

An Empirical Re-Investigation on the ‘Buy-and-hold Strategy’ in Four Asian Markets: A 20 Years’ Study

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Abstract: A buy-and-hold strategy is a passive investment strategy and also a very conservative approach with which investors’ buy-and-hold stocks for a long period regardless of the fluctuations in the market. This strategy signifies that investors who hold their investment for a long period will possibly earn higher returns. This paper is specially designed to examine the applicability of the buy-and-hold strategy in relation to the theory of risk-return trade-off. This paper focuses on the Malaysia, Singapore, Hong Kong and Korea, over the period 1990 to 2009. The paper uses rolling returns (computed as the average annualized returns) and standard deviation as a measure of the total risk. The results show that the buy-and-hold strategy seems to be effective in reducing the equity risk. Overall, the volatility of stock return is reduced from about 20% to below 1%. However, the results fail to show whether there is any sign in enhancing the return of an investment in stocks. On average, there is roughly about 5% average annual compounding return during the ten-year holding period, which is much lower than the return of the one-year holding period. No superior returns or any equity premiums are generated even in the very long-run. Hence, in general the theory of risk and return still holds in long run.

Key words: Buy-and-hold • Risk and return • Risk return tradeoff • Rolling returns • Volatility

INTRODUCTION

Equities have traditionally been regarded as risky assets. They may be attractive because of their high average returns, but these returns represent compensation for risk; thus equities should be treated with caution by all but the most aggressive investors. In recent years, it has become a common view to argue that equities are actually relatively safe assets for investors who are able to hold for the long term. An extreme version of this revisionist view is promoted by James Glassman and Kevin Hassett in their book *Dow 36,000*.

A buy-and-hold strategy is a passive investment strategy and also a very conservative approach with which investors buy-and-hold stocks for a long period regardless of fluctuations in the market. Many financial experts say a “buy-and-hold” strategy is the best investment strategy, especially during the weak stock

market situation. Given the present weak economic and stock market conditions, some investors may lose patience as they do not know when the market will recover again. Gitman, *et al.* [1] said that investors will select high-quality shares that offered current income or capital gains and hold these stocks for extended periods with perhaps 10 to 15 years.

Investors will look to exit investments only if they could sell at a profit. With markets heading lower, investors are stuck as their only option to exit is closed due to weaker stock prices. Investors believed in the notion that markets will always recover. However, this is not the case when the Nikkei index is still 80% down from its 1989 peak. There have been many researchers who also tried to explain the relationship of risk and return. The most common theory used by those researchers to investigate the relationship between risk and the stock return is the theory of risk and return which says high risk investment should yield high return to compensate the

investors. According to Sheu, *et al.* [2], they found that the relationship between beta and return of the stock was not a linear relationship. Based on their research on the Taiwan stock market, the stock beta and the stock return worked another way; the beta of stock market did not affect the return of the stock market. The researchers concluded that there was not enough evidence to say there is a relationship between stock beta and stock return in their investigation.

Another similar research was conducted by Michailidis, *et al.* [3] on the Greek stock market. The research investigated 100 companies listed on the Athens stock exchange for the period of January 1998 to December 2002. The result of the research also showed that there was a negative relationship between the beta of the stock and the return of the stock.

Rationale of the Study: This study focuses mainly on illustrating the clash of beliefs between different groups of investors in the financial market in particular the stock market. There have been numerous studies conducted with regards to stock winning strategies and one of the strategies commonly mentioned is the buy-and-hold strategy. In this case, arguments have risen between different groups of investors where one group argues that the buy-and-hold strategy is workable with profitable returns while others argue that the strategy will not provide the equity investors any good returns. The arguments and conflicts between these investors have led to this research. It is the intention of this research to try to resolve these conflicting beliefs by capturing the results, not in the short term, but more so the long term effects of buy-and-hold strategy to the investors' stock return. This study seeks to resolve this confusion, to allay fears that the buy-and-hold strategy can still be regarded as an investment strategy.

Investment Strategies: According to the Survey of Consumer Finances (2001), only 21.3% of U.S. households held stocks through brokerage and 17.7% through mutual fund accounts. However, 52.2% of the U.S. households invested in retirement accounts. The contributions and portfolios of many of these retirement accounts were infrequently revised[4]. The contributors to these accounts effectively followed a buy-and-hold strategy. The study on TIAA-CREF data from 1986 to 1996 by Ameriks and Zeldes [5] showed that 47% of

individuals made no change to the contribution flow to 401(k) programs¹ during the 10-year period and another 21% only made one change. Roughly 73% made no change to *asset allocations* over the entire 10-year period and another 14% made one change. A full 44% of the population made no changes whatsoever to either the contribution flow or *asset allocation* and another 17.2% made one change to either stocks or flows. The finding that participants rarely change either asset or flow allocations is consistent with earlier evidence reported in Samuelson and Zeckhauser [6]. Choi, *et al.* [7] also found that for defined contribution plan, participants tended to choose "the path of least resistance" by doing nothing to their flow and *asset allocations*. The above evidence suggests that many plan participants who rarely make changes to their investment allocations follow buy-and-hold, an investment strategy that has been recommended by many financial advisors for many years.

