



Faculty of Economics and Business

**OPTIMAL PORTFOLIO CONSTRUCTION:
A CASE IN BURSA MALAYSIA**

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OPTIMAL PORTFOLIO CONSTRUCTION: A CASE IN BURSA MALAYSIA

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ABSTRACT

OPTIMAL PORTFOLIO CONSTRUCTION:

A CASE IN BURSA MALAYSIA

By

Chin Mei Han

This study investigates the adoption of portfolio construction in Malaysia stock market by using financial ratios such as economic value added (EVA), price earnings ratio (PER), book-to-market ratio (BM), size or market capitalization (MC) and dividend yield (DIV) from the year of 2009-2014. The aim of this study is to identify the optimum portfolio construction that generates maximum revenue for investors. Only 100 listed companies in Bursa Malaysia are being selected in constructing the portfolios - A_{TOP} , B_{BOT} , and C_{MID} . The results of mean equality test derived are mostly insignificant results yet there is positive excess return (0.39%) found in portfolio with low performing DIV companies. The findings of this study also revealed that portfolio constructions which employ financial ratios are suitable for 2-3 years holding period investment. Most of the constructed portfolio show drastic drop of return after three years of holding period. Among the five portfolios, this paper suggests the best choice of portfolio construction for short term investment is to construct portfolio using DIV or MC.

ABSTRAK

PEMBINAAN PORTFOLIO OPTIMUM: KES DI BURSA MALAYSIA

Oleh

Chin Mei Han

Kajian ini mengkaji pembentukan portfolio optimum dalam pasaran saham Malaysia dengan menggunakan nisbah kewangan seperti nilai tambah ekonomi (EVA), nisbah harga pendapatan (PER), nisbah buku ke pasaran (BM), saiz atau permodalan pasaran (MC) dan hasil dividen (DIV) dari tahun 2009-2014. Hanya 100 syarikat yang tersenarai di Bursa Malaysia dipilih untuk tujuan pembinaan portfolio tersebut dan dibahagikan kepada tiga kumpulan portfolio iaitu – tertinggi (A_{TOP}), terendah (B_{BOT}), and pertengahan (C_{MID}). Keputusan ujian kesetaraan min (*mean equality test*) yang diperolehi menunjukkan bahawa kebanyakan portfolio yang dibina adalah tidak signifikan. Akan tetapi, portfolio yang merangkumi syarikat berprestasi DIV rendah menunjukkan pulangan yang positif (0.39%). Hasil kajian ini menunjukkan bahawa pembinaan portfolio menggunakan nisbah kewangan adalah sesuai untuk tempoh pegangan selama 2 -3 tahun sebagai strategi pelaburan pilihan pelabur. Antara lima portfolio yang dibina, pembentukan portfolio menggunakan DIV atau MC amat sesuai bagi pelaburan jangka pendek.

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CHAPTER ONE

INTRODUCTION

1.0 Introduction

1.1.1 The Evolution of Portfolio Selection

Whether or not you agree, the primary intention to involve in investment is to create wealth. Among all types of investments available in market, acquisition of stock is the most preferred by investors in expanding their wealth. Dilemmas of an individual in making investment decisions concern on how to select and construct an optimum portfolio as well as diversify risk. It is a natural psychology that investors would mainly focus on the basic investment concept where high risk associated with high expected returns. In short, “high risk, high return”.

Portfolio construction is the best method in diversifying the risk tolerance of an investor. Innovatively, investors use the combination of classes of assets or selections based on their preference of investment strategies in achieving the optimum result. Markowitz (1952) was the first who contributed to portfolio theory called “The Portfolio Selection” which emphasized on the diversification mechanisms of risk and the expected returns to whom investors are concerned of. Anticipated risk - it is sometimes best known as expected risk - for a given expected return can be potentially reduced through diverse portfolio (Hirschey, 2001).

De Bondt and Thaler (1985) studied on the behavior of stock where violation of Bayes’ rule existed if investors overreacted towards the surprise news. Yu-Nan (2014) conducted both strategies of contrarian and momentum in Taiwan, Hong

Kong and Singapore. The purchasing of the bad performance stocks in the past and selling of good performance stocks in the past are being entitled as the contrarian strategy. In contrast, momentum strategy is the purchase of good stocks and sale of bad stocks. Bajkowski (1998) mentioned that O'Higgins introduced the Dogs of Dow "DOD" (dividend yield based strategy) which was more likely a buy-hold-strategy. In addition, it exhibits whether or not the portfolio beats the market. There were numbers of studies conducted by researchers specifically on DOD strategy expressed that it was often outperforming the market which consistent to the market overreaction hypothesis. Yet, in the study of Bhabra and Bruce (2006) displayed the disappointed results. They articulated that a high yield firm with the poor price movement could distress the result. O'Higgins discovered a new value investing strategy called MOAR- Michael O' Higgins Absolute Return (Hallam, 2012). MOAR strategy worked and generated 8.6 % of gain in 2011 with a portfolio comprised of world Dogs, gold or platinum, long-term government bonds, and intermediate term government bonds. The weightage of the portfolio was subjected to changes based on the current situation of the market.

