THE PERFORMANCE OF MALAYSIAN UNIT TRUSTS INVESTING IN DOMESTIC VERSUS INTERNATIONAL MARKETS

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ABSTRACT

This paper investigates the relationship between unit trusts invested domestically and those invested overseas. The performance of unit trusts investing overseas is compared to unit trusts that are invested locally to determine whether they outperform the local funds. The Kuala Lumpur Composite Index (KLCI) is used as the local funds' benchmark. The Morgan Stanley Capital international All Country (MSCI AC) Asia Pacific and MSCI World Free are utilised as the international funds' benchmarks. With a total of 26 local funds and 23 internationally invested funds, it is found that the risk-adjusted performance of internationally diversified funds is not significantly different from the performance of well-diversified domestic funds.

Keywords: unit trusts, domestic, international, risk-adjusted performance, Sharpe measure

INTRODUCTION

Mutual funds are recognised as an investment tool that can help investors grow their wealth and diversify their investment portfolios. Mutual funds, which are more popularly known as unit trusts in Malaysia, had experienced considerable growth over the last decade in terms of the number of funds offered, and the volume of capital managed by unit trust management companies (UTMCs). According to Choong (2005), the Malaysian unit trust industry has been one of the fastest-growing sectors within the finance industry in the last two decades.

With the development of the unit trust industry in Malaysia, investors could invest in a diverse array of securities traded within Malaysia and abroad. The number of funds that are chosen to be invested in the international equity markets grew as fund management companies identified the benefits of diversifying funds in these markets.

The financial success of an internationally diversified mutual fund portfolio depends partly on the ability of the total portfolio to generate risk-adjusted returns equal to or greater than the domestic stock market. Success is also determined by the ability of the international funds within the portfolio to match or outperform market benchmarks and to generate returns better than those of domestic mutual funds. Otherwise, it will not be worthwhile for investors to spend the time and effort necessary to select an international or global fund for portfolio inclusion.

Asian economies have continued to enjoy promising growth prospects in the past years and are predicted to grow even more in the years to come. As such, equity funds invested in these markets are expected to continue to perform well due to the region's sustained economic growth, abundant liquidity, stable interest rates and potential currency strength amidst a weakening US dollar. The Greater China region, which consists of mainland China, Taiwan and Hong Kong, offers promising opportunities for investors. China's gross domestic product (GDP) has seen a robust growth of 20% per annum over the period from 2003–2006. Funds are also developed to be invested in North Asian markets such as South Korea and Japan. ASEAN countries, which are seen as the fastest-growing regions in the world, with a GDP nominal growth averaging 9% annually since 2000, are also seen as opportunities for fund management companies to develop funds to be invested in these markets. Other global markets, which could provide opportunities for above-average returns compared to the domestic market, are also potential markets in which to make investments.

Within the investment management industry, unit trust funds are by far the largest contributor to assets under management. Over the last five years, the Malaysian unit industry has grown at a phenomenal pace, and it continues to hold the largest market share in ASEAN (approximately 45%) in terms of the mutual funds and unit trusts' assets under management.

So far, no study has been conducted on the performance of Malaysian-based international mutual funds mainly because of the strict foreign-exchange administration rules, which were only recently liberalised in 2005. Unit trusts that invested overseas were launched only after 2005. Initially, unit trust management companies (UTMCs) were only allowed to invest 30% of their net asset value in foreign currency assets, but this was increased by 50% in 2007. With the removal of a need to seek the Securities Commission's (SC) approval for foreign markets (other than stock exchanges recognised by Bursa Securities) in March 2008, more funds for international investments are expected to be launched in Malaysia.

From studies provided by Shamsher and Annuar (1995), Tan (1995) and Leong and Aw (1997), empirical findings on the overall fund performance

indicate that on average, unit trust funds in Malaysia performed worse than the global market. Taib and Isa (2007) reported that unit trusts in Malaysia did not perform well over the period of their study. Ewe (unpublished), Shamsher and Annuar (1995) and Tan (1995) have all reported that returns on investments in Malaysian unit trusts were below the risk-free and market returns.

