A STUDY ON PERFORMANCE AND RISK-RETURN RELATIONSHIP OF INDUSTRIES IN KLSE

BY

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DECLARATION

We hereby declare that:

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

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

(3) The word count of this research report is 9,979.

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LIST OF ABBREVIAITONS

RFR	Risk-free Rate
CAPM	Capital Asset Pricing Model
KLSE	Kuala Lumpur Stock Exchange
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Squares
CNLRM	Classical Normal Linear Regression Model
CLT	Central Limit Theorem
VIF	Variation Inflation Factor
TOL	Tolerance Factors
ARCH	Autoregressive Conditional Heteroscedasticity

PREFACE

This research is submitted in as a fulfillment of the requirement for the pursuit of the Master Degree in Business Administration (Corporate Management). This research is focusing on the determinants of the relationship between risk and stock return of industries in KLSE. The changing in trend of stock market in Malaysia over the period has raised the concern of the investors, financial institutes and the researchers as this will essentially become a stumbling block for Malaysia to become a better investment country in future. Even the past researchers have identified some factors used in the relationship between risk and stock return of industries in Malaysia was due to the beta, investor behaviour, knowledge and others. However, the degree of the risk-return relationship are kept on changing over the year due to the changing in the economic market. This has raised the question that whether there is any difference from the result shown for difference period selected, and are there any other important potential variables being ignored by the researcher and investor. The details of the research finding, limitation, and recommendation for the future researcher will be discussed further in this research paper.

ABSTRACT

These study is to investigate the relationship between risk and returns of stocks listed on the Kuala Lumpur Stock Exchange (KLSE). Using yearly sectors data of 10 from January 2006 to December 2015 collected from Bloomberg, yearly closing values of the FBMKLCI as proxy for the market portfolio, yield on 12-month Malaysia Treasury Bill rate as the risk-free interest rate. The study tests the explanatory power of Capital Assets Pricing Model (CAPM) beta in explaining the variations in returns of stocks listed on the KLSE or equity market. The empirical results from the Ordinary Least Square (OLS) cross-sectional regression analysis of the Capital Asset Pricing Model shown that Risk-free rate the only explanatory variable in the model offered significant explanation to variations in the stock return, and price index and beta offered insignificant explanation to variations in the stock over the time period selected in the stud, Year 2006 to Year 2015. As a finding, the result indicated that the stock returns in Malaysia equity market are not significantly sensitive to the market (systematic) risk.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

This introductory chapter renders an overview of the research. The researchers have conducted a research background, identified the problem statements, proposed research objectives and research questions, followed by constructing relevant hypotheses and significance of this study.

1.1 Research Background

What is stock risk and return? What kind of returns are expected from the capital markets? Risk is defined as the chance that the investment's actual return will be different than investor's expectation. Risk means that the possibility of losing in investor's money, either partially or all. While, return is defined as the possible gains or losses from the investment in a certain time period. Returns are usually quoted as a percentage. The high levels of investment risk (or uncertainty) are associated with higher potential returns, while low levels of investment risk (or uncertainty) are associated with lowest potential returns. The desire for the lowest possible risk and higher possible return is to balance the risk-return trade-off in the investment market. And, risks are divided into two categories, which are systematic risk and unsystematic risk.

The return of investments can use in measuring the amount change in investor's wealth and the quantitative evaluation of an investment performance (Al-Qaisi, 2011; Hussein & Devinaga, 2013). The pricing of stock and bonds within stock market is the most important area of finance and investment (Hussein, Mohammad, & Devinaga, 2012). It plays an important role in the stock market as it may affect the economic life of both investors and industries (Hussein et al., 2012).

Most of the investors are expect for the higher return, and yet with the lower return as possible. But, the rate of return is direct reflect to the level of risk. It is common knowledge in the investment activities and market. There are many types of risk in the market, such as exchange rate risk, market risk, investment risk, inflation risk, so on and so forth. And the return from the investment is not only depend or related with company risk, but also company performance, project involved, company cash flow and so on.

Risk is defined as the uncertainty or unpredictability of an investment that we make will earn its expected rate of return in the future. In theoretical, there always show that there is positive relationship between risk and stock return. There shown that the relationship between risk and stock return are inextricably intertwined. The commonly used model for assessing risk and return is Capital Asset Pricing Model (CAPM). CAPM model developed based on the market risk (also known as systematic risk), which can influence a large portfolio of investment or assets. Sharpe (1964), Lintner (1965), and Jensen & M. Scholes & Black (1972) are the one who developed this model.

1.2 Problem Statement

The relationship between stock risk and return in Kuala Lumpur Stock Exchange (KLSE) become a popular financial research's topic. Stock risk and return is a crucial part of the stock market as it acts as an important role in the country financial market performance. Every stock market is involved risk and return, but how was the relationship between stock risk and return is? Is there any difference in the relationship between stock risk and return in difference country? Stock risk and return involves in the valuation of the securities based on the different kind of risk occur to the independent company or the whole industry or market. The valuation of stock risk and return is useful and important for various user such as, financial investment company, government, banks, and investors.

The changes of the stock risk and return will affect the country economic performance and development for that particular year, yet for few years after. This was the reason why the performance of the stock market is concerning by the difference level of stakeholders, which included banks, government, creditors, industry and investors from time to time. There is researcher make the investigation about the risk-return relationship of stock market in Ghana Stock Exchange (Abonongo, Oduro & Ackora-Prah, 2016), Tehran Stock Exchange (Raei, Tehrani & Farhangzadeh, 2015; Zohreh & Alireza, 2013), Dhaka Stock Exchange (Md. Zobaer, Anton, Adli & Md. Azizul, 2012). To measure the relationship between stock risk and return in KLSE, the time series data method will be used and the data collect is from year 2006 to 2015 with yearly basis.

Although there is some of the past empirical studies have been done by other researcher, but there is a gap there as the trend of economic is keep on changing from time to time. The gap or limitation from previous studies is the time period selected or used in the study is different. Different of time series choose will give an impact to the final result as there is volatile in stock market over the year. Moreover, the economic theoretical model and the variables used in the study will also affect the study outcome. Thus, there is equal possibility of significant and not significant result in the related topic studies.

Moreover, most of the past empirical studies are investigate the risk-return relationship in other country, such as Nigeria, New York, Ghana, and so on. There is only few is examined Malaysia stock market (Kuala Lumpur Stock Exchange). While, there also different variables are taken into account in order to examine the relationship between risk and return. The common used of the variables included beta, risk-free rate, price index, market return, exchange rate, GDP, company cash flow and so on. The variables chose is used to support and prove that there is risk-return relationship is occurs in the market.

Furthermore, the Capital Assets Pricing Model is being used in this study. Capital Asset Pricing Model is tested by included the risk-free rate, market risk, and beta. CAPM is common used in assessing the relationship between risk and return in the investment market. But, are the CAPM relevant in using or apply in the real market or it is only a theoretical model that suitable to discuss on paper? Are the CAPM suitable for all the equity market in Malaysia?

1.3 Research Questions and Objectives

1.3.1 Research Objectives

General Objective

- The current research of this study will attempt to investigate the relationship between risk and stock return in KLSE.

Specific Objectives

- The objective of this study is to investigate the relationship between Capital Asset Pricing Model (CAPM) and stock return in KLSE.
- The objective of this study is to investigate the relationship between risk and stock return in sectorial of KLSE.

