THE DETERMINANTS OF DERIVATIVE USAGE IN MALAYSIA CORPORATION

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DECLARATION

We hereby declare that:

(1)   This UBFZ3026 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 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 project is 25,581 words.

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Last but not least, we would like to thank each of our group members in this research project who were willing to work hard together and cooperate to complete this project.

DEDICATION

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We would like to dedicate a message to those who are reading our thesis. "Work smart instead of work hard". We suggest that good time management is important to produce a good quality thesis. Furthermore, it is also one of the best ways to overcome problems and achieving tight deadline for success.

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CAR	Cumulative Abnormal Return
CE	Capital Expenditure
COMMEX	Commodity and Monetary Exchange
CEO	Chief Executive Officer
CPO	Crude Palm Oil
CUR	Current Ratio
DP	Dividend Payout
FASB	Financial Accounting Standard Board
KLCI	Kuala Lumpur Composite Index
ISDA	International Swap and Derivatives Association
KLCE	Kuala Lumpur Commodity Exchange
KLOFFE	Kuala Lumpur Options and Financial Futures Exchange
LEV	Leverage
MDEX	Malaysian Derivative Exchange
MME	Malaysian Monetary Exchange
NPV	Net Present Value
OLS	Ordinary Least Square

ROA   Return On Asset

ROE   Return On Equity

R & D   Research and Development

STD. DEV   Standard Deviations

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PREFACE

Nowadays, derivatives have become increasingly important to financial institutions and non-financial institution. Derivative contracts such as forward, future, swap and option has been traded actively by fund managers, corporate treasurers and others all over the world. It is a financial instrument where the value is depends on the underlying assets. Derivatives have become an important part of firm in risk management policy. Some of the companies have adopted financial derivative instrument to control their exposure in exchange rate, interest rate, commodity price and others. By performing derivatives, firms are able to minimize the fluctuation in cash flow and also, to have a ready and available internal fund for investment or expand its business activity. Therefore, this study conducted a research to discover the critical factors that influence the demand of derivatives use in Malaysian corporation.

This study examines the link between debt, investment growth, managerial ownership, liquidity and profitability with derivative usage in a sample of 97 Malaysian non-financial companies over the years of 2010 to 2011. Panel data such as fixed effect model was used to conduct this study.

ABSTRACT

Derivatives usages among the firms have been increasing over the year. Firms are always faced with financial constraints from undesirable circumstance regardless of how large and healthy the firm is. Therefore, most of firms firm try to minimize their risk exposure through the financial derivatives instrument. Thus, this study examines the determinate of derivatives use by Malaysian corporations. A sample of 97 companies drawn from Bursa Malaysia, main market for the year of 2010 and 2011 to ascertain the main factors that affect the decision of firm involved in derivatives activity. Secondary data and quantitative approach has been used in this study. Besides, the Panel data techniques and Fixed effect model has been used to carry out the result. While, the result show that corporations engage in derivative are mostly concerned with minimizing the volatility of cash flow which cause financial distress, investment growth, liquidity and profitability. However, managerial ownership was not the main reason for firms to involve in derivatives contracts due to the firm maximizing its firm value rather than to improve its managerial wealth.

CHAPTER 1 : RESEARCH OVERVIEW

1.0 Introduction

Derivatives are a financial instrument which plays an important role in the financial market. Derivative exists for quite a long time in the market and it is commonly being practiced by people around the world at present. The derivatives instrument evolves from basic contract to another new innovative contract as time changer. Nowadays, there are many different derivatives instrument that are being introduced. Derivatives have become more and more important in the financial world in the last 25 years. Many exchanges use Future and Option Contract actively all over the world to reduce some of the risk (Kroszner, 1999).

As the Chicago Board of Trade was established in 1848, a lot of new future or forward contracts were brought into derivatives market (Cronon, 1991). As time passes, more organizations traded counters were formed to enhance the derivative trading. Until the 1980s, Swaps and Over-the-counter derivatives have been introduced to the derivatives market as International Swaps and Derivatives Association (ISDA) and was finally established in 1985 (International Swaps and Derivatives Association, n.d.). Derivatives became a hot topic during that period and a lot of researchers started to conduct studies to further investigate the factors and impacts of the derivatives in the market of developed countries. Starting from 2008, the Financial Accounting Standards Board had been announced as a more comprehensive derivatives disclosure requirement (Financial Accounting Standards Board, n.d.). This ensures that all listed firms are required to disclosure their derivatives contract in the financial reporting. Thus, lead to another hot topic in derivatives among the finance researcher. Now, this study is to investigate the factor

that influences the director hedging decision in Malaysia as there is not much research being done in the Malaysian market.

The introduction will be explains in seven sections whereby the research background is discussed in the Section one. Section two will be mainly about problem statement and research objectives are listed down in Section three. Research questions and significance of the study are shown and discuss in Section four and Section five respectively. Chapter layout is provided in Section six, followed by conclusion of overall research in the last section.

1.1 Research Background

It was discovered that the history of derivatives started in the fourth millennium B.C where trading activities in Mesopotamia was believed to be the origins of commerce. The Royal Exchange in London was actually the first exchange for trading derivatives which is Forward contract. About the year of 1650, the Yodoya rice market which was the first Future contracts took place in Osaka, one of the cities in Japan. Thus, the use of derivatives had grown rapidly in the market since the introduction of foreign exchange, and the size of derivatives markets is huge.

Derivatives are securities where price is derived from one or more underlying assets, it serves as a contract between two or more parties. The most common types of derivatives are future contracts, forward contracts, options and swaps. Derivatives play an important role in helping companies to manage risk of the interest rates, currency exchange rates, and equity markets. For example, a company that owes a large amount of debt at a variable and the interest rate will be locked in its debt at a fixed rate, the company may enter a derivative contract that will allow it to swap interest rates with those companies that are seeking to switch from a fixed to a

variable rate. Derivatives also can also be used for speculative purposes to earn profits.

There are three main uses of derivatives, hedging, speculating and arbitrage. Hedging is most commonly used by people who seek to reduce their risks by entering into a derivatives transaction. Speculating is commonly used by traders who aim to earn profits with investments. Speculating can bring a high return though it is quite risky. Arbitrage is an attempt to profit by exploiting price differences between two or more markets.

The use of derivatives by non-financial firms has increased rapidly in the last two decades. It shows that leverage and firm size are the two most important factors that induce a firm to make use of financial derivatives (Nguyen and Fatt, 2002). Large banking organizations are much more likely than small banking organizations to fully utilize derivatives. The agency costs and monitoring problems affect derivative usage, which affect the firm value. It is found that derivative usage has different firm valuation effects and negative effects of firms with greater agency costs and monitoring problems (Fauver and Naranjo, 2010).

Smith and Stulz (1985) argued that hedging can affect firm value through the changes in tax liabilities and changes in stakeholders' contracting costs. This shows that hedging helps to increase a firm's value by reducing the external claims such as taxes paid to the government. However, derivatives will be influenced by managers because he was the ones who are responsible to diversify the risk that relates to the firm. If managers' wealth was in aligning with the firm value, it will be optimal for them to hedge the value of the firm.

On the other hand, the use of derivatives and the cost of equity is closely related. The researchers evidences that firms used derivatives to reduce their financial distress in the market and they use derivatives to hedge rather than to speculate in the foreign exchange market (Gay, 2011).

Derivatives in Malaysia

Kuala Lumpur Commodity Exchange (KLCE) was the first Malaysia derivative exchange which was established in 1980. In the same year, Crude Palm Oil (CPO) contract was the first derivative product that had been introduced by KLCE. Up to date, CPO contract still remains as the main product of KLCE although KLCE has introduced other contracts such as Commodity Contract on rubber, tin, cocoa and others. Although other contracts might be less concerned by KLCE if compared to CPO, but they are good substitute contracts traded on foreign exchanges such as in Tokyo and London. Therefore, KLCE will not take up these contracts.

In 1995, KLCI Stock Index Future contract was first launched by Kuala Lumpur Options and Financial Futures Exchange (KLOFFE). It became the second derivative exchange in Asia due to the establishment of this index futures contract. COMMEX, which is the merging of MME and KLCE due to MME was unable to maintain single contract by itself. In December 2000, KLOFFE and COMMEX merged into a single exchange and formed as Malaysian Derivatives Exchange (MDEX), it is owned by KLSE which is in charge of derivatives activities and it was renamed as Bursa Malaysia Derivatives Berhad.

Bursa Malaysia Derivatives Berhad is established to meet the growing need for financial risk management in Malaysia. It plays an important role which is to ensure the integrity of the market and the futures and options trading. Bursa Malaysia is the country's only derivatives exchange, and to date, it has 9 derivative contracts, with 7 as financial derivatives while the other 2 are commodity contracts. With the establishment of Bursa Malaysia, the derivatives exchanges in Malaysia have reached their final point. The contracts in Bursa Malaysia are traded on a different platform and required a different licensing arrangement for stocks brokers to trade in the derivative contracts (Bursa Malaysia, 2012).

1.2 Problem Statement

Nowadays, a majority of the firms are facing risk in the competitive financial environment. Therefore, the awareness of corporation to use the derivatives have been increasing in risk management in recent years to protect themselves against the risk. However, regardless of how large or healthy a firm is, the possibility of facing financial distress always exists in unfavourable circumstances.

Figure 1.2
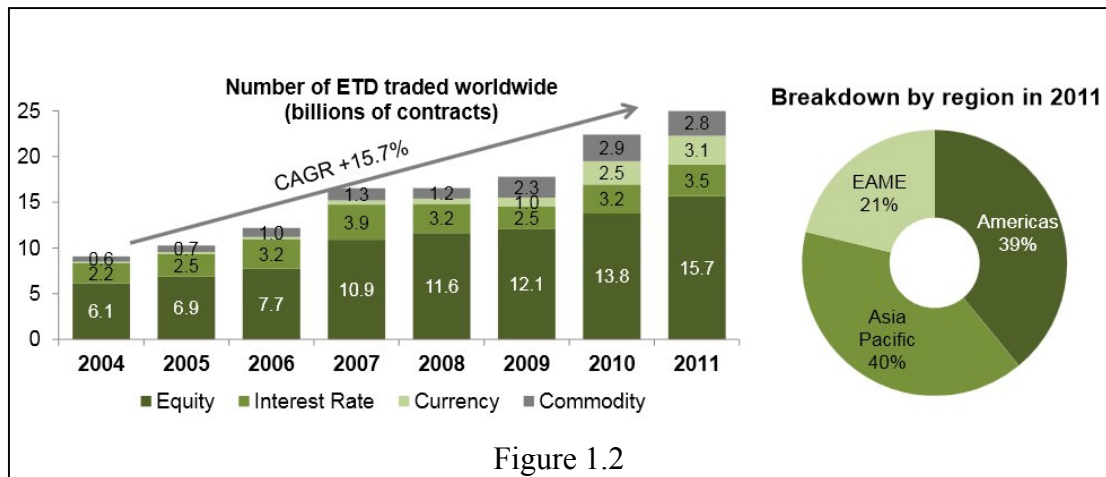
According to World Federation of Exchanges (2012), the exchange trade derivative contracts hits 25 billion at the year 2011 which consist of 13 billion options and 12 billion futures. It shows a 12% growth compared to 2010 which is higher in growth rate than on cash market. Besides, according to the information by ISDA regarding the use of derivative by the companies appears to be widespread, some of the companies are facing losses due to not hedging or misuse of derivatives instrument such as Metallgeselschaft loss from Oil future with the amount of $1800 million in 1993, Sumitomo Corporation loss from Copper future with the amount of $3500 million in 1996, Kashima Oil loss from Foreign Exchange derivative with the amount of $1500 million in 1994 (Karpinsky, 1998). Therefore, companies should have well defined their risk management policy in order to benefit from the use of derivatives. Thus, this study would like to determine the motive that sways the firm to hedging in Malaysian corporate.

Financial distress may rise up when the firm is not able to pay back the debt due to the increase in insufficient funding when going to undertaking a project. When the firms do not have enough funds to invest, they have to borrow the loans from banks or issue the bonds in order to raise funds for their business (Smith and Stulz, 1985). However, carrying heavy debts may cause the firms to default on loans in the future.

Besides, when the firm is having insufficient internal funds, it may cause to raise the external funds and reduce the investment plans. Normally, the cost of underinvestment usually will be greater to the firms with more growth option because it poses a positive NPV project but with the insufficient of internal funds (Bessembinder, 1991; Froot et al. 1993). Besides, if the firms have potential in bankruptcy, shareholders definitely have no incentive to make any investment although it has a positive NPV project because when the shareholders bear with the cost of investment, the return which are from the investment will accrue to the debt holders (Myers, 1977).

In addition, the managerial ownership also may influence the use of derivative due to some frictions between the interest of the manager and firms. The manager acts as an economic agent to help the firm to make the decision that will maximize the shareholder wealth. Since the managers are not part of the owner of the company, they will put less effort to generate profit. Besides, they might just resign and join other companies if they found there are no advantages or opportunities in their current companies.   As mentioned above, firms may group the managers into ownership by issuing shares to them because by doing so, it will align the managers' goals to the same as the shareholders' goals in order to achieve shareholder wealth maximization. When the managers are awarded a larger portion of shares from the firm, they will have more incentives to reduce the risk because if they don't manage the risk well for the company, they will end up facing very high risk in terms of salary, bonus or shareholder earnings. In other words, if the company performs badly, they may get a salary drop, less bonus or lower shareholder earnings and vice versa (Smith & Stulz, 1985).

Firms which are unable to pay its liabilities mean they are possessing less liquid asset to meet their debt obligation. A firm with a lower liquidity will have to access to more costly external financing to fund their investment programmer. Hence, the firm tends to meet with expected cost of financial distress (Nance, Smith and Smithson, 1993). Furthermore, it may cause the firm to face a higher liquidity risk and it also might indicate that the firm may fail in the near future.

Last but not least, companies' income comes from its business activities. However, companies without profitability may cause the company to survive with difficulties and fall into a predicament in the long run. Companies' losses reflect the operation of the business having an opposite effect of profit and thus, the probability of the company to experience a downtown in the business cycle will be getting larger and cause the company to reduce its operational output such as selling its equipment or closing some facilities which are underperforming.

The factors as mentioned above are the key elements that may directly affect to the use of derivative usage. Therefore, this research intends to investigate the relationship among those factors and derivatives usage. Other than that, this paper is going to examine which are the critical factors that influence the use of derivative in the Malaysian corporate.

1.3 Research Objectives

There are 3 main objectives in this study. This study aims to:
1) Determine the trend derivative usage of firms in Malaysia.
2) Determine the main determinant factor that drives a Malaysia firm to use derivatives frequently.

3) Determine the relationship between financial distress, investment growth, managerial ownership, liquidity and profitability of a firm with derivatives usage of a firm.

1.4 Research Question

There are 3 research questions in this study. The 3 research questions are shown as below:

1) What is the trend of the derivatives usage of firms in Malaysia?
2) What are the main determinant factors that affect the derivatives usage of firm in Malaysia?
3) What is the relationship between financial distress, investment growth, managerial ownership, liquidity and profitability of a firm with derivatives usage of a firm?

1.5 Significant of Study

Derivatives play an important role in against the risk exposures in getting losses from uncertainty in the business environment. While it becomes a common tool in managing risk exposures but it is still obviously stranger to some people. Hence, this study is conducted to promote a clear understanding of the problems which arises in corporate in risk management nowadays. Besides, this study also provides a better understanding of the relationship among variables such as debt, investments growth, managerial ownership and liquidity influence on the use of derivatives in corporations.

