



Libyan International Medical University  
Faculty of Business Administration



# Testing the Capital Asset Pricing Model (CAPM) in Bursa Malaysia

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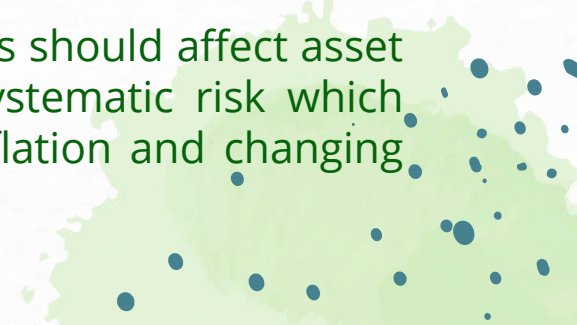
# **INTRODUCTION**



In the last century, many models appeared to determine the trade-off between risk and return when investing in stocks or portfolios. The Capital Asset Pricing Model referred to as CAPM, is one of the most well-known models in the financial area. This model depends on a mathematical equation that is easy to use and apply. It only includes a single variable which is the systematic risk to explain the excess return of an asset or portfolio.

CAPM has had a significant impact because it is commonly used as a benchmark to assess fund managers' performance and to measure the value of financial assets and capital planning projects.

The CAPM is based on the idea that not all risks should affect asset prices. They should be affected only by a systematic risk which affects all companies and sectors, such as inflation and changing interest rates (Perold,2004, Pg.2).



# Research Problem

Many studies have been conducted regarding the appropriateness of the CAPM to explain the returns of stocks in the financial market. For example, Olakojo and Ajide (2010) and Ward and Muller (2012) found that CAPM is an adequate model for explaining stock returns. On the other hand, Choudhary and Choudhary (2010), and Azam and Naveed (2022), asserted that CAPM has a weak explanatory power for stock returns.

Furthermore, unlike developing countries, many studies have been conducted on developed countries. This gap has offered sufficient motivation for the researcher to carry out this research in Bursa Malaysia. Therefore, the main question of this research is:

“Does CAPM is an appropriateness model to explain stock returns in Bursa Malaysia?”

# RESEARCH OBJECTIVES

The main objectives of this research are as follows:

- To investigate the applicability of the CAPM to explain the excess return of the portfolio in Bursa Malaysia over the examination period.
- To investigate whether the excess returns of the portfolio can be explained by the excess returns of the market portfolio in Bursa Malaysia over the examination period.

# RESEARCH IMPORTANCE

The importance of this research lies in trying to answer the open question, is CAPM an effective model for explaining stock returns. Thus, this study attempts to answer this open question through an application of the CAPM on Bursa Malaysia. Moreover, since the CAPM is a popular model in the western financial world, it is also interesting to test its validity in one of ASEAN's largest stock exchange markets, which is Bursa Malaysia.

# Literature Review

In twenty research papers well-reviewed about testing the CAPM model, it is noted that the results of papers are not the same. For example, Choudhary and Choudhary (2010), and Azam and Naveed (2022), asserted that CAPM is a useful model for explaining the return. On the other hand, Olakojo and Ajide (2010) and Ward and Muller (2012) found that CAPM is not an adequate model. In addition, some papers found CAPM useful for a certain period and not an adequate model for the rest of the periods, for example, Khan et al., (2012), and Khudoykulov et al., (2015). The differences in the results might be because of the differences in the period, methodology or market conditions when doing the research. However, it was noted that most of the previous studies did not test for autocorrelation bias. Therefore, their results obtained are subject to negotiation. This study, on the other hand, aims to examine again the possibility of applying the CAPM in Bursa Malaysia, but it tested the autocorrelation bias before running the regression.



# HYPOTHESES

Therefore, based on the problem statement and literature review, the hypotheses of this research is as follows:

**H<sub>0</sub>**: the CAPM is a valid model for the use and application in Bursa Malaysia over the examination period.

**H<sub>1</sub>**: the CAPM is not a valid model for the use and application in Bursa Malaysia over the examination period.

# Methodology

A qualitative or quantitative method can be used to undertake an empirical investigation. Qualitative research is to learn more about what defines an event and how to recognize it. In social science, quantitative approaches try to examine and develop conclusions based on numerical data and measurement. Thus, quantitative approaches appear to be a good fit for this research (Kothari and C. R. 2004.,pg3).

# Data

As mentioned earlier, the main objectives of this research are to (1) investigate the applicability of the CAPM to explain the excess return of the portfolio in Bursa Malaysia over the examination period from 1 January 2010 to 31 December 2016; and (2) to investigate whether the excess returns of the portfolio cannot be explained by the excess returns of the market portfolio in Bursa Malaysia over the same examination period. This research relied on monthly data instead of daily data since it fluctuated less than daily data over time. Data were obtained mainly from the Taiwan Economic Journal database, Bursa Malaysia, and Bank Negara Malaysia (Central Bank of Malaysia).