Every investor needs to make decision and select the best stock-picking strategies as the traditional saying goes, "Don't put all eggs into one basket". Investors can shape their desired portfolio by shopping for types of stocks in accordance to their financial ratios. For instance, Basu (1977) explored the price earnings ratio (PER) criteria with the performance of expected returns and found out that low PER tend to generate more returns as compared to high PER ratio. On the other hand, Sareewiwatthana (2014) and Estrada (2005) further examined on hybrid PER; PERG ratio (PE ratio being adjusted with growth and risk) in relation with the

expected return. To be concerned, this research is to explore more on financial ratios which can act as the portfolio strategies and further investigate the relationship with each of the portfolio returns.

1.2 Background of study

1.2.1 Efficient Market Hypothesis (EMH)

Mayo (2011) and Reilly and Norton (2006) specified three similar assumptions of EMH which indicates the efficient capital market: a huge number of competitive investors, the availability of new random information in market, and costless transaction in trading securities. Rapid adjustments of security prices fully reflect the effect of new information released. In opposition to the previous statement, Malkiel (2003) introduced the random walk hypothesis theory which tells us that the unexpected pattern of subsequent price changes must be in random along with the newly released information. Arguments are made that even if investors are irrational; presence of valuation error; greater volatility of stock prices, the markets can still be efficient.

Strong disagreement by Fama (1998) towards casting off the efficiency even though many researches proposed that inefficiency of market exists in the returns of long-run. In the events of efficient market, the availability of information which causes overreaction of prices and there was similar frequency of under-reaction and overreaction to occur. Large anomalies of long-term return are mostly attributed by chance. It disappeared when different measures and application of models and statistical approach are being applied. Fama (1970) categorized form tests regarding

the efficient market hypothesis into three: weak form test, semi-strong form test and strong form test. The center of attention in the study of Bursa Malaysia was the evidences of weak form test. Fama (1970) mentioned that weak form tests vis-à-vis to the behavior of past return or prices. However, there could be possibility that our Malaysian stock market was not behaving as such.

1.2.2 Portfolio

Portfolio is the asset holdings of investors with the combination of certain proportion of financial assets such as stocks, bonds, cash equivalents and many other instruments which constructed by themselves or managed by the financial professionals. The combination of financial assets into a portfolio is formed in accordance to investor's financial goals and risk tolerance.

Behaviour of an investor indicates the level of risk tolerance that one can bear with their own level of risk appetite that eventually motivates them to invest into specific type of investments. To illustrate, willingness of risk averse investors to take risk happened only when the return of investment able to compensate the risk that they took. Jones (1994) defined that risk was being shown when expected return deviated from the actual return of an investment.

Determinants of the well-diversified portfolios need to be taken into account as part of the process in portfolio construction. An investor must decide on how to construct portfolio based on the elements such as number of securities (N), numbers of types of assets classes included, weights of each securities, portfolio style,

portfolio strategy or any combinations to be employed to reduce riskiness of the portfolio.

Apart from that, the return from the invested portfolio is the main concern by most of investor. Therefore, evaluation of portfolio performance provides the incorporated return and risk embedded in the calculation of performance measures such as Sharpe ratio and Treynor ratio. The highest value of ratios among the portfolios constructed implies the best performing portfolio.

