A ROLLING RETURN ANALYSIS OF THE BUY-AND-HOLD STRATEGY

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DECLARATION

I hereby declare that:

(1) MKMA25106 Research Project is the end result of my own work and that due acknowledgement has been given in the references to **ALL sources** of information be they printed, electronic, or personal.
(2) No portion of this research project has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.
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ABSTRACT

Buy-and-hold is a common strategy being used by investors who are considered risk-adverse. Nevertheless, this strategy is commonly used by investors who prefer to gain dividends and at the same time not wanting to trade excessively. However, this strategy is often being criticized for being ineffective in churning high returns as compared to buy-and-sell. Shilling (1992); Dare (1995); Dichev (2007); and Blanchett (2011) had all proven that the buy-and-hold strategy is rather outdated, and that trading in-accordance to the right market timing is the way about to earning abnormal returns. While this is true when estimating returns for equity in the short run, further research carried out by Barber, Lee, Liu and Odean (2011) had estimated that the costs for frequent trading of individual investors outweigh its returns if trading occurs too often in the long run, and may lead to emotional trading. Hence, the purpose of this research is to examine the effectiveness of buy-and-hold, give a comparison of its performance between markets, comment on risk-return tradeoff, provide insights to its effectiveness against the Efficient Market Hypothesis, as well as examine whether buy-and-hold is dead. A total of twelve stock indexes are being examined, namely DJIA, TSX, FTSE, CAC, DAX, KOSPI, Hang Seng, NIKKEI, TAIEX, STI, KLCI, and ASX. These twelve stock indexes are being selected according to the North American region, the European region, as well as the Asian region. Rolling return analysis and standard deviation analysis are then being carried out to test the risk-return relationship of each index as well as analyzing the cut-off holding period where risk is lower than returns. The results showed a significant decrease in risk while returns remain relatively the same. However, there is also evidence that returns did not decrease even when risk decrease to almost zero. This shows that buy-and-hold is effective in minimizing risk, has no risk-return tradeoff, has no evidence of Efficient Market Hypothesis, and is technically not dead.

CHAPTER 1

RESEARCH OVERVIEW

1.1 A Rolling Return Analysis of the Buy-and-Hold Strategy

This chapter presents an overview of buy-and-hold strategy including introduction to the topic, problem statements, research questions and also research objectives.

1.2 Introduction

Share equities have been one of the most frequently traded assets in global markets. Although they contain the investment potential of gaining higher-than-average returns, these returns however are compensated by high risks of yielding negative returns. Whilst this fact presents itself to be true, there are many strategies of which investors commonly use to ensure that they get their share of commensurable or even lucrative returns.

Investors playing with shares can buy, hold or sell the shares based on his/her preferred strategy. The strategy of buying and holding equities for a long period of time is also known as a passive strategy, or negligent strategy; whereas the strategy of buying equities and then selling them after a short period of time is also known as an active strategy. Many debates over whether a buy-and-hold strategy is actually more superior to a buy-and-sell. Shilling (1992); Dare (1995); Dichev (2007); and Blanchett (2011) had all proven that

the buy-and-hold strategy is rather outdated, and that trading in-accordance to the right market timing is the way about to earning abnormal returns. Moreover, Shilling even suggested that the best way to gain abnormal returns from equities is to buy them during bearish business cycles, and sell them during bullish business cycles.

However, there has been evidence proving that the buy-and-hold strategy can actually outperform the buy and sell strategy, provided that the equity is being held for a prolonged period of time. James Glassman and Kevin Hassett promoted an extreme version of the strategy in their book *Dow 36,000* (Times Books, 1999). They argued that while buying and holding equities have a certain amount of business risk exposure, such as the risk of the equity of that particular company being insolvent, the risk being faced by holding stocks for longer periods is actually lower than having to hold stocks for short periods.

Further research carried out by Barber, Lee, Liu and Odean (2011) had estimated that the costs for frequent trading of individual investors outweigh its returns if trading occurs too often. Since the normal market reacts to information rather swiftly, individual investors who are behind the news often had to incur trading losses, trading costs, and market-timing losses if they were to trade very often. This is especially true under the theory of the Efficient Market Hypothesis (EMH) stating that the normal economy is usually stimulated by information pretty quickly. Also known as the "signaling effect", investors who are not so quick at receiving critical information would face the risk of incurring opportunity costs when they sell their shares later than other investors who got the news quicker. (Dare, 1995)

1.3 Problem Statement

Probably the most used, abused, and criticized investing strategy that ever existed; the buy-and-hold strategy is one of the most heavily debated topics that have come across every investor. This strategy has been blatantly attacked

by many investors and researchers. Many argued that the risk being faced by this strategy is not being compensated enough in terms of returns. In other words, they deem that buy-and-hold is dead. Unlike the buy-and-sell strategy whose returns are better compensated for the risk being faced, the buy-and-hold strategy promises insufficient returns to their risk-undertakings. However, more often than not, individual investors usually prefer to buy-and-hold equities as a means of saving.

Although numerous studies regarding the buy-and-hold strategy as well as the buy-and-sell strategy have been carried out, many of these researches conducted were based on the markets in the United States of America (USA) as compared to other countries. Although many studies have been carried out to analyze stock markets around the world, there is a lack of comparison between the risk-return compositions of the buy-and-hold strategy using rolling returns. Most studies, in evaluating the effectiveness of buy-and-hold, use cumulative average annual returns as a means of analysis. Although this method is useful, it is less accurate as compared to the more complex rolling returns analysis. Hence, the purpose of this research is to analyze the strategy carefully among global markets to determine its effectiveness, given carefully selected markets and market timings.

1.4 Research Questions

The research questions in this study are to investigate the relationship between equity holding periods and risk and return in twelve different countries' stock markets from four different continents in the world. The research questions are as below:-

I. Is buy-and-hold an effective strategy in minimizing risk?

II. Are there differences in the pattern of risk and return in various markets?

III. Does the risk-return tradeoff hold when employing buy-and-hold strategy?

IV. Does the Efficient Market Hypothesis (EMH) apply in the buy-and-hold strategy?

V. Is the buy-and-hold strategy dead?

1.5 Research Objectives

Subsequent research objectives for the research questions are as follows:-

i. To examine whether risk reduces over a long period of time by employing the buy-and-hold strategy.
ii. To investigate whether risk exposure will be lower than returns in the long run.
iii. To analyze buy-and-hold performance for each stock index of twelve different countries.
iv. To compare results obtained by analyzing stock index of twelve different countries.
v. To determine if the risk-return tradeoff is present when employing the buy-and-hold strategy.
vi. To determine if EMH applies in the buy-and-hold strategy.
vii. To examine whether buy-and-hold is dead.

1.6 Significance of Study

The results generated from this research may benefit both individual investors as well as corporate investors who seek avenues to heighten returns while lowering risks when investing in the stock market. This study will help investors to determine if the buy-and-hold strategy is suitable to be used when investing in equities.

1.7 Chapter Layout

This research includes five chapters, as listed below:

Chapter 1 Research Overview

The first chapter is the introductory chapter which will provide an overview of the study context and defines the research problem. It sets the research questions to be answered and research objective to be achieved. Other topics also include the problem statement, justification, and term of definition.

Chapter 2 Literature Review

The second chapter provides the foundation for developing a good theoretical or conceptual framework to proceed with further investigation. The literature review is based on the empirical research introduced previously by researchers.

Chapter 3 Research Methodology

The third chapter describes the methodology being used. It explains how the research was carried out in terms of research design, data collection methods, data analysis, and measurement scales as evaluation techniques.

Chapter 4 Results and Findings

The fourth chapter is to present the patterns and analysis of the results obtained from the research methodologies that are outlined in Chapter 3.

Chapter 5 Discussion and Conclusion

The last chapter discusses the summaries of statistical analyses and the implication towards the research. The conclusion includes prepositions, future

trends, and what future research is needed for better understanding of the topic in question. On top of that, the limitations of the research would also be identified and discussed.

CHAPTER 2

LITERATURE REVIEW

This chapter presents the definition of buy-and-hold strategy and its related areas of research. This chapter also further provides studies and discussions that have been carried out previously by other researchers.

2.1 Investing in Equities

Common stocks might just be the most frequently traded assets of all time. Not only are they easily affordable unlike real estates, equities are also favored for their speed in converting into cash as well as the opportunity to earn capital returns as well as dividends. It is thus not surprising that almost 30 percent of investors holding equities in the United States of America consist of common households, next to mutual funds which consist of only 25 percent. The main reason to investing in equities is non-other than to obtain a secondary source of income besides depending on just one. After all, investors are always driven to creating wealth.

Numerous studies have also found that most of the equity holders' risk appetite are skewed towards being risk-averse than being risk-takers. It is not surprising for this behavior to be the main momentum in investing. Over the decades, there were many distresses in the financial markets that caused investors to abruptly lose confidence. Stock market prices fluctuations led to shifts in risk structures of investors even in the earlier years (Hsu, 1982).

Malkiel (2003) conducted an observation of the buy-and-hold strategy being used in the European and the US market for small, medium and large cap companies. His study concluded that there is no record suggesting that sufficient predictability exists in the market to outperform a passive portfolio with equivalent risk. He also found that there are no recognizable anomalies or irrationalities to take advantage of exploitable arbitrage opportunities. Hence, investors are more likely to gain from the Buy-and-hold strategy rather than the buy-and-sell portfolio management.

2.2 Risk and Return

A common dilemma faced by investors and portfolio managers is the tradeoff preference between risk and return. The core concept that underlies stock performances as well as other investment instruments is the relationship between the uncertainties being faced as well as the potential returns associated to it. Also known as the "Risk-Return Tradeoff", this principle suggests that low levels of uncertainty (low-risk) are associated with low potential returns, whereas high levels of uncertainty (high-risk) are associated with high potential returns. According to this theory, invested money can render higher profits only if it is subject to the possibility of being lost (*investopedia.com).* Technically, investors who prefer using the Buy-and-hold Strategy are more risk-adverse than those who prefer using the Buy-and-Sell Strategy. Ideally, the principle of the Risk-Return Tradeoff should reflect lower stock performances for the risk-adverse investors than the latter.

Numerous studies are conducted regarding the risk-return paradox. Xing and Howe (2003) applied a bivariate generalized autoregressive conditional heteroscedasticity in mean (GARCH-M) model to the weekly stock index returns from the UK and the world market. The results obtained showed a significant positive relationship between stock returns and the variance of returns in the UK stock market. Syriopoulos (2006) have also found supporting results in emerging Central Europe and developed stock markets

that international portfolio diversification can be less effective across co-integrated markets because risk cannot be substantially reduce and return can exhibit a volatile reaction to domestic and international shocks.

Li, Yang, Hsiao, and Chang (2005) examined the relationship between expected stock returns and volatility in the 12 largest international stock markets during January 1980 to December 2001 based on parametric EGARCH-M models. The results found a positive but insignificant relationship. However, results showed that stock market returns are negatively correlated with stock market volatility when a flexible semi-parametric specification of conditional variance was used.

Rahmbia, Joshipura and Joshipura (2013) examined low risk anomaly in Indian stock markets by using the constituent stocks of S&P CNX 500 index of NSE for 11 periods starting from 2001 to 2011. Monthly rolling iterations are used to form low and high volatility portfolios. The findings of the study proved that there is presence of low risk anomaly in Indian stock markets as low volatility portfolio outperforms market portfolio as well as its high volatility counterpart on risk-adjusted basis.

2.3 Efficient Market Hypothesis (EMH) and Random Walk Theory

The risk-return tradeoff was examined further by numerous studies to test the efficiency of stock markets towards "signals" given by new information pertaining to the performance of the companies and/or of their stocks. The Random Walk Theory is one of the research areas proclaiming that movement of stocks cannot be predicted, and that ups and downs of stocks are just fairly random. The Efficient Market Hypothesis (EMH) however, postulates that the "randomness" of stock movements is primarily dependant on the efficiency of the market towards new information. Generally, the rule of thumb is that the

higher the efficiency of the market, the lower the predictability of stock movements. There are three forms of classification of the EMH – (a) strong form, (b) semi-strong form, and (c) weak form (Yu, Nartea, Gan, and Yao, 2012).

Lim, Brooks, and Kim (2008) empirically investigated the effects of the 1997 financial crisis on the efficiency of eight Asian stock markets by applying the rolling bi-correlation test statistics for the three sub-periods of pre-crisis, crisis, and post-crisis. On a country-by-country basis, the results demonstrated that the crisis adversely affected the efficiency of most Asian stock markets, with Hong Kong being the hardest hit, followed by the Philippines, Malaysia, Singapore, Thailand and Korea. However, most of these markets' efficiency recovered in the post-crisis period. The findings of higher inefficiency during the crisis are not surprising as in the chaotic financial environment at that time; investors would overreact not only to local news, but also to news originating in the other markets, especially when the news events were adverse.

Kim and Shamsuddin (2008) used non-parametric finite sample tests known as the new multiple variances ration tests to investigate the EMH in the stock prices of a group of Asian markets. Both weekly and daily data from 1990 are considered. It is found that the Hong Kong, Japanese, Korean and Taiwanese markets have been efficient in the weak-form. The markets of Indonesia, Malaysia and Philippines have shown no sign of market efficiency, despite financial liberalization measures implemented since the eighties. There are also evidences that the Singaporean and Thai markets have become efficient after the Asian crisis. In general, the results pointed toward the notion that the pricing efficiency of a market depends on the level of equity market development as well as the regulatory framework conducive of transparent corporate governance.

Yu, Nartea, Gan and Yao (2012) also investigated whether the moving average and trading range breakout rules can predict stock price movements and outperform a simple Buy-and-hold strategy in Asian markets after

adjusting for transaction costs over the period from January 1991 to December 2008. The empirical results showed that the trading rules have stronger predictive power in the emerging stock markets of Malaysia, Thailand, Indonesia, and the Philippines than in the more developed stock market of Singapore consistent with earlier studies. Furthermore, in most stock markets during the study period further suggested that these markets have become more efficient in terms of information over time.

Lee, Lee, and Lee (2010) conducted a test to investigate whether the EMH holds in stock markets under different economic development levels over the period January 1999 to May 2007. After accommodating general forms of cross-sectional dependence as well as controlling for finite-sample bias, the real stock price series seemed to be stationary in 32 developed and 26 developing countries, indicating that there are opportunities of arbitrage among stock markets.

Majumder (2012) found evidences that market inefficiencies caused by emotional investing is prominent in large emerging markets in Brazil, Russia, India and China and also in developed markets in the USA. When a market is inefficient and sentiments play a dominant role in an investor's decision making, valuation by any existing asset pricing model would produce a suboptimal risk–return relationship. Standard pricing technology will guide a rational investor to wrong policies for his new investments or for reallocating his old investments. Alvarez-Ramirez, Rodriguez, and Espinosa-Paredes (2012) also found that the relative efficiency for the US stock market has declined slightly in the past 10 years.

2.4 Buy-and-Hold as a Strategy

2.4.1 Definitions of Buy-and-Hold

The definition of Buy-and-Hold can be summarized according to various sources in Table 2.1 below.

Table 2.1 Definitions of Buy-and-Hold

Source	Definition
Investopedia	A passive investment strategy in which an investor buys stocks and holds them for a long period of time, regardless of fluctuations in the market.
Wikipedia	Buy and hold is an investment strategy where an investor buys stocks and holds them for a long time
Investorwords	An investment strategy in which stocks are bought and then held for a long period, regardless of the market's fluctuations.
The Free Dictionary	An investment strategy in which one does not do any trading on a portfolio between the initial selection of the securities and the end of a certain time period (which is usually a long time).
Business Dictionary	Investment strategy in which an asset is bought and held for a long period despite the fluctuations in its price.

Buy-and-Hold is an investment strategy that is used by buying investment securities and holding them for long periods of time. It is said that the

rationale behind Buy-and-Hold is for investors to gain long-term returns that are reasonable despite of the volatility in price fluctuations over short-term periods. Moreover, this strategy is backed-up by the ideology of investors requiring less frequent trading than other strategies. Hence, excessive trading costs and taxes are being minimized, which will in turn increase the overall net return of the investment portfolio. The opposite of this strategy is market timing, which refers to an investor buying and selling over shorter periods to buy at a lower price and sell at a higher price in order to profit from the trade. Simply put, the buy-and-hold investor believes "time in the market" is a more prudent investment style than "timing the market". (*mutualfunds.about.com*)

2.4.2 General Explanation

The explanation for this strategy is to buy and hold a particular investment stock for a very long period of time despite market volatility. It requires substantial patience and commitment from the investor to hold a particular stock for a few years and not be swayed by external preferences or market movements. This is easier said than done. Most investors would rather buy the stocks at a relatively lower price, and then wait for the right market timing to sell the stocks, earning dividends and capital gains between the processes (Dare, 1995).

Unless the rationale behind investing in equities is to sit back and enjoy the dividends being handed out for some, many would rather Buy-and-Sell than to Buy-and-hold. Even if they choose the latter, many would not be able to resist selling their stocks when the right opportunity rises. This seems like logical reasoning, but bear in mind of what the Financial Crises have to teach – for every return, there is always risk at present. Sure, investors might opt to diversify their risks by diversification of stocks to reduce risks, but then so will their opportunity of obtaining huge return (Markellos, 2007).

2.4.3 Why Buy-and-Hold is Better

Most investors would think that low risk stocks can only deliver minimal returns. If an investor were to expect for higher returns he/she would have to try their luck in investing in high risk stocks or playing around with market timing. However, it is the least risky stocks that deliver long-term high returns (*Forbes.com*). There are many studies that proved that buy-and-hold is indeed better than buy-and-sell, but the investing wisdom is only effective if the investor is willing to buy and hold for long periods of time before they can enjoy the returns.

Blanchett (2011) conducted a paper suggesting that a long-term static allocation strategy is more likely to produce higher risk-adjusted performance than a tactical asset allocation strategy. Similarly, Dichev (2011) also found that actual investor returns are systematically lower than Buy-and-hold returns for nearly all major international markets.

Further researches that have been done to reinforce the effectiveness of Buy-and-Hold are mainly regarding excessive transaction costs while over-trading as well as information asymmetry. These topics are being discussed in this study under the subsequent sub-sections.

2.4.3.1 Transaction Costs

Perhaps the most researched area of Barber and Odean (2001; 2002) would be the downfall of transaction costs regarded to too-frequent trading. They blame overconfidence as the main culprit when it comes to excessive trading. When investors are overconfident, they expose themselves to situations where expected gains are not enough to offset trading costs. In fact, even when trading costs are ignored, these investors actually lower their returns through trading (Odean, 1999).

Barber and Odean (2001) even went on further to investigate the difference in risk appetites and confidence levels of men and women. The study which included 29,659 trading accounts opened by men; and 8,005 opened by women, showed that in overall, men performed worse than women due to excessive trading. Moreover, the tests found that men trade more than women and thereby reduce their returns more so than do women.

Furthermore, Barber, Lee, Liu & Odean (2005) investigated both the US and the Taiwanese markets to find that investors who are saving to meet long term goals would benefit better if they had not been sufficiently educated regarding stock investment.

2.4.3.2 Information Asymmetry and Emotional Trading

One aspect of buy-and-hold is to maintain discipline and commitment to hold stocks for a long period of time. Often investors are heavily influenced by internal as well as external events taking place. This leads to fear and greed which could result in investors not being rational in analyzing crucial information. Hence, the ability to understand the inner workings of an equity, its fundamentals and the ability to determine the direction of the trend are a few of the key traits needed, but not one of these is as important as the ability to contain emotions and maintain discipline. (*Investopedia*)

Barber and Loeffler (1993) had done a study which resulted that those analyst recommendations on positive abnormal return on announcement of recommendation, is rather out-dated since the information is already second-hand information. The authors concluded that reliance on such information is a result of naïve buying pressure as well as the information content of the analysts' recommendations.

Furthermore, many investors, even educated ones are commonly trading based solely on their confidence in trying to beat the market, ignoring information efficiency altogether. However, despite being conflicted by market efficiency,

they would generally perceive the market to be efficient if they are investing passively rather than actively (Doran, Peterson and Wright, 2010). One of the ways to avoid being trapped in the information bubble is to employ a long term Buy-and-hold strategy (Malkiel, 2009).

2.5 Arguments against the Buy-and-Hold Strategy

Evans (1970) gave insight into two main strategies which are the Buy-and-hold and the fixed proportion / reallocation strategy to compare risk and return performances of these two strategies as well as examine the effects of investment "costs". The study suggests that while the Buy-and-hold strategy is superior when the initial investment in each security is small and the marginal capital tax gains are high. However, when the initial investment in each security is larger and the marginal capital tax gains are lower, the fixed proportion strategy is more superior.

Dare (1995) argued that investors who have long investment horizons, pay low commission costs, and receive nominal returns when invested in cash can beat a Buy-and-hold strategy, while simultaneously reducing market risk. The study also supports the findings of Shilling (1992) stating that market timing is better than a simple Buy-and-hold.

Furthermore, Metghalchi, Du and Ning (2009) tests two moving average technical trading rules for four Asian markets namely Hong Kong, Singapore, South Korea, and Taiwan to discover that the moving average technical trading rules are more predictable and thus can outperform the simple Buy-and-hold strategy.

Guido, Pearl and Walsh (2011) utilized the US equity premium as a regime-switching process where the regimes are dependent on economic variables. The study also further tested a dynamic asset-allocation strategy. The results

indicated that the timing strategy outperformed a simple Buy-and-hold strategy on a risk-adjusted basis.

Similarly, Yu, Natea, Gan and Yao (2012) investigated whether the moving average and trading range breakout rules can forecast stock price movements and outperform the Buy-and-hold strategy using adjusted data from January 1991 to December 2008. The empirical results showed that the trading rules have better predicting power in emerging markets of Malaysia, Thailand, Indonesia and Philipines.

2.6 Stock Indexes

2.6.1 United States of America (DJIA)

Perhaps the most dominant stock market in the world would be the New York Stock Exchange (NYSE). Nanda and Peters (2006) conducted a study analyzing total return performance of all stocks in the Centre for Research Security Prices (CRSP) throughout 40 years to carefully analyze a number of economic and investment cycles. Their results indicate that a Buy-and-hold strategy is indeed better than one who applies a Buy-and-Sell strategy. Barber and Odean (2000) also claimed that over-trading in the US market is more likely to lead to substantial losses as compared to a humble Buy-and-hold.

2.6.2 Canada (TSX)

Canada is also on the verge of competing itself closely to its southern counterpart. These two countries are so closely correlated that decimalization in the United States had positive impact on trading in both NYSE and the Toronto Stock Exchange (TSE) (Oppenheimer and Sabherwal, 2003).

Deaves, Miu and White (2008) adopted the earnings to price ratio (E/P) to test on the predictability of future stock prices in the Canadian market base on

dividend yields. Much like the US, longer term returns proved to have a predictable component.

Alexeev and Tapon (2010) further conducted a study of market efficiency of the TSX using the EGARCH model and although there seems to lack of proof of weak form efficiencies, some sectors of the Canadian economy were weaker than others.

2.6.3 United Kingdom (FTSE)

In the case of the United Kingdom, the major stock index is the Financial Times Stock Exchange (FTSE). Fong (1992) observed the size of the UK stock market in influencing investment strategies. He found that mean returns computed on a Buy-and-hold basis is significantly lower than a Buy-and-Sell. The result also showed that mean Buy-and-hold returns in the UK are not only lower that of rebalanced portfolio, but is also not statistically significant.

In addition, Mase (2006) also analyzed the FTSE 100 Index to find asymmetric long-run abnormal return performances between 1992 and 1999. This asymmetry suggests that investors' awareness of stocks is influenced by index changes.

Mazouz and Li (2007) tested the overreaction hypothesis using data from the UK stock market. The study covers a period of 30 years (from 1973 to 2002). The results initially seemed to be consistent with the overreaction hypothesis and no obvious seasonal pattern can be identified. The results did not depend on whether buy-and-hold returns (BHR) or cumulative abnormal returns (CAR) used to compute the returns of the arbitrage portfolio. This overreaction phenomenon was still observable even after controlling for the size effect and the time-varying nature of risk.

2.6.4 France (CAC)

In France, stocks are commonly traded in the Paris CAC. Korczhak and Roger (2002) adopted a genetic algorithm to search a set of trading rules out of a sample of 24 French stocks among the most important stocks traded on the French market. They found that in most cases, the method outperforms a simple Buy-and-hold strategy.

Arrondel, Pardo, and Oliver (2010) utilized the DELTA-TNS 2002 survey to investigate the risk-forbearance of French households to find that non-negatively correlated background risks reduce the willingness of French households to bear financial risks.

Siwar (2011) also investigated on the over-reaction and under-reaction of the French stock market and resulted that the markets are quite efficient, and investors can rarely beat the market and achieve abnormal returns.

2.6.5 Germany (DAX)

The German stock uses the DAX as its composite index. Jasic and Wood (2004) examined the profitability of trading signals generated from the out-of-sample short-term predictions for daily returns of S&P 500, DAX, KOSPI, and FTSE stock indexs ranging from the year 1965 to 1999. The results provide strong evidence of high and consistent predictability contrasting the previous finding of weak form efficiency.

Bonfiglioli and Favero (2005) examined the interdependence of US and German stock markets to find relative contagion effects. The results showed that while there was no long-term interdependence between US and German stock markets, there were short-term interdependence and contagion between US and German stock markets.

2.6.6 South Korea (KOSPI)

South Korea's composite index is the KOSPI index. Lee, Jung, and Thornton Jr. (2005) examined the long-run stock performance of firms that announce open-market repurchases in Korea. They separated the study into short-term and long-term. The results are consistent with other markets. However, the results specified that long-term performance results strongly supported the Efficient Market Hypothesis.

Choi and Nam (2006) compared the long-run Buy-and-hold returns of privatization initial public offerings (IPOs) to those of the domestic stock markets of respective countries using a sample of 241 privatization IPOs from 41 countries. The results indicated that the long-run performance of privatization IPOs is significantly related to uncertainties.

Metghalchi, Du and Ning (2009) tested two moving average technical trading rules for four Asian markets including Korea. The results indicated that moving average rules do indeed have predictive power and can discern recurring price patterns for profitable trading. Moreover, the results support the hypothesis that technical trading rules can outperform the buy-and-hold strategy.

2.6.7 Hong Kong (Hang Seng)

A few decades back, the Asian stock markets were just mere followers of the more active US market. Many people then did not possess sufficient financial management skills, and traded base solely on their confidence towards particular stocks. Many did well, and many others followed through. There wasn't much regulation and control over stock trading, except for China which imposed strict capital controls (Burdekin and Siklos, 2012). Numerous studies

have been conducted to test for short- and long-term stock performances over various markets.

Coutts and Cheung (2000) investigated the applicability and validity of trading rules in the Hang Seng Index on the Hong Kong Stock Exchange for the period January 1985 to June 1997, and for two subsamples of equal length, partitioned from the whole sample. It is concluded that the Moving Average Oscillator and the Trading Range Break-out rules appear to be present, to varying extents, for all three data samples, although the Trading Range Break-out rule is by far the strongest. In terms of implementation, it is suggested that both the Moving Average Oscillator and Trading Break-out rules, would fail to provide positive abnormal returns, net of transaction costs and the associated opportunity costs of investing

2.6.8 Japan (NIKKEI)

Japan's composite index is the Nikkei. Liu (2009) investigated the price and trading volume effects of the Nikkei 500 stock index within 1991 to 1999 to find abnormal patterns of returns of each firm on each event day in a 31-day event window.

Greenwood (2005) developed a framework to analyze demand curves for multiple risky securities at extended horizons in a setting with limits-to-arbitrage using the Nikkei 225 index in Japan. The results found a significant relation between event returns and the contribution of each demand shock to the risk of a diversified portfolio. The results also found a positive relation between the returns of 1,042 securities not experiencing demand shocks and the change in their contribution to portfolio risk.

2.6.9 Singapore (STI)

Tang and Shum (2004) examined the risk-return relations in the Singapore stock market for the period April 1986 to December 1998. Though the unconditional relation between beta and returns was found to be significantly positive, the explanatory power was extremely low. Also, such a relation disappeared in sub-periods. On the other hand, the risk– return relation is found not to be nonlinear. Unsystematic risk and total risk play a marginally significant and highly significant role respectively in pricing the Singapore securities. However, the incremental explanatory power to returns is still very limited.

Singh, Kumar and Pandey (2010) examined price and volatility spillovers across North American, European and Asian stock markets. The return spillover is modeled through VAR(15) in which fifteen world indexs, representative of their stock market are considered. Volatility spillover was modeled through AR-GARCH incorporating the same day effect. In both return and volatility spillover, it is found that a particular index is mostly affected by the indexs which open/close just before it. It is also found that there is a greater regional influence among Asian and European stock markets.

2.6.10 Malaysia (KLCI)

Chang, Lima and Tabak (2004) carried out a study to test the predictability of various emerging equity markets including Malaysia using variable moving average (VMA) and trading range break (TRB). Their results indicated that while the Buy-and-hold strategy seem to be perform better in general, the Malaysian equity market seem to react more positively to trading rules.

Similarly, Nurwati, Campbell and Goodacre (2007) also did a study investigating the long run share price performance of 454 Malaysian IPOs during the period 1990 to 2000. In contrast with developed markets,

significant over-performance is found for equally-weighted event time CARs and buy-and-hold returns using two market benchmarks, though not for value-weighted returns or using a matched company benchmark. While the long run performance of Main and Second Board IPOs does not differ, the year of listing, issue proceeds and initial returns were found to be performance-related.

2.6.11 Taiwan (TAIEX)

Cho, Russel, Tiao and Tsay (2003) conducted a study using intraday prices from the Taiwan Stock Exchange (TSE) to test the effects of daily price limits. Among the results obtained, there are evidences suggesting that the Buy-and-hold strategy is optimal especially when heavy transaction costs are involved. Further studies in Taiwan also found that individual investors are losing too much from frequent trading (Barber, Lee, Liu & Odean, 2011).

2.6.12 Australia (ASX)

Alcock and Gray (2005) assessed the economic significance of return predictability in Australian equities by comparing the performance of a Buy-and-hold market investment to that of portfolio-switching strategies generated by a predictive model. The results showed that even before transaction costs, the strategy failed to outperform the Buy-and-hold strategy.

Galariotis (2010) investigated Australian momentum strategies and their performance stability separately employing two samples a) the S&P/ASX 200 constituents and b) all market securities; for different time periods and market states. Non-overlapping portfolios were employed to avoid transaction intensive strategies. Results showed that momentum performance is not sample specific and is positive in all cases, yet at varying magnitudes for different states and years.

2.7 Term of Definition

Composite Stock Index is grouping of equities, indexes or other factors combined in a standardized way, providing a useful statistical measure of overall market or sector performance over time. There are indices for almost every conceivable sector of the economy and stock market. Many investors are familiar with stock indexes through index funds and exchange-traded funds whose investment objectives are to track the performance of a particular index.

Rolling Return is the annualized average return for a period ending with the listed year. Rolling returns are useful for examining the behavior of returns for holding periods similar to those actually experienced by investors. They create a more realistic view of investment returns.

Standard Deviation is a measure of dispersion of a set of data from its mean. In finance, it is applied to the annual rate of return of an investment to measure the investment's volatility. It is commonly used as a measure of risks.

2.8 Literature Review Summary

Table 2.2 recaps the various studies conducted by various researchers using different methods to analyze the theories and rationale behind investment strategies in light of composite indexes, typically the buy-and-hold strategy.

Table 2.2: Literature Review Summary

Author(s)/ Year	Country/ Data Period	Models/ Techniques	Findings/Conclusions
A. Gary Shilling (1992)	DJIA (Jan 1946 – Dec 1991)	-	In the post-war era, buying and holding stocks were extremely rewarding.
Alessandra Bonfiglioli, Carlo A. Favero	US and German stock markets Stocks' monthly returns	VAR Vector Error Correction Model	There was no long-term interdependence between US and German Stock Markets but short-term interdependence and contagion between the two countries were present

(2005)	(Jan 1980 – Sept 2002)		
Brad M. Barber, Terrance Odean (2000)	66,465 households at a large discount brokerage firm in US (Jan 1991 – Dec 1996)	Gross return Stock turn-over rate	Trading is hazardous to your wealth. People trade too often due to overconfidence. Thus, active investment strategies will not outperform passive investment strategies.
Brad M. Barber, Terrance Odean (2001)	35,000 households from a large brokerage firm in US – 8,005 women and 29,659 men (Jan 1991 – Jan 1997)	Gross and net return performance of each household Monthly portfolio turnover for each household	Men traded 45 percent more than women. Trading reduced men's net returns by 2.65 percentage points a year as opposed to 1.72 percentage points for women.

		"own-benchmark" abnormal return for each household	
Brad M. Barber, Terrance Odean (2002)	1,607 investors who switched from phone-based to online trading (Jan 1991 – Jan 1996)	Gross performance and net performance Own benchmark CAPM alpha Fama and French alpha	Investors were led by online advertisements to believe that profitable investment opportunities are ephemeral events, seized only by the quick and vigilant. Most investors, however, benefit from a slow trading, buy-and-hold strategy.
Brad M. Barber, Douglas Loeffler	Review of second-hand information literature published in the "Dartboard"	-	The positive abnormal return on announcement is partially reversed within 25 trading days. Positive abnormal return on announcement of the recommendations was a result of naive buying pressure as well as the information content of analysts'

(1993)	column of the Wall Street Journal		recommendations.
Brad M. Barber, Yi-Tsung Lee, Yu-Jane Liu, Terrance Odean (2005)	All TSE trade data (1 Jan 1995 – 31 Dec 1999)	Averaged daily dollar profits of individual investors and firms	Individual investor trading resulted in systematic and economically large losses. Virtually all individual trading losses can be traced to their aggressive orders. In contrast, institutions enjoyed an annual performance boost of 1.5 percentage points, and both the aggressive and passive trades of institutions were profitable. Foreign institutions garnered nearly half of institutional profits.
Bryan Mase (2006)	FTSE 100 Index (1 Apr 1992 – 1 Apr 1999)	Buy-and-hold abnormal returns	Asymmetric long-run abnormal return performance was present following inclusion or deletion of stocks from the index. This asymmetry suggested that investors' awareness of stocks was influenced by index changes.