For this research, a portfolio that consists of all stocks listed in Bursa Malaysia is constructed over the study period from 1 January 2010 to 31 December 2016. The number of stocks in the study's beginning and conclusion periods was 486 and 634, respectively. The increase in the stock number is mostly due to the new companies listed in Bursa Malaysia over time.

# Statistical Method

The Statistical Package for the Social Sciences or "SPSS" statistical analysis program is used by regressing the portfolio's monthly excess returns on the monthly returns of the MRP factor. The test formula is as follows Equation :

$$(R_x - R_f) = a + b_{x,m} \cdot MRP_t \dots\dots\dots (2)$$

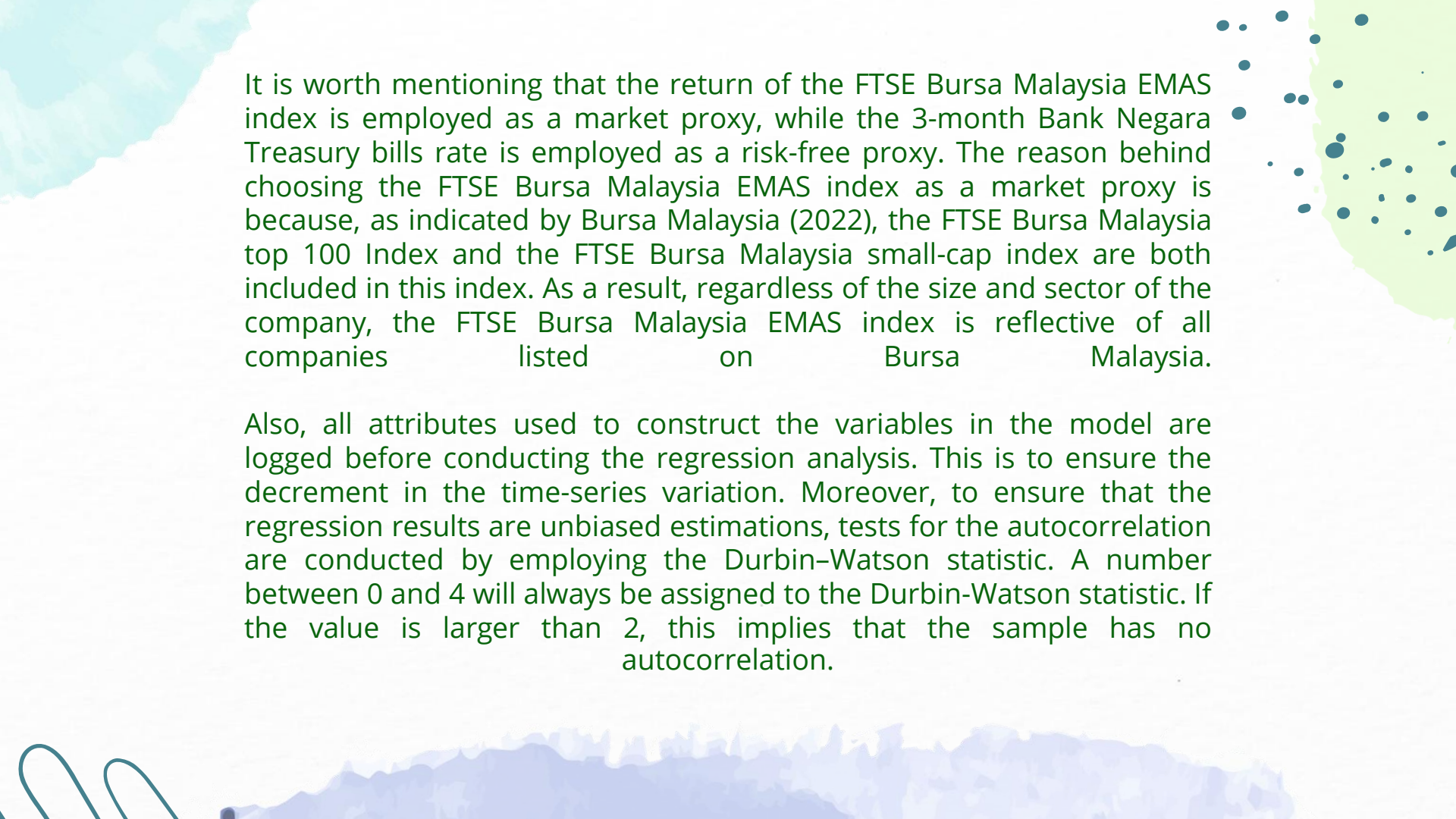
Where:

$(R_x - R_f)$  : is the excess return of the portfolio x.

$a$  : is the alpha coefficient;

$MRP_t$  : is the market risk premium;

$b_{x,m}$  : measures the sensitivity of the portfolio x to the movement in the MRP;



It is worth mentioning that the return of the FTSE Bursa Malaysia EMAS index is employed as a market proxy, while the 3-month Bank Negara Treasury bills rate is employed as a risk-free proxy. The reason behind choosing the FTSE Bursa Malaysia EMAS index as a market proxy is because, as indicated by Bursa Malaysia (2022), the FTSE Bursa Malaysia top 100 Index and the FTSE Bursa Malaysia small-cap index are both included in this index. As a result, regardless of the size and sector of the company, the FTSE Bursa Malaysia EMAS index is reflective of all companies listed on Bursa Malaysia.