The contribution of this study is to shed light on the derivatives usage specifically on corporations in Malaysia. In fact, there are many researchers who have conducted studies on this specific field of derivatives usage prior to our research. However,

those studies were done in certain countries only. Therefore, this makes our study more unique and different compared to the previous studies.

Apart from that, this study also contributes to several parties such as communities, investors and managers. By doing this research, the communities such as business students are able to gain more of knowledge on how and what are the factors that affect the use of derivatives. Besides that, this study will also be able to grab the attention of corporate managers on the importance of derivatives usage against the specific risk in order to protect themselves from financial embarrassment in the business environment. At the same time, it also provides useful information for investors on the awareness and knowledge of the corporate practise in Malaysia that engages in derivative usage from undesirable circumstances. Investors may take into consideration on investment to meet the potential in gaining returns in the Malaysian corporation.

Last but not least, this study becomes an important guideline or references to other researchers who are interested and tend to conduct a similar research topic. Higher education institutions may enhance their interest and attention with the reliability of the secondary data that was carried out from previous researches to conduct more of these kind of researches in different countries since there are few researches conducted in this field of study in some countries.

1.6 Chapter Layout

This section consists of explanation on some of the contents in each of the chapter. Our research project consists of five chapters which are as follows:

Chapter one is the first chapter which explains the background of the study, the research problems and provide the overview of the study context. Chapter two will

investigate the documentation about those published and unpublished information from secondary sources of data. Chapter three presents the operationalization of the research. The methodology consists of data collection methods, operational definitions of constructs, research design, measurement scales, sampling design and methods of data analysis. Chapter four provides the results through Eview to analyze the data which are related to this research objectives and questions. In chapter five, discussion, conclusion and implications are presented. The discussion will include the summary of the statistical analyses.

1.7 Conclusion

Chapter 1 provides an overview of the research project. It also started the introduction of the research background and problems statement of the study. After identifying the problems statement, this study will continue with the research objectives and research questions respectively. Finally, the hypothesis testing will be formed and examined. Nonetheless, all the information in this chapter will take as the precedence for the following chapters.

CHAPTER 2 : LITERATURE REVIEW

2.0 Introduction

In this chapter, there will be four sections. The first section reviews the theoretical framework whereby the theory developed by the previous researchers regarding the dependent variable and independent variable are explained. The second section includes the empirical findings which examine the relationship between the dependent and independent variables that have been carried out by many other researchers in different countries. The third section is the methodology part which will be developed to postulate and determine the relationship among the variables. The last section will be the conclusion of this chapter.

2.1 Theoretical Review

The discussion of theories related to the research variables by previous researchers are explained in this section.

2.1.1 Modigliani-Miller Theory

Modigliani-Miller theorem is a theory based on the capital structure which was developed by Modigliani and Miller in the late 1958. The Modigliani-Miller Theorem, assumes that there is no tax, information asymmetry and bankruptcy cost and it is in a perfect market. Besides, it does not matter whether the firm's capital is raised through the debt financing or equity

financing and also what the dividend policies are. Therefore, it is also known as Capital Structure Irrelevance principle. In other words, the capital structure does not affect the firm's value.

In the real world, firms may choose a capital structure that minimizes their cost of capital and maximizes their returns on projects. Firm can raise the funds they needs through the issuing of debt or equity. By debt financing, firms may issue bond whereby collecting money from the investors and pay back the principal amount to the investors at the maturity date with a fixed periodic interest payment. Besides that, firms also can raise funds through the equity by issue stock. Issue stock does not have the requirement to pay dividend to the stockholders but it transfers some of the ownership of business to the stockholder. Therefore, most of the companies use debt financing rather than using financing since the cost of debt financing is cheaper than equity financing.

However, in Modigliani-Miller theorem, it showed that the average cost of capital is independent from the structure of debt and it is equal to the required rate of returns by investors and thus, it is considered as the same "risk class". M&M theorem explained that the cost of debt financing may be cheaper than equity financing as there is no risk premium. Risk premium is necessary to pay to the investor for security when taking the high risk in equity market. However, the increase in leverage does not reduce the average cost of capital due to the additional financial risk such as credit risk, interest rate risk, liquidity risk, regulation and thus, offset by the largest cost of equity due to those effects (Modigliani & Miller, 1958). If the perfect capital market did not exist, there may be a reason for a firm to be involve in hedging.

2.1.2 Pecking Order Theory

Pecking order theory is a theory based on the financing hierarchy to make the investment due to the information asymmetric. The theory was developed by Myers and Majluf in the late 1984. The theory states that the firm prefers to use internal funds before issuing debt which is then followed by using equity.

Firm followed the financing hierarchy to make investments due to the information asymmetric between the managers and investors. Managers tend to be biased and assume that they know more information about the company as opposed to the outside investor. Managers assumed the equity has been issued it is overvalued. However, the investor might also have the same information as the manager and will use those information to manipulate the price and thus, the possibility that market will bring down the price to be undervalued. Investors might discount back to find the intrinsic price and compare the current price of the securities and thereby, there is a probability of underinvestment problem which result from discounting (Myers and Majluf, 1984).

In order to avoid the underinvestment problem, firms prefer to use internal funds or risk free debts which are not undervalued by the market. Firms use internal funds to avoid the information problem as the money comes from within the firm itself and do not involve outside investor. In other words, firms will use their own profit rather than obtain the capital from elsewhere. If the internal funds are not enough for investment, the firms will turn to external financing in order to fulfil the financing deficit. Firm may use the debt financing by issuing bonds or apply loans from banks first. While, the firms tries to use debt up to a certain level at which does not cause the firm to fall to the financial constrain. However, if the investment is not enough to be financed by using debt, firms may turn to the equity financing whereby issue

stock at last (Myers and Majluf, 1984). However, firms may be involved in derivative to stabilize the volatility of the cash flow.

2.1.3 Agency Theory

Agency theory is a theory that is concerned about the resolving problem which happens between the principle and agent. This theory was developed by Ross and Mitnick in the late 1972. Agency theory explains how the shareholders motivate the management to accept the prescription of achieving the shareholder wealth maximization.

Agency theory explains the relationship between the two parties which are principle and agent in an organization. In other words, it is also known as principal-agent relationship. Principle is present as a shareholder while the agent is present as a manager and thus, the principle hires the agent to perform work. However, there might be some conflict and friction that occur between the shareholder and the manager such as the difference of interest and goal. Furthermore, it is hard for a principle to find out what the agent is doing. Shareholders are relying on the financial performance of the company to judge whether the agent is doing a good job but the financial statement could be easily manipulated by the agent, so ultimately, shareholders could find themselves difficult in determining the real effort put in by the agent. Besides self-interest, risk adverse also happens between the principal and the agent whereby the shareholder and the manager might have owns different attitudes towards the risk (Eisenhardt, 1989).

Managers act as an economic agent to help the firm to make the decision that will maximize the shareholder wealth. However, since the manager is not part of the owner of the company, they will put less effort to increase share price. Therefore, the firm may group the managers as part of the ownership by

issuing the share to them. The purpose of this is mainly to align the manager's goal to same as the shareholder's goal in order to achieve the shareholder wealth maximization. Hence, the managers will have more incentives to help the company to generate more earning by reducing or mitigate the risk and the possibility of entering into the derivative contract which will be greater since the manager is awarded a larger portion of shares from the firm. Thus, manager will do their best to protect the share price from dropping and any factors that may influence the return from investment. If they do not manage well for the company, they will end up facing a very high risk in terms of their salary, bonus or shareholder earning (Smith and Stulz, 1985). Therefore, it shows the mutual benefit between the shareholder and the manager.

2.1.4 Liquidity Preference Theory

Liquidity preference theory is a theory concerned about the people or corporate demand of liquidity based on the three different motives to holding the cash. The theory was developed by Keynes in the late 1936.

Companies have to maintain adequate liquidity at all times, no matter what kind of the emergency may happen in the future. However, firm may consider as liquid when they are ready enough for immediately spendable funds at the particular time when needed. Corporate have sufficient funds on hand when needed or else can raise the liquid fund through the selling of an asset on time.

Corporate liquidity occurs when the firm can be quickly convert its asset into cash when it falls into the undesirable circumstances. In liquidity preference theory, there have three different kinds of motives for corporate to hold certain cash for liquidity such as transaction motive, precaution motive and speculation motive (Keynes, 1936).

Transaction motive refers to the need to have cash on hand to meet any current transaction of business such as the payment of wages, trade debt, raw material or others. However, holding cash to a certain level is necessary to serve as a buffer zone for companies in the business in order to have good liquidity so as to manage the business more efficiently (Keynes, 1936).

Precautionary motive refers to the need to hold more cash for unforeseen contingencies. It acts as a financial reserves whereby holding the cash as a safety margin in order to maintaining the liquidity. In other words, companies will keep the cash in reserve in order to tide over the unfavourable circumstances (Keynes, 1936).

Lastly, speculative motive which refers to the interest rate and bond price have a reverse relationship. Firms may hold less cash but hold more bonds when the interest rate is expected to rise. This is because people would want to buy more when bond price is lower and sell it when the bond prices are higher in the future. However, firms will hold more cash rather than bonds when the interest rate is expected to fall because people would like to sell the bond when the price is higher in order to gain profit and avoid from any losses (Keynes, 1936).

However, firms may perform in derivative to assure that the functions and liquidity of the company is going smoothly. Besides, derivatives may lead the firm to have the insensitive on the cash flow and as such, smooth out investment.

2.1.5 Profitability Theory

Nowadays, DuPont has become a famous concept around the world in the field of determining firm profitability. It was a simple and better

understanding by the firm to improve their company performance whereby allowing them to determine the possible items to be improved from the financial statement. However, the concept was developed by DuPont Corporate in the late 1920s.

There are two types of ratio to determine the profitability of the company which is Return On Asset (ROA) and Return on Earning (ROE). The company converts their assets to generate net earning which is known as ROA. It is a useful measurement to compare the company profitability with other companies. The lower ROA indicates that the company may overspend in operating expenses.

Besides, companies use total equity such as capital reserve to generate the net income which is known as Return On Earnings (Molyneux and Thornton (1992). It is a useful measurement for the stockholders to determine the earning on their investment. The higher ROE indicates that the companies have better utilized the shareholder fund. However, there is possibility that the increase of ROE is associated with the increase of debt to generate the net income while the shareholder funds remain the same. In contrary, ROA will not increase as the debt increases due to higher borrowing that will not increase the level of the asset.

From the view of DuPont, ROA and equity multipliers are categorized in ROE. Meanwhile, ROE is break down into 3 components which are profit margin, total asset turnover and equity multiplier. Inside those 3 components, there are different affect to the ROE which are operating efficiency, asset use of efficiency and financial leverage respectively. While, the weakness in operating efficiency or asset use of efficiency may result in diminishing returns on asset and ultimately, lower down the ROE. Besides, ROE could be leveraged due to the increase of debt. Therefore, company profit margin may

be reduced due to the increase in interest expense (Ross, Westterfield and Jordan, 2006).

As we know that, profit margin is net income generated by sales. It treats as the part of to increase the company's profitability. Therefore, companies should increase their net income by increasing its sales and decrease their cots such as cost of good s sold, selling and administrative expenses and interest in others to increase its ROE. Besides, companies should improve their total asset turnover by increasing their sales and reduce inventory holding and total asset.

2.2 Empirical Finding

Based on previous research, it was found that derivative usage is affected by the debt, investment growth, managerial ownership and liquidity. While, leveraged, debt to equity, capital expenditure, dividend payout, number of shareholding, current ratio and quick ratio, ROA and ROE as an proxy variable. The empirical results from the previous researchers are provided in this section.

2.2.1 Debt

A firm with a higher debt means that the firm is facing the risk of financial distress. In other words, the firms would be likely to default on loan when borrowing more from creditors. Therefore, derivatives could play a very important part in helping the firm to deal with its competitive financial environment. In most of the previous research work, debt is proxy by leverage and debt to equity. Thus, the below are the conceptual papers that have been

carried out by the previous researchers between the debt and derivatives on their findings.

Froot, Scharfstein, and Stein (1993) developed a framework on the analysis of corporate risk management policies. The research pointed out that the financial distress rose when the firm could not meet with its debt obligation in the short term or long term. Thus, a firm which engages in hedging can reduce the probabilities of the unpaid debts.

Smith and Stulz (1985) developed a set of theory on hedging behaviours which also depict hedging as one part for the corporate in making financing decisions. While, the researchers document that the transaction cost of bankruptcy can lea the firm to engage in hedging due to the hedging can decrease the probability of bankruptcy. Hedging is also beneficial to the shareholder since it will reduce the probability of bankruptcy which causes the firm value decrease. Besides, firm with a higher expected cost are tends to perform hedging in order to decrease the volatility of its earning.

2.2.1.1 Proxy Variable: Leverage

Leverage is the proxy to measure the corporate's debt. While, some of the companies might be using debt to finance operations by increase the leverage without increase its equity to make an investment. However, corporate with a higher leverage might face the risk of bankruptcy during the economic downturn if they are unable to settle the payment. Below are the empirical results that were carried out by many previous researchers in different industries and countries.

Nguyen and Faff (2002) explored the factors that affected the use of derivatives and the extent to use of derivatives based on the Australian

corporation with a sample size of 469 firms from non-financial companies from 1999 to 2000. The researchers used the Logit and Tobit regression to analyze the results from several variables that may affect the use of derivatives. Meanwhile, the researchers used leverage and firm size as a proxy of financial distress. The result showed that there is a significant and positive relationship between leverage and derivative usage. Therefore, there is more incentive for a firm to use derivatives to encounter or reduce its financial distress when the firm over accessed to use debt to finance its asset and cause a higher level of leverage.

Afza and Alam (2011) had conducted a research on the determinants of corporate hedging policies on foreign income and interest rate derivatives. By using 105 listed non-financial Pakistani firms from 2004-2008, they analysed the variations in firm specific operating characteristic of derivatives between non-user and user with Mann-Whitney U test to find out whether the non-user and user are significantly different from each other. The empirical result also show that a firm with a high leverage ratio and low intangible assets are more often hedging in derivatives in order to reduce the variability of their firm profit. This is due to interest rate and foreign exchange rate that can help the firm take a debt or contract with a fixed rate which is suitable for the firm and enable the firm to be able to carry out their planning without worrying on the uncertainty fluctuation of the interest rate and foreign exchange rate. Thus, the leveraged and hedging is positive and significant related.

Haushalter (2000) examined the factors that affected the corporation to extent the use of financial derivatives, the impact of risk management in the firm value and also the hedging policy of oil and gas producers. A random sample data of 100 of oil and gas producers from 67 different countries had been selected for the period from 1992 to 1994. Researchers used conditional regression to test the relationship between the debt and hedging. As a result, it showed that the hedging against the price risk is positive and significant

related for the total debt to total asset ratio. Therefore, it concludes that if the company does not apply in hedging, the unexpected oil price will raise in costs and thus, leads to the firm to make a lower profit and reduce the firm value.

Singh (2009) examined the relationship between the interest rate derivatives, debt maturity structure and exposure in the lodging industry. A random sample of lodging firm over the period of 2000 to 2004 had been selected. Lodging firms are likely to meet in the greater risk exposure from their liability compare to the operating cash flow. The finding showed that the short term debt and swap into fixed rate debt are more likely issued by the small unrated firms with the purpose to reduce their exposure in interest rate risk and gain the benefit from the lower financing costs and also the lower costs of financial difficulty. Besides, it also showed that the larger and higher debt rates of the firms are likely to swap from fixed debt to floating rate debt. As a result, it showed that the interest rate risks are significant and positively related to determine the interest rate derivatives. Firms engage in derivatives may reduce the interest rate exposure from the debt maturity to lower the borrowing costs. Hence, firms which in more debt characteristics are more often with interest rate derivatives.