1.3.2 Research Questions

The research questions are addressed as below to gain better insight and understand more on the relationship between stock risk and return.

General Question

- What is the relationship between risk and return of stocks in sectorial of KLSE?

Specific Questions

- Is there any difference in the relationship between price index and stock returns in different sectors?
- Is there any difference in the relationship between risk-free rate and stock returns in different sectors?
- Is there any difference in the relationship between beta and stock returns in different sectors?

1.4 Hypothesis of the study

The research investigated the relationships between independent variables (IVs) towards the dependent variable (DV). The hypotheses provided to test the relationship between stock risk and return in KLSE. Hence, the hypotheses are formulated as follow:

First Hypothesis

H_0: There is no relationship between risk and stock returns in sectorial in KLSE.
H_1: There is relationship between risk and stock returns in sectorial in KLSE.

Second Hypothesis

H_0: There is no difference in the relationship between price index and stock returns in difference sectors.
H_2: There is a difference in the relationship between price index and stock returns in difference sectors.

Third Hypothesis

H_0: There is no difference in the relationship between risk-free rate and stock returns in difference sectors.
H_3: There is a difference in the relationship between risk-free rate and stock returns in difference sectors.

Fourth Hypothesis

H_0: There is no difference in the relationship between beta and stock returns in difference sectors.

H_4: There is a difference in the relationship between beta and stock returns in difference sectors.

1.5 Significance of the study

1.5.1 Theoretical Significance

This study gives a better instrument for researchers, or scholars to examine the relationship between risk and returns in KLSE. There was a formed with Capital Asset Pricing Model (CAPM) in the context of stock's risk and return. CAPM is useful in investment and financial analysis neither for individual or an organization even country. The quantitative design in this study give a clear picture of relationship between risk and return.

1.5.2 Practical Significance

This research will provide the result on the relationship between stock risk and return in KLSE. This research highlighted the issue of the Malaysia stock risk and return in Kuala Lumpur Stock Exchange (KLSE). Stock analysts can use this research as a reference to have better analysis on the Malaysia stock risk and return in the future. This research provides a guidance for the stock analysts to investigate the relationship between stock risk and return.

Furthermore, with the understanding on relationship between stock risk and return, stock analysts or investors able to avoid some risk or unnecessary mistake that commonly face in the investment. Investor or stock analysts can therefore reduce the risk of making an investment in

stock market as they improve their knowledge regarding to the relationship between stock risk and return. In an investment company, stock analysts serve as main referent for the company investment. They dominate the company profit and loss if the company is purely investment company. The stock investment performance will reflect to the company performance. Therefore, this research is important in providing guidelines for investment companies, stock analysts even individual investors to investigate the performance of their portfolio that being affect by the relationship between risk and return in KLSE.

Moreover, investors might have less idea on how the stock risk will affect to the return and how the risk is considered. Therefore, this research going to give the investor a clear picture and better understanding on the relationship between stock risk and return in KLSE. According to this research, the investors were had a high compensated for holding risky assets when the market was bullish or extremely volatile (Abonongo, Oduro, & Ackora-Prah, 2016). So, the investors can take the risk and return into consideration before any investment make.

This research will be beneficial for future researchers as their interesting in the same topic. While, the researchers face the problem of lack of reference or resources due to there is short of the study that related to the stock risk and return in KLSE. There are only few studies are found. For example, Fadzlan & Muhamed (2015) studied the efficiency of banking stocks which are traded on KLSE by risk and return. Therefore, this research tends to access and investigate the relationship between stock risk and return in KLSE.

1.5.3 Societal Significance

Stock risk is diluting investor confidence. Despite those investors who have good fundamental & technical analysis, and experience before,

investor tend to rely heavily on the impact or effect between the relationship of risk and return. Investors are becoming loss in confidence and worry to their investment, whether there is making loss or not from time to time. Therefore, this research tends to examine the relationship between risk and return in Malaysia market and show that is there any relationship between risk and return.

1.6 Outline of the study

The researchers consist an overview of the topic together with research background on the risk and stock return, research problems, research objectives and questions, and significance of the study in Chapter 1. Under Chapter 2, this research will cover the literature review. The summarizing information from the past studies that related to Dependent Variable (DV) and Independent Variables (IVs) will be provided in this chapter. Moreover, a development of conceptual framework and hypotheses also will be done in this chapter. While, Chapter 3 will discuss on the methodologies used to examine the relationship between stock risk and return in KLSE. Chapter 4 is statistical elaborations and inferential analysis relate to the hypotheses. It consists of results of data analysis and results of hypotheses testing. In the last chapter, Chapter 5 outlines the finding and discussion of the research results. It concluded all the outcomes and have a comparison with the results collected from past studies. Furthermore, there also given some recommendation and implication of the results.

1.7 Conclusion

The first chapter aims to convey the whole mind map of this study. It helps readers to have a clear picture on the research background and the problems that are incurring recently. Furthermore, it useful to future researchers and users who are interesting in this topic, relationship between risk and stock returns.

The following chapter discusses on the relevant past empirical studies to support this studies and the proposed conceptual model is formed.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

In Chapter 2, past studies that related to the topic will be review, analyse and summarized thoroughly for the formation of conceptual model and hypotheses. The literature review included Capital Asset Pricing Model, stock risk and return. The literature review provide a basis to the conceptual framework development as well as theoretical framework of the study. The hypotheses development will be further clarifications on research objectives in this chapter.

2.1 Theoretical Framework

Prior empirical studies of risk and stock returns, capital asset pricing model (CAPM) have been gathered from diverse sources such as the Internet, articles, journals and others.

2.1.1 The Concept of Capital Asset Pricing Model (CAPM)

Capital Asset Pricing Model (CAPM) is a model that common used to describes the relationship between market risk (or systematic risk) and expected return for an investment, especially stocks. Capital Asset Pricing Model is widely used in finance area for testing or determine the pricing of risky securities and the expected returns (Investopedia, n.d.). CAPM is used to calculate asset risk and the cost of capital for each investment. The asset sensitivity to market risk (also known as systematic risk or non-diversifiable risk) is taken into account for the Capital Asset Pricing Model. It often represented by the Beta (β) in the economic marketplace or financial industry, as well as the risk-free rate and the expected return of the market (Wikipedia, n.d.).

Capital Asset Pricing Model is assumed a particular form of utility functions or alternatively asset returns who probability distributions are completely described, and risk is measured by variance, such as quadratic utility. The probability distribution is described by normal distribution. The cost of equity capital in Capital Asset Pricing Model is determined by Beta. Although CAPM failing numerous empirical tests and existence of more modern approaches to asset pricing and portfolio (such as arbitrage pricing model), Capital Asset Pricing Model still remain popular in used to investigate the asset pricing in variety situations.

Capital Asset Pricing Model is mainly for pricing an individual investment security or portfolio. Security market line (SML) is make use when Capital Asset Pricing Model is applied. It relation to how the market price to the individual securities and the security risk class in the market. The reward-risk ratio for security in the overall market is able to calculate by Security Market Line. Therefore, the reward-risk ratio for individual investment in the market will be shown in equal to the market reward-risk ratio, when the expected rate of return for security is deflated by its beta coefficient. Thus, the market reward-risk ratio is effectively and rearranging the market risk premium by equation $\boldsymbol{E(R_i)}$ for obtaining of the Capital Asset Pricing Model (CAPM).

$$\mathbf{E(R_i) = R_f + \beta_i \times (R_m - R_f)}$$

Where,

$E(R_i)$: The expected return on the capital asset

R_f: the risk-free rate of interest such as interest arising from government bonds

β_i: Beta for the industry i

$(R_m - R_f)$: Risk premium, which is the difference between required return of the market and risk free rate.