These findings serve as catalysts for fund management companies to seek higher returns by diversifying overseas. Considering that previous research has not examined the risk-adjusted returns of international funds relative to those of domestic unit trusts, this study will look into whether or not the performance of international mutual funds as a group is superior to that of the domestic benchmark, the KLSE Composite Index (KLCI) and a portfolio of domestic unit trusts; that is, do international funds afford investors diversification benefits in the form of superior risk-adjusted returns relative to both the Malaysian stock market and domestic unit trusts?

As the number of unit trust funds that invest in the international markets increases, it creates an opportunity for this research to be implemented. This study intends to evaluate the performance of Malaysian-based international equity mutual funds in comparison to both domestic and international benchmark indices. The international funds' performance will also be compared to the performance of domestic mutual funds.

This paper is organised as follows. The next section offers a review of the relevant literature in this area of study. The third section describes the data and methodologies used to measure and compare the performances of the funds, while the fourth section reports and analyses the results. The final section includes the summary and conclusion.

LITERATURE REVIEW

In 1952, Harry Markowitz developed the basic portfolio model that derived the expected rate of return for a portfolio of assets and an expected risk measure. The Markowitz model is based on assumptions, whereby a single asset or portfolio of assets is considered to be efficient if no other asset or portfolio of assets offers a higher expected return with the same (or lower) risk or lower risk with the same (or higher) expected return.

The portfolio with the maximum expected return is not necessarily the one with the minimum variance (Markowitz, 1952). The expected return rule is rejected, as it never implies the superiority of diversification. Markowitz was also of the opinion that in trying to minimise variance, it is not enough to invest in

many securities. It is necessary to avoid investing in securities with a high covariance among themselves, and to diversify across industries because firms in different industries, especially industries with different economic characteristics, have a lower covariance than firms within an industry.

When examining different asset combinations and deriving the curves assuming all the possible weights, a graph connecting all the northwestern most portfolios to show an envelope curve that contains the best of all these possible combinations, will be generated. This curve is known as the *efficient frontier*. It represents the set of portfolios that have the maximum rate of return for every given level of risk (standard deviation) or the minimum risk for every given level of return (Reilly & Brown, 2006). The expected return-standard deviation combinations for any individual asset will be inside the efficient frontier, as single-asset portfolios are inefficient due to the lack of diversification (Bodie, Kane & Marcus, 2001).

Investors invest for anticipated future returns, but these returns can rarely be predicted precisely. Actual or realised returns will almost always deviate from the expected return anticipated at the start of the investment period (Bodie, Kane & Marcus, 2001). If all else could be held equal, investors would prefer investments with the highest expected return.

In the portfolio model, the investor looks at individual assets only in terms of their contributions to the expected value and dispersion, or risk, of the portfolio return (Fama & Macbeth, 2001). With normal return distributions, the portfolio's risk is measured by the standard deviation of its return. Fama and Macbeth (2001) also find that on average there is a positive trade-off between return and risk, with risk measured from the portfolio view point.

Treynor (1965) finds more than one kind of risk in a diversified fund; these are the risks produced by the volatility of the stock market and risks resulting from fluctuations in specific securities held by the fund. The characteristic line relates the expected rate of return of a trust, pension or mutual fund to the rate of return of a suitable market average (Treynor, 1965). It contains information about both the expected rate of return and risk. The slope of the line measures volatility. Thus, a steep slope means that the actual rate of return for the fund in question is relatively sensitive to fluctuations in the general stock market; a gentle slope indicates that the fund in question is relatively sensitive to market fluctuations.

The Sharpe Ratio developed by Sharpe (1966) examines the situations in which two measures (mean and variance) can usefully be summarised into one (the Sharpe Ratio). It indicates the historic average differential return per unit of

historic variability of the differential return. When choosing one from among a set of funds to provide representation in a particular market sector, the greatest predicted Sharpe Ratio should be picked, as long as the correlations of the funds with other relevant asset classes are reasonably similar.