Wang and Fan (2011) conducted a research to determine the corporate engaged in hedging activities in the oil and gas industry. The data was collected from 102 oil and gas producers in the United States between the years of 2003 and 2004. Tobin regression was used by researchers to examine the hedging policy. As a result, it showed that the leveraged had a positive relationship and significant to the use of derivative. Hedging has a useful effect for higher leverage of firms whereby it can stabilize the internally cash flow and reduce several costs such as financial distress costs, underinvestment problem and others that are associated with the variability of cash flow.

2.2.1.2 Proxy Variable: Debt to equity ratio

The debt to equity ratio is the proxy of corporate debt. It is a very simple and popular of debt valuation indicator to measure the ability of the company to repay its debt obligation over its equity. However, the company might have a tendency towards bankruptcy if it uses debt in access than its own financial sources to finance its business due to the cost of debt financing and thus, end up leave nothing to the shareholder. Below are the empirical results that were carried out by many previous researchers in different industries and countries.

Reynolds, Bhabra and Boyle (2009) had investigated about the relationship between cash flow, investment and derivative used in New Zealand on a total of 99 samples from non financial corporation which is listed on the New Zealand Stock Exchange for the period of 1994 to 1999. Regression analysis has been used such as multivariate tests. The result indicates that the firms had decided to use risk management instrument such as derivative to ensure that they are able to stabilize their funds for business operation during the financial constraint. Moreover, by implement the risk management plan, the companies were able to reduce any expected costs which resulted from financial distress.

Allayannis and Weston (2001) had examined the effect of using the derivative on firm value. The sample consists of 720 larger nonfinancial firms in the United States over the years 1990 and 1995. The researchers used Tobin's Q as an approximation for the market value of firm and multivariate test to test for the result. The result showed that the firm which normally employ the foreign currency derivative are facing higher currency risk. By using the derivative in the business transaction, it showed that the firm values were higher than the firm that did not engage in hedging. Therefore, showed that the debt to equity and firm value have positive and significant related.

Block and Gallagher (1986) had investigated the use of interest rate future and option by corporate financial manager. A total number 193 firms from Future 500 of the largest United States corporation had been selected which responded to use derivative. However, the result from the statistical tests showed that the debt to equity ratio had a positive but insignificant relationship with derivative usage. The researcher found that the companies which are employing the interest rate future mostly are the firm which are in the industry of traditional commodity operation. Hedging brought the advantage to some of the firm such as reduced risk explore and administrative problem that may incur. However, some of the firms did not use derivatives due to lack of the knowledge, experience from losses and others.

Based on the literature review above, it can be concluded that the firm fail to the level of cash or debt, it intuition lead the firms to higher leverage. Firm with a higher level of leverage and debt to equity which exposure to a greater financial distress. Based on the result, it explains that there is a positive relationship between the leverage, debt to equity and derivative usage. Therefore, higher debt induces the firm to use more derivatives.

2.2.2 Investment growth

Shortfall cash may cause the firm to decrease the investment opportunity. Firms may engage in derivatives to avoid underinvestment problems and earning fluctuation by minimizing the risk in order to enhance the investment opportunity. Most of the previous research work, investment growth is proxy by capital expenditure and dividend payout. Thus, below are the conceptual papers that had been observed by previous researchers between the investment growth and derivatives on their finding.

Froot, Scharfstein, and Stein (1993) conducted a research to identify the factors that affected a company to perform hedging from the capital market imperfections. Capital market imperfection such as information asymmetries and the shortfall in cash and those that can lead the firm to rise external funds which are costly than the internal funds. Besides, it also caused the firms to reduce in investment due to limited cash. In other words, firms with the higher level of growth opportunities will tend to raised in external funds due to the insufficient of internal funds. While the external financing are costly to the firm. Therefore, firms may not undertake those investments. Hence, firms with higher level of growth opportunity may tend to use the derivatives to reduce the risk on interest risk or other risk when raising the external fund.

Myers (1977) presented an analysis on companies borrowing behaviour. The author documented that the debt may cause the firm to reject the positive NPV project that does not earn enough to provide payment to debtors. In other words, higher financial distress will cause the firm to have no incentive in investment while it was a positive NPV project because when the firms bears the cost of investment, the returns which are from the investment will accrue to the debt holder. Therefore, hedging may control the firm default on the bond payment to a certain level.

Bessembinder (1991) presented an analysis on the relationship between the hedging and underinvestment. He observed that the cost of underinvestment will be greater to the firms which have more growth option in their investment. Firm will loss more value when they possess more positive NPV project opportunities and the projects are forgone due to the variability of cash flow and debt show a tendency to financial distress. Therefore, hedging can reduce the probability of the firm from falling into financial distress while it transforms the individual future states from default to non-default states.

2.2.2.1 Proxy Variable: Capital expenditure

The capital expenditure is the proxy of investment growth. Companies try to upgrade and improve their long term assets in every year. By doing so, companies could increase their business operation scope in order to follow trends in the business environment. Besides, investor will know how the company is using the money in long term planning through the annual report. Below are the empirical results that were carried out by the previous researches in different industries and countries.

Opler, Lee, Stulz and Williamson (1999) had done a research which investigated the determinant of cash holding of Malaysian corporation from the years of 1971 to 1994 which base on the public traded firm in U.S by using the Ordinary Least Squares and fixed effect regression. Thus, capital expenditure is taken as a proxy for the growth opportunity because it shows the improvement of the business by purchasing a new asset or upgrading with its existing facility. The regression result showed that the firms had a higher capital expenditure and they spend more on acquisition of the other businesses when there was a higher excess to cash and thus, there was a positive and significant relationship between the capital expenditure and investment growth.

Bartram, Brown and Fehle (2006) conducted a research on the international evidence in the use of financial derivatives. Total samples of 7292 non financial firm observations were drawn from 48 countries and also included the United States in the years of 2000 and 2001. While, there are many factors that determine the use of derivatives but also depend on the local market size. Multivariate analysis has been used to test which of the factor influenced companies to use the derivative. The variable such as R&D ratio and capital expenditure has been used to capture the investment growth opportunity. As a result, it shows that capital expenditure has a positive and significant

relationship with hedging. By using the derivatives to hedge the capital expenditure whereby the cash outflow is greater than the cash inflow, companies with higher capital expenditure represent an improvement of the business.

Clark and Judge (2005) investigated the motive that affected the hedging activities through the overall program of risk management in the United Kingdom corporations. Two different types of data collection method were used by the researchers which is survey data and annual report data. 441 of non financial firm have been selected as a sample size from 500 large companies in UK for the year 1995. However, from the result of multivariate test, the researcher found that firm enter into the derivative to reduce the cash flow that varies with the competitive environment and to ensure the healthy capital foundation was being formed. Therefore, companies are able to upgrade their asset or expand their business and commitment to produce and sell more products to increase the company income. Thus, this showed that the capital expenditure is positive related to the hedging.

2.2.2.2 Proxy Variable: Dividend payout

The dividend payout is one of the proxy to measure the growth opportunity. Dividend is the payment of the companies which made out from its business earning to the investor. Therefore, dividend is regarded as the best sign of safety of the companies. Some of the investors use the dividend payout ratio to determine how well the company had done and also, the company's growth prospects in the future. However, some of the company may choose to keep a portion of their earning from investment as a retain earning for future investment need and at the same time, distribute the dividend to investor. Therefore, firm incentive to hedge to reduce the uncertain risk against the

higher return on investment. Below are the empirical result that was carried by many previous researches in different industries and countries.

Mian (1996) had examined the determinants of hedging on corporation. 3022 firms were identified as the sample firms in 1992 from annual financial statements. Out of the 771 firms were hedgers, 543 firms disclosed their information on hedging activities and the use of derivatives and 228 firms did not disclose their hedging activities in the use of derivatives. The regression from Pearson Correlation showed that the dividend payout and hedging have a positive correlation which resulted that the companies are in the position of higher leverage, illiquidity, higher dividend payout and higher dividend ratio were more likely to perform in hedging in the long run.

One of the evident research studies of Goldbery, Godwin, Kim and Tritschler (1994), examined a sample of firms in which the corporate policy choice could affect the use of derivative instrument. A total number of 438 firms out of 1457 firms were selected as the sample after excluding the financial institutions and choosing the company with book asset that was greater than one billion U.S dollar from the annual report and 10-Ks in 1993. Besides, the researcher used Tobin regression test to test their result. The result indicated that there was a negative and significant relationship between the dividend payout and foreign exchange derivative but insignificant to interest rate derivative. It showed an inverse relationship between the dividend payout and investment growth whereby the companies with a low dividend payout were more likely to use foreign exchange derivative.

Stanley and Salvary (2005) conducted a research to investigate the relationship between the underinvestment problem and risk management problem on corporation. 45 firms out of 115 firms had been selected as a sample from the years 1983 to 1990 from Value Line Investment Survey. The regression test indicated that there was no any relationship between the

dividend payout and hedging. Lower dividend payout did not mean that the companies were not performing well or lower risk explore in investment. However, it was just the companies trying to keep some of the earning and ensure that there have available of fund in hand to expand its business and future investment or insulate the companies against uncertainty risk. Higher dividend payout ratio does not meaning that the companies are in the state of good condition. Therefore dividend payout can not to be judged on companies performance.

Based on the literature review above, it can be concluded that capital expenditure and dividend payout are the proxy used to test for the investment growth. Underinvestment problems serve for firms as a significance in investment growth opportunity from the business environment. Based on the overall result, it can be explained that the capital expenditure has a positive relationship with derivative usage. However, dividend payout and hedging has a negative relationship. Hence, the higher level of growth opportunities will lead the firms to use more derivatives in order to avoid it from underinvestment. Cash flow is the one to point out the success of a firm in investment strategy. Therefore, firms used derivatives to minimize their volatility in cash flows and variation in market value from unforeseen circumstances.

2.2.3 Managerial Ownership

Managerial ownership may influence the decision of hedging in a firm. Generally, the larger firms are more likely to exercise the derivatives instruments. Most of the previous researches work show that managerial ownership is proxy by number of shareholding. Thus, below are the conceptual papers that were observed by the previous researchers about derivatives and managerial ownership on their findings.

Afza and Alam (2011) conducted a research on determining the factors that affect the firms hedging activities of foreign currency and interest rate derivative instruments. Hedging is not only for firms to achieve their shareholder wealth maximization, but also improve economic growth. Generally, those firms with high managerial ownership are more likely to hedge in derivatives usage and normally the larger firms are more likely to exercise the derivatives instruments, because they have enough cash in hand that can easily pay their interest payment.

Geczy, Minton and Schrand (1997) developed a framework on analysis based on the use of derivatives from the point of view of managers, debt holders, and equity holders. It also showed that the sample firms are hedging, but not on speculation. Besides, the study investigated how a firm uses the derivatives instruments and what types of instruments are to be used. It measures the managerial ownership of options through the log of the market value of the shares by using outstanding options.

2.2.3.1 Proxy Variable: Number of Shareholding

Number of shareholding is one of the proxies in managerial ownership. Empirical result as shown below ware observed by researchers in order to understand the relationship between derivatives used and the number of shareholding.

Smith and Stulz (1985) had studied about the analysis of hedging behaviour in a corporation. From the perspectives of the number of shareholdings, which is proxy variable from managerial ownership, they found that there is a positive relationship between management shareholdings with the use of derivativess. When a manager owns a large number of shareholdings, it will significantly

affect the firm's profit. The manager will influence the firm to use derivative to reduce the financial risk. Generally in developing a framework for derivative instruments, it is assumed that shareholders will maximize expected wealth.

Nguyen and Fatt (2002) examined the motives behind the aggregate use of financial derivatives in terms of foreign currency derivatives and interest rate derivatives. They tested the factors which affected the use of derivatives based on Australian companies on a sample of non-financial companies on 469 firms in 1999 and 2000. This study aimed to improve the firm's value rather than maximize shareholder wealth. Logit and Tobit regressions were used to measure the derivatives usage and their variables such as leverage, liquidity, number of shareholding and the others. As a result, the number of shareholding and derivatives usage show a significant and positive relationship. The more shares that are held by managers, the more hedging they would like to commit.

Supanvanij and Strauss (2006) examined whether executive compensation in the form of options or stocks affected a firm's decision to hedge, and showed that the relationship between managerial compensation with derivative used on a sample of 500 firms over the time period of 1994 to 2000. Ordinary Least Square indicated the relationship between derivatives usage and independent variables. One of the independent variables, managerial compensation was measured by the number of share outstanding. Results proved that hedging is insignificantly related to the managerial compensation, the more the shareholding is held by managers, the less the firms was likely to hedge. This is because the increased in volatility can increase the value of their option contracts.

Based on the literature review as shown above, it can be concluded that managerial ownership, with the proxy of number of shareholding, the

relationship between managerial compensation with derivatives used is expected to be significant, because those firms with high managerial ownership are more likely to hedge in derivatives usage. This can increase a firm's value in order to gain more profit. And normally the larger firms are more likely to exercise the derivatives instruments.

2.2.4 Liquidity

Liquidity, the ratio of cash and cash equivalents to firm size, is one of the independent variables of derivative usage, which spells a firm's ability to payback its short-terms debts obligations. As the value of liquidity ratio higher, the better performance of the firm is indicated. Derivatives may play an important role in the firms to reduce the risks that occur in the firms. In most of the previous research work, liquidity is proxy by current ratio and quick ratio. Thus, below are the conceptual papers that were observed in the previous researches between the liquidity and derivative.

Nguyen and Fatt (2002) conducted a research on identifying the motives behind the aggregate use of financial derivatives in terms of foreign currency derivatives and interest rate derivatives. It tested that the factors which affected the use of derivatives based on Australian companies. Throughout this study, it was found that leverage and firm size were the major factors that influence a firm to use derivatives. Liquidity, the ratio of cash and cash equivalents to firm size, is one of the independent variable of derivative usage. The firm with high liquidity does not need to use more derivatives, because high liquidity means that the firms are efficient and face lower cost of financial distress.

Kim and Sung (2005) have done a research which examined the factors that influenced a firm's decision to manage foreign exchange risk in an emerging

market, using a survey data compiled by the Korean Financial Supervisory Service. There are many factors why firms engage in hedging and this study found that firm size is a proxy for hedging, is the major factor. Liquidity, is measured by quick ratio, quick assets divided by current liabilities. The result for this variable is negatively correlated to the derivatives usage, because firms with high liquidity have less incentives to take part in hedging activities because they are facing a lower probability of financial distress.

2.2.4.1 Proxy Variable: Quick Ratio

Quick ratio is one of the proxies of liquidity. A firm with higher quick ratio means that the firm has liquidity and is able to meet current obligations. Therefore, the derivatives used in the firm will be decreased since the firm has high quick ratio. Thus, below are the researches that have been carried out by the previous researcher between the derivatives and quick ratio.

Clark and Mefteh (2010) examined the relationship between derivatives usage with a firm value to see whether there is a positive or negative relationship. This study wants to find out how foreign currency derivatives use affects the firms, and is based on a sample of 176 of the largest non-financial firms which were located in France in 2004. The results from this study showed that derivatives usage had a significant determinant in French firms, and it was mostly used by larger firms. In this study, the regression was using ordinary least squares. Quick Ratio has been used to measure the ratio of cash accounts and marketable securities to short term liabilities. And it was found that there is a negative relationship between quick ratio and derivative usage. A firm with high quick ratio means it is a high liquid firm and has less risk, so they reduce the number of hedging.