There was a research carried out by Brozynski, *et al.* [8] regarding what was the most preferable investment strategy by investors. According to a questionnaire survey to the fund managers from 64 German fund management companies, the most widely used strategies were momentum, contrarian and buy-and-hold strategies. All the predetermined trading strategies were preferred by younger and less experienced professionals. There was a clear preference in the usage of buy-and-hold strategy, while momentum and contrarian trading were only used in a complementary fashion.

Buy and Hold Strategy: There is consensus on the explanation of the buy-and-hold strategy from various reliable internet sources [9-12], where it is a passive investment strategy that buys a security and holds it for an extended period of time, regardless of the market's fluctuation. An investor actively selects stocks, but once in a position, is not concerned with technical indicators and short-term price movements. The meaning of "long term holding" is not absolute or fixed and it is typically more than five years. Buy-and-hold strategy works best when all the proper research has been done to ensure that the stocks of a high-quality company are bought. Conventional investing wisdom tells us that with a long time horizon, equities render a higher return than other asset classes such as bonds². The belief is that it is better to allow a security the opportunity to grow overtime. It rests upon the assumption that in a capitalist society,

¹ A retirement savings plan in the United States of America allows a worker to save for retirement and have the savings invested while deferring current income taxes on the saved money and earnings until withdrawal.

²Extracted from investopedia's explanation to buy-and-hold.

the economy will keep expanding, profits will keep growing as well as both the stocks prices and stocks dividends. There may be short term fluctuations due to business cycles or rising inflation, but in the long term these will be smoothen out and the market as a whole will rise. A trader will ultimately be more successful over a multi-year timeframe.

A buy-and-hold strategy has tax benefit (in certain countries where investors are taxed on the profit from the investment in stocks). Trader is taxed at a lower tax bracket, since buy-and-hold strategy often calls for a time horizon greater than 1 year. Trading commissions can also be reduced. It allows a trader to invest large sums of money with minimal costs. By trading fewer stocks and not concerning oneself with every price movement, it makes it easier for a trader to follow their trading plan and stay the course. It is definitely less stressful to the trader. The buy-and-hold strategy's killer is when the market is bearish. If a buy-and-hold trader purchases a stock prior to a swift market decline similar to the ones in '87 and '02, the trader may have to wait 5-10 years to breakeven on his/her initial investment. The other sour note for the buy-and-hold strategy is the fact that you have to buy-and-hold. Making money in the market is not like working a job where more effort equals greater results. So, traders will have to fight the urge to overtrade, as the key to a successful buy-and-hold strategy is quality not quantity.

A buy-and-hold strategy has been used for a long time in financial markets. Amateur stock-market investors are commonly advised to adopt such strategy. The standard justification by Rosenthal and Wang [13] was that it saves on commissions and transactions costs. Secondly, buy-and-hold strategy pays on average in the long run because the stock market as a whole can be expected to generate superior long-run returns to investment (extrapolating from history). This justification relies vaguely on a hypothesis of market inefficiency that prevents future expected returns from being completely capitalized in current prices. The auction aspect of market trading together with incompletely informed agents and illiquidity³ produces a gap between the fundamental value of an asset and its equilibrium price, which renders the buy-and-hold strategy optimal.

Shen [14] described the buy-and-hold strategy as a simple and crude investment strategy that buys a diversified stock market index and holds it. He assumed that investors would hold a security if and only if its expected return at the market price would provide an adequate tradeoff with the risk exposure the security brings. In other words, investors were assumed to make their own judgment on whether a security was worth holding. It was only meant to identify the very rare times when the stock market seemed so pricey that investors might be better off to avoid it. So, the buy-and-hold strategy might suffer less from the potential data-snooping⁴ problem. Lastly, his research suggested that it might be possible to use a simple rule-of-thumb to avoid some of the market downturns and to improve upon the widely preached buy-and-hold strategy. Besides Shen [14], Brozynski, *et al.* [8] also described buy-and-hold strategy as a simplified notion of perfectly rational behavior. Those professionals who relied more on the buy-and-hold strategy behaved more like the arbitrageurs. So, they were more successful, more fundamentally oriented and less affected by behavioral anomalies. Buy-and-hold traders were comparatively risk averse and not self-confident, which motivated them to go along with the market. According to Wu [15], buy-and-hold strategy had static and slow changing goals. It was always used to invest large pools of assets that were difficult and expensive to move and to eschew market timing. It was also popular among those who were governed by boards with complicated decision making, such as pension funds, endowments and foundations.