Jensen's alpha evaluates fund performance quite differently than a Sharpe ratio. Jensen (1968) emphasises that in estimating α_i, the measure of performance, we are allowing for the effects of risk on return as implied by the asset pricing model. If the model is valid, the particular nature of general economic conditions or the particular market conditions over the sample or evaluation period has no effect whatsoever on the measure of performance. If the portfolio manager has an ability to forecast security prices, the intercept, α_i, will be positive. It represents the average incremental rate of return on the portfolio, which is solely due to the manager's ability to forecast future security prices. If the manager is not performing well as a random-selection buy and hold policy, α_i will be negative.

There are several studies that investigate the empirical sensitivity of mutual fund performance to alternative market benchmarks. Lehmann and Modest (1987) and Grindblatt and Titman (1994) find that inferences about fund performance are sensitive to the chosen benchmark portfolios. Lehmann and Modest (1987) examine selectivity using a Jensen-like measure based on capital asset pricing model (CAPM) and Arbitrage Pricing Theory (APT) models and find substantial differences in the performance results between benchmarks.

Because fund managers also invest in non-index assets, previous studies have also highlighted the importance of taking into account the existence of such assets in the portfolio holding of fund managers. The research of Bello and Janjigian (1997) has indicated that unless proper market benchmarks are chosen, the existence of non-S&P assets in the mutual fund holding can lead to erroneous conclusions regarding fund performance. The study of Elton et al. (1993) also shows similar findings; they correct the problem by including a bond index and a non-S&P 500 equity index in their analysis. Zimmerman and Wetter (1992), in their study of five Swiss stock indices, find that performance measures are very sensitive to different specifications of the benchmark index. Brown and Brown (1987) and Daniel et al. (1997) stress the importance of considering the portfolio weighting and portfolio composition when measuring fund performance.

Jensen (1968) suggests that investors could earn a significant excess (risk-adjusted) in returns by purchasing recently good-performing funds. This is further supported by Hendricks, Patel and Zeckhauser (1993), and Goetzmann and Ibbotson (1994), who argue that past mutual fund returns, could predict future returns. As for the Treynor Index, it assumes that fund managers would

normally diversify the unsystematic risk. Therefore, a manager is only rewarded on his/her ability to manage the systematic risk. Given some reasonable assurance that a fund will perform its diversification well, the Treynor Index may provide better predictions of future performance than the expected return to variance of return (E/V) ratio.

Malkiel (1995) finds evidence of the predictability of mutual fund returns from period to period, especially during the 1970s. However, he concludes that he has been unable to design a dependable strategy by which an investor can consistently achieve excess returns over long periods of time. In 1998, Soosung and Satchell study performance measures based on the traditional CAPM and conclude that they do not hold for emerging-market mutual funds. They also encounter difficulties in portfolio evaluation, as performances are found to be sensitive to the choice of data-generating process and to the selection of the right benchmark index. Furthermore, in this study, size is also found to affect the funds' performance.

In a study on the mutual fund's size and its performance, Perold and Salomon (1991) believe that a large asset base of a mutual fund eroded fund performance because of trading costs that were associated with liquidity or price impact, whereas a small fund can easily put all of its money in its best ideas. Grindblatt and Titman (1989) find mixed evidence that fund returns decline with fund size. When controlling for fund size, Chen et al. (2004) find that controlling for fund size, solo-managed funds (funds managed by one manager) outperform co-managed funds (funds managed by many managers). Sharpe (1966) discusses the impact of size on fund performance where funds with substantial assets could obtain a given level of security analysis by spending a smaller percentage of its income than a smaller fund can. Detzel (2006) finds that investors should monitor their fund size regularly, as there is evidence that fund size tends to drift over the years.

In Malaysia, evidence provided by Shamsher and Annuar (1995), Tan (1995) and Leong and Aw (1997) showed that on average, the overall fund performance of unit trust funds in Malaysia is worse than the market. This is consistent with Taib and Isa (2007), who study unit trust performance in Malaysia over the period 1991–2001. Their results show that on average, the performance of Malaysian unit trusts falls below the market portfolio and risk-free returns. Similarly, Low (2007) also finds that unit trust funds display a negative overall performance relative to either the KLCI or the EMAS Index. In contrast, Rozali and Abdullah (2006), studying the performance of Malaysian equity funds (growth funds) for the period 1995 to 2004, find that all types of funds outperform the market portfolio, and there are no significant differences in

the performance of all funds. It can be concluded that the results obtained from studies on the Malaysian unit trust performances are mixed.