There is some assumption of the Capital Asset Pricing Model is present for all investors. It included aim to maximize economic utilities, broadly diversified across a range of investment, have homogeneous expectation, rational and risk averse.

Laubscher (2002) & Muhammad, Maria, Noorul, Bilal, and Sanaullah (2012) stated that the Capital Assets Pricing Model (CAPM) gives a significant, yet an easy explanation of the relationship between risk and return in the investment market. Harrington (1993) said that CAPM has effectively contributed to the finance theory and yet to changing the way of thinking of investors. But still, besides being widely tested, some researchers have criticized and acknowledged the capital asset pricing model (Lau & Quay, 1974; Eatzaz & Attiya, 2008; Hanif, 2009).

Although there is many researchers and academicians contributed to the development of Capital Asset Pricing Model, but the improvement and the enhancement of the CAPM is attributed to the work of Linter (1965), Black (1972), and Sharpe (1964). Capital Assets Pricing Model is common used in investigate or assessing the relationship between risk and return in the investment market. The initial development of the Capital Asset Pricing Model is popular history that generate from the works of Lintner (1965), Sharpe (1964), and Mossin (1966). But, the most frequently cited are Black, Jensen and Scholes (1972) to substantiate or refute the validity of the CAPM model as an economic model after a decade of academic attempts. The Capital Asset Pricing Model is never being empirically tested conclusively, since the market portfolio is immeasurable, demonstrated by Roll (1977). Nevertheless, the Capital Asset Pricing Model continues to inspire theoretical and empirical research.

2.2 Review of Prior Empirical Studies

In the previous studies, country beta is commonly used as country portfolio risk (Gangemi, Brooks, Faff, 2000; Andrade & Teles, 2006). The sector beta was used to calculate United State and Canada stock risk (He & Kryzanowski, 2007). The different result in different markets and different time has been tested for the relationship hypothesis between risk and return.

There are a lot of past studies is trying to investigates or examines the relationship between risk and return. The researchers try to investigate the relationship between risk and return from the equity market of different country, such as Ghaka Stock Exchange (GSE), Dhaka Stock Exchange (DSE), Tehran Stock Exchange (TSE), New York Stock Exchange (NYSE), Kuala Lumpur Stock Exchange (KLSE) and so on. The investigation of the relationship between systematic and unsystematic risk in the portfolio, and the volatility and risk-return trade off of the stock markets are being done (Zohreh et al., 2013; John et al., 2016; Raei et al., 2015; Abu & M. Khokan, 2015; Ahmed, Muhammad, Ghulam, Babar, Kashif and Rauf, 2011). The relationship between risk and return is tested by different ways in different research done. There have direct test between other variables that may cause to the significant level and the risk-return, while there are also some influential factors is added as the mediator of the study to enrich the model, such as investment horizon, portfolio size, portfolio diversifies.

But, there is different result is shown in past empirical studies. The significant level of the equity market is shown differently in different stock market. there are some researcher shows that there is significant in the relationship between risk and return in the equity market, while some is shown that there is no significant relationship between the variables. There is significant positive relationship and significant negative relationship is shown in the past study (Zohreh et al.,2013; John et al., 2016; Abu & M. Khokan, 2015). The significant relationship between the variables prove that the performance of the one variable is impact on another. The performance of the variables is a key factor in the investment decision in the real marketplace. While, in Raei et al. (2015) & Ahmed, Muhammad, Ghulam,

Babar, Kashif and Rauf (2011) studies, there shown that there is no significant relationship between the variables, stock risk and return.

In Hameed, Sajid, Nasir, Naveed, Shafiq, and Aziz (2013) study, there is only show the existence of the risk premium as the only factor affecting the market stock return and the rest is not. While, there are also some studies show that Beta is the only explanatory variable in the model offered insignificant explanation to variations in stock returns over the entire sample period (Bilgin and Basti, 2011; Chinazaekpere, 2013; Ahmad & Talal, 2016). The rejection or not significant result in Beta is in line with the studies of (Morelli, 2007; Choudhary & Choudhary, 2010; Bilgin and Basti, 2011). Zohreh, H. & Alireza (2013); Ahmad & Talal (2016) shown that there is not significant in test of relationship between risk and return in CAPM. Some study shown that, stock returns and beta in emerging market do not seem to be related and there is reported as negative relationship between risk-return for three Asian market, which is Taiwan, Singapore and South Korea (Bark, 1991; Huang, 1997; Estrada, 2000).

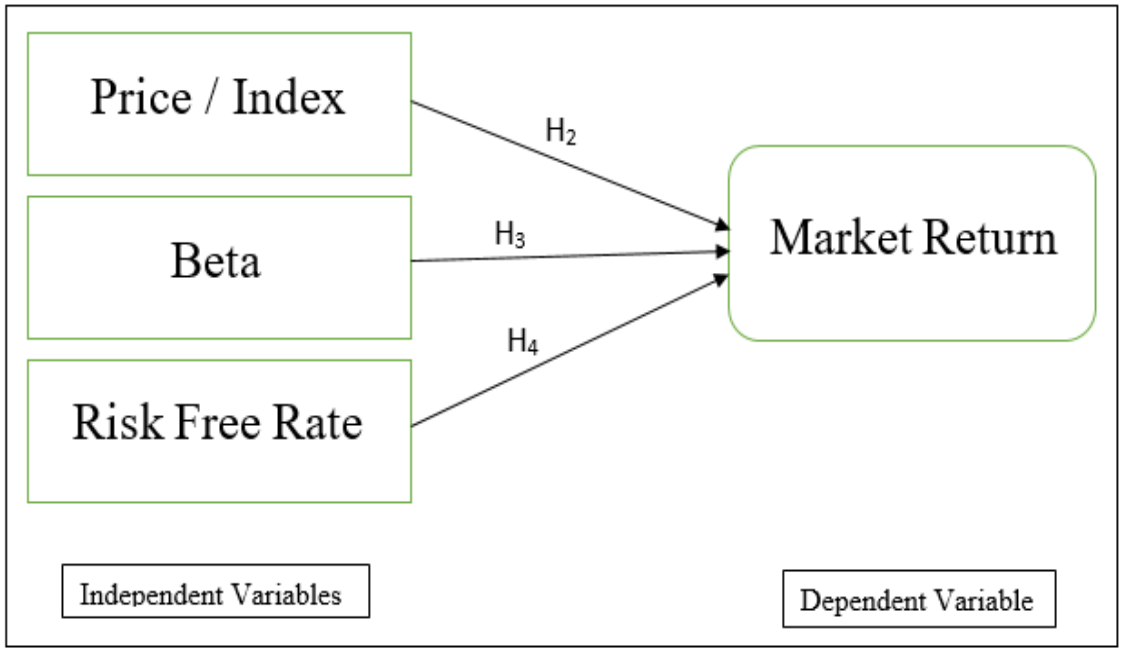
A 12-year period market data in the down-market and up-market has been taken to examine the relationship between risk and expected return of Athens stock markets separately (Theriou, Aggelidis, Maditinos, & Ševic., 2010). The result indicated that the estimation of return and sector beta, without distinguish positive and negative market will cause to unconditional risk-return relationship. However, the findings of the study will more likely to indicate a significant positive relationship in up market, whereas a significant negative relationship in down market, when using conditional Capital Asset Pricing Model and the cross-sectional regression analysis (Theriou et al, 2010). The risk identification is a compulsory condition for a safe and sound financial environment (Oyerogba, Ogungbade, and Idode, 2016).