Critical Review:

Earnings Through Buy-and-Hold: During the 1970's, only the buy-and-hold strategy seemed to be justified by theoretical and empirical work⁵. Such as in the period of Jan. 1926 to Dec. 1965, Fisher and Lorie [16] tested the strategy on the NYSE. In all the 820 overlapping time periods within the forty years (assuming that the stock was purchased every beginning of the year started from 1926 and never sold), only 72 of the periods showed negative rates of return. During the last twenty years

³ At each auction a new finite asset of individuals with private information about the asset's current-period income bids for the asset; the winning bidder acquires the asset, holds it, and consumes the income stream for as long as he desires or until some external circumstance forces him to sell at auction.

⁴ Data snooping occurs when a set of data is used more than once for purposes of inference or model selection. Extracted from <http://data-snooping.martinsewell.com/> and Sullivan, R., A. Timmermann and H. White, 1999. Data-Snooping, Technical Trading Rule Performance, and the Bootstrap. *The Journal of Finance* 54, 1647-1691.

⁵ Adopted from Shiller, Robert J. (2003) From Efficient Markets Theory to Behavioral Finance, *Journal of Economic Perspectives*, 17:1, 83-104.

covered by the study, rates were consistently high. Positive rates of return were earned in 95% of the total periods. There was no four-year period in which the investor earned less than 7% and there was no ten-year period in which the investor earned less than 11%. For the period from December 1960 to December 1965, rates of return were also very high, which had an average return of 15.9% per annum, compounded annually.

Another more recent evaluation was done by Tower and Gokcekus [17] on the SandP 500 for a longer covered time period from the year of 1871 to 2001. Assuming that the stock was purchased and never sold, consuming dividends, the highest annual real rate of return was for a purchase in June 1932: 13.02 %; while the lowest figure was for August 2000: 2.88 %. Excerpt from the Spring 1990 issue of *In The Vanguard*, a publication of The Vanguard Group (of mutual funds), over the past six decades, stocks achieved an average annual rate of return of 9.7% — far exceeding the 5.2% average return on corporate bonds and the 3.6% average return on U.S. Treasury bills. Of course, the stock market is subject to wide and unpredictable price swings in any given year. Consider, however, that the volatility of stock market returns diminishes markedly over time.

As found by Butterworth [18] in her article of “The Sell Decision”, it is easy to make money in the stock market by buying a stock and holding it until it goes up, then selling it. But “if it doesn’t go up, don’t buy it.” However, many were asking that “how high is up?” On the assumption that the astute readers of this column made their buying decisions in July 1982 when the DJIA was languishing around 750 and before the bull market began its surge on August 13, 1982, the sell decision would be considered.

Ibbotson and Chen [19] evaluated the buy-and-hold strategy in the other way. They analyzed historical equity returns by decomposing returns into factors commonly used to describe the aggregate equity market and overall economic productivity, such as inflation, earnings, dividends, P/E, the dividend-payout ratio, BV, ROE and GDP per capita; and used historical information in supply-side models to forecast the equity risk premium. They found the long-term supply of the equity risk premium to be only slightly lower than the straight historical estimate. The implication of an estimated equity risk premium being far closer to the historical premium is that stocks are expected to outperform bonds over the long run. For long-term investors, such as pension funds

and individuals saving for retirement, stocks should continue to be a favored asset class in a diversified portfolio.

Wu [15] had analyzed the effects of buy-and-hold investors on security price dynamics in a pure-exchange, continuous-time model. Many investors follow buy-and-hold strategies due to information costs or other frictions. A simple calibration of his model showed that the economy with buy-and-hold investors could simultaneously produce a low interest rate and a high Sharpe ratio.

Buy-and-hold and Risk Reduction: During any one-year period between 1960 and 1989, the maximum spread in annual returns of stocks (as measured by the unmanaged Standard and Poor's 500 Composite Stock Price Index) was 64%. Over ten-year holding periods, the difference in annual rates of return decreased to 16% and, over 25 years, less than 2%. Note that for ten-year periods and beyond, the returns were all positive. Clearly, over time, stock market risk hardly seems excessive⁶. Marshall [20] made virtually the similar statement in his academic literature paper.

Other than the US markets, buy-and-hold strategy was also examined in the FTSE from January 1976 to April 2002. Howie and Davies [21] reported that time diversification had validity, which is the notion that equity risk decays over time. Risk reduces as time horizon increases. This concept has fairly widespread acceptance in actuarial thinking and practice, as Yakoubov, *et al.* [22] incorporated equity risk decay in the stochastic investment model they described which resulted in modelled “high short term volatility (which derives from market sentiment) and significantly lower long term volatility (which arises from economic fluctuations)”.

