RISK AND RETURN FOR THE DOLLAR-COST AVERAGING (DCA) VERSUS

LUMP-SUM (LS) STRATEGY ON THE MARKET PORTFOLIO OF STOCKS

LISTED ON THE KUALA LUMPUR STOCK EXCHANGE (KLSE)

by

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ABSTRAK

Tujuan kajian ini adalah mengenalpasti risiko dan pulangan untuk strategi-strategi pelaburan Purata Kos-Ringgit berbanding Jumlah-Keseluruhan di dalam portfolio pasaran saham yang disenaraikan di Bursa Saham Kuala Lumpur (BSKL). BSKL adalah cekap dalam bentuk lemah dan harga sejarah tidak dapat digunakan sebagai panduan dalam meramal harga di masa hadapan. Ketidakpastian di dalam ekonomi makro dan persekitaran global telah meningkatkan kemeruapan pasaran saham Malaysia dalam jangka masa sepuluh tahun yang lalu. Kebanyakan pemegang saham merupakan pelabur yang bersifat spekulasi dan ini telah menyebabkan ramalan rentak pasaran semakin sukar. Walaupun pada ketika ini banyak cara ataupun teknik telah wujud untuk meramal paras pasaran saham, ramai pelabur masih tidak percaya mereka berkemampuan untuk mengenalpasti masa yang tepat dalam membuat pelaburan dan meramalkan harga saham pada masa hadapan. Pelabur telah membangunkan beberapa cara untuk meminimumkan kesan dari penentuan masa di dalam pelaburan mereka melalui strategi seperti Purata Kos-Ringgit, pelaburan Jumlah-Keseluruhan, strategi Beli dan Pegang, Purata Nilai, Penunjuk dan Plan Formula. Kajian dalam portfolio pasaran di BSKL mencadangkan Purata Kos-Ringgit melalui taburan pelaburan dalam jangka masa panjang tidak dapat mengatasi strategi Jumlah-Keseluruahan di mana pelaburan dibuat pada suatu masa dan ketika. Kajian ini juga mendapati kedua-dua risiko dan purata pulangan meningkat dengan jangka masa pegangan untuk Bursa Saham Kuala Lumpur. Walaupun Purata Kos-Ringgit adalah strategi yang tidak optimum, tetapi ia masih popular di kalangan pelabur kerana sifat tingkahlaku pelabur sendiri.

ABSTRACT

The purpose of this study was to examine the risk and return profile of the Dollar-Cost Averaging versus Lump-Sum investment strategies in the market portfolio of stocks listed on the Kuala Lumpur Stock Exchange (KLSE). KLSE is weak form efficient and historical prices cannot be used to predict future prices. Uncertainties in the macro economic and global environment have increased volatility in the Malaysian stock market for the past decade. Majority of Malaysian shareholders who are speculators have made market timing even more difficult. While there may be ways to identify when the market hits the bottom, many investors still do not believe they have the ability to correctly time the stock market movement and predict future stock prices. Investors have developed ways to minimize the effects of timing in their investments through strategies like Dollar-Cost Averaging, Lump-Sum investment, Buy and Hold strategy, Value Averaging, Indexing and Formula Plans. The study on the market portfolio of KLSE suggests that Dollar-Cost Averaging, which spreads an investment over time, may not be superior to the Lump-Sum strategy that invests a Lump-Sum at one point in time. This study also finds that both risk and average return increase with the length of holding period for the Kuala Lumpur Stock Exchange. While Dollar-Cost Averaging is a sub-optimal strategy, it is still popular among investors due to the behavioral characteristics of investors.

Chapter 1

INTRODUCTION

1.1   Introduction

The study of the principles and practices of investments is concerned with the investors' attempt to make logical investment decisions about alternatives that have varying degree of return and risk. It is assumed that a typical investor does not like risks, defined as the possible loss of income or capital or the variability of expected return. Investment return is expressed as the rate found by dividing the sum of investments into the income plus the capital gain or loss.

Local academic studies such as Lim (1980), Lanjong (1983), Laurence (1986), and Barnes (1986) on the KLSE finds that it is weak form efficient. In other words, past price changes should be unrelated to future price changes. The current price reflects all past market data and historical price information is of no value in assessing future share prices movements. The price change today is unrelated to the changes yesterday or the day before. If new information arrives randomly, the change in prices will also be random. The KLSE is also subjects to certain market anomalies like calendar effect and "January Effect" (Yong, 1989; Zamri, 1998). Macro economic and global changes have increased the volatility of the domestic stock market over the past decade. Events such as the Iraq invasion of Kuwait in early 1990, the ERM crisis, the sudden influx of short-term foreign funds during 1992/93 super bull run, the PESO crisis in mid-1990, the Asian currency crisis in 1997 which started with the devaluation of Baht, the burst of the US technology bubble in 2000, the September 11 incident and the accounting scandals of huge empires like Enron

have shown how vulnerable the Malaysian stock market is to external shocks which occurred randomly.