Although there is significant evidence has been shown or put forward against the use of Capital Asset Pricing Model before, but there is still a strong rejection has

been seen (Levy 1997). While, the CAPM still remain a popular tool for finding out the cost of capital, market events and investment performance (Moyer, McGuigan, and Kretlow, 2001; Muhammad, Maria, Noorul, Bilal, and Sanaullah, 2012).

2.3 Conceptual Framework

Proposed theoretical framework is to examine the relationship of each variable towards the stock risk and return in Kuala Lumpur Stock Exchange (KLSE) from year 2006 to year 2015.



Source: Developed for the study

2.4 Hypotheses Development

Abu & M. Khokan (2015) found that the stock risk had significant positive relationship with stock return. When the portfolio is context of relatively high risk, there is suggesting the existence of some anomalies in high risk assets. Syndey (2005) also indicated that there was a strongly statistically significant or positive conditional correlation between risk and return.

First Hypothesis

H_0: There is no relationship between risk and stock returns in sectorial in KLSE.

H_1: There is relationship between risk and stock returns in sectorial in KLSE.

Second Hypothesis

H_0: There is no difference in the relationship between price index and stock returns in difference sectors.

H_2: There is a difference in the relationship between price index and stock returns in difference sectors.

Third Hypothesis

H_0: There is no difference in the relationship between risk-free rate and stock returns in difference sectors.

H_3: There is a difference in the relationship between risk-free rate and stock returns in difference sectors.

Fourth Hypothesis

H_0: There is no difference in the relationship between beta and stock returns in difference sectors.

H_4: There is a difference in the relationship between beta and stock returns in difference sectors.

2.5 Conclusion

Capital Asset Pricing Model (CAPM), and stock risk and return have been explained in Chapter 2. All the empirical studies that produced in the past are used to support the research and the conceptual model and the hypotheses are developed from the theoretical foundation. Consequently, the using of appropriate research methodology to test the hypotheses will be further explained in the next chapter.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

Follow by the discussion of conceptual model and hypotheses development in Chapter 2, the research methodology that to be used in this study is going to interpret in Chapter 3. Research methods involved in this study are data description, research design, data collection method, population and sampling procedures, data processing, and data analysis technique.

3.1 Data Description

This time-series data from January 2006 to December 2015 is being used in this study. This study is using monthly basis data and yearly basis data as the sampling method for the analysis.

3.2 Research Design

Purpose of research design is to help researchers to perform their research effectively. A quantitative research model is applied in this study by using secondary data that been collected from Bloomberg. A quantitative analysis enables to show a more accurate reflect between the relationship between both dependent variable and independent variables. But, the ACAPS (2012) stated that the sample used in the study will be pointless, if the data collection tools that used to collet quantitative data are improper. Cohen (1980) stated that there is empirical statement and utilizes empirical methods is used for the social research. Further, a descriptive statement that being express in a numerical term is come from an empirical statement, he said. The empirical evaluations used to examine the degree of the standard for the empirical policy.

A quantitative research is used to analyse and explaining phenomena by using mathematically based methods and yet gathering all the research related numerical data (Creswell, 1994). The test of predetermined hypotheses and generating the results is the main objective of quantitative research method. The outcomes of quantitative analysis can be used to confirm or reject the hypothesis made for determining the relationship between dependent and independent variables by using statistical methods. The collection and analysis of data from representative samples selected is more frequently utilized due quantitative data is numeric. Quantitative research is concentrates on the independent variables in the study, gather the evidence and follow by the computation of the result finding (Hesketch and Laidlaw, 2013).

While, there is also an advantage and disadvantage of using quantitative data to the study. An advantage for it is the results are reliable when data is collected accurately and provide a numeric estimate; disadvantage is it might fail to provide in depth description of the result or experience of how significant the relationship between risk and return is. Therefore, this research aims to investigate the relationship between stock risk and return in KLSE by using quantitative data method.

3.3 Data Collection Method

Data which collected is based on the variables in this study which are stock risk and return in KLSE. The period of data collection id covered from year 2006 to 2015 which can represent the current economic condition of Malaysia market. Primary and secondary data are the two common method that used to collect data for a research (Nicholson and Bennet, 2009). Primary data is defined as the data collection is fresh and first-hand information for the research, while, secondary data is an existing data or information that available and ready to use by the research. Secondary data are the information that was collected by someone or being used before than the user.

According to Church (2001), a secondary data analysis may be conducted based on the published data or information, such as company annual report, government portal, organization or individual for various research purpose. The used of secondary data in the study able to reduce the time consuming and expenses (Ghauri & Grønhaug, 2005). The time and cost saving for the future research is the main benefits that given from using secondary data as the research data collection method (Sorensen, Sabroe and Olsen, 1998). Therefore, secondary data is employed in this study for the data collection. The secondary data obtained from Bloomberg to be used in this study. Data was collected for the Malaysia stock market risk and return.

3.4 Population and Sampling Procedures

3.4.1 Target Population

The Organization for Economic Co-operation and Development (OECD) (2001) stated that the target population is refer to the set of elements about which information is wanted and required in the study. There is also may exclude some of the units due to practical consideration. The total respondents who fulfils the designed set of standard is the target population of the study (Burns & Grove, 1997). The target respondent or target population in this study is the sectors listed in Kuala Lumpur Stock Exchange (KLSE).

All the industry that listing in KLSE is the target population of the companies. Thus, the relationship between risk and return for the all sectors has determined. There are 10 sectors available in KLSE, which including the Property (KLPRP), Construction (KLCON), Consumer (KLCSU), Industrial Product (KLIND), Mining (KLTIN), Trading and services (KLSER), Plantation (KLPLN), Finance (KLFIN) and FBMKLCI.

3.4.2 Sampling Technique

SAS was applied in this study. Bossche (2011) stated that time series data and cross sectional data can be analysed by utilizing SAS. SAS is a statistical software package for data analysis, such as mean & median, and regression analysis like F-Test statistic and T-Test statistic. SAS is used to run multiple test and regression model used in the study to provide the reliable information for equation and estimated model. Besides that, the diagnostic checking (e.g., Normality Test, Multi-collinerity, and Autocorrelation), empirical results (e.g., F-Test Statistic, T-Test Statistic, P-value, R^2, Adjusted R^2), and data analysis like descriptive analysis are the econometric analysis that able to generated from SAS.

3.4.3 Sampling Size

Sampling size is the total sampling units which selected from a population that included in the study. The number observations in a sample is called sample size (Evan, Hastings and Peacock, 2000). A time series data and cross sectional data are combined to developed panel data in this study. The sample time periods used in this study is from year 2006 to 2015 is used as the sample in this study. There are 9 sectors listed in KLSE are selected. Therefore, total observation will be 90 which are the results of multiplying the number of year chosen and number of sectors. There is 90 observations of panel data are used to investigate the relationship between stock risk and return in KLSE.