Tower and Gokcekus [17] documented that buy-and-hold strategy did not reduce the risk of an equity. Dividends played an important role here. “If there is a limit to how much the ratio of the price of stock index to dividends can rise, then if the index is held long enough, the price at which it is sold doesn’t matter for calculating the real rate of return.” It had already been justified previously by Rosenthal and Wang [13]. When some of the asset's income is retained and reinvested, it is transformed into an uncertain return process about which information also may be privately distributed. When the asset is finally sold, this additional uncertainty contributes to a larger gap. This creates an incentive for

⁶Excerpt from the Spring 1990 issue of *In The Vanguard*.

the owner to pay himself a dividend rather than reinvest. Some financial economists and other observers of the stock market have claimed that stock returns do not follow a random walk in the long run. Rather, they argue, the behavior of stock returns is best characterized as a mean-reverting process, like what Poterba and Summers [23] reported. It is mean reversion⁷ in stock returns, some say that is the reason stocks are less risky for investors with a long time horizon, such as Malkiel and Saha [24]. However, this is contradictory with the conclusion drawn by Bodie [25] and Howie and Davies [21]. There is limited evidence that equity markets do exhibit mean-reversion, but if they do, the effect is weak and slow. They conclude that mean-reversion has little impact on equity risk, even for very long time horizons.

Buy-and-hold and other Investment Strategies: The traditional buy-and-hold strategy is always compared with the other newly invented investment strategies. The survey of papers included ten studies. Of the ten studies, nine found that buy-and-hold tended to underperform and only one found buy-and-hold better.

Buy-and-hold is most often compared with market timing. According to Lander, Lander, *et al.* [26], a market timing trading rule was used to verify the quality of a forecasting model based on earning yields on common stocks. The trading rule alternated between the SandP and cash. It turned out that for the 1984 to 1996 sample period, the trading rule performed well compared to buy-and-hold the SandP 500 and generated significantly higher returns. Same results were gained by Grauer, *et al.* [27] and Grauer and Hakansson [28] in the periods from 1934 to 1988 and 1934 to 1986, respectively, based on treasury bills and the CRSP value-weighted index. Wong and Tai [29]'s study showed that inter-market timing between Hong Kong and Singapore stock markets was most likely to earn more than a buy-and-hold strategy too, but on the condition that investor was correct 75% of the time. In the examination of five market timing strategies by Shen [14], all other four market timing strategies outperformed buy-and-hold in the sense that they provided higher mean returns and lower variances, except for the strategy using only E/P ratios. Market timing, by using the US presidential election cycle and the inversions of the yield curve as a guide, was also more profitable than a simple buy-and-hold strategy as shown by Nguyen and Roberge [30].

Different evidence was provided by Fuller and Kling [31]. The authors used out-of-sample forecasting techniques and simple benchmark models as comparisons. Active trading based on these forecast prices did not beat a buy-and-hold strategy. But from this result it could not be concluded that passive trading was superior to active trading. Besides market timing, contrarian strategy was also compared to buy-and-hold by Gropp [32]. He found that using the standard portfolio formation method to construct size-sorted portfolios was inadequate for detecting mean reversion. However, there was strong evidence of mean reversion in portfolio prices when using alternative portfolio formation methods i.e. ranked on the basis of different interval of market capitalization during the period 1963 to 1998. Parametric contrarian investment strategies that exploited mean reversion outperformed buy-and-hold strategies.

In the research by Beach and Rose [33], compared with the monthly rebalancing strategy which sells those assets that perform best and buys the assets that underperform, buy-and-hold portfolio had slightly higher return and higher degree of risk too. The monthly rebalancing strategy produced a higher risk/return performance as measured by the Sharpe ratio in a longer investment horizon. The empirical results in the research by Miller, *et al.* [34] concluded that mutual fund asset classes exhibited predictable return patterns and had significant cross-autocorrelations at the macro-level. They tested cross-autocorrelation and developed trading rules with one subsample and then tested the dominance of those rules over a buy-and-hold strategy using the holdout sample. By using the most positive statistical relationship as the base and moving from one asset class to the next based on the significance of the Granger relationship, the dynamic trading strategy provided a higher return per unit of risk and superior Sharpe and Jensen performance measures compared with a buy-and-hold strategy.

The Risk-Return Paradox: The theory of risk and return could be said as a common sense, that theoretically a high risk asset provides high return as Cootner and Holland [35] had theorized. Defining business risk as functionally related to the variability of earnings, a reasonable and significant association is discovered between rate of return and risk for both a sample of industries and

⁷By Campbell and Viceira (2002), mean reversion means "an unexpectedly high return today reduces expected returns in the future, and thus high short-term returns tend to be offset by lower returns over the long-term."

individual companies. The opportunity to earn a return commensurate with the risk and it is also true that these expectations will be realized in fact.

However, if the buy-and-hold strategy is effective as reported⁸ by Ibbotson and Chen [19], which implies that the equity risk can be reduced in long run, whereby the return can be increased, than the trade-off of risk and return shouldn't hold anymore. Bowman [36] challenged the long held view that 'there is no free lunch' by finding that firms with high returns can have low risk. The following is a discussion on the risk-return paradox in various countries stock markets.

Some evidences were found by Morton [37] long time ago in the US markets. The rate of profit in industries of different risks depends upon the supply of and demands for capital in each of these industries. An industry cannot expect to make higher profits simply by taking on more risks, just as an investor in stocks or bonds cannot be assured of high profits because he takes high risks. If indeed, there were a predictable positive relationship over time between risk and realized return, capital would pour into the more risky industries causing profits to fall. The very concept of high risk and continued high realized return is therefore self-contradictory. Hassler [38] evidence showed a negative relationship between risk and return too in Swedish stock market. When the world market goes into a period of high volatility, both the domestic and world markets fall simultaneously and also the expected return, conditional on the realized state.