While there may be claims that investors could identify the market bottoms and highs, many investors still do not believe that they have the ability to time the stock market and predict the future prices. Findings by Kon and Jen (1979) and Henriksson (1984) have shown little evidence that fund managers had consistent timing abilities. Therefore, investors have developed ways to minimize the effects of timing in their investments through strategies like Dollar-Cost Averaging, Lump-Sum investment, Buy and Hold strategy, Value Averaging, Indexing and Formula Plans.

Dollar-Cost Averaging requires an individual to spread an investment outlay at regular intervals, such as every week, month or quarter. Dollar-Cost Averaging enable investor to end up purchasing more shares when prices fall and fewer shares when prices rise. Dollar-Cost Averaging is a simple, forced savings plan that results in lower transaction costs than a plan that requires frequent portfolio rebalancing and allows investors to hedge against regret that results from investing a Lump-Sum during a market high. Lump-Sum investing requires investor to invest all funds at one time. For example, if an investor has RM10,000 available to spend, he purchases RM10,000 worth of assets now, leaves the investment dollars in place, and computes the return earned on this investment over a given period of time.

Dollar-Cost Averaging is widely recognized by personal investment and academic financial literature as a way to increase return and reduce risk. This strategy is believed to guarantee the investor does not invest his entire sum at a market high and thus regrets his investment decision ex-post. Since Constantinides (1979) demonstrated that Dollar-Cost Averaging plans are suboptimal theoretically compared to Lump-Sum because its practice is inconsistent with standard finance, Rozeff (1994)

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in his empirical study on the S&P 500 and a small firm portfolio in United States has also shown similar findings. The terminal wealth theory, briefly defined as expected return generated from certain investment horizon also supports Lump-Sum investment that has a higher ending wealth compared with Dollar-Cost Averaging. While Dollar-Cost Averaging may be a suboptimal strategy, it is still popular among investors due to the behavioral characteristics of investors. Statman (1995) concluded that investors are risk averse, may be reluctant to commit all available funds at one time since the investment may occur at a high market and it minimizes regret. Kahneman and Tversky (1980)'s findings showed that people (investors) are generally risk averse and do not like uncertainties.

This study seeks to examine the risk and return for the Dollar-Cost Averaging versus Lump-Sum investment in the market portfolio of stocks listed on the Kuala Lumpur Stock Exchange. The period examined is from January 1992 to January 2002 and data used consists of the closing Emas Index for the first trading day of each month. The 3-months Fixed Deposit rates of a foreign bank in Malaysia for the same period are also used as the investment rate for the un-invested portion of the fund for Dollar-Cost Averaging strategy. The period from January 1992 to January 2002 covered both bull and bear markets and also periods of high and low interest rates in Malaysia. This study is based on Rozeff (1994)'s research methodology on Dollar-Cost Averaging versus Lump-Sum strategy in the monthly S&P 500 Index and a small firm portfolio for the period from 1926 to 1990.

1.2   Research Questions

1) Can investors time the market with the occurrence of market efficiency and anomalies?

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2) Can we develop alternative solutions to timing?

3) Is Dollar-Cost Averaging superior than Lump-Sum as a result of investors being risk-averse?

4) Will the success of Dollar-Cost Averaging and Lump-Sum determined by seasonality?

1.3   Objectives of the Study

The objectives of this study are to

1) compare the average return and risk (as measured by the standard deviation of returns) in employing the Lump-Sum strategy versus the Dollar-Cost Averaging strategy on the market portfolio of stocks listed on the Kuala Lumpur Stock Exchange.

2) explore the trend of average return and standard deviation with the length of the holding period for both strategies.

3) Compare the success of Lump-Sum strategy with Dollar-Cost Averaging strategy during different months.

1.4   Significance of the Study

It is hoped that using the results of this study, investors will be able to assess whether the Dollar-Cost Averaging strategy is superior to Lump-Sum strategy for investment in stocks listed on the Kuala Lumpur Stock Exchange (KLSE). The results also could shed some lights on the implication on theories such as market efficiency and behavior finance, and practical investment.