Burton G. Malkiel (2009)	S&P 500	-	Passive investment management could still be justified despite less-than-efficient markets.
Chien-Chiang Lee, Jun-De Lee, Chi-Chuan Lee (2010)	OECD Main Economic Indicators International Financial Statistics 32 developed countries and 26 developing countries (Jan 1999 – May 2007)	Panel data stationary test	Real stock price indexes were stationary processes that were inconsistent with the efficient market hypothesis. This showed the presence of profitable arbitrage opportunities among stock markets.
D. A. Hsu	US stock market prices	Bayesian robust inference	Provided a statistical procedure for the analysis of stock market prices that is robust toward departures from the normal

(1982)	(1971 – 1974)		distribution assumption and that can detect and evaluate a shift of parameters at an un-known time point.
David D. Cho, Jeffrey Russell, George C. Tiao, Ruey Tsay (2003)	TSE Daily price limits	AR-GARCH Regression	Tendency for stock prices to accelerate toward the upper bound and weak evidence of acceleration toward the lower bound as the price approaches the bounds when price limits are imposed.
David M. Blanchett (2011)	S&P 500 (Jan 1926 – Dec 2009)	Sharpe ratio	The likelihood of a tactical approach outperforming a static allocation decreased further when considering additional costs incurred by tactical investors, such as additional trading expenses. Hence, A long-term static allocation strategy is likely the approach that will lead to higher risk-adjusted performance

			for the majority of investors.
Debasish Majumder (2012)	Brazil, Russia, India, China, and US (April 2001 – April 2012)	-	When a market is inefficient and sentiments play a dominant role in an investor's decision making, valuation by any existing asset pricing model would produce a suboptimal risk–return relationship. Standard pricing technology will guide a rational investor to wrong policies for his new investments or for reallocating his old investments.
Ellouz Siwar (2011)	French stock market (1974 – 2004)	Methodology of De Bondt and Thaler (1985)	Over-reaction and under-reaction in the market is rarely significant. Hence, the variation of stock returns is often unforeseeable.
Emilios C. Galariotis (2010)	S&P/ASX 200 (Jul 2000 – Apr 2007)	-	Momentum performance in the Australian market was not sample specific and is positive in all cases, yet at varying magnitudes for different states and years. The profits are robust to univariate and multivariate risk considerations, Seasonality, and to different starting months.

Eui Jung Chang, Eduardo Jose Araujo Lima, Benjamin Miranda Tabak (2004)	US, Japan, Argentina, Brazil, Chile, Mexico, India, Indonesia, South Korea, Malaysia, The Philippines, Thailand, and Taiwan (Jan 1991 – Jan 2004)	Variable moving average (VMA) Trading range break (TRB)	Emerging equity market indexes did not show a resemblance to random walk theory. In general, trading rules do not generate statistically significant profits after taking into account both transaction cost and a Buy-and-hold strategy.
Gordon Y.N. Tang, Wai Cheong Shum (2004)	Singapore stock market (Apr 1986 – Dec 1998)	CAPM Cross-sectional regression	Realized returns had a significant positive relation with unsystematic risk, total risk and kurtosis in up market. There was also evidence that investors do not hold diversified portfolios in the Singapore stock Market

Hao Yu, Gilbert V. Nartea, Christopher Gan, Lee J. Yao (2012)	Malaysia, Thailand, Indonesia, and Philippines (Jan 1991 – Dec 2008)	VMA, FMA, TRB technical trading rules	VMA, FMA, and TRB technical trading rules were all successful in forecasting stock price movements in Malaysia, Thailand, Indonesia, and the Philippines, with the TRB having additional predictive ability in Singapore. The buy signals generate positive returns and sell signals generate negative returns which are, on average, significantly different from the returns earned by a simple buy-and-hold strategy. Short-term variants of the technical trading rules may be more useful in predicting stock price movements than their long-term counterparts. Though these results suggest market inefficiency, we find that transaction costs can eliminate profits from trading on these signals for at least four of the five stock markets. The results indicated the existence of at least weak-form market efficiency in Singapore, Malaysia, Indonesia, and the Philippines and highlight the need to constantly revisit statements about the efficiency of economically dynamic and rapidly growing emerging markets.

Henry R. Oppenheimer, Sanjiv Sabherwal (2003)	Canadian stocks cross-listed on TSE and NYSE of NASDAQ	Regression	US decimalization had the desired positive impact on trading in both the US and Canada, with a decrease in spreads and an increase in retail-sized trading.
Ilia D. Dichev (2011)	NYSE/AMEX (1926 – 2002)	Descriptive statistics Correlation matrix	Actual investor returns are systematically lower than buy-and-hold returns for nearly all major international stock markets. These results imply that the historical equity premium and the cost of equity capital are likely lower than previously thought.
Jae H. Kim, Abul Shamsuddin (2008)	Hong Kong, Japan, Korea, Taiwan, Indonesia, Malaysia, Thailand, Singapore and Philippines (Jan 1990 – April	Chow-Denning test Wild Bootstrap Test Joint Sign Test	Market efficiency varies with the level of equity market development. In general, the developed or advanced emerging markets (Hong Kong, Japan, Korea, Singapore, Taiwan) show weak-form efficiency, while the secondary emerging markets (Indonesia, Malaysia, Philippines) are found to be inefficient. Evidence that Singaporean and Thai markets have become

	2005)		efficient after the Asian crisis in 1997. Despite financial market liberalization, the secondary emerging markets have shown little sign of market efficiency.
James S. Doran, David R. Peterson, Colby Wright (2010)	642 US Professors	Likert scale	The 642 respondents seemed to agree that the stock market is not strong form efficient and is weak form efficient. However, they seem undecided about semi-strong form efficiency. Twice as many respondents passively invest than actively invest, suggesting that although they may be conflicted about market efficiency, they generally behave as if they accept markets as efficient. Despite respondents' education and sophistication, they seem to set investment objectives and make trades largely based on confidence.
Jamie Alcock,	Australia	-	Relative to a buy-and-hold market investment, the returns to the portfolio-switching strategy are impressive under several model-

Philip Gray (2005)	(Jan 1975 – Dec 1979)		selection criteria, even after accounting for transaction costs.
J. Andrew Coutts, Kwong-C Cheung (2000)	Hang Seng (1985 - 1997)	Moving Average Oscillator Rule Trading Range Break-out Rule	Although the Trading Range Break-out rule is by far the strongest. In terms of implementation, it is suggested that both the Moving Average Oscillator and Trading Break-out rules would fail to provide positive abnormal returns, net of transaction costs and the associated opportunity costs of investing.
John L. Evans (1970)	S&P (1958 – 1967)	Annual average portfolio returns Standard deviation of returns Reward-to-	Prior to considerations of transaction costs and taxes, the Fixed Proportion (FP) strategy leads to significantly superior risk-adjusted returns as compared to the Buy-and-hold (BH) strategy. However, when transaction costs and taxes are included in the analysis the results must be qualified on other factors: (1) the amount of the initial investment; and (2) the marginal capital gains tax rate of the investor.

		variability ratios	On the one hand, when the initial investment in each security is small and the marginal capital gains tax rate of the investor is high, this analysis suggests that the BH strategy leads to superior results. On the other hand, when the initial investment in each security is larger and the marginal capital gains tax rate of the investor is smaller, this analysis suggests that the FP strategy leads to superior results.
J. Korczak, P. Roger (2002)	France	Genetic algorithm	In most cases, the method outperformed a simple buy and hold strategy. However, the near-optimal set of rules varies through time and across stocks.
Jose Alvarez-Ramirez, Eduardo	DJIA (1929 - 2012)	-	Market efficiency is a characteristic that varies continuously over time and across markets.

Rodriguez, Gillerto Espinsosa-Paredes (2012)			
Khelifa Mazouz, Xiafei Li (2007)	FTSE (1973 - 2002)	Buy-and-hold Returns (BHR) Cumulative Abnormal Returns (CAR)	Both CAR and BHR methods predict the presence of the overreaction phenomenon. On average, the loser portfolio outperforms the winner portfolio about 16.4% by using CAR method and 18.3% when BHR method is applied.
Kian-Ping Lim, Robert D. Brooks,	Hong Kong, Philippines, Malaysia, Singapore, Thailand, and Korea	Rolling bi-correlation test statistics	The statistical findings show that Hong Kong is the most efficient over the 14 years full sample period, followed by Korea and Taiwan, while Malaysia is at the tail end of the ranking list. However, in many cases, the 1997 Asian crisis is responsible for a large portion of inefficiency, notably in Hong Kong, the

Jae H. Kim (2008)	(Feb 1992 – Dec 2005)		Philippines, Taiwan and Malaysia.
Luc Arrondel, Hector Calvo Pardo, Xisco Oliver (2010)	France DELTA-TNS 2002 Survey	Regression analysis	Non-negatively correlated background risks reduce the willingness to bear financial risk, crowding households out from the stock market. Moreover, borrowing and liquidity constraints reduce households' propensity to invest in risky assets.
Massound Metghalchi, Jiajun Du, Yixi Ning	Hong Kong, Singapore, South Korea, and Taiwan	Moving Average Rules Robustness test	Moving average rules have predictive power and can discern recurring-price patterns for profitable trading. This is proved to be particularly true for short-term moving average rules. Results on trading strategies support the hypothesis that technical trading rules can outperform the buy-and-hold strategy.

(2009)			
Nurwati A. Ahmad-Zaluki, Kevin Campbell, Alan Goodacre (2007)	Malaysian IPO (1990 - 2000)	Fama-French model	Investors who measure their investment in IPO companies using the event-time approach will conclude that they earn positive returns in the long run, but if they adopt the calendar-time approach they would conclude that do not gain any abnormal returns.
Priyanka Singh, Brajesh Kumar, Ajay Pandey (2010)	North America, Europe, and Asia (Jan 2000 – Feb 2008)	AR-GARCH VAR/AR model	In both return and volatility spillover, it is found that a particular index is mostly affected by the indexes which open/close just before it. It is also found that there is a greater regional influence among Asian and European stock markets.

Qi Li, Jian Yang, Cheng Hsiao, Young-Jae Chang (2005)	12 largest international stock markets (Jan 1980 – Dec 2001)	EGARCH-M model	Found a positive but insignificant relationship between expected stock returns and volatility during the sample period for the majority of the markets based on parametric EGARCH-M models. However, using a flexible semi-parametric specification of conditional variance, there is evidence of a significant negative relationship between expected returns and volatility in 6 out of the 12 markets.
Rohan Rambhia, Mayank Joshipura, Nehal Joshipura.	S&P CNX 500 index of NSE (2001 – 2011)	Comparative study between LV and HV portfolio. t-test F-test	While LV portfolio delivers higher absolute returns over both HV and market portfolios, the result is statistically not significant. However, when it comes to variance of returns, LV portfolio has much lower variance than both HV and market portfolios and the result is highly statistically significant. In addition, LV portfolio suffers much smaller drawdown as compared to its HV counterpart.

(2013)			
Raphael N. Markellos (2007)	DJIA (1915 – 1986) and FT30 (1935 – 1994))	Correlation Matrix	The combination of simple technical analysis based trading systems with a buy-and-hold strategy will usually perform better in terms of risk-adjusted returns than any strategy alone.
Richard C.K. Burdekin, Pierre L. Siklos (2012)	Asia-Pacific and US (1995 – 2010)	Rolling Correlation matrix Regression analysis	Post-Asian financial crisis quartile regressions yield substantial evidence of long-run linkages between the Shanghai market, the US market and many regional exchanges. Co-integration is particularly prevalent at the higher end of the distribution.

Richard Deaves, Peter Miu, C. Barry White (2008)	Canadia (1956 – 2003)	E/P Ratio	Although short-term returns are essentially unpredictable, but consistent with U.S. evidence, longer term returns do have a predictable component especially using the dividend yield.
Ron Guido, Joshua Pearl, Kathleen Walsh (2011)	US (Jan 1959 – Dec 2005)	Bayesian method	There is strong evidence that equity returns exist in a dual regime framework and that these regimes can be characterized by one positive return low volatile regime and one negative return highly volatile regime. The results indicate that if an agent was able to identify these returns ex ante they would enjoy much superior raw and risk-adjusted returns relative to the agent who buys and holds equity.
Seung-Doo Choi, Sang-Koo Nam	Multinational markets (1981 - 1994)	Zero Mean CAR and BHAR	Long-run performance of privatization IPOs is significantly related to the proxies of policy uncertainty.

(2006)			
Shinhua Liu (2009)	Japan Nikkei225 (1975 - 2006)	Runs test First-order Autocorrelation test	Employing two alternative tests, we document that the return series become more (less) random and, thus, less (more) predictable for stocks added (deleted).
Theodore Syriopoulos (2006)	Poland, Czech Republic, Germany, US, Slovakia, and Hungary (Jan 1997 – Sept2003)	EGARCH	Central European markets tend to display stronger linkages with their mature counterparts rather than their neighbors. International portfolio diversification can be less effective across co-integrated markets because risk cannot be reduced substantially and return can exhibit a volatile reaction to domestic and international shocks. The possibility of arbitrage short-run profits however, is not ruled out.
Terrance Odean (1999)	US (Jan 1987 – Dec	Regression analysis	Overconfident investors tend to buy securities that have risen or fallen more over the previous six months than the securities they sell. They sell securities that have, on average, risen rapidly in

	1993)		recent weeks. And they sell far more previous winners than losers
Teo Jasic, Douglas Wood (2004)	S&P500, DAX, TOPIX, FTSE (1965 - 1999)	Neural networks Pesaran-Timmermann Test	The results provide strong evidence of high and consistent predictability contrasting the previous finding of weak form efficiency for index series. It is shown that buy and sell signals derived from neural network predictions are significantly different from unconditional one-day mean return and are likely to provide significant net profits for plausible decision rules and transaction cost assumptions.
Vitali Alexeev, Francis Tapon (2011)	Canada TSX (1980 - 2010)	EGARCH	Although the null hypothesis of weak form efficiency on the TSX cannot be rejected, some sectors of the Canadian economy appear to be less efficient than others. In addition, pattern frequencies appear to be negatively dependent on the two moments of return distributions, variance and kurtosis.
Wat Mun Fong (1992)	UK (Jan 1979 – Dec	-	An investor in small firms is likely to face a tradeoff between lower rebalancing costs and lower returns from a more passive investment strategy.

	1988)		
William H. Dare (1995)	S&P 500 (1970 – 1988)	-	Investors who have long investment horizons, pay low commission costs, and receive nominal returns when invested in cash can beat a buy-and-hold investment strategy, while simultaneously reducing market risk.
Xuejing Xing, John S. Howe (2003)	UK and World market (Jan 1973 - Dec 1999)	GARCH-M	Bivariate GARCH-M model is more likely to be the true model for UK stock market returns than univariate GARCH-M models. In addition, the world factor should not be omitted in assessing the risk–return relationship in local stock markets; investors should consider both domestic and world factors when they pursue international diversification.
Yong-Gyo Lee, Sung-Chang Jung, John H.	South Korea (1994 – 2000)	Fama-and-French model	Long-term performance results provide strong support for the efficient market hypothesis. Long-term performance is measured in the post-repurchase period with both a one-factor and a three-factor calendar-time model. The results showed essentially no evidence of abnormal long-term performance in the full sample and in several partitions that are motivated by findings in

Thornton Jr. (2005)			previous studies. In conclusion, the Korean market is efficient with regard to the long-term performance of firms that announce open-market repurchases.

CHAPTER 3

RESEARCH METHODOLOGY

This chapter presents the research design, data collection, sample size, sample collection, as well as data analysis, which rolling return and standard deviation formulas will be used.

3.1 Research Design

Research design is the plan and structure of investigation conceived in order to obtain answers to research questions. The plan outlined in the research design determines the structure and workload for the purpose of the research, from formulating hypotheses and their operational implications to the final analysis of data. (Cooper and Schindler, 2008)

There are different categories of research. Generally, a research can be divided into three fundamental types which are descriptive, exploratory and causal. For the purpose of this research, exploratory as well as descriptive studies are being carried out. This research aims to explore the possibility of reduced risk and enhanced return by employing the buy-and-hold strategy for twelve countries. These countries are the USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Singapore, Malaysia and Australia. The research is quantitative in nature. Quantitative research is a method of analyzing a group of responses based upon mathematical formulas and probability to render findings (Chris, 2004).

3.2 Data Collection

According to Zikmund (2012), the two fundamental sources of data collection are primary data and secondary data. Primary data is the first hand information that is gathered by the researcher himself/herself (Richardson, 2005); whereas secondary data refers to information that is gathered by someone other than the researcher conducting the current study (Sekaran, 2003).

Furthermore, for the purpose of this research, secondary data is used. The daily Composite Indexes for the USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Thailand, Singapore, Malaysia and Australia are collected from Thompson Reuters Datastream. These countries' stock indexes are being selected to allow a comparison of stock performance using buy-and-hold throughout different regions. Nevertheless, the countries that are selected are those of strong economic growth, where investors are keener to flock in.

3.3 Sampling Design

Sampling frame is the list of elements from the sample may be drawn (Zikmund, 2012). The sampling frame of this research consists of composite indexes for selected countries located in USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Singapore, Malaysia and Australia. In addition, non-probability sampling is used since the selection of countries is based on personal judgment. Zikmund (2012) defined non-probability sampling as the probability of any particular member of the population being chosen is unknown and judgmental sampling is a sampling technique in which an experienced individual selects the sample based upon some appropriate characteristic of the sample members. As a conclusion, this research employed non-probability sampling which is also a judgmental sampling technique.

3.3.1 Sample Size

The sample size of this research is the daily Composite Indexes for 12 countries namely USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Singapore, Malaysia and Australia within a 20-year time frame from 1992 to December 2011 except for Singapore which is from 2002 to December 2011. The data for Singapore for years before 2002 was not found in DataStream. Hence, the total number of observations collected is 59,822.

Table 3.1: Markets and Sampling Design

Countries	Composite Indexes /No. of Stocks	No. of Observations	Period of Study
USA	DJIA (30)	5218	Jan 1992 – Dec 2011
Canada	TSX (60)	5218	Jan 1992 – Dec 2011
UK	FTSE (100)	5218	Jan 1992 – Dec 2011
France	CAC (40)	5218	Jan 1992 – Dec 2011
Germany	DAX (30)	5218	Jan 1992 – Dec 2011
South Korea	KOSPI (200)	5218	Jan 1992 – Dec 2011
Hong Kong	HANG SENG (40)	5218	Jan 1992 – Dec 2011
Taiwan	TSEC (50)	5218	Jan 1992 – Dec 2011
Japan	NIKKEI (225)	5218	Jan 1992 – Dec 2011

Singapore	STI (30)	2532	Apr 2002 – Dec 2011
Malaysia	KLCI (30)	5218	Jan 1992 – Dec 2011
Australia	ASX (200)	5110	Jan 1992 – Dec 2011

3.4 Method of Analysis

After data has been collected and tabulated into Microsoft Office Excel (Microsoft Excel), the Rolling Annual Compounding Return (Rolling Return) and the Total Risk (Standard Deviation) for the specific stock market holding period is calculated. Rolling Returns are the annualized average return for a period ending with the listed years. In recent years, this method is gaining popularity among analysts. It is deemed as a better way to measure performance. For example, TheRoyceFunds (*roycefunds.com*) and Forbes (*forbes.com*) have claimed that this method is an art of "Intelligent Investing".

3.4.1 Rolling Returns

Rolling returns are useful for examining the behavior of returns for holding periods similar to those actually experienced by investors. Although rolling returns had not been a common method of analysis being used by previous researches, it is starting to grow in popularity by researchers which used the concept to estimate stock price volatility as well as to predict returns.

For instance, Fleming, Kirby and Ostdiek (2001) adopted rolling returns correlations to estimate the economic value of volatility trading. Pesaran and Timmermann (2002); Ghysels, Santa-Clara, and Valkanov (2004); Clarke and

West (2007); and Chander and Mehta (2007) applied a rolling window approach into their methodologies to forecast returns.

Moreover, rolling returns are also used to examine stock returns based on historical prices. The M401K (2001) report incorporated data of several funds over a year by Hueler Analytics to compare stock performance based on 3-months rolling returns and 12-months rolling returns each. In addition, Nanda, Sudhir, Peter and Donald J. (2006) evaluated the buy-and-hold strategy for a 44-year investment period of the S&P 500 index based on the concept of RR.

For the purpose of this study, rolling returns are used to calculate the annually compounded rolling return for all the stock markets over the 20-year time-frame. The concept of rolling return is derived from the calculation of future value. The formula for future value is as follows:-

$$FV = (1 + \mathrm{i})^n$$

Where,

FV = Future Value

i = Interest Rate / Yield

n = Number of periods

In conversion to rolling return formula, the key here is to find the "i" or yield. In which case, this is the rolling return we are about to compute. Holding periods of the study shall be determined by the "n" value. Nevertheless, FV is the actual average returns from year to year. Conversion of this formula will make "i" the variable we are about to find. In other words, the new formula is:-

$$i = \sqrt[n]{FV} - 1$$

Hence, the formula for rolling return is as follows:

$$Rolling\ Return = \sqrt[N]{(1 + Return_1) \times (1 + Return_2) \times \dots\dots \times (1 + Return_n)} - 1$$

Where,

$Return_1$ = annual return for year one

$Return_2$ = annual return for year two

N = number of holding period

The main objective of this study is to compare between risks and return using the rolling return formula to gauge returns held over a period of years. For this, average return over each year the stocks are being held is calculated from the "$(1+Return_n)$" as shown. Reason for the "1+" is because of the percentage effect. Assuming Return for the first holding period is 8%; total return for that period will be (1+0.08). Subsequently, if return for the second holding period is 2%, then total return for that period will be (1+0.02).

Under the same assumption, if we were to find out total returns for holding stocks for 2 consecutive periods, then that's where the multiplying effect comes in. For example, using the same total return for the same 2 periods, we take (1+0.08) multiply with (1+0.02) to get 1.10. This will be the total returns for 2 consecutive periods. Apply the rest according to the converted future value formula, and we shall get 0.049 as our rolling return for holding stock for that particular 2 years.

For this method to take place, two more formulas are being used so that accuracy is present in this study.

3.4.1.1 Average Stock Market Index

In order to ensure accuracy of annual returns from the indexes, firstly the daily data (Composite Indexes) of the twelve countries are used to determine the Rolling Annual Compounding Return (Rolling Return). The study is mainly to test the relationship between rolling return and the total risk. The average stock market daily index was calculated using the daily index data in each of the countries. The formula is as follows:

$$Average\ Stock\ Market\ Index = \frac{Total\ Composite\ Index}{365}$$

The total composite index is the sum of the indexes of the specific year and divided by 365.

3.4.1.2 Annual Return

The next step would be to calculate the annual return based on the average stock market daily index. The formula is stated below.

$$Annual\ Return = \frac{X_2 - X_1}{X_1}$$

While X_1 represents the average stock market index for year 1 and X_2 represents the average stock market index for year 2.

3.4.2 Standard Deviation

Standard deviation known as the dispersion of returns around an asset's average or expected return, which can also be found in a number of published services, measures a stock's volatility, regardless of the cause (Morton, 1969). It basically represents how much a stock's short-term returns have moved around its long-term average return.

Total risk for the market will be calculated by using standard deviation. Standard deviation is calculated using the formula provided below.

$$Standard\ Deviation = \sqrt{\frac{\sum(X - \overline{X})^2}{N - 1}}$$

Where, X represents the annual return, $\bar{X}$ represents the average return and N represents the number of period.

CHAPTER 4

RESULTS AND FINDINGS

4.1 Structure of Results and Analyses

This chapter reports all the results and findings in the form of tables and graphs based on the research question and hypotheses formulated for easy viewing. This chapter also entails empirical results according to the methods of analysis outlined in the previous chapter.

This chapter is separated into two sections with five parts for each index in the first section. The first part describes the results and findings on the highest and lowest of risk and return for the index. The second part explains the risk-return cut-off for each index. The third part takes a total of 19 holding periods starting from 1992 to describe which holding period has the highest annualized returns. The fourth part looks at only HP1 to gauge the maximum and minimum returns in the short term (1 year period). Finally, the last part looks at the short term holding period of HP1 to explain the positive and negative returns for the period.

The second section of this chapter encompasses a comparative study of indexes within their respective regions. In this case, DJIA and TSX are tabled under the North American region, FTSE, CAC, and DAX are under the European region, and KOSPI, HANG SENG, TAIEX, NIKKEI, STI, KLCI under the Asian region. The only index not being taken into comparison is ASX because it is in a region of its own.

4.1.1 United States of America

Figure 4.1: Relationship between Average Rolling Return and Total Risk on investment in United States of America (DJIA)

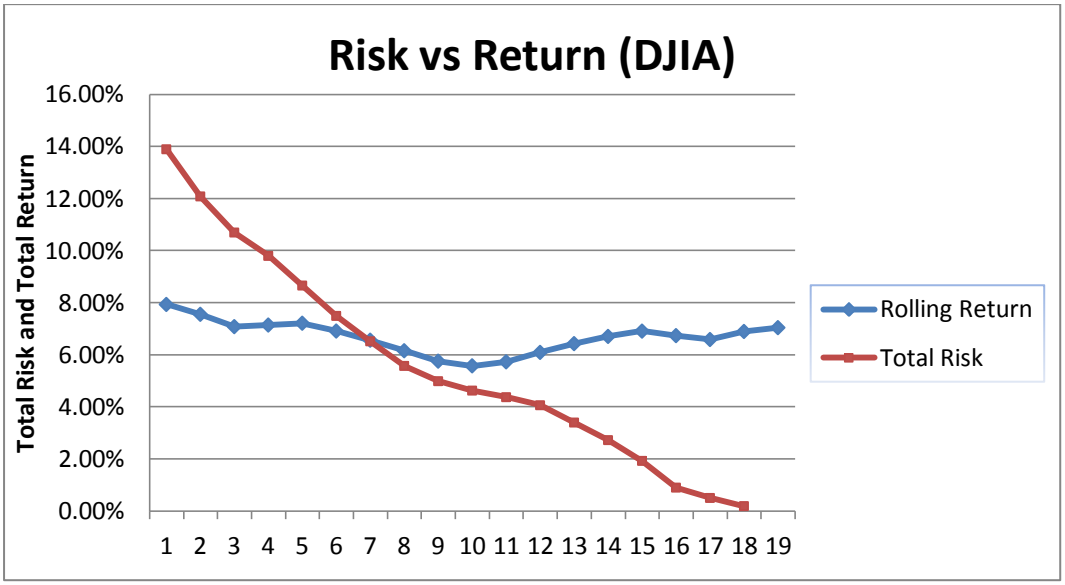


Figure 4.1 shows the average rolling return and total risk on investment in the U.S. market (DJIA) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.1.1 Results and Findings

Returns of DJIA are stable, ranging from 5% - 8% between various holding periods. However its total risk ranged around 0.2% - 14%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 29.63%. The lowest return is at the 10th holding period, where the return is at 5.57%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.1, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 13.89%, which is the highest. However at the

last holding period, risk was only at 0.18%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 98%.

4.1.1.2 Risk-Return Cut-off

The cut-off point of DJIA where annualized return is higher than risks is at the 7th holding period, where total average annual return is at 6.56% and total risk is at 6.51%. This means that, the most optimal strategy for investors is to hold DJIA stocks for at least 7 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 7th holding period.

4.1.1.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP7, which is 18.02%. Comparatively, annualized return at HP19 is 7.04%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 7 years, then sell them off in 1999; rather than holding the stocks for 19 years and sell them off in year 2011. Moreover, the cut-off point as discussed previously is also indicated to be at the 7th holding period.

4.1.1.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for DJIA are 29.63% whereas minimum returns are -21.01%. The highest returns are recorded in 1996, a year before the Asian Financial Crisis struck South East Asian countries. Meanwhile, minimum returns of -21.01% was during the Sub-Prime Crisis of 2008.

4.1.1.5 Positive and Negative Returns (HP1)

In the first holding period of DJIA throughout 20 years, there are 14 positive returns and 5 negative returns. The negative returns are mainly caused by major events in the U.S. market. For example, around year 2000 was when the dot.com bubble burst, which caused returns to be -4.88%.

Subsequently, it was during 2001 when terrorists attacked the World Trade Centre in New York, which subsequently led to the Iraq war as well as budget and trade deficits in the U.S. economy spilled over into year 2002. This caused the annualized returns to be -9.63% and -2.39% respectively.

After that, the sub-prime crisis as well as credit crisis happened around year 2007 to 2008, where annualized returns are recorded to be -14.58% and -21.01% respectively.

4.1.2 Canada

Figure 4.2: Relationship between Average Rolling Return and Total Risk on investment in Canada (TSX)

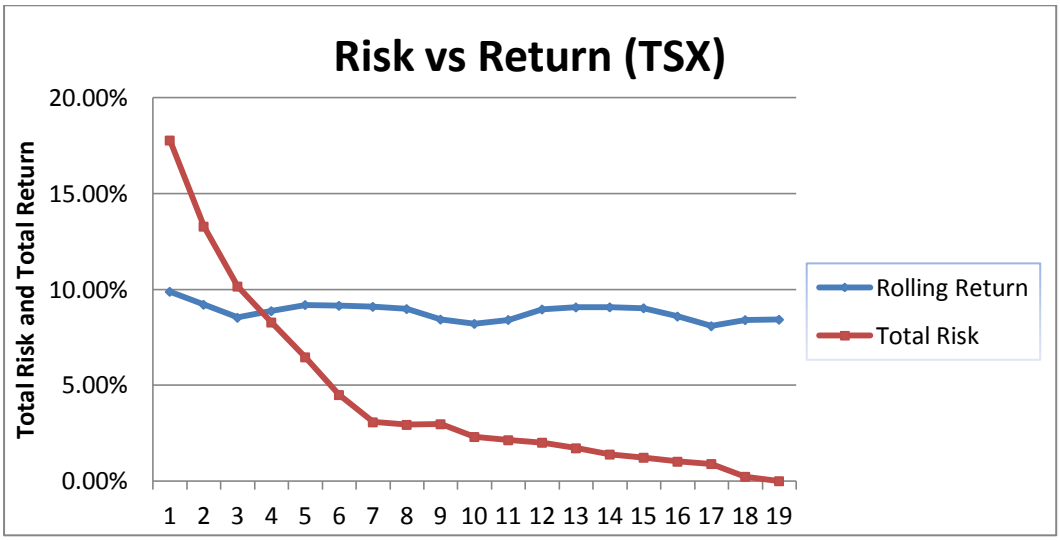


Figure 4.2 shows the average rolling return and total risk on investment in the Canadian market (TSX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.2.1 Results and Findings

Returns of TSX are stable, ranging from 8.09% - 9.88% between various holding periods. However its total risk ranged around 0.23% - 17.78%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 9.88%. The lowest return is at the 17th holding period, where the return is at 8.09%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.1.2, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 17.78%, which is the highest. However at the last holding period, risk was only at 0.23%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99%.

4.1.2.2 Risk-Return Cut-off

The cut-off point of TSX where annualized return is higher than risks is at the 4th holding period, where total average annual return is at 8.87% and total risk is at 8.28%. This means that, the most optimal strategy for investors is to hold TSX stocks for at least 4 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 4th holding period.

4.1.2.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP8, which is 11.062%. Comparatively, annualized return at HP19 is 8.43%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 8 years, then sell them off in 2000; rather than holding the stocks for 19 years and sell them off in year 2011. However, this is beyond the cut-off point at HP4.

4.1.2.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for TSX are 37.893% whereas minimum returns are -24.32%. The highest returns are recorded in 1999, a year after the Asian Financial Crisis struck South East Asian countries. Meanwhile, minimum returns of -24.32% was during the Sub-Prime Crisis of 2008 in the U.S. Market.

4.1.2.5 Positive and Negative Returns (HP1)

In the first holding period of TSX throughout 20 years, there are 14 positive returns and 13 negative returns. The negative returns are mainly caused by major

events in the Global markets as well as the U.S. market. For example, around year 1997 was during the Asian Financial Crisis, which caused returns to be -1.73%.

In year 2000, the Canadian market also took a big hit from the rumors of Y2K, which caused returns for TSX to be at -22.97%. In 2001, due to terrorist attacks on Canada's major counterpart the U.S.A., returns were at -10.71%. Subsequently in 2007 and 2008 Canada also took a huge toll from the U.S. subprime crisis, where TSX returns were -6.59% and -24.32% respectively.

4.1.3 United Kingdom

Figure 4.3: Relationship between Average Rolling Return and Total Risk on investment in UK (FTSE)

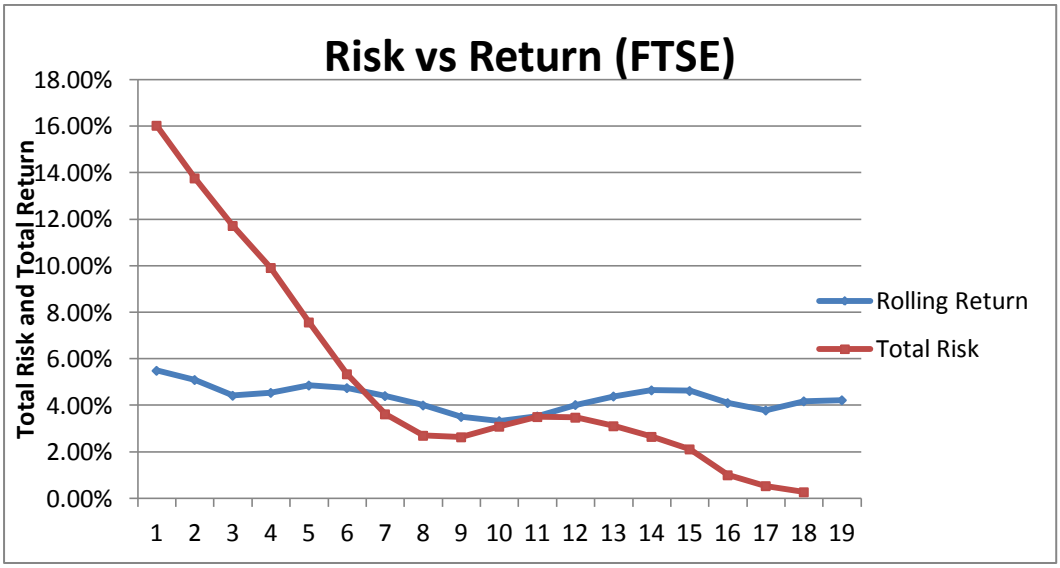


Figure 4.3 shows the average rolling return and total risk on investment in the U.K. market (FTSE) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.3.1 Results and Findings

Returns of FTSE are stable, ranging from 3% - 5% between various holding periods. However its total risk ranged around 0.27% - 16.03%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 5.49%. The lowest return is at the 10th holding period, where the return is at 3.33%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.3, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 16.03%, which is the highest. However at the

last holding period, risk was only at 0.27%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 98.3%.