In a more recent research by Syriopoulos [39], a similar circumstance was found. The risk and return implications from investing in major emerging CE and developed stock markets had been studied in depth. Persistent volatility effects were found, since once volatility increases it can remain high over several periods in the future. However, the impact of volatility on the CE stock market returns was not uniform. The asymmetric effects were found to be significant mainly for the developed stock markets, indicating that a negative shock was anticipated to potentially cause volatility to rise more than a positive shock of the same magnitude, which was consistent with the findings from Pagan and Schwert [40]. In the long-run, market co-movements imply that the potential for attaining superior portfolio returns may be limited. This outcome was reinforced by the findings that the risk level for assets allocated to the CE markets appeared relatively high, as persistent volatilities might adversely affect investment returns.

MATERIALS AND METHODS

This study aims to examine whether the buy-and-hold is an effective strategy among the investment strategies in the stock market and to examine the theory of risk and return in Malaysia, Singapore, Hong Kong and Korea). The factors that were tested comprised the annual compounding rolling return and the total risk. The details of the markets and the sampling design are given in Table 1 below.

The study involved the daily data of the Composite Indexes Malaysia, Singapore, Hong Kong and Korea, ranging from 1990 to 2009. Based on the daily data, the annual compounding rolling return and total risk of stock markets were computed for the respective countries.

Methods, Procedures and Measures: Microsoft Office Excel (Microsoft Excel) was used to calculate the Rolling Annual Compounding Return (Rolling Return) and the Total Risk for the specific stock market holding period. This work included calculation, graphing tools, pivot tables and a macro programming language called VBA (Visual Basic for Applications).

Rolling Return was the annualized average return for a period ending with the listed years. Rolling returns were useful for examining the behavior of returns for holding periods similar to those actually experienced by investors. The most common way to measure risk would be the use of 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 [37]. It basically represents how much a stock's short-term returns have moved around its long-term average return.

Firstly, the daily data (Composite Indexes) of the five countries were used to determine the Rolling Annual Compounding Return (Rolling Return). The study was 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;

$$\text{Average Stock market index} = \frac{\text{Total Composite index}}{\text{Total Working Days}}$$

The total composite index is the sum of the indexes of the specific year and divided by the total working days for the specific year.

Table 1: Markets and sampling design

Countries	Stock Markets	No. of Observations	Period of Study
Malaysia	KLCI	4,953	1990 - 2009
Singapore	FSSTI	4,953	1990 - 2009
Hong Kong	HIS	4,953	1990 - 2009
Korea	KOPSI	4,953	1990 - 2009

$$AnnualReturn = \frac{X_2 - X_1}{X_1}$$

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

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

In order to calculate the annually compounded rolling return for all the stock markets, the formula is as follows;

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

Where, Return 1 stands for the annual return for year one, Return 2 stands for the annual return for year two, while N represents the number of holding periods.

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

Lastly, total risk for the market will be calculated by using standard deviation. Standard deviation had been calculated using the formula provided below.

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

RESULTS

The results below show the buy-and-hold strategy in the four markets which include the arguments on the risk-return trade-off that covered a 19- year holding period (January 1990 to December 2009).

Figure 1 shows the risk and average return of Malaysia within 19 years in KLCI. KLCI provided an overall average return of about 1.5% - 6% and risk of about 0% - 22%. The average return dropped initially by about 76.85% when investor held up to 8-year. The average return veered up only when the holding period exceeded 12-year. A 19-year holding period only provided an average return of 3.62%, which was only 59.44% of the average return of 1-year holding period. There was a

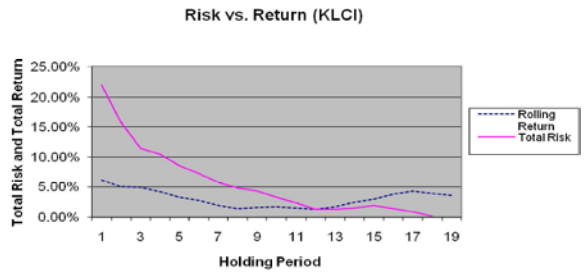


Fig. 1: Relationship between Total Risk and Average Rolling Return on investment in Malaysia (KLCI)

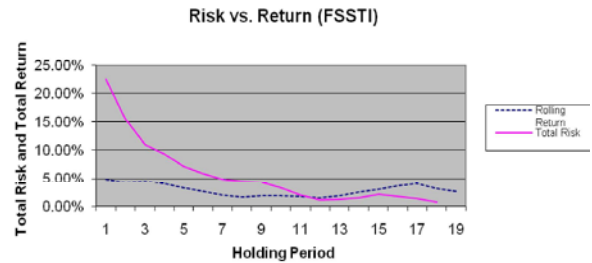


Fig. 2: Relationship between Total Risk and Average Rolling Return on investment in Singapore (FSSTI)

sharp decrease in the risk of investment by holding the stocks 3 years, which was by about 47.65%. Subsequently the risk kept reducing until 13-year holding period by about 94.21%, compared to the 1-year holding period. In total 19-year holding period, the risk was reduced by about 99.18%.

