36467
LIQ	2.573152	1.600000	24.430000	0.100000	2.815184	3.426512	18.90746
NDTS	0.034845	0.031103	0.164557	0.000248	0.020152	1.156290	5.536924
TANG	0.396368	0.394027	0.919950	0.010225	0.172150	0.276658	2.904306

4.1.1 Leverage

An approximation of the ratio of total debt to total assets, leverage (LEV), on average is 0.23390, which presents that the average liabilities are 23.39% of total assets for 193 industrial product firms in Malaysia from 2005 to 2010. The relatively smaller value of standard deviation (0.180580) indicates that the panel data dispersion is quite small. This finding can use to suggest that 193 industrial product firms were having small dispersion of leverage. While the Kurtosis value of 5.015207 and Skewness value of 0.829673 indicates that the distribution is peaked compared to the normal relatively (leptokurtic), and it was also skewed positively.

This mean value (0.288930) is lower than the 0.4518 mean value reported by Mustapha et al. (2011) using 235 companies listed on Bursa Malaysia randomly selected from the various sectors , such as consumer, construction and property, industrial and trading and services. These authors also reports that industrial product sector has a lower mean value (0.4025) compare to consumer, construction and property and trading and services sectors. This mean value is higher as compared to the mean value (0.1752) by using 22 non-government-linked companies; it is lower as compared to the mean value (0.2916) by using 22 government-linked companies listed on Bursa Malaysia from 1997 to 2008 (Wei & Lean, 2011). However, the mean value is relatively close to a mean value (0.233) reported by Aggarwal and Kyaw (2010) using 3988 companies in United States. Besides, this mean value is also relatively close to a mean value of 0.218 reported by Ramli (2010) using 245 Malaysia's listed companies from 2002 to 2006.

4.1.2 Dividend Policy

For the dividend payout ratio, the mean value and its standard deviation are 0.282535 and 1.707416. These figures indicate that the data dispersion is relatively large throughout the panel series. The Kurtosis value of 373.6816 and Skewness value of 17.38063 indicate that the distribution is peaked compared to the normal relatively (leptokurtic) and it was also skewed positively.

The mean value of dividend payout ratio is 0.282535 (28.2535%), which presents the average dividend per share is about 28.2535% of the earning per share for 193 Malaysia industrial product firms from 2005 to 2010. This mean value is higher than the average value of 14.073% reported by Aggarwal and Kyaw (2010) using United State data. This average dividend payout ratio also is higher than the average value of 0.2680 reported in Gill, Biger and Tibrewala (2010) by selecting approximately 500 public firms in United States in 2007.

However, this average dividend payout ratio is relatively close to a mean value (0.2832) reported by Ameer (2007) using listed industrial product firms in Malaysia from 1995 to 2005. Compare to the descriptive statistic of this author in other industry sector, industrial product sector has a higher average dividend payout ratio compared to construction, consumer goods, financial, hotel, trading and technology sectors. In opposite, industrial product sector has a lower average value compare to property, infrastructure projects and plantation relatively.

4.1.3 Ownership Concentration

The proxy variable of ownership structure, ownership concentration – Herfindahl Index, shows a more interesting result in Malaysia's industrial product sectors. The average value of ownership concentration is 0.122732 (12.2732%), which indicate that industrial product firms are tightly held among most families or individuals in Malaysia. The standard deviation of ownership concentration is 0.103285. The smaller value of standard deviation indicates that the date dispersion is relatively small throughout the panel series. The Kurtosis value of 6.156437 and Skewness value of 1.547361 indicate that the distribution is peaked compared to the normal relatively (leptokurtic) and it was also skewed positively.

Sulong and Nor (2010) find that the ownership concentration variables as measured by the top five Herfindahl Index has an average of 31.8% among 403 listed firms in Malaysia from 2002 to 2005. However, the average value of Herfindahl Index in industrial product firm is relatively lower than the average value reported by these authors. Tam and Tan (2007) reported that the ownership concentration as measured by the percentage of shareholding by ultimate owner has an average of 43.44% among the top 150 Malaysia's listed firms in year 2007 and their research undertaken before the renovation of corporate governance. Besides, this average value also is lower than the average value of Herfindahl Index of 18.11% reported by Jiang et al. (2009) using New Zealand data. However, this smaller average percentage of Herfindahl Index indicates that the ownership structure in Malaysia's industrial product firms is dispersed.

4.1.4 Profitability

For the proxy variable of profitability, return on assets (ROA), the average percentage and its standard deviation are 4.089142% and 9.187342. These figures indicate that the data dispersion is relatively large throughout the panel series. The Kurtosis value of 13.40089 and Skewness value of -1.698015 indicate that the distribution is peaked compared to the normal relatively (leptokurtic) and it was skewed negatively.

This mean value of return on assets (4.089142%) is higher than the mean value of 1.7733% reported in Paydar and Bardai (2012) by using 117 Malaysia's manufacturing firms from 2004 to 2010. It is also higher than the average percentage of return on asset (1.01%) reported in Mustapha et al. (2011) by using 235 listed companies in Malaysia. However, this average value is relatively close to the average value of 4.646% reported in Ramasamy, Ong and Yeung (2005) by applying 30 public listed plantation-based firms from 2001 to 2003.

4.1.5 Firm Size

For the proxy variable of firm size, the natural logarithm of total assets, the average value and its standard deviation are 19.29051 and 1.171028. These figures indicate that the data dispersion is relatively small throughout the panel series. The Kurtosis value of 4.234095 and Skewness value of 0.990134 indicate that the distribution is peaked compared to the normal relatively (leptokurtic) and it was skewed positively.

As for control variables, the average natural logarithm of total assets of 19.29051 indicates that the average total assets for Malaysia's industrial product firms in the sample period are RM238.66 million. This mean value

is relatively lower than the average value of 19.744 reported in Mustapha et al. (2011) by using 235 listed companies in Malaysia.

4.1.6 Growth Opportunity

The average value and of the firm's growth opportunity is 0.472598 with its standard deviation of 0.432611. These figures indicate that the data dispersion is relatively small throughout the panel series. The Kurtosis value of 27.36467 and Skewness value of 3.803594 indicate that the distribution is peaked compared to the normal relatively (leptokurtic) and it was skewed positively.

The average growth opportunity of Malaysia's industrial product firms is 47.2578%. This value is lower than the average percentage of growth opportunity (105.15%) reported in Mustapha et al. (2011) by using 235 randomly selected firms in Malaysia.

4.1.7 Liquidity

The average value and of the firm's liquidity is 2.573152 with its standard deviation of 2.815184. These figures indicate that the data dispersion is relatively large throughout the panel series. The Kurtosis value of 18.90746 and Skewness value of 3.426512 indicate that the distribution is peaked compared to the normal relatively (leptokurtic) and it was skewed positively.

The mean value of liquidity ratio (2.573152) is higher than the average value of 1.771779 reported in Ahmad and Rahim (2013) by using 38 government linked firm from 2001 to 2010. It is also higher than the

average liquidity of 1.9547 reported in Saaranil & Shahadan (2013) by using 334 small and medium-sized enterprises in Malaysia from 2005 to 2009.

4.1.8 Non-debt Tax Shield

The average value and of the firm's non-debt tax shield is 0.034845 with its standard deviation of 0.020152. These figures indicate that the data dispersion is relatively small throughout the panel series. The Kurtosis value of 5.536924 and Skewness value of 1.156290 indicate that the distribution is peaked compared to the normal relatively (leptokurtic) and it was skewed positively.

The average value of non-debt tax shield indicates that the total depreciation is about 3.4845% of the total assets in 193 Malaysia's industrial product firms. This value is higher than the average value of Malaysia's non-debt tax shield (2.82%) reported in Deesomsak et al. (2004) by using 669 firms from 1993 to 2001. It is also higher than the average percentage of 1.9259% reported in Ahmad and Rahim by using 38 government-linked firms from 2001 to 2010.

4.1.9 Tangibility

The average value and of the firm's tangibility is 0.396368 with its standard deviation of 0.172150. These figures indicate that the data dispersion is relatively small throughout the panel series. The Kurtosis value of 2.904306 and Skewness value of 0.276658 indicate that the distribution is peaked compared to the normal relatively (platykurtic) and it was skewed positively.