1.5   Organization of the Chapters

This study is organized into five chapters. Chapter 1 introduces the subject matter, discusses research questions, states the objective and explains the usefulness of this study. It is aimed at comparing the average return and risk by employing the Lump-Sum strategy versus the Dollar-Cost Averaging strategy on the market portfolio of stock listed on the KLSE. The remaining chapters have been organized in the following manner, Chapter 2 reviews previous studies and their findings on behavioral framework, market efficiency, market anomalies, timing the market, and alternatives solution to time the markets. The review will serve to compare and contrast the findings in the past researches on Dollar-Cost Averaging strategy with Lump-Sum strategy. Chapter 3 outlines the research methodology, which covers the discussion on data selection, return of investment formulation, formalization of hypotheses for testing, and statistical analyses deployed. Chapter 4 presents various analyses of data selected and the respective findings. Last but not least, Chapter 5 concludes the study, discusses survey findings, provide implication for investors, highlights some limitations, and gives some suggestions for future studies in this field.

Chapter 2

LITERATURE REVIEW

2.1   Introduction

This chapter reviews the relevant literature that forms the basis of this study. To understand the related knowledge on the subject of the study, the literature survey encompasses previous research studies on behavioral framework, market efficiency, market anomalies, timing the market, and alternatives solution to time the markets. Dollar-Cost Averaging and Lump-Sum strategies have been selected for this study. The review will serve to compare and contrast the findings in the past researches on Dollar-Cost Averaging strategy with Lump-Sum strategy. A summary of Emas Index and Fixed Deposit interest rate movement from 1992 to 2002 were also discussed in this study. Lastly, a summary of this chapter and an overview of the subsequent chapter is presented.

2.2   Behavioral Framework

Jones (1996) defines an investment as the commitment of funds to one or more assets that will be held over some future time period. Investment is concerned with the management of an investor's wealth, that is the sum of current income and the present value of all future income. Investors invest to improve welfare that can be defined as monetary wealth, both current and future. Funds to be invested come from assets already owned, borrowed money and savings or foregone consumption. By foregoing consumption today and investing the savings, investors expect to enhance their future consumption possibilities by increasing their wealth. Investors also seek to manage

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their wealth effectively by obtaining the most from it while protecting it from inflation, taxes and other factors. Specifically, they must decide when to invest, what assets to acquire, how much of their wealth to invest in those assets and for what future periods to hold those assets. Making and implementing such decisions is here referred to as the process of investing.

Two psychologists, Daniel Kahneman of University of California at Berkeley and Amos Tversky of Stanford, in the 1980's carried out research into human decision-making processes regarding risk. The report on this research appeared in the "The 1987 Investor's Guide", Fortune Magazine. Although their efforts have not focused on investors in particular, many of their findings aptly refer to the decisions of investors constantly make. Kahneman and Tversky (1987) have conducted elaborate psychological tests with subjects who were asked to choose between different pairs of risks and rewards. From these tests, there emerged a new understanding of how people assess the probabilities of gains and losses. Most people are bothered by the 20% chance of getting nothing in the second choice which tells psychologists what stock market theorists believe all along, that is, investors like certainty, or in other words, are risk-averse.

Shefrin (2000) defines loss aversion as people tend to feel losses much more acutely than they feel gains of comparable magnitude. Statman (1995), who argues that investors not wanting to experience "regret" and would choose to keep their holdings in cash rather than suffer the pain of regret that will come if stock prices declines.

For the above reason, investor is said to be risk averse. Why do risk-averse individual or institutions invest? Whether investors are individual or institutions, they are likely to choose an investment that offers the highest return with the lowest risk.

It is assumed that investors attempt to maximize wealth that is accomplished through the process of maximizing return and minimizing risk. There appears to be direct correlation between return and risk, that is the higher the reward, the higher the risk. Therefore, the investor should attempt to keep the risk associated with the return proportional. Seeking excessive risk does not ensure excessive return. Not all securities with a given level of return have the same degree of risk.

As such, Dollar-Cost Averaging is more attractive to people who prefer multiple bets to one-shot risk (Lump-Sum) and it can mitigate loss aversion (Shefrin, 2000). Moreover, as Statman (1995) argues, financial loss is usually accompanied by regret. Lump-Sum investors are likely to blame themselves more than Dollar-Cost Averaging investors if the stock takes a dive shortly after they bought it.