Figure 2 shows the risk and average return of FSSTI. The overall average return and risk provided was similar to KLCI, which was around 1.5% - 5% and 0.5% - 22.5% respectively, but it fluctuated more than KLCI. In general the average return kept reducing until the 8-year holding period, by about 68.36%. The figures were varying and it increased only after the 12-year holding period. Unfortunately, there was still another significant drop after the 17-year holding period. In total, the return earned in 19-year holding period constituted only 53.35% of the return earned in 1-year holding period. The risk invested in FSSTI was reduced a lot too in the first 3-year holding period by 51.5%. From 1-year holding period to 12-year holding period, the risk could be reduced by about 95%. The risk could drop even lower with 19-year holding period, where in total the risk that could be reduced was 99.18%. FSSTI tended to have larger proportion of negative return, although it was still dominated by positive return. If investor was able to hold up to 12-year and above, the historical data showed no loss.

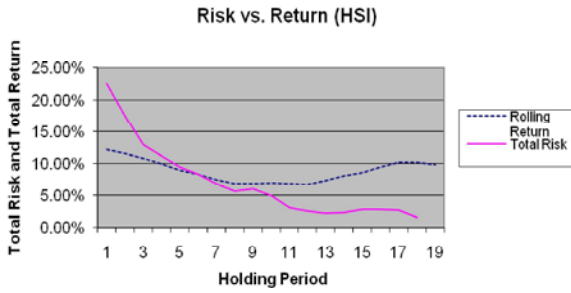


Fig. 3: Relationship between Total Risk and Average Rolling Return on investment in Hong Kong (HIS)

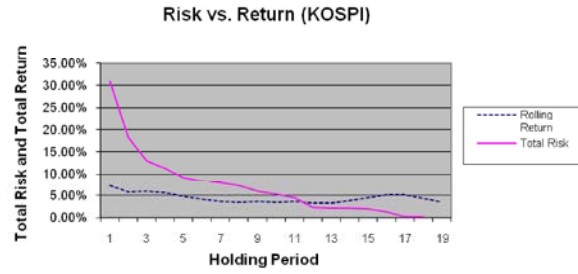


Fig. 4: Relationship between Total Risk and Average Rolling Return on investment in Korea (KOSPI)

Figure 3 shows the risk and average return from Hong Kong stock market within 19 years. The Hong Kong stock market provided the second highest average return, which was about 7% - 12%; and the risk was also comparatively lower than SENSEX, which was in the range of 1.5% - 22.5%. The average return gained from the 19-year holding period was 9.86%, which was about 80.82% of the 1-year holding period average return, while the risk was reduced by about 93%. Similar case happened in Hong Kong; longer holding period reduced the average return initially. The return was reduced by about 44.51% when an investor held up to 8-year, compared to the return from 1-year holding period. The lowest return was provided by the 12-year holding period. Risk could be reduced a lot too by simply held up to 3-year. It was lesser about 42.61% compared to the risk of holding 1-year; and if held up to 8-year, the risk was reduced by about 74.73%.

By analyzing the returns from various holding period separately, there were many negative returns in the shorter holding period too. For example, in the total 12 periods, negative returns were incurred in 7 periods. There was no negative return starting from the 8-year holding period of the HSI was more stable than the other country's stock index [40, 41].

Figure 4 shows the risk and average return of KOSPI. An investor was able to generate an overall average return in between 3.5% - 7% from it. However, the risk was definitely high, which was about 0.2% - 31%. The result shows a fluctuating trend in the average return like Indonesia. In general, the average return was dropped initially by about 51% when investor held up to 8-year. When investor held up to 19-year, he could only gain 3.46%, which was about 48% of the return from 1-year

Table 2: Total risk and average rolling return on investment in KLCI, FSSTI, HSI, TWSE and KOSPI (Holding period of 1 - 19 year)