The average value of the tangibility indicates that the total tangibility assets are about 39.6368% of the total assets in 193 Malaysia's public listed industrial product firms. The mean value of the tangibility is higher than the mean value (34.44%) which reported in Mustapha et al. (2011) by using 235 Malaysia's public listed firms. This mean value also is higher than the average percentage of 35.62% which reported in Saaranil & Shahadan (2013) by using 334 small and medium-sized enterprises in Malaysia from 2005 to 2009. However, this average percentage of tangibility is close to the average percentage of 40.63% reported in Aprilia (2012) by using 788 non-financial public listed firms in Malaysia.

4.2 Testing Assumption Underlying Panel Data Analysis

4.2.1 Poolibility Hypothesis Test and Hausman Test

Table 4.2: Result of Poolibility Hypothesis Test

	Cross Section F-statistic	**Decision**
Full Period (2005-2010)	14.483023***	Fixed Effect Model (FEM)
Pre-crisis Period (2005-2007)	14.418511***	Fixed Effect Model (FEM)
Post-crisis Period (2008-2010)	9.819077***	Fixed Effect Model (REM)

Notes: ***** Significant at 10%; ******significant at 5%; *******significant at 1%.

Based on the result of cross-section F-statistic from Table 4.2, it is apparent that full, pre-crisis and post-crisis models are significant at 1% significance level, thus encouraging the rejection of the null hypothesis of

Poolibility Hypothesis Test. The results of Poolibility Hypothesis Test conclude that there is no common intercept on all the companies in all research's models. Thus, Pooled OLS model is not valid and FEM is more appropriate in all research's models.

Table 4.3: Result of Hausman Test

	Cross Section Random Chi-Sq. Statistic	**Decision**
Full Period (2005-2010)	42.396785***	Fixed Effect Model (FEM)
Pre-crisis Period (2005-2007)	33.129883***	Fixed Effect Model (FEM)
Post-crisis Period (2008-2010)	48.092899***	Fixed Effect Model (REM)

Notes: ***** Significant at 10%; ******significant at 5%; *******significant at 1%.

Based on the result of the cross-section random chi-square statistic from Table 4.3, it is apparent that the models of full period, pre-crisis period and post crisis period are significant at 1% significance level, thus supporting and encouraging the rejection of the null hypothesis of Hausman Test. So, the results conclude that there is correlation between firm's individual effect and $X_{i,t}$ (Consistency). Due to this correlation, firms' individual specification effect is more important. Through these result, FEM is more appropriate and better than REM to estimate full, pre-crisis and post-crisis models.

4.2.2 Unit Root Test

In order to examine the stationary characteristic for the all variables in 193 Malaysia's industrial product public-listed firms, the unit root test of Levin, Lin & Chu t* (LLC), Im, Pesaran &Shin W-stat (IPS), Augmented Dickey Fuller (ADF) - Fisher Chi-square and Phillips Perron (PP) - Fisher Chi-square have been carried out in this research.

Through LLC, IPS, ADF and PP, the results of Unit Root test for level have found that panel data are stationary at 1% significance level in all regression models. Thus, the null hypothesis of unit root in panel data set have been rejected across all time periods sample. It can be concluded that the panel data sets for the full, pre-crisis and post-crisis models are stationary.

Table 4.4: Result of Unit Root Test for Level

	Levin, Lin & Chu t* (LLC)	**Im, Pesaran & Shin W-stat (IPS)**	**ADF - Fisher Chi-square**	**PP – Fisher Chi-square**
Full Period (2005-2010)	-56.5545***	-50.4891***	1208.47***	1209.97***
Pre-crisis Period (2005-2007)	-46.2078***	-39.7533***	979.037***	1030.30***
Post-crisis Period (2008-2010)	-38.0620***	-32.7445***	821.004***	1085.17***

Notes: ***** Significant at 10%; ******significant at 5%; *******significant at 1%.

4.2.3 Diagnostics Checking

4.2.3.1 Normality

Based on the result of the Jarque-Bera statistic from Table 4.5, it is apparent that the model of full period, pre-crisis period and post crisis period are significant at 1% significance level, thus supporting and encouraging the rejection of the null hypothesis of normality test. So, the result can be concluded that error term is not normally distributed across all time periods.

According to the central limit theorem (CLT), if there are a big number of identically distributed and independent random variables, the distribution of the sum tends to become a normal distribution due to the number of the variables increase indefinitely (Gujarati, 2006, pg 177). By invoking the CLT, the error term of full, pre-crisis and post-crisis model can be assumed to follow the normal distribution due to the sample size large enough.

Table 4.5 Result of Normality Test

	Jarque-Bera Statistic	**Decision**
Full Period (2005-2010)	20689.84***	Non-normality
Pre-crisis Period (2005-2007)	798.3635***	Non-normality
Post-crisis Period (2008-2010)	104503.2***	Non-normality

Notes: ***** Significant at 10%; ******significant at 5%; *******significant at 1%.

4.2.3.2 Multicolinearity

This research have performed the covariance correlation analysis for the variables that found to be potentially affecting capital structure to ensure that the explanatory variables do not correlated with each other in the regression model.

Based on Table 4.6, the results have showed that the pair-wise correlations for all variables are less than 80% in full period. The highest percentage of pair-wise correlation is -48.4131% between leverage and liquidity; the lowest percentage of pair-wise correlation is -0.2312% between firm size and tangibility. Thus, it can be concluded that there is not serious multicolinearity problem in the full model.

Based on Table 4.7, the results have showed that the pair-wise correlations for all variables are less than 80% in pre-crisis period. The highest percentage of pair-wise correlation is -51.7528% between leverage and liquidity; the lowest percentage of pair-wise correlation is 0.1605% between ownership concentration and liquidity ratio. Thus, it can be concluded that there is not serious multicolinearity problem in the pre-crisis model.

Based on Table 4.8, the results have showed that the pair-wise correlations for all variables are less than 80% in post-crisis period. The highest percentage of pair-wise correlation is -55.0608% between leverage and liquidity; the lowest percentage of pair wise correlation is 0.8589% between dividend payout ratio and firm size. Thus, it can be concluded that there is not serious multicolinearity problem in the pre-crisis model.

Table 4.6 Pair-wise Correlations of All Variables for Full Period

	LEV	DIV	OC	ROA	SIZE	GOP	LIQ	NDTS	TANG
LEV	1.000000								
DIV	-0.027658	1.000000							
OC	-0.189112	0.009779	1.000000						
ROA	-0.190165	0.049773	0.053252	1.000000					
SIZE	0.139277	0.028964	0.086063	0.267210	1.000000				
GOP	-0.362636	0.039347	0.075818	0.349624	0.092987	1.000000			
LIQ	-0.517528	0.058068	0.066240	0.110094	-0.098261	0.284972	1.000000		
NDTS	0.039601	-0.011435	-0.013541	-0.161727	-0.161556	-0.093386	-0.097162	1.000000	
TANG	0.232461	0.019322	0.008405	-0.204696	-0.002312	-0.121434	-0.262900	0.440846	1.000000

Table 4.7 Pair-wise Correlations of All Variables for Pre-crisis Period

LEV	1.000000								
DIV	-0.070876	1.000000							
OC	-0.191029	0.020303	1.000000						
ROA	-0.170895	0.043498	0.055750	1.000000					

	LEV	DIV	OC	ROA	LNSIZE	GOP	LIQ	NDTS	TANG
SIZE	0.153341	0.053430	0.073764	0.290029	1.000000				
GOP	-0.376445	0.051180	0.057405	0.359347	0.074421	1.000000			
LIQ	-0.484131	0.036244	0.001605	0.119206	-0.115796	0.272246	1.000000		
NDTS	0.016255	-0.043914	-0.003770	-0.184336	-0.190656	-0.116911	-0.089159	1.000000	
TANG	0.258821	0.008596	0.045531	-0.223024	-0.050707	-0.194202	-0.284265	0.445369	1.000000

Table 4.8 Pair-wise Correlations of All Variables for Post-crisis Period

	LEV	DIV	OC	ROA	SIZE	GOP	LIQ	NDTS	TANG
LEV	1.000000								
DIV	0.010681	1.000000							
OC	-0.187803	0.000938	1.000000						
ROA	-0.213775	0.057139	0.051551	1.000000					
SIZE	0.125752	0.008589	0.096083	0.247014	1.000000				
GOP	-0.361353	0.023368	0.107172	0.341107	0.136760	1.000000			
LIQ	-0.550608	0.078911	0.126984	0.100127	-0.082682	0.319093	1.000000		
NDTS	0.060343	0.016134	-0.021693	-0.139962	-0.135721	-0.073156	-0.104675	1.000000	
TANG	0.212950	0.027198	-0.023277	-0.189665	0.050673	-0.063270	-0.242464	0.439122	1.000000