Gay, Lin and Smith (2011) had examined the relationship between the use of derivatives and the cost of equity. This study uses the data in derivatives activities of non-financial firms in the United States over the time period of year 1992-1996 and 2002-2004. And suggested the firms may use derivatives to reduce their financial risk in the market. Quick ratio measures a firm's ability to meet its obligations with its liquid assets, while the higher the quick ratio, the better for the firms. The method used to measure the relationship between dependent and independent variables is pooled regression. Based on the pooled regression estimation, the quick ratio is negative correlated with hedging in derivatives usage, because high liquid firms have less need to hedge. The higher the quick ratio, the better the position of the firm, and the lesser the use of derivatives due to there is high liquidity of the firms and therefore less risk to be hedge.

Geczy, Minton and Schrand (1997) had examined the determinants of the use of derivatives from the managers' point of view, debt holders, and equity holders. The sample used represents 372 of the Fortune 500 non-financial firms in the United States in 1990 and most of these firms use currency swaps, forwards, futures, options and other instruments. From the result of Logit regressions, Quick ratio, calculated a firm's ability to repay short term liability with available cash, it shows negative relationship between Quick ratio and derivatives usage. The higher a firm's quick ratio, the lower its dividend payout ratio, and also the lower the firms need to hedge in order to reduce the financial distress and the financial risks, because the firm is able to pay back its short term liabilities with its short term assets.

2.2.4.2 Proxy Variable: Current Ratio

Current ratio is the proxy to measure the liquidity of a firm. It shows that the efficiency of the firm's ability to cover its short-terms liabilities with short-terms assets. Hedging take place when the firm is unable to pay back its short-term debts. Below are the empirical results which were carried out by previous researchers.

Nguyen and Fatt (2002) had examined the motives behind the aggregate use of financial derivatives in terms of foreign currency derivatives and interest rate derivatives. The researchers tested the factors affected to use of derivatives based on Australian companies on a sample of non-financial companies on 469 firms in 1999 and 2000. The measurement used in this study is Tobit regression. Current ratio, which is current asset divided by current liabilities. Current ratio is one of the variables used in order to determine the relationship between derivatives usage with variables. Based on the results, they showed a negative sign, which carry a meaning of the higher the current ratio in a firm, the lesser the derivative will be used, because it means that the firm is able to meet its short term obligations.

Mian (1996) examined the determinants of corporate hedging decisions, using a sample of 3022 firms which were obtained from 1992 annual reports. Out of these 771 firms were classified as hedgers while 543 firms disclosed information in their annual reports on their hedging activities, and the remaining 228 firms reported use of derivatives but provided no information on hedging activities. This study reported results from logistic regressions, measures the probability of hedging with the determinant of hedging. Current ratio, as a proxy for liquidity, there is negatively correlated with the use of derivatives, because there will be less risks to hedge in high liquid firms.

Based on the literature review above, liquidity (ratio of cash and cash equivalents to firm size) is one of the independent variables of derivative usage. The proxies for liquidity are quick ratio and current ratio. Based on the result, there is a negative relationship between liquidity and derivatives usage. The firm with high liquidity does not need to use more derivatives, because there will be less risks to hedge in high liquid firms.

2.2.5 Profitability

Profitability is playing an important role in all businesses, it shows a firm's overall efficiency and performance, and concerned its return to its investors. Without profitability the business will not run smoothly and survive in the long run. A firm with high profitability means that the firm has less incentives to engage in hedging. In other words, high profitability firms were exposed to a lower probability of financial distress. Therefore, every firm is concerned with its profitability. In most of the previous research work, profitability is proxy by return on equity (ROE) and return on asset (ROA). Thus, below are the conceptual papers that were carried out by the previous researchers between profitability and derivatives.

Jang and Park (2011) developed a framework on the analysis of inter-relationship between firm growth and profitability. The research pointed out that growth and profitability are important issues for a firms and stated that growth and profitability influenced each other. There have evidence that a firm's profitability was increased with its firm size. Thus, once the firms have high profitability, they have less incentives to engage in hedging because of a lack of financial distress.

2.2.5.1 Proxy Variable: Return on Asset (ROA)

Return on asset (ROA) is the proxy to measure profitability. ROA is the firm's net income divided by its total assets. ROA investigated how profitable a firm is relative to its total assets. It examined how a firm utilized its total asset effectively to get higher earnings. The higher the ROA is, the better, meaning that the firm is earning more money on its assets, while a firm with low ROA is using its asset inefficiently and causes less earning. Therefore, the firm is incentive to hedge when it has a lower percentage of ROA because it faced more risks. Below are the empirical result that was carried oout by many previous researches in different industries and countries.

Clark and Mefteh (2010) examined the relationship between derivatives usage with firm value to see whether there is a positive or negative relationship. This study was to find out how foreign currency derivatives use affected the firms, and based on a sample of 176 of the largest non-financial firms which located in France in the year 2004. The results from this study showed that derivatives usage was a significant determinant in France firms, and it was mostly used by larger firms. In this study, the regression is using ordinary least squares. The result showed that ROA is positively and significantly related, because the marketplace is likely to reward more profitable firms with higher values.

Gay, Lin and Smith (2011) examined the relationship between the use of derivatives and the cost of equity. This study used the data in derivatives activities of non-financial firms in the US over the time period 1992-1996 and 2002-2004. And suggest the firms to the use derivatives to reduce their financial risk in the market. The method used to measure the relationship between dependent and independent variables is pooled regression. Based on the pooled regression estimation, ROA is negative correlated with hedging in derivative usage. The research provided evidence that the firms using derivatives are those lower ROA. The higher the percentage of ROA of firm,

the better the position of the firms have. Thus, the use of derivatives will be lower due to lower probability of financial distress.

Hsin, Shiah-Hou and Chang (2007) had conducted a research on the US stock return exposure to exchange rate risk through a perspective from a firm's hedging effects. The study provided evidence that firms may engage in financial hedging to minimize the currency effect on their value. In this study, the regression is using pooled regression to determine the relationship between ROA and hedging. The result showed that ROA is negatively and insignificantly correlated with firm risk exposure. The firms that are larger in size have fewer international activities. However, they engage less in hedging due to less financial distress that the firm faced.

2.2.5.2 Proxy Variable: Return on Equity (ROE)

Return on equity (ROE) is one of the proxies used to measure profitability. ROE equals the firm's net income divided by shareholders' equity. The ROE ratio is important to investors in the firm because it measures the return on the money that those investors have invested in the firm. Investors usually look for firms with returns on equity that are high and growing. In general, the higher the percentage of the ROE, it is the better, and this means that the firm is efficiently using the investors' money. Therefore, the firm has lesser incentive to hedge when it has higher profitability. Below are the empirical result that was carried out by many previous researches in different industries and countries.

Nelson, Moffitt and Graves (2005) had conducted a research on the impact on the market value of equity by using a sample of 1308 companies in the United States. from the period 1995-1999. The researchers found that when derivatives were used, interest rate and currency securities were used more

frequently than commodity products. Throughout the use of derivatives to hedge, the researchers were able to examine the annual stock performance of the firms. Meanwhile, Tobin regression has been used by researchers to examine the hedging policy. The regression result showed that there was a negative relationship between the return on equity and hedging, because higher ROE is better as it means that the firm is efficient in using its equity, thus there are less incentives to hedge. There is also showed that no significant relationship between the returns on equity and the hedging.

Gounopoulos, Molyneux, Staikouras, Wilson and Zhao (2012) had investigated the relationship between the exchange rate risk and the equity performance of financial intermediaries. A sample of the United States, United Kingston and Japanese banks and insurance firms were identified as the sample firms for the year 2003-2011. This study used a multivariate analysis to test the variable that drives the firms to use derivatives. The finding showed that there was a negative correlated and insignificant relationship between derivatives and equity. The banks' equity returns are also negatively related to changes in foreign currency value and for those smaller banks had less incentive to hedge or limited their currency hedging activities.

Chincarini (2007) had been conducted a research about the effectiveness of global currency hedging after the Asian crisis. This study used the firms in Europe, Asia, Latin America and US as a sample to determine their hedging strategies from 1999 to 2006. One of the purpose in this study is to investigate how the hedging strategies affected the return on equity. An ordinary Least Squares regression has been used while conducting this study. Throughout the study, the result showed that negative correlation between return on equity and hedging. In other words, it meant that the higher level of return on equity leads to the firm to use less hedging approaches.

Based on the literature review, it can be concluded that the return on equity (ROE) and return on asset (ROA) are the proxy used to test for the profitability. Profitability is the most important issue in the success of a business. A business with no profitability cannot survive while a business with high profitability has the ability to rewards its investors with highes returns from their investment. Based on the result, explains that there is negative relationship between profitability and derivatives usage. The firm with high profitability does not need to use more derivatives, because there will be less risks to hedge.

2.3 Methodology

Methodology is a guideline system or procedures that can be used to solve problems or prove a statement. Those procedures would provide methods or techniques to carry out analysis. However, there may be have different methods and techniques to solve a problem or statement. The method or technique is said to be a best solution to a problem when the method or technique is suitable to apply and provide accurate result.

2.3.1 Cragg model

Cragg model was used by Haushalter (2000) to conduct a study on the hedging policies of the oil and gas industry firms. Cragg model is a variant of Tobit model which was proposed by Cragg (1971) and it was use to separate the 2 probability of the result from each other such as to run the analysis with a firm's hedging policy with 2 differing outcome conditions such as by separating determinants of a decision of hedging and extending of hedging in the Haushalter (2000) studies.

According to Lin and Schmidt (1984), the Cragg model basically has two assumptions. First assumption is probability of a limit observation is given by a Probit model with parameter β_1 which is

$$P (y_t = 0) = \Phi (-X_t\beta_1),$$

where y_t = dependent variable

X_t = row vector of K explanatory variables

β_1 = column vector of K parameters

Φ = standard normal cumulative distribution function (cdf)

$t = 1, 2, \ldots , T$ indexes observations

Second assumption is the density of y_t, conditional on being a non-limit (positive) observation, is that of $N (X_t\beta_2,)$, truncated at zero. Thus,

$$f (y_t \mid y_t > 0) = \frac{1}{\Phi (X_t\beta_2/)} \frac{1}{\sqrt{2\Pi}} \times \exp \left\{ \frac{-1}{2^2} (y_t - X_t\beta_2)^2 \right\}$$

where y_t = dependent variable

X_t = row vector of K explanatory variables

β_1 = column vector of K parameters

Φ = standard normal cumulative distribution function (cdf)

$t = 1, 2, \ldots , T$ indexes observations

σ = standard deviation of sample size

Cragg model is made up of 1 binomial probit and conditional regression to present its analysis result for users. Binomial probit normally would be run out of a regression result and thus provide the binary outcomes of the analysis with the related factors included in the regression such as the determinant of a firm to hedge. After that, conditional regression which only include the hedging firm data and exclude the non-hedging firm data would be carries out further to investigate the analysis for another outcome which is different with the binomial probit regression such as to determine the factors of a firm that

extends their hedge. Cragg model is more accurate compare to the other model as it separate the analysis into 2 stages in order to avoid a multicollinearity problem in the regression and enable researchers to determine the factor of dependent variable much more clearly with 2 different decisions.

2.3.1.1 Advantages of Cragg model

- Allows negative values to be computed in the analysis.
- Provides a more accurate and specific analysis for the rare and extreme event such as natural disaster as its captures those extreme data value.
- Show some power against misspecification problem of other model

2.3.1.2 Disadvantages of Cragg model

- More complicated analysis and calculation
- Lack of readily available software

2.3.2 Logit regression

Logit regression is a regression analysis which is introduced by Berkson (1944) to estimate the probability or outcome of a dependent variable based on other independent variables. Logit regression is almost similar to probit regression as they share a almost same function when plotted in the a graph. Logit regressions present the result in terms of possibility from 0 to 1 which is make more sense compare to the other ordinary probability model which have an outcome other than 0 to 1. The result of logit regression are always be a possibility value of dependent variable whereas the result of Ordinary Least

Square methods are always an amount value of the dependent variable. The basic equation of the logit regression are shown as below:

$$\text{Logit}(\rho) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k$$

where $(\beta_0 \ldots \beta_k)$ = maximum likelihood estimates of coefficients

X_s = column vector of the value of independent variables

The predicted probability for the above equation is then given by:

$$\rho = \exp(\text{logit}_j) / [\, 1 + \exp(\text{logit}_j)\,]$$

where logit_j = the logit value for equation j

DeMaris (1995) stated that logit regression is flexible in analysis of qualitative outcome and it is a useful approach to be used in an event history analysis. Logit regression is applied by Afza and Alam (2011) in other to find out the probability that a firm would hedge with other independent variables. Logit regression can be used to include qualitative data which could have 2 or more possible outcomes (For example, hedge or not hedge). Normally, the data will be coded as "0" for non-user or stand for not and the "1" for user or stand for yes. Afza and Alam (2011) apply this logit regression to decide whether a firm is hedge when the value of dependent variable is near to "1" or the firm do not hedge when the value of dependent variable is near to "0" with the main independent variables data are included in the analysis. According to Pohlmann and Leitner (2003), logit regression can be also used to test whether the independent variables are significant to affect the dependent variables and is much better to use to model binary dependent variable.

2.3.2.1 Advantages of Logit regression

- Useful in analysis of binary dependent variable
- Provides more accurate estimation of probabilities of the dependent outcome than OLS (Berkson, 1951).
- Flexible in handling ordinal as well as qualitative respond variables
- Suitable to be applied in event history analysis

2.3.2.2 Disadvantages of Logit regression

- Assumption of linearity of the regression
- Requires large sample size to get accurate estimator
- Can be used to estimate discrete functions only.

2.3.3 Ordinary least square regression

Ordinary least square regression is a regression which is developed by Carl Friedrich Gauss in 1794. "Least Square" means the regression would be carried out by minimizing the sum of the square of errors which is made in every regression result or outcome. Ordinary least square regression normally is used to predict the outcome of a variable by insert all the factors which would affect the variable. Other than that, ordinary least square model can also be used to explain the relationship between the dependent variable and the independent variable. The basic equation of OLS is as simple as below:

$$Y = b_0 + b_1X_1 + b_2X_2 + \ldots + b_3X_3 + \varepsilon$$

Xs is the column vector of the value of independent variables and its coefficient (b_s) are measured by least square by minimizing the sample error sum of squares

Certain assumptions must be fulfilled to apply the ordinary least square model which are linearity relationship, uncorrelated relationship, no homoskedasticity and normality of error term. Those assumptions must be fulfils in order to get a best, linear, effective and unbiased results. Ordinary least square model has been used by Supanvanij and Strauss (2010) who examined the relationship between the corporate derivative used and the composition of CEO compensation. Ordinary least square model was applied in their study because the ordinary least square model provide a clear relationship between manager compensation and derivative use as those data can fulfil the above fourth assumption. Ordinary least square model are commonly used by researchers nowadays as there are simple to used and the result provided are more effective and accurate to real value of the estimator compared to other regression models.

2.3.3.1 Advantages of Ordinary Least Square Regression

• Oldest regression which are commonly used by many researcher.
• Simple and easy to carry out the analysis.
• There are a lot software which are users friendly and available in the market.