Holding period/ country	Malaysia-KLCI		Singapore-FSSTI		Hong Kong-HSI		Korea-KOSPI	
	Std. deviation	Return	Std. deviation	Return	Std. deviation	Return	Std. deviation	Return
1 year	21.95%	6.09%	22.57%	4.93%	22.60%	12.20%	30.99%	7.20%
2 years	15.67%	5.05%	15.58%	4.29%	17.55%	11.52%	18.23%	5.77%
3 years	11.49%	4.92%	10.94%	4.49%	12.97%	10.87%	12.97%	5.94%
4 years	10.46%	4.01%	9.32%	3.98%	11.15%	9.92%	11.42%	5.49%
5 years	8.61%	3.30%	7.18%	3.21%	9.44%	8.93%	9.25%	4.86%
6 years	7.30%	2.70%	5.86%	2.64%	8.28%	8.36%	8.38%	4.15%
7 years	5.71%	1.88%	4.88%	1.91%	6.77%	7.49%	7.88%	3.59%
8 years	4.82%	1.41%	4.47%	1.56%	5.71%	6.77%	7.34%	3.53%
9 years	4.33%	1.56%	4.30%	1.79%	6.02%	6.88%	6.00%	3.70%
10 years	3.29%	1.71%	3.24%	1.81%	4.89%	7.01%	5.27%	3.54%
11 years	2.31%	1.50%	2.00%	1.72%	3.13%	6.77%	4.49%	3.64%
12 years	1.30%	1.31%	1.13%	1.48%	2.62%	6.66%	2.34%	3.32%
13 years	1.27%	1.74%	1.20%	1.81%	2.17%	7.32%	2.07%	3.33%
14 years	1.51%	2.46%	1.51%	1.49%	2.28%	8.09%	2.09%	3.86%
15 years	1.91%	2.97%	2.10%	2.99%	2.79%	8.59%	2.05%	4.49%
16 years	1.43%	3.73%	1.76%	3.60%	2.86%	9.43%	1.26%	5.10%
17 years	0.86%	4.30%	1.29%	3.95%	2.73%	10.18%	0.21%	5.15%
18 years	0.18%	3.86%	0.74%	3.17%	1.59%	10.19%	0.25%	4.22%
19 years	-	3.62%	-	2.63%	-	9.86%	-	3.46%

Table 3: Basic statistics for holding period returns.

	Malaysia	Singapore	Hong Kong	Korea
Mean	0.0306***	0.02813***	0.0879***	0.04434***
Median	0.0297	0.0264	0.0859	0.0415
Stdev	0.01423	0.0114	0.003982	0.002497
Skewness	0.4816	0.3914	0.3864	1.04701
Kurtosis	-0.6898	-1.2288	-0.9657	0.5592

Confidence level for the means of the countries' returns are at 1%, 5% and 10% level of significance denoted by ***, **and *.

Table 4: Basic statistics for the standard deviations associated with their holding period returns.

	Malaysia	Singapore	Hong Kong	Korea
Mean	0.0580*	0.0556**	0.06975**	0.07361**
Median	0.0381	0.0377	0.053	0.05635
Stdev	0.0591	0.0584	0.01382	0.01800
Skewness	1.5139	1.8470	1.4977	1.9557
Kurtosis	2.0725	3.3996	1.8587	4.6765

Confidence level for the means of the countries' standard deviations are at 1%, 5% and 10% level of significance denoted by ***, **and *.

holding period. The risk was reduced dramatically by simply holding up to 3-year. It dropped from 30.99% to 12.97% by about 58%. Eventually the risk was reduced gradually by every additional holding period. In total, it was reduced by about 99.19%.

Descriptive Results: Table 3 and 4 below, gives the summary of the basic statistics of the holding period returns and standard deviations associated to the holding period returns for the Malaysia, Singapore, Hong Kong and Korea.

The buy-and-hold strategy exhibited the smallest average holding period return in Singapore, followed by Malaysia, Korea and Hong Kong. All holding period returns are positively skewed. However, Malaysia, Singapore and Hong Kong exhibits a flatter than normal distributions which is a total contrast to the Korean market's holding period return distribution. The Korean KOSPI shows a sharper than normal holding periods' returns distribution with relatively peaked and significantly higher returns for shorter holding periods and then declining at almost a constant rate after holding period 2 with a slight rebound in holding period fifteen. This is accompanied by its highest volatility, measured by its standard deviation.

All markets under study exhibit positive skewness in their holding period returns variation. However, the Korean KOSPI depicts a sharper than normal distribution for its holding period returns. The distributions of the holding periods' standard deviation is positively skewed

and mesokurtik, although the Malaysian market demonstrates slightly peaked distribution while Korea had a sharp distribution. This could be due to high volatility jump in the particular period's stock returns caused by macroeconomic factors [41].

CONCLUSIONS

The Applications of the Buy-and-hold Analyses: Table 5 shows the effect of buy-and-hold strategy on the average rolling return (hereafter refers as return) on investment in various major stock markets. The empirical result doesn't show any sign in enhancing the return on investment. Nevertheless, a steep decrease in the returns is huge between holding period one and 2 comparatively. If an investor holds the returns of the Malaysian equity investment from period one through period nineteen, he/she would experience a total decrease of 2.47%, that is a close to 41%¹⁰ drop (shown in Table 5) in the value of investment (assuming no rebalancing effort was taken throughout the periods studied). Consecutively, the analyses of nineteen years holding period returns (HP19) reduction shown in Table 5 implies a general decline throughout the nineteen periods analyzed. Although so, the impact leads no negative consequences (i.e. negative average returns) to the investor's investment value. Needless to say, the overall scenario does not compensate the investor significantly given the opportunity cost of other strategies and investments forgone as well as the liquidity risks faced in the longer investment horizon.