4.2.3.3 Autocorrelation

As a rule of thumb, if the Durbin-Watson (DW) statistics between the range of 1.5 and 2.5 indicates that there is not an autocorrelation problem in the regression model. (Prusty, Pg 55, 2010). Based on Table 4.9, the results show that there is an autocorrelation problem in the full model since the DW statistic of 1.227192 is less than 1.5. Thus, this research further detect autocorrelation problem by using the estimation of first order correlation coefficient in the full model. However, the DW statistic of first order correlation coefficient has showed a favorable result, which value (1.751362) is fall between the ranges of 1.5 to 2.5. Therefore, it can be concluded that there is not autocorrelation in this regression model. Based on the rule of thumb of Durbin-Watson test, the results showed that there is not autocorrelation in the regression model for pre-crisis period and post-crisis period sample since the DW statistic for pre-crisis model (2.493138) and post-crisis model (2.20770) is fall between the ranges of 1.5 to 2.5.

Table 4.9 Result of Autocorrelation Test

Sample	Durbin-Watson Statistic	Decision
Full Period (2005-2010)	1.227192	Autocorrelation
Pre-crisis Period (2005-2007)	2.493138	No Autocorrelation
Post-crisis Period (2008-2010)	2.207770	No Autocorrelation
First Order Autocorrelation Coefficient		
Full Period (2005-2010)	1.751361	No Autocorrelation

4.3 Empirical Result

In order to examine the theoretical relationship between leverage and the determinants of capital structure in 193 Malaysia's industrial product public-listed firms from 2005 to 2010, the panel data regression model is run by E-view 6 using fixed effect model (FEM). The reported empirical results are controlled for white cross-section coefficient covariance estimator to correct for the heteroskedasticity.

In order to detect the effect of financial crisis and compare the pattern of the determinant of capital structure between pre-crisis and post-crisis period, the full model has been converted to become pre-crisis (2005-2007) and post-crisis (2008-2010) model. These two models are estimated by using FEM and controlling by white cross-section coefficient covariance method. The results of the multiple regressions for full, pre-crisis and post-crisis models are summarized in Table 4.10.

4.3.1 R-square

The value of the R-square is very high for full, pre-crisis and post-crisis model, it suggest that they are the good predictive models of capital structure for Malaysia's industrial product sector.

The coefficient of determination for the full model is 0.839740. It indicates that 83.9740% of the variation in the dependent variable can be explained by the variation in the explanatory variables from 2005 to 2010.

The coefficient of determination for the pre-crisis model is 0.924910. It indicates that 92.4910% of the variation in the dependent variable can be explained by the variation in the explanatory variables from 2005 to 2007.

Table 4.10: Multiple Regression Results

Independent Variables	Dependent Variable: Leverage (LEV)		
	Full Period (2005-2010)	**Pre-crisis Period (2005-2008)**	**Post-crisis Period (2008-2010)**
DIV	-0.001322***	-0.001626	-0.000318***
OC	-0.123867***	-0.216502*	-0.080966**
ROA	-0.002177***	-0.002093***	-0.002401*
SIZE	0.039504***	0.043840*	0.013256
GOP	-0.072182***	-0.061514***	-0.118513***
LIQ	-0.010406***	-0.006265***	-0.009280***
NDTS	0.211026	-0.190909	0.791946**
TANG	0.049888**	0.020217	-0.051431
Constant	-0.469876*	-0.529591	0.065230
R^2	0.839740	0.924910	0.898542
Adjusted R^2	0.806248	0.885180	0.844861
F-statistic	25.07271***	23.27975***	16.73843***
No. of Obs	1158	579	579
Poolibility Statistic	14.483023***	14.418511***	9.819077***
Hausman Statistic	42.396785***	33.129883***	48.092899***
DW Statistic	1.227192	2.493138	2.207770

Notes: ***** Significant at 10%; ******significant at 5%; *******significant at 1%.

The coefficient of determination for the post-crisis model is 0.898542. It indicates that 89.8542% of the variation in the dependent variable can be explained by the variation in the explanatory variables from 2008 to 2010.

4.3.2 F-statistic

H_0: All explanatory variables are not significant in explaining capital structure.
H_1: At least one of the explanatory variables is significant in explaining capital structure.

The null hypothesis of the F-statistic for full, pre-crisis and post-crisis model have been rejected since the probability value of the F-statistic for each model is less than 1% significance level. Thus, it can be concluded that at least one of the explanatory variables is significant in explaining capital structure across all time periods.

4.3.3 Dividend Policy

H1: Dividend policy is negatively significant with capital structure in Malaysia's industrial product sector.

As shown in the full model of Table 4.10, the relationship between dividend payout and leverage is negative and significant at 1% level statistically, thus the result rejects the null hypothesis and supports the hypothesis H1. The result suggests that high dividend payout firms will tend to use less debt. The coefficient of dividend payout ratio (-0.001322) indicates that if dividend payout ratio increased by 1 unit, the leverage ratio will be decreased by 0.001322 units, holding other variables constant.

Unfavorably, dividend policy has shown a negatively insignificant relationship with leverage during pre-crisis periods. Thus, the result do not rejects the null hypothesis in pre-crisis period. In contrary, based on the post-crisis model, dividend payout has shown a negatively significant relationship with leverage at 1% significance level, thus the result rejects the null hypothesis and supports the hypothesis H1. The coefficient of dividend payout ratio (-0.000318) of post-crisis model means that if dividend payout ratio increased by 1 unit, leverage will be decreased by 0.000318 unit, holding others variable constant.

Before global financial crisis, dividend policy is not one of the important factors to determine leverage in Malaysia's industrial product sector. Some firms freely pay dividend to investors without any policies. After crisis, firms are trying to pay more dividends to attract shareholders in order to reduce leverage and overcome financial crisis. Thus, dividend policy is a significant factor to determine capital structure choice after financial crisis.

4.3.4 Ownership Concentration

H2: Ownership concentration is negatively significant with capital structure in Malaysia's industrial product sector.

Based on the results of this research, ownership concentration is negatively significant with leverage in full model at 1% significant level. The coefficient of Herfindahl index (-0.123867) for full model mean that if Herfindahl index increase by 1 unit, leverage ratio will decrease by 0.123867 unit, holding other variables constant.

Based on pre-crisis model, ownership concentration is negatively significant with leverage in full model at 10% significant level. The

coefficient of Herfindahl index (-0.216502) mean that if Herfindahl index increase by 1 unit, leverage ratio will decrease by 0.216502 units, holding other variables constant.

Based on post-crisis model, ownership concentration also is negatively significant with leverage in full model at 5% significant level. The estimated coefficient of Herfindahl index (-0.080966) mean that if Herfindahl index increase by 1 unit, leverage ratio will decrease by 0.080966 units, holding other variables constant.

The result of all models suggests that the null hypothesis has been rejected and the hypothesis H2 has been accepted across all times periods. The results highlight that the concentrated ownership companies have lower level of leverage than the dispersed ownership's companies in Malaysia's industrial sector across all times periods.

High leverage firms face high bankruptcy risk. In order to avoid the disadvantages of high indebtedness, largest shareholders may reduce their holding for decreasing their losses. Thus, the negative relationship between leverage and ownership concentration is happen in Malaysia's industrial product sector.

4.3.5 Profitability

H3: Profitability is negatively significant with capital structure in Malaysia's industrial product sector.

Based on this research, the proxy variable of profitability, return on assets (ROA), shows a negative and significant relationship with leverage in full model since the probability value is less than 1% significance level. Thus,

the null hypothesis has been rejected and hypothesis H3 has been supported in full model. The estimated coefficient of ROA (-0.002177) for full model mean that if the ROA increase by 1 unit, leverage will be decreased by 0.002177 units, holding other variables constant.

In pre-crisis model, profitability shows a negative and significant relationship with leverage in pre-crisis model since the probability value is less than 1% significance level. Besides, profitability is also negatively with leverage during post-crisis period at 10% significance level. Thus, the results of pre-crisis and post-crisis models reject the null hypothesis and support the hypothesis H3. The results highlight that profitable companies are not likely to use debt rather than equity across all time periods.