Also, all attributes used to construct the variables in the model are logged before conducting the regression analysis. This is to ensure the decrement in the time-series variation. Moreover, to ensure that the regression results are unbiased estimations, tests for the autocorrelation are conducted by employing the Durbin-Watson statistic. A number between 0 and 4 will always be assigned to the Durbin-Watson statistic. If the value is larger than 2, this implies that the sample has no autocorrelation.

# Table 2 Durbin-Watson Results

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.803a	0.645	0.641	0.023	2.295
a. Predictors: (Constant), MRP					
b. Dependent Variable: Portfolio					

As mentioned earlier in the methodology chapter, the autocorrelation bias for the data is examined by employing the Durbin-Watson test. The results in Table 2 show that the value of Durbin-Watson is 2.29. This value, of course, is bigger than 2. Therefore, there is no autocorrelation bias in the data, which is a good result.

# Table 3 OLS Regression Results

<b>Source</b>	<b>SS</b>	<b>df</b>	<b>MS</b>	Number of obs	= 84
Model	0.084	1	0.084	F( 1, 82)	= 149.0
Residual	0.046	82	0.000	Prob > F	= 0.000
Total	0.131	83	0.001	R-squared	= 0.645
				Adj R-squared	= 0.640
				Root MSE	= .0238
<b>portfolio</b>					
<b>Coef.</b>	<b>Std. Err.</b>	<b>T</b>	<b>P&gt;t</b>		
MRP	1.160	0.095	12.21	0.000	
cons	0.003	0.002	1.31	0.192	

The results in Table 3 emphasize that the R-squared of the regression is 64.5% with a p-value equal to 0.000, which is less than 0.05. Therefore, the CAPM model can explain 64.5% of the portfolio excess return, while 35.5% can be explained by other factors. However, since the R-squared value is between 0.5 and 0.7, thus, the CAPM is generally considered moderate for explaining the stock returns.

The results also show that the alpha coefficient, which represents the abnormal return of the portfolio, has a p-value of 0.192, which is more than 0.05. Therefore, there is no abnormal return in the portfolio, this result supports the CAPM. Furthermore, the results indicate that the p-value of the MPR is equal to 0.000 with a value of 1.160. Hence, the portfolio returns move in tandem with the returns of the market and the MRP is considered a curial factor in explaining the portfolio excess return.

As a result, by employing the CAPM, the excess returns of the portfolio moderately can be explained by the excess returns of the market portfolio in Bursa Malaysia over the examination period from 1 January 2010 to 31 December 2016. Also, the MRP is considered an important factor in explaining the portfolio's excess return. Accordingly, the research middling accepts the null hypothesis which claims that CAPM is a valid model for the use and application in Bursa Malaysia over the examination period. As a result, this research accept the nul hypothesis (H0) which claims that the CAPM is a valid model for the use and application in Bursa Malaysia over the examination period.



# Limitation

Since the end of the examination period in this study is December 2016, the study time is linked to the research limits. However, a longer study period would be better; however, this was not an option available to the researcher at the time of the study. In addition, there is very little research in Malaysia that tests the CAPM. Another limitation relates to the financial market, Bursa Malaysia because the results are exclusive to Bursa Malaysia and may vary from market to market. Furthermore, the study only uses quantitative analysis; however, both quantitative and qualitative investigations would be desirable. Furthermore, the R-squared value in the regression is 64.5 percent. Other factors, then, explain 35.5% of the stock return.

# Recommendation

The researcher recommends, through her study, the following:

The findings of this study should not be utilized to make any future investment decisions, since any such choice should be based on a thorough investigation and consultation with experts and brokers in this sector.

It is necessary to reconsider the use of the CAPM by investors in Bursa Malaysia because it was a moderate model for use and application in Bursa Malaysia over the research examination period.

Investors should focus on the market risk premium in the investment since the results show that it is a curial factor in explaining the portfolio excess return in Bursa Malaysia.

# Further Research

For further studies, the research suggests investigating whether Fama and French's (1993) three-factor model or Fama and French's (1993) five-factor model are efficient models in explaining the portfolio return in Bursa Malaysia. Other research can be done by using quantitative analyses or different statistical methods. Also, the majority of stocks listed in Bursa Malaysia are Shariah-compliant. Thus, future research could also be done on a comparison between the Islamic and conventional portfolios before, during, and after a covid-19 period.

The background features a large, irregular watercolor splash in shades of light green and light blue. The splash is centered and has a soft, painterly texture. In the top right and bottom left corners, there are smaller, more defined watercolor splashes in light green and light blue, respectively. Scattered throughout the background are small, dark blue dots of varying sizes. A thin, dark blue line starts in the top right corner and curves downwards and to the left, ending near the bottom right corner. In the bottom right corner, there is a simple, hand-drawn sketch of a person's head and shoulders, rendered in dark blue ink.

# THANKS!

Do you have any questions?