Table 5: Buy-and-hold's effect on value⁹ enhancing

Country	Range of average return	Total return reduction in HP19*
Malaysia (KLCI)	1.5% - 6.0%	40.5%
Singapore (FSSTI)	1.5% - 5.0%	46.5%
Hong Kong (HSI)	7.0% - 12.0%	19.0%
Korea (KOSPI)	3.5% - 7.0%	52.0%

* HP refers to holding period. E.g. HP19 = 19-year holding period

Table 6: Buy-and-hold's effect on risk reduction

Country	Range of risk level	Total risk reduction in HP19*
Malaysia (KLCI)	0.0% - 22.0%	99.0%
Singapore (FSSTI)	0.5% - 22.5%	99.0%
Hong Kong (HSI)	1.5% - 22.5%	93.0%
Korea (KOSPI)	1.0% - 11.5%	92.0%

* HP refers to holding period. E.g. HP19 = 19-year holding period

⁹Also referred to as return for the purpose of this analysis.

¹⁰This value is calculated by comparing the holding period one's return with holding period nineteen's return and then converting the differences to give a value that is denoted in terms of percentage.

Table 7: Other statistical results

Country	Number of positive returns (%)	Number of negative returns (%)	Minimum holding period which does not incur losses
Malaysia (KLCI)	69.47%	30.53%	14 years
Singapore (FSSTI)	70.00%	30.00%	12 years
Hong Kong (HSI)	86.84%	16.16%	8 years
Korea (KOSPI)	77.89%	22.11%	14 years

Similarly, Table 6 shows the total risk reduction from holding an equity investment for the five countries above. The overall risk return reduction is derived by comparing the level of risk (denoted as the standard deviation of the holding period's return) in holding period one and nineteen, then taking this value as a percentage to better illustrate the decline from period one through period nineteen (assuming that there were no rebalancing efforts taken throughout the periods studied). For example, the volatility for the Malaysian equity investment declines from 21.95% to 0.18% in year one to year nineteen of holding periods, giving a steep decline of volatility for about 99.18%. This is followed by the overall decline of volatility of approximately 90% in all five stock markets from year one through year 19 holding periods. The results imply that one will experience large decline in the risk due to the reduced dynamics of the averaged returns when adopting this strategy throughout the investment horizon. So, we could say that the buy-and-hold strategy proves effectiveness in equity risk reduction. An aggressive investor who is constantly searching for high returns will not benefit from this approach. The risk and return tradeoff is significantly shown in this analysis. Other supporting results were also gathered by Howie and Davies [21] proving longer stock holding leads to lower level of risk

Table 7 shows the other relevant statistical measures obtained in the study. There is an exception case, which is in Hong Kong. The Hong Kong stock market performs much better than the other countries. In the overall, an investor could gain between 7% - 12% in HSI. In the 190 overlapping time periods considered, positive returns are earned in 86% of the total periods. Investing in the HSI only required holding up to 8-years. If investor holds the stock until 19-year, the average return is reduced about 20% only.

Applicability of the Theory of Risk and Return: Hence, in general the theory of risk and return still holds in long run. The opportunity to earn a return is commensurate with the

risk, as defined by Cootner and Holland [35]. Equity return is decreasing at the same time as the equity risk is reducing. It shall not follow the earlier evidences reported by Morton [37] and the risk-return paradox documented by Bowman [36]. The trade-off of risk and return doesn't hold only for a certain period. For instance, in KLCI, the risk was reduced in the holding period of 15 to 17 years while the return veered up.

Recommendations: The buy-and-hold strategy maybe effective and applicable only if the overall stock market performs very well. By using HSI as an example, which has the best performance in our research sample, a buy-and-hold provides very high average rolling return in each of the holding period. They are generally above 10%. For the 10-year holding period and above, there is no negative return in our empirical results, no matter which year you start to hold the investment. At the same time, the risk of the investment could be reduced a lot from 32% to only 2%.

The possible alternative of the passive management in a normal performing stock market is to buy-and-hold the ten highest dividend-yielding stocks among the index at the beginning of the year, hold for a year and replace any stocks if necessary at the beginning of the next year with the newest highest-yielding stocks in the index. Since dividend payments play a very important role in the long-run, it can magnify the return of the portfolio and at the same time reduce the risk of the portfolio a lot, as justified by Tower and Gokcekus [17] and Fisher and Lorie [16]. This strategy does not require stock selection since it is based only on using the easily calculated dividend yield for the identified stocks, making substitutions when necessary. In order to obtain a better outcome, other scholars may extend the study period in their further researches. A larger sample size can produce more accurate result. Furthermore, a longer study period can provide a clearer picture of the buy-and-hold effect and show the trend of the whole business cycle.

Limitations: The exclusion of China is one of the limitations in the research. China economy is booming up in this recent year and it has significant influence to the other Asian countries. The main reason is that the China stock market index (SHCOMP) starts its operation at the end of 1990 and the data of stock market indexes are only released in 1995. Therefore, it is difficult to make comparison with the other countries stock markets performances.

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