Managers are more likely to finance its assets by using internal funds in order to reduce the agency problem between managers and shareholders. Thus, profitable firms are not likely to raise external funds due to this action will increase the potential of the dilution of ownership. Therefore, the negative relationship between profitability and leverage is happen in industrial product sector.

4.3.6 Firm Size

H4: Firm size is positively significant with capital structure in Malaysia's industrial product sector.

Firm size is positively significant with leverage in full model since the p-value of t-statistic for firm size in full model is less than 1% significant level. Thus, the result rejects the null hypothesis and supports the hypothesis H4. It highlight that larger firms are likely to raise fund by using debt rather than equity. The coefficient of firm size in full model

(0.039504) indicates that when the natural logarithm of total asset increased by one 1 unit, the leverage will be increased by 0.039504 units, holding other variables constant.

In pre-crisis model, firm size is positively significant with leverage at 10% significant level. Thus, the result of pre-crisis model rejects the null hypothesis and supports hypothesis H4. Unfavorably, firm size is insignificantly and positively related with leverage after global financial. Thus, the result of post-crisis model does not reject the null hypothesis.

Firm size is an important inverse proxy for the probability of bankruptcy. The cash flow of the larger firms is more stable and diversified than smaller firms, so the probability of large firms facing problem of bankruptcy is lesser than smaller ones. Due to the advantages of economic of scale and bargaining power with creditors, larger firms take lesser cost in issuing debt compare to small firms. Thus, firm size is positively significant with leverage in Malaysia's industrial product. After global financial crisis 2007, firms face the problem of borrowing due to credit risk is higher than before. Due to the less accurate credit risk information, lenders are more careful to lend money to firms even the firm size is large. Thus, firm size is insignificant with leverage after crisis.

4.3.7 Growth Opportunity

H5: Growth opportunity is negatively significant with capital structure in Malaysia's industrial product sector.

According to the results for this study, growth opportunity is negatively significant with leverage in full, pre-crisis and post-crisis model since the probability value of the t-statistic is less than 1% significant level across

all models. Thus, the results reject the null hypothesis and support the hypothesis H5. Holding other variables constant, the estimated coefficient for all models highlights that if the growth opportunity increase, its leverage ratio will be decreased. This is because high growths firms are tend to use equity to finance its assets rather than debt. Therefore, higher growth opportunity will tend to decrease firm's leverage.

High growth firms has high market value, thus its stock usually will overvalue. Due to stocks are overvalued, firms usually will issue equity rather than debt to finance its assets. Thus, the negative relationship between growth opportunity and leverage has been found in Malaysia's industrial product sector.

4.3.8 Liquidity

H6: Liquidity is negatively significant with capital structure in Malaysia's industrial product sector.

Based on the results of this research, liquidity and leverage have a negative and significant relationship in full, pre-crisis and post-crisis models since the probability value of t-statistic in all models are less than 1% significant level. The results reject the null hypothesis and support the hypothesis H6 in all models. The negative sign of the coefficient suggest that higher liquidity firms will lead to a lower leverage. Holding other variables constant, the estimated coefficient for all models highlights that if firm increases its liquidity level, its leverage ratio also will be decreased. This is because likely to finance its assets by using equity rather than debt.

High liquidity firms are more likely to use internal funds to launch their project due to they have sufficient liquidity assets to carry on their

investment project. Thus, liquidity firms have no reason to raise external funds. The negative relationship between liquidity and leverage is significant in Malaysia's industrial product sector across all time periods.

4.3.9 Non-debt Tax Shield

H7: Non-debt tax shield is negatively significant with capital structure in Malaysia's industrial product sector.

Based on the result of this research, non-debt tax shield (NDTS) has shown different outcome based on different time period's models. There is an insignificant and positive relationship between NDTS and leverage during full period. Thus, the result does not reject the null hypothesis in full model. NDTS also show an insignificant but negative relationship with leverage during pre-crisis period. Thus, the result of pre-crisis model does not reject the null hypothesis even the coefficient sign is consistent with expected sign.

Based on post-crisis model, NDTS is significantly and positively related with leverage at 5% significant level. It highlight that higher non-debt tax shield firm will tend to increase its debt level. Unfavorably, the result rejects the null hypothesis but it also does not support the hypothesis H7 since the positive sign of the coefficient is inconsistent with expected sign. The coefficient of NDTS in post-crisis model (0.791946) means that if NDTS increase by 1 unit, the leverage ratio will be increased by 0.791946 units, holding other variables constant.

NDTS is not significant to affect capital structure. Due to the smaller average value of NDTS (3.4845%), the small financial resources from the non-cash item, depreciation, represents only a small proportion of the firm's internal financial resources. Thus, NDTS is not significant to

increase internal fund to substitute external fund (debt) in Malaysia's industrial product sector.

4.3.10 Tangibility

H8: Tangibility is positively significant with capital structure in industrial product sector.

Based on the result of full model, there is a positive and significant relationship between tangibility and leverage at 5% significant level. The result reject the null hypothesis and support the hypothesis H8, thus it suggest that high tangibility firms are able to exercise more debts due to them having sufficient tangibles assets as collateral to secure debts. The coefficient of tangibility in full model (0.049888) indicates that if the tangibility ratio increased by 1 unit, the leverage ratio also will be increased by 0.049888 units, holding other variables constant.

Based on pre-crisis model, there is an insignificant and positive relationship between tangibility and leverage. Post-crisis model shows an insignificant but negative relationship between leverage and tangibility during post-crisis period. Thus, the results from both models do not reject null hypothesis.

The agency costs of debt, such as potential difficulties and risk shifting due to the problem of moral hazard and adverse selection, force creditors to obtain guarantees for lending in term of collateral. During pre-crisis and post-crisis periods, if the firms do not fully disclose information about the actual total tangible assets to creditor, it may cause the problem of asymmetric information between them. Thus, this situation will lead to an insignificant effect of tangibility on leverage.

4.3.11 Financial Crisis

Compare the result between the pre-crisis and post-crisis model, the impact of the ownership concentration, profitability, growth opportunity and liquidity on capital structure are constant across all time periods. All variables show a significant relationship with leverage in both pre-crisis and post-crisis model. The comparison can suggest that the impact of the ownership concentration, profitability, growth opportunity and liquidity on capital structure are not affected by global financial crisis 2007 in Malaysia's industrial product sector.

Based on Table 4.10, dividend policy, firm size, non-debt tax shields (NDTS) and tangibility has different impacts on capital structure between pre-crisis and post-crisis model. For dividend payout ratio, it is insignificant in pre-crisis period but significant in post-crisis period. In contrary, firm size is significant in pre-crisis model but insignificant in post-crisis model. For NDTS, it is insignificant negatively with leverage in pre-crisis model; it is significant positively with leverage in post-crisis model. For tangibility, it is insignificant positively with leverage in pre-crisis model; it is also insignificant but negatively with leverage and tangibility in post-crisis model.

Based on the comparison of the determinants of capital structure between pre-crisis model and post-crisis model, the results suggest that the impact of dividend policy, firm size, NDTS and tangibility on capital structure might be affected by global financial crisis 2007.

4.4 Conclusion

In chapter 4, full, pre-crisis and post-crisis models have high R-square and significant F-statistic. It suggests that they are the good predictive models of capital structure for Malaysia's industrial product sector. All explanatory variables (exclude NDTS) that appear on full model have a significant relationship with capital structure. We have found that dividend policy, ownership concentration, profitability, growth opportunity and liquidity have a negative and significant relationship with leverage. In contrary, firm size and tangibility are positively significant with leverage. Based on pre-crisis and post-crisis models, there is a different pattern of the determinants of capital structure between pre-crisis and post crisis periods, especially for the impact of dividend policy, firm size, NDTS and tangibility.

CHAPTER 5: CONCLUSION

5.0 Introduction

Chapter 5 presents the overall conclusion and discussion of the entire research. This chapter will present the summary of the overall picture of this research and discuss its major findings. There is a discussion on the policy implication of this research. At the end, it also presents some recommendations for future research based on major findings, limitation and conclusion.