3.5 Data Processing

The five stages of data processing are concern in this study. The first stage is reviewing the past empirical study which is topic related to this study. There is an independent variable is selected with the guide from past study. The journal from various sources, such as Science Direct, UTAR library database, Google Scholar, and others related and useable journal are used as supporting references for this study. Second stage is collect data from secondary sources such as Bloomberg.

The data of risk and return that used in this study is collected from Bloomberg. Then, there is follow by determine what method to apply in this research and compute data collected. A generating of data with SAS system is the important stage after determine the research method in stage three. And, there is also an obtaining of the relevant result is done in the same stage. While, an analysing and interpret the result for this research is the last stage of data processing for the study.

3.6 Data Analysis

The objective of this study is aimed to investigate the relationship between stock risk and return in Kuala Lumpur Stock Exchange (KLSE) from year 2006 to 2015. The software used to carry out the test is SAS system software. The regression models in this study are shown as below:

$$\beta_i = Var\ (R_m) / Cov\ (R_i, R_m)$$

Where,

β_i: Beta (systematic risk/market risk) of the index for the industry i

R_m: FTSE Bursa Malaysia (FBMKLCI) yearly indices return

R_i: Actual realized yearly return of the index of the industry i

Cov (R_i, R_m): Covariance between the yearly returns of the index for the industry i and the FTSE Bursa Malaysia (FBMKLCI) yearly index returns

Var (R_m): Variance of the market's yearly returns

There is always a positive amount for the (R_i, R_m) in the long term period is achieved, due to the average market's return is usually higher than rate of risk-free rate (Ross, Westerfield, & Jaffe, 2010). They also stated that the equation indicates there is always a positively related between expected return and risk The equation used for calculating the required rate of return is as follow:

$$\mathbf{E(R_i) = R_f + \beta_i X (R_m - R_f)}$$

Where,

$E(R_i)$: The expected return on the capital asset

R_f: the risk-free rate of interest such as interest arising from treasury bills

β_i: Beta for the industry i

$(R_m - R_f)$: Risk premium, which is the difference between required return of the market risk and risk free rate.

3.7 Diagnostic Checking

Diagnostic test is conducted to detect the existence of econometric problems for the model in the study. The non-normal distribution of error term, such as autocorrelation and multi-collinearity is the potential problems that may occur in the model.

3.7.1 Ordinary Least Squares (OLS) Test

Ordinary Least Squares regression is a core of econometric analysis. Ordinary least squares, also known as least squares linear regression, least squared errors regression, and least squares. OLS is the most commonly used prediction techniques known to humankind. It is commonly applications in fields as diverse as statistics, economics, finance, medicine and psychology (ClockBackward, 2009). Ordinary Least Squares is important in calculated estimated regression coefficients without the aid of regression program one time (Ordinary Least Squares, n.d.). An easy access of regression programs makes it unnecessary for analysis.

Ordinary Least Squares is used to estimating the unknown parameters in linear regression model. The goal of using OLS is to minimizing the sum of the squares of the difference between observed responses in the given dataset. The value of the variable is being predicted and it predicted by linear function of explanatory variables. Therefore, the sum of the squared vertical distances between the data point and the corresponding point on

the regression line is visually seen, and the smaller the differences, the better the model fits the data.

3.7.2 Normality

Classical Normal Linear Regression Model (CNLRM) is assume that the error term is normal distribution (Gujarati & Porter, 2009). According to the few authors, each of them have their own reasons on the normality assumption. For instant, the Central Limit Theorem (CLT) will more likely to be normal, when the number of independent variables is very large. Next is, the normal distribution of Ordinary Least Squares (OLS) estimators allow the conducted of hypothesis testing in the study, such as F-test, T-test, and Chi-squared. As discuss by Gujarati et al. (2009), the Ordinary Least Squared estimators will be unbiased, consistent the sample size increased, and having a minimum variance, when the error terms are normally distributed.

According to Ghasemi & Zahediasi (2012), there is few approaches that can be grouped by visual methods or normality test for the assessing of normality of error terms. The normality tests that common used is include Kolmogorov-Smirnov test and Shapiro-Wilk test Anderson-Darling test.

3.7.3 Multi-collinearity

A multi-collinearity will arises when there is linear relationship between two or more independent variables in the regression model (Gujarati et al., 2009). According to Farrar & Glauber (1967), multi-collinearity creates a threat to regression model and it shown the sign of poor experimental design of the variables. These is the signal of high inter correlation among the independent variables when the multi-collinearity exists. The overdetermined model, constraints imposed on the model or sample

population, model specification are the causes that cause to multi-collinearity problem.

Williams (2015) stated that the confidence intervals will become very wide and t-test become smaller, when there is multi-collinearity problem occur. And, it will cause to more difficult for researcher to accept alternative hypothesis and reject null hypothesis in the study. There are few indicators to detect the multi-collinearity problem, such as the R^2 value of the regression is exceed 0.8, and there is high pair wise correlation between two or more independent variables in the study. If the R^2 exceed 0.8 and have a high pair between independent variables, then the researchers may suspect that the multi-collinearity problem exists. Variation Inflation Factor (VIF) also a method to detect multi-collinearity problem. The formula for VIF is as below:

$$\mathbf{VIF_j = 1/ (1-R^2_j)}$$

Where,
R^2_j = The R^2 value for each auxiliary regression in which each independent variable regress with other variables.

The value range of VIF is between one to infinity. There shown a serious multi-collinearity problem occur on the variables when the VIF is greater than 10. While, Tolerance Factors (TOL) is the another approach used to measure the multi-collinearity problems. The formula for TOL is as below:

$$\mathbf{TOL= 1 / VIF_j}$$

Where,

VIF_j = The Variation Inflation Factor value for independent variable that computed in the respective auxiliary regressions

The value range of Tolerance Factors is zero to one. The multi-collinearity problem occurs when the value of TOL is closer to zero, and vice versa.

3.7.4 Autocorrelation

The economic problem that disturbance of one period that may affect the observation of the other period is called autocorrelation (Schink and Chiu, 1966). Gujarati & Porter (n.d.) stated that autocorrelation is used to test the correlation between a series of observation that neither in cross sectional data nor time series data. Autocorrelation is no longer effect (minimum variance), hence the variances of the Ordinary Least Squares (OLS) estimators are inefficient and biased. They are no longer BLUE. It is same as heteroscedasticity. There are few ways to detect the presence of the autocorrelation problem, which are Breusch Godfrey (BG) test (also known as LM test), Durbin Watson h test, and Durbin Watson d test. Durbin Watson h test and Durbin Watson d test are applied to carry out the test for the first order correlation in the study. There are several assumptions when apply Durbin Watson test, which included there must be normally distributed error term, the regression model cannot contain the lagged value of the dependent variable and so on. The another way to detect autocorrelation is Breusch Godfrey (BG) test (also known as LM test) which developed by the statisticians called Breusch and Godfrey. Based on the Breusch Godfrey LM test, if the p-value is greater than the (1%, 5%, and 10%) significance level of the model, the null hypothesis (H_0) is tends to do not reject or accept null hypothesis (H_0).

3.7.5 Heteroscedasticity

A no constant in the variance of the error term is called Heteroscedasticity. Heteroscedasticity is a violation assumption of the Ordinary Least Squares (OLS) (Gujarati & Porter, n.d.). The OLS estimators still shown linear and unbiased even through there is heteroscedasticity problems occur. And, the variances will show in biased and inefficient in the result. The underestimate or overestimate the true variance of the error term will be happened. Furthermore, the usual confidence intervals will be affected, and the T and F distribution will show inaccurate and unreliable in the hypothesis test.