2.3 Market Efficiency

An efficient market is a market in which the price of securities fully reflect all know information quickly and on average accurately. This concept postulates that investors will assimilate all relevant information into prices in making their buy and sell decisions. Therefore, the current price of a stock reflects all know information, including not only past information but also current information as well as events that have been announced but are still forthcoming such as stock split and bonus issues. Furthermore, information that can reasonably be inferred is also assumed to be reflected in price. For example, if investors believe that interest rates will decline soon, prices will reflect this belief before the actual decline occurs. The early literature on market efficiency assumes that the market prices incorporate new information instantaneously. The modern version of market efficiency does not require that the adjustment be literally instantaneously, only that it occur very quickly

as information becomes known. The Efficient Market Hypothesis states that the adjustment in prices resulting from information is "unbiased".

Jones (1996) concluded that the market could be expected to be efficient if the following events occur:

1) A large number of rational, profit-maximizing investors exists who actively participate in the market by analyzing, valuing and trading stocks. These investors are price takers; that is one participant alone cannot affect the price of a security.

2) Information is costless and widely available to market participants at approximately the same time.

3) Information is generated in a random fashion such that announcements are basically independent of one another.

4) Investors react quickly and fully to the new information, causing stock prices to adjust accordingly.

These conditions may seem strict. There is no question that a large number of investors are constantly "playing the game". Both individuals and institutions follow the market closely on daily basis and ready to buy or sell when they think is appropriate. The total amount of money at their disposal at any one time is more than enough to adjust prices at the margin. Although the production of information is not costless, for institutions in the investment business, generating various types of information is a necessary cost of business and many participants receive it easily. It is widely available to many participants at approximately the same time as information is reported on radio, television and specialized communications devices now available to any investor willing to pay for such devices. Information is largely generated in a random fashion in the sense that most investors cannot predict when

companies will announce significant new developments like when wars will break out, when strikes will occur, when currencies will be devalued and so forth. Although there is some dependence on information events over the time, by and large announcements are independent and occur more or less randomly. Security prices will adjust very quickly to reflect random information coming into the market. Furthermore, price changes are independent of one another and move in a random fashion. Today's price change is independent of the one yesterday because it is based on investor's reactions to new, independent information coming into the market today.

In a perfectly efficient market, security prices always reflect immediately all available information and investors are not able to use available information to earn abnormal returns because it already impounded in prices. In such a market, every security's price is equal to its intrinsic value, which reflects all information about that security's prospects. If some types of information are not fully reflected in prices or lags exist in the impoundment of information into prices, the market is less than perfectly efficient. In fact, the market is not perfectly efficient and it is certainly not grossly inefficient, so it is the question of degree.

Fama (1970) discuss efficient market in the form of Efficient Market Hypothesis, which is simply the formal statement of market efficiency. It is concerned with the extent to which security prices quickly and fully reflect the different types of available information. Weak-form is the part of the Efficient Market Hypothesis that states that prices reflect all price and volume data. The correct implication of a weak-form efficient market is that the past history of price information is of no value in assessing future changes in price.

2.3.1 *Evidence on Market Efficiency*

Weak-form efficiency means that price data are incorporated into current stock prices. If prices follow nonrandom trends, stock price changes are dependent; otherwise, they are independent. Therefore, weak-form tests involve the question of whether all information contained in the sequence of past prices is fully reflected in the current price. The weak-form Efficient Market Hypothesis is related to, but not identical with an idea from the 1960s called the random walk hypothesis. If prices follow a random walk, price changes over time are random and independent. The price change for today is unrelated to the price change yesterday or the day before or any other day. If new information arrives randomly in the market and investors react to it immediately, changes in prices will also be random. Stock price changes in an efficient market should be independent. Fama (1965) studied the daily returns on the 30 Dow Jones Industrial stocks and found that only a very small percentage of any successive price change could be explained by a prior change. This suggest that price changes are independent and the implication is that knowing and using past sequence of price information is of no value to an investor. Fama (1991) found that stock prices were adjusted efficiently to firm-specific information such as dividend changes, changes in capital structure, and corporate control transactions. In addition, the stock-price reactions to private information were small, and predictability of stock prices from past return and other variables were short on precision.

Evidence of market efficiency could also be observed in studies on stock market overreaction. Debondt and Thaler (1985) have tested an "overreaction hypothesis", which states that people overreact to unexpected and dramatic new events. As applied to stock prices, the hypothesis states that, as a result of overreaction, "loser" portfolios outperform the market after their formation. Debondt and Thaler (1985) found that over half-century period, the loser portfolios of 35

stocks outperformed the market by an average of almost 20% for a 36-months period after portfolio formation. Winner portfolios earned about 5% less than the market. Interestingly, the overreaction seems to occur mostly during the second and third year of test period. They interpreted this evidence as indicative of irrational behavior by investors or "overreaction". This indicates substantial weak-form inefficiencies because overreaction hypothesis is predictive. In other words, according to their research, knowing past stock returns appears to help significantly in predicting future stock prices and it is in a way that weak-form contra evidence.