5.1 Summary

The major objective of the research is to examine the certain factors that will affect the capital structure in 193 Malaysia's public-listed industrial product firms from 2005 to 2010. This research's objective had been achieved since the determinants applied were found as the key factors of capital structure in Malaysian industrial product firms. The data is produced and literature reviews are enriched on the research of capital structure in Malaysia's industrial product sector.

The research applied variety of accounting data for 193 public-listed industrial product firms over the six year period from 2005-2010. This research was focusing on the effects of dividend policy and ownership structure on capital structure. Besides, some important control variables are included, which are profitability, firm size, growth opportunity, liquidity, non-debt tax shield and tangibility. In order to detect the effects of the global financial crisis 2007 on the determinants of capital structure, the full sample have been transferred to become two sub-periods, which are pre-crisis period (2005-2007) and post-crisis period (2008-2010).

Full, pre-crisis and post-crisis model were employed by using fixed effects model to carry out the objective of this research. The conclusion of the hypothesis for full, pre-crisis and post crisis models are summarized in Table 5.1. The relationship between leverage and its explanatory variables are summarized in Table 5.2.

Table 5.1 Summary of the Decision of the Hypothesis

Hypothesis	**Conclusion**		
	Full Period (2005-2010)	**Pre-crisis (2005-2007)**	**Post-crisis (2008-2010)**
H1: Dividend policy is negatively significant with capital structure.	Reject H_0	Do Not Reject H_0	Reject H_0
H2: Ownership concentration is negatively significant with capital structure.	Reject H_0	Reject H_0	Reject H_0
H3: Profitability is negatively significant with capital structure.	Reject H_0	Reject H_0	Reject H_0
H4: Firm size is positively significant with capital structure.	Reject H_0	Reject H_0	Do Not Reject H_0
H5: Growth opportunity is negatively significant with capital structure.	Reject H_0	Reject H_0	Reject H_0
H6: Liquidity is negatively significant with capital structure.	Reject H_0	Reject H_0	Reject H_0
H7: Non-debt tax shield is negatively significant with capital structure.	Do Not Reject H_0	Reject H_0*	Do Not Reject H_0
H8: Tangibility is positively significant with capital structure.	Reject H_0	Do Not Reject H_0	Do Not Reject H_0

Note: * Inconsistent with expected sign.

Table 5.2 Summary of the Relationship between Capital Structure and its Explanatory variables

Variables	**Coefficient**			**Expected Sign Based on Trade-off Theory**	**Expected Sign Based on Pecking-order Theory**	**Expected Sign Based on Empirical Result**
	Full period (2005-2010)	**Pre-crisis (2005-2007)**	**Post-crisis (2008-2010)**			
Dividend	–	–	–	Consistent	Consistent	Consistent
Ownership concentration	–	–	–	Consistent	Inconsistent	Consistent
Profitability	–	–	–	Inconsistent	Consistent	Consistent
Firm size	+	+	+	Consistent	Consistent	Consistent
Growth opportunity	–	–	–	Consistent	Inconsistent	Consistent
Liquidity	–	–	–	Inconsistent	Consistent	Consistent
Non debt tax shield	+		+	Inconsistent	N/A	Inconsistent
		–		Consistent	N/A	Consistent
Tangibility	+	+		Consistent	Consistent	Consistent
			–	Inconsistent	Inconsistent	Inconsistent

Based on the empirical result in full model, dividend, ownership concentration, profitability, growth opportunity and liquidity are negatively significant with leverage. In contrary, firm size and tangibility are positively significant with leverage. Unfavorably, non-debt tax shield are positive insignificant with leverage. The effects of ownership concentration, profitability, growth opportunity and liquidity on leverage are constant due to they are significant in both pre-crisis and post-crisis. In contrary, dividend policy, firm size, non-debt tax shield (NDTS) and tangibility have different impacts on capital structure between pre-crisis and post-crisis model. This research has provided empirical evidences that are useful for regulators, invertors, general public and academicians.

5.2 Discussion of Major Findings

Eight explanatory variables are taken into account to examine the determinants of the capital structure, which are dividend, ownership concentration, profitability, firm size, growth opportunity, liquidity, non-debt tax shield and tangibility. This section will discuss the major findings of this research.

5.2.1 Dividend Policy

For dividend policy, a proxy of dividend payout ratio in a negative and significant relationship with firm's capital structure in full model and post-crisis model. The negative sign of the coefficient for dividend payout ratio is consistent with the expected sign. The negative impact of the dividend payout in full and post-crisis models may highlight that higher the dividend payout, the lower the income retention and the higher leverage ratio (Aggarwal & Kyaw, 2010). In order to support this statement, past researches also had provided the same findings. According to Chen and Steiner (1999), Frank and Goyal (2009) and Jensen et al. (1992), they also

have found that there is a negative relationship between capital structure and dividend policy. However, the negative coefficient sign in this research is not consistent with some previous researches. For instances, Easterbrook (1984) argued that dividend payout is positively interacted with leverage. If a firm faces the problem of earning shortages and unwilling to reduce dividend, it tend to borrow by using debt to pay dividend.

During pre-crisis period, there is an insignificant and negative relationship between dividend and capital structure. This insignificant relationship is supported by Allen and Mizuno (1989), they found that the relationship between leverage ratio and dividend payout are negative and insignificant. Esfahani and Jaffar (n.d.) found that there is an insignificant and negative relationship between leverage and dividend in Malaysia. They suggest that if the agency problem is low, the firm can raise fund by using debt easily due to investors are confidence for the firm and the conflict of interests between them is low. Thus, they are willing to wait for future dividend payout, and insignificant relationship are occurred between dividend and leverage. Before financial crisis, the conflicts of interest are low and investors are confidence for the firm performance, they are willing to wait dividend payout in the case of increase of the debt. Thus, leverage and dividend are insignificantly related before financial crisis.

The negative result is also supported by trade-off theory and pecking order theory. This result support the valid of trade-off theory in this research, which state that leverage and dividend is negative related (Adedeji, 1998). High leverage firms face high bankruptcy risk; the riskier firms usually pay out the lower dividend. Thus, dividend is negatively related with bankruptcy cost and firm's debt level (Rozeff, 1982). Myers (1984) found that dividend payout has negative relationship with leverage under pecking order theory. Allen and Mizuno (1989) also has the same result due to

dividend policy is tricky in short term, leaving variation in cash flows to be absorbed largely by debt.

5.2.2 Ownership Concentration

Based on the empirical result for full, pre-crisis and post-crisis model, ownership concentration has a significant and negative impact on capital structure in Malaysia's industrial product firms across all time periods. The negative sign of coefficient for the proxy ownership concentration, Herfindahl Index 5, is consistent with the expected sign. Guo et al. (2010), Huang and Song (2006) and Nam et.al (2003) support this result, they have found that there is a negative relationship between capital structure and ownership concentration. This results highlights that largest shareholders are avoiding to increase the level of debt due to the problem of financial distress and bankruptcy risk. Thus, concentrated ownership firms will prefer lower debt level; dispersion ownership firms will prefer higher debt.

The negative sign of coefficient is consistent with trade-off theory. This theory also suggests that high debt level increase bankruptcy risk and largest shareholders will reduce their holding in order to decrease their losses (Jensen, 1986). Thus, the negative relationship is happen between ownership concentration and capital structure.

The result is contrary with pecking order theory, which states that leverage and ownership concentration is positively related. Myers (1984) argued that concentrated ownership firms have higher debt level than diffused ownership firms. This is because ownership concentration firm's manager are likely to reduce debt level while they taking risky project. Mehran (1992) also support the positive relationship between ownership concentration and leverage.

5.2.3 Profitability

According to the empirical result of full, pre-crisis and post-crisis models, there is sufficient evidence to conclude that profitability is negatively significant with leverage. The negative sign of the coefficient for return on assets is consistent with the expected sign. Allen and Mizuno (1989), Jensen et al. (1992) and Toy et al. (1974) find out that there is a negative relationship between capital structure and profitability.

The negative result is supported by pecking order theory, which states that profitable firms usually are not willing to raise external funds in order to prevent the potential dilution of ownership (Rajan & Zingales, 1995). However, the negative sign of coefficient for profitability is contrary with trade-off theory. It suggests that high profitability firms are likely to use debt because the advantages of tax shield expenses on interest payment (Wahab et al., 2012).