4.1.3.2 Risk-Return Cut-off

The cut-off point of FTSE where annualized return is higher than risks is at the 7th holding period, where total average annual return is at 4.40% and total risk is at 3.62%. This means that, the most optimal strategy for investors is to hold DJIA stocks for at least 7 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 7th holding period.

4.1.3.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP6, which is 12.42%. Comparatively, annualized return at HP19 is 4.22%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 6 years, then sell them off in 1998; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.3.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for FTSE are 27.16% whereas minimum returns are -28.38%. The highest returns are recorded in 2003, the year when UK decided to join troops with US to invade Iraq. Meanwhile, minimum returns of -28.38% was during 2008, when the Sub-Prime Crisis hit the US market.

4.1.3.5 Positive and Negative Returns (HP1)

In the first holding period of FTSE throughout 20 years, there are 13 positive returns and 6 negative returns. The negative returns are mainly caused by major events in the US market. For example, the terrorist attack in the US in 2001 caused the returns to be -16.35%, in which it spilled over to years 2002, where returns are -2.54%. Subsequently, the subprime crisis in the US also impact UK. In year 2007 and 2008, returns were -22.67% and -28.38% respectively.

4.1.4 France

Figure 4.4: Relationship between Average Rolling Return and Total Risk on investment in France (CAC)

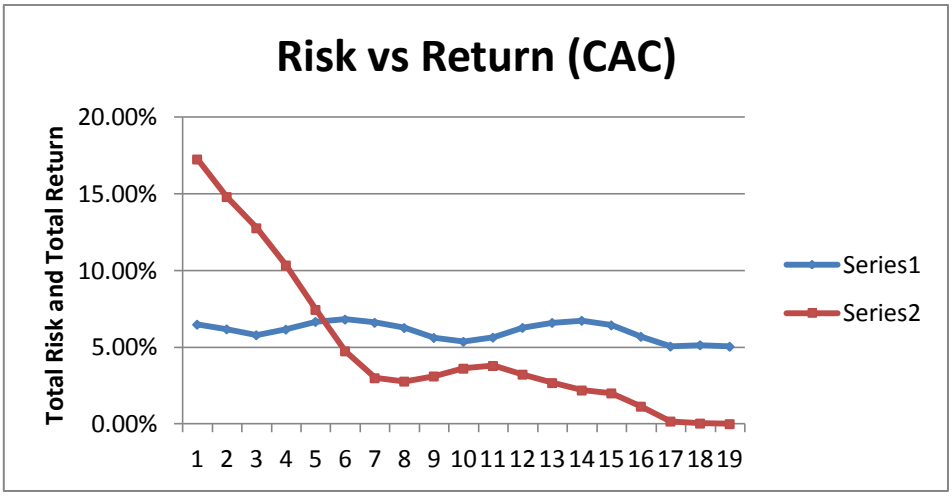


Figure 4.4 shows the average rolling return and total risk on investment in the French market (CAC) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.4.1 Results and Findings

Returns of CAC are stable, ranging from 5% - 6% between various holding periods. However its total risk ranged around 0.04% - 17.24%, which is quite a huge difference. The highest return is at the 6th holding period, where the return is at 6.81%. The lowest return is at the 19th holding period, where the return is at 5.04%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.4, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 17.24%, which is the highest. However at the last holding period, risk was only at 0.04%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99.8%.

4.1.4.2 Risk-Return Cut-off

The cut-off point of CAC where annualized return is higher than risks is at the 6th holding period, where total average annual return is at 6.81% and total risk is at 4.74%. This means that, the most optimal strategy for investors is to hold CAC stocks for at least 6 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 6th holding period.

4.1.4.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP6, which is 12.30%. Comparatively, annualized return at HP19 is 5.04%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 6 years, then sell them off in 1998; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.4.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for CAC are 30.82% whereas minimum returns are -27.13%. The highest returns are recorded in 2003. Meanwhile, minimum returns of -27.13% was during 2008, when the Sub-Prime Crisis hit the US market.

4.1.4.5 Positive and Negative Returns (HP1)

In the first holding period of FTSE throughout 20 years, there are 15 positive returns and 4 negative returns. The negative returns are mainly caused by major events in the US. market. For example, the dot com bubble burst in 2000 and terrorist attack in the US in 2001 caused the returns to be -21.47% and -18.07%

respectively. Subsequently, the subprime crisis in the US also impact France. In year 2007 and 2008, returns were -18.36% and -27.03% respectively.

4.1.5 Germany

Figure 4.5: Relationship between Average Rolling Return and Total Risk on investment in Germany (DAX)

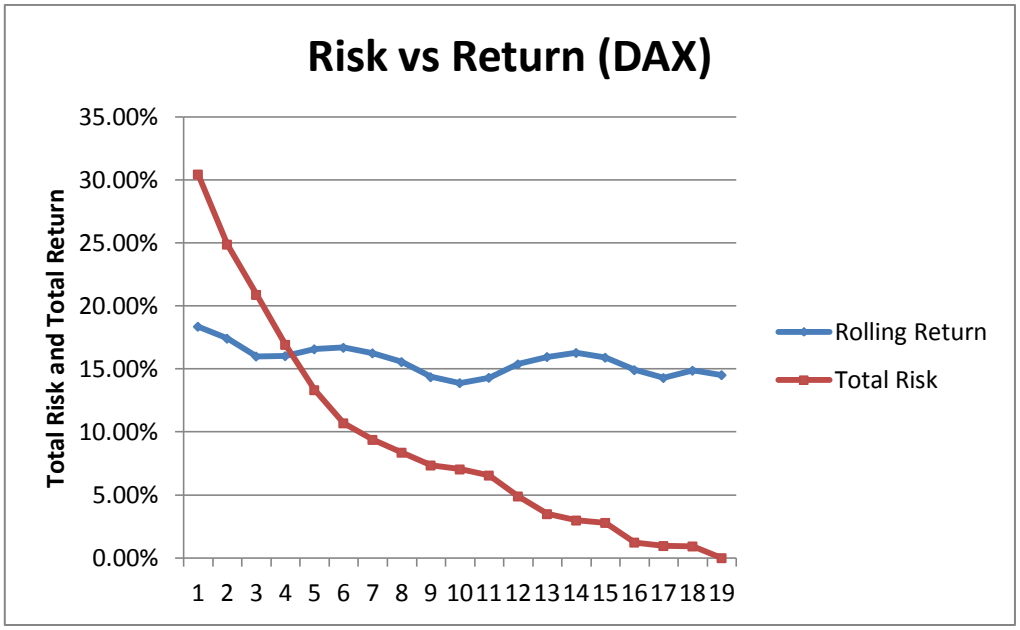


Figure 4.5 shows the average rolling return and total risk on investment in the German market (DAX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.5.1 Results and Findings

Returns of DAX are slightly more volatile compared to other indexs, ranging from 13.89% - 18.37% between various holding periods. However its total risk ranged around 0.93% - 30.45%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 18.37%. The lowest return is at the 10th holding period, where the return is at 13.89%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.5, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 30.45%, which is the highest. However at the last holding period, risk was only at 0.93%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 97%.

4.1.5.2 Risk-Return Cut-off

The cut-off point of DAX where annualized return is higher than risks is at the 5th holding period, where total average annual return is at 16.57% and total risk is at 13.33%. This means that, the most optimal strategy for investors is to hold DAX stocks for at least 6 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 6th holding period.

4.1.5.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP8, which is 31.21%. Comparatively, annualized return at HP19 is 14.52%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 8 years, then sell them off in 2000; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.5.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for DAX are 76.68% whereas minimum returns are -27.13%. The highest returns are recorded in 1997, when the Asian Financial Crisis occurred in the South East Asian region. Meanwhile, minimum returns of -27.13% was during 2008, when the Sub-Prime Crisis hit the US market.

4.1.5.5 Positive and Negative Returns (HP1)

In the first holding period of DAX throughout 20 years, there are 13 positive returns and 6 negative returns. The negative returns are mainly caused by major events in the US market. For example, the dot com bubble burst in 2000 and terrorist attack in the US in 2001 caused the returns to be -23.32% and -23.19%

respectively. Subsequently, the subprime crisis in the US also impacted Germany. In year 2007 and 2008, returns were -18.65% and -29.23% respectively.

4.1.6 South Korea

Figure 4.6: Relationship between Average Rolling Return and Total Risk on investment in South Korea (KOSPI)

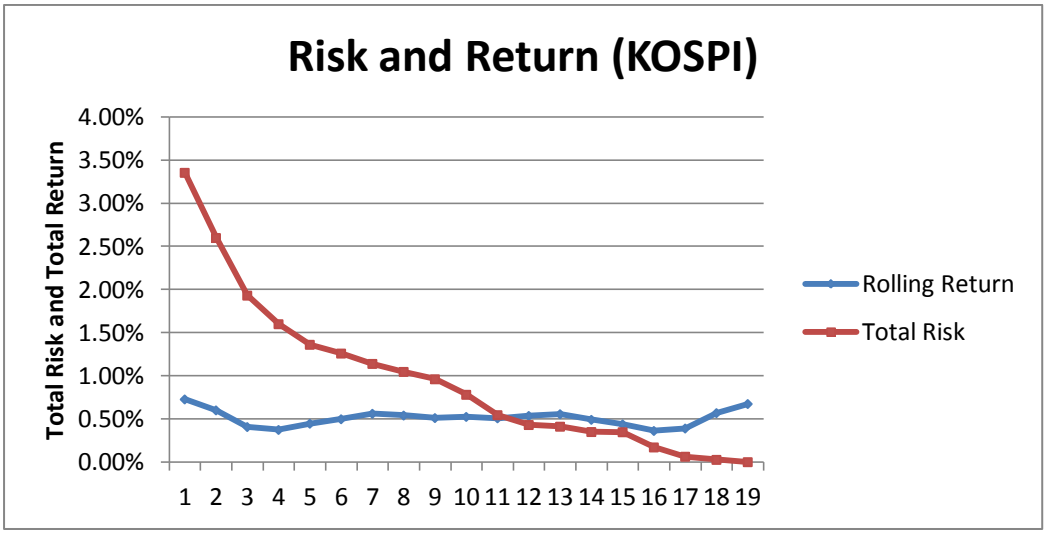


Figure 4.6 shows the average rolling return and total risk on investment in the Korean Market (KOSPI) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.6.1 Results and Findings

Returns of KOSPI are stable and relatively lower compared to other indexs, ranging from 0.36% - 0.73% between various holding periods. However its total risk ranged around 0.03% - 3.35%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 0.73%. The lowest return is at the 16th holding period, where the return is at 3.36%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.6, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 3.35%, which is the highest. However at the last holding period, risk was only at 0.03%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99%.

4.1.6.2 Risk-Return Cut-off

The cut-off point of KOSPI where annualized return is equal or higher than risks is at the 12th holding period, where total average annual return is at 0.54% and total risk is at 0.43%. This means that, the most optimal strategy for investors is to hold KOSPI stocks for at least 12 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 12th holding period.

4.1.6.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP2, which is 3.08%. Comparatively, annualized return at HP19 is 0.67%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 3 years, then sell them off in 1994; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.6.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for KOSPI are 4.86% whereas minimum returns are -4.99%. The highest returns are recorded in 1998, one year after the Asian Financial Crisis occurred in the South East Asian region. Meanwhile, minimum returns of -4.99% was during 2007, during the Asian Financial Crisis.

4.1.6.5 Positive and Negative Returns (HP1)

In the first holding period of KOSPI throughout 20 years, there are 8 positive returns and 11 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets such as the Asian Financial Crisis in 1997 and the Subprime Crisis in 2007 and 2008.

4.1.7 Hong Kong

Figure 4.7: Relationship between Average Rolling Return and Total Risk on investment in Hong Kong (Hang Seng)

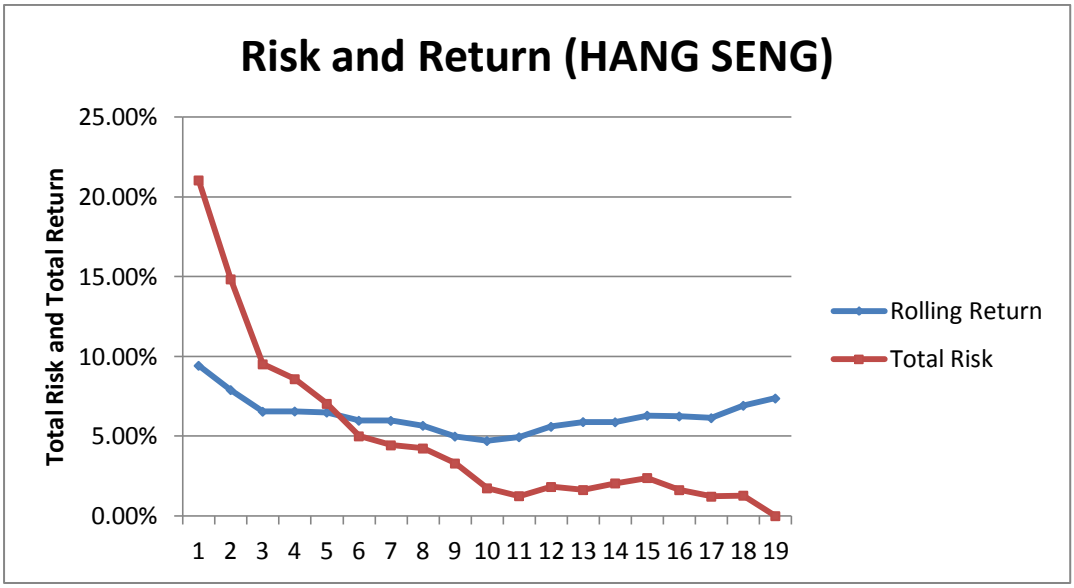


Figure 4.7 shows the average rolling return and total risk on investment in the Hong Kong market (Hang Seng) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.7.1 Results and Findings

Returns of Hang Seng are stable, ranging from 4.71% - 9.42% between various holding periods. However its total risk ranged around 1.28% - 21.03%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 9.42%. The lowest return is at the 10th holding period, where the return is at 4.71%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.7, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 21.03%, which is the highest. However at the

last holding period, risk was only at 1.28%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 94%.

4.1.7.2 Risk-Return Cut-off

The cut-off point of KOSPI where annualized return is equal or higher than risks is at the 6th holding period, where total average annual return is at 5.98% and total risk is at 5.00%. This means that, the most optimal strategy for investors is to hold KOSPI stocks for at least 6 years before selling them in order to gain returns and at the same time benefit from a lower risk exposure than selling them before the 12th holding period.

4.1.6.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP1, which is 35.09%. Comparatively, annualized return at HP19 is 7.37%. This result shows that investors could actually profit better if they buy the stocks in 1992 and hold the stocks for 1 years, then sell them off in 1993; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.7.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for Hang Seng are 36.51% whereas minimum returns are -29.73%. The highest returns of 36.51% are recorded in 2006, while minimum returns of -29.73% was during 1997, during the Asian Financial Crisis.

4.1.7.5 Positive and Negative Returns (HP1)

In the first holding period of Hang Seng throughout 20 years, there are 8 positive returns and 11 negative returns. The negative returns are mainly caused by major

events in the Asian as well as the US markets such as the Asian Financial Crisis in 1997, the dot com bubble in 2000, and the Subprime Crisis in 2007 and 2008.

4.1.8 Taiwan

Figure 4.8: Relationship between Average Rolling Return and Total Risk on investment in Taiwan (TAIEX)

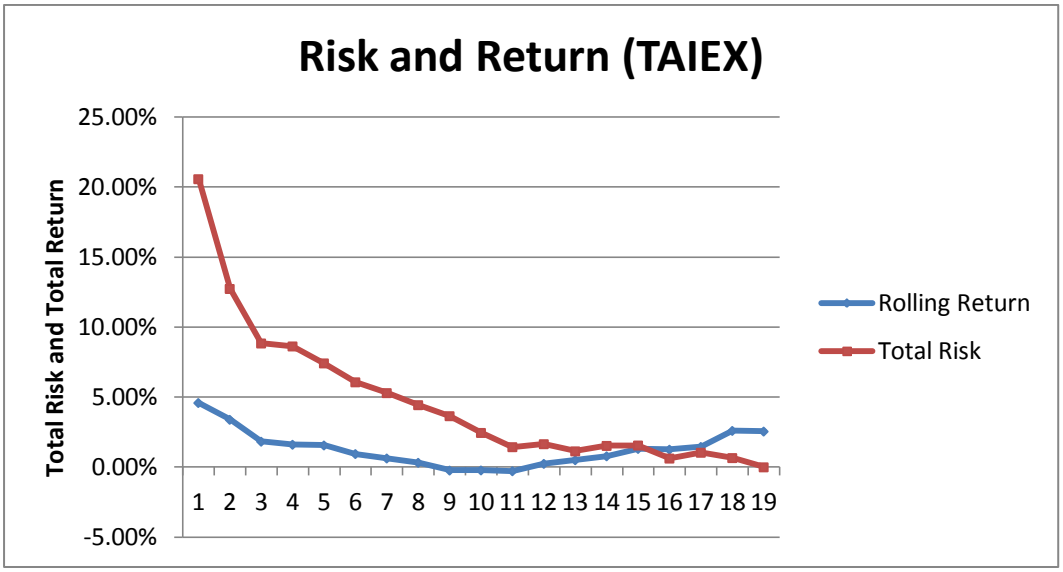


Figure 4.6 shows the average rolling return and total risk on investment in the Taiwan market (TAIEX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.8.1 Results and Findings

Returns of TAIEX are relatively unstable compared to other indexs, ranging from -0.28% - 4.59% between various holding periods. However its total risk ranged around 0.66% - 20.57%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 4.59%. The lowest return is at the 11th holding period, where the return is at -0.28%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.8, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 20.57%, which is the highest. However at the

last holding period, risk was only at 0.66%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 97%.

4.1.8.2 Risk-Return Cut-off

The cut-off point of KOSPI where annualized return is equal or higher than risks is at the 16th holding period, where total average annual return is at 1.26% and total risk is at 0.63%. This means that, the most optimal strategy for investors is to hold KOSPI stocks for at least 16 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 16th holding period.

4.1.8.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP2, which is 17.17%. Comparatively, annualized return at HP19 is 2.55%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 1 year, then sell them off in 1993; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.8.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for TAIEX are 46.52% whereas minimum returns are -41.63%. The highest returns are recorded in 1993, while minimum returns of -41.63% was during 2007, during the dot com crisis.

4.1.8.5 Positive and Negative Returns (HP1)

In the first holding period of TAIEX throughout 20 years, there are 8 positive returns and 11 negative returns. The negative returns are mainly caused by major

events in the Asian as well as the US markets like the Asian Financial Crisis in 1997 and the dot com crisis in 2000.

4.1.9 Japan

Figure 4.9: Relationship between Average Rolling Return and Total Risk on investment in Japan (NIKKEI)

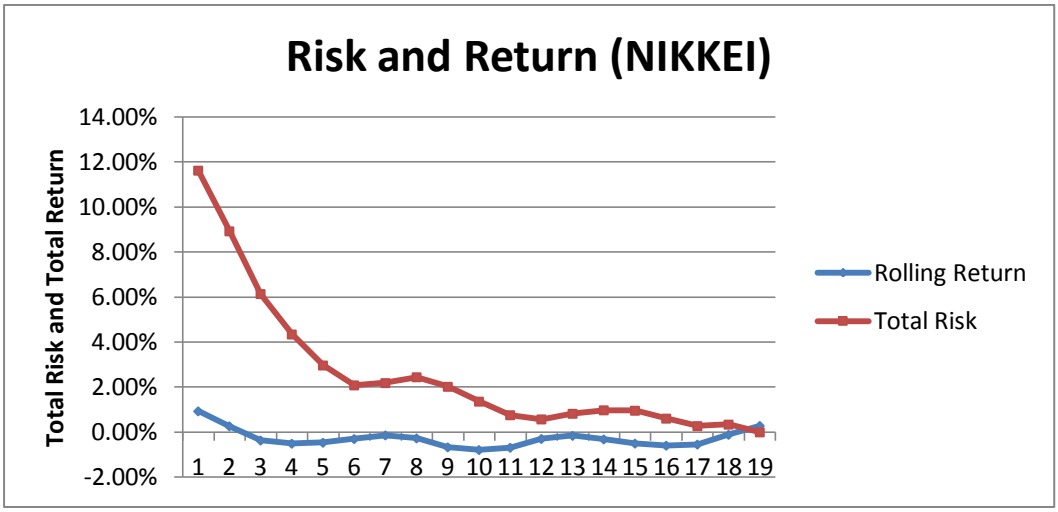


Figure 4.9 shows the average rolling return and total risk on investment in the Japan market (NIKKEI) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.9.1 Results and Findings

Returns of NIKKEI are lower and more volatile compared to other indexs, ranging from -0.79% - 0.93% between various holding periods. However its total risk ranged around 0.34% - 11.62%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 0.93%. The lowest return is at the 10th holding period, where the return is at -0.79%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.9, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 11.62%, which is the highest. However at the last holding period, risk was only at 0.34%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 97%.

4.1.9.2 Risk-Return Cut-off

There is no cut-off point for NIKKEI throughout the 20 year period. Meaning that, risks are always higher than returns.

4.1.9.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP1, which is 12.47%. Comparatively, annualized return at HP19 is 0.28%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 1 year, then sell them off in 1993; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.9.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for NIKKEI are 23.57% whereas minimum returns are -23.60%. The highest returns are recorded in 1998, one year after the Asian Financial Crisis occurred in the South East Asian region. Meanwhile, minimum returns of -23.60% was in 2000, during the dot com crisis.

4.1.9.5 Positive and Negative Returns (HP1)

In the first holding period of KOSPI throughout 20 years, there are 9 positive returns and 10 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets. For example the Asian Financial Crisis in 1997 , the dot com crisis in 2000 and the Subprime Crisis in 2007.

4.1.10 Singapore

Figure 4.10: Relationship between Average Rolling Return and Total Risk on investment in Singapore (STI)

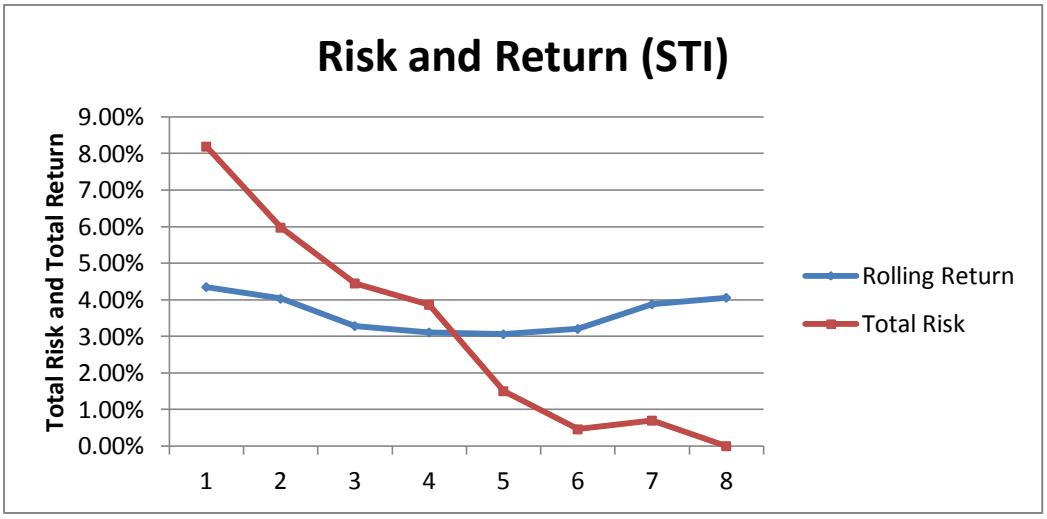


Figure 4.10 shows the average rolling return and total risk on investment in the Singapore market (STI) within 8 years, from 2002 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.10.1 Results and Findings

Returns of STI are stable, ranging from 3.06% - 4.35% between various holding periods. However its total risk ranged around 0.46% - 8.19%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 4.35%. The lowest return is at the 5th holding period, where the return is at 3.06%.

The buy-and-hold strategy was able to significantly decrease risk, albeit not as much as other indexes due to its shorter course. Referring to Figure 4.10, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 8.19%, which is the highest. However at the last holding period,

risk was only at 0.70%, which is the lowest. Over the 8 holding periods from 2002 to 2011, risk levels had decreased by 91%.

4.1.10.2 Risk-Return Cut-off

The cut-off point of STI where annualized return is higher than risks is at the 5th holding period, where total average annual return is at 3.06% and total risk is at 1.50%. This means that, the most optimal strategy for investors is to hold TSX stocks for at least 5 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 5th holding period.

4.1.10.3 Highest Annualized Returns (2002)

The highest annualized return recorded at 2002 is at HP1, which is 8.90%. Comparatively, annualized return at HP8 is 4.06%. This result shows that investors can actually profit better if they buy the stocks in 2002 and hold the stocks for 1 year, then sell them off in 2003; rather than holding the stocks for 8 years and sell them off in year 2011. However, this is beyond the cut-off point at HP5.

4.1.10.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 8 years, maximum returns for STI are 13.80% whereas minimum returns are -9.13%. The highest returns are recorded in 2005, perhaps due to rapid development in the country. Meanwhile, minimum returns of -9.13% in 2006 was probably due to the 10th general election being held in the country.

4.1.10.5 Positive and Negative Returns (HP1)

In the first holding period of STI throughout 8 years, there are 6 positive returns and 2 negative returns. The positive returns are generated by overall well-being of the country, typically surprising in 2008 where returns flourished; this is during the Global Financial Crisis spurred by the Subprime Crisis in the US. Negative returns in 2006 and 2007 are perhaps due to the 10^{th} general election being held.

4.1.11 Malaysia

Figure 4.11: Relationship between Average Rolling Return and Total Risk on investment in Malaysia (KLCI)

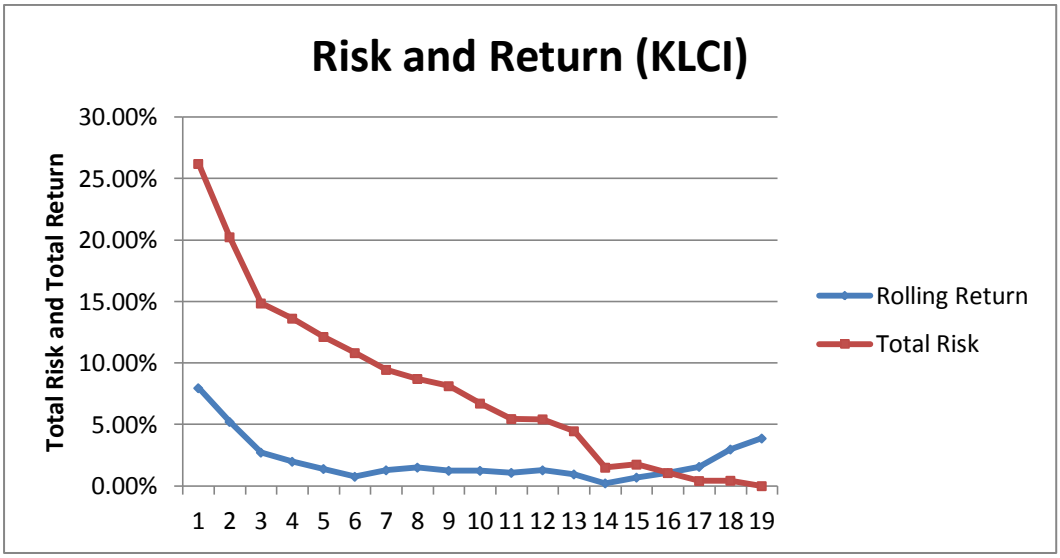


Figure 4.11 shows the average rolling return and total risk on investment in the Malaysian market (KLCI) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.11.1 Results and Findings

Returns of KLCI are lower and more volatile compared to other indexs, ranging from 0.22% - 7.96% between various holding periods. However its total risk ranged around 0.41% - 26.19%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 7.96%. The lowest return is at the 14th holding period, where the return is at 0.22%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.11, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 26.19%, which is the highest. However at the

last holding period, risk was only at 0.44%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 98%.

4.1.11.2 Risk-Return Cut-off

The cut-off point of KLCI where annualized return is higher than risks is at the 16th holding period, where total average annual return is at 1.06% and total risk is also at 1.06%. This means that, the most optimal strategy for investors is to hold KLCI stocks for at least 16 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 16th holding period.

4.1.11.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP2, which is 30.02%. Comparatively, annualized return at HP19 is 3.87%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 2 years, then sell them off in 1994; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.11.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for KLCI are 44.94% whereas minimum returns are -64.20%. The highest returns are recorded in 2006, when the Ninth Malaysian Plan was launched and number of developments around the Peninsular rose. Meanwhile, minimum returns were in 1997, during the Asian Financial Crisis.

4.1.11.5 Positive and Negative Returns (HP1)

In the first holding period of KLCI throughout 20 years, there are 12 positive returns and 7 negative returns. The negative returns are mainly caused by major

events in the Asian as well as the US markets. For example the Asian Financial Crisis in 1997 , the dot com crisis in 2000 and the Subprime Crisis in 2007.

4.1.12 Australia

Figure 4.12: Relationship between Average Rolling Return and Total Risk on investment in Australia (ASX)

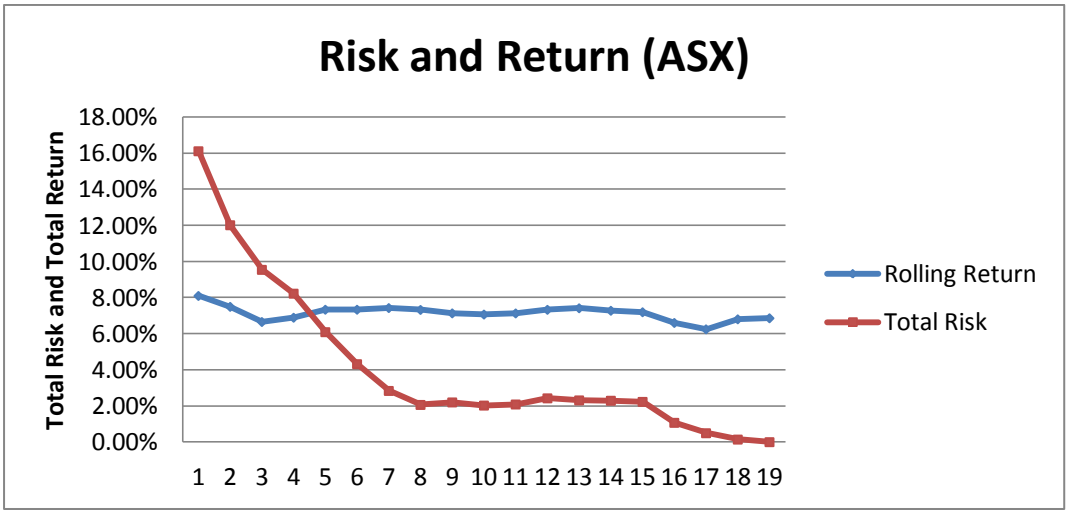


Figure 4.12 shows the average rolling return and total risk on investment in the Australian market (ASX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns.

4.1.12.1 Results and Findings

Returns of ASX are stable, ranging from -6.25% - 8.10% between various holding periods. However its total risk ranged around 0.14% - 16.11%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 8.10%. The lowest return is at the 17th holding period, where the return is at -6.25%.

The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.12, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 16.11%, which is the highest. However at the last holding period, risk was only at 0.14%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99%.

4.1.12.2 Risk-Return Cut-off

The cut-off point of ASX where annualized return is equal or higher than risks is at the 5th holding period, where total average annual return is at 7.33% and total risk is at 6.09%. This means that, the most optimal strategy for investors is to hold ASX stocks for at least 5 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 5th holding period.

4.1.12.3 Highest Annualized Returns (1992)

The highest annualized return recorded at 1992 is at HP2, which is 12.08%. Comparatively, annualized return at HP19 is 6.86%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 2 year, then sell them off in 1994; rather than holding the stocks for 19 years and sell them off in year 2011.

4.1.12.4 Maximum and Minimum Returns (HP1)

Looking at the first holding period of 20 years, maximum returns for ASX are 33.22% whereas minimum returns are -25.17%. The highest returns are recorded in 2006, while minimum returns were subsequent during 2007 and 2008, during the Global Financial Crisis as well as the Subprime Crisis.

4.1.12.5 Positive and Negative Returns (HP1)

In the first holding period of ASX throughout 20 years, there are 15 positive returns and 4 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets like the Asian Financial Crisis in

1997, the dot com crisis in 2000, and the global financial crisis as well as subprime crisis in 2007 and 2008.

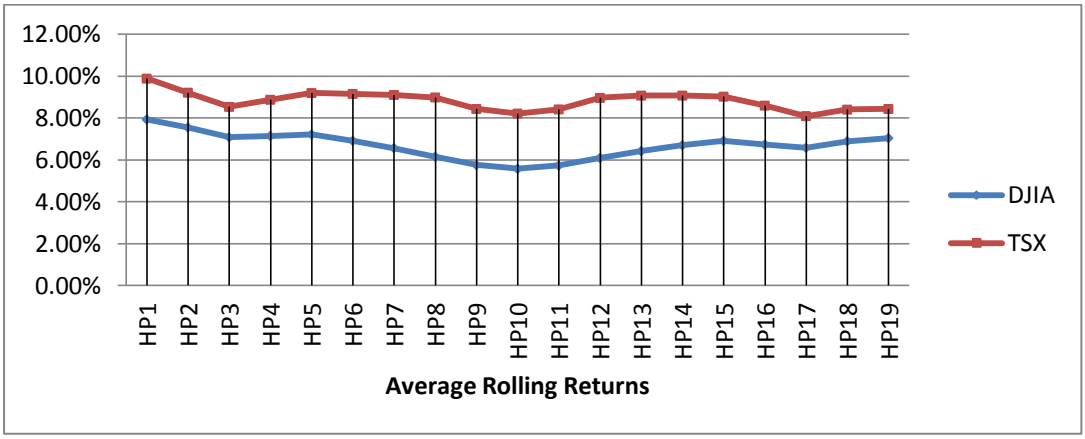
4.2 Comparison of Indexes According to Region

4.2.1 DJIA and TSX

The U.S. and the Canadian economy are located side by side and they are the dominant players of the North American region. The DJIA and TSX are very popularly debated and compared to as to which index is performing better by various academicians. Nonetheless due to the strength of the U.S. Dollar and its economy globally, DJIA is said to be more of a market-mover whereas the TSX is said to be a market-follower of the DJIA.