Do market anomalies appear to be contrary to an efficient market? Market anomalies are phenomenon that appears to be contrary to an efficient market. By definition, an anomaly is an exception to a rule or model. In other words, these anomalies are in contrast to what would be expected in a totally efficient market, and they cannot easily be explained away. Investors must be cautious in viewing any of these anomalies as a stock selection device guaranteed to outperform the market. There is no such guarantee because empirical tests of these anomalies may not approximate actual trading strategies that would be followed by investors. Furthermore, if anomalies exist and can be identified, investors should still hold a portfolio of stocks rather than concentrating on a few stocks identified by one of these methods. Among the more well-documented anomalies are the size effect, the January effect and other calendar effect.

One well-known anomaly is the firm size effect. Banz (1981) discovered that stocks of small New York Stock Exchange (NYSE) firms' earned higher risk adjusted returns than stocks of large NYSE firms. The size effect appears to have persisted for over 40 years. He attributed the results to a misspecification of the CAPM rather than to market inefficiency. That is, in the face of persistent abnormal returns attributed to

the size effect, Banz (1981) is unwilling to reject the idea that market could have inefficiencies of this type. Addition research by Keim (1983) on the size effect indicates that "small" firms with the largest abnormal returns tend to be those that have recently become small (or have recently declined in prices), that either pay no dividend or have a high dividend yield, that have low prices and low P/E ratios. He found out that roughly 50% of return difference reported is concentrated in January.

Numerous studies in the past have suggested that seasonality exists in the stock market. Keim (1983) studied the month-to-month stability of the size effect for all NYSE and AMEX firms with data for 1963 to 1979. His findings again supported the existence of a significant size effect. However, roughly half of this size effect occurred in January and more than half of the excess January returns occurred during the first five trading days of the month. The first trading day of the year showed a high small firm premium for every year of the period studied. The strong performance in January by small company stocks has become known as the January effect. Keim (1986) documented once again the abnormal returns for small firms in January. He found a yield effect – the largest abnormal returns tended to accrue to firms either paying no dividends or having high dividends yields.

The information about a possible January effect has been available for years and has been widely discussed in press. The question arises, therefore, as to why a January effect would persists and reoccur again and again. A recent study of the January effect by Bhardwaj and Brooks (1992) indicates that the previous studies of abnormal returns for small firms may be biased by incomplete consideration of a price effect and transaction costs. On the basis of the years 1967 to 1986, this study argues that the January effect is a low-price phenomenon rather than a small firm effect; there is a stable and strong low-price January in each of these 20 years. Further tests

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indicated that, after adjusting for differential transaction costs, portfolios of lower price stocks almost always under-performed the market portfolio. Therefore, the large before-transaction-costs excess January returns observed on low-price stocks may be explained by higher transaction costs and a bid-ask bias. The implication of this study is that the reported January anomaly is not persistent and is not likely to be exploited by most investors.

Branch (1977) proposed a unique trading rule for taking advantage of tax selling. Investors tend to engage in tax selling at the end of the year to establish losses on stocks that have declined. After the New Year, there is a tendency to reacquire these stocks or to buy other stocks that look attractive. This scenario would produce downward pressure on stock prices in late November and December and positive pressure in early January. Those who believe in efficient markets would not expect such a seasonal pattern to persist; arbitragers who would buy in December and sell in January should eliminate it. Dyl (1977) supported the tax-selling hypothesis when he found that December trading volume was abnormally high for stocks that had declined during the previous year and that volume was abnormally low for stocks that had experienced large gains. He found significant abnormal returns during January for stocks that had experienced losses during the prior year.

Although not as significant as the January anomaly, several other "calendar" effects have been examined, including the Chinese New Year (CNY) effect, the monthly effect, the weekend/day-of-the-week effect, and the intraday effect. Zamri (1998) has concluded that CNY effect plays a very important role in explaining high returns surrounding the turn-of-the western year in Chinese-dominated market of KLSE. This result is consistent with Yong (1989) and Wong *et al.* (1990) findings. There are also evidence that in the study of monthly effect, all the market's

cumulative advance occurred during the first half of trading months. The weekend effect has been documented by French (1980), and by Gibbons and Hess (1981). French (1980) found that the mean return for Monday was significantly negative during 5-year sub-periods and during the full period. In contrast, the average return for the other four days was positive. Gibbons and Hess (1981) likewise found negative returns on Monday for individual stocks and Treasury bills. The Monday effect was similar for different size firms that were exchange-traded or OTC.