5.2.4 Firm Size

The empirical result found that firm size is positively and significantly related with leverage in full period and pre-crisis period. During post-crisis period, firm size is positively insignificant with leverage which is consistent with expected sign. The result is similar to the researches from Crutchley and Hansen (1989), Frank and Goyal (2003) and Rajan and Zingales (1995), they found out that there is a positive relationship between capital structure and firm size. The result is also supported by Marsh (1982), this author found that large firms more likely will choose long-term debt, while small firms will go for short-term debt. Large firms may enjoy the benefits of economies of scale in issuing long-term debt, since they may have the power to bargain over creditors.

This positive sign of coefficient also is supported by trade-off theory and pecking order theory. Michaelas et al. (1999) found that larger firm has more diversified and stable cash flow and thus lower bankruptcy risk compare to smaller firm. Therefore, larger firm take lesser cost in issuing debt under trade-off theory. Titman and Wessels (1988) found that firm size is a proxy variable for information asymmetry between companies and capital markets. Consistent with pecking order theory, larger firms provide the more accurate credit risk information to market, thus they can borrow external fund easily. The validity of both theories in this research is acceptable.

Financial crisis can be known as a disruption in the financial markets in which the moral hazard and adverse selection problem become worse than before. Thus, financial market is unable to channel funds efficiently to the investors who own the high productive investment opportunities (Mishkin, 1992). Because of the linkage between asymmetric information and financial crisis, the problem of asymmetric information is occurred during financial crisis. Hence, firm size is insignificant to affect leverage since there is less credible information in financial market after financial crisis.

5.2.5 Growth Opportunity

The result of this research stated that the relationship between growth opportunity and leverage is negatively significant across all time periods. It is consistent to the expected sign. To support this result, Gaver and Gaver (1993), Long and Malitz (1985) and Smith and Watts (1992) found out that there is a negative relationship between capital structure and growth opportunity. High growth opportunity's firms are less likely to issue debt due to the underinvestment problem and assets-substitution problem.

The negative sign of coefficient for growth opportunity is supported by trade-off theory, which states that growth opportunity is negatively related with leverage because high growth firms tend to face more risk and higher financial distress (Rajan & Zingales, 1995). A high grown firm is suffering higher cost of financial distress and caused the stocks overvalued. To overcome the problem, they will issue more stocks.

In contrary, the empirical result is not supported by pecking order theory, which states that growth opportunity is positively related with leverage. Um (2001) argued that a high grown firm needs more sources of fund to carry out their investments since its retained earnings are not sufficient. Thus, a firm will use debt to solve the problem of insufficient funds.

5.2.6 Liquidity

The result for full, pre-crisis and post-crisis models presented a negative and significant relationship between liquidity and leverage in Malaysia's industrial product sector across all time periods. The negative sign of the coefficient for liquidity is consistent with expected sign. This result is supported by Suhaila and Mahmood (2008) and Wahab et al. (2012), they found out that there is a negative relationship between capital structure and liquidity. This is because higher liquidity firms are likely to use internal sources of funds rather than external sources of funds to finance their investment.

Pecking order theory is valid in this research. Mazur (2007) and Viviani (2008) found that firm tends to use internal sources to launch their project under pecking order theory. High liquidity firm is having more sufficient liquid assets to carry on its investment. Thus, pecking order theory assumes there is negative relationship between liquidity and leverage.

However, the validity of trade-off theory in this research is violated. This theory argued that high liquidity firms are encouraged to borrow more debt because they are able to meet the liability obligations (Wahab et al., 2012).

5.2.7 Non-debt tax shield (NDTS)

Based on the empirical result, non-debt tax shield has a variety relationship with leverage in different model. In full model, NDTS is positively insignificant with leverage. NDTS is negatively insignificant with leverage before global financial crisis but carry a positive and significant result at after crisis period. The positive significant result is consistent with Schwartz and Aronson (1967) and Al-Shubiri (2010) research results.

Only the negative sign of coefficient for non-debt tax shield in pre-crisis model is consistent with the expected sign. Al-Shubiri (2010), Huang and Song (2006), and Qian et al. (2009) hold results that there is a negative relationship between capital structure and non-debt tax shield. If a firm has higher level of non-debt tax shield assets, it will reduce their debt level since it can take the advantages of tax shield on the non-debt items, such as depreciation.

During full and pre-crisis period, the relationship between NDTS and leverage is insignificant. The result is supported by La Masidonda, Idrus, Salim and Djumahir (2013), they also found that there is an insignificant relationship between NDTS and leverage. NDTS does not determine the changes of capital structure since depreciation is only a small proportion of firm's internal resources. In this research, a smaller average value of NDTS (3.4845%) indicates that the small financial resources from the non-cash item, depreciation, represent only a small proportion of the firm's internal financial resources. Thus, NDTS is relatively less important to

increase internal fund to substitute external fund (debt) in Malaysia's industrial product sector. Thus, it is concluded that NDTS is an important factor to determine capital structure choice in Malaysia's industrial product sector due to the smaller amount of depreciation.

5.2.8 Tangibility

The empirical result of full model showed that the relationship of tangibility and leverage is positively significant in Malaysia's industrial product sectors from 2005 to 2010. The positive sign of the coefficient is consistent with expected sign. This result is supported by Prasad et al. (2003) and Wiwattanakantang (1999). They assume the high tangibility firms are able to exercise more debt because they have sufficient tangibility assets as collateral to secure debts.

The positive significant result is consistent with pecking order theory and trade-off theory. Trade-off theory suggests that tangibility assets are easier to collateralize and caused firms face a relatively smaller amount of loss when they are having difficulty (Scott, 1977). Under pecking order theory, Jensen and Meckling (1976) suggest that the agency cost of debt occurs when the firms are making riskier investment. If firm holds more tangible assets, those assets can helps to minimize the lender's risk of taking high agency costs of debt. Thus, the validity of the both theory is accepted between tangibility and leverage.

The empirical result found that tangibility is not significant during pre-crisis and post-crisis period. Sogorb-Mira (2005) found that the agency costs of debt, such as potential difficulties and risk shifting due to the problem of moral hazard and adverse selection, force creditors to obtain guarantees for lending in term of collateral. If the firms do not fully

disclose information about the actual total tangible assets to creditor, it may cause the problem of asymmetric information between them. Hence, this situation will lead to an insignificant effect of tangibility on leverage during pre-crisis and post-crisis periods.

5.3 Policy Implication

Through this research, it is hoped that the major players such as policy makers, managers, investors and academicians will have a further understanding about the explanatory variables which may affect the capital structure of the industrial product firms in Malaysia. The result of this research provides the important information about industrial product firm's capital structure to the public and it is useful for firm's capital structure decision making. Thus, the finding in this research might be used by the policy maker as a guideline for the future research of the capital structure.

Different set of the regulations or policies might not applicable in different sectors because each sector has its own culture and traits. Past researchers are likely to examine the determinant of capital structure in Malaysia's property sector (Wahab et al., 2012) or construction sector (Sahudin et al., 2011). Due to the lack of evidence about the industrial product firm's capital structure, the empirical result can provide some evidence to policy makers to set the capital structure policy in this sector. They can do the selection of equity and debt securities with different level of costs and benefit in the balanced proportion in order to obtain the maximization of firm value.

Each of explanatory variables is playing an important and useful role in conducting this research when determining the variation in industrial product firm's capital structure. The empirical results in full model indicates the dividend policy, ownership structure, profitability, growth opportunity, liquidity are negatively significant with leverage. In contrary, firm size and tangibility are

positively significant with leverage. Although non-debt tax shield were showed an insignificant result in industrial product sectors, most of the past researchers were strongly proposed that it is one of the major factors in determining firm's capital structure. Policy maker could apply the most suitable policies by using these few factors to do capital structure in order to withstand financial and economic crisis for every company.

Debt and dividends are known as an alternative mechanism to reduce the agency costs in the under- and over-investment management. In this research, the result shows dividend payout is negatively related with leverage. High leverage indicates the firm faces high bankruptcy risk. In order to reduce bankruptcy risk, policy makers might set new policy to encourage firms use high dividend payout to reduce debt level. Higher dividend payout might increase shareholders' confidence for the stock, thus they are willing to invest in the firms. Therefore, firm can use internal sources of funds rather than external sources of fund to finance its assets or investment. The decreasing in debt level can help the firm to withstand financial distress and bankruptcy risk.