4.2.1.1 Risk-Return Comparison

Figure 4.13: Comparison of Average Rolling Returns and Total Risk (DJIA and TSX)



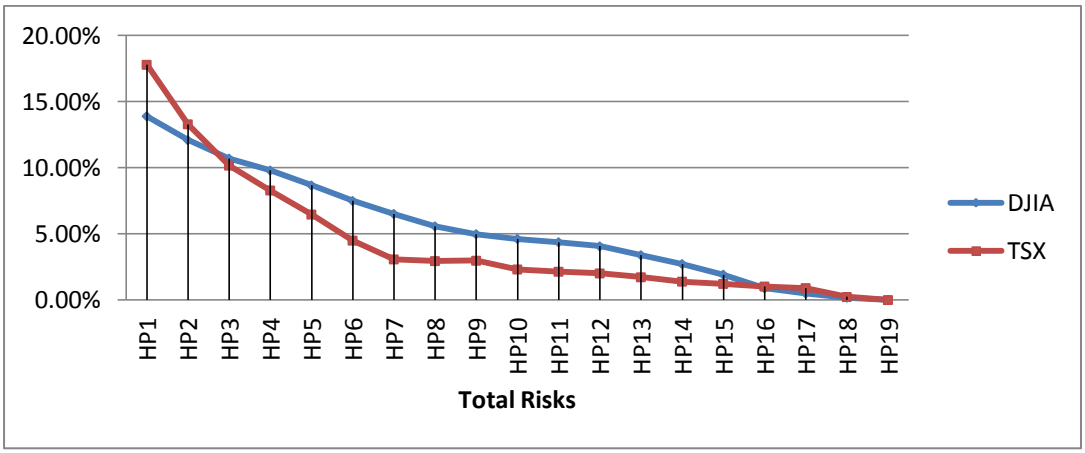


Figure 4.13 gives a comparison of two variables to look at: rolling returns and total risk of DJIA and TSX. Based on the statistics, the two indexes are positively correlated to each other in terms of returns. Meaning that, they move at the same pace in the same magnitude and direction. However, TSX has constant higher values than DJIA over the 19 holding periods.

From the comparison of total risk, albeit both DJIA and TSX have shown tremendous decrease in risk over the 19 holding periods, TSX's magnitude is steeper from HP1 till HP 7, and risk decline gradually after that; Whereas for DJIA, there is no sharp decline but only a gradual decline from HP1 till HP19.

4.2.1.2 Cut-off Comparison

Take note from the previous discussion that the cut-off point for DJIA is in HP7 while TSX is in HP4. This indicates that it is faster for investors to enjoy minimal risk of investing in TSX as compared to DJIA. Moreover, the buy-and-hold strategy is effective for both DJIA and TSX

4.2.2 FTSE, CAC, and DAX

The UK, French, and German economy are located close to each other and they are the dominant players of the Central European region. These three indexes are popular among investors are frequently debated and compared to as to which index is performing better by various academicians. FTSE is even being used widely as a comparison gauge for many companies that employ the UK company law.

4.2.2.1 Risk-Return Comparison

Figure 4.14: Comparison of Average Rolling Returns and Total Risk (FTSE, CAC and DAX)

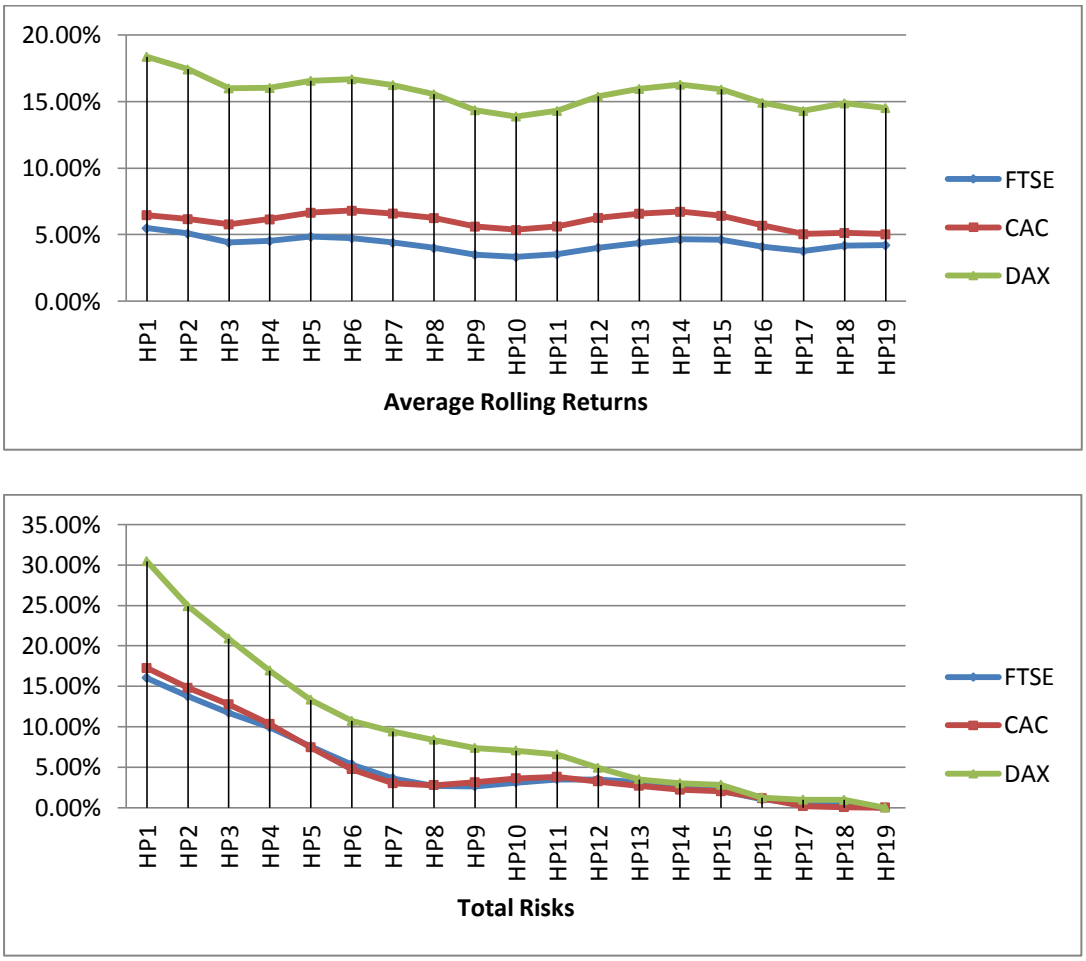


Figure 4.14 gives a comparison of two variables to look at: rolling returns and total risk of FTSE, CAC and DAX. Based on the statistics, the three indexes are

positively correlated to each other in terms of returns. Meaning that, they move at the same pace in the same magnitude and direction. Comparatively, DAX has the highest consistent returns, followed by CAC and FTSE respectively.

From the comparison of total risk, both FTSE and CAC have shown similar decrease in risk over the 19 holding periods. Both FTSE and CAC have huge risk reduction using rolling returns as analysis. However, DAX has the steepest risk reduction over the 19 holding periods.

4.2.2.2 Cut-off Comparison

Take note from the previous discussion that the cut-off point for FTSE is the 7^{th} holding period; CAC is the 6^{th} holding period, and DAX is the 5^{th} holding period respectively. This indicates that it is the fastest for investors to enjoy minimal risk of investing in DAX, followed by CAC and FTSE. As a conclusion, buy-and-hold as a strategy is effective in reducing risk for all three FTSE, CAC, and DAX.

4.2.3 KOSPI, Hang Seng, TAIEX, NIKKEI, STI, and KLCI

South Korea, Hong Kong, Taiwan, Japan, Singapore, and Malaysia are emerging markets in the South East Asian region. Located close to each other, these countries have been popular amongst investors abroad. The returns for these stock indexes remains competitive, although these countries were being affected by numerous crisis such as the Asian Financial Crisis in 1997 and the Global Financial Crisis in 2008 followed by the Sub-prime crisis in the US.

4.2.3.1 Risk-Return Comparison

Figure 4.15: Comparison of Average Rolling Returns and Total Risk (KOSPI, Hang Seng, TAIEX, NIKKEI, STI, and KLCI)

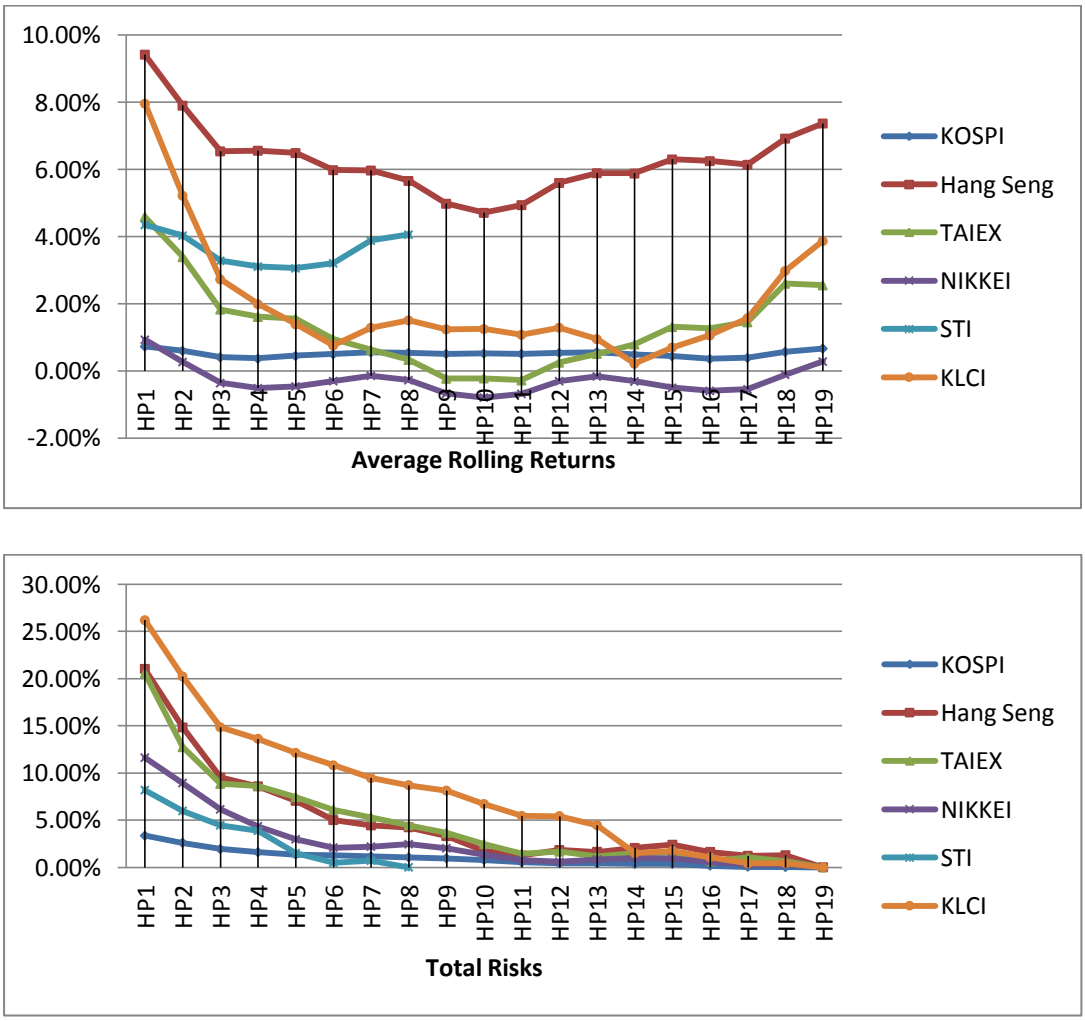


Figure 4.15 gives a comparison of two variables to look at: rolling returns and total risk of KOSPI, Hang Seng, TAIEX, NIKKEI, STI, and KLCI. Based on the results, all 6 indexes move at a relatively similar direction and magnitude. Hang Seng has the highest returns throughout the 19 holding periods as compared to others, while NIKKEI has the lowest returns.

Take note that STI has only just started since 2002 and thus does not have 20 years of historical trends to analyze as compared to the rest of the stock indexes. From the observation, KOSPI, Hang Seng, TAIEX, NIKKEI, and STI have a somewhat positive correlation while KLCI has a negative correlation with the rest. This is observed from the returns in HP8, HP14, and HP17; where KLCI significantly moved towards the opposite direction as compared to the other indexes which moved at the same direction.

Looking at the second chart of Chart 3, it is evident that the rolling returns analysis proved that the buy-and-hold strategy has a significant decrease in total risk for all 6 stock indexes. KLCI has the steepest decline while KOSPI has the most gradual decline in terms of total risk.

4.2.3.2 Cut-off Comparison

The cut-off comparison shows how fast investors are generally able to gain returns while at the same time enjoy minimal risks. This means that the earlier the cut-off period the better. From the results, STI and Hang Seng have the earliest cut-off points, which are on the 5^{th} and 6^{th} holding period respectively. Followed which are KOSPI on the 12^{th} holding period, and KLCI and TAIEX at the 16^{th} holding period. NIKKEI has no cut-off point due to its inability to gain sufficient returns to minimize total risk. Overall, the buy-and-hold strategy is effective in reducing risk. However, this is not the case for NIKKEI.

CHAPTER 5

DISCUSSION AND CONCLUSION

5.1 Introduction

The main purpose of this study was to test whether the simple buy-and-hold strategy is capable of outperforming the buy-and-sell strategy. In this chapter, the discussion of the research will be presented, which includes interpretation of the research results, the implications of the findings and recommendations to the research. Furthermore, there will also be a discussion on the limitations being faced.

The first part of this chapter concludes about the results and findings of the study and how do the results and findings answer the research questions (RQ) as well as research objectives (RO) set out in Chapter 1. The second part of this chapter gives a comparison of the results and findings as to what previous researchers have found. The last part of this chapter will encompass the recommendations as well as limitations to this study,

5.2 Conclusions

In this section, the conclusions of the findings is base on answering the research questions (RQ) as well as research objectives (RO) as stated in Chapter 1. Moreover a matching of some previous researches mentioned in Chapter 2 is being discussed here.

5.2.1 Effectiveness of Buy-and-Hold

The main purpose of this study was to test whether the simple buy-and-hold strategy is capable of outperforming the buy-and-sell strategy through rolling returns analysis. Investors often perceive holding stocks for a long time unprofitable and risky. This is mainly due to the unforeseen market movements that are crucial in influencing stock price movements. Many seek for stock investments that have lower risk exposures and yet able to gain reasonable amounts of returns, hence they buy and hold for a short period of time, and then quickly sell whenever the market timing is "right". Table 5.1 summarizes the findings as per Chapter 4 according to the first research question: "is buy-and-hold an effective strategy in minimizing risk?" and to answer the question a summary of the first and second research objectives are being tabled accordingly.

Table 5.1: (RQ 1) Is Buy-and-Hold an Effective Strategy in Minimizing Risk?

Indexes	**RO 1***	**RO 2** (Cut-off Point)**
DJIA	YES	YES (7)
TSX	YES	YES (4)
FTSE	YES	YES (7)
CAC	YES	YES (6)
DAX	YES	YES (5)
KOSPI	YES	YES (12)
Hang Seng	YES	YES (6)

TAIEX	YES	YES (16)
NIKKEI	YES	NO (no cut-off)
STI	YES	YES (5)
KLCI	YES	YES (16)
ASX	YES	YES (5)

**RO 1: To examine whether risk reduces over a long period of time by employing the buy-and-hold strategy.*

***RO 2: To investigate whether risk exposure will be lower than returns in the long run (using cut-off).*

The results indicate that, by using buy-and-hold, risk reduces over all holding periods; 19 holding periods for DJIA, TSX, FTSE, CAC, DAX, KOSPI, Hang Seng, TAIEX, NIKKEI, KLCI, and ASX as well as 8 holding periods for STI. Moreover, for all the indexes, risk reduction is more than 95% throughout all holding periods. Subsequently, the study also found that there is potential for risk exposure to drop lower than returns in the long run by using cut-off as estimate.

Evidently, buy-and-hold strategy is most effective for TSX as its cut-off is the shortest among all indexes. The most ineffective index is NIKKEI where there is no cut-off at all. In light of this study, the results are also supportive of a research conducted by Markellos (2007) where buy-and-hold is significantly less risky than buy-and-sell. The results are against the findings of Evans (1970) where it indicates that buy-and-hold is less effective when initial investments are high. In addition, the results are against Metghalchi, Du and Ning (2009) where it indicates that average technical trading rules are more predictable and thus can outperform the simple Buy-and-Hold strategy.

5.2.2 Comparison of Risk and Return between Markets

Throughout the study, all indexes were able to generate reasonably stable returns the longer the holding periods, but with constantly reducing risks. The only exceptional case is Japan's NIKKEI index, where returns actually hit negative values after a few years of holding the stock. This study also went on further to

illustrate the differences between indexes within regions. However, there is no comparison for ASX. Table 5.2 summarizes the findings as per Chapter 4 according to the second research question: "are there differences in the pattern of risk and return in various markets?" and to answer the question a summary of the third and fourth research objectives are being tabled accordingly.

Table 5.2: (RQ 2) Are There Differences in the Pattern of Risk and Return in Various Markets?

Indexes	**Region**	**RO 3***	**RO 4****
DJIA	North America	YES	• Positive correlation for returns. • TSX has steepest risk reduction.
TSX		YES	
FTSE	Europe	YES	• Positive Correlation for returns. • DAX has steepest risk reduction.
CAC		YES	
DAX		YES	
KOSPI	Asia	YES	• No obvious correlation for returns. • Somewhat positive correlation on all indexes except KLCI. • KLCI has somewhat negative correlation. • NIKKEI performed
Hang Seng		YES	
TAIEX		YES	
NIKKEI		YES	
STI		YES	

KLCI		YES	the worst.
ASX	Australia	YES	Nil

**RO 3: To analyze buy-and-hold performance for each stock index of twelve different countries*

***RO 4: To compare results obtained by analyzing stock index of twelve different countries.*

The results indicate that buy-and-hold performs well for every index from 1992 to 2011. While returns remain relatively the same throughout all the holding periods, risk reduces substantially. In the North American region, TSX has higher constant returns and steeper risk reduction as compared to its counterpart DJIA. In the European region, DAX has the highest constant returns and steepest risk reduction followed by CAC and FTSE. In the Asian region however, Hang Seng has the highest constant returns, followed by STI, KLCI, TAIEX, KOSPI, and NIKKEI. KLCI has the steepest risk reduction followed by Hang Seng, TAIEX, NIKKEI, STI, and KOSPI.

As for correlation of returns, TSX and DJIA have an obvious positive correlation in terms of returns for the holding periods between 1992 and 2011. In the European region, there is also a significant positive correlation between FTSE, CAC, and DAX. However in the Asian region, the only significant positive correlation is between Hang Seng and TAIEX. KLCI has some negative correlation with Hang Seng and TAIEX, while KOSPI and NIKKEI have no obvious correlation at all. The worst performer in the Asian region is NIKKEI, with the most negative returns and no cut-off period. There are no comments to be given to STI due to its shorter period of analysis. However, it can be suggested that STI does have a positive correlation with Hang Seng and TAIEX.

5.2.3 Risk and Return

Typically, an investment would have a risk-return tradeoff. This means that, the higher the risk the lower the returns and vice versa. Table 5.3 summarizes the findings as per Chapter 4 according to the third research question: "does the risk-return tradeoff hold when employing buy-and-hold strategy?" and to answer the question a summary of the fifth research objective is being tabled accordingly.

Table 5.3: (RQ 3) Does the Risk-Return Tradeoff Hold when Employing Buy-and-Hold Strategy?

Indexes	**RO 5***
DJIA	YES
TSX	YES
FTSE	YES
CAC	YES
DAX	YES
KOSPI	YES
Hang Seng	YES
TAIEX	YES
NIKKEI	NO
STI	YES
KLCI	YES
ASX	YES

**RO 5: To determine if the risk-return tradeoff is present when employing the buy-and-hold strategy.*

It is a common concept that low levels of uncertainty or risk are associated with low potential returns. Investors with appetite for higher potential returns would usually have to bear with the consequence of a higher risk exposure. However, throughout the study of all 12 countries' stock indexes, risk-return tradeoff does not hold. The results obtained from the analyses show that while there is significant risk reduction for all of the stock indexes, returns remain comparatively the same if not higher than risk, with the exception of NIKKEI. In

the case of NIKKEI risks are ultimately higher than returns no matter how long one holds the stock index.

Li, Yang, Hsiao and Chang (2005) found that stock market returns are negatively correlated with stock market volatility; however the results of this study show otherwise. The results obtained is symmetrical to the findings of Rahmbia, Joshipura and Joshipura (2013) where there is evidence that low volatility portfolio outperforms market portfolio as well as its high volatility counterpart on risk-adjusted basis.

According to the results obtained, during the first few holding periods before the cut-off point total risk is higher than total returns. During or after the cut-off point, although risk continues to decline significantly, returns remain relatively the same as their initial levels in the first holding period. Moreover during the 19th holding period when total risk was close to zero, returns are still not affected and continue to remain the same. This leads to comparatively significant higher returns with minimal risk exposure.

5.1.4 Efficient Market Hypothesis (EMH) and Random Walk Theory

This section is about answering the fourth research question: "Does the Efficient Market Hypothesis (EMH) apply in the buy-and-hold strategy?" and also to give a discussion on the sixth research objective which is: "To determine if EMH applies in the buy-and-hold strategy."

Many have blamed the EMH for the risk-return tradeoffs pertaining to stock investments. In this study EMH and RWT is ignored among all daily stock indexes for 20 years, particularly due to the similar pattern being found in most of the indexes except NIKKEI. The results showed a similar pattern of risk and

return. In other words, Return remains relatively the same throughout all holding periods while risks of all indexes show a significant decline for all indexes.

The findings support the findings of Lim, Brooks, and Kim (2008) where market inefficiency affects most of the Asian countries during the Asian Financial Crisis. However, the results are against the study of Yu, Nartea, Gan, and Yao (2012) which indicated that trading rules can out-perform a simple buy-and-hold. Furthermore, the findings also support the result of Lee, Lee and Lee (2010) which indicated that there is opportunity of arbitrage in the stock market if EMH is present. However, this is not the case as our findings show a similar pattern for all 12 indexes.

5.2.5 Is the Buy-and-Hold Strategy Dead?

This section is about answering the fifth research question as well as the seventh research objective, which is to determine if the buy-and-hold strategy dead.

This study is able to prove that holding stocks for a short period of time is actually riskier than holding stocks for a long period of time. Throughout the study between 1992 and 2011, all indexes proved to generate reasonably stable returns the longer the holding periods, but with constantly reducing risks. The only exceptional case is Japan's NIKKEI index, where returns actually hit negative values after a few years of holding the stock.

Similarly, the results are against Guido, Pearl and Walsh (2011) where their results indicated that the timing strategy outperformed a simple Buy-and-Hold strategy on a risk-adjusted basis. It is imperative that throughout 40 years of careful analysis of a number of economic and investment cycles, a Buy-and-Hold strategy is indeed better than one who applies a Buy-and-Sell strategy.

In conclusion, the buy-and-hold strategy is more alive than dead. This result is against the study conducted by Dare (1995). Observations from the results show that the longer the holding period of stocks, the less risky they become. As compared to a typical buy-and-sell strategy, investors are likely to lose more due to unforeseen risks and also trading costs, which are discussed by Barber and Odean (2001; 2002).

5.3 Implications of the Study

The findings from this research provide several implications that might be useful for investors in determining what investment strategy they should undertake to ensure they are not at the losing end where risks overwhelm returns. This study incorporates average daily rolling returns and standard deviations to provide insight into stock indexes of 12 countries over 20 years. The coverage of these stocks are also not biased to one region or continent only. The study comprises of 12 stock indexes namely DJIA, TSX, FTSE, CAC, DAX, KOSPI, Hang Seng, NIKKEI, KLCI, TAIEX, STI, and ASX.

This study is also able to help corporations and organizations secure a more sustainable shareholder wealth growth. Investors who are inferior buys and sells very quickly and this can adversely affect shareholder value. If confidence is established among investors to buy stocks and hold them for a long period of time, not only this will benefit the investors but also improve corporate image.

5.4 Limitations to the Study

The limitations addressed in this study are perhaps the exclusion of public holidays and weekends in the study. However, this does not significantly impact the results because the 12 countries being studied have individual differences in holidays, and the long periods override the necessity to include holidays as a basis

for analysis. Other limitations include the unavailability of Singapore stock index data before 1992. Moreover, the time frame for this study is only limited from 1992 to end of 2011.

5.5 Recommendations

When conducting this research study, time is the major issue. Stocks move so fast and so random, and it is impossible to record and calculate every single one of them after the 20^{th} period. Further studies should be conducted to see if the buy-and-hold still holds for future stocks. Furthermore, extensive research for other indexes can be conducted such as for Brazil, Russia, India, and China (BRIC) as well as Mexico, Indonesia, Nigeria, and Turkey (MINT). In addition, further researches giving a comparison of the buy-and-hold strategy and other investing strategies can be conducted as well.

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APPENDICES

1. Appendix A –DJIA
2. Appendix B – TSX
3. Appendix C – FTSE
4. Appendix D – CAC
5. Appendix E – DAX
6. Appendix F – KOSPI
7. Appendix G – Hang Seng
8. Appendix H – TAIEX
9. Appendix I – NIKKEI
10. Appendix J – STI
11. Appendix K – KLCI
12. Appendix L – ASX
13. Appendix M – Turnitin Originality Report

APPENDIX A - DJIA

		Averaged Annual Rolling Return (DJIA)																		
Averaged Daily Share Price		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	3,284.46	7.32%	7.46%	11.01%	14.98%	17.78%	17.47%	18.02%	15.95%	13.43%	10.88%	9.60%	10.01%	9.39%	9.30%	9.70%	8.00%	6.03%	6.76%	7.04%
1993	3,524.85	7.61%	12.91%	17.66%	20.55%	19.61%	19.91%	17.24%	14.21%	11.28%	9.83%	10.26%	9.56%	9.46%	9.87%	8.04%	5.95%	6.73%	7.02%	
1994	3,792.94	18.47%	23.03%	25.20%	22.82%	22.53%	18.92%	15.19%	11.75%	10.08%	10.53%	9.74%	9.61%	10.05%	8.07%	5.84%	6.67%	6.99%		
1995	4,493.44	27.78%	28.70%	24.30%	23.57%	19.02%	14.65%	10.82%	9.08%	9.68%	8.91%	8.84%	9.37%	7.31%	4.99%	5.93%	6.31%			
1996	5,741.49	29.63%	22.60%	22.20%	16.92%	12.19%	8.22%	6.64%	7.61%	6.99%	7.11%	7.84%	5.76%	3.42%	4.52%	5.01%				
1997	7,442.87	15.94%	18.64%	12.97%	8.21%	4.38%	3.22%	4.78%	4.46%	4.86%	5.87%	3.83%	1.49%	2.81%	3.45%					
1998	8,629.47	21.40%	11.51%	5.75%	1.68%	0.85%	3.03%	2.91%	3.55%	4.81%	2.69%	0.27%	1.78%	2.54%						
1999	10,475.76	2.42%	-1.29%	-4.15%	-3.71%	-0.30%	0.12%	1.23%	2.90%	0.79%	-1.63%	0.16%	1.11%							
2000	10,729.70	-4.88%	-7.28%	-5.68%	-0.97%	-0.34%	1.03%	2.97%	0.59%	-2.07%	-0.06%	0.99%								
2001	10,206.34	-9.63%	-6.08%	0.37%	0.83%	2.25%	4.34%	1.40%	-1.72%	0.49%	1.60%									
2002	9,223.93	-2.39%	5.78%	4.57%	5.46%	7.38%	3.36%	-0.53%	1.83%	2.93%										
2003	9,003.91	14.63%	8.24%	8.21%	9.97%	4.55%	-0.22%	2.45%	3.61%											
2004	10,321.08	2.20%	5.14%	8.46%	2.18%	-2.95%	0.55%	2.13%												
2005	10,548.60	8.16%	11.74%	2.17%	-4.20%	0.22%	2.12%													
2006	11,409.33	15.43%	-0.70%	-8.00%	-1.67%	0.95%														
2007	13,169.89	-14.58%	-17.86%	-6.79%	-2.38%															
2008	11,249.33	-21.01%	-2.63%	2.07%																
2009	8,885.67	20.03%	16.02%																	
2010	10,665.06	12.15%																		
2011	11,960.80																			
Average		7.93%	7.55%	7.08%	7.14%	7.21%	6.91%	6.56%	6.15%	5.75%	5.57%	5.73%	6.09%	6.42%	6.70%	6.91%	6..73%	6.58%	6.89%	7.04%
Std Dev		13.89%	12.08%	10.69%	9.79%	8.66%	7.49%	6.51%	5.57%	4.98%	4.62%	4.37%	4.06%	3.39%	2.72%	1.92%	0.89%	0.50%	0.18%	-
Maximum Return		29.63%	28.70%	25.20%	23.57%	22.53%	19.91%	18.02%	15.95%	13.43%	10.88%	10.26%	10.01%	10.05%	9.87%	9.70%	8.00%	6.99%	7.02%	7.04%
Minimum Return		-21.01%	-17.86%	-8.00%	-4.20%	-2.95%	-0.22%	-0.53%	-1.72%	-2.07%	-1.63%	0.16%	1.11%	2.54%	3.45%	5.01%	5.95%	6.03%	6.76%	7.04%
Positive Return		14	12	13	11	12	13	12	11	10	8	9	8	7	6	5	4	3	2	1
Negative Return		5	6	4	5	3	1	1	1	1	2	0	0	0	0	0	0	0	0	0

Appendix B – TSX

Averaged Daily Share Price		Average Annual Rolling Returns (TSX)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	2,822.00	5.91%	5.33%	4.57%	7.93%	10.62%	8.46%	7.68%	11.06%	6.63%	4.76%	5.56%	7.37%	8.72%	9.88%	10.59%	9.43%	7.08%	8.24%	8.43%
1993	2,988.81	4.74%	3.91%	8.61%	11.83%	8.97%	7.97%	11.81%	6.72%	4.63%	5.53%	7.50%	8.95%	10.19%	10.93%	9.67%	7.15%	8.38%	8.57%	
1994	3,130.55	3.08%	10.60%	14.29%	10.06%	8.63%	13.04%	7.01%	4.62%	5.62%	7.78%	9.34%	10.65%	11.42%	10.03%	7.31%	8.61%	8.80%		
1995	3,226.92	18.67%	20.35%	12.49%	10.07%	15.14%	7.68%	4.84%	5.94%	8.32%	9.99%	11.37%	12.14%	10.58%	7.62%	8.99%	9.16%			
1996	3,829.27	22.06%	9.52%	7.34%	14.28%	5.61%	2.70%	4.24%	7.09%	9.07%	10.66%	11.57%	9.93%	6.82%	8.33%	8.56%				
1997	4,673.83	-1.73%	0.66%	11.80%	1.86%	-0.79%	1.53%	5.11%	7.54%	9.47%	10.57%	8.89%	5.64%	7.34%	7.65%					
1998	4,592.90	3.12%	19.24%	3.08%	-0.55%	2.19%	6.29%	8.94%	10.95%	12.03%	10.01%	6.33%	8.14%	8.41%						
1999	4,736.11	37.89%	3.06%	-1.75%	1.96%	6.94%	9.94%	12.12%	13.20%	10.81%	6.66%	8.60%	8.87%							
2000	6,530.67	-22.97%	-17.07%	-7.80%	0.35%	5.07%	8.32%	10.05%	7.82%	3.66%	6.04%	6.55%								
2001	5,030.43	-10.71%	0.88%	9.60%	13.55%	15.96%	16.79%	13.13%	7.58%	9.88%	10.07%									
2002	4,491.91	13.97%	21.43%	23.02%	23.79%	23.24%	17.68%	10.48%	12.76%	12.65%										
2003	5,119.40	29.38%	27.81%	27.25%	25.67%	18.43%	9.91%	12.59%	12.49%											
2004	6,623.45	26.26%	26.20%	24.46%	15.84%	6.39%	10.01%	10.26%												
2005	8,362.46	26.15%	23.57%	12.57%	1.93%	7.02%	7.80%													
2006	10,549.10	21.04%	6.33%	-5.06%	2.71%	4.47%														
2007	12,768.40	-6.59%	-15.92%	-2.76%	0.69%															
2008	11,927.57	-24.32%	-0.79%	3.24%																
2009	9,026.62	30.07%	20.58%																	
2010	11,740.77	11.79%																		
2011	13,125.20																			
Average		9.88%	9.21%	8.53%	8.87%	9.19%	9.15%	9.10%	8.98%	8.43%	8.21%	8.41%	8.96%	9.07%	9.07%	9.02%	8.59%	8.09%	8.40%	8.43%
Std Dev		17.78%	13.28%	10.16%	8.28%	6.46%	4.49%	3.07%	2.94%	2.97%	2.31%	2.14%	2.01%	1.72%	1.39%	1.22%	1.02%	0.90%	0.23%	-
Maximum Return		37.89%	27.81%	27.25%	25.67%	23.24%	17.68%	13.13%	13.20%	12.65%	10.66%	11.57%	12.14%	11.42%	10.93%	10.59%	9.43%	8.80%	8.57%	8.43%
Minimum Return		-24.32%	-17.07%	-7.80%	-0.55%	-0.79%	1.53%	4.24%	4.62%	3.66%	4.76%	5.56%	5.64%	6.82%	7.62%	7.31%	7.15%	7.08%	8.24%	8.43%
Positive Return		14	15	13	15	14	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Negative Return		13	3	4	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX C – FTSE