In the 90s, the Western literature extended its research, looking into international mutual funds. Cumby and Glen examine the performance of 15 US-based, internationally diversified funds and compare it to the Morgan Stanley US Index, the Morgan Stanley World Index, and a benchmark combining the world index and Eurocurrency deposits. The time period analysed was 1982–1988. By using the Jensen index and the methodology developed by Grindblatt and Titman (1989b), Cumby and Glen conclude that the funds did not outperform the international equity index; however, there was evidence of the funds outperforming the US Index.

Eun, Kolodny and Resnick (1991) report similar findings. The benchmarks used in their study are the Standard and Poor's 500 Index, the Morgan Stanley Capital International World Index, and a self-constructed index of US multinational firms. For the period 1977–1986, the majority of the international funds outperform the US market. However, most fail to outperform the world index. The sample consisted of 19 US based international funds, and the Sharpe measure is used to assess excess returns.

In contrast to the work of Cumby and Glen (1990) and Eun, Kolodny and Resnick (1991), Droms and Walker (1994) use a cross-sectional/time series regression methodology. A total of four funds are examined over 20 years (1971–1990), and 30 funds are analysed over a six-year period (1985–1990). The funds are compared to the Standard and Poor's 500 Index, the Morgan Stanley Europe, Australia and the Far East Index (EAFE), which proxies non-US stock markets and the World Index. Applying the Jensen, Sharpe and Treynor indices of performance, they find that international funds generally underperformed the US market and the international market. Additionally, their results indicate that portfolio turnover, expense ratios, asset size, load status and fund size were unrelated to fund performance. This result differs from that of Gallo and Swanson (1996), who find that, on average, international mutual funds match the MSCI market proxy when the Sharpe measure is used.

Lang and Niendorf (1993), however, document that eight out of nine actively managed international funds outperformed the underlying indices over the period 1986–1992. Bers (1998), who studied international mutual funds in the US from 1990 to 1996, found that investors would have benefited from making their international mutual fund investment decisions based on the long-term past performance of these funds.

In another study, Apap and Collins (1994) found that, when compared to a specially designed and constructed MSCI Weighted International Index that accurately reflects the composition of a portfolio investment, the 13 evaluated outperformed the index. Their study also finds that the international mutual fund performance exceeded US domestic mutual fund performance. A similar finding was projected by Redman et.al. (2000), who further suggested that there were potential diversification benefits to adding global funds to portfolios of domestic mutual funds, and that those mutual funds that invest solely in foreign securities or in combinations of US stocks outperformed the US market over a period of ten years.

The benefits of international portfolio diversification are also emphasised by Fletcher and Marshall (2005), who examine UK investors between January 1985 and December 2000. They find significant benefits of diversification among the U.K. unit trusts with international equity objectives. International investment opportunities were attractive to investors because there were greater opportunities for portfolio risk reduction than those concentrated on domestic funds (Dimson and Marsh, 2001). Demaskey, Dellva and Heck (2003) discover that international diversification provides opportunities for increasing portfolio returns and/or decreasing portfolio risk.

METHOD

The data used in this study consist of weekly returns for unit trust funds, weekly prices of 3 month Malaysian Treasury Bills, the MSCI AC Asia Pacific Index, the KLCI and the MSCI World Free Index, which were obtained from the Bloomberg Terminal at the Library of Bursa Malaysia. The study periods are from June 2004 to May 2008 and from June 2005 to May 2008 for the local and international funds, respectively. The study period for the international funds is shorter because Malaysian unit trusts had only started investing overseas after the liberalisation of foreign-exchange administration rules by the Central Bank (Bank Negara) in 2005. The international funds consist of a mixture of funds invested in emerging and developed countries in Asia, while some were invested in Europe and the US. Table 1 and Table 2 list the local and international funds that are used in this study.