Based on this research, the ownership concentration is negatively significant with leverage. Higher ownership concentration might reduce the agency costs between shareholder and manager. If a firm's has a higher debt level, largest shareholders will reduce their holding because the firm facing higher bankruptcy risk. Therefore, policy maker might use new policy to reduce the agency problem between shareholders and managers in order to build up shareholders' loyalty. If the agency problem is low between shareholders and managers, shareholders will increase their holding since they are satisfied to the firm's performance. If the firm has sufficient internal funds to finance its assets, they tend to reduce their debt level.

Financial crisis can be knows as a disruption in the financial markets in which the moral hazard and adverse selection problem become worse than before, thus financial institution is unable to channel funds efficiently to the investors who

own the high productive investment opportunities. Based on the empirical result, the financial crisis is one of the factors to influence the effect of dividend policy, firm size, non-debt tax shield and tangibility on leverage. Policy maker might encourage industrial product firms reduce their debt level in order to avoid the shock of financial crisis. This is because higher debt level will produce higher bankruptcy risk. During financial crisis, if the firm is unable to meet its debt obligation, the firm will face the problem of bankruptcy. Thus, the lower debt level can help the firm to withstand financial distress during financial crisis.

The result of this research shows that profitable firm less likely relies on debt financing. When the industrial product firm has substantial profit, policy maker might encourage firm to use retained earnings to finance its assets and less reliably on debt financing. Besides, growth opportunity is negatively significant with debt financing. Industrial product firm might attempt to increase its growth opportunity in order to increase its maker value and potential to attract investors. Due to the high growth opportunity, this firm can raise fund by using equity financing from investors easily.

Result from this research shows high liquidity firm rely heavily on equity financing because the negative relationship between liquidity and debt. Policy maker might advise liquidity firm to finance its investment by using its sufficient current assets. When the firm own sufficient current assets, they can meet its debt obligation efficiently without the use of debt financing. Based on the empirical result, there is no significant relationship between non-debt tax shield (NDTS) and leverage in Malaysia's industrial product sector. Based on the literature review, it is expected that NDTS is negatively related with leverage. Thus, policy maker might encourage firms to increase the level of the non-debt tax shield assets, this situation can stimulate the firm to reduce its debt level due to it can get the advantages of tax shield on the non-debt items, such as depreciation.

The empirical result show that larger firms rely heavily on debt financing. Besides, asset tangibility also has effect heavily on debt. Based on rationale, when the

industrial product firm becomes bigger in term of the firm size and has more tangibility assets, this firm will rely more on the debt financing compared to equity financing. The major findings should improve further for financial institutions as good capital providers to stimulate the industrial production firm's financial needs powerfully for its country growth and future development.

The major finding from this research showed that some of the coefficient sign in full, pre-crisis and post-crisis model is consistent with the expected sign based on trade-off theory and pecking-order theory. Thus, these two theories are still valid in today's corporate capital structure choice. Policy makers can take benefits from two theories to derive a more appropriate approach to improve their capital structure practices.

The findings in this research paper also can contribute to managers, investors, academicians and others. Through the major finding of this research, financial manager can more accurately do the decision making of capital structure choice in order to reduce the risk of financial distress. Thus, financial manager can help the firm to raise funds by using more appropriate source. Besides, this research paper also provides the in-depth knowledge of the capital structure to investor. For instance, high leverage firms usually have high bankruptcy risk, thus investors has high chance to get loss. If they can more clearly understand the firm's capital structure, they can reduce the investment risk and loss efficiently. Lastly, the research paper also provides the sufficient educational knowledge to academicians. Through this research paper, academicians can gain the theoretical and empirical knowledge's of the firm's capital structure.

5.4 Limitations

On August 3, 2009, Bursa Malaysia implemented the new framework for the listings and the equity fund-raising. The reformation has merged the Main Board

and the Second Board into the Main Market. Besides, the MESDAQ Market also was transformed into the ACE Market. Processes and rules for the equity fund-raising have been streamlined to provide shorter time to market, greater certainty and lower regulatory cost under this new framework. The structural reform in Bursa Malaysia is take place in the research period (2005-2010), this may cause the standard of the information and data about the public-listed firms are not consistent before and after merger. Under this reformation, this research has made the extraction of the data extremely difficult.

Different public listed companies will announce its annual report at different times. The ending date of financial statement for some firms is on the year ended 31 December. However, the ending date of financial statement for some firms is not on the year ended, such as 31Octorber or 31May. Due to the limitation of the financial statement, it is hard to obtain the data and information based on same ending date in Malaysia's public-listed companies. This situation may lead to an inaccurate yearly data set that would probably cause the result to become inefficient.

In addition, this research only investigates industrial product sectors in Malaysia. Thus, the information and the result of this research are only useful for the industrial product sector's policy maker and investors. Different sectors has own trait and culture. So, other sectors like properties, construction and consumer product sector are encouraged to consult the research's finding, but they cannot apply the industrial product sector's case into their respective sector's policy.

This research only review secondary data like financial statement, annual report, articles and journal of the industrial product firms to examine the effects of the explanatory variables on capital structure. Thus, this research is limited in secondary data to examine the capital structure in Malaysia's industrial product sector since primary data is difficult to be conducted.

5.5 Recommendations for Future Study

The sample period of this study is from 2005 to 2010. Future study should increase the length of sample period in order to ensure that the study can provide an unbiased result in drawing the conclusion. The longer sample period can provide a more meaningful result in explaining the variation of capital structure.

This research is focus on the industrial product sector in Malaysia in order to provide the contribution to this sector's capital structure choice. Future researchers are recommended to enlarge the research area like property industry, construction industry, trading and service industry or others in order to explore the effects of the factors on the debt structure of cross-industries public-listed companies in Malaysia. Future research is also recommended to make the comparison among different sectors for the purpose to capture different capital structure from each sector. Other than that, cross-industries analysis can helps to increase sample size and lead to a high accuracy result.

Theoretically, firms generally will consider other factors when they are doing capital structure choice. Factors such as operating leverage, sales stability, reputation, board size and business risk should be looked upon and explored for the future research. Besides, the research is limited since primary data is difficult to be conducted. Future research is recommended to include primary data also to analysis firm's capital structure more accurate and specific. For instance, future research can examine the likert scale ranging about asymmetric information, business characteristic and others through survey or questionnaire.

Lastly, future study is recommended to test the various dimension of debt level in order to ensure the robustness of the research about capital structure choice. Since different debt structures are affected by different factors, future study is encouraged to use variety proxy variables for capital structure, such as short-term debt ratio, long-term debt ratio, debt to market value ratio and others.

5.6 Conclusion

The major objective of the research is to examine certain factors that will affect the capital structure in 193 Malaysia's public-listed industrial product firms from 2005 to 2010. The models were employed by fixed effects method and controlled by white cross-sectional coefficient covariance estimator.

As a conclusion, result shows the dividend, ownership concentration, profitability, growth opportunity and liquidity are negatively significant with leverage. In contrary, firm size and tangibility are positively significant with leverage. Unfavorably, non-debt tax shield are positive insignificant with leverage. Based on the result from this research, the relationship between dividend, firm size and tangibility with leverage are supported by both trade-off and pecking order theories. The relationship between leverage and profitability or liquidity is only valid in pecking order theory. Furthermore, the relationship between leverage and ownership concentration or liquidity is valid in trade-odd theory.

By comparing the empirical result between pre-crisis and post-crisis model, the effects of ownership concentration, profitability, growth opportunity and liquidity on leverage are found constant and significant in both models. In contrary, dividend policy, firm size, non-debt tax shield (NDTS) and tangibility have different impacts on capital structure between pre-crisis and post-crisis model.

This research has provided empirical evidences that are useful for policy makers, manager, investor and academicians. However, this research could be affected by some limitation, such as the problem of data accuracy and data collection. Lastly, there are some critical recommendations suggested for future study, such as enlarge the research area, test on other explanatory variables and others.