A heteroscedasticity problem can be detected by using Autoregressive conditional heteroscedasticity (ARCH) model. Autoregressive conditional heteroscedasticity (ARCH) model is appropriate to examine and test the economic problem, such as heteroscedasticity which is common issue for the time series data. The significant level and the p-value of the model will be compared from the result generated. It does not reject the null hypothesis (H_0), if the Chi-Square probability (p-value) of the ARCH test is greater than the significant level (1%, 5% and 10%) of the model. Thus, it proved that there is no heteroscedasticity problem is occur in the econometric models.

3.8 Inferential Statistics

3.8.1 R-square

R-square is often emphasizing in the regression model. The single number provides in R-square is telling how well the regression model fits the data. The higher value of the R-square is equal to 1, which means 100 percent of the variation observed in the dependent variable is captured by independent variables in the regression model. The higher the value of R-square, the better the regression model. In contrast, if R-square value shown at 0.01, which means the regression model is bad and only able to

capture small percent of the observed variation in the data. In other words, there is more than 99 percent of the observed variation is not explained by the model used in the regression. However, how "high" of the R-square value is consider high. there is still an argumentative topic for most of the researcher. While, Reisinger (1997) & Gujarati and Porter (2009) agreed that the R-square is consider high as long as the value is above 50 percent of the observed variation. There is major limitation of R-square, the R-square value can be increase as there is adding the number of independent variables in the regression model.

3.8.2 Adjusted R-square

Adjusted R-square have the similar concept with R-square. But, there has been adjusted by increasing or decreasing the number of predictors in the model. This will cause to increase in adjusted R-square value as there is increasing in number of independent variables that has correlation with dependent variable in the regression model. The result of low value in adjusted R-square is mainly due to the weaken correlation with anyone the independent variables in the regression model. While, adjusted R-square value will shown in equal with R-square value when there is only one independent variable is testing, however, the value of adjusted R-square will keep on decreasing in value when there are additional independent variables added. (Gujarati and Porter, 2009).

3.8.3 F-test Statistic

H_0: There is no difference between the variances

H_1: There is at least 1 difference between the variances

F-test is a statistical test used to determine the significance of the entire regression model. It is applied to test whether the model is fits the

population based on the sample data set. F-test is used to examine the regression model whether there has at least a minimum one independent variables is significant to explain the dependent variable (Gujarati and Porter, 2009). There is no difference or equal to zero between the variance in the coefficient of the independent variables for null hypothesis, while, there is at least one difference between the variance in the alternative hypothesis. There is rejection of null hypothesis if the F-value (or P-value) is smaller than 10% significance level.

3.8.4 T-test Statistic

$H_0 = \beta 1 = 0, \beta 2 = 0, \ldots\ldots, \beta 3 = 0$ *(Insignificant)*

$H_1 = \beta 1 \neq 0, \beta 2 \neq 0, \ldots\ldots, \beta 3 \neq 0$ *(Significant)*

T-test statistics is used to determine the significance level between independent variable and dependent variable (Gujarati and Porter, 2009). T-test allows to examine the two samples are statistically different from each other. The assumption of T-test is where the samples are randomly chosen from normal distribution populations without bias occur. The individual regression coefficient for null hypothesis is equal to zero, while, for the alternative hypothesis is not equal to zero. There is rejection of null hypothesis if the P-value is smaller than 10% significance level.

3.9 Conclusion

In a nutshell, Chapter 3 explained the research methods that have been conducted and a brief description of data analysis were generated using SAS system to investigate the relationship between risk and return of sectors listed in KLSE. A secondary data of 9 sectors from 2006 to 2015 are used in this study. Data of risk and return of sectors listed in KLSE are obtained from Bloomberg. In following chapter, there will be discussing on the results generated from the data collected.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

In this chapter, the analysis of the time series will be make and presentation on the study's result, which relationship between stock risk and return in Malaysia market. The degree of relevant in Capital Asset Pricing Model (CAPM) toward Malaysia market also will be shown in this chapter. There are consists the results of Ordinary Least Squares (OLS) test, Normality test, Multi-collinearity test, Autocorrelation test, and Heteroscedasticity test.

4.1 Descriptive statistics

Table 4.1: Summary of Descriptive Analysis of stock market return in Malaysia

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
price/ index	90	2862	4200	257543	31.03200	16956
RFR	90	2.27800	0.64887	205.02000	1.46000	3.26000
Beta	90	0.99700	0.16191	89.73000	0.69100	1.25700
Mkt. Return	90	0.11012	0.29432	9.91100	-0.49500	1.14300

In Table 4.1, the summarized descriptive data related to Malaysia stock market is shown. The mean of the price/index is 2862 along the time period. The minimum point of price/index is 31.032 and the maximum point reach 16956 from year 2006 to 2015. The standard deviation (SD) is 4200 which shows a very high fluctuation in Malaysia stock price compared with other variables.

The mean of Risk Free Rate (RFR) is 2.278 while the minimum and maximum rates are 1.46 and 3.26 respectively. The standard deviation is 0.64887. Next, Beta has a mean of 0.997 and the standard deviation is 0.16191 which shows the lowest fluctuation among the independent variables. The minimum value is 0.691 and maximum value is 10257. For the market value, the mean is show at 0.11012

which is the lowest mean among the independent variables. The minimum and maximum value are -0.495 and 1.143, while the standard deviation is 0.2432.

4.2 Diagnostic Checking

4.2.1 Ordinary Least Square (OLS) test

Table 4.2: Ordinary Least Square (OLS) test

Parameter Estimates								
Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Tolerance	Variance Inflation
Intercept	1	-0.39459	0.20846	-1.89	0.0617	0	.	0
price/ index	1	0.00000995	0.00000696	1.43	0.1566	0.14205	0.97943	1.02101
RFR	1	0.18186	0.04501	4.04	0.0001	0.40095	0.98289	1.01740
Beta	1	0.06214	0.17913	0.35	0.7295	0.03418	0.99641	1.00360

The Pr > F (F-value) of the study is 0.0012, which mean there getting a significant in the entire variables test.

From the Table 4.2, the result shown that there is only risk-free rate is significant with the Pr > t of 0.0001. The others two variables price index and beta is shown in not significant since the Pr > t are 0.1566 and 0.7292.

4.2.2 Normality Test

The result from SAS shown that, the mean of the data is 0.000, and the standard deviation is 0.273132. The test for normal distribution shown the result in Chi-square is 17.585 with the p-value 0.00015. There is suffered from normal distributed.

4.2.3 Multi-collinearity Test

The result from SAS system shown that, there is the only positive correlation exists between price/index and risk-free rate, which is -0.1308 respectively. While, the combination of beta and price/index has the higher negative correlation, and the combination between beta and risk-free rate

has the lowest negative correlation, which having the value of -0.0599 and -0.0078 respectively.

The Variance Inflation Factor (VIF) value of independent variables for price/index, risk-free rate, and beta are 1.0201, 1.01740, and 1.0036 respectively. Price/index having the highest Variance Inflation Factor, while beta having the lowest. It can be concluded that there is no multi-collinearity problem exists in the three independent variables.