2.3.3.2 Disadvantages of Ordinary Least Square Regression

• Must fulfil the linearity assumption of the regression.
• Always have a multi-correlation problem among variables.
• The variance of data and error must be assumed to be constant.

- The error term must obey the normality shape.
- Not so accurate when dealing with the probability of binary outcomes model.

2.3.4 Tobit regression

Tobit regression (censored regression model) is another statistical model introduced by Tobin (1958). Tobit regressions are usually used on non-linear model and are normally applied to maximise the likelihood of estimation techniques. Tobit regressions are different from other regular regression models as it can be only used to analyse the relationship between positive value-based variable with the independent variable. The standard tobit regressions are shown as below:

$$y_i^* = \alpha + X_i\beta + \varepsilon_i \, , \, i = 1,2,\ldots,n,$$

where y^* = latent respond variable

X_i = observed $1 \times k$ vector of explanatory variables

$\varepsilon_i \sim$ i.i.d. $N(0, \sigma^2)$ and is independent of X_i

Then, $y_i = \{y_i^* \, , \, \text{if } y_i^* > \gamma$

$\{ 0 \, , \quad \text{if } y_i^* \leq \gamma \, ,$

Where γ = non-stochastic constant and the value of y_i^* is missing when it is less than or equal to γ

Tobit regressions are used to solve the truncation and censoring problems which normally happen in the large sample data (Carson & Sun, 2007). Truncation and censoring happen when some of the data are lost or limited in running a regression which would lead to a biased result. Nguyen and Faff (2002) applied the Tobit regression in their study in order to study the extent of derivative use by a firm. In their study on the extent of derivative use by a

firm, extent of derivative usage (total derivatives contract amount / firm size) is set at 0% as left censor and restricted at 100% at right censor. Those extent of derivative usage which are less than 0% or more than 100% are excluded from the sample size as they might have some problems with the data. Tobit regression is the best model to be applied in the data more than zero and the sample size data can be adjusted to fit into more specific and accurate regression.

2.3.4.1 Advantages of Tobit regression

- Contain two or more outcomes which are uncensored and censored outcome
- Provides more accurate and precise information to researcher after censored the data (Sigelman and Zeng, 1999).
- Researcher may rule the sample according to their designed analysis purpose (Maddala,1987).

2.3.4.2 Disadvantages of Tobit regression

- Rely heavily on homoscedasticity and normality of underlying latent variable.
- No solution to deal with heteroskedasticity problem.

2.3.5 Fixed-effect method

Fixed-effect method is defined as a statistical model which represents the observed quantities in terms of explanatory variables. The purpose of the model is to measure the quantities which were non-random. On the other hand, biostatistics define Fixed-effect model in other terms of other ways. It is defines as subject-specific effects as 'fixed' and 'random' effects and the

population-average. The authors also can explain that it is similar with the linear regression model, which mean that there may be a natural choice in any given situation. Inside the panel data, the Fixed-effects model consists an estimator which is called the within estimator or fixed effects estimator. The purpose of the estimator is to show the coefficients in the regression model. If the authors use the Fixed-effects model, it must apply the time independent effects. This is because for each entity that including may possible correlated with the repressors. According to Wooldridge (2009), fixed-effect method allow different to intercept for the every variables and it basic formula are written as below with an *i* subscript on the intercept.

$$y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

Where β_{1i} is treated as estimator of fixed unknown parameters

Estimates of fixed effect method can be obtained either by using least squares dummy variable estimator or fixed effect estimator. Least squares dummy variable estimator is an estimator that add in dummy variable for every variable whereas fixed effect estimator is an estimator that minuses out the intercept prior to the estimation.

Plumper, Troeger and Manow (2005) had investigated the panel data analysis by linking the theory. The authors picked four dependent variables that may consist of problems when using into panel data. All variables consisted of unit dummy and period. The authors found that the simple regression model cannot be used because it will be biased and inefficient. Researchers suggested a Hausman-Taylor procedure will be the best solution for it. Hausman-Taylor procedure can be transformed into the exogenous variable that will change the endogenous variable. Exogenous variable will lead to dummy variable bias and influence the consistent of the result.

Beck and Katz (1995) said that based on the inclusion of the lagged dependent variable, may not be appropriate. The authors suggested to change lagged dependent variable to Prais-Winsten transformation. This is because the authors believe that the explanatory variables can explain the trend. The authors generally concluded that the result will be based on the theoretical assumption and methodological decision and it only can be hidden but cannot be terminated.

2.3.5.1 Advantages of Fixed Effect Method

- Able to control all stable characteristic of the variables
- Help to reduce sampling variation in running the regression test.
- Suitable to be used for non-experiment data by reducing the bias of result.
- Fix effect methods are less restrictive and likely to present data in a more realistic way.

2.3.5.2 Disadvantages of Fixed Effect Method

- Unable to control the random characteristics of the variables
- The estimator might be biased if the method is applied on the wrong data (Nickell, 1981).

2.3.6 Random-effects method

Random-effects method is defined as one type of hierarchical linear model. It is also called variance components model. The assumption of the model is consists of differences relate to that hierarchy. This assumption will be used in statistics. On the other hand, in the aspects of econometrics, this model is used to analyse panel data or hierarchical. Individual effect is not allowed in the Random-effects model. In terms of biostatistics, random-effects method and fixed-effect method are the same definition which means that the subject-specific effects as 'fixed' and 'random' effects and the population-average. According to Wooldridge (2009), the basic model of random effect method is shown as below:

From the equation from fixed effect model,

$$y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

β_{1i} is replaced by $\overline{\beta_1} + u_i$ in the random effect method whereby β_1 is the population mean intercept and u_i is a random effect error.

After replacing the β_{1i} into $\overline{\beta_1} + u_i$, the basic random effect model should be the same as the equation as below:

$$y_{it} = \overline{\beta_1} + \beta_2 X_{2it} + \beta_3 X_{3it} + v_{it}$$

Laird and Ware (1982) used two-stage random-effects models to investigate the relationship between serial observations on the same unit instead of using multivariate models with general covariance structure. One of the advantages of the Random-effects model is it can be separated into two components which are the within-school (between-pupil) variance and the between-school variance. Moreover, it can also be differential school effectiveness shown

through the use of random coefficients models and the possibility of estimating shrunken residuals.

2.3.6.1 Advantages of Random Effect Method

- Take in consideration of random factor of the variables.
- The number of parameters will remain the same even if the sample size increases.
- Allows to measure the impact of time-invariant variable.

2.3.6.2 Disadvantages of Random Effect Method

- Unable to control all stable characteristics of the variables.
- Might be misspecification and produce biased result if the variables are conditional or correlated to other variables.

2.4 Conclusion

This chapter discusses about the theoretical review which started out with the findings from other earlier researches to construct an appropriate research to be carried out in Malaysia. After referring to many previous studies, a new proposed research framework has been established which consists of debt, investment growth, managerial ownership and liquidity as independent variables. Data collection and analysis methods will be elaborated in the next chapter.

CHAPTER 3 : METHODOLOGY REVIEW

3.0 Introduction

This chapter discusses the methodology which include the research design, data collection method, instrument measurement, hypothesis development and data processing. All the formula and variables will be shown and explained clearly with the data analysis techniques.

3.1 Research Design

This study is aimed to determine derivative usage in the Malaysian corporation by using a sample of 97 non-financial firms over the period of the period 2010 and 2011 after the filtering process. The research used secondary data and focused on the quantitative approach. This study examined the quantitative approach by using Pearson Correlation, White Heteroskedasticity-Consistent Standard Error and Covariance, fixed effect method, random effect method, Panel Data Technique and Hausman Specification Test.

3.2 Data Collection Methods

The objective of this research is to find out the determinants that drove a Malaysia's firm to apply derivatives in managing their firm. Besides that, it also aimed to determine how the firm's derivatives usage changes relatively to financial distress, investment growth, managerial ownership, liquidity and profitability of a firm in

Malaysia. This research collected the data by using data from the sample size of 826 non-financial firms which was listed in the Bursa Malaysia.

The data used in this research was secondary data. This research had been filtered out from 826 non-financial firms into 97 firms which are applying derivatives in their firm for the period 2010-2011. In March 2008, Financial Accounting Standard Boards (FASB) had issued statement no. 161 on the derivatives usage of a firm (Financial Accounting Standards Board, n.d.). All listed firms were required to disclose the purpose of derivative usage and the amount of derivatives hedge or speculate, effective 15 November 2008. Therefore, firms will be classified as derivatives users if their do disclose the derivatives usage in their annual reports. The 97 non-financial firms were selected based on the disclosure of derivatives in their annual reports over the period of 2010-2011 in Malaysia. After obtaining the 97 non-financial firms, this research started to analyse the 97 firms either via annual reports or other source for independent data.

3.3 Instrument measurement

This study had been using different kinds of measurement to determinate the use of derivatives. However, the measuring instruments which are chosen are based on the previous research studies. Thus, the instrument measurements being used by previous researches are mentioned in this section.

3.3.1 Debt

It is easier for a company to get into debt than to get out of debt. Debt acts as a liability to the company. Therefore, company that having a higher debt tends to involves in hedging in order to protect the company from insolvency. Thus,

this study are used leverage ratio as the proxy variable of debt to determine whether the debt has any impact on the derivative usage of the firm.

3.3.1.2 Proxy Variable: Leverage Ratio

Leverage ratio shows the ability of the company to meet with its financial obligation. A company with a higher level of leverage ratio indicates that the company is using more debt than equity. However, this study analyses data of the company from 2010 and 2011. The formula to calculate the leverage ratio is by using the long term debt divided by the total equity of the company (Haushalter, 2000). Both long term debt and total equity can be taken directly from the company's balances sheet in its annual report.

3.3.1.2 Proxy Variable: Debt to Equity Ratio

Debt to equity ratio acts as an indicator to measure the ability of the company to repay its debt obligation over its equity. Company with a higher debt to equity ratio tend to fail due to failure to meet its obligation. Thus, this study has chosen the company data for the years 2010 and 2011. The formula to calculate the debt to equity ratio is by using the total debt divided by the total equity (Reynolds, Bhabra and Boyle, 2009). However, both total debt and total equity are obtained from the balance sheet of the company's annual report.

3.3.2 Investment Growth

When the company shows a promising emerging investment growth, the investor would have confidence to invest. In order to achieve a good performance, the company will make a profit by planning investments. Thus, this study is using Capital Expenditure Ratio and Dividend Payout Ratio as the proxy variable of investment growth to capture the firm growth opportunities.

3.3.2.1 Proxy Variable: Capital Expenditure Ratio

Capital expenditure ratio shows the cash that the company is spending to upgrade its asset or expand its business to improve with its current situation. Higher level of the capital expenditure of a company indicates that the company is in the growing position. The formula to calculate the capital expenditure is by using the beginning of net fixed assets minus the ending of net fixed assets and minus with depreciation expense divide by total asset (Bartram, Brow and Fehle, 2006). This study extracts the data over the year of 2009 to 2011 from the balance sheet of the company's annual report.

3.3.2.2 Proxy Variable: Dividend Payout Ratio

Dividend payout ratio show that the stability and health of the company by measuring its earning from investment and paying to its investor in terms of dividend. Thus, this study had chosen the company data for the years 2010 and 2011. The formula to calculate the dividend payout ratio is the dividend payout divided by net income (Berkman and Bradbury, 1996). However, this study extracts the dividend payout ratio from Kuala Lumpur Stock Exchange (KLSE) for the year of 2010. While, for the year of 2011, it was obtained from the company's annual reports.

3.3.3 Managerial Ownership

When the firm group the manager as part of the owner by giving share to the manager for the purpose of ensuring the manager to act in the best interest for the firm in maximize the shareholder wealth. Hence, this study is using the number of shareholding as the proxy variable of managerial ownership to clarify whether the shareholding of the manager will have the same attitude towards the risk as the firms and perform well for the company.

3.3.3.1 Proxy Variable: Number Of Shareholding

The number of shares which are held by the manager is one of the methods to encourage the manager to have the same goal with the firm to maximize the shareholder wealth. The number of shareholding indicates that the level at which the manager will help the firm to eliminate or mitigate the risk by engaging in hedging to avoid any factors that may affect the returns from investment since the manager is part of the ownership (Nguyen and Fatt, 2002). Thus, this study has acquired the number of shareholding from shareholding statements which adds up the direct and indirect interest in holding the ordinary share from director shareholding in 2010 and 2011 of the company's annual report.

3.3.4 Liquidity

Company should have more capital for investment or any spending in business. Most of the companies will hold some cash to ensure that the company is in the state of being liquid from any unexpected circumstances. Therefore, this study are using current ratio and quick ratio as the proxy variable of liquidity

to determine whether the companies have enough liquidity in operating business and the possibility to involve in derivatives.

3.3.4.1 Proxy Variable: Current Ratio

Current Ratio shows the ability of a company to pay off its short term liability with the current asset that can be easily changed into cash. Company with a lower current ratio indicates that the company is unable to pay off liability which were made earlier and thereby, turn to use the derivatives to avoid the financial complexity. Thus, this study has chosen the company data for the years 2010 and 2011. The formula to calculate the current ratio is by using the total current asset divided by the total current liability of the company (Kim and Sung, 2005). While, both total current asset and total current liability can be directly extract from the company's balances sheet, annual report.

3.3.4.2 Proxy Variable: Quick Ratio

Quick Ratio is the same measure as the current ratio which examines the ability of a company to pay the short term liability by selling its current asset to obtain credit. However, quick ratio excludes the inventory from the current asset due to some of the difficulties in selling out company's inventory to get cash. The formula to calculate the quick ratio is by using the total current asset minus inventory and divided by the total current liability of the company (Clark and Mefteh, 2010). Meanwhile, both of the three account items as mentioned above can be obtained from the company balances sheet, annual report.

3.3.5 Profitability

Before the investor put their money into the company, they will analyze whether the company is using its asset efficiently and manage its operation effectively in generating the earning. Company profitability shows a sign to the investors whether the company is doing well. Thus, this study is using return on asset ratio and returns on equity ratio as the proxy variable of profitability to determine the company's financial health.

3.3.5.1 Proxy Variable: Return On Asset Ratio

Return on asset ratio acts as an important role to measure the efficiency of the company in using its asset to generate for the profit. Thus, this study has chosen the company data for the years of 2010 and 201. The formula to calculate return on earning asset ratio is net income divided by total asset (Gay, Lin and Smith, 2011). While, both of the terms mentioned above can be directly taken from the company annual report.

3.3.5.2 Proxy Variable: Return Of Equity Ratio

Return on equity ratio is an indicator to measure how the company is using its funds such as shareholder fund to generate earning from investment. Thus, this study has chosen the company data for the years 2010 and 2011. The formula to calculate return to equity ratio is net income divided by total equity (Nelson, Moffitt and Graves, 2005). However, net income and total equity was extracted from the company's balance sheet, annual report.

3.4 Hypotheses Development

The hypothesis developments have been developed in this section based on previous researches in order to examine whether the theory and the previous research result is consistent with this study.

3.4.1 Debt

3.4.1.1 Proxy Variable: Leverage

Financial leverage was a part in the capital structure that may influence the firm value. From the research paper of Wang and Fan (2011), the researchers found that the firms in oil and gas industry that possess a higher leverage are more likely to engage in hedging due to the derivatives that can stabilize the internal fund and reduce the variability of the cash flow. Besides, the finding from Clark and Judge (2005) had been proved that the firms with daily foreign currency transaction tend to use currency derivative to reduce the size of exposure on currency risk and on the others hand, reduce its unstable cash flow that might cause high leverage. In addition, Nguyen and Fatt (2002) also found that the incentive for a firm to perform in derivative to reduce the financial distress when the firm over access to use debt to finance its asset. Besides, Chernenko and Faulkender (2011) had documented that the firm uses the interest rate swap contract to alter the risk exposure on their debts to assure that the cash flow are managed properly. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between leverage and derivative usage.