2.4   Can Investors Time the Market?

With the past findings on market efficiencies and anomalies as explained above, can we really time the market? Timing is clearly an important aspect of the investing process. Buying and selling at the right time is as important as being able to select good stocks. Unfortunately, buying at the bottom and selling at the top is very seldom accomplished except by chance.

Kon and Jen (1979) investigated the relationship between timing, selectivity and market efficiency as compared to the investment performance of mutual funds. Of the 37 funds examined, 25 had exhibited positive estimated selectivity, of which 5 were statistically significant at 95% confidence. They suggested that there was evidence that the funds as a group exhibited an ability to generate positive selection performance. Kon (1983) also evaluated the timing of the mutual funds. Of the 37 funds, 14 had positive overall timing performance estimates, but none was statistically significant at 95% confidence. Kon (1983) concluded that mutual fund managers should rely on their skills of stock selection and not try to time the market.

Henriksson (1984) conducted another empirical investigation on market timing and mutual fund performance. He did not find any evidence of a consistent

timing ability. Of the 116 funds sampled over the period of February 1968 through May 1980, only 3 had statistically significant positive estimates of timing ability. In contrasts, 9 funds had negative timing estimates that were statistically significant.

Kester (1990) examined the comparative potential gains and required predictive ability of marketing timing asset mix decisions in the United States and Singapore based on historical returns data over the period from 1975 to 1988. He concluded that at 2% transaction cost level, the required predictive ability in both the United States and Singapore is probably beyond the reach of most investors.

Price (1987) examined the potential rewards and risks from timing decisions involving financial assets in the United States. Table 2.1 shows the average annual rates of return, calculated over the period from 1926 to 1983, for the market timing versus buy-and-hold strategy, with a 1% commission on each transaction. Market timing as conducted in the study involved the transferring of funds between common stocks and treasury bills. In order to be successful at market timing relative to a buy-and-hold strategy in the United States, the study suggested that an investor must correctly forecast market movements over the 50% of the time and less accurate forecasts result in greatly diminished returns.

Table 2.1

Annual return by buy-and-hold strategy

Market Timing Accuracy	Average Annual Return (%)
100%	18.2%
70%	12.1%
50%	8.1%
Buy-and-hold with no timing decisions	11.8%

Source: Price (1987) - Average annual return for market timing versus buy-and-hold strategy in the US, 1926 - 1983

2.5 Alternatives Solutions to Timing

Many investors do not believe they have the ability to make profit from stocks trading. They stress quality and selectivity and develop ways to minimize the effects of timing.

Amling (1989) recommended typical solutions to the timing problem. These are done by using the Dollar-Cost Averaging, formula plan and indexing approaches.

2.5.1 Dollar-Cost Averaging

Dollar-Cost Averaging is considered to be a better averaging technique because it involves buying stock at a price lower than the average of the market trend, even though the market moves upward in a cyclical fashion. With Dollar-Cost Averaging, the investor buys the same dollar amount of stock at regular time periods. As the market declines, the investor is able to buy more shares of stock with a fixed number of dollars. If the stock moves up in price, the investor buys a smaller number of shares.

The advantages of Dollar-Cost Averaging are as follows:

1) It relieves investor from the pressure in timing stock purchases. It works best when stock is acquired in a declining market and reduces the average cost per share and improves the possibility of gain over long-term.

2) It forces the investor to plan an investment program more thoroughly as compared to a Lump-Sum commitment made at one time.

3) It provides the periodic and continuous review of the investor's portfolio and objectives.

4) It eliminates the cyclical characteristics of a stock but retains the trend of growth over time.

5) It reduces timing risks associated with the market. Many investors make incorrect guesses about the future course of the stock market, which can lead to poorly timed investment decision. Since its program ensures that you are investing continuously, you will never choose the "wrong" time to invest (Patrick, 1996).

However, there are also some disadvantages of Dollar-Cost Averaging.

1) It increases the cost involved in purchasing the stock at several different times rather than at one time.

2) The investor may be unwilling to carry on the averaging program especially when the stock begins to drop.

3) It attempts to solve buy timing issue but it does not call attention to the problem of the timing of the sales of the securities that have been purchased. Dollar-Cost Averaging assumes that once stock is purchased, they will be sold infrequently. There is an advantage in holding securities of quality companies but once the company's basic status changed, we should act.