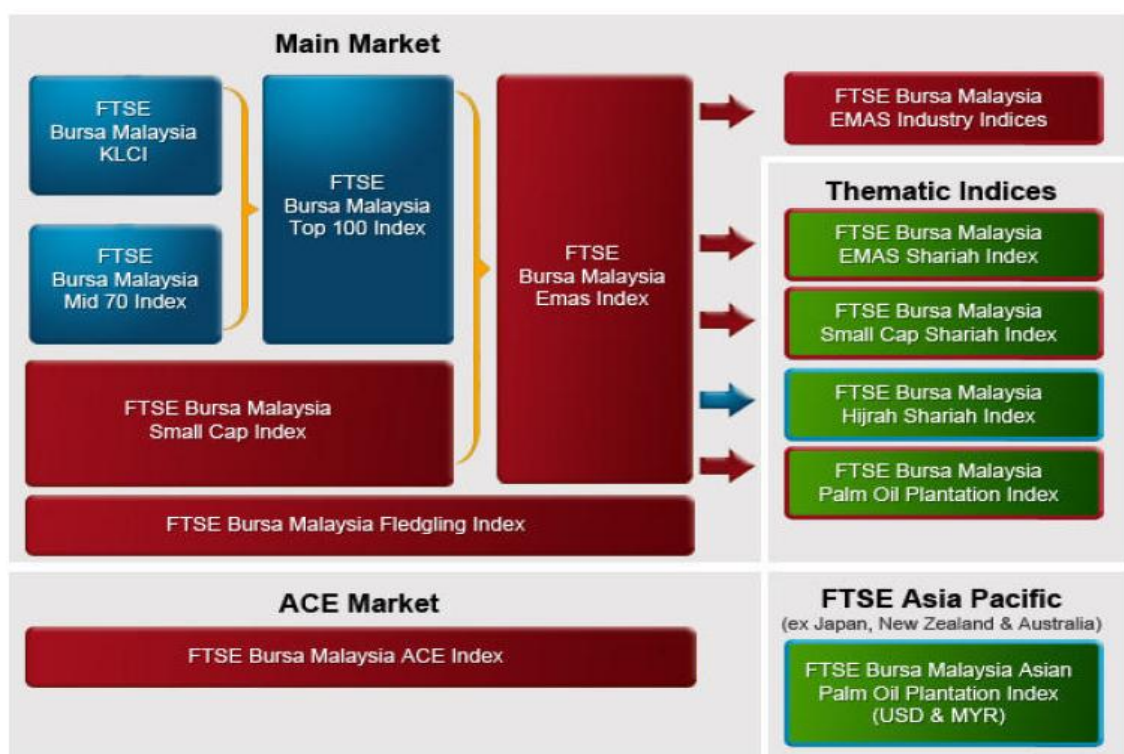
1.2.3 Malaysian stock market: Bursa Malaysia

History of Bursa Malaysia began in 1930 where Singapore Stockbroker's Association was Malaysia's initially formed securities business organization. It was then re-registered in the year of 1937 as Malayan Stockbrokers' Association. Public shares trading began when Malayan Stock Exchange was being established in 1960. After the event of separation of Singapore from Malaysia in 1965, the well-known Stock Exchange of Malaysia transformed into Stock Exchange of Malaysia and Singapore. They were then further separated into Kuala Lumpur Stock Exchange Berhad and Stock Exchange of Singapore. Since 14th April 2004, the name of Kuala Lumpur Stock Exchange Berhad newly labelled as Bursa Malaysia and listed on the Main Board of Bursa Malaysia Securities Berhad. On 3rd August 2009, new board structure was being implemented by separating the market into Main Market and Ace market.

Currently, the main market structure in Bursa Malaysia is FTSE Bursa Malaysia Top 100 Index which comprises of the top 30 stocks in FTSE Bursa

Malaysia KLCI and FTSE Bursa Malaysia Mid 70 Index. FTSE Bursa Malaysia categorizes indices into two: tradable indices and benchmark indices. One of the benchmark indices is FTSE Bursa Malaysia Emas Index with the combination of FTSE Bursa Malaysia Top 100 Index and FTSE Bursa Malaysia Small Cap Index was formed on 31st March 2006.

Figure 1: The structure of Main Market and Ace Market of Bursa Malaysia



Source: Bursa Malaysia Berhad

The table below shows the number of listed companies in Bursa Malaysia from December 2003 till November 2014:-

Table 1.1: Numbers of Listed Companies in Bursa Malaysia

Year	Domestic companies	Foreign companies	Total listed companies
Dec 2003	897	4	901
Dec 2004	955	4	959
Dec 2005	1015	4	1019
Dec 2006	1021	4	1025
Dec 2007	983	3	986
Dec 2008	972	4	976
Dec 2009	952	7	959
Dec 2010	948	8	956
Dec 2011	932	8	940
Dec 2012	911	9	920
Dec 2013	900	10	910
Dec 2014	895	10	905

Source: The World Federation of Exchanges

1.3 Motivation of Study

The purpose of this study is to identify the optimum approach to construct portfolios of stocks for Malaysian investors as preference in their investment from the stock market in Bursa Malaysia.

1.3.1 Problem Statement

Portfolio construction is an ultimate key for an investor to formulate a successful investment. The significance of having well-constructed portfolio by not “putting all eggs into a basket” is strongly related to risk diversification concept. A well-diverse portfolio eliminates the unsystematic risk without affecting the expected gain of an investment.