Averaged Daily Share Price		Average Annual Rolling Returns (FTSE)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	2,155.97	1.65%	5.70%	6.43%	8.26%	11.19%	12.42%	11.86%	9.99%	6.69%	4.44%	3.78%	5.55%	6.18%	7.02%	7.76%	5.55%	3.17%	3.99%	4.22%
1993	2,191.62	9.91%	8.90%	10.56%	13.71%	14.71%	13.66%	11.23%	7.34%	4.75%	4.00%	5.92%	6.57%	7.44%	8.21%	5.82%	3.27%	4.13%	4.37%	
1994	2,408.79	7.91%	10.88%	15.01%	15.94%	14.42%	11.46%	6.98%	4.12%	3.36%	5.52%	6.27%	7.24%	8.08%	5.53%	2.84%	3.78%	4.05%		
1995	2,599.26	13.94%	18.73%	18.75%	16.11%	12.18%	6.82%	3.59%	2.81%	5.26%	6.11%	7.18%	8.10%	5.35%	2.49%	3.51%	3.81%			
1996	2,961.49	23.73%	21.23%	16.85%	11.75%	5.46%	1.96%	1.31%	4.23%	5.27%	6.53%	7.58%	4.66%	1.65%	2.80%	3.17%				
1997	3,664.31	18.78%	13.55%	8.01%	1.33%	-1.91%	-2.01%	1.70%	3.17%	4.77%	6.09%	3.08%	0.00%	1.34%	1.84%					
1998	4,352.41	8.55%	3.00%	-3.90%	-6.49%	-5.71%	-0.89%	1.11%	3.14%	4.77%	1.63%	-1.55%	0.01%	0.64%						
1999	4,724.58	-2.26%	-9.58%	-11.02%	-8.98%	-2.68%	-0.08%	2.39%	4.30%	0.89%	-2.51%	-0.73%	0.01%							
2000	4,617.69	-16.35%	-15.11%	-11.11%	-2.79%	0.36%	3.19%	5.28%	1.29%	-2.53%	-0.57%	0.22%								
2001	3,862.52	-13.84%	-8.37%	2.21%	5.04%	7.61%	9.39%	4.10%	-0.65%	1.35%	2.05%									
2002	3,327.94	-2.54%	11.32%	12.21%	13.76%	14.74%	7.44%	1.39%	3.43%	3.98%										
2003	3,243.29	27.16%	20.40%	19.78%	19.52%	9.55%	2.06%	4.31%	4.83%											
2004	4,124.29	14.00%	16.25%	17.07%	5.55%	-2.33%	0.93%	1.98%												
2005	4,701.88	18.55%	18.64%	2.87%	-6.03%	-1.50%	0.10%													
2006	5,573.97	18.73%	-4.18%	-13.04%	-5.96%	-3.23%														
2007	6,618.22	-22.67%	-25.58%	-12.99%	-8.05%															
2008	5,118.06	-28.38%	-7.71%	-2.59%																
2009	3,665.73	18.92%	13.60%																	
2010	4,359.20	8.52%																		
2011	4,730.52																			
Average		5.49%	5.09%	4.42%	4.54%	4.86%	4.75%	4.40%	4.00%	3.51%	3.33%	3.53%	4.02%	4.39%	4.65%	4.62%	4.10%	3.78%	4.18%	4.22%
Std Dev		16.03%	13.76%	11.72%	9.91%	7.57%	5.34%	3.62%	2.70%	2.63%	3.09%	3.50%	3.48%	3.11%	2.65%	2.11%	1.00%	0.53%	0.27%	-
Maximum Return		27.16%	21.23%	19.78%	19.52%	14.74%	13.66%	11.86%	9.99%	6.69%	6.53%	7.58%	8.10%	8.08%	8.21%	7.76%	5.55%	4.13%	4.37%	4.22%
Minimum Return		-28.38%	-25.58%	-13.04%	-8.98%	-5.71%	-2.01%	1.11%	-0.65%	-2.53%	-2.51%	-1.55%	0.00%	0.64%	1.84%	2.84%	3.27%	3.17%	3.99%	4.22%
Positive Return		13	12	11	10	9	11	13	11	10	8	7	8	7	6	5	4	3	2	1
Negative Return		6	6	6	6	6	3	0	1	1	2	2	0	0	0	0	0	0	0	0

APPENDIX D – CAC

Averaged Daily Share Price		Average Annual Rolling Returns (CAC)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	1,451.98	3.81%	5.97%	3.95%	5.60%	7.08%	10.52%	11.35%	12.30%	7.93%	4.99%	4.63%	6.60%	7.41%	8.44%	9.38%	7.40%	4.97%	5.17%	5.04%
1993	1,507.34	8.16%	4.02%	6.20%	7.92%	11.92%	12.66%	13.57%	8.45%	5.12%	4.71%	6.85%	7.71%	8.81%	9.79%	7.64%	5.05%	5.25%	5.11%	
1994	1,630.37	0.04%	5.23%	7.83%	12.88%	13.58%	14.50%	8.49%	4.75%	4.34%	6.72%	7.67%	8.86%	9.91%	7.60%	4.84%	5.07%	4.94%		
1995	1,631.08	10.69%	11.96%	17.51%	17.24%	17.63%	9.97%	5.44%	4.88%	7.49%	8.46%	9.70%	10.78%	8.21%	5.19%	5.41%	5.25%			
1996	1,805.40	13.24%	21.08%	19.51%	19.43%	9.83%	4.59%	4.08%	7.10%	8.22%	9.60%	10.79%	8.00%	4.78%	5.05%	4.90%				
1997	2,044.40	29.46%	22.78%	21.57%	8.99%	2.94%	2.63%	6.25%	7.61%	9.20%	10.54%	7.54%	4.11%	4.44%	4.32%					
1998	2,646.71	16.44%	17.81%	2.91%	-2.79%	-2.03%	2.81%	4.80%	6.90%	8.62%	5.56%	2.06%	2.59%	2.61%						
1999	3,081.75	19.19%	-3.25%	-8.47%	-6.17%	0.28%	2.98%	5.61%	7.68%	4.42%	0.73%	1.41%	1.53%							
2000	3,673.13	-21.47%	-19.79%	-13.36%	-3.96%	0.01%	3.50%	6.13%	2.70%	-1.14%	-0.21%	0.06%								
2001	2,884.58	-18.07%	-9.00%	2.70%	6.25%	9.37%	11.59%	6.72%	1.75%	2.48%	2.52%									
2002	2,363.30	1.07%	14.99%	15.86%	17.57%	18.71%	11.52%	4.95%	5.39%	5.10%										
2003	2,388.70	30.82%	24.05%	23.64%	23.57%	13.74%	5.61%	6.02%	5.62%											
2004	3,124.99	17.63%	20.20%	21.25%	9.83%	1.18%	2.37%	2.43%												
2005	3,675.87	22.83%	23.10%	7.35%	-2.56%	-0.44%	0.10%													
2006	4,514.99	23.37%	0.36%	-9.80%	-5.53%	-3.91%														
2007	5,570.18	-18.36%	-22.87%	-13.57%	-9.73%															
2008	4,547.23	-27.13%	-11.07%	-6.66%																
2009	3,313.42	8.53%	5.64%																	
2010	3,596.17	2.83%																		
2011	3,698.03																			
Average		6.48%	6.18%	5.79%	6.16%	6.66%	6.81%	6.60%	6.26%	5.62%	5.36%	5.63%	6.27%	6.59%	6.73%	6.43%	5.69%	5.05%	5.14%	5.04%
Std Dev		17.24%	14.79%	12.76%	10.33%	7.44%	4.74%	2.99%	2.77%	3.11%	3.61%	3.79%	3.23%	2.68%	2.19%	2.00%	1.14%	0.17%	0.04%	-
Maximum Return		30.82%	24.05%	23.64%	23.57%	18.71%	14.50%	13.57%	12.30%	9.20%	10.54%	10.79%	10.78%	9.91%	9.79%	9.38%	7.40%	5.25%	5.17%	5.04%
Minimum Return		-27.13%	-22.87%	-13.57%	-9.73%	-3.91%	0.10%	2.43%	1.75%	-1.14%	-0.21%	0.06%	1.53%	2.61%	4.32%	4.84%	5.05%	4.94%	5.11%	5.04%
Positive Return		15	13	12	10	12	14	13	12	10	9	9	8	7	6	5	4	3	2	1
Negative Return		4	5	5	6	3	0	0	0	1	1	0	0	0	0	0	0	0	0	0

APPENDIX E – DAX

Averaged Daily Share Price		Average Annual Rolling Returns (DAX)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	337.00	-2.18%	16.53%	13.90%	13.98%	14.96%	23.49%	28.35%	31.21%	23.61%	17.87%	15.76%	17.74%	17.17%	17.78%	19.57%	16.72%	13.34%	14.22%	14.52%
1993	329.65	38.83%	22.91%	19.94%	19.69%	29.39%	34.29%	36.84%	27.28%	20.33%	17.73%	19.75%	18.95%	19.47%	21.29%	18.10%	14.38%	15.26%	15.53%	
1994	457.65	8.82%	11.48%	13.92%	27.13%	33.40%	36.51%	25.71%	18.20%	15.59%	17.99%	17.29%	17.99%	20.04%	16.75%	12.92%	13.93%	14.29%		
1995	498.01	14.20%	16.56%	33.89%	40.37%	42.84%	28.77%	19.61%	16.47%	19.05%	18.17%	18.86%	21.02%	17.38%	13.21%	14.28%	14.64%			
1996	568.74	18.96%	44.98%	50.36%	51.05%	31.90%	20.53%	16.80%	19.67%	18.62%	19.33%	21.66%	17.65%	13.14%	14.29%	14.67%				
1997	676.56	76.68%	69.04%	63.57%	35.35%	20.85%	16.44%	19.78%	18.58%	19.38%	21.94%	17.53%	12.67%	13.93%	14.37%					
1998	1,195.37	61.74%	57.39%	23.84%	9.90%	7.12%	12.26%	12.02%	13.67%	17.02%	12.84%	8.15%	9.84%	10.61%						
1999	1,933.35	53.15%	8.37%	-3.38%	-3.36%	4.36%	5.36%	8.08%	12.38%	8.41%	3.89%	6.05%	7.16%							
2000	2,961.00	-23.32%	-23.26%	-17.11%	-5.19%	-2.23%	1.98%	7.51%	3.83%	-0.50%	2.22%	3.74%								
2001	2,270.40	-23.19%	-13.82%	1.76%	3.89%	7.97%	13.75%	8.43%	2.80%	5.54%	6.92%									
2002	1,743.94	-3.31%	17.13%	14.90%	17.56%	23.04%	14.84%	7.16%	9.81%	10.92%										
2003	1,686.13	41.90%	25.25%	25.48%	30.68%	18.86%	9.02%	11.83%	12.84%											
2004	2,392.64	10.56%	17.99%	27.14%	13.71%	3.42%	7.48%	9.21%												
2005	2,645.30	25.92%	36.34%	14.78%	1.71%	6.87%	8.98%													
2006	3,331.04	47.62%	9.58%	-5.28%	2.58%	5.88%														
2007	4,917.22	-18.65%	-24.13%	-9.14%	-2.56%															
2008	3,999.97	-29.23%	-3.98%	3.48%																
2009	2,830.67	30.28%	25.13%																	
2010	3,687.86	20.19%																		
2011	4,432.35																			
Average		18.37%	17.42%	16.00%	16.03%	16.57%	16.69%	16.25%	15.56%	14.36%	13.89%	14.31%	15.38%	15.96%	16.28%	15.91%	14.92%	14.30%	14.87%	14.52%
Std Dev		30.45%	24.88%	20.89%	16.93%	13.33%	10.70%	9.39%	8.37%	7.36%	7.04%	6.55%	4.90%	3.49%	2.99%	2.80%	1.24%	0.96%	0.93%	-
Maximum Return		76.68%	69.04%	63.57%	51.05%	42.84%	36.51%	36.84%	31.21%	23.61%	21.94%	21.66%	21.02%	20.04%	21.29%	19.57%	16.72%	15.26%	15.53%	14.52%
Minimum Return		-29.23%	-24.13%	-17.11%	-5.19%	-2.23%	1.98%	7.16%	2.80%	-0.50%	2.22%	3.74%	7.16%	10.61%	13.21%	12.92%	13.93%	13.34%	14.22%	14.52%
Positive Return		13	14	13	13	14	14	13	12	10	10	9	8	7	6	5	4	3	2	1
Negative Return		6	4	4	3	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0

APPENDIX F – KOSPI

Averaged Daily Share Price		Average Annual Rolling Returns (KOSPI)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	8.38	2.24%	3.08%	1.95%	0.89%	0.03%	-0.82%	-0.03%	-0.01%	-0.33%	-0.09%	-0.12%	0.05%	0.33%	0.61%	0.88%	0.57%	0.32%	0.55%	0.67%
1993	8.57	3.93%	1.80%	0.44%	-0.51%	-1.43%	-0.41%	-0.33%	-0.64%	-0.35%	-0.35%	-0.14%	0.18%	0.49%	0.78%	0.46%	0.21%	0.45%	0.59%	
1994	8.91	-0.29%	-1.26%	-1.95%	-2.72%	-1.25%	-1.03%	-1.28%	-0.87%	-0.82%	-0.54%	-0.16%	0.20%	0.55%	0.21%	-0.04%	0.24%	0.39%		
1995	8.88	-2.22%	-2.77%	-3.52%	-1.49%	-1.17%	-1.44%	-0.96%	-0.88%	-0.57%	-0.14%	0.25%	0.62%	0.25%	-0.02%	0.27%	0.44%			
1996	8.68	-3.32%	-4.16%	-1.24%	-0.91%	-1.29%	-0.74%	-0.69%	-0.36%	0.09%	0.50%	0.88%	0.46%	0.15%	0.45%	0.62%				
1997	8.39	-4.99%	-0.19%	-0.09%	-0.77%	-0.22%	-0.24%	0.07%	0.52%	0.93%	1.31%	0.81%	0.45%	0.75%	0.90%					
1998	7.98	4.86%	2.45%	0.67%	1.01%	0.74%	0.94%	1.34%	1.70%	2.03%	1.41%	0.96%	1.24%	1.37%						
1999	8.36	0.11%	-1.35%	-0.24%	-0.27%	0.17%	0.76%	1.26%	1.69%	1.04%	0.57%	0.92%	1.09%							
2000	8.37	-2.79%	-0.41%	-0.39%	0.18%	0.90%	1.45%	1.91%	1.15%	0.63%	1.00%	1.18%								
2001	8.14	2.03%	0.83%	1.20%	1.84%	2.32%	2.72%	1.73%	1.06%	1.43%	1.58%									
2002	8.30	-0.35%	0.79%	1.78%	2.40%	2.86%	1.68%	0.93%	1.36%	1.53%										
2003	8.27	1.94%	2.86%	3.33%	3.68%	2.09%	1.14%	1.61%	1.77%											
2004	8.43	3.79%	4.03%	4.26%	2.13%	0.98%	1.55%	1.75%												
2005	8.75	4.27%	4.50%	1.58%	0.29%	1.11%	1.41%													
2006	9.13	4.73%	0.26%	-1.00%	0.34%	0.85%														
2007	9.56	-4.02%	-3.75%	-1.09%	-0.10%															
2008	9.17	-3.48%	0.41%	1.25%																
2009	8.86	4.45%	3.69%																	
2010	9.25	2.94%																		
2011	9.52																			
Average		0.73%	0.60%	0.41%	0.37%	0.45%	0.50%	0.56%	0.54%	0.51%	0.52%	0.51%	0.54%	0.56%	0.49%	0.44%	0.36%	0.39%	0.57%	0.67%
Std Dev		3.35%	2.60%	1.93%	1.60%	1.36%	1.26%	1.14%	1.05%	0.96%	0.78%	0.55%	0.43%	0.41%	0.35%	0.35%	0.17%	0.06%	0.03%	-
Maximum Return		4.86%	4.50%	4.26%	3.68%	2.86%	2.72%	1.91%	1.77%	2.03%	1.58%	1.18%	1.24%	1.37%	0.90%	0.88%	0.57%	0.45%	0.59%	0.67%
Minimum Return		-4.99%	-4.16%	-3.52%	-2.72%	-1.43%	-1.44%	-1.28%	-0.88%	-0.82%	-0.54%	-0.16%	0.05%	0.15%	-0.02%	-0.04%	0.21%	0.32%	0.55%	0.67%
Positive Return		11	11	9	9	10	8	8	7	7	6	6	8	7	5	4	4	3	2	1
Negative Return		8	7	8	7	5	6	5	5	4	4	3	0	0	1	1	0	0	0	0

APPENDIX G – Hang Seng

Averaged Daily Share Price		Average Annual Rolling Returns (Hang Seng)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	711.65	35.09%	31.86%	17.88%	20.18%	19.51%	9.39%	12.61%	14.20%	9.54%	6.57%	5.78%	7.30%	7.60%	8.29%	9.98%	8.67%	7.20%	7.83%	7.37%
1993	961.38	28.70%	10.12%	15.58%	15.90%	4.87%	9.25%	11.49%	6.70%	3.80%	3.22%	5.08%	5.58%	6.46%	8.37%	7.11%	5.66%	6.40%	6.01%	
1994	1,237.30	-5.78%	9.53%	11.93%	-0.37%	5.73%	8.86%	3.88%	1.05%	0.72%	2.97%	3.70%	4.80%	6.95%	5.71%	4.28%	5.15%	4.81%		
1995	1,165.74	27.33%	22.00%	1.50%	8.82%	12.05%	5.59%	2.06%	1.56%	3.99%	4.70%	5.81%	8.08%	6.65%	5.04%	5.92%	5.51%			
1996	1,484.34	16.88%	-9.37%	3.26%	8.53%	1.71%	-1.63%	-1.66%	1.39%	2.44%	3.87%	6.49%	5.09%	3.50%	4.54%	4.19%				
1997	1,734.95	-29.73%	-2.94%	5.88%	-1.77%	-4.97%	-4.46%	-0.65%	0.77%	2.52%	5.50%	4.07%	2.46%	3.64%	3.34%					
1998	1,219.16	34.07%	29.96%	9.84%	2.48%	1.60%	5.26%	6.10%	7.48%	10.37%	8.24%	6.03%	7.05%	6.45%						
1999	1,634.48	25.98%	-0.58%	-6.29%	-5.20%	0.29%	2.04%	4.14%	7.72%	5.70%	3.57%	4.89%	4.42%							
2000	2,059.08	-21.54%	-19.18%	-13.78%	-5.27%	-2.17%	0.88%	5.34%	3.41%	1.34%	2.98%	2.66%								
2001	1,615.62	-16.76%	-9.62%	0.87%	3.37%	6.08%	10.64%	7.57%	4.63%	6.14%	5.46%									
2002	1,344.86	-1.86%	11.03%	11.11%	12.71%	17.11%	12.26%	8.11%	9.41%	8.26%										
2003	1,319.84	25.62%	18.23%	18.04%	22.41%	15.32%	9.87%	11.13%	9.60%											
2004	1,657.99	11.27%	14.42%	21.35%	12.88%	6.96%	8.88%	7.49%												
2005	1,844.80	17.66%	26.73%	13.43%	5.91%	8.41%	6.87%													
2006	2,170.53	36.51%	11.37%	2.26%	6.21%	4.83%														
2007	2,962.95	-9.14%	-11.49%	-2.31%	-1.86%															
2008	2,692.03	-13.78%	1.29%	0.69%																
2009	2,321.10	19.00%	8.81%																	
2010	2,762.04	-0.51%																		
2011	2,748.09																			
Average		9.42%	7.90%	6.54%	6.56%	6.49%	5.98%	5.97%	5.66%	4.98%	4.71%	4.94%	5.60%	5.89%	5.88%	6.30%	6.25%	6.14%	6.92%	7.37%
Std Dev		21.03%	14.83%	9.51%	8.58%	7.04%	5.00%	4.44%	4.24%	3.30%	1.74%	1.25%	1.83%	1.64%	2.05%	2.39%	1.63%	1.22%	1.28%	-
Maximum Return		36.51%	31.86%	21.35%	22.41%	19.51%	12.26%	12.61%	14.20%	10.37%	8.24%	6.49%	8.08%	7.60%	8.37%	9.98%	8.67%	7.20%	7.83%	7.37%
Minimum Return		-29.73%	-19.18%	-13.78%	-5.27%	-4.97%	-4.46%	-1.66%	0.77%	0.72%	2.97%	2.66%	2.46%	3.50%	3.34%	4.19%	5.15%	4.81%	6.01%	7.37%
Positive Return		11	12	14	11	13	12	11	12	11	10	9	8	7	6	5	4	3	2	1
Negative Return		8	6	3	5	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX H – TAIEX

Averaged Daily Share Price		Average Annual Rolling Returns (TAIEX)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	177.05	-6.30%	17.17%	7.19%	6.06%	11.08%	5.09%	4.21%	5.02%	-1.61%	-1.06%	-1.09%	0.50%	0.81%	1.46%	2.73%	1.74%	0.75%	2.13%	2.55%
1993	165.90	46.52%	14.64%	10.53%	15.90%	7.53%	6.08%	6.75%	-1.01%	-0.47%	-0.56%	1.14%	1.42%	2.09%	3.41%	2.29%	1.21%	2.65%	3.07%	
1994	243.08	-10.30%	-4.00%	7.19%	-0.48%	-0.56%	1.26%	-6.41%	-5.16%	-4.75%	-2.54%	-1.91%	-0.94%	0.68%	-0.30%	-1.25%	0.39%	0.96%		
1995	218.04	2.74%	17.17%	3.03%	2.04%	3.74%	-5.74%	-4.40%	-4.03%	-1.64%	-1.03%	-0.04%	1.65%	0.52%	-0.57%	1.15%	1.71%			
1996	224.01	33.64%	3.18%	1.80%	3.99%	-7.35%	-5.54%	-4.96%	-2.17%	-1.44%	-0.32%	1.55%	0.33%	-0.82%	1.04%	1.64%				
1997	299.36	-20.34%	-11.15%	-4.35%	-15.46%	-11.88%	-10.21%	-6.44%	-5.13%	-3.51%	-1.20%	-2.25%	-3.26%	-1.11%	-0.33%					
1998	238.48	-0.90%	4.82%	-13.77%	-9.63%	-8.04%	-3.90%	-2.73%	-1.17%	1.19%	-0.23%	-1.54%	0.69%	1.40%						
1999	236.35	10.85%	-19.56%	-12.36%	-9.74%	-4.48%	-3.03%	-1.21%	1.46%	-0.15%	-1.60%	0.83%	1.60%							
2000	262.00	-41.63%	-22.08%	-15.71%	-7.97%	-5.59%	-3.09%	0.18%	-1.45%	-2.89%	-0.12%	0.80%								
2001	152.93	4.02%	1.28%	7.11%	6.47%	7.25%	9.62%	6.21%	3.49%	6.02%	6.46%									
2002	159.08	-1.38%	8.68%	7.30%	8.07%	10.77%	6.58%	3.41%	6.28%	6.73%										
2003	156.88	19.78%	11.92%	11.42%	14.04%	8.25%	4.23%	7.42%	7.79%											
2004	187.90	4.58%	7.46%	12.19%	5.54%	1.37%	5.49%	6.18%												
2005	196.52	10.42%	16.19%	5.86%	0.59%	5.67%	6.45%													
2006	216.99	22.27%	3.65%	-2.49%	4.51%	5.67%														
2007	265.32	-12.13%	-12.92%	-0.81%	1.88%															
2008	233.14	-13.72%	5.38%	7.03%																
2009	201.17	28.70%	19.21%																	
2010	258.90	10.42%																		
2011	285.88																			
Average		4.59%	3.39%	1.83%	1.61%	1.56%	0.95%	0.63%	0.33%	-0.23%	-0.22%	-0.28%	0.25%	0.51%	0.79%	1.31%	1.26%	1.45%	2.60%	2.55%
Std Dev		20.57%	12.73%	8.84%	8.63%	7.42%	6.07%	5.30%	4.44%	3.65%	2.46%	1.44%	1.65%	1.14%	1.53%	1.56%	0.63%	1.04%	0.66%	-
Maximum Return		46.52%	19.21%	12.19%	15.90%	11.08%	9.62%	7.42%	7.79%	6.73%	6.46%	1.55%	1.65%	2.09%	3.41%	2.73%	1.74%	2.65%	3.07%	2.55%
Minimum Return		-41.63%	-22.08%	-15.71%	-15.46%	-11.88%	-10.21%	-6.44%	-5.16%	-4.75%	-2.54%	-2.25%	-3.26%	-1.11%	-0.57%	-1.25%	0.39%	0.75%	2.13%	2.55%
Positive Return		11	13	11	11	9	8	7	5	3	1	4	6	5	3	4	4	3	2	1
Negative Return		8	5	6	5	6	6	6	7	8	9	5	2	2	3	1	0	0	0	0

APPENDIX I – NIKKEI

Averaged Daily Share Price		Average Annual Rolling Returns (NIKKEI)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	16.94	12.47%	10.16%	4.92%	3.93%	1.17%	-0.96%	2.23%	3.47%	0.04%	-1.11%	-1.12%	0.11%	0.51%	1.21%	1.05%	0.26%	-0.27%	0.13%	0.28%
1993	19.05	7.89%	1.34%	1.23%	-1.47%	-3.44%	0.61%	2.24%	-1.41%	-2.51%	-2.39%	-0.95%	-0.43%	0.39%	0.28%	-0.51%	-1.01%	-0.55%	-0.35%	
1994	20.55	-4.81%	-1.95%	-4.41%	-6.08%	-0.79%	1.33%	-2.67%	-3.74%	-3.47%	-1.79%	-1.15%	-0.21%	-0.28%	-1.08%	-1.58%	-1.06%	-0.82%		
1995	19.57	1.00%	-4.21%	-6.51%	0.25%	2.61%	-2.31%	-3.59%	-3.30%	-1.45%	-0.78%	0.22%	0.11%	-0.79%	-1.34%	-0.80%	-0.56%			
1996	19.76	-9.15%	-10.04%	0.00%	3.01%	-2.96%	-4.33%	-3.90%	-1.75%	-0.97%	0.14%	0.03%	-0.93%	-1.52%	-0.93%	-0.67%				
1997	17.95	-10.93%	4.91%	7.42%	-1.35%	-3.34%	-2.99%	-0.64%	0.10%	1.23%	0.99%	-0.15%	-0.86%	-0.26%	-0.03%					
1998	15.99	23.57%	17.97%	2.07%	-1.34%	-1.32%	1.18%	1.79%	2.87%	2.41%	0.99%	0.11%	0.68%	0.86%						
1999	19.76	12.62%	-7.24%	-8.47%	-6.72%	-2.78%	-1.45%	0.21%	0.04%	-1.24%	-1.97%	-1.18%	-0.83%							
2000	22.25	-23.60%	-17.49%	-12.40%	-6.29%	-4.05%	-1.73%	-1.64%	-2.85%	-3.47%	-2.46%	-1.97%								
2001	17.00	-10.90%	-6.20%	0.31%	1.57%	3.35%	2.59%	0.54%	-0.61%	0.22%	0.50%									
2002	15.15	-1.26%	6.43%	6.11%	7.25%	5.52%	2.58%	0.95%	1.71%	1.86%										
2003	14.96	14.71%	10.00%	10.25%	7.29%	3.37%	1.33%	2.14%	2.25%											
2004	17.16	5.48%	8.09%	4.92%	0.71%	-1.16%	0.18%	0.59%												
2005	18.10	10.76%	4.64%	-0.83%	-2.75%	-0.85%	-0.21%													
2006	20.05	-1.14%	-6.16%	-6.87%	-3.55%	-2.27%														
2007	19.82	-10.92%	-9.61%	-4.34%	-2.54%															
2008	17.65	-8.29%	-0.88%	0.42%																
2009	16.19	7.14%	5.08%																	
2010	17.35	3.06%																		
2011	17.88																			
Average		0.93%	0.27%	-0.36%	-0.51%	-0.46%	-0.30%	-0.14%	-0.27%	-0.67%	-0.79%	-0.68%	-0.30%	-0.16%	-0.31%	-0.50%	-0.59%	-0.54%	-0.11%	0.28%
Std Dev		11.62%	8.93%	6.14%	4.35%	2.97%	2.09%	2.19%	2.45%	2.02%	1.36%	0.76%	0.57%	0.82%	0.98%	0.96%	0.61%	0.28%	0.34%	-
Maximum Return		23.57%	17.97%	10.25%	7.29%	5.52%	2.59%	2.24%	3.47%	2.41%	0.99%	0.22%	0.68%	0.86%	1.21%	1.05%	0.26%	-0.27%	0.13%	0.28%
Minimum Return		-23.60%	-17.49%	-12.40%	-6.72%	-4.05%	-4.33%	-3.90%	-3.74%	-3.47%	-2.46%	-1.97%	-0.93%	-1.52%	-1.34%	-1.58%	-1.06%	-0.82%	-0.35%	0.28%
Positive Return		10	9	9	7	5	7	8	6	5	4	3	3	3	2	1	1	0	1	1
Negative Return		9	9	8	9	10	7	5	6	6	6	6	5	4	4	4	3	3	1	0

APPENDIX J – STI

	Averaged Daily Share Price	Average Annual Rolling Returns (STI)							
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8
2002	10.95	8.90%	8.18%	7.67%	9.17%	5.23%	3.26%	4.37%	4.06%
2003	11.93	7.46%	7.05%	9.26%	4.34%	2.17%	3.64%	3.39%	
2004	12.82	6.65%	10.17%	3.32%	0.88%	2.89%	2.72%		
2005	13.67	13.80%	1.69%	-0.97%	1.97%	1.95%			
2006	15.56	-9.13%	-7.61%	-1.69%	-0.81%				
2007	14.14	-6.07%	2.25%	2.13%					
2008	13.28	11.31%	6.50%						
2009	14.78	1.89%							
2010	15.06								
2011									
Average		4.35%	4.03%	3.28%	3.11%	3.06%	3.21%	3.88%	4.06%
Std Dev		8.19%	5.98%	4.45%	3.87%	1.50%	0.46%	0.70%	-
Maximum Return		13.80%	10.17%	9.26%	9.17%	5.23%	3.64%	4.37%	4.06%
Minimum Return		-9.13%	-7.61%	-1.69%	-0.81%	1.95%	2.72%	3.39%	4.06%
Positive Return		6	6	4	4	4	3	2	1
Negative Return		2	1	2	1	0	0	0	0

APPENDIX K – KLCI

Averaged Daily Share Price		Average Annual Rolling Returns (KLCI)																		
		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	242.20	28.08%	30.02%	18.13%	17.17%	8.97%	-9.48%	-5.12%	-0.73%	-3.55%	-2.19%	-2.08%	-0.41%	0.11%	0.71%	3.18%	2.41%	1.54%	3.29%	3.87%
1993	310.21	31.99%	13.45%	13.75%	4.66%	-15.55%	-9.75%	-4.27%	-6.91%	-5.08%	-4.67%	-2.66%	-1.93%	-1.14%	1.60%	0.90%	0.08%	1.99%	2.67%	
1994	409.46	-2.50%	5.59%	-3.13%	-24.47%	-16.36%	-9.26%	-11.44%	-8.91%	-8.06%	-5.58%	-4.54%	-3.49%	-0.42%	-1.02%	-1.75%	0.36%	1.16%		
1995	399.24	14.35%	-3.44%	-30.64%	-19.50%	-10.56%	-12.85%	-9.79%	-8.73%	-5.92%	-4.74%	-3.58%	-0.25%	-0.90%	-1.70%	0.55%	1.40%			
1996	456.52	-18.47%	-45.98%	-28.39%	-15.89%	-17.45%	-13.29%	-11.62%	-8.18%	-6.65%	-5.21%	-1.48%	-2.08%	-2.83%	-0.36%	0.59%				
1997	372.21	-64.20%	-32.89%	-15.01%	-17.20%	-12.21%	-10.42%	-6.61%	-5.06%	-3.61%	0.41%	-0.43%	-1.40%	1.18%	2.11%					
1998	133.24	25.80%	30.96%	9.51%	9.86%	7.61%	9.58%	9.13%	9.10%	12.60%	10.29%	8.11%	10.34%	10.68%						
1999	167.61	36.33%	2.17%	5.01%	3.49%	6.59%	6.58%	6.90%	11.05%	8.69%	6.48%	9.03%	9.51%							
2000	228.51	-23.43%	-7.84%	-5.59%	0.23%	1.46%	2.65%	7.84%	5.65%	3.60%	6.62%	7.35%								
2001	174.97	10.93%	4.83%	9.64%	8.85%	8.85%	14.17%	10.63%	7.59%	10.61%	11.04%									
2002	194.10	-0.94%	9.00%	8.17%	8.34%	14.83%	10.58%	7.12%	10.57%	11.05%										
2003	192.28	19.94%	13.03%	11.62%	19.15%	13.03%	8.53%	12.32%	12.65%											
2004	230.62	6.52%	7.68%	18.89%	11.37%	6.38%	11.10%	11.64%												
2005	245.65	8.86%	25.61%	13.04%	6.34%	12.04%	12.52%													
2006	267.41	44.94%	15.19%	5.52%	12.85%	13.27%														
2007	387.57	-8.45%	-9.96%	3.82%	6.50%															
2008	354.81	-11.45%	10.56%	12.01%																
2009	314.19	38.05%	25.97%																	
2010	433.74	14.94%																		
2011	498.55																			
Average		7.96%	5.22%	2.73%	1.99%	1.39%	0.76%	1.29%	1.51%	1.24%	1.25%	1.08%	1.29%	0.95%	0.22%	0.70%	1.06%	1.57%	2.98%	3.87%
Std Dev		26.19%	20.23%	14.85%	13.62%	12.13%	10.81%	9.45%	8.71%	8.13%	6.71%	5.45%	5.43%	4.46%	1.50%	1.75%	1.06%	0.41%	0.44%	-
Maximum Return		44.94%	30.96%	18.89%	19.15%	14.83%	14.17%	12.32%	12.65%	12.60%	11.04%	9.03%	10.34%	10.68%	2.11%	3.18%	2.41%	1.99%	3.29%	3.87%
Minimum Return		-64.20%	-45.98%	-30.64%	-24.47%	-17.45%	-13.29%	-11.62%	-8.91%	-8.06%	-5.58%	-4.54%	-3.49%	-2.83%	-1.70%	-1.75%	0.08%	1.16%	2.67%	3.87%
Positive Return		12	13	12	12	10	8	7	6	5	5	3	2	3	3	4	4	3	2	1
Negative Return		7	5	5	4	5	6	6	6	6	5	6	6	4	3	1	0	0	0	0