H1: There is significant relationship between leverage and derivative usage.

Hypothesis in this study: Reject H0, Leverage has a positive and significant relationship with derivative usage.

3.4.1.2 Proxy Variable: Debt To Equity Ratio

Creditor or investors are able to determine the capability of the companies to meet financial obligation by the looking at the company shareholder equity. According to the research of Allayannis and Weston (2001), the researcher found that the firms with higher value are more likely to engage in the foreign currency derivative to hedge against the risk of business transaction. Besides, Block and Gallagher (1986) presented an analysis on traditional commodity operation industry and found that firms trying to reduce risk explore and administrative problems by employing the interest rate future. However, Reynolds, Bhabra and Boyle (2009) also found that the firms implement risk management instrument such as derivative to stabilize their fund for business operation whereby reducing their expected costs. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between Debt To Equity Ratio and derivative usage.

H1: There is significant relationship between Debt To Equity Ratio and derivative usage.

Hypothesis in this study: Reject Ho, Debt To Equity Ratio has a positive and significant relationship with derivative usage.

3.4.2 Investment Growth

3.4.2.1 Proxy Variable: Capital Expenditure

Capital expenditure shows that the company spends some money to upgrade its asset and expand its business in order to gain more profit on operation. According to Berrospide, Purnanandamz and Rajan (2011), the researchers document that the hedging activities protect the firm capital expenditure from the variability of operating cash flow and to moving evenly in investment policies. In addition, the researchers of Opler, Lee, Stulz and Williamson (1990), found that the hedging induced the firms to have a stable cash holding and tend to be more likely to restore their property and acquisition on their business. Besides, Bartram, Brown and Fehle (2003) also proved that the firm involved in derivatives had successfully minimized the instability of cash flow when the company is in the spending to upgrade on their productivities asset. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between Capital Expenditure and derivative usage.

H1: There is significant relationship between Capital Expenditure and derivative usage.

Hypothesis in this study: Reject Ho, Capital Expenditure has a positive and significant relationship with derivative usage.

3.4.2.2 Proxy Variable: Dividend Payout

Dividend payout ratio is one of the useful measurements among the investment growth. It values the company expected growth and earnings in the future by determining to its dividend payout. According to Mian (1996), the researcher found that the more dividend is paid to its investor by company which resulted the company to have higher growth prospects and greater expected future earnings are induce the firm enter into derivative to hedge against uncertainty. However, the researchers Stanley and Salvary (2005), found that there is no relationship between dividend payout and derivative usage. This is due to the lower dividend payout ratio that does not mean the company has a bad performance in investment or low expected growth but it shows the firm to have a competitive advantage in the future. Companies keep a portion of their earning from investment mainly to prevent any insolvency happened in the near future. Moreover, Goldbery, Godwin, Kim and Tritschler (1994) also found that the firms with a lower dividend payout ratio are more likely to use foreign exchange rate derivative and thus, show an inverse relationship between dividend payout and derivative. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between Dividend Payout Ratio and derivative usage.

H1: There is significant relationship between Dividend Payout Ratio and derivative usage.

Hypothesis in this study: Do not reject Ho, Dividend Payout Ratio has a negative and insignificant relationship with derivative usage.

3.4.3 Managerial Ownership

3.4.3.1 Proxy Variable: Number Of Shareholding

How the manager helps the firm to maximize shareholder wealth is depends on how many percent of the share is held by the manager. From the research paper of Acharge and Bisin (2009), the researcher found that the more shares the manager is holding, the more derivatives will be used by manager to help the company to hedge against the risk which may influence a drop in share price. Once the share price drop, it may influence the return of manager since the manager is part of the owner and thus, shows mutual benefit between the manager and firm. Besides, Tufano (1996) found that the manager will have more incentive to reduce the firm's risk through hedging when the manager hold on stock compare to the own on stock option. Meanwhile, Nguyen and Fatt (2002) also proved that the manager with holding more share are tends to help the company to eliminate the risk with the purpose of generating more earning from investment. Others than that, Ameer (2010) indicated that Malaysian firms with low foreign sales but higher manages' shareholding and firm with foreign sale but lower managers' shareholding have the incentive to hedge foreign exchange risk due to personal wealth maximization and good performance objective respectively. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between Number Of Share Holding and derivative usage.

H1: There is significant relationship between Number Of Share Holding and derivative usage.

Hypothesis in this study: Reject Ho, Number Of Share Holding have a positive and significant relationship with derivative usage.

3.4.4 Liquidity

3.4.4.1 Proxy Variable: Current Ratio

Current ratio measures whether the company is in liquidity condition to pay off its short term debts by using its asset. According to Mello and Parson (2000), company which involves in hedging leads to the firm to have a financial flexibility, grab the investment opportunities and protect company against the illiquidity operating and thus, shows that the current ratio are significantly associated to the use of derivatives. The findings from Gay and Nam (1998) have been proved that current ratio have a negative sign against the hedging. Firm with a higher current ratio has a tendency to hedge less to stabilise their cash flow due to a company in a liquidity condition. Meanwhile, Mian (1996) also documented that the company with a higher liquidity does not intend to hedging because there is no purpose to hedge when the company is running smoothly. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between Current Ratio and derivative usage.

H1: There is significant relationship between Current Ratio and derivative usage.

Hypothesis in this study: Do not reject Ho, Current Ratio has a negative and insignificant relationship with derivative usage.

3.4.4.2 Proxy Variable: Quick Ratio

Quick ratios are also one of the measurements among the liquidity to determine whether the company is able to meet with its short term debt obligations. However, it is a useful measurement compared to the current ratio because it has excluded the inventory from the asset since some of the companies are unable to sell out their inventory at the precise time when needed. According to Gay, Lin and Smith (2010), the researchers found that the quick ratio have a negative sign with the use of derivative as the result showed that the derivatives are not attracted for firms to use when the companies are able to meet with their current liability by selling out the liquidity asset. In addition, Geczy, Minton and Schrand (1997) documented that the firm with a higher quick ratio indicates that the company is experiencing a solid and healthy growth and thereby, it is unnecessary to enter into the derivative contract. Besides, the finding from Clark and Mefteh (2010) also showed that when the companies are able to pay off their liability, it reflect that the company's finance is in the secured position and thus, hedging activities will be less. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between Quick Ratio and derivative usage.

H1: There is significant relationship between Quick Ratio and derivative usage.

Hypothesis in this study: Do not reject Ho, Quick Ratio has a negative and insignificant relationship with derivative usage.

3.4.5 Profitability Ratio

3.4.5.1 Proxy Variable: Return On Asset Ratio

Return on asset ratio is a measurement of profitability whereby its use to examine how was the firm use it total asset to generate earning effectively. According to Clark and Mefteh (2010), the researcher found that the derivatives are mostly used by larger firm. Besides, Gay, Lin and Smith (2010), presented an analysis on non-financial firm in the U.S. However, the researcher found that the firm with a higher of ROA resulted that the firm are in a good condition where there has no reason for the firm to enter into derivative contract and thus, shows the ROA and derivative are negative correlated. Besides, the researcher of Hsin, Shiah-Hou and Chang (2007), also found that large firms are tend to hedge less due to less financial distress. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between ROE Ratio and derivative usage.

H1: There is significant relationship between ROE Ratio and derivative usage.

Hypothesis in this study: Do not reject Ho, ROE Ratio has a negative and insignificant relationship with derivative usage.

3.4.5.2 Proxy Variable: Return On Equity Ratio

Return on equity ratio is a useful indicator to determine whether the companies is in profitability whereby generate its profit from investment by using its capital reserve. According to Nelson, Moffitt and Graves (2005), the

researcher found the firms are capable to use its equity effectively to make investment engage less in derivative, thereby, shows a negative correlated between ROE and derivative use. Besides, the researcher of Gounopoulos, Molyneux, Staikouras, Wilson and Zhao (2012), also indicated that the derivative and return on equity ratio and negative relationship in a sample size of U.S, UK, and Japanese commercial bank. In addition, Chincarini (2007) also indicates that hedging strategy does not affected by ROE due to there is no reason for the firm to use more hedging approach since the firm with a higher of ROE. Therefore, this study has developed a hypotheses as below:

H0: There is no significant relationship between ROE Ratio and derivative usage.

H1: There is significant relationship between ROE Ratio and derivative usage.

Hypothesis in this study: Do not reject Ho, ROE Ratio has a negative and insignificant relationship with derivative usage.

3.5 Data processing

A serial of data preparation process is provided in this section.

Secondary data
- The data was collected from the secondary sources which obtained from the firm's annual report and Datastream.

Rearranged and calculate the data
- Financial data obstained from annual report will be rearrange because not every company is using derivatives. After reaaraging, the remaining data will be entered into the Miscosoft Excel to calculate some of the ratio that could not be directly gathered from the annual report or Datastream.

Using software to analyzed data
- After rearranging and calculating the data, the useful data will be analyzed by E-view version 6.0 to determine the real factors that affected to the use of derivative in Malaysian corporation.

Interpret the result
- Lastly, the result from the E-view will then be interpreted.

Figure 3.5

3.6 Data Analysis

Data analysis is a process of transforming the primary or secondary data that is collected into useful information which can provide important information to users. There are two types of data which are qualitative and quantitative data in the data analysis. Both data can be analyzed and run through a lot of analysis techniques and the result of the analysis can be carried out in different fields of study for different purpose. The purpose of the data analysis help this study to conclude a summary out of a sample size and help to support the decision making of this study.

3.6.1 Descriptive Statistic

Larson (2006) stated that descriptive statistic is a method that provides us the summary of various aspects of data such as mean, standard deviation, variance, skewness and kurtosis of the data. Mean or median is a measure of average of all the data collected and most of the data would have a close number to the mean value. Standard deviation is a measure of variation and difference of the data which would differ from our mean value. A higher standard deviation shows that there is a wide range between the highest values of data with the lowest value of the data. According to D'Agostino and D'Belanger (1990), the skewness and kurtosis statistic allowed their research study to identify the patterns of the data collected and carry out the normality test of the data. A normal distribution data proved that the data collected is correct and accurate as most of those study data must follow the rules of normal distribution. If there   is an abnormal distribution curve appears in the data, the data collected can be said to be biased and inaccurate unless the abnormal curve is supported by a strong theory and evidence.

3.6.2 Multivariate analysis

Multivariate analysis is an analysis that takes consideration of multi dependent and independent variable regress simultaneously to find out the relationship between them. Multivariate analysis is more complex as it involves a lot of variables data to be analyzed. Since this research study is about the determinants of derivative usage in Malaysian firm which will be involving a lot of factors, therefore multivariate analysis will be applied in this research. The following is general model for this study:

DEV.USAGE = B0 + B1 DEBT + B2 INVEST + B3 MA.OWN + B4

LIQUID + B5 PROFIT

DEV.USAGE = Derivatives usage; represented by the ratio of total notation amount of derivative usage over total asset of the firm.

B0 = Constant intercept

B1 DEBT = Deb is proxy by leverage and debt to equity of the firm

B2 INVEST = Investment growth is proxy by capital expenditure, and dividend payout

B3 MA.OWN = Managerial ownership is proxy by the proxy by shareholder ownership.

B4 LIQUID = Liquidity is proxy by current ratio and quick ratio

B5 PROFIT = Profitability is proxy by return on asset and return on equity

The complete multivariate analysis is as shown below after replacing the independent variables with proxy variables:

DEV.USAGE =B0 + B1 LEV + B2 DE + B3 CE + B4 DP + B5 SHARE + B6 CUR+ B7QUICK + B8 ROA+ B9 ROE

DEV.USAGE =   Derivatives usage; calculated by ratio of total notation amount of derivative use over total asset of the firm.

B0   =   Constant intercept

B1 LEV   =   Leverage; calculated by ratio of long term debt over equity

B2 DE   =   Debt to equity; calculated by total debt over total equity

B3 CE   =   Capital expenditure; calculated by amount of total asset purchase minus property asset purchase and non-property asset over total asset of firm

B4 DP   =   Dividend Payout; calculate by dividend payout over net income

B5 SHARE   =   Number of shareholding; calculated by number of shareholding by firm

B6 CUR   =   Current ratio; calculated by ratio of current asset over current liability

B7 QUICK   =   Quick ratio; calculated by ratio of amount of current asset minus inventory over current liability

B8 ROA   =   Return on asset; calculated by net income over total asset

B9 ROE   =   Return on equity; calculated by net income over total equity

3.6.3 Conceptual framework

Figure 3.6.3

Dependent Variable	Independent variable	Proxy Variable, (Relationship)

Derivative Usage

- Debt
- Investment Growth
- Managerial Ownership
- Liquidity
- Profitability

- Leverage (Positive)

- Capital Expenditure (Positive)
- Dividend Payout

- Number OfShareholding (Positive)

- Current Ratio (Negative)
- Quick Ratio (Negative)

- Return On Asset (Negative)
- Return on Earning (Negative)

3.6.4 Theoretical framework

Figure 3.6.4

Dependent Variable	Independent Variable	Proxy Variable (Author, Years)

Debt
- Leverage (Nguyen and Faff, 2002), (Afza and Alam , 2011), (Haushalter, 2000), (Wang and Fan, 2011)
- Debt to equity (Allayannis and Weston, 2001), (Block and Gallagher, 1986)
- Firm size (Nguyen and Faff, 2002)
- Interest coverage ratio (Gay and nam, 1998), (Geczy, Minton and Schrand, 1997)

Investment

Managerial Ownership
- Capital expenditure (Opler, Lee, Stulz and Williamson, 1999), (Clark and Judge, 2005)
- Dividend payout (Mian, 1996), (Goldbery, Godwin, Kim and Tritschler, 1994), (Stanley and Salvary, 2005)
- Market to book value (Nguyen and Fatt, 2002), (Mian,1996)
- R&D (Bartram, Brown and Fehle, 2006), (Nance, Smith and Smithson, 1993)

Liquidity

Profitabilit

Derivative Usage

- Number or shareholding (Smith and Stulz, 1985), (Nguyen and Fatt, 2002)
- Stock option (Wang and Fatt, 2011)

- Current Ratio(Nguyen and Fatt, 2002), (Mian, 1996)
- Quick Ratio(Clark and Mefteh, 2010), (Gay, Lin and Smith, 2010), (Geczy, Minton and Schrand, 1997)
- Dividend yield (Nguyen and Fatt, 2002)

- Return on asset (Clark and Mefteh, 2010), (Gay, Lin and Smith, 2010), (Hsin,Shiah-Hou and Chang, 2007)
- Return on earning (Nelson, Moffitt and Graves, 2005), (Gounopoulos, Molyneux, Staikouras, Wilson and Zhao, 2012), (Chincarini, 2007)

3.6.5 Pearson Correlation

Pearson correlation is a test which is used to the correlation between the dependent and independent variables. The estimator is said to be biased and inconsistent when there are have a lot of variables that correlated with each other.

3.6.6 White Heteroskedasticity-Consistent Standard Error and Covariance

White heteroskedasticity-consistent standard error and covariance is the method proposed by White (1980) used to fit a model when the errors or disturbances have different variance across all the observations or having heteroskedasticity problem. White (1980) stated that heteroskedasticity-consistent standard error and covariance would also produce a correct confident interval even if the heteroskedasticity problem is not completely eliminated.