2.5.2 Formula Plans

By not telling the investor when to sell, Dollar-Cost Averaging does not emphasize sufficiently the fundamental problem of the investment-management equation – bluntly stated as the buy low sell high concept. If investors were perfect in their judgment of the market and market conditions, they would buy low and sell high. This process requires a great deal of patience and fortitude. It is generally full of pitfalls and errors in judgment.

The buy low sell high concept is excellent but difficult to employ, particularly for the small investor. A systematic approach is needed to produce results comparable to those of a skilled investor to generate a good judgment on buying low

and selling high; yet the approach must be automatic, so that once it is established, the person with only a modest skill in investment timing will be able to carry out the investment successfully. Programs that provide an automatic timing device to guide the buy and sell transactions on a prearranged plan to simulate good management are referred to as formula plans.

In a formula plan, a certain percentage of the investor's portfolio will be invested in fixed-income securities or cash and a certain percentage in common stock. The exact amount invested in each depends on the height of the stock market at the time the investor begins the plan. It is not uncommon for investor to follow a balanced-fund approach when 50% are invested in bonds and 50% are invested in common stocks. At the time the portfolio is established, an attempt should be made to determine the relative height of the stock market. If the market is relatively high, a greater percentage of the investment fund should be in fixed income types of securities and cash, perhaps a ratio of 70% fixed and 30% stock. If on the other hand, the market is low, then one could reverse proportions.

When the market moves higher, the proportion of common stock in the portfolio either remains the same or it declines. When the market declines, the common stock either remains the same or it increases. These changes simply recognize that a portfolio should be more aggressive when the market is low and more defensive when the market is high. Formula plan also requires that stock be bought and sold when a significant change occurs in the price of the securities owned by the investor. A significant change in the level of the market as measured by a leading stock market index, such as Dow Jones Industrial Average, or Standard & Poor's 500 Index might also signal a change. The time period between purchase and sale will depend on the movement of the market or the securities owned.

The advantages include:

1) Once the plan is established, the investor is free from making emotional decisions based on the current attitudes of other investors in the stock market.

2) Most effort and discussion about timing is concerned with buying securities. The formula plans stresses both buying and selling.

3) It recognizes the defensive and aggressive characteristics of an investment portfolio. As market moves up, the formula plan results in an increasingly defensive position while when the market decline, the portfolio automatically becomes more aggressive.

The disadvantages include:

1) Investors must make a value judgment as to the relative height of the stock market to increase or decrease holding common stock

2) Over a sustained market rise, investors would be better off in common stock than in a combination of bonds and common stock.

3) Investors might choose securities that do not move with the market, as the beta characteristics of common stocks are not entirely stable.

4) It offers only modest opportunity for capital gains.

2.5.3 Indexing

Many people think that they must do as good if not better than the market if they are to be successful investors. Unfortunately, it is difficult to do better than the market. Therefore, many investors would be willing to do as well as the market by earning the return of the market and accepting the risk of the market. The market consists of usually some market index such as S&P 500 Index. In order to "get the market", an investor would purchase all the stocks in the index based on the proportion of each in the index. The unfortunate part about indexing is the large number of companies the

investor must own to obtain the results of the market average. For instance, there are 30 DJIA stocks and 500 stocks in the S&P Index. Only large institutions would be able to do so and it appears to be a weak alternative for investor with limited funds.

2.5.4 Value Averaging

Several researchers have compared Dollar-Cost Averaging to alternative investment techniques. Edleson (1988) introduces an alternative scheduled investment strategy, value averaging. Value averaging requires an investor to increase the value of his portfolio by a total dollar amount each period. As a result, the dollar contribution each period varies depending on the return for the investment in the previous period. In periods of negative returns, investors have to increase the total dollar contribution. Yet, over an extended investing horizon, if the investment returns are positive, the investor may need to disinvest in order to reduce the value of the portfolio to the required increase level. Edelson (1988) finds investors are better off with a value averaging investment strategy rather than with a Dollar-Cost Averaging strategy.

Value averaging allows investors to take advantage of price fluctuations and increase purchases when prices are low and decrease or stop purchases when stock prices are high. Individuals using value averaging are concerned with increasing the cumulative value of their investment by a set amount each period. For example, let's say an investor wants to increase the value of his portfolio by RM1,000 each month. The individual invests RM1,000 and earns 2% the first month. The investment is now worth RM1,020. For the second month, the individual wants the total value invested to be RM2,000 so he adds an additional RM980 (RM2,000 – RM1,020) to the account. Alternatively, if the first month's investment of RM1,000 had lost 5%, the second month the individual needs to invest RM1,050 (RM2,000 – RM950). Value averaging is most suited for volatile investments, since individual essentially "buys

low, sells high". It requires a high degree of discipline on the part of the investor to stick with the strategy. It also requires the resources to increase contributions after a period of negative returns.