The models used in this study to measure the performance of the funds include the Sharpe, Treynor and Jensen performance measures. These models are based on the assumption that (i) all investors are risk averse, (ii) all investors have identical decision horizons and homogenous expectations regarding investment opportunities, (iii) all investors are able to choose among portfolios solely on the basis of expected returns and variance of returns, (iv) all

transactions costs and taxes are zero, and (v) all assets are infinitely divisible (Jensen, 1968).

The mean returns are calculated by averaging the weekly returns of the local and international funds (obtained from Bloomberg Terminal) over the relevant time period. The mean excess return is calculated by subtracting the risk-free rate of return from the mean return. The proxy used in this study for the risk-free rate of return is the average yield on 90-day Malaysian Treasury bills. This is in accordance with the standard practice in the performance evaluation of mutual funds. The total risk is measured by the standard deviation of returns, which can be calculated as follows:

$$Variance = \sum(R - \check{R})^2 / (n-1) \tag{1}$$

$$Standard\ Deviation,\ \sigma = \sqrt{Variance} \tag{2}$$

Systematic (market) risk is estimated by beta, which is calculated as the slope coefficient in the regression of the fund rate of return on the market rate of return. Similarly, it is calculated by dividing the covariance of the fund returns and the market returns by the standard deviation:

$$\beta_{(fund\ i,)} = Cov_{(fund\ i,\ KLCI)} / \sigma^2_{(KLCI)} \tag{3}$$

Weekly returns on the KLCI and the International Index served as benchmarks to proxy for the market's returns.

As with most previous studies of fund performance, the Sharpe Ratio (1966), Treynor Ratio (1965) and Jensen's model are used to measure funds' performance. Sharpe (1966) conceived of a composite measure to evaluate the performance of mutual funds. The Sharpe measure of portfolio performance (designated *S*) is stated as follows:

$$S_i = \frac{R_i - R_f}{\sigma_i} \tag{4}$$

Where:

R_i = average return on fund *i*
R_f = average return on Malaysian 3-month Treasury Bills
σ_i = standard deviation of returns for fund *i*

Table 1
Local funds inception dates, total assets and benchmarks.

Fund	Inception Date	Total Assets (RM'000) (As At 18-6-2008)	Benchmark
CIMB-Principal KLCI-Linked	08-02-2000	28,970	KLSE Composite
Public SmallCap	13-06-2000	264,375	KLSE Composite
PRUsmall-cap	29-05-2001	27,707	KLSE Composite
Public Equity	15-08-2001	541,843	KLSE Composite
Hwang DBS Select Opportunity	07-09-2001	152,907	KLSE Composite
MAAKL Growth	18-02-2002	26,217	KLSE Composite
MAAKL Progess	18-02-2002	48,174	KLSE Composite
PB Growth	03-10-2002	144,127	KLSE Composite
CIMB-Principal Equity Growth	01-10-2003	71,528	KLSE Composite
Pacific Dividend	18-11-2003	149,570	KLSE Composite
TA Small Cap	09-02-2004	26,738	KLSE Composite
CIMB-Principal Equity 3	16-03-2004	26,595	KLSE Composite
Hwang DBS Asia Quantum	15-04-2004	31,543	KLSE Composite
CIMB-Principal Small Cap	20-04-2004	14,911	KLSE Composite
ING Blue Chip	23-04-2004	37,466	KLSE Composite
ING Hwang DBS Growth Opp	23-04-2004	1,980	KLSE Composite
TA High Growth	07-06-2004	10,643	KLSE Composite
CIMB-Principal Equity Aggressive	18-08-2004	144,952	KLSE Composite
MAAKL Equity 80	08-09-2004	17,480	KLSE Composite
PRUequity Income	18-10-2004	64,212	KLSE Composite
Public Focus Select	25-11-2004	176,608	KLSE Composite
Avenue DividendEXTRA	18-03-2005	12,361	KLSE Composite
AmDividend Income	28-03-2005	7,854	KLSE Composite
Public Dividend Select	03-05-2005	436,595	KLSE Composite
Apex Dynamic	18-05-2006	17,488	KLSE Composite
Pacific Focus 18	16-06-2006	40,212	KLSE Composite

Table 2
International funds inception dates, total assets and benchmarks.