3.6.7 Panel Data Technique

Panel data technique is a method that is used to analyses\ the characteristic behaviour of some firms or individuals data across some period of time. They are also known as the combination of cross-sectional and time series data analysis technique. Panel data provides a multi-dimension data analysis whereby the cross-sectional or time series data are only able to provide one dimension data analysis only. The estimator of panel data would provide more accurate estimator as the number observation is large enough (Bai,

2009). Since this study's data involves a lot of firms and a time period of 2 years, therefore this research will apply the panel data technique in its analysis.

3.6.8 Fixed Effect Method

Fixed effect method is a method that is used to test the output of the regression whereby all independent variables are treated as a fix value. This is because the method assume that the random factors are not present or not even having any effect in the regression. In fixed effect method, there is only one true effect which underlines all the studies in the analysis and any different in other effect is due to sampling error. Fix effect method allows different intercept for every variables and its basic formula are written as below with an i subscript on the intercept.

$$y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

Where β_{1i} is treated as estimator of fixed unknown parameters

Estimates of fixed effect method can be obtained either by using least squares dummy variable estimator or fixed effect estimator. Least squares dummy variable estimator is an estimator that adds in dummy variable for every variable whereas fixed effect estimator is an estimator that minuses out the intercept prior to the estimation.

3.6.9 Random Effect Method

Random effect model is a model that is used to test the output of the regression whereby all independent variables are treated as random value.

Besides that, the models are also used to predict the optimal output value of the firm from the sample size of independent variables. In random effect method, the true effect may vary from time to time. The basic model of random effect method is shown as below:

From the equation from fixed effect model,

$$y_{it} = \beta_{1i} + \beta_2 X_{2it} + \beta_3 X_{3it} + e_{it}$$

β_{1i} is replaced by $\beta_1 + u_i$ in the random effect method whereby β_1 is the population mean intercept and u_i is a random effect error.

After replace the β_{1i} into $\beta_1 + u_i$, the basic random effect model should be the same as the equation as below:

$$y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + v_{it}$$

3.6.10 Hausman Specification Test

Hausman specification test (Hausman, 1978) is a test which is used to test the biased and inconsistency of the estimator. It helps to test the significance of overall independent variables in explaining the dependent variable. An estimate model can be said to be accurate if the overall model is specific and significant at the desired significance level.

3.7 Conclusion

In this chapter, the research design, data collection method, research instrument, hypothesis development, data processing and data analysis have been discussed. The next chapter will discuss in depth the data analysis, the processes by using a set of data that has been collected from DataStream database, elaboration and interpretation the result.

CHAPTER 4 : DATA ANALYSIS

4.0 Introduction

This chapter will be explain how data is analyzed through different types of statistical models or method to provide a better view or summary on the pattern of the sample size. Based on the result provided by the data, an interpretation on the result showed by the data is came out in order to provide accurate overall data analysis.

4.1 Normality Test

Normality test which is also known as Jarque-Bera test, it used to examine whether the error term of Malaysian Corporation is normally distributed and the result is shows in Appendix 4.1.

Our normality test result shows that the error term is not normality distributed. According to Donald and Lang (2007), the normality distribution of the error term normally will be biased if the sample size of the panel data with fixed effect is less than 250. The sample size in this study is limited as there is no much hedger firm in our data as derivatives instrument consider is considered a new financial instrument in Malaysia. Therefore, the biased normality distribution of error term is ignored in this study.

4.2 Descriptive Statistic

Appendix 4.2 provides a summary of a panel dated data for dependent variables (derivative usage per total asset ratio) and independent variables (return on asset, return on equity, leverage, debt to equity ratio, dividends per net earnings ratio, capital expenditure per total asset ratio, no of shareholding, current ratio and quick ratio) for the 97 Malaysia hedging from 2010 to 2011. From Appendix 4.2, it shows that Malaysia firms which are involve in hedging in derivative hedge about 2.9 times of the total asset of the firms on average.

From the proxy variable of profitability of firm (return on asset and return on equity), it shows that the mean of return on asset and return on equity of the Malaysia hedging firm are 8.1% and 18.5% respectively. Besides that, Leverage and debt to equity ratio which represent financial distress of the firm are have an approximately same median which are 0.42 and 0.261 respectively. On the other hand, for the growth variable, Malaysia hedging firms are having 0.514 dividends per net earnings ratio and 3.186 capital expenditures per total asset ratio on average.

On average, Malaysian corporation hedger top managements are holding 33% of shareholding of the firm which represent 1/3 of the controlling interest of the firm. Last but not least, Malaysia hedging firms on averagely have a value of 2.983 on the current ratio and a value of 2.306 on the quick ratio which act as the liquidity measurement for the firms.

4.3 Pearson Correlation

In Appendix 4.3, the table shows the correlation between every variable either is dependent or independent. From Appendix 4.3, ROE shows a high correlation with

ROA which is about 0.951234. It is a very high figure which is approximately near to 1 which indicates that ROE & ROA is perfectly correlated to each other. This is because ROE & ROA are using the same numerator which is the net profit of the firm. Besides that, there is also correlation between dividend payout ratio & ROE which is about 0.169869. Both of them are correlated because they are using the same data which is the net profit, but ROE used the net profit as its numerator but dividend payout ratio used it as its denominator.

Other than that, dividend payout ratio and ROA are slightly correlated with each other at 0.141717. Both of them are correlated because they are using the same data which is the net profit, but ROA used net profit as its numerator but dividend payout ratio used it as their denominator. Moreover, a correlation between leverage and number of shareholding by director also occur in the Appendix 4.3. It is about 0.165518 and this may be due to firm with a high risk (high leverage) that tends to have a high financing cost, so they will select a lower level of net leverage to minimize the external financing costs in future, which can be related to equity issuance or debt restructuring. Moreover, high leverage and managerial ownership will complement each other when there is extra cash flow (Gravey, 1992).

Meanwhile, there is a strong negative relationship between leverage and current ratio (Mustapha and Ng, 2012). The correlation value which was extracted in this study was 0.241128. This may be due to high leverage and high cash flows which may affect capital structure adjustment (Faulkender et al., 2012). On the other hand, there is also correlation between the number of shareholding by directors and capital expenditure which is 0.123556. This may due to the firms want to reduce agency problem arise from the conflict of interest of managers and shareholders. Thus, by giving managers or directors some shares, or the top management hold more than 50% of the shares of the company, they would have maximized the shareholder profit (Davies, Hillier and McColgan, 2005). As the capital expenditure increases, the directors will be also get more profit from the capital gain from the price increment of their share holding.

Lastly, there are also two other proxy variables which are highly correlated to each other, that is the current ratio and the quick ratio, which the result is 0.970885, this is because both of them are almost the same ratio. The difference between them is the quick ratio's current asset should minus inventory to provide a more accurate liquidity for the company.

4.4 Panel Least Squares

Cross-section and period fixed effects test equation:

Dependent Variable: DE_U_T_A

Method: Panel Least Squares

Date: 01/31/13   Time: 18:34

Sample: 2010 2011

Periods included: 2

Cross-sections included: 92

Total panel (balanced) observations: 184

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.183763	2.078947	-1.531431	0.1275
ROA	31.52664	16.80260	1.876295	0.0623
ROE	9.984702	4.030420	2.477335	0.0142
LEV	-1.297205	0.691050	-1.877152	0.0622
DEBT_EQUITY	0.702284	0.561470	1.250795	0.2127
DIV_N_EARN	-0.616264	0.577853	-1.066471	0.2877
CAP_EXP_T_A	0.243465	0.053282	4.569375	0.0000
SHARE	-0.008836	0.047118	-0.187522	0.8515
CUR	2.749218	1.245451	2.207407	0.0286
QUICK	-2.307739	1.263101	-1.827043	0.0694

R-squared	0.562110	Mean dependent var	2.903014
Adjusted R-squared	0.539461	S.D. dependent var	21.05948
S.E. of regression	14.29161	Akaike info criterion	8.210037
Sum squared resid	35539.50	Schwarz criterion	8.384762
Log likelihood	-745.3234	Hannan-Quinn criter.	8.280855
F-statistic	24.81779	Durbin-Watson stat	1.708734

Prob(F-statistic)	0.000000

Table 4.4

In the beginning, this study conducted a Panel Least Squares test as shown in Table 4.4. It present the dependent variable of derivative usage and independent variable such as debt, investment growth, managerial ownership, liquidity and profitability and also, to ascertain the exact independent variable influence on the dependent variable. Every independent variable consists of proxy variable. Independent variable of debt consists of two proxy variable which are debt to equity ratio and leverage ratio. Proxy variables of Investment growth are capital expenditure and dividend payout ratio. Proxy variable of managerial ownership are the number of shareholding. Moreover, proxy variables of liquidity are current ratio and quick ratio. Lastly, the proxy variables for the profitability are return on asset (ROA) and return on equity (ROE).

All proxy variables are shown in the Table 4.4 and examine the relationship between the dependent variable with the independent variables. The proxy variables of profitability (ROA and ROE) have a positive relationship with the derivative usage of Malaysian corporation in the year 2010 and 2011 at 10% significant level respectively. This indicated that derivative usage of a hedging firm will be affected by the profitability of a firm. As the profitability of firm increases, the derivative amount that is hedged will be also increase. The result is consistent with Clark and Mefteh (2010) whereby ROA is positively and significantly related, because the marketplace is likely to reward more profitable firms with higher values. The ROA and ROE are having a coefficient of 31.52664 and 9.984702 respectively. This mean that the portion of derivative usage over the total asset will increase more relatively to the profitability of the firm compare to other main variables as most of the profitability of firm increase is due to the well decision making in the risk management of the firm as the make a good hedging position in the derivative market. In overall, this study

concludes that profitability is significantly and positively correlated to the derivative usage of Malaysian corporation.

The proxy variables of the debt which are debt to equity ratio and leverage ratio has a different result from each other whereby leverage ratio is significant at 10% significant level whereas the debt to equity ratio does not show any significance to the derivative usage of Malaysian hedging firms. The value of t-statistic of leverage and debt to equity ratio are -1.877152 and 1.250795 respectively. There is a significant and negative relationship between the leverage and derivative usage and it is inconsistent with Nguyen and Faff (2002) and Froot, Scharfstein, and Stein (1993) studies. This might be due to the derivative usage of a firm is dependend on the financial position of the firm. As a firm is in a high debt level, the firm will be cut off the cost to reduce the debt level and thus they will avoid from entering into derivative market if it is unnecessary due to the budget and capital problem. The reason why debt to equity ratio not significant is maybe due to this ratio that could not accuratly show the debt level of a firm as some of the firm might not like to raise fund from the external financing source. Ooverall, this study concludes that debt is significantly but negatively correlated to the derivative usage of Malaysian Corporate.

The proxy variable of the investment growth will be capital expenditure and dividend payout ratio. The result of panel least squares test show that the capital expenditure is significant but dividend payout ratio is insignificant at 10% significant level. The result of investment growth variable is consistent to Opler, Lee, Stulz and Williamson (1999) research result. This is because capital expenditure is more accurate compared to the dividend payout ratio as it was calculated by annually. As the company growth is higher, it will be involved in a lot of investment project and thus lead the firm to be exposed to more risks such as foreign exchange risk, commodities price risk and other risk. Therefore, firms like to hedge more to reduce those risks when they have a huge investment growth. On the other hand, dividend payout ratio is calculate base on the dividend payout of the current years might not really reflect the growth of the firm because the dividend payout might come from the retain earning from the previous

years. Ooverall, this study concludes that investment growth is significantly and positively correlated to the derivative usage of Malaysian corporation.

The proxy variable of the managerial ownership will be the number of shareholding by top management of the firm either directly or indirectly. The result of the panel least squares show that the result of the number of shareholding is not significant to the derivative usage of Malaysian corporation as the p-value of the number of shareholding by top management has a high value of 0.8515. The result is not consistent compared to previous researches (Smith and Stulz, 1985) which states that when a manager owns a large number of shareholding, it will significantly affect the firm's derivative usage. This may happen due to Malaysian are new to the derivative market compared to other develop countries. As the managers are new to the derivative market, they would not participate in the derivative market as they could not hedge their risks accurately and could incur losses to the firms. Therefore, they avoids of hedging from derivative market. Overall, this study concludes that managerial ownership is insignificant to the derivative usage of Malaysian corporation.

The proxy variable of the liquidity will be current ratio and quick ratio. The result of the panel least squares show that the result of current ratio and quick ratio is significant to the derivative usage at 10% significant level.Current ratio and quick ratio tend to have approximately standard error which is 1.245451 and 1.263101 respectively. Quick ratio is consistent to the Clark and Mefteh (2010) whereby they found that there is a negative relationship between quick ratio and derivative usage. Meanwhile, current ratio is not consistent compared to previous researcher result (Nguyen and Fatt, 2002). Nguyen and Fatt (2002) showed a negative sign, which means that higher current ratio in a firm, the lesser the derivative will be used, because it means firm is able to meet its short term obligations. The current ratio shows a positive relationship which might be due to a lot of firms having a huge amount of inventory which acts as a short term asset for them. As the firms are having a low liquidity in cash, they will be engage more in derivative market as they

are not be able pay off the debt if the market move in unfavourably towards them. Besides that, a well hedging position in the derivative markets could help the firm to plan their investment projects well without worrying about the liquidity of the firm in future which would lead to the bankruptcy of the firms. Overall, this study concludes that liquidity is significantly and negative correlated to the derivative usage of Malaysian corporation.

The R-squared indicates that a regression line fits the data well. This is because R-squared is 0.562110 which falls between 0 to 1 but is close to 1 which means that regression line fits the data well enough. Moreover, 0 is the regression line that does not fit the data well. In our regression result, R-squared is 0.562110 which means that half of the results can be fully explained by the above estimator.

Adjusted R-squared must be lower than the amount of the R-squared to make sure it is normally distributed. Adjusted R-squared 0.539461 shows that if the new explanatory is added into the regression, the R-squared will also increase the value. Adjusted R-squared can be a negative value. Moreover, Adjusted R-squared can only be less than or equal to the value of the R-squared and it is the amount of variance that can clearly explain the population rather than just the sample.

Durbin-Watson statistic is examine or indicated the autocorrelation of the statistical regression analysis. The Durbin-Watson test can only get the figure between 0 and 4. If the value is near to the value of 2, it means that there is no autocorrelation in the regression model. If the value is falls into 0, it means that there is a positive autocorrelation. However, the values of 4 indicated there has a negative autocorrelation. The results shown that it is 1.708734 in this study which means it is near to the value of 2 and indicated that there has no autocorrelation between the independent variable and the dependent variable.

4.5 Conclusion

In conclusion, the above data analysis still needs some improvement in order to provide a better result. Even though there are some insignificant variable in result, this might be due to insufficient information provided by the firm's annual report. Future researchers might need to be more careful in collecting the data in the future as there are a lot missing data on the few independent and dependent variables.

CHAPTER 5: DISCUSSION, CONCLUSION AND IMPLICATIONS

5.0 Introduction

This chapter discusses the overall conclusion of the previous chapters which include summary of statistical analysis, discussions of major findings, implication of the study, limitation and recommendation for future research.

5.1 Summary of Statistical Analyses

Our normality test result in the previous chapter showed that the error term is not normality distributed as the sample size is considered small for a panel data with fixed effect model.