APPENDIX L – ASX

		Average Annual Rolling Returns																		
Averaged Daily Share Price		HP1	HP2	HP3	HP4	HP5	HP6	HP7	HP8	HP9	HP10	HP11	HP12	HP13	HP14	HP15	HP16	HP17	HP18	HP19
1992	1,708.40	9.79%	12.08%	8.39%	10.82%	11.55%	8.82%	9.56%	8.35%	6.17%	5.65%	6.32%	7.95%	8.94%	9.20%	10.66%	8.06%	5.75%	6.91%	6.86%
1993	1,875.58	14.42%	7.70%	11.16%	12.00%	8.63%	9.53%	8.15%	5.72%	5.21%	5.98%	7.79%	8.87%	9.16%	10.72%	7.94%	5.50%	6.74%	6.70%	
1994	2,146.06	1.38%	9.57%	11.20%	7.22%	8.57%	7.14%	4.54%	4.11%	5.08%	7.14%	8.38%	8.73%	10.44%	7.50%	4.93%	6.28%	6.26%		
1995	2,175.64	18.43%	16.46%	9.25%	10.45%	8.33%	5.07%	4.50%	5.56%	7.81%	9.10%	9.43%	11.24%	7.98%	5.19%	6.61%	6.58%			
1996	2,576.56	14.53%	4.93%	7.91%	5.94%	2.59%	2.35%	3.84%	6.55%	8.11%	8.57%	10.60%	7.15%	4.23%	5.81%	5.83%				
1997	2,950.93	-3.87%	4.75%	3.23%	-0.20%	0.07%	2.15%	5.45%	7.34%	7.92%	10.22%	6.51%	3.42%	5.17%	5.24%					
1998	2,836.68	14.14%	6.97%	1.06%	1.08%	3.40%	7.09%	9.04%	9.50%	11.91%	7.60%	4.11%	5.96%	5.97%						
1999	3,237.90	0.25%	-4.91%	-2.93%	0.88%	5.73%	8.21%	8.85%	11.63%	6.90%	3.16%	5.25%	5.32%							
2000	3,245.86	-9.80%	-4.48%	1.09%	7.15%	9.88%	10.35%	13.36%	7.76%	3.48%	5.76%	5.79%								
2001	2,927.82	1.14%	7.02%	13.48%	15.43%	14.89%	17.76%	10.54%	5.28%	7.65%	7.49%									
2002	2,961.29	13.24%	20.21%	20.63%	18.61%	21.40%	12.19%	5.88%	8.49%	8.22%										
2003	3,353.43	27.60%	24.51%	20.46%	23.53%	11.98%	4.70%	7.83%	7.61%											
2004	4,279.11	21.49%	17.03%	22.20%	8.38%	0.64%	4.84%	5.02%												
2005	5,198.67	12.74%	22.55%	4.33%	-3.99%	1.80%	2.50%													
2006	5,861.09	33.22%	0.36%	-8.99%	-0.77%	0.56%														
2007	7,807.95	-24.39%	-24.78%	-10.05%	-6.26%															
2008	5,903.48	-25.17%	-1.89%	0.70%																
2009	4,417.86	28.63%	16.81%																	
2010	5,682.76	6.08%																		
2011	6,028.48																			
Average		8.10%	7.49%	6.65%	6.89%	7.33%	7.34%	7.43%	7.32%	7.13%	7.07%	7.13%	7.33%	7.41%	7.28%	7.20%	6.60%	6.25%	6.80%	6.86%
Std Dev		16.11%	12.01%	9.54%	8.22%	6.09%	4.32%	2.84%	2.06%	2.20%	2.03%	2.09%	2.43%	2.31%	2.29%	2.23%	1.07%	0.50%	0.14%	-
Maximum Return		33.22%	24.51%	22.20%	23.53%	21.40%	17.76%	13.36%	11.63%	11.91%	10.22%	10.60%	11.24%	10.44%	10.72%	10.66%	8.06%	6.74%	6.91%	6.86%
Minimum Return		-25.17%	-24.78%	-10.05%	-6.26%	0.07%	2.15%	3.84%	4.11%	3.48%	3.16%	4.11%	3.42%	4.23%	5.19%	4.93%	5.50%	5.75%	6.70%	6.86%
Positive Return		15	14	14	12	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Negative Return		4	4	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Appendix M

Turnitin Originality Report
Draft_2 by Aileen Gan
From Buy and Hold Strategy (Master research project)

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CHAPTER 1: RESEARCH OVERVIEW 1.1 A Rolling Return Analysis of the Buy-and-Hold Strategy 1.2 Introduction Share equities have been one of the most frequently traded assets in global markets. Although they contain the investment potential of gaining higher- than-average returns, these returns however are compensated by high risks of yielding negative returns. Whilst this fact presents itself to be true, there are many strategies of which investors commonly use to ensure that they get their share of commensurable or even lucrative returns. Investors playing with shares can buy, hold or sell the shares based on his/her preferred strategy. The strategy of buying and holding equities for a long period of time is also known as a passive strategy, or negligent strategy; whereas the strategy of buying equities and then selling them after a short period of time is also known as an active strategy. Many debates over whether a buy-and-hold strategy is actually more superior to a buy-and-sell. Shilling (1992); Dare (1995); Dichev (2007); and Blanchett (2011) had all proven that the buy-and-hold strategy is rather outdated, and that trading in-accordance to the right market timing is the way about to earning abnormal returns. Moreover, Shilling even suggested that the best way to gain abnormal returns from equities is to buy them during bearish business cycles, and sell them during bullish business cycles. 1 However, there has been evidence proving that the buy-and-hold strategy can actually outperform the buy and sell strategy, provided that the equity is being held for a prolonged period of time. James

Glassman and Kevin Hassett promoted an extreme version of the strategy in their book Dow 36,000 (Times Books, 1999). They argued that while buying and holding equities have a certain amount of business risk exposure, such as the risk of the equity of that particular company being insolvent, the risk being faced by holding stocks for longer periods is actually lower than having to hold stocks for short periods. Further research carried out by Barber, Lee, Liu and Odean (2011) had estimated that the costs for frequent trading of individual investors outweigh its returns if trading occurs too often. Since the normal market reacts to information rather swiftly, individual investors who are behind the news often had to incur trading losses, trading costs, and market-timing losses if they were to trade very often. This is especially true under the theory of the Efficient Market Hypothesis (EMH) stating that the normal economy is usually stimulated by information pretty quickly. Also known as the "signaling effect", investors who are not so quick at receiving critical information would face the risk of incurring opportunity costs when they sell their shares later than other investors who got the news quicker. (Dare, 1995) 1.3 Problem Statement Probably the most used, abused, and criticized investing strategy that ever existed; the buy-and-hold strategy is one of the most heavily debated topics that have come across every investor. This strategy has been blatantly attacked by many investors and researchers. Many argued that the risk being faced by this strategy is not being compensated enough in terms of returns. In other words, they deem that buy-and-hold is dead. Unlike the buy-and-sell strategy whose returns are better compensated for the risk being faced, the buy-and- hold strategy promises insufficient returns to their risk-undertakings. However, more often than not, individual investors usually prefer to buy-and-hold equities as a means of saving. Although numerous studies regarding the buy-and-hold strategy as well as the buy-and-sell strategy have been carried out, many of these researches conducted were based on the markets in the United States of America (USA) as compared to other countries. Since there are many stock markets around the world, there is a lack of comparison between the risk-return compositions of the buy-and-hold strategy in general sense. Hence, the purpose of this research is to analyze the strategy carefully among global markets to determine its effectiveness, given carefully selected markets and market timings. 1.4 Research Questions The research questions in this study are to investigate the relationship between equity holding periods and risk and return in twelve different countries' stock markets from four different continents in the world. The research questions are as below:- I. Is buy-and-hold an effective strategy in minimizing risk? II. Are there differences in the pattern of risk and return in various markets? III. Does the risk-return tradeoff hold when employing buy-and-hold strategy? IV. Does the Efficient Market Hypothesis (EMH) apply in the buy-and- hold strategy? V. Is the buy-and-hold strategy dead? 1.5 Research Objectives Subsequent research objectives for the research questions are as

follows:- i. To examine whether risk reduces over a long period of time by employing the buy-and-hold strategy. ii. To investigate whether risk exposure will be lower than returns in the long run. iii. To analyze buy-and-hold performance for each stock index of twelve different countries. iv. To compare results obtained by analyzing stock index of twelve different countries. v. To determine if the risk-return tradeoff is present when employing the buy- vi. To determine if EMH applies in the buy-and-hold strategy. vii. To examine whether buy-and-hold is dead. 1.6 Significance of Study The results generated from this research may benefit both individual investors as well as corporate investors who seek avenues to heighten returns while lowering risks when investing in the stock market. This study will help investors to determine if the buy-and-hold strategy is suitable to be used when investing in equities. 1.7 Chapter Layout This research includes five chapters, as listed below: Chapter 1 Research Overview The first chapter is the introductory chapter which will provide an overview of the study context and defines the research problem. It sets the research questions to be answered and research objective to be achieved. Other topics also include the problem statement, justification, and term of definition. Chapter 2 Literature Review The second chapter provides the foundation for developing a good theoretical or conceptual framework to proceed with further investigation. The literature review is based on the empirical research introduced previously by researchers. Chapter 3 Research Methodology The third chapter describes the methodology being used. It explains how the research was carried out in terms of research design, data collection methods, data analysis, and measurement scales as evaluation techniques. Chapter 4 Results and Findings The fourth chapter is to present the patterns and analysis of the results obtained from the research methodologies that are outlined in Chapter 3. Chapter 5 Discussion and Conclusion The last chapter discusses the summaries of statistical analyses and the implication towards the research. The conclusion includes prepositions, future trends, and what future research is needed for better understanding of the topic in question. On top of that, the limitations of the research would also be identified and discussed. CHAPTER 2: LITERATURE REVIEW 2.1 Investing in Equities Common stocks might just be the most frequently traded assets of all time. Not only are they easily affordable unlike real estates, equities are also favored for their speed in converting into cash as well as the opportunity to earn capital returns as well as dividends. It is thus not surprising that almost 30 percent of investors holding equities in the United States of America consist of common households, next to mutual funds which consist of only 25 percent. The main reason to investing in equities is non-other than to obtain a secondary source of income besides depending on just one. After all, investors are always driven to creating wealth. Numerous studies have also found that most of the equity holders' risk appetite are skewed towards being risk-averse than being risk-takers. It is not surprising

for this behavior to be the main momentum in investing. Over the decades, there were many distresses in the financial markets that caused investors to abruptly lose confidence. Stock market prices fluctuations led to shifts in risk structures of investors even in the earlier years (Hsu, 1982). Malkiel (2003) conducted an observation of the buy-and-hold strategy being used in the European and the US market for small, medium and large cap companies. His study concluded that there is no record suggesting that sufficient predictability exists in the market to outperform a passive portfolio with equivalent risk. He also found that there are no recognizable anomalies or irrationalities to take advantage of exploitable arbitrage opportunities. Hence, investors are more likely to gain from the Buy-and-hold strategy rather than the buy-and-sell portfolio management. 2.2 Risk and Return A common dilemma faced by investors and portfolio managers is the tradeoff preference between risk and return. The core concept that underlies stock performances as well as other investment instruments is the relationship between the uncertainties being faced as well as the potential returns associated to it. Also known as the “Risk-Return Tradeoff”, this principle suggests that low levels of uncertainty (low-risk) are associated with low potential returns, whereas high levels of uncertainty (high-risk) are associated with high potential returns. According to this theory, invested money can render higher profits only if it is subject to the possibility of being lost (investopedia.com). Technically, investors who prefer using the Buy-and-hold Strategy are more risk-adverse than those who prefer using the Buy-and-Sell Strategy. Ideally, the principle of the Risk-Return Tradeoff should reflect lower stock performances for the risk-adverse investors than the latter. Numerous studies are conducted regarding the risk-return paradox. Xing and Howe (2003) applied a bivariate generalized autoregressive conditional heteroscedasticity in mean (GARCH-M) model to the weekly stock index returns from the UK and the world market. The results obtained showed a significant positive relationship between stock returns and the variance of returns in the UK stock market. Syriopoulos (2006) have also found supporting results in emerging Central Europe and developed stock markets that international portfolio diversification can be less effective across co- integrated markets because risk cannot be substantially reduce and return can exhibit a volatile reaction to domestic and international shocks. Li, Yang, Hsiao, and Chang (2005) examined the relationship between expected stock returns and volatility in the 12 largest international stock markets during January 1980 to December 2001 based on parametric EGARCH-M models. The results found a positive but insignificant relationship. However, results showed that stock market returns are negatively correlated with stock market volatility when a flexible semi-parametric specification of conditional variance was used. Rahmbia, Joshipura and Joshipura (2013) examined low risk anomaly in Indian stock markets by using the constituent stocks of S&P CNX 500 index of NSE for 11 periods starting from 2001 to 2011. Monthly

rolling iterations are used to form low and high volatility portfolios. The findings of the study proved that there is presence of low risk anomaly in Indian stock markets as low volatility portfolio outperforms market portfolio as well as its high volatility counterpart on risk-adjusted basis. 2.3 Efficient Market Hypothesis (EMH) and Random Walk Theory The risk-return tradeoff was examined further by numerous studies to test the efficiency of stock markets towards “signals” given by new information pertaining to the performance of the companies and/or of their stocks. The Random Walk Theory is one of the research areas proclaiming that movement of stocks cannot be predicted, and that ups and downs of stocks are just fairly random. The Efficient Market Hypothesis (EMH) however, postulates that the “randomness” of stock movements is primarily dependant on the efficiency of the market towards new information. Generally, the rule of thumb is that the higher the efficiency of the market, the lower the predictability of stock movements. There are three forms of classification of the EMH – (a) strong form, (b) semi-strong form, and (c) weak form (Yu, Nartea, Gan, and Yao, 2012). Lim, Brooks, and Kim (2008) empirically investigated the effects of the 1997 financial crisis on the efficiency of eight Asian stock markets by applying the rolling bi-correlation test statistics for the three sub-periods of pre-crisis, crisis, and post-crisis. On a country-by-country basis, the results demonstrated that the crisis adversely affected the efficiency of most Asian stock markets, with Hong Kong being the hardest hit, followed by the Philippines, Malaysia, Singapore, Thailand and Korea. However, most of these markets’ efficiency recovered in the post-crisis period. The findings of higher inefficiency during the crisis are not surprising as in the chaotic financial environment at that time; investors would overreact not only to local news, but also to news originating in the other markets, especially when the news events were adverse. Kim and Shamsuddin (2008) used non-parametric finite sample tests known as the new multiple variances ration tests to investigate the EMH in the stock prices of a group of Asian markets. Both weekly and daily data from 1990 are considered. It is found that the Hong Kong, Japanese, Korean and Taiwanese markets have been efficient in the weak-form. The markets of Indonesia, Malaysia and Philippines have shown no sign of market efficiency, despite financial liberalization measures implemented since the eighties. There are also evidences that the Singaporean and Thai markets have become efficient after the Asian crisis. In general, the results pointed toward the notion that the pricing efficiency of a market depends on the level of equity market development as well as the regulatory framework conducive of transparent corporate governance. Yu, Nartea, Gan and Yao (2012) also investigated whether the moving average and trading range breakout rules can predict stock price movements and outperform a simple Buy-and-hold strategy in Asian markets after adjusting for transaction costs over the period from January 1991 to December 2008. The empirical results showed

that the trading rules have stronger predictive power in the emerging stock markets of Malaysia, Thailand, Indonesia, and the Philippines than in the more developed stock market of Singapore consistent with earlier studies. Furthermore, in most stock markets during the study period further suggested that these markets have become more efficient in terms of information over time. Lee, Lee, and Lee (2010) conducted a test to investigate whether the EMH holds in stock markets under different economic development levels over the period January 1999 to May 2007. After accommodating general forms of cross-sectional dependence as well as controlling for finite-sample bias, the real stock price series seemed to be stationary in 32 developed and 26 developing countries, indicating that there are opportunities of arbitrage among stock markets. Majumder (2012) found evidences that market inefficiencies caused by emotional investing is prominent in large emerging markets in Brazil, Russia, India and China and also in developed markets in the USA. When a market is inefficient and sentiments play a dominant role in an investor's decision making, valuation by any existing asset pricing model would produce a suboptimal risk–return relationship. Standard pricing technology will guide a rational investor to wrong policies for his new investments or for reallocating his old investments. Alvarez-Ramirez, Rodriguez, and Espinosa-Paredes (2012) also found that the relative efficiency for the US stock market has declined slightly in the past 10 years. 2.4 Buy-and-Hold as a Strategy 2.4.1 Definitions of Buy-and-Hold The definition of Buy-and-Hold can be summarized according to various sources in Table 1.1 below. Table 2.1 Definitions of Buy-and-Hold Source Definition A passive investment strategy in which an investor Investopedia buys stocks and holds them for a long period of time, regardless of fluctuations in the market. Wikipedia Buy and hold is an investment strategy where an investor buys stocks and holds them for a long time Investorwords An investment strategy in which stocks are bought and then held for a long period, regardless of the market's fluctuations. The Free Dictionary An investment strategy in which one does not do any trading on a portfolio between the initial selection of the securities and the end of a certain time period (which is usually a long time). Investment strategy in which Business an asset is bought and held for a long period despite Dictionary the fluctuations in its price. Buy-and-Hold is an investment strategy that is used by buying investment securities and holding them for long periods of time. It is said that the rationale behind Buy-and-Hold is for investors to gain long-term returns that are reasonable despite of the volatility in price fluctuations over short-term periods. Moreover, this strategy is backed-up by the ideology of investors requiring less frequent trading than other strategies. Hence, excessive trading costs and taxes are being minimized, which will in turn increase the overall net return of the investment portfolio. The opposite of this strategy is market timing, which ref ers to an investor buying and selling over shorter periods to buy at a lower pri ce and sell at a

higher price in order to profit from the trade. Simply put, the buy-and-hold investor believes “time in the market” is a more prudent investment style than “timing the market”. (mutualfunds.about.com) 2.4.2 General Explanation The explanation for this strategy is to buy and hold a particular investment long period of time despite market volatility. It requires stock for a very ce and commitment from the investor to hold a particular stock for a few years and not be swayed by external preferences or market is easier said than done. Most investors would rather buy the ely lower price, and then wait for the right market timing to movements. This substantial patien stocks at a relativ sell the stocks, earning dividends and capital gains between the processes (Dare, 1995). Unless the rationale behind investing in equities is to sit back and enjoy the dividends being handed out for some, many would rather Buy-and-Sell than to Buy-and-hold. Even if they choose the latter, many would not be able to resist selling their stocks when the right opportunity rises. This seems like logical reasoning, but bear in mind of what the Financial Crises have to teach – for every return, there is always risk at present. Sure, investors might opt to diversify their risks by diversification of stocks to reduce risks, but then so will their opportunity of obtaining huge return (Markellos, 2007). 2.4.3 Why Buy-and-hold is Better Most investors would think that low risk stocks can only deliver minimal returns. If an investor were to expect for higher returns he/she would have to try their luck in investing in high risk stocks or playing around with market timing. However, it is the least risky stocks that deliver long-term high returns (Forbes.com). There are many studies that proved that buy-and-hold is indeed better than buy-and-sell, but the investing wisdom is only effective if the investor is willing to buy and hold for long periods of time before they can enjoy the returns. Blanchett (2011) conducted a paper suggesting that a long-term static allocation strategy is more likely to produce higher risk-adjusted performance than a tactical asset allocation strategy. Similarly, Dichev (2011) also found that actual investor returns are systematically lower than Buy-and-hold returns for nearly all major international markets. Further researches that have been done to reinforce the effectiveness of Buy- and-Hold are mainly regarding excessive transaction costs while over-trading as well as information asymmetry. These topics are being discussed in this study under the subsequent sub-sections. 2.4.3.1 Transaction Costs Perhaps the most researched area of Barber and Odean (2001; 2002) would be the downfall of transaction costs regarded to too-frequent trading. They blame overconfidence as the main culprit when it comes to excessive trading. When investors are overconfident, they expose themselves to situations where expected gains are not enough to offset trading costs. In fact, even when trading costs are ignored, these investors actually lower their returns through trading (Odean, 1999). Barber and Odean (2001) even went on further to investigate the difference in risk appetites and confidence levels of men and women. The study which included 29,659 trading accounts

opened by men; and 8,005 opened by women, showed that in overall, men performed worse than women due to excessive trading. Moreover, the tests found that men trade more than women and thereby reduce their returns more so than do women. Furthermore, Barber, Lee, Liu & Odean (2005) investigated both the US and the Taiwanese markets to find that investors who are saving to meet long term goals would benefit better if they had not been sufficiently educated regarding stock investment. 2.4.3.2 Information Asymmetry and Emotional Trading One aspect of buy-and-hold is to maintain discipline and commitment to hold stocks for a long period of time. Often investors are heavily influenced by internal as well as external events taking place. This leads to fear and greed which could result in investors not being rational in analyzing crucial information. Hence, the ability to understand the inner workings of an equity, its fundamentals and the ability to determine the direction of the trend are a few of the key traits needed, but not one of these is as important as the ability to contain emotions and maintain discipline. (Investopedia) Barber and Loeffler (1993) had done a study which resulted that those analyst recommendations on positive abnormal return on announcement of recommendation, is rather out-dated since the information is already second- hand information. The authors concluded that reliance on such information is a result of naïve buying pressure as well as the information content of the analysts' recommendations. Furthermore, many investors, even educated ones are commonly trading based solely on their confidence in trying to beat the market, ignoring information efficiency altogether. However, despite being conflicted by market efficiency, they would generally perceive the market to be efficient if they are investing passively rather than actively (Doran, Peterson and Wright, 2010). One of the ways to avoid being trapped in the information bubble is to employ a long term Buy-and-hold strategy (Malkiel, 2009). 2.5 Arguments against the Buy-and-hold Strategy Evans (1970) gave insight into two main strategies which are the Buy-and- hold and the fixed proportion / reallocation strategy to compare risk and return performances of these two strategies as well as examine the effects of investment "costs". The study suggests that while the Buy-and-hold strategy is superior when the initial investment in each security is small and the marginal capital tax gains are high. However, when the initial investment in each security is larger and the marginal capital tax gains are lower, the fixed proportion strategy is more superior. Dare (1995) argued that investors who have long investment horizons, pay low commission costs, and receive nominal returns when invested in cash can beat a Buy-and-hold strategy, while simultaneously reducing market risk. The study also supports the findings of Shilling (1992) stating that market timing is better than a simple Buy-and-hold. Furthermore, Metghalchi, Du and Ning (2009) tests two moving average technical trading rules for four Asian markets namely Hong Kong, Singapore, South Korea, and Taiwan to discover that the moving average technical trading rules are

more predictable and thus can outperform the simple Buy- and-hold strategy. Guido, Pearl and Walsh (2011) utilized the US equity premium as a regime- switching process where the regimes are dependent on economic variables. The study also further tested a dynamic asset-allocation strategy. The results indicated that the timing strategy outperformed a simple Buy-and-hold strategy on a risk-adjusted basis. Similarly, Yu, Natea, Gan and Yao (2012) investigated whether the moving average and trading range breakout rules can forecast stock price movements and outperform the Buy-and-hold strategy using adjusted data from January 1991 to December 2008. The empirical results showed that the trading rules have better predicting power in emerging markets of Malaysia, Thailand, Indonesia and Philipines. 2.6 Stock Indexes 2.6.1 United States of America (DJIA) Perhaps the most dominant stock market in the world would be the New York Stock Exchange (NYSE). Nanda and Peters (2006) conducted a study analyzing total return performance of all stocks in the Centre for Research Security Prices (CRSP) throughout 40 years to carefully analyze a number of economic and investment cycles. Their results indicate that a Buy-and-hold strategy is indeed better than one who applies a Buy-and-Sell strategy. Barber and Odean (2000) also claimed that over-trading in the US market is more likely to lead to substantial losses as compared to a humble Buy-and-hold. 2.6.2 Canada (TSX) Canada is also on the verge of competing itself closely to its southern counterpart. These two countries are so closely correlated that decimalization in the United States had positive impact on trading in both NYSE and the Toronto Stock Exchange (TSE) (Oppenheimer and Sabherwal, 2003). Deaves, Miu and White (2008) adopted the earnings to price ratio (E/P) to test on the predictability of future stock prices in the Canadian market base on dividend yields. Much like the US, longer term returns proved to have a predictable component. Alexeev and Tapon (2010) further conducted a study of market efficiency of the TSX using the EGARCH model and although there seems to lack of proof of weak form efficiencies, some sectors of the Canadian economy were weaker than others. 2.6.3 United Kingdom (FTSE) In the case of the United Kingdom, the major stock index is the Financial Times Stock Exchange (FTSE). Fong (1992) observed the size of the UK stock market in influencing investment strategies. He found that mean returns computed on a Buy-and-hold basis is significantly lower than a Buy-and-Sell. The result also showed that mean Buy-and-hold returns in the UK are not only lower that of rebalanced portfolio, but is also not statistically significant. In addition, Mase (2006) also analyzed the FTSE 100 Index to find asymmetric long-run abnormal return performances between 1992 and 1999. This asymmetry suggests that investors' awareness of stocks is influenced by index changes. Mazouz and Li (2007) tested the overreaction hypothesis using data from the UK stock market. The study covers a period of 30 years (from 1973 to 2002). The results initially seemed to be consistent with the overreaction hypothesis

and no obvious seasonal pattern can be identified. The results did not depend on whether buy-and-hold returns (BHR) or cumulative abnormal returns (CAR) used to compute the returns of the arbitrage portfolio. This overreaction phenomenon was still observable even after controlling for the size effect and the time-varying nature of risk. 2.6.4 France (CAC) In France, stocks are commonly traded in the Paris CAC. Korczhak and Roger (2002) adopted a genetic algorithm to search a set of trading rules out of a sample of 24 French stocks among the most important stocks traded on the French market. They found that in most cases, the method outperforms a simple Buy-and-hold strategy. Arrondel, Pardo, and Oliver (2010) utilized the DELTA-TNS 2002 survey to investigate the risk-forbearance of French households to find that non- negatively correlated background risks reduce the willingness of French households to bear financial risks. Siwar (2011) also investigated on the over-reaction and under-reaction of the French stock market and resulted that the markets are quite efficient, and investors can rarely beat the market and achieve abnormal returns. 2.6.5 Germany (DAX) The German stock uses the DAX as its composite index. Jasic and Wood (2004) examined the profitability of trading signals generated from the out-of- sample short-term predictions for daily returns of S&P 500, DAX, KOSPI, and FTSE stock indexs ranging from the year 1965 to 1999. The results provide strong evidence of high and consistent predictability contrasting the previous finding of weak form efficiency. Bonfiglioli and Favero (2005) examined the interdependence of US and German stock markets to find relative contagion effects. The results showed that while there was no long-term interdependence between US and German stock markets, there were short-term interdependence and contagion between US and German stock markets. 2.6.6 South Korea (KOSPI) South Korea's composite index is the KOSPI index. Lee, Jung, and Thornton Jr. (2005) examined the long-run stock performance of firms that announce open-market repurchases in Korea. They separated the study into short-term and long-term. The results are consistent with other markets. However, the results specified that long-term performance results strongly supported the Efficient Market Hypothesis. Choi and Nam (2006) compared the long-run Buy-and-hold returns of privatization initial public offerings (IPOs) to those of the domestic stock markets of respective countries using a sample of 241 privatization IPOs from 41 countries. The results indicated that the long-run performance of privatization IPOs is significantly related to uncertainties. Metghalchi, Du and Ning (2009) tested two moving average technical trading rules for four Asian markets including Korea. The results indicated that moving average rules do indeed have predictive power and can discern recurring price patterns for profitable trading. Moreover, the results support the hypothesis that technical trading rules can outperform the buy-and-hold strategy. 2.6.7 Hong Kong (Hang Seng) A few decades back, the Asian stock markets were just mere followers of the more active US

market. Many people then did not possess sufficient financial management skills, and traded base solely on their confidence towards particular stocks. Many did well, and many others followed through. There wasn't much regulation and control over stock trading, except for China which imposed strict capital controls (Burdekin and Siklos, 2012). Numerous studies have been conducted to test for short- and long-term stock performances over various markets. Coutts and Cheung (2000) investigated the applicability and validity of trading rules in the Hang Seng Index on the Hong Kong Stock Exchange for the period January 1985 to June 1997, and for two subsamples of equal length, partitioned from the whole sample. It is concluded that the Moving Average Oscillator and the Trading Range Break-out rules appear to be present, to varying extents, for all three data samples, although the Trading Range Break- out rule is by far the strongest. In terms of implementation, it is suggested that both the Moving Average Oscillator and Trading Break-out rules, would fail to provide positive abnormal returns, net of transaction costs and the associated opportunity costs of investing 2.6.8 Japan (NIKKEI) Japan's composite index is the Nikkei. Liu (2009) investigated the price and trading volume effects of the Nikkei 500 stock index within 1991 to 1999 to find abnormal patterns of returns of each firm on each event day in a 31-day event window. Greenwood (2005) developed a framework to analyze demand curves for multiple risky securities at extended horizons in a setting with limits-to- arbitrage using the Nikkei 225 index in Japan. The results found a significant relation between event returns and the contribution of each demand shock to the risk of a diversified portfolio. The results also found a positive relation between the returns of 1,042 securities not experiencing demand shocks and the change in their contribution to portfolio risk. 2.6.9 Singapore (STI) Tang and Shum (2004) examined the risk-return relations in the Singapore stock market for the period April 1986 to December 1998. Though the unconditional relation between beta and returns was found to be significantly positive, the explanatory power was extremely low. Also, such a relation disappeared in sub-periods. On the other hand, the risk– return relation is found not to be nonlinear. Unsystematic risk and total risk play a marginally significant and highly significant role respectively in pricing the Singapore securities. However, the incremental explanatory power to returns is still very limited. Singh, Kumar and Pandey (2010) examined price and volatility spillovers across North American, European and Asian stock markets. The return spillover is modeled through VAR(15) in which fifteen world indexs, representative of their stock market are considered. Volatility spillover was modeled through AR-GARCH incorporating the same day effect. In both return and volatility spillover, it is found that a particular index is mostly affected by the indexs which open/close just before it. It is also found that there is a greater regional influence among Asian and European stock markets. 2.6.10 Malaysia (KLCI) Chang, Lima and Tabak (2004) carried out a study to test the

predictability of various emerging equity markets including Malaysia using variable moving average (VMA) and trading range break (TRB). Their results indicated that while the Buy-and-hold strategy seem to be perform better in general, the Malaysian equity market seem to react more positively to trading rules. Similarly, Nurwati, Campbell and Goodacre (2007) also did a study investigating the long run share price performance of 454 Malaysian IPOs during the period 1990 to 2000. In contrast with developed markets, significant over-performance is found for equally-weighted event time CARs and buy-and-hold returns using two market benchmarks, though not for value- weighted returns or using a matched company benchmark. While the long run performance of Main and Second Board IPOs does not differ, the year of listing, issue proceeds and initial returns were found to be performance-related. 2.6.11 Taiwan (TAIEX) Cho, Russel, Tiao and Tsay (2003) conducted a study using intraday prices from the Taiwan Stock Exchange (TSE) to test the effects of daily price limits. Among the results obtained, there are evidences suggesting that the Buy-and- hold strategy is optimal especially when heavy transaction costs are involved. Further studies in Taiwan also found that individual investors are losing too much from frequent trading (Barber, Lee, Liu & Odean, 2011). 2.6.12 Australia (ASX) Alcock and Gray (2005) assessed the economic significance of return predictability in Australian equities by comparing the performance of a Buy- and-hold market investment to that of portfolio-switching strategies generated by a predictive model. The results showed that even before transaction costs, the strategy failed to outperform the Buy-and-hold strategy. Galariotis (2010) investigated Australian momentum strategies and their performance stability separately employing two samples a) the S&P/ASX 200 constituents and b) all market securities; for different time periods and market states. Non-overlapping portfolios were employed to avoid transaction intensive strategies. Results showed that momentum performance is not sample specific and is positive in all cases, yet at varying magnitudes for different states and years. 2.7 Term of Definition Composite Stock Index is grouping of equities, indexes or other factors combined in a standardized way, providing a useful statistical measure of overall market or sector performance over time. There are indices for almost every conceivable sector of the economy and stock market. Many investors are familiar with stock indexes through index funds and exchange-traded funds whose investment objectives are to track the performance of a particular index. Rolling Return is the annualized average return for a period ending with the listed year. Rolling returns are useful for examining the behavior of returns for holding periods similar to those actually experienced by investors. They create a more realistic view of investment returns. Standard Deviation is a measure of dispersion of a set of data from its mean. In finance, it is applied to the annual rate of return of an investment to measure the investment's volatility. It is commonly used as a measure of risks. 2.8 Literature Review