The minimum possible multi-collinearity value should be 1.0. If the value is more or greater than 1.0, then there may indicate a collinearity problem is occur. In this study, since all the three values for price/index, risk-free rate and beta are more than 1.0, therefore it can be concluded that there is collinearity problem between variable j and the other independent variables.

4.2.4 Autocorrelation Test

The result of Durbin-Watson statistics indicated the degree of autocorrelation. The Durbin-Watson value in the study is show at 2.800. As the value of Durbin-Watson is greater than 2.5, which mean that there is sufficient evidence to prove that the models is no autocorrelation problem. The null hypotheses are failed to reject, if the Durbin-Watson statistics is fall in the range of 1.5 to 2.5 as there is insufficient evidence to prove that the model suffer from autocorrelation problem (Haery, Bahrami & Haery, 2013).

4.2.5 Heteroscedasticity

The white heteroscedasticity of the study is 0.002744. The regression model is suffered from heteroscedasticity since the p-value is not greater than 1.0.

4.3 Inferential Analyses

4.3.1 Interpretation on R-square (R^2) and Adjusted R-square ($\bar{R}^2$)

Based on the R^2, there is approximately 16.78% of the variation in the stock market return can be explained by the variation in independent variables which are the price index, risk-free rate, and beta. Meanwhile, from the $\bar{R}^2$, there is approximately 13.88% of the variation in the stock market return can be explained by the variation in independent variables after the degree of freedom is taking into account.

4.3.2 F-test Statistic

F-test is used to test the difference in the entire variation of the economic regression model. The example hypothesis is as below:

H_0: There is no difference between the variances

H_1: There is at least 1 difference between the variances

And, there is decision rule under F-test:

i. Reject H_0 if the F-value is smaller than the significant level at 1%. This signifies there is at least 1 difference between the variances or there is minimum of 1 independent variable; and
ii. Do not reject H_0 if the F-value is greater than the significant level at 5%. This signifies there is no difference between the variances or all the independent variable are significantly to explain the dependent variable.

Conclusion:

Based on the result shows in SAS, there is reject H0 since the F-value is smaller than the significant level at 1%. This can be conclude that there is at least 1 difference between the independent variables.

4.3.3 T-test Statistic

In this paper, T-test is used to test the relationship between individual partial regression coefficient and dependent variable.

4.3.3.1 Price Index

Hypothesis:

H_0: There is no difference in the relationship between price index and stock returns in difference sectors.
H_2: There is a difference in the relationship between price index and stock returns in difference sectors.

Decision Rules:

i. Reject H_0 if the p-value is smaller than the significant level at 10%. This signifies there is significant relationship between the two variables.

ii. Do not reject H_0 if the p-value is greater than the significant level at 10%. This signifies there is no significant relationship between the two variables.

Conclusion:
Regression result: do not reject H0 since the p-value is greater than 10%, which is 0.1566.

4.3.3.2 Risk-free Rate

Hypothesis:

H_0: There is no difference in the relationship between risk-free rate and stock returns in difference sectors.
H_3: There is a difference in the relationship between risk-free rate and stock returns in difference sectors.

Decision Rules:

i. Reject H_0 if the p-value is smaller than the significant level at 10%. This signifies there is significant relationship between the two variables.

ii. Do not reject H_0 if the p-value is greater than the significant level at 10%. This signifies there is no significant relationship between the two variables.

Conclusion:
Regression result: reject H_0 since the p-value is 0.0001 which is significant at 10%.

4.3.3.3 Beta

Hypothesis:

H_0: There is no difference in the relationship between beta and stock returns in difference sectors.
H_4: There is a difference in the relationship between beta and stock returns in difference sectors.

Decision Rules:

i. Reject H_0 if the p-value is smaller than the significant level at 10%. This signifies there is significant relationship between the two variables.

ii. Do not reject H_0 if the p-value is greater than the significant level at 10%. This signifies there is no significant relationship between the two variables.

Conclusion:

Regression result: do not reject H_0 since the p-value is 0.7295 which is greater than the significant level at 10%.

4.4 Conclusion

Data collected from sectors from FTSE Bursa Malaysia have been analyzed in this chapter. The regression results showed that the relationship between three independent variable and dependent variable vary in full period with total of 90 sample size in this study. The result showed that price/index and beta has insignificant relationship with the market return, while only risk-free rate significantly related with market return in Malaysia stock market within the time period selected. In Chapter 5, the hypothesis outcome will be discussed with reasonable reasons and insights.

CHAPTER 5: MAJOR FINDING, CONCLUSION AND IMPLICATIONS

5.0 Introduction

After the analysing of various test in Chapter 4. The implications of the study, limitation, recommendations and conclusion will discuss in Chapter 5.

5.1 Discussion of Major Findings

5.1.1 Risk and Market Return

The analysis results of this research have shown that there is positively significant relationship between risk and stock return in KLSE as the F-value of the study is 0.0617, which is fulfil the 10% significant level. H_0 is rejected as the F-value is smaller than 10% significant level and H_1 is accepted. The results shown indicate that the market risk will have direct effect on the market return. The higher the risk of particular investment, the higher the return is expected.

In Molla and Mobarek (2009); Ward and Muller (2012); Abu et al. (2015) study, the risk-free rate is shown in significant. The risk is having a positively relationship between risk and market return both at the individual security level and at the portfolio level.

5.1.2 Price Index

Price index is shown in not significant relationship with the stock return in sectorial of KLSE. The result of price index is shows at p-value 0.1566. The p-value of price index is greater than 10% significance level. Therefore, there is fail to reject null hypothesis. It indicated that the

movement of price index in the market is no direct relationship with stock return in sectorial of KLSE. No matter the price index is increasing or decreasing in the market, the expected stock return is still remains the same.

The test for the Capital Asset Pricing Model hypothesis that price index is a good toll to predict the risk-return relationship did not fully support the CAPM. Hence, the price index shown in the study was not significant, which means it is not different there and violated the CAPM assumption (Zohreh, H. & Alireza, 2013; Ahmad & Talal, 2016). In Zohreh, H. & Alireza (2013); Ahmad & Talal (2016) studies, the relationship between price index and stock return is shown not significant. The price index of the stock will not have any impact to investor's expected return. There result shown is in line with others studies as well (Hussein, Mohammad, & Devinaga, 2012; Muhammad, Maria, Noorul, Bilal, and Sanaullah, 2012).

5.1.3 Risk-free Rate (FRF)

Risk-free rate is shown significant relationship with the stock market in sectorial of KLSE. The p-value of risk-free rate is 0.0001, which is smaller than 10% significance level of the study. Therefore, the null hypothesis is rejected and the alternative hypothesis is accepted. The movement of the risk-free rate will give a direct effect to the stock market. the increase of risk-free rate of government treasury bill will cause to increase in investor's expectation of stock return.

In Abu et al. (2015); Raei et al. (2015) study, the risk-free rate is shown in significant. The risk-free rate is having a positively relationship between risk-free rate and stock return both at the individual security level and at the portfolio level.

5.1.4 Beta

Beta is shown in not significant relationship with the stock return in sectorial of KLSE. Beta have p-value of 0.7295. The p-value of beta 0.7295 is greater than 10% significance level of the study. Therefore, there is fail to reject null hypothesis. It indicated that the movement of beta in the market is no direct relationship with stock return in sectorial of KLSE.