Besides that, the average hedging ratio of Malaysia's firms which are involved in derivative market is 2.9 times of their asset on averagely from the descriptive statistics. This is considered as a high ratio for Malaysia's hedging firm as they are involved in a high value of notional amount of derivatives contract which are 290% amount of firm total asset on average. According to Brav et al. (2008), a strong involvement in derivatives usage not only improves a firm's performance and increase stocks price, it also provides a stable corporate governance.

Other than that, there are 9 independent proxy variables that represent the 5 main factors that affect the derivative usage of Malaysian hedging firms which are profitability, investment growth, debt, management ownership and liquidity. From

Appendix 4.3, there are some high value of correlation for the proxy variables of profitability and liquidity variables which are 0.9512 and 0.9709 respectively. However, those two proxy variables of each factor included the estimator as more proxy variables can test the significance of the 5 main factors more accurately.

Lastly, cross-section and period fixed effects test equation is run in the previous chapter to provide the result estimation. The fixed effect model is applied on cross-section and time-series as there is no much changes between the economic market for the firm from 2010 to 2011. From the result, the 4 main determinants which are profitability, investment growth, debt and liquidity are significant to explain the derivative usage of Malaysia hedging firms whereas management ownership is only one determinant variable which is not significant. However, one of the proxy variables for debt and investment growth respectively (debt-to-equity ratio and dividend payout ratio) is not significant at 10% significant level. Investment growth and debt are considered as significant because one of the proxy variables from these two factors which is significant at 10% significant level while the p-value of those 2 insignificant proxy variables is below to the value of 0.3. Overall, the estimator equation in chapter 4 can be only used to explain on 54% of the derivative usage of hedging firm in Malaysia at 10% significant level. The low value in adjusted R-squared for the estimator equation might be due to the difficulty in collecting the data on the derivatives usage of a Malaysia firm.

5.2 Discussions of Major Finding

This study determines the use of derivatives on the sample of 826 Malaysia non-financial firms over the period 2010 and 2011. From the regression results, this study conclude that the number of shareholding by the director, dividend payout ratio and debt to equity ratio have no significant impact on derivative usage. The number of shareholding will not be the same with the previous researcher's results. Smith and

Stulz (1985) found that there is a positive relationship between management shareholdings and the use of derivatives. Geczy, Minton and Schrand (1997) found out that there is a negative relationship between dividend payout ratio with the derivative usage. This shows that there is consistent result of the dividend payout ratio with the previous researcher. Allayannis and Weston (2001) found that debt to equity ratio have a positive and significant relationship with derivative usage. From the regression result, the debt to equity ratio is not consistent with the previous researcher result. This is due to the debt to equity that will not affect the derivative usage using by the firms.

In terms of other explanatory variables, capital expenditure has a strongly significance related to the derivative usage. For leverage ratio, current ratio, quick ratio, ROA and ROE will be significantly to the derivative usage.

Therefore, this study made a conclusion for the hypotheses that were developed in chapter 3:

1. Leverage: Reject H0, leverage has a positive and significant relationship with derivative usage. There is evidence that shows leverage is positively related to derivative usage.

2. Debt to equity: Reject Ho, debt to equity ratio have a positive and significant relationship with derivative usage. However, the result in this study shows that there should not reject Ho, there is no evidence to conclude that debt to equity is positively related to derivative usage.

3. Capital expenditure: Reject Ho, capital expenditure has a positive significant relationship with derivative usage. There is evidence that shows capital expenditure is positively related to derivative usage.

4. Dividend payout ratio: Do not reject Ho, dividend payout ratio have a negative and insignificant relationship with derivative usage. However, the result in this study shows that there should not reject Ho, there is no evidence to conclude that dividend payout ratio is negatively related to derivative usage.

5. Number of shareholding: Reject Ho, number of shareholding has a positive and significant relationship with derivative usage. However, the result in this study shows that there should not reject Ho, there is no evidence shows that dividend payout ratio is positively related to derivative usage.

6. Current Ratio: Do not reject Ho, current ratio has a negative and insignificant relationship with derivative usage. There is evidence shows that current ratio is negatively related to derivative usage.

7. Quick Ratio: Do not reject Ho, quick ratio has a negative and insignificant relationship with derivative usage. There is evidence shows that quick ratio is negatively related to derivative usage.

8. Return On Asset Ratio (ROA): Do not reject Ho, ROA ratio has a negative and insignificant relationship with derivative usage. There is evidence shows that ROA is negatively related to derivative usage.

9. Return On Equity Ratio (ROE): Do not reject Ho, ROE ratio has a negative and insignificant relationship with derivative usage. There is evidence shows that ROE is negatively related to derivative usage.

From the results, most of the proxy variables have significance to the previous researcher result.

5.3 Implications of the Study

In conclusion, this study found that the critical factors that affect derivative usage in Malaysian corporation are debt, investment growth, liquidity and profitability. Besides, the results also illustrate the trend of derivative usage in Malaysia.

From the results in the previous chapter, managerial ownership is insignificant to derivative usage. This may be due to hedging behaviour that managers engage in the derivatives market when they are exposed to a certain high risk in their firm

operations to protect the company's benefits regardless to the portion of shareholding by them. The fluctuation on the price of crude oil is considered as a high price risk to the airline industry as they require a lot of crude oil in their business operation. Therefore, most of the airline companies such as AirAsia, MAS and others would enter into the future or forward contract to lock the price of the crude oil all the time.

In addition, liquidity and debt show a negative relationship to the derivative usage of firms in Malaysia. When the firm are in illiquidity condition, they prefer to hedge in order to protect their cash flow. Therefore, hedging activities prevent the firms from falling into insolvent situations or even face bankruptcy. Besides, a lower debt of firms prefer to apply more of derivatives as they have enough budget and capital to engage in the derivative market.

Furthermore, profitability and investment growth shows a positive relationship to derivative usage. In other words, it means that the amount of derivative usage will keep on increasing when the firm has a high profit and rapid expansion on the business. This is because firms are required to reduce the risk exposed to them via hedging as they are involved in a larger and international business trading. Any little changes in the market will cause the firm to suffer huge losses as they are involved in a huge amount of business transaction.

Derivative is still a stranger to many of firms. Some of the firms suffer the losses due to the misuse of derivative whereby they use to hedging but also for speculation. On top of that, it causes the other firms to strike terror to perform in derivative, as in their mindset, hedger might have the chance to get the losses. Therefore, this study may be able to grab the attention of firm to understand more about the derivatives usage. Besides, it can also become a guideline or reference to the firms whom intend to enter into derivative market and also, for the future researchers who are interested to conduct with a similar topic in the near future. Hence, with the knowledge increased on derivative usage, firm may hedge their risk exposure by proper planning through

the business operating and the also, understand the main factors that affected the demand of derivative in the Malaysia business environment from this study.

5.4 Limitations of the Study

First and foremost, the sample size of this study is relatively small whereby only 97 of the companies meet the selection criteria from 826 of financial and nonfinancial companies which are listed in the Bursa Malaysia, Main Market. However, research with a smaller sample size may cause the estimator to become biased. This study excluded the commercial banks by selecting the non-financial companies based on the notional amount of derivative contract use. Starting from 2008, Malaysia Derivative Exchange had been announced as a comprehensive of derivative disclose requirement with the purpose of requiring all of the listed companies to disclose their derivative contract in financial reports. However, some of the companies d not behave in conformity with the law. This study found that some of the companies do not provide detail on their annual report. While, some of the companies never even provide any information regarding to use or not to use in derivative.

In addition, the outcome such as debt to equity ratio, dividend payout ratio and the number of shareholding was resulted insignificant in this study. It reflects that some of the proxy variables do not perfectly represent the main variables of our estimator or those proxy variables are not suitable to be applied in Malaysia as different countries are having different reporting formats. For instance, some of the countries used dividend payout ratio to measure the company profitability while some of the countries use it to measure the company investment growth.

Apart from that, this study also faced some problems when choosing to use panel data method to run for data. As the current information or knowledge on panel data regression is not detailed, it may lead to inaccuracy of the estimator compared to the

time-series regression or cross-section regression. The study shows the normality test was not normality due to the sample size is not large enough as 1000 but it was just 97 out of 827.

5.5 Recommendations for Future Research

Nowadays, derivatives are still new to some of the companies. It was consider as at early stage during the time to conduct in this study. Therefore, it becomes a matter of influencing the size of sample. Hence, this study suggests that the future researchers carry out the similar topic in the next few years in order to make the comparison between each different stage on corporate engagement in derivative in Malaysia. Moreover, future researcher may get more accurate estimator as the data on derivative usage in the next few years will be comprehensive and also, the sample size in collecting will be more than the previous studies.

In addition, this study suggests that the future researcher should clearly defined which ratio being used to be the most appropriate to measure the changes in the main variables. Future researcher may implement the others financial ratio analysis based on the country they are going to investigate on derivative usage.

Last but not least, this study suggest that the future researchers who are interested and tend to conduct a similar research topic should implement other methods such as time series method, cross sectional method and others appropriate method accordingly to the objective in order to get a desired result.

5.6 Conclusion

Based on the results, it was discovered that some of the independent variables are significant with dependent variables and some are not. For example, the proxy variables of profitability such as ROA and ROE are having a positive relationship with the derivative usage of Malaysian corporation, which means that the profitability of a firm will affect the derivative usage. Meanwhile, the managerial ownership is insignificant to derivative usage.

In conclusion, derivatives play an important role in against the risk exposure in the possibility of getting losses from the business environment. This study provides a better understanding of the relationship among each of the variables such as debt, investments growth, managerial ownership, liquidity and profitability influence to the use of derivatives in the corporation.

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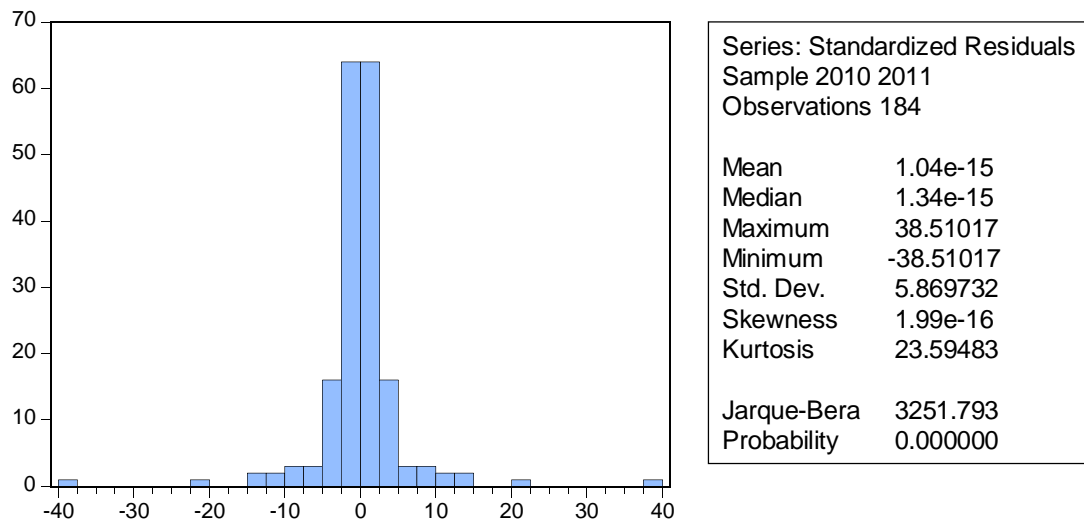## APPENDICES

Appendices 4.1 : Normality Test

Hypothesis:

H_0 : Error term is normally distributed

H_1 : Error term is not normally distributed

Decision rules:

1) If P-value for JB-stats > 0.01, do not reject H_0 because it meaning that the error term is normally distributed.

2) If P-value for JB-stats <0.01, reject H_1, reject H_0 because it meaning that the error term is not normally distributed

Jarque-Bera Test Result for Malaysia Corporate

Series: Standardized Residuals	
Sample 2010 2011	
Observations 184	
Mean	1.04e-15
Median	1.34e-15
Maximum	38.51017
Minimum	-38.51017
Std. Dev.	5.869732
Skewness	1.99e-16
Kurtosis	23.59483
Jarque-Bera	3251.793
Probability	0.000000

Conclusion:

Since the P-value of this study for JB-stats is 0.000000 < 0.01. Hence, Reject H_0. We have not enough of evident to conclude that the error term is normally distributed.

Apendix 4.2: Descriptive Statistic

	DE U T A	ROA	ROE	LEV	DEBT EQUITY	DIV N EARN	CAP EXP T A	SHARE	CUR	QUICK
Mean	2.903014	0.080798	0.185042	1.031482	-0.028221	0.514034	3.185845	32.76412	2.983249	2.305809
Median	0.036768	0.045820	0.096000	0.420000	0.261000	0.234259	0.022398	35.36500	1.555000	1.136597
Maximum	234.8457	2.350000	9.960000	14.74000	3.828000	17.97800	198.5139	74.52000	42.51000	42.51000
Minimum	4.67E-06	-0.190710	-0.889800	0.000944	-12.20000	-10.00000	-0.754564	0.000000	0.441713	-0.290000
Std. Dev.	21.05948	0.204919	0.857755	2.028406	1.963848	1.881364	20.93014	23.11833	4.715927	4.529458
Skewness	9.209934	8.281050	9.721757	4.477309	-3.221861	4.093826	7.792290	-0.068983	5.361363	6.212463
Kurtosis	93.10588	86.85062	103.5178	26.36434	16.34743	48.90992	65.95756	1.772285	38.02305	47.70243
Jarque-Bera	64847.44	56006.76	80361.07	4799.929	1684.178	16673.15	32250.09	11.70177	10285.53	16503.93
Probability	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.002877	0.000000	0.000000
Sum	534.1547	14.86679	34.04780	189.7927	-5.192603	94.58228	596.1955	6028.598	548.9178	424.2689
Sum Sq. Dev.	81160.80	7.684513	134.6411	752.9410	720.2242	647.7344	80166.96	97805.63	4069.915	3754.426
Observations	184	184	184	184	184	184	184	184	184	184

Apendix 4.3: Pearson Correlation

	DE U T A	ROA	ROE	LEV	DEBT EQUITY	DIV N EARN	CAP EXP T A	SHARE	CLR	QUICK
DE U T A	1.00000	0.686643	0.693948	-0.046311	0.023259	0.080873	0.248761	0.023088	0.057764	0.056244
ROA	0.686643	1.000000	0.951234	-0.031729	0.043254	0.141717	0.040732	0.012197	-0.060554	-0.043407
ROE	0.693948	0.951234	1.00000	-0.032004	0.045651	0.169869	0.049428	-0.001575	-0.059653	-0.045417
LEV	-0.046311	-0.031729	-0.032004	1.000000	0.062523	-0.012516	-0.023358	0.165518	0.241128	0.089926
DEBT EQUITY	0.023259	0.043254	0.045651	0.062523	1.000000	-0.093163	-0.286373	-0.050661	-0.016506	-0.013931
DIV N EARN	0.080873	0.141717	0.169869	-0.012516	-0.093163	1.000000	0.075953	0.003882	0.009903	-0.007168
CAP EXP T A	0.248761	0.040732	0.049428	-0.023358	-0.286373	0.075953	1.000000	0.123556	-0.013437	-0.007794
SHARE	0.023088	0.012197	-0.001575	0.165518	-0.050661	0.003882	0.123556	1.000000	0.013486	-0.031696
CLR	0.057764	-0.060554	-0.059653	0.241128	-0.016506	0.009903	-0.013437	0.013486	1.000000	0.970885
QUICK	0.056244	-0.043407	-0.045417	0.089926	-0.013931	-0.007168	-0.007794	-0.031696	0.970885	1.000000