Based on early prior research done by Fama and French (1993), Basu (1977), Chan and Lakonishok (2004), Griffin and Lemmon (2002), and many other researchers, they justified the greatest portfolio returns by constructing portfolio using financial ratios such as price earnings ratio, dividend yield, and book-to-

market. In Malaysia, there are quite a number of overreaction studies examine on the abnormal return in the long and short-run conducted by Ahmad, Ali, and Anusakumar (2013), Ahmad, Ali, and Anusakumar (2011), Abidin, Ali, Hassan, and Nassir (2009), Guru, Lai, and Nor (2003), and Ahmad and Hussain (2001).

Two problems had been identified from prior research on portfolio strategies in Malaysia and other countries. First, there are limited studies utilised financial ratio, for instance, economic value added (EVA) as the strategy to construct portfolio especially in the context of Malaysia. Second, inconclusive result of the empirical evidence compared to prior studies of other countries. When the first sample data which compounded the 367 out of S&P 500 companies were being regressed in the studies of Degel, Degner, and Farsio (2000), they found weak positive relationship between EVA and total stock return. In contrast, the result of third sample data of 55 randomly selected S&P 500 companies did not show any relationship between the EVA and total stock return. They concluded that EVA cannot predict the return in the short run. Leong, Pagani, and Zaima (2009) evaluated that the highest book to market (BM) portfolio exhibited the highest return in the t-test and Wilcoxon non parametric test compared to earnings value added to market measure (EVAM) and earnings price (EP) ratio. In term of performance among the 30 constructed portfolios, portfolio with highest EVA companies (EVAM10) has the best performance. Interestingly, when the variables included Sharpe performance measure, EP or BM portfolio is as effective as EVAM portfolio strategy.

Findings of Chee, Sie, and McInish (2002) showed the negative relationship between size and stock returns was found in both Malaysia and Singapore for the research period from 1988- 1996 based on cross sectional regression. However, no

significant relationship between the firm size and stock returns was found after tested by using multiple regression model on financial and non-financial companies in Sri Lanka within the period of 2005-2010 (Jariya, Rimziya, and Shafana, 2013). Overall, we can conclude that there are gap differences in the findings of their research. The major reasons of the problem can be affected by different application of methodology, period of study, and selected country. To clarify, this paper is to identify the relationship between financial ratios and the portfolio performance in Malaysia.

There are five major concerns in the selection of optimum portfolio which eventually formed the questions as addressed below:-

- i. Is there any relationship between economic value-added (EVA) and portfolio return in short and long run?
- ii. Is there any relationship between book-to-market ratio (BMR) and portfolio return in short and long run?
- iii. Is there any relationship between price earnings ratio (PER) and portfolio return in the short and long run?
- iv. Is there any relationship between size and portfolio return in the short and long run?
- v. Is there any relationship dividend yield and portfolio return in the short and long run?

Thus, the aim of this study is to investigate the relationship between economic value-added (EVA), book-to-market ratio (BMR), price earnings ratio (PER), size, dividend yield, and portfolio performance return in long run by focusing on Bursa Malaysia.

1.4 Objectives of Study

1.4.1 General Objective

The main objective of this study is to construct optimum portfolio selection strategies in the context of Bursa Malaysia.

1.4.2 Specific Objectives

My research will be concerning on the companies which are listed on Bursa Malaysia. Hence, the specific objectives for this study include:

- i. To examine the relationship between the economic value-added (EVA) and portfolio performance.
- ii. To test whether the book market ratio (BMR) and portfolio performance has positive relationship.
- iii. To investigate the correlation between price earnings ratio and portfolio performance.
- iv. To study the behavior between the size and portfolio performance.
- v. To assess the affiliation of dividend yield and portfolio performance.

1.5 Significance of Study

This study is regarding the relationship between the application of portfolio strategy and portfolio returns in Bursa Malaysia. The main intention is to provide an additional contribution in the area of portfolio construction by identifying the optimum approach of portfolio strategy to construct portfolios of stocks for Malaysian investors. In addition, this empirical study on the context of Malaysia would attract and benefit more investors towards the importance of building an optimum portfolio for investment purpose as well as to gain abnormal return with a minimum risk. In future, this study may fascinate more Malaysian researchers who are interested to further study on optimum portfolio construction.

1.6 Scope of Study

Prior studies on portfolio strategies had shown the popularity of using PER, dividend yield, overreaction and size to analyze the relationship with returns of portfolio. With respect to this, economic value-added (EVA), book-to-market ratio (BMR), price earnings ratio (PER), size, and dividend yield are applied as part of the portfolio strategies to indicate which component contributes the greatest returns in portfolio creation strategies. Secondary data are collected by using the times series data from 2009 till 2014.