Summary Table 2.2: Literature Review Summary Author(s)/ Year A. Gary Shilling (1992) Alessandra Bonfiglioli, Carlo A. Favero (2005) Brad M. Barber, Terrance Odean (2000) Country/ Data Period Models/ Techniques DJIA - Findings/Conclusions In the post-war era, buying and holding stocks were extremely rewarding. (Jan 1946 – Dec 1991) US and German stock markets Stocks' monthly returns (Jan 1980 – Sept 2002) 66,465 households at a large discount brokerage firm in US (Jan 1991 – Dec VAR Vector Error Correction Model There was no long-term interdependence between US and German Stock Markets but short-term interdependence and contagion between the two countries were present Gross return Trading is hazardous to your wealth. People trade too often due to overconfidence. Thus, active investment strategies Stock turn- will not outperform passive investment strategies. over rate Brad M. Barber, 1996) 35,000 households from a large brokerage Gross and net return performance Men traded 45 percent more than women. Trading reduced men's net returns by 2.65 percentage points a year as opposed to 1.72 percentage points for women. Terrance firm in US – of each Odean (2001) 8,005 women and 29,659 men household Monthly (Jan 1991 – Jan 1997) portfolio turnover for each household Brad M. Barber, 1,607 investors who switched "own- benchmark" abnormal return for each household Gross performance Investors were led by online advertisements to believe that profitable investment opportunities are ephemeral events, from phone- and net seized only by the quick and vigilant. Most investors, Terrance based to online performance however, benefit from a slow trading, buy-and-hold strategy. Odean trading Own (2002) (Jan 1991 – Jan benchmark 1996) CAPM alpha Yu-Jane Liu, Terrance Odean (2005) Bryan Mase FTSE 100 Index Buy-and-hold nearly half of institutional profits. Asymmetric long-run abnormal return performance was Fama and French alpha Brad M. Review of - The positive abnormal return on announcement is partially Barber, second-hand reversed within 25 trading days. Positive abnormal return on information announcement of the recommendations was a result of naive Douglas literature buying pressure as well as the information content of Loeffler published in the analysts' recommendations. "Dartboard" (1993) column of the Wall Street Journal Brad M. All TSE trade Averaged Individual investor trading resulted in systematic and Barber, data daily dollar economically large losses. Virtually all individual trading profits of losses can be traced to their aggressive orders. In contrast, Yi-Tsung (1 Jan 1995 – 31 individual institutions enjoyed an annual performance boost of 1.5 Lee, Dec 1999) investors and percentage points, and both the aggressive and passive trades firms of institutions were profitable. Foreign institutions garnered (2006) Burton G. (1 Apr 1992 – 1 Apr 1999) S&P 500 abnormal returns - present following inclusion or deletion of stocks from the index. This asymmetry suggested that investors' awareness of stocks was influenced by index changes. Passive investment management could still be justified Malkiel (2009) Chien- Chiang Lee,

Jun-De Lee, Chi-Chuan Lee OECD Main Economic Indicators International Financial Statistics Panel data stationary test despite less-than-efficient markets. Real stock price indexes were stationary processes that were inconsistent with the efficient market hypothesis. This showed the presence of profitable arbitrage opportunities among stock markets. (2010) 32 developed countries and 26 developing countries (Jan 1999 – May 2007) D. A. Hsu (1982) US stock market prices (1971 – 1974) Bayesian robust inference Provided a statistical procedure for the analysis of stock market prices that is robust toward departures from the normal distribution assumption and that can detect and evaluate a shift of parameters at an un-known time point. David D. Cho, TSE Daily price AR-GARCH Regression Tendency for stock prices to accelerate toward the upper bound and weak evidence of acceleration toward the lower bound as the price approaches the bounds when price limits Jeffrey Russell, George C. limits are imposed. Tiao, Ruey Tsay (2003) David M. Blanchett (2011) Debasish Majumder S&P 500 (Jan 1926 – Dec 2009) Brazil, Russia, India, China, and US Sharpe ratio - The likelihood of a tactical approach outperforming a static allocation decreased further when considering additional costs incurred by tactical investors, such as additional trading expenses. Hence, A long-term static allocation strategy is likely the approach that will lead to higher risk-adjusted performance for the majority of investors. When a market is inefficient and sentiments play a dominant role in an investor's decision making, valuation by any existing asset pricing model would produce (2012) (April 2001 – April 2012) a suboptimal risk–return relationship. Standard pricing technology will guide a rational investor to wrong policies for his new investments or for reallocating his old investments. Ellouz Siwar French stock Methodology Over-reaction and under-reaction in the market is rarely (2011) Emilios C. Galariotis (2010) Eui Jung Chang, Eduardo Jose market (1974 – 2004) S&P/ASX 200 (Jul 2000 – Apr 2007) US, Japan, Argentina, Brazil, Chile, Mexico, India, of De Bondt and Thaler (1985) - Variable moving average (VMA) significant. Hence, the variation of stock returns is often unforeseeable. Momentum performance in the Australian market was not sample specific and is positive in all cases, yet at varying magnitudes for different states and years. The profits are robust to univariate and multivariate risk considerations, Seasonality, and to different starting months. Emerging equity market indexes did not show a resemblance to random walk theory. In general, trading rules do not generate statistically Araujo Lima, Benjamin Miranda Tabak (2004) Indonesia, South Korea, Malaysia, The Philippines, Thailand, and Taiwan (Jan 1991 – Jan Trading range break (TRB) significant profits after taking into account both transaction cost and a Buy-and-hold strategy. Gordon Y.N. Tang, Wai Cheong Shum 2004) Singapore stock market (Apr 1986 – Dec 1998) CAPM Cross-sectional regression Realized returns had a significant positive relation with unsystematic risk, total risk and kurtosis in up market. There was also evidence that investors do not hold

diversified portfolios in the Singapore stock Market (2004) Hao Yu, Malaysia, Thailand, VMA, FMA, TRB technical VMA, FMA, and TRB technical trading rules were all successful in forecasting stock price movements in Malaysia, Gilbert V. Nartea, Christopher Gan, Indonesia, and Philippines (Jan 1991 – Dec 2008) trading rules Thailand, Indonesia, and the Philippines, with the TRB having additional predictive ability in Singapore. The buy signals generate positive returns and sell signals generate negative returns which are, on average, significantly different from the returns earned by a simple buy-and-hold strategy. Lee J. Yao (2012) Short-term variants of the technical trading rules may be more useful in predicting stock price movements than their long-term counterparts. Though these results suggest market inefficiency, we find that transaction costs can eliminate profits from trading on these signals for at least four of the five stock markets. The results indicated the existence of at least weak-form market efficiency in Singapore, Malaysia, Indonesia, and the Philippines and highlight the need to constantly revisit statements about the efficiency of economically dynamic and rapidly growing emerging markets. Henry R. Oppenheimer , Sanjiv Canadian stocks cross-listed on TSE and NYSE of NASDAQ Regression US decimalization had the desired positive impact on trading in both the US and Canada, with a decrease in spreads and an increase in retail-sized trading. Sabherwal (2003) Ilia D. Dichev (2011) Jae H. Kim, Abul Shamsuddin (2008) James S. NYSE/AMEX (1926 – 2002) Hong Kong, Japan, Korea, Taiwan, Indonesia, Malaysia, Thailand, Singapore and Philippines (Jan 1990 – April 2005) 642 US Descriptive statistics Correlation matrix Chow- Denning test Wild Bootstrap Test Joint Sign Test Likert scale Actual investor returns are systematically lower than buy- and-hold returns for nearly all major international stock markets. These results imply that the historical equity premium and the cost of equity capital are likely lower than previously thought. Market efficiency varies with the level of equity market development. In general, the developed or advanced emerging markets (Hong Kong, Japan, Korea, Singapore, Taiwan) show weak-form efficiency, while the secondary emerging markets (Indonesia, Malaysia, Philippines) are found to be inefficient. Evidence that Singaporean and Thai markets have become efficient after the Asian crisis in 1997. Despite financial market liberalization, the secondary emerging markets have shown little sign of market efficiency. The 642 respondents seemed to agree that the stock market is Doran, David R. Peterson, Professors not strong form efficient and is weak form efficient. However, they seem undecided about semi-strong form efficiency. Twice as many respondents passively invest than actively Colby Wright (2010) invest, suggesting that although they may be conflicted about market efficiency, they generally behave as if they accept markets as efficient. Jamie Alcock, Australia - Despite respondents' education and sophistication, they seem to set investment objectives and make trades largely based on confidence. Relative to a buy-and-hold market

investment, the returns to the portfolio-switching strategy are impressive under several John L. Evans (1970) S&P (1958 – 1967) Annual average portfolio returns Standard Prior to considerations of transaction costs and taxes, the Fixed Proportion (FP) strategy leads to significantly superior risk-adjusted returns as compared to the Buy-and-hold (BH) strategy. However, when transaction costs and taxes are included in the analysis the results must be qualified on other factors: (1) the amount of the initial investment; and (2) the Philip Gray (Jan 1975 – Dec 1979) model-selection criteria, even after accounting for transaction costs. (2005) J. Andrew Hang Seng Moving Although the Trading Range Break-out rule is by far the Coutts, Average strongest. In terms of (1985 - 1997) Oscillator implementation, it is suggested that both the Moving Kwong-C Rule Average Oscillator and Trading Cheung Break-out rules would fail to provide positive abnormal Trading returns, net of transaction costs and the associated (2000) Range Break- opportunity costs of investing. out Rule deviation of returns Reward-to- variability ratios marginal capital gains tax rate of the investor. On the one hand, when the initial investment in each security is small and the marginal capital gains tax rate of the investor is high, this analysis suggests that the BH strategy leads to superior results. On the other hand, when the initial investment in each security is larger and the marginal capital gains tax rate of the investor is smaller, this analysis suggests J. Korczak, P. Roger (2002) France Genetic algorithm that the FP strategy leads to superior results. In most cases, the method outperformed a simple buy and hold strategy. However, the near-optimal set of rules varies through time and across stocks. Jose Alvarez- Ramirez, Eduardo Rodriguez, Gillerto DJIA (1929 - 2012) - Market efficiency is a characteristic that varies continuously over time and across markets. Espinsosa- Paredes (2012) Khelifa FTSE Buy-and-hold Both CAR and BHR methods predict the presence of the Mazouz, Xiafei Li (2007) Kian-Ping Lim, (1973 - 2002) Hong Kong, Philippines, Malaysia, Returns (BHR) Cumulative Abnormal Returns (CAR) Rolling bi- correlation test statistics overreaction phenomenon. On average, the loser portfolio outperforms the winner portfolio about 16.4% by using CAR method and 18.3% when BHR method is applied. The statistical findings show that Hong Kong is the most efficient over the 14 years full sample period, followed by Korea and Taiwan, while Malaysia is at the tail end of the Robert D. Brooks, Jae H. Kim (2008) Singapore, Thailand, and Korea (Feb 1992 – Dec 2005) ranking list. However, in many cases, the 1997 Asian crisis is responsible for a large portion of inefficiency, notably in Hong Kong, the Philippines, Taiwan and Malaysia. Luc Arrondel, Hector Calvo Pardo, Xisco Oliver (2010) Massound France DELTA-TNS 2002 Survey Hong Kong, Regression analysis Moving Non-negatively correlated background risks reduce the willingness to bear financial risk, crowding households out from the stock market. Moreover, borrowing and liquidity constraints reduce households' propensity to invest in risky assets. Moving average rules

have predictive power and can discern Metghalchi, Singapore, South Average recurring-price patterns for profitable trading. This is proved Jiajun Du, Yixi Ning (2009) Korea, and Taiwan Rules Robustness test to be particularly true for short-term moving average rules. Results on trading strategies support the hypothesis that technical trading rules can outperform the buy-and-hold strategy. Nurwati A. Ahmad- Zaluki, Kevin Campbell, Alan Goodacre Malaysian IPO (1990 - 2000) Fama-French model Investors who measure their investment in IPO companies using the event-time approach will conclude that they earn positive returns in the long run, but if they adopt the calendar-time approach they would conclude that do not gain any abnormal returns. (2007) Priyanka Singh, Brajesh Kumar, Ajay Pandey North America, Europe, and Asia (Jan 2000 – Feb 2008) AR-GARCH VAR/AR model In both return and volatility spillover, it is found that a particular index is mostly affected by the indexes which open/close just before it. It is also found that there is a greater regional influence among Asian and European stock markets. (2010) Qi Li, Jian Yang, Cheng Hsiao, Young-Jae 12 largest international stock markets (Jan 1980 – Dec 2001) EGARCH-M model Found a positive but insignificant relationship between expected stock returns and volatility during the sample period for the majority of the markets based on parametric EGARCH-M models. However, using a flexible semi- parametric specification of conditional variance, there is evidence of a significant negative relationship between expected returns and volatility in 6 out of the 12 markets. Chang (2005) Rohan Rambhia, Mayank Joshipura, Nehal Joshipura. S&P CNX 500 index of NSE (2001 – 2011) Comparative study between LV and HV portfolio. t-test F-test While LV portfolio delivers higher absolute returns over both HV and market portfolios, the result is statistically not significant. However, when it comes to variance of returns, LV portfolio has much lower variance than both HV and market portfolios and the result is highly statistically significant. In addition, LV portfolio suffers much smaller drawdown as compared to its HV counterpart. (2013) Raphael N. Markellos (2007) DJIA (1915 – 1986) and Correlation Matrix The combination of simple technical analysis based trading systems with a buy-and-hold strategy will usually perform better in terms of risk-adjusted returns than any strategy alone. FT30 (1935 – 1994)) Richard C.K. Burdekin, Pierre L. Siklos (2012) Asia-Pacific and US (1995 – 2010) Rolling Correlation matrix Regression analysis Post-Asian financial crisis quartile regressions yield substantial evidence of long-run linkages between the Shanghai market, the US market and many regional exchanges. Co-integration is particularly prevalent at the higher end of the distribution. Richard Deaves, Peter Miu, C. Barry White (2008) Ron Guido, Canadia (1956 – 2003) US E/P Ratio Bayesian Although short-term returns are essentially unpredictable, but consistent with U.S. evidence, longer term returns do have a predictable component especially using the dividend yield. There is strong evidence that equity returns

exist in a dual Joshua Pearl, Kathleen Walsh (2011) (Jan 1959 – Dec 2005) method regime framework and that these regimes can be characterized by one positive return low volatile regime and one negative return highly volatile regime. The results indicate that if an agent was able to identify these returns ex ante they would enjoy much superior raw and risk-adjusted returns relative to the agent who buys and holds equity. Seung-Doo Multinational Zero Mean Long-run performance of privatization IPOs is significantly Choi, Sang-Koo Nam (2006) Shinhua Liu markets (1981 - 1994) Japan Nikkei225 CAR and BHAR Runs test related to the proxies of policy uncertainty. Employing two alternative tests, we document that the return series become more (less) random and, thus, less (more) (2009) (1975 - 2006) First-order predictable for stocks added (deleted). Autocorrelatio n test Theodore Poland, Czech EGARCH Central European markets tend to display stronger linkages Syriopoulos Republic, with their mature counterparts rather than their neighbors. Germany, US, International portfolio diversification can be less effective (2006) Slovakia, and across co-integrated markets because risk cannot be reduced Hungary substantially and return can exhibit a volatile reaction to domestic and international shocks. The possibility of (Jan 1997 – arbitrage short-run profits however, is not ruled out. Sept2003) Terrance US Regression Overconfident investors tend to buy securities that have risen Odean analysis or fallen more over the previous six months than the (Jan 1987 – Dec securities they sell. They sell securities that have, on (1999) 1993) average, risen rapidly in recent weeks. And they sell far more previous winners than losers Teo Jasic, S&P500, DAX, Neural The results provide strong evidence of high and consistent Douglas Wood (2004) Vitali Alexeev, TOPIX, FTSE (1965 - 1999) Canada TSX networks Pesaran- Timmermann Test EGARCH predictability contrasting the previous finding of weak form efficiency for index series. It is shown that buy and sell signals derived from neural network predictions are significantly different from unconditional one-day mean return and are likely to provide significant net profits for plausible decision rules and transaction cost assumptions. Although the null hypothesis of weak form efficiency on the TSX cannot be rejected, some sectors of the Canadian Francis Tapon (2011) (1980 - 2010) economy appear to be less efficient than others. In addition, pattern frequencies appear to be negatively dependent on the two moments of return distributions, variance and kurtosis. Wat Mun Fong (1992) William H. Dare (1995) UK (Jan 1979 – Dec 1988) S&P 500 (1970 – 1988) - - An investor in small firms is likely to face a tradeoff between lower rebalancing costs and lower returns from a more passive investment strategy. Investors who have long investment horizons, pay low commission costs, and receive nominal returns when invested in cash can beat a buy-and-hold investment strategy, while simultaneously reducing market risk. Xuejing Xing, John S. Howe UK and World market (Jan 1973 - Dec 1999) GARCH-M Bivariate GARCH-M model is more likely to be the

true model for UK stock market returns than univariate GARCH- M models. In addition, the world factor should not be omitted in assessing the risk–return relationship in local stock markets; investors should consider both domestic and (2003) world factors when they pursue international diversification. Yong-Gyo Lee, Sung-Chang Jung, South Korea (1994 – 2000) Fama-and- French model Long-term performance results provide strong support for the efficient market hypothesis. Long-term performance is measured in the post-repurchase period with both a one- factor and a three-factor calendar-time model. The results showed essentially no evidence of abnormal long-term performance in the full sample and in several partitions that John H. Thornton Jr. (2005) are motivated by findings in previous studies. In conclusion, the Korean market is efficient with regard to the long-term performance of firms that announce open-market repurchases. CHAPTER 3: RESEARCH METHODOLOGY 3.1 Research Desi gn Research design is the plan and structure of investigation conce ived in order to obtain answers to research questions. The plan outlined in the research design determines the structure and workload for the purpose of the research, from formulating hypotheses and their operational implications to the final analysis of data. (Cooper and Schindler, 2008) There are different categories of research. Generally, a research can be divided into three fundamental types which are descriptive, exploratory and causal. For the purpose of this research, exploratory as well as descriptive studies are being carried out. This research aims to explore the possibility of reduced risk and enhanced return by employing the buy-and-hold strategy for twelve countries. These countries are the USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Singapore, Malaysia and Australia. The research is quantitative in nature. Quantitative research is a method of analyzing a group of responses based upon mathematical formulas and probability to render findings (Chris, 2004). 3.2 Data Collection According to Zikmund (2012), the two fundamental sources of data collection are primary data and secondary data. Primary data is the first hand information that is gathered by the researcher himself/herself (Richardson, 2005); whereas secondary data refers to information that is gathered by someone other than the researcher conducting the current study (Sekaran, 2003). For the purpose of this research, secondary data is used. The daily Composite Indexes for the USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Thailand, Singapore, Malaysia and Australia are collected from Thompson Reuters Datastream. 3.3 Sampling Design Sampling frame is the list of elements from the sample may be drawn (Zikmund, 2012). The sampling frame of this research consists of Composite Indexes for selected countries located in USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Singapore, Malaysia and Australia. In addition, non- probability sampling is used since the selection of countries is based on personal judgment. Zikmund

(2012) defined non-probability sampling as the probability of any particular member of the population being chosen is unknown and judgmental sampling is a sampling technique in which an experienced individual selects the sample based upon some appropriate characteristic of the sample members. As a conclusion, this research employed non-probability sampling which is also a judgmental sampling technique. 3.3.1 Sample Size The sample size of this research is the daily Composite Indexes for 12 countries namely USA, Canada, UK, France, Germany, Japan, South Korea, Hong Kong, Taiwan, Singapore, Malaysia and Australia within a 20-year time frame from 1992 to December 2011 except for Singapore which is from 2002 to December 2011. The data for Singapore for years before 2002 was not found in DataStream. Hence, the total number of observations collected is 59,822. Table 3.1: Markets and Sampling Design Countries Composite Indexes No. of /No. of Stocks Observations Period of Study USA DJIA (30) 5218 Jan 1992 – Dec 2011 Canada TSX (60) 5218 Jan 1992 – Dec 2011 UK FTSE (100) 5218 Jan 1992 – Dec 2011 France CAC (40) 5218 Jan 1992 – Dec 2011 Germany DAX (30) 5218 Jan 1992 – Dec 2011 South Korea KOSPI (200) 5218 Jan 1992 – Dec 2011 Hong Kong HANG SENG (40) 5218 Jan 1992 – Dec 2011 Taiwan TSEC (50) 5218 Jan 1992 – Dec 2011 Japan NIKKEI (225) 5218 Jan 1992 – Dec 2011 Singapore STI (30) 2532 Apr 2002 – Dec 2011 Malaysia KLCI (30) 5218 Jan 1992 – Dec 2011 Australia ASX (200) 5110 Jan 1992 – Dec 2011 3.4 Method of Analysis After data has been collected and tabulated into Microsoft Office Excel (Microsoft Excel), the Rolling Annual Compounding Return (Rolling Return) and the Total Risk (Standard Deviation) for th e specific stock market holding period is calculated. Rolling Returns are the with the listed years. annualized average return for a period ending 3.4.1 Rolling Returns Rolling r eturns are useful for examining the behavior of returns for holding returns h periods similar to those actually ad not been a common method of analysis experienced by investors. Although rolling being used by previous researches, it is starting to grow in popularity by researchers which used the concept to estimate stock price volatility as well as to predict returns. For instance, Fleming, Kirby and Ostdiek (2001) adopted rolling returns correlations to estimate the econo mic value of volatility trading. Pesaran and Timmermann (2002); Ghysels, Santa-Clara, and Valkanov (2004); Clarke and West (2007); and Chander and Mehta (2007) applied a rolling window approach into their methodologies to forecast returns. Moreover, rolling returns are also used to examine stock returns based on historical prices. The M401K (2001) report incorporated data of several funds over a year by Hueler Analytics to compare stock performance based on 3-months rolling returns and 12-months rolling returns each. In addition, Nanda, Sudhir, Peter and Donald J. (2006) evaluated the buy-and-hold strategy for a 44-year investment period of the S&P 500 index based on the concept of RR. For the purpose of this study, rolling returns are used to

calculate the annually compounded rolling return for all the stock markets over the 20-year time-frame. The concept of rolling return is derived from the calculation of future value. The formula for future value is as follows:- Where, FV = Future Value i = Interest Rate / Yield n = Number of periods In conversion to rolling return formula, the key here is to find the “i” or yield. In which case, this is the rolling return we are about to compute. Holding periods of the study shall be determined by the “n” value. Nevertheless, FV is the actual average returns from year to year. Conversion of this formula will make “i” the variable we are about to find. In other words, the new formula is:- √ Hence, the formula for rolling return is as follows: √ Where, Return1 = annual return for year one Return2 = annual return for year two N = number of holding period The main objective of this study is to compare between risks and return using the rolling return formula to gauge returns held over a period of years. For this, average return over each year the stocks are being held is calculated from the “(1+Returnn)” as shown. Reason for the “1+” is because of the percentage effect. Assuming Return for the first holding period is 8%; total return for that period will be (1+0.08). Subsequently, if return for the second holding period is 2%, then total return for that period will be (1+0.02). Under the same assumption, if we were to find out total returns for holding stocks for 2 consecutive periods, then that’s where the multiplying effect comes in. For example, using the same total return for the same 2 periods, we take (1+0.08) multiply with (1+0.02) to get 1.10. This will be the total returns for 2 consecutive periods. Apply the rest according to the converted future value formula, and we shall get 0.049 as our rolling return for holding stock for that particular 2 years. For this method to take place, two more formulas are being used so that accuracy is present in this study. 3.4.1.1 Average Stock Market Index In order to ensure accuracy of annual returns from the indexes, firstly the daily data (Composite Indexes) of the twelve countries are used to determine the Rolling Annual Compounding Return (Rolling Return). The study is mainly to test the relationship between rolling return and the total risk. The average stock market daily index was calculated using the daily index data in each of the countries. The formula is as follows: The total composite index is the sum of the indexes of the specific year and divided by 365. 3.4.1.2 Annual Return The next step would be to calculate the annual return based on the average stock market daily index. The formula is stated below. While X1 represents the average stock market index for year 1 and X2 represents the average stock market index for year 2. 3.4.2 Standard Deviation Standard deviation known as the dispersion of returns around an asset’s average or expected return, which can also be found in a number of published services, measures a stock's volatility, regardless of the cause (Morton, 1969). It basically represents how much a stock's short-term returns have moved around its long-term average return. Total risk for the market will be calculated by using standard deviation. Standard deviation is calculated using the formula

provided below. 54 √ ∑ Where, X represents the annual return, r̄epresents the average return and N represents the number of period. CHAPTER 4: RESULTS AND FINDINGS 4.1 Structure of Results and Analyses This chapter reports all the results and findings in the form of tables and graphs based on the research question and hypotheses formulated for easy viewing. This chapter also entails empirical results according to the methods of analysis outlined in the previous chapter. This chapter is separated into two sections with five parts for each index in the first section. The first part describes the results and findings on the highest and lowest of risk and return for the index. The second part explains the risk-return cut-off for each index. The third part takes a total of 19 holding periods starting from 1992 to describe which holding period has the highest annualized returns. The fourth part looks at only HP1 to gauge the maximum and minimum returns in the short term (1 year period). Finally, the last part looks at the short term holding period of HP1 to explain the positive and negative returns for the period. The second section of this chapter encompasses a comparative study of indexes within their respective regions. In this case, DJIA and TSX are tabled under the North American region, FTSE, CAC, and DAX are under the European region, and KOSPI, HANG SENG, TAIEX, NIKKEI, STI, KLCI under the Asian region. The only index not being taken into comparison is ASX because it is in a region of its own. 4.1.1 United States of America Figure 4.1: Relationship between Average Rolling Return and Total Risk on investment in United States of America (DJIA) 16.00% Total Risk and Total Return 14.00% 12.00% 10.00% 8.00% 6.00% 4.00% 2.00% 0.00% Risk vs Return (DJIA) Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.1 shows the average rolling return and total risk on investment in the U.S. market (DJIA) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.1.1 Results and Findings Returns of DJIA are stable, ranging from 5% - 8% between various holding periods. However its total risk ranged around 0.2% - 14%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 29.63%. The lowest return is at the 10th holding period, where the return is at 5.57%. The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.1, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 13.89%, which is the highest. However at the last holding period, risk was only at 0.18%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 98%. 4.1.1.2 Risk-Return Cut-off The cut-off point of DJIA where annualized return is higher than risks is at the 7th holding per iod, where total average annual return is at 6.56% and total risk is at 6.51%. This means that, the most optimal strategy for investors is to hold DJIA stocks for at least 7 years before selling them in order to gain return and at the

same time benefit from a lower risk exposure than selling them before the 7th holding period. 4.1.1.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP7, which is 18.02%. Comparatively, annualized return at HP19 is 7.04%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 7 years, then sell them off in 1999; rather than holding the stocks for 19 years and sell them off in year 2011. Moreover, the cut-off point as discussed previously is also indicated to be at the 7th holding period. 4.1.1.4 Maximum and Minimum Returns (HP1) Looking at the first holding period of 20 years, maximum returns for DJIA are 29.63% whereas minimum returns are -21.01%. The highest returns are recorded in 1996, a year before the Asian Financial Crisis struck South East Asian countries. Meanwhile, minimum returns of -21.01% was during the Sub-Prime Crisis of 2008. 4.1.1.5 Positive and Negative Returns (HP1) In the first holding period of DJIA throughout 20 years, there are 14 positive returns and 5 negative returns. The negative returns are mainly caused by major events in the U.S. market. For example, around year 2000 was when the dot.com bubble burst, which caused returns to be -4.88%. Subsequently, it was during 2001 when terrorists attacked the World Trade Centre in New York, which subsequently led to the Iraq war as well as budget and trade deficits in the U.S. economy spilled over into year 2002. This caused the annualized returns to be -9.63% and -2.39% respectively. After that, the sub-prime crisis as well as credit crisis happened around year 2007 to 2008, where annualized returns are recorded to be -14.58% and -21.01% respectively. 4.1.2 Canada Figure 4.2: Relationship between Average Rolling Return and Total Risk on investment in Canada (TSX) Risk vs Return (TSX) 20.00% Total Risk and Total Return 15.00% 10.00% Rolling Return Total Risk 5.00% 0.00% 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.2 shows the average rolling return and total risk on investment in the Canadian market (TSX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.2.1 Results and Findings Returns of TSX are stable, ranging from 8.09% - 9.88% between various holding periods. However its total risk ranged around 0.23% - 17.78%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 9.88%. The lowest return is at the 17th holding period, where the return is at 8.09%. The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.1.2, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 17.78%, which is the highest. However at the last holding period, risk was only at 0.23%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99%. 4.1.2.2 Risk-Retur n Cut-off The cut-off point of TSX where annualized return is higher than risks is at the 4th holding period, where total average annual return is at

8.87% and total risk is at 8.28%. This means that, the most optimal strategy for investors is to hold TSX stocks for at least 4 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 4th holding period. 4.1.2.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP8, which is 11.062%. Comparatively, annualized return at HP19 is 8.43%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 8 years, then sell them off in 2000; rather than holding the stocks for 19 years and sell them off in year 2011. However, this is beyond the cut-off point at HP4. 4.1.2.4 Maximum and Minimum Returns (HP1) Looking at the first holding period of 20 years, maximum returns for TSX are 37.893% whereas minimum returns are -24.32%. The highest returns are recorded in 1999, a year after the Asian Financial Crisis struck South East Asian countries. Meanwhile, minimum returns of -24.32% was during the Sub-Prime Crisis of 2008 in the U.S. Market. 4.1.2.5 Positive and Negative Returns (HP1) In the first holding period of TSX throughout 20 years, there are 14 positive returns and 13 negative returns. The negative returns are mainly caused by major events in the Global markets as well as the U.S. market. For example, around year 1997 was during the Asian Financial Crisis, which caused returns to be -1.73%. In year 2000, the Canadian market also took a big hit from the rumors of Y2K, which caused returns for TSX to be at -22.97%. In 2001, due to terrorist attacks on Canada's major counterpart the U.S.A., returns were at -10.71%. Subsequently in 2007 and 2008 Canada also took a huge toll from the U.S. subprime crisis, where TSX returns were -6.59% and -24.32% respectively. 4.1.3 United Kingdom Figure 4.3: Relationship between Average Rolling Return and Total Risk on investment in UK (FTSE) 18.00% Total Risk and Total Return 16.00% 14.00% 12.00% 10.00% 8.00% 6.00% 4.00% 2.00% 0.00% Risk vs Return (FTSE) Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.3 shows the average rolling return and total risk on investment in the U.K. market (FTSE) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.3.1 Results and Findings Returns of FTSE are stable, ranging from 3% - 5% between various holding periods. However its total risk ranged around 0.27% - 16.03%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 5.49%. The lowest return is at the 10th holding period, where the return is at 3.33%. Figure 4.3, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 16.03%, which is the highest. However at the last holding period, risk was only at 0.27%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 98.3%. 4.1.3.2 Risk-Retu rn Cut-off The cut-off point of FTSE where annualized return is higher than risks is at the 7th holding period,

where total average annual return is at 4.40% and total risk is at 3.62%. Th is means that, the most optimal strategy for investors is to hold DJIA stocks for at least 7 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 7th holding period. 4.1.3.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP6, which is 12.42%. Comparatively, annualized return at HP19 is 4.22%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 6 years, then sell them off in 1998; rather than holding the stocks for 19 years and sell them off in year 2011. 4.1.3.4 Maximum and Minimum Returns (HP1) Looking at the first holding period of 20 years, maximum returns for FTSE are 27.16% whereas minimum returns are -28.38%. The highest returns are recorded in 2003, the year when UK decided to join troops with US to invade Iraq. Meanwhile, minimum returns of -28.38% was during 2008, when the Sub-Prime Crisis hit the US market. 4.1.3.5 Positive and Negative Returns (HP1) In the first holding period of FTSE throughout 20 years, there are 13 positive returns and 6 negative returns. The negative returns are mainly caused by major events in the US market. For example, the terrorist attack in the US in 2001 caused the returns to be -16.35%, in which it spilled over to years 2002, where returns are -2.54%. Subsequently, the subprime crisis in the US also impact UK. In year 2007 and 2008, returns were -22.67% and -28.38% respectively. 4.1.4 France Figure 4.4: Relationship between Average Rolling Return and Total Risk on investment in France (CAC) Risk vs Return (CAC) Total Risk and Total Return 20.00% 15.00% 10.00% 5.00% 0.00% Series1 Series2 1 2 3 4 5 6 7 8 9 10111213141516171819 Figure 4.4 shows the average rolling return and total risk on investment in the French market (CAC) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.4.1 Results and Findings Returns of CAC are stable, ranging from 5% - 6% between various holding periods. However its total risk ranged around 0.04% - 17.24%, which is quite a huge difference. The highest return is at the 6th holding period, where the return is at 6.81%. The lowest return is at the 19th holding period, where the return is at 5.04%. Figure 4.4, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 17.24%, which is the highest. However at the last holding period, risk was only at 0.04%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99.8%. 4.1.4.2 Risk-Return Cut-off The cut-off point of CAC where annualized return is higher than risks is at th e 6th holding period, where total average annual return is at 6.81% and total risk is at 4.74%. This means that, the most optimal strategy for investors is to hold CAC stocks for at least 6 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling

them before the 6th holding period. 4.1.4.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP6, which is 12.30%. Comparatively, annualized return at HP19 is 5.04%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 6 years, then sell them off in 1998; rather than holding the stocks for 19 years and sell them off in year 2011. Looking at the first holding period of 20 years, maximum returns for CAC are 30.82% whereas minimum returns are -27.13%. The highest returns are recorded in 2003. Meanwhile, minimum returns of -27.13% was during 2008, when the Sub-Prime Crisis hit the US market. 4.1.4.5 Positive and Negative Returns (HP1) In the first holding period of FTSE throughout 20 years, there are 15 positive returns and 4 negative returns. The negative returns are mainly caused by major events in the US. market. For example, the dot com bubble burst in 2000 and terrorist attack in the US in 2001 caused the returns to be -21.47% and -18.07% respectively. Subsequently, the subprime crisis in the US also impact France. In year 2007 and 2008, returns were -18.36% and -27.03% respectively. 4.1.5 Germany Figure 4.5: Relationship between Average Rolling Return and Total Risk on investment in Germany (DAX) Risk vs Return (DAX) 35.00% Total Risk and Total Return 30.00% 25.00% 20.00% 15.00% 10.00% 5.00% 0.00% Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10111213141516171819 Figure 4.5 shows the average rolling return and total risk on investment in the German market (DAX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.5.1 Results and Findings Returns of DAX are slightly more volatile compared to other indexs, ranging from 13.89% - 18.37% between various holding periods. However its total risk ranged around 0.93% - 30.45%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 18.37%. The lowest return is at the 10th holding period, where the return is at 13.89%. Figure 4.5, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 30.45%, which is the highest. However at the last holding period, risk was only at 0.93%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 97%. 4.1.5.2 Risk-Return Cut-off The cut-off point of DAX where annualized return is higher than risks is at the 5th holding period, where total average annual return is at 16.57% and total risk is at 13.33%. This means that, the most optimal strategy for investors is to hold DAX stocks for at least 6 years before selling them in order to gain return and at the sa me time benefit from a lower risk exposure than selling them before the 6th holding period. 4.1.5.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP8, which is 31.21%. Comparatively, annualized return at HP19 is 14.52%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 8 years, then sell