The test for the Capital Asset Pricing Model hypothesis that beta is a good toll to predict the risk-return relationship did not fully support the CAPM. Hence, the beta shown in the study was not significant, which means it is not different there and violated the CAPM assumption (Ahmad & Talal, 2016). The not significant result in beta also in line with studies of (Morelli, 2007; Choudhary & Choudhary, 2010; Bilgin and Basti, 2011; Chinazaekpere, 2013).

5.2 Implications of the Study

In this study, there is investigating the relationship between risk and return in Malaysia stock market by using Capital Asset Pricing Model (CAPM). The variables used in the study including, market return, price index, risk-free rate (RFR), and beta. While, the result shown in the study is not look “beautiful” as we expected. The three independent variables used in the study, is only one is showing in significant and the others two are not. From the result analyse in Chapter 4, there is only risk-free rate is significant with the p-value 0.0001, while price/index and beta is show in not significant with p-value 0.1566 and 0.7295.

Besides, the result indicated that the Capital Asset Pricing Model (CAPM) that been used in this study is not suitable and applicable to Malaysia stock market. It proved that the CAPM is just a theoretical model and unable to apply it in the real

marketplace. Although the F-value is shown in significant, no autocorrelation happened, but there is heteroscedasticity problem is occur.

The results shown is important to investors as they may use it as an information or reference in forecasting the movement of stock market and making decision on future investment. Furthermore, this finding contributes to Malaysia stock market participants in a better understanding on the relationship between risk and return in Malaysia equity market can be affected by which variables and not by which variables.

In this study, it can be concluded that risk-free rate is strongly related to Malaysia stock market performance. It can be explained as when there is a movement of the risk-free rate along the time period will affecting to the performance of the stock market as the p-value 0.0001 is shown. As an investor, they will concern more on the risk-free rate before they make any investment as there is relation between the variables. Therefore, the demand of the stock will highly affect by the risk-free rate as well as the return from their investment. While, the price index and beta is shown no relation with Malaysia stock market all over the period. It meant that the changes of price index and beta over the period will not affect or get impact to the performance of stock market. Investor will not make decision on their investment based on these two variables.

5.3 Limitations

The limitation of this study is this study fail to use the other theoretical model to examine the relationship, and the data collection is limited as there is incomplete microeconomic data is available for each listed sector. There is possible to other economic theoretical model more suitable in examine the relationship between risk and return in Malaysia stock market rather than Capital Asset Pricing Model (CAPM). Besides that, there is limited data available in the Bloomberg, such as market capitalise of each sector, leverage ratio of the sector, and other microeconomic variables which able to affect the result of the study.

5.4 Recommendations

There is recommended that the future researcher to include more other variables in investigate the relationship between risk and return in Malaysia Stock Market. This will help to enrich the data of the study rather than only focus on price, beta, risk-free rate and market return. It would helpful as well for future researcher to get know whether there is any impact of other variables to Malaysia stock market, such as GDP. And therefore, the investors would have a clearer picture on the performance of Malaysia stock market and the what is the impact of the market will bring from this all variables or situation happen.

The future researcher is recommended to study on Capital Asset Pricing Model will taking consideration into the impact of difference variables, such as Earning per share (EPS), Price Earning ratio (P/E ratio), Dividend Yield of stock and other financial and marketing indicators. Furthermore, there is recommend that to expand the study period to cover more data.

5.5 Conclusion

In a nutshell, it is concluded that the result under this study shows that the price/index and beta do not have any relationship with the Malaysia stock market return, while only risk-free rate has relationship with the Malaysia stock market return. On the other hand, the result has proved that the Capital Asset Pricing Model (CAPM) has is not applicable to the Malaysia equity market. It is only a theoretical model, but not suitable and relevant in the real marketplace. Besides, some limitations and recommendation also have been discussed in this Chapter. it is mainly as a guidelines and reference for the future researcher who are interesting in this topic. Findings are useful in enhancing better understanding on the relationship between risk and return in Malaysia stock market. Thus, here to conclude that Capital Asset Pricing Model (CAPM) is not a suitable indicator of asset prices or return in Malaysia equity market over the chosen sample period.

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LIST OF APPENDICES

Appendices 4.1 Linear Regression Results

Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: Mkt. Return

Number of Observations Read	90
Number of Observations Used	90

Analysis of Variance

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	3	1.29371	0.43124	5.78	0.0012
Error	86	6.41567	0.07460		
Corrected Total	89	7.70938			

Root MSE	0.27313	R-Square	0.1678
Dependent Mean	0.11012	Adj R-Sq	0.1388
Coeff Var	248.02587		

Parameter Estimates

Variable	DF	Parameter Estimate	Standard Error	t Value	Pr > |t|	Standardized Estimate	Tolerance	Variance Inflation
Intercept	1	-0.39459	0.20846	-1.89	0.0617	0	.	0
price/ index	1	0.00000995	0.00000696	1.43	0.1566	0.14205	0.97943	1.02101
RFR	1	0.18186	0.04501	4.04	0.0001	0.40095	0.98289	1.01740
Beta	1	0.06214	0.17913	0.35	0.7295	0.03418	0.99641	1.00360

Covariance of Estimates

Variable	Intercept	price/ index	RFR	Beta
Intercept	0.0434539212	-1.576609E-7	-0.004668384	-0.031634186
price/ index	-1.576609E-7	4.850576E-11	4.0995091E-8	-7.47536E-8
RFR	-0.004668384	4.0995091E-8	0.0020254883	-0.000063179
Beta	-0.031634186	-7.47536E-8	-0.000063179	0.0320882857

Correlation of Estimates

Variable	Intercept	price/ index	RFR	Beta
Intercept	1.0000	-0.1086	-0.4976	-0.8472
price/ index	-0.1086	1.0000	0.1308	-0.0599
RFR	-0.4976	0.1308	1.0000	-0.0078
Beta	-0.8472	-0.0599	-0.0078	1.0000

Collinearity Diagnostics

Number	Eigenvalue	Condition Index	Proportion of Variation			
			Intercept	price/ index	RFR	Beta
1	3.32178	1.00000	0.00167	0.02879	0.00610	0.00220
2	0.61325	2.32737	0.00122	0.92733	0.00847	0.00151
3	0.05341	7.88661	0.03001	0.04163	0.86376	0.13315
4	0.01157	16.94594	0.96711	0.00225	0.12166	0.86314

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Linear Regression Results

The REG Procedure
Model: Linear_Regression_Model
Dependent Variable: Mkt. Return

Test of First and Second Moment Specification		
DF	Chi-Square	Pr > ChiSq
9	17.59	0.0402

Durbin-Watson D	2.800
Number of Observations	90
1st Order Autocorrelation	-0.407

Appendices 4.2 Correlation Analysis

Correlation Analysis

The CORR Procedure

3 With Variables:	price/ index RFR	Beta
1 Variables:	Mkt. Return	

Simple Statistics						
Variable	N	Mean	Std Dev	Sum	Minimum	Maximum
price/ index	90	2862	4200	257543	31.03200	16956
RFR	90	2.27800	0.64887	205.02000	1.46000	3.26000
Beta	90	0.99700	0.16191	89.73000	0.69100	1.25700
Mkt. Return	90	0.11012	0.29432	9.91100	-0.49500	1.14300

Pearson Correlation Coefficients, N = 90 Prob > |r| under H0: Rho=0	
	Mkt. Return
price/ index	0.09173
	0.3898
RFR	0.38240
	0.0002
Beta	0.04262
	0.6900