2.5.5 *Buy-and-Hold*

Thorley (1994) compares the Dollar-Cost Averaging strategy to a buy and hold investment strategy. He notes that investment advisers sell the Dollar-Cost Averaging strategy to clients since the scheduled savings plan helps individuals avoid the temptation to consume earnings. The study finds that Dollar-Cost Averaging leads to a reduction in expected returns and an increase in risk compared with buy and hold strategy.

With buy and hold strategy, an individual places some portion of his wealth in risky assets and the remaining portion of his wealth is held in less risky assets such as treasury bills. The investment dollars remain in the original distribution for some period of time; then the overall return for the investing strategy is calculated. For example, if an investor has RM10,000 to invest, he may choose to place 50% of his wealth in a market index fund and hold the remaining 50% of his wealth in treasury bills. He does not adjust his position and at the end of the year, he calculates the return of his portfolio.

This strategy requires an investor to determine assets of interest up front and use a portion of the available funds to purchase some percentage of risky assets. No additional transactions are required during the investment time period.   A disadvantage of this strategy is that the risk of the portfolio increases over time. The risk premium associated with an investment in a market fund assures, on average, that the percentage of total wealth in the risky asset will increase relative to the wealth allocated to the risk free asset over time. Investors typically determine an optimal

level of risk to be achieved over time. They either invest in the risky asset originally knowing that the percentage of total wealth in risky assets will grow throughout the life of the investment, or they partition the investment dollars in the optimal mix of risky and risk-free assets up front and watch the riskiness of the portfolio increase. Either strategy results in a sub-optimal distribution of the investor's wealth during the life of the investment.

2.6   Strategies Selection for the Study

Due to the unpredictability of the KLSE performance, any attempt to time the market would be akin making a guess or even worse. In that case, one of the more popular questions investors are asking is, "Is it better to feed money into the market over time or to invest it all at once?". Another way of framing the question is, "Which is better – Dollar-Cost Averaging or Lump-Sum?". Therefore, Dollar-Cost Averaging and Lump-Sum have been selected for evaluating investment performance in the KLSE in this study.

2.7   Dollar-Cost Averaging Strategy

Dollar-Cost Averaging is widely promoted by personal investment as a way to increase return and reduce risk. Personal finance literature for example Goodman and Bloch (1994) and financial radio programs are repleted with references to an investment technique Dollar-Cost Averaging where a fixed amount of money is invested at fixed intervals rather than investing the money all at once in what is commonly known as Lump-Sum strategy. According to many personal finance books, the Dollar-Cost Averaging system reduces risk and enhances return. Goodman

and Bloch (1994) suggest that a Dollar-Cost Averaging strategy is superior to Lump-Sum strategy in up markets and down markets. The logic of such claim is that as market withdraws, investors gain by buying more shares with their fixed investment and the assumed result is a lower cost per share and increased return. Dollar-Cost Averaging is a simple, forced savings plan that results in lower transaction costs than with a formula plan that requires frequent portfolio rebalancing. It allows investors to hedge against regret that results from investing a Lump-Sum during a market high.

Mandell and O'Brien (1992) mentioned that one of the arguments used for Dollar-Cost Averaging is that investor do not regret a market decline since a portion of the funds will be purchasing shares at a relatively low price and if the market goes up, the investor is not unhappy because of the appreciation of the funds already committed even though he is buying high. They stated that there are benefits for the investor in diversifying over time by dividing up a sum and spreading that over time. However, they cautioned about three costs. The first is the transaction cost which increases as a percentage of investment as the size of investment decreases. The second is the opportunity costs of holding the un-invested portion in a risk-free asset such as bank account until it is time to invest it. The opportunity cost is equivalent to the risk premium on the security that the investor intends to purchase. The third cost is the lack of portfolio balance caused by a rigid investment scheme.

Johnson (1983) stated that Dollar-Cost Averaging is relatively simple yet generally effective to minimize the risk of incorrect timing and it uses time diversification, which is the practice of periodically spacing purchases and sales of a security over time. He mentioned that Dollar-Cost Averaging is best suited for investors who have regular funds available for purchasing securities, who have little