them off in 2000; rather than holding the stocks for 19 years and sell them off in year 2011. Looking at the first holding period of 20 years, maximum returns for DAX are 76.68% whereas minimum returns are -27.13%. The highest returns are recorded in 1997, when the Asian Financial Crisis occurred in the South East Asian region. Meanwhile, minimum returns of -27.13% was during 2008, when the Sub-Prime Crisis hit the US market. 4.1.5.5 Positive and Negative Returns (HP1) In the first holding period of DAX throughout 20 years, there are 13 positive returns and 6 negative returns. The negative returns are mainly caused by major events in the US market. For example, the dot com bubble burst in 2000 and terrorist attack in the US in 2001 caused the returns to be -23.32% and -23.19% respectively. Subsequently, the subprime crisis in the US also impacted Germany. In year 2007 and 2008, returns were -18.65% and -29.23% respectively. 4.1.6 South Korea Figure 4.6: Relationship between Average Rolling Return and Total Risk on investment in South Korea (KOSPI) Risk and Return (KOSPI) 4.00% Total Risk and Total Return 3.50% 3.00% 2.50% 2.00% 1.50% 1.00% 0.50% 0.00% Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.6 shows the average rolling return and total risk on investment in the Korean Market (KOSPI) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.6.1 Results and Findings Returns of KOSPI are stable and relatively lower compared to other indexs, ranging from 0.36% - 0.73% between various holding periods. However its total risk ranged around 0.03% - 3.35%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 0.73%. The lowest return is at the 16th holding period, where the return is at 3.36%. Figure 4.6, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 3.35%, which is the highest. However at the last holding period, risk was only at 0.03%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99%. 4.1.6.2 Risk-Return Cut-off The cut-off point of KOSPI where annualized return is equal or higher than risks is at the 12th holding period, where total average annual return is at 0.54% and total risk is at 0.43%. This means that, the most optimal strategy for investors is to hold KOSPI stocks for at least 12 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 12th holding period. 4.1.6.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP2, which is 3.08%. Comparatively, annualized return at HP19 is 0.67%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 3 years, then sell them off in 1994; rather than holding the stocks for 19 years and sell them off in year 2011. Looking at the first holding period of 20 years, maximum returns for KOSPI are 4.86% whereas minimum returns are -4.99%. The

highest returns are recorded in 1998, one year after the Asian Financial Crisis occurred in the South East Asian region. Meanwhile, minimum returns of -4.99% was during 2007, during the Asian Financial Crisis. 4.1.6.5 Positive and Negative Returns (HP1) In the first holding period of KOSPI throughout 20 years, there are 8 positive returns and 11 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets such as the Asian Financial Crisis in 1997 and the Subprime Crisis in 2007 and 2008. 4.1.7 Hong Kong Figure 4.7: Relationship between Average Rolling Return and Total Risk on investment in Hong Kong (Hang Seng) Risk and Return (HANG SENG) 25.00% Total Risk and Total Return 20.00% 15.00% 10.00% 5.00% 0.00% Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.7 shows the average rolling return and total risk on investment in the Hong Kong market (Hang Seng) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.7.1 Results and Findings Returns of Hang Seng are stable, ranging from 4.71% - 9.42% between various holding periods. However its total risk ranged around 1.28% - 21.03%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 9.42%. The lowest return is at the 10th holding period, where the return is at 4.71%. The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.7, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 21.03%, which is the highest. However at the last holding period, risk was only at 1.28%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 94%. 4.1.7.2 Risk-Return Cut-off The cut-off point of KOSPI where annualized return is equal or higher than risks is at the 6th ho lding period, where total average annual return is at 5.98% and total risk is at 5.00%. This means that, the most optimal strategy for investors is to hold KOSPI stocks for at least 6 years before selling them in order to gain returns and at the same time benefit from a lower risk exposure than selling them before the 12th holding period. 4.1.6.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP1, which is 35.09%. Comparatively, annualized return at HP19 is 7.37%. This result shows that investors could actually profit better if they buy the stocks in 1992 and hold the stocks for 1 years, then sell them off in 1993; rather than holding the stocks for 19 years and sell them off in year 2011. Looking at the first holding period of 20 years, maximum returns for Hang Seng are 36.51% whereas minimum returns are -29.73%. The highest returns of 36.51% are recorded in 2006, while minimum returns of -29.73% was during 1997, during the Asian Financial Crisis. 4.1.7.5 Positive and Negative Returns (HP1) In the first holding period of Hang Seng throughout 20 years, there are 8 positive returns and 11 negative returns. The negative returns are mainly caused by major

events in the Asian as well as the US markets such as the Asian Financial Crisis in 1997, the dot com bubble in 2000, and the Subprime Crisis in 2007 and 2008. 4.1.8 Taiwan Figure 4.8: Relationship between Average Rolling Return and Total Risk on investment in Taiwan (TAIEX) Risk and Return (TAIEX) 25.00% Total Risk and Total Return 20.00% 15.00% 10.00% 5.00% 0.00% -5.00% Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.6 shows the average rolling return and total risk on investment in the Taiwan market (TAIEX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.8.1 Results and Findings Returns of TAIEX are relatively unstable compared to other indexs, ranging from -0.28% - 4.59% between various holding periods. However its total risk ranged around 0.66% - 20.57%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 4.59%. The lowest return is at the 11th holding period, where the return is at -0.28%. The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.8, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 20.57%, which is the highest. However at the last holding period, risk was only at 0.66%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 97%. 4.1.8.2 Risk-Return Cut-off The cut-off point of KOSPI where annualized return is equal or higher than risks is at the 16th holding period, where total average annual return is at 1.26% and total risk is at 0.63%. This means that, the most optimal strategy for investors is to hold KOSPI stocks for at least 16 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 16th holding period. 4.1.8.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP2, which is 17.17%. Comparatively, annualized return at HP19 is 2.55%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 1 year, then sell them off in 1993; rather than holding the stocks for 19 years and sell them off in year 2011. Looking at the first holding period of 20 years, maximum returns for TAIEX are 46.52% whereas minimum returns are -41.63%. The highest returns are recorded in 1993, while minimum returns of -41.63% was during 2007, during the dot com crisis. 4.1.8.5 Positive and Negative Returns (HP1) In the first holding period of TAIEX throughout 20 years, there are 8 positive returns and 11 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets like the Asian Financial Crisis in 1997 and the dot com crisis in 2000. 4.1.9 Japan Figure 4.9: Relationship between Average Rolling Return and Total Risk on investment in Japan (NIKKEI) Risk and Return (NIKKEI) 14.00% Total Risk and Total Return 12.00% 10.00% 8.00% 6.00% 4.00% 2.00% 0.00% -2.00% Rolling Return Total Risk 1 2 3 4

5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.9 shows the average rolling return and total risk on investment in the Japan market (NIKKEI) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.9.1 Results and Findings Returns of NIKKEI are lower and more volatile compared to other indexs, ranging from -0.79% - 0.93% between various holding periods. However its total risk ranged around 0.34% - 11.62%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 0.93%. The lowest return is at the 10th holding period, where the return is at -0.79%. The buy-and-hold strategy was able to significantly decrease risk. Referring to Figure 4.9, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 11.62%, which is the highest. However at the last holding period, risk was only at 0.34%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 97%. 4.1.9.2 Risk-Return Cut-off There is no cut-off point for NIKKEI throughout the 20 year period. Meaning that, risks are always higher than returns. 4.1.9.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP1, which is 12.47%. Comparatively, annualized return at HP19 is 0.28%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 1 year, then sell them off in 1993; rather than holding the stocks for 19 years and sell them off in year 2011. Looking at the first holding period of 20 years, maximum returns for NIKKEI are 23.57% whereas minimum returns are -23.60%. The highest returns are recorded in 1998, one year after the Asian Financial Crisis occurred in the South East Asian region. Meanwhile, minimum returns of -23.60% was in 2000, during the dot com crisis. 4.1.9.5 Positive and Negative Returns (HP1) In the first holding period of KOSPI throughout 20 years, there are 9 positive returns and 10 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets. For example the Asian Financial Crisis in 1997 , the dot com crisis in 2000 and the Subprime Crisis in 2007. 4.1.10 Singapore Figure 4.10: Relationship between Average Rolling Return and Total Risk on investment in Singapore (STI) Risk and Return (STI) 9.00% Total Risk and Total Return 8.00% 7.00% 6.00% 5.00% 4.00% 3.00% 2.00% 1.00% 0.00% Rolling Return Total Risk 1 2 3 4 5 6 7 8 Figure 4.10 shows the average rolling return and total risk on investment in the Singapore market (STI) within 8 years, from 2002 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.10.1 Results and Findings Returns of STI are stable, ranging from 3.06% - 4.35% between various holding periods. However its total risk ranged around 0.46% - 8.19%, which is quite a huge difference. The highest return is at the 1th holding period, where the return is at 4.35%. The lowest return is at the 5th holding

period, where the return is at 3.06%. much as other indexes due to its shorter course. Referring to Figure 4.10, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 8.19%, which is the highest. However at the last holding period, risk was only at 0.70%, which is the lowest. Over the 8 holding periods from 2002 to 2011, risk levels had decreased by 91%. 4.1.10.2 Risk- Return Cut-off The cut-off point of STI where annualized return is higher than risks is at the 5 th holding period, where total average annual return is at 3.06% and total risk is at 1.50%. This means that, the most optimal strategy for investors is to hold TSX stocks for at least 5 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 5th holding period. 4.1.10.3 Highest Annualized Returns (2002) The highest annualized return recorded at 2002 is at HP1, which is 8.90%. Comparatively, annualized return at HP8 is 4.06%. This result shows that investors can actually profit better if they buy the stocks in 2002 and hold the stocks for 1 year, then sell them off in 2003; rather than holding the stocks for 8 years and sell them off in year 2011. However, this is beyond the cut-off point at HP5. 4.1.10.4 Maximum and Minimum Returns (HP1) Looking at the first holding period of 8 years, maximum returns for STI are 13.80% whereas minimum returns are -9.13%. The highest returns are recorded in 2005, perhaps due to rapid development in the country. Meanwhile, minimum returns of -9.13% in 2006 was probably due to the 10th general election being held in the country. 4.1.10.5 Positive and Negative Returns (HP1) In the first holding period of STI throughout 8 years, there are 6 positive returns and 2 negative returns. The positive returns are generated by overall well-being of the country, typically surprising in 2008 where returns flourished; this is during the Global Financial Crisis spurred by the Subprime Crisis in the US. Negative returns in 2006 and 2007 are perhaps due to the 10th general election being held. 4.1.11 Malaysia Figure 4.11: Relationship between Average Rolling Return and Total Risk on investment in Malaysia (KLCI) Risk and Return (KLCI) 30.00% Total Risk and Total Return 25.00% 20.00% 15.00% 10.00% 5.00% 0.00% Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.11 shows the average rolling return and total risk on investment in the Malaysian market (KLCI) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.11.1 Results and Findings Returns of KLCI are lower and more volatile compared to other indexs, ranging from 0.22% - 7.96% between various holding periods. However its total risk ranged around 0.41% - 26.19%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 7.96%. The lowest return is at the 14th holding period, where the return is at 0.22%. Figure 4.11, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 26.19%,

which is the highest. However at the last holding period, risk was only at 0.44%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 98%. 4.1.11.2 Risk-Return Cut-off The cut-off point of KLCI where annualized return is higher than risks is at the 16th holding period, where total average annual return is at 1.06% and total risk is also at 1.06%. This means that, the most optimal strategy for investors is to hold KLCI stocks for at least 16 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 16th holding period. 4.1.11.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP2, which is 30.02%. Comparatively, annualized return at HP19 is 3.87%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 2 years, then sell them off in 1994; rather than holding the stocks for 19 years and sell them off in year 2011. 4.1.11.4 Maximum and Minimum Returns (HP1) Looking at the first holding period of 20 years, maximum returns for KLCI are 44.94% whereas minimum returns are -64.20%. The highest returns are recorded in 2006, when the Ninth Malaysian Plan was launched and number of developments around the Peninsular rose. Meanwhile, minimum returns were in 1997, during the Asian Financial Crisis. 4.1.11.5 Positive and Negative Returns (HP1) In the first holding period of KLCI throughout 20 years, there are 12 positive returns and 7 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets. For example the Asian Financial Crisis in 1997 , the dot com crisis in 2000 and the Subprime Crisis in 2007. 4.1.12 Australia Figure 4.12: Relationship between Average Rolling Return and Total Risk on investment in Australia (ASX) Risk and Return (ASX) Total Risk and Total Return 18.00% 16.00% 14.00% 12.00% 10.00% 8.00% 6.00% 4.00% 2.00% 0.00% Rolling Return Total Risk 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 Figure 4.12 shows the average rolling return and total risk on investment in the Australian market (ASX) within 20 years, from 1992 to 2011. The blue line represents total average rolling return (hereafter refers as return) and the red line represents the total amount of risks faced in achieving the returns. 4.1.12.1 Results and Findings Returns of ASX are stable, ranging from -6.25% - 8.10% between various holding periods. However its total risk ranged around 0.14% - 16.11%, which is quite a huge difference. The highest return is at the 1st holding period, where the return is at 8.10%. The lowest return is at the 17th holding period, where the return is at - 6.25%. Figure 4.12, the risk level dropped steadily with every additional holding period. At the 1st holding period, risk was at 16.11%, which is the highest. However at the last holding period, risk was only at 0.14%, which is the lowest. Over the 19 holding periods from 1992 to 2011, risk levels had decreased by 99%. 4.1.12.2 Risk-Return Cut-off The cut-off point of ASX where annualized return is equal or higher than risks is at the 5th hold ing period, where total average annual return is at 7.33%

and total risk is at 6.09%. This means that, the most optimal strategy for investors is to hold ASX stocks for at least 5 years before selling them in order to gain return and at the same time benefit from a lower risk exposure than selling them before the 5th holding period. 4.1.12.3 Highest Annualized Returns (1992) The highest annualized return recorded at 1992 is at HP2, which is 12.08%. Comparatively, annualized return at HP19 is 6.86%. This result shows that investors can actually profit better if they buy the stocks in 1992 and hold the stocks for 2 year, then sell them off in 1994; rather than holding the stocks for 19 years and sell them off in year 2011. Maximum and Minimum Returns (HP1) Looking at the first holding period of 20 years, maximum returns for ASX are 33.22% whereas minimum returns are -25.17%. The highest returns are recorded in 2006, while minimum returns were subsequent during 2007 and 2008, during the Global Financial Crisis as well as the Subprime Crisis. 4.1.12.5 Positive and Negative Returns (HP1) In the first holding period of ASX throughout 20 years, there are 15 positive returns and 4 negative returns. The negative returns are mainly caused by major events in the Asian as well as the US markets like the Asian Financial Crisis in 1997, the dot com crisis in 2000, and the global financial crisis as well as subprime crisis in 2007 and 2008. 4.2 Comparison of Indexes According to Region 4.2.1 DJIA and TSX The U.S. and the Canadian economy are located side by side and they are the dominant players of the North American region. The DJIA and TSX are very popularly debated and compared to as to which index is performing better by various academicians. Nonetheless due to the strength of the U.S. Dollar and its economy globally, DJIA is said to be more of a market-mover whereas the TSX is said to be a market-follower of the DJIA. 4.2.1.1 Risk-Return Comparison Figure 4.13: Comparison of Average Rolling Returns and Total Risk (DJIA and TSX) 12.00% 10.00% 8.00% 6.00% 4.00% DJIA 2.00% TSX 0.00% HP1 HP2 HP3 HP4 HP5 HP6 HP7 HP8 HP9 HP10 HP11 HP12 HP13 HP14 HP15 HP16 HP17 HP18 HP19 Average Rolling Returns 20.00% 15.00% 10.00% DJIA 5.00% TSX 0.00% HP1 HP2 HP3 HP4 HP5 HP6 HP7 HP8 HP9 HP10 HP11 HP12 HP13 HP14 HP15 HP16 HP17 HP18 HP19 Total Risks Figure 4.13 gives a comparison of two variables to look at: rolling returns and total risk of DJIA and TSX. Based on the statistics, the two indexes are positively correlated to each other in terms of returns. Meaning that, they move at the same pace in the same magnitude and direction. However, TSX has constant higher values than DJIA over the 19 holding periods. From the comparison of total risk, albeit both DJIA and TSX have shown tremendous decrease in risk over the 19 holding periods, TSX's magnitude is steeper fr om HP1 till HP 7, and risk decline graduall y after that; Whereas for DJIA, there is no sharp decline but only a gradual decline fr om HP1 t ill HP19. 4.2.1.2 Cut-off Comparison Take note from the previous discussion that the cut-off point for DJIA is in HP7 while TSX is in HP4. This indicates that it is faster for investors to enjoy minimal risk of

investing in TSX as compared to DJIA. Moreover, the buy-and-hold strategy is effective for both DJIA and TSX FTSE, CAC, and DAX The UK, French, and German economy are located close to each other and they are the dominant players of the Central European region. These three indexes are popular a mong investors are frequently debated and compared to as to which index is performing better by various academicians. FTSE is even being used widely as a comparison gauge for many companies that employ the UK company law. 4.2.2.1 Risk-Return Comparison Figure 4.14: Comparison of Average Rolling Returns and Total Risk (FTSE, CAC and DAX) 20.00% 15.00% 10.00% FTSE 5.00% CAC DAX 0.00% HP1 HP2 HP3 HP4 HP5 HP6 HP7 HP8 HP9 HP10 HP11 HP12 HP13 HP14 HP15 HP16 HP17 HP18 HP19 Average Rolling Returns 35.00% 30.00% 25.00% 20.00% 15.00% FTSE 10.00% CAC 5.00% DAX 0.00% HP1 HP2 HP3 HP4 HP5 HP6 HP7 HP8 HP9 HP10 HP11 HP12 HP13 HP14 HP15 HP16 HP17 HP18 HP19 Total Risks Figure 4.14 gives a comparison of two variables to look at: rolling returns and total risk of FTSE, CAC and DAX. Based on the statistics, the three indexes are positively correlated to each other in terms of returns. Meaning that, they move at the same pace in the same magnitude and direction. Comparatively, DAX has the highest consistent returns, followed by CAC and FTSE respectively. From the comparison of tota l risk, both FT SE an d CAC have shown similar decrease in risk over the 19 holding periods. Both FTSE and CAC have huge risk reduction using rolling returns as analysis. Howeve r, DAX has the steepest risk reduction over the 19 holding periods. 4.2.2.2 Cut-off Comparison Take note from the previous discussion that the cut-off point for FTSE is the 7th holding period; CAC is the 6th holding period, and DAX is the 5th holding period respectively. This indicates that it is the fastest for investors to enjoy minimal risk of investing in DAX, followed by CAC and FTSE. As a conclusion, buy-and-hold as a strategy is effective in reducing risk for all three FTSE, CAC, and DAX. KOSPI, Hang Seng, TAIEX, NIKKEI, STI, and KLCI South Korea, Hong Kong, Taiwan, Japan, Singapore, and Malaysia are emerging markets in the South East Asian region. Located close to each other, these countries have been popular amongst investors abroad. The returns for these stock indexes remains competitive, although these countries were being affected by numerous crisis such as the Asian Financial Crisis in 1997 and the Global Financial Crisis in 2008 followed by the Sub-prime crisis in the US. 4.2.3.1 Risk-Return Comparison Figure 4.15: Comparison of Average Rolling Returns and Total Risk (KOSPI, Hang Seng, TAIEX, NIKKEI, STI, and KLCI) 10.00% 8.00% KOSPI 6.00% Hang Seng 4.00% TAIEX 2.00% NIKKEI STI 0.00% HP1 HP2 HP3 HP4 HP5 HP6 HP7 HP8 HP9 HP10 HP11 HP12 HP13 HP14 HP15 HP16 HP17 HP18 HP19 KLCI -2.00% Average Rolling Returns 30.00% 25.00% 20.00% KOSPI 15.00% Hang Seng 10.00% TAIEX 5.00% NIKKEI 0.00% STI HP1 HP2 HP3 HP4 HP5 HP6 HP7 HP8 HP9 HP10 HP11 HP12 HP13 HP14 HP15 HP16 HP17 HP18 HP19

KLCI Total Risks Figure 4.15 gives a comparison of two variables to look at: rolling returns and total risk of KOSPI, Hang Seng, TAIEX, NIKKEI, STI, and KLCI. Based on the results, all 6 indexes move at a relatively similar direction and magnitude. Hang Seng has the highest returns throughout the 19 holding periods as compared to others, while NIKKEI has the lowest returns. Take note tha t STI ha s only just started since 2002 and th us does not have 20 years of historical trends to ana lyze as compa red to th e rest of the stock indexes. From the obs ervation, KOSPI, Hang Seng, TAIEX, NI KKEI, and STI have a somewhat pos itive correlatio n while KLCI has a negative cor relation with the rest. This is observed from the returns in HP8, HP14, and HP17; where KLCI significantly moved towards the opposite direction as compared to the other indexes which moved at the same direction. Looking at the second chart of Chart 3, it is evident that the rolling returns analysis proved that the buy-and-hold strategy has a significant decrease in total risk for all 6 stock indexes. KLCI has the steepest decline while KOSPI has the most gradu al decline in terms of total risk. 4.2.3.2 Cut-off Compar ison The cut-off comparison shows how fast investors are generally able to gain returns while at the same time enjoy minimal risks. This means that the earlier the cut-off period the better. From the results, STI and Hang Seng have the earliest cut-off points, which are on the 5th and 6th holding period respectively. Followed which are KOSPI on the 12th holding period, and KLCI and TAIEX at the 16th holding period. NIKKEI has no cut-off point due to its inability to gain sufficient returns to minimize total risk. Overall, the buy-and-hold strategy is effective in reducing risk. However, this is not the case for NIKKEI.
CHAPTER 5: DISCUSSION AND CONCLUSION 5.1 Introduction The main purpose of this study was to test whether the simple buy-and-hold strategy is capable of outperforming the buy-and-sell strategy. In this chapter, the discussion of the research will be presented, which includes interpretation of the research results, the implications of the findings and recommendations to the research. Furthermore, there will also be a discussion on the limitations being faced. The first part of this chapter concludes about the results and findings of the study and how do the results and findings answer the research questions (RQ) as well as research objectives (RO) set out in Chapter 1. The second part of this chapter gives a comparison of the results and findings as to what previous researchers have found. The last part of this chapter will encompass the recommendations as well as limitations to this study, 5.2 Conclusions In this section, the conclusions of the findings is base on answering the research questions (RQ) as well as research objectives (RO) as stated in Chapter 1. Moreover a matching of some previous researches mentioned in Chapter 2 is being discussed here. 5.2.1 Effectiveness of Buy-and-Hold The main purpose of this study was to test whether the simple buy-and-hold strategy is capable of outperforming the buy-and-sell strategy through rolling returns analysis. Investors often perceive holding stocks for a long

time unprofitable and risky. This is mainly due to the unforeseen market movements that are crucial in influencing stock price movements. Many seek for stock investments that have lower risk exposures and yet able to gain reasonable amounts of returns, hence they buy and hold for a short period of time, and then quickly sell whenever the market timing is “right”. Table 5.1 summarizes the findings as per Chapter 4 according to the first research question: “is buy-and-hold an effective strategy in minimizing risk?” and to answer the question a summary of the first and second research objectives are being tabled accordingly. Table 5.1: (RQ 1) Is Buy-and-Hold an Effective Strategy in Minimizing Risk? Indexes RO 1* RO 2** (Cut-off Point) DJIA YES YES (7) TSX YES YES (4) FTSE YES YES (7) CAC YES YES (6) DAX YES YES (5) KOSPI YES YES (12) Hang Seng YES YES (6) TAIEX YES YES (16) NIKKEI YES NO (no cut-off) STI YES YES (5) KLCI YES YES (16) ASX YES YES (5) *RO 1: To examine whether risk reduces over a long period of time by employing the buy-and-hold strategy. **RO 2: To investigate whether risk exposure will be lower than returns in the long run (using cut-off). The results indicate that, by using buy-and-hold, risk reduces over all holding periods; 19 holding periods for DJIA, TSX, FTSE, CAC, DAX, KOSPI, Hang Seng, TAIEX, NIKKEI, KLCI, and ASX as well as 8 holding periods for STI. Moreover, for all the indexes, risk reduction is more than 95% throughout all holding periods. Subsequently, the study also found that there is potential for risk exposure to drop lower than returns in the long run by using cut-off as estimate. Evidently, buy-and-hold strategy is most effective for TSX as its cut-off is the shortest among all indexes. The most ineffective index is NIKKEI where there is no cut-off at all. In light of this study, the results are also supportive of a research conducted by Markellos (2007) where buy-and-hold is significantly less risky than buy-and-sell. The results are against the findings of Evans (1970) where it indicates that buy-and-hold is less effective when initial investments are high. In addition, the results are against Metghalchi, Du and Ning (2009) where it indicates that average technical trading rules are more predictable and thus can outperform the simple Buy-and-Hold strategy. 5.2.2 Comparison of Risk and Return between Markets Throughout the study, all indexes were able to ge nerate reasonably stable returns the longer the holding periods, but with constantly reducing risks. The only exceptional case is Japan’s NIKKEI index, where returns actually hit negati ve values after a few years of holding the stock. This study also went on further to illustrate the differences between indexes within regions. However, there is no comparison for ASX. Table 5.2 summarizes the findings as per Chapter 4 according to the second research question: “are there differences in the pattern of risk and return in various markets?” and to answer the question a summary of the third and fourth research objectives are being tabled accordingly. Table 5.2: (RQ 2) Are There Differences in the Pattern of Risk and Return in Various Markets? Indexes Region RO 3* DJIA YES North America TSX YES

FTSE YES CAC Europe YES DAX YES RO 4** ? Positive correlation for returns. ? TSX has steepest risk reduction. ? Positive Correlation for returns. ? DAX has steepest risk reduction. KOSPI YES Hang Seng YES TAIEX YES Asia NIKKEI YES STI YES KLCI YES ? No obvious correlation for returns. ? Somewhat positive correlation on all indexes except KLCI. ? KLCI has somewhat negative correlation. ? NIKKEI performed the worst. ASX Australia YES Nil *RO 3: To analyze buy-and-hold performance for each stock index of twelve different countries **RO 4: To compare results obtained by analyzing stock index of twelve different countries. The results indicate that buy-and-hold performs well for every index from 1992 to 2011. While returns remain relatively the same throughout all the holding periods, risk reduces substantially. In the North American region, TSX has higher constant returns and steeper risk reduction as compared to its counterpart DJIA. In the European region, DAX has the highest constant returns and steepest risk reduction the Asian region however, Hang Seng has the EI. EI, followed by highest constant returns, followed by STI, KLCI , TAIEX, KOSPI, and NIKK KLCI has the steepest risk reduction followed by Hang Seng, TAIEX, NIKK CAC and FTSE. In As for correl in terms of STI, and KOSPI. returns for the hol ation of returns, TSX and DJIA have an obvious positive correlation ding periods between 1992 and 2011. In the given to STI European region, there is also a CAC, and DAX. However in t correlation i due to its shorter p obvious correlation at all. The worst performer with the most negative returns and no cut-off peri eriod of analysi correlation with Hang Seng and TAIEX, while KOSPI and NIKKEI have in the Asian region is NIKK od. There are no comments to that STI does have a positive correlation with Hang Seng and TAIEX. significant positive correlation between FTSE, he Asian region, the only significant positive s between Hang Seng and TAIEX. KLCI has some negative no EI, be s. However, it can be suggested 5.2.3 Risk and Return Typically, an investment would have a risk-return tradeoff. This means that, the higher the risk the lower the returns and vice versa. Table 5.3 summarizes the findings as per Chapter 4 according to the third research question: “does the risk- return tradeoff hold when employing buy-and-hold strategy?” and to answer the question a summary of the fifth research objective is being tabled accordingly. Table 5.3: (RQ 3) Does the Risk-Return Tradeoff Hold when Employing Buy- and-Hold Strategy? Indexes RO 5* DJIA YES TSX YES FTSE YES CAC YES DAX YES KOSPI YES Hang Seng YES TAIEX YES NIKKEI NO STI YES KLCI YES ASX YES *RO 5: To determine if the risk-return tradeoff is present when employing the buy-and-hold strategy. It is a common concept that low levels of uncertainty or risk are associated with low potential returns. Investors with appetite for higher potential returns would usually have to bear with the consequence of a higher risk exposure. However, throughout the study of all 12 countries’ stock indexes, risk-return tradeoff does not hold. The results obtained from the analyses show that while there is significant risk reduction for all of

the stock indexes, returns remain comparatively the same if not higher than risk, with the exception of NIKKEI. In the case of NIKKEI risks are ultimately higher than returns no matter how long one holds the stock index. Li, Yang, Hsiao and Chang (2005) found that stock market returns are negatively correlated with stock market volatility; however the results of this study show otherwise. The results obtained is symmetrical to the findings of Rahmbia, Joshipura and Joshipura (2013) where there is evidence that low volatility portfolio outperforms market portfolio as well as its high volatility counterpart on risk-adjusted basis. According to the results obtained, during the first few holding periods before the cut-off point total risk is higher than total returns. During or after the cut-off point, although risk continues to decline significantly, returns remain relatively the same as their initial levels in the first holding period. Moreover during the 19th h olding period when total risk was close to zero, returns are still not affected and co ntinue to remain the same. This leads to comparatively significant higher returns with minimal risk exposure. 5.1.4 Efficient Market Hypothesis (EMH) and Random Walk Theory This section is about answering the fourth research question: "Does the Efficient Market Hypothesis (EMH) apply in the buy-and-hold strategy?" and also to give a discussion on the sixth research objective which is: "To determine if EMH applies in the buy-and-hold strategy." Many have blamed the EMH for the risk-return tradeoffs pertaining to stock investments. In this study EMH and RWT is ignored among all daily stock indexes for 20 years, particularly due to the similar pattern being found in most of the indexes except NIKKEI. The results showed a similar pattern of risk and return. In other words, Return remains relatively the same throughout all holding periods while risks of all indexes show a significant decline for all indexes. The findings support the findings of Lim, Brooks, and Kim (2008) where market inefficiency affects most of the Asian countries during the Asian Financial Crisis. However, the results are against the study of Yu, Nartea, Gan, and Yao (2012) which indicated that trading rules can out-perform a simple buy-and-hold. Furthermore, the findings also support the result of Lee, Lee and Lee (2010) which indicated that there is opportunity of arbitrage in the stock market if EMH is present. However, this is not the case as our findings show a similar pattern for all 12 indexes. 5.2.5 Is the Buy-and-Hold Strategy Dead? This section is about answering the fifth research question as well as the seventh research objective, which is to determine if the buy-and-hold strategy dead. This study is able to prove that holding stocks for a short period of time is actually riskier than holding stocks for a long period of time. Throughout the study between 1992 and 2011, all indexes proved to generate reasonably stable returns the longer the holding periods, but with constantly reducing risks. The only exceptional case is Japan's NIKKEI index, where returns actually hit negative values after a few years of holding the stock. Similarly, the results are against Guido, Pearl and Walsh (2011) where their results indicated that the timing strategy

outperformed a simple Buy-and-Hold strategy on a risk-adjusted basis. It is imperative that throughout 40 years of careful analysis of a number of economic and investment cycles, a Buy-and-Hold strategy is indeed better than one who applies a Buy-and-Sell strategy. In conclusion, the buy-and-hold strategy is more alive than dead. This result is against the study conducted by Dare (1995). Observations from the results show that the longer the holding period of stocks, the less risky they become. As compared to a typical buy-and-sell strategy, investors are likely to lose more due to unforeseen risks and also trading costs, which are discussed by Barber and Odean (2001; 2002). 110 5.3 Implications of the Study The findings from this research provide several implications that might be useful for investors in determining what investment strategy they should undertake to ensure they are not at the losing end where risks overwhelm returns. This study incorporates average daily rolling returns and standard deviations to provide insight into stock indexes of 12 countries over 20 years. The coverage of these stocks are also not biased to one region or continent only. The study comprises of 12 stock indexes namely DJIA, TSX, FTSE, CAC, DAX, KOSPI, Hang Seng, NIKKEI, KLCI, TAIEX, STI, and ASX. This study is also able to help corporations and organizations secure a more sustainable shareholder wealth growth. Investors who are inferior buys and sells very quickly and this can adversely affect shareholder value. If confidence is established among investors to buy stocks and hold them for a long period of time, not only this will benefit the investors but also improve corporate image. 5.4 Limitations to the Study The limitations addressed in this study are perhaps the exclusion of public holidays and weekends in the study. However, this does not significantly impact the results because the 12 countries being studied have individual differences in holidays, and the long periods override the necessity to include holidays as a basis for analysis. Other limitations include the unavailability of Singapore stock index 111 data before 1992. Moreover, the time frame for this study is only limited from 1992 to end of 2011. 5.5 Recommendations When conducting this research study, time is the major issue. Stocks move so fast and so random, and it is impossible to record and calculate every single one of them after the 20th period. Further studies should be conducted to see if the buy- and-hold still holds for future stocks. Furthermore, extensive research for other indexes can be conducted such as for Brazil, Russia, India, and China (BRIC) as well as Mexico, Indonesia, Nigeria, and Turkey (MINT). In addition, further researches giving a comparison of the buy-and-hold strategy and other investing strategies can be conducted as well. The buy-and-hold strategy was able to significantly decrease risk. Referring to The buy-and-hold strategy was able to significantly decrease risk. Referring to 4.1.4.4 Maximum and Minimum Returns (HP1) The buy-and-hold strategy was able to significantly decrease risk. Referring to 4.1.5.4 Maximum and Minimum Returns (HP1) The buy-and-hold strategy was able to significantly decrease risk. Referring to

4.1.6.4 Maximum and Minimum Returns (HP1) 4.1.7.4 Maximum and Minimum Returns (HP1) 4.1.8.4 Maximum and Minimum Returns (HP1) 4.1.9.4 Maximum and Minimum Returns (HP1) The buy-and-hold strategy was able to significantly decrease risk, albeit not as The buy-and-hold strategy was able to significantly decrease risk. Referring to The buy-and-hold strategy was able to significantly decrease risk. Referring to 4.1.12.4 4.2.2 4.2.3 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 112