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Appendices I: List of 193 Malaysia's Public-listed Industrial Product Firms

1. ABRIC BHD
2. ADVENTA BHD
3. ADVANCED PACKAGING TECHNOLOGY
4. AE MULTI HOLDINGS BHD
5. AMALGAMATED INDUSTRIAL STEEL
6. AJIYA BHD
7. ASIA KNIGHT BERHAD
8. ANCOM BHD
9. ANN JOO RESOURCES BHD
10. APB RESOURCES BHD
11. APM AUTOMOTIVE HOLDINGS BHD
12. A-RANK BHD
13. ASTINO BHD
14. ASTRAL SUPREME BHD
15. ATLAN HOLDINGS BHD
16. ATURMAJU RESOURCES BHD
17. AUTOAIR HOLDINGS BHD
18. B.I.G INDUSTRIES BHD
19. BOX-PAK (MALAYSIA) BHD
20. BP PLASTIC HOLDING BHD
21. BRIGHT PACKAGING INDUSTRY BHD
22. BTM RESOURCES BHD
23. CAN-ONE BHD
24. CB INDUSTRIAL PRODUCT HOLDING
25. CHEMICAL COMPANY OF MALAYSIA
26. CENTURY BOND BHD
27. CONCRETE ENGINEERING PRODUCTS
28. COMPUTER FORMS (M) BHD
29. CHIN WELL HOLDINGS BHD
30. CHOO BEE METAL INDUSTRIES BHD

31. CENTRAL INDUSTRIAL CORPORATION
32. CME GROUP BHD
33. CAHAYA MATA SARAWAK BHD
34. CN ASIA CORPORATION BHD
35. COASTAL CONTRACTS BHD
36. COMINTEL CORPORATION BHD
37. CSC STEEL HOLDINGS BERHAD
38. CYL CORPORATION BHD
39. CYMAO HOLDINGS BHD
40. DAIBOCHI PLASTIC & PACKAGING
41. DENKO INDUSTRIAL CORPORATION
42. DOLOMITE CORPORATION BHD
43. DOMINANT ENTERPRISE BHD
44. DRB-HICOM BHD
45. EC INDUSTRIES BHD
46. EKSONS CORPORATION BHD
47. EONMETALLGROUP BHD
48. EP MANUFACTURING BHD
49. EVERGREEN FIREBOARD BHD
50. FACB INDUSTRIES INCORPORATED
51. FIMA CORPORATION BHD
52. FURNIWEB INDUSTRIAL PRODUCTS
53. GOH BAN HUAT BHD
54. GE-SHEN CORPORATION BHD
55. GOLSTA SYNERGY BHD
56. GOODWAY INTEGRATED INDUSTRIES
57. GPA HOLDINGS BHD
58. GSB GROUP BHD
59. GUH HOLDINGS BHD
60. HARVESET COURT INDUSTRIES BHD
61. HEVEABOARD BHD
62. HEXZA CORPORATION BHD

63. HIAP TECK VENTURE BHD
64. HIL INDUSTRIES BHD
65. HO WAH GENTING BHD
66. INGRESS CORPORATION BHD
67. IRE-TEX CORPORATION BHD
68. IRM GROUP BHD
69. JASA KITA BHD
70. JAVA BERHAD
71. JMR CONGLOMERATION BHD
72. JOHORE TIN BHD
73. JAYA TIASA HOLDINGS BHD
74. KEIN HING INTERNATIONAL BHD
75. KIA LIM BHD
76. KIAN JOO CAN FACTORY BHD
77. KIM HIN INDUSTRY BHD
78. KINSTEEL BHD
79. KKB ENGINEERING BHD
80. KOBAY TECHNOLOGY BHD
81. KOMARKCORP BHD
82. KOSSAN RUBBER INDUSTRIES BHD
83. KUMPULAN POWERNET BHD
84. KUMPULAN H&L
85. KECK SENG (M) BHD
86. KUMPULAN PERANGSANFG SELANGOR BHD
87. KYM HOLDINGS BHD
88. LAGARGE MALAYSIA BERHAD
89. LATEXX PARTNERS BHD
90. LB ALUMINIUM BHD
91. LCTH CORPORATION BHD
92. LEWEKO RESOURCES BHD
93. LION CORPORATION BHD
94. LION INDUSTRIES CORPORATION

95. LION DIVERSIFIED HOLDINGS BHD
96. LEADER STEEL HOLDINGS BHD
97. LUSTER INDUSTRIES BHD
98. LYSAGHT GALVANIZED STEEL BHD
99. MALAYSIAN AE MODEL HOLDINGS
100. MALAYSIA AICA BHD
101. MALAYSIA STEEL WORK (KL) BHD
102. MASTER-PACK GROUP BERHAD
103. MAXTRAL INDUSTRY BHD
104. MALAYSIA PACKAGING INDUSTRY
105. MELEWAR INDUSTRIAL GROUP BHD
106. MENTIGA CORPORATION BHD
107. MERCURY INDUSTRIES BHD
108. METAL RECLAMATION BHD
109. METROD HOLDINGS BERHAD
110. MIECO CHIPBOARD BHD
111. MINETECH RESOURCES BHD
112. MINHO (M) BHD
113. MALAYSIA SMELTING CORPORATION
114. MAJOR TEAM HOLDINGS BHD
115. MUDA HOLDINGS BHD
116. MULTI-USAGE HOLDINGS BHD
117. MULTI-CODE ELECTRONICS INDS
118. MYCRON STEEL BHD
119. NAKAMICHI CORPORATION BHD
120. NWP HOLDINGS BHD
121. OCTAGON CONSOLIDATED BHD
122. OKA CORPORATION BHD
123. ORNAPAPER BHD
124. PENSONIC HOLDINGS BHD
125. PETRONAS GAS BHD
126. PETRON MSIA REFINING & MKTG BHD

127. P.I.E. INDUSTRIAL BHD
128. PMB TECHNOLOGY BHD
129. PRESS METAL BHD
130. PNE PCB BHD
131. POLY GRASS FIBRE (M) BHD
132. PELANGI PUBLISHING GROUP BHD
133. PUBLIC PACKAGES HOLDINGS BHD
134. PREMIER NALFIN BERHAD
135. QUALITY CONCRETE HOLDINGS BHD
136. RALCO CORPORATION BHD
137. RAPID SYNERGY BHD
138. RUBBEREX CORPORATION (M) BHD
139. SOUTHERN ACIDS (M) BHD
140. SANBUMI HOLDINGS BHD
141. SAPURA INDUSTRIAL BHD
142. SARAWAK CONSOLIDATED IND BHD
143. SCIENTEX BERHAD
144. SCOMI ENGINEERING BHD
145. SINO HUA-AN INTERNATIONAL BHD
146. SUPERCOMNET TECHNOLOGIES BHD
147. SHELL REFINING CO (F.O.M.) BHD
148. SKB SHUTTERS CORPORATION BHD
149. SKP RESOURCES BHD
150. SMIS CORPORATION BHD
151. SMPC CORPORATION BHD
152. STONE MASTER CORPORATION BHD
153. SUBUR TIASA HOLDINGS BHD
154. SUCCESS TRANSFORMER CORP BHD
155. SUNCHIRIN INDUSTRIES (M) BHD
156. SUPER ENTERPRISE HOLDINGS BHD
157. SUPERMAX CORPORATION BHD
158. TA ANN HOLDINGS BHD

159. TAS OFFSHORE BERHAD
160. TASEK CORPORATION BERHAD
161. TA WIN HOLDINGS BHD
162. TECK GUAN PERDANA BHD
163. TECNIC GROUP BERHAD
164. TEKALA CORPORATION BHD
165. THREE A RESOURCES BHD
166. THONG GUAN INDUSTRIES BHD
167. TIEN WAH PRESS HOLDINGS BHD
168. TIGER SYNERGY BERHAD
169. TIMBERWELL BHD
170. TOMYPARK HOLDINGS BHD
171. TONG HERR RESOURCES BHD
172. TOP GLOVE CORPORATION BHD
173. TOYO INK GROUP BHD
174. TURIYA BHD
175. UNITED BINTANG BHD
176. UCHI TECHNOLOGIES BHD
177. UNITED U-LI CORPORATION BHD
178. VERSATILE CREATIVE BHD
179. VTI VINTAGE BHD
180. V.S INDUSTRY BHD
181. WAH SEONG CORPORATION BHD
182. WATTA HOLDING BHD
183. WEIDA (M) BHD
184. WONG ENGINEERING CORPORATION
185. WOODLANDOR HOLDINGS BHD
186. WHITE HORSE BHD
187. WTK HOLDINGS BHD
188. WAWASAN TKH HOLDINGS BHD
189. YA HORNG ELECTRONIC (M)
190. YI-LAI BHD

191. YKGI HOLDINGS BERHAD
192. YLI HOLDINGS BHD
193. YOKOHAMA INDUSTRIES BHD