Fund	Inception Date	Total Assets(RM'000) (As At 18-6-2008)	Benchmark
MAAKL Pacific	23-06-2005	43,775	MSCI AC Asia Pacific
CIMB-Principal Global Titans	18-07-2005	124,966	MSCI World
PRU Asia Pacific Equity	21-07-2005	20,202	MSCI AC Asia Pacific
OSK-UOB Global Equity Yield	09-11-2005	62,568	MSCI World
Public Far-East Select	22-11-2005	536,454	MSCI AC Asia Pacific

Table 2 (*continued*)

Fund	Inception Date	Total Assets(RM'000) (As At 18-6-2008)	Benchmark
CIMB Principal Emerging Asia	22-11-2005	65,126	MSCI AC Asia Pacific
TA South East Asia Equity	28-11-2005	88,514	MSCI AC Asia Pacific
OSK-UOB Asia Pacific	06-01-2006	34,861	MSCI AC Asia Pacific
Pacific Asia Brands	20-01-2006	37,363	MSCI AC Asia Pacific
HLG Asia-Pacific Dividend	28-02-2006	44,706	MSCI AC Asia Pacific
CIMB-Principal Asian Equity	01-03-2006	140,354	MSCI AC Asia Pacific
Public Regional Sector	21-03-2006	391,332	MSCI AC Asia Pacific
Prudential Global Leaders	23-03-2006	129,034	MSCI World
HLG Global Healthcare	18-04-2006	64,433	MSCI World
Alliance Global Equities	19-05-2006	60,690	MSCI World
AMB Dividend Trust	06-06-2006	NA	MSCI AC Asia Pacific
PB Asia Equity	27-06-2006	179,547	MSCI AC Asia Pacific
AmAsia-Pacific Property Equities	18-07-2006	203,959	MSCI AC Asia Pacific
Hwang DBS Global Opportunity	18-07-2006	108,827	MSCI World
Pacific S&P Global Stars Fund	20-07-2006	36,544	MSCI World
Public Global Select	28-09-2006	149,496	MSCI World
Hwang DBS Greater China Structured	15-11-2006	387,433	MSCI AC Asia Pacific
Public Far-East Dividend	28-11-2006	1,021,204	MSCI AC Asia Pacific

The Sharpe measure seeks to measure the total risk of the portfolio by including the standard deviation of returns rather than considering only the systematic risk, β_i (Brown & Reilly, 2006).

The second performance measure was performed by Treynor (1965). He postulated two components of risk: (i) risk produced by general market fluctuations and (ii) risk resulting from unique fluctuations in the portfolio securities (Reilly & Brown, 2006).

Deviations from the characteristic line indicate unique returns for the portfolio relative to the market. These differences arise from the returns on individual stocks in the portfolio. In a completely diversified portfolio, these unique returns for individual stocks should cancel out. As the correlation of the portfolio with the market increases, unique risk declines and diversification improves.

According to Treynor, rational, risk-averse investors would always prefer portfolio possibility lines with larger slopes because such high slope lines would

place investors on higher indifference curves. It would also demonstrate a higher performance in good and bad years (Treynor, 1965). The slope of the portfolio possibility line (designated *T*) is equal to:

$$T_i = \frac{R_i - R_f}{\beta_i}$$

(5)

where:

R_i = average return for fund *i*
R_f = average return on Malaysian 3-month Treasury Bills
β_i = the slope of the fund's characteristic line during the selected period (indicating the fund's relative volatility)

The third approach is the Jensen measure (Jensen, 1968), which is based on the CAPM. All versions of the CAPM calculate the expected one-period return on any security or portfolio by the following expression:

$$E(R_j) = RFR + \beta_j [E(R_M) - RFR]$$

(6)

where:

$E(R_j)$ = the expected return on Portfolio j
RFR = the one-period risk-free interest rate
β_j = the systematic risk (beta) for Portfolio j
$E(R_M)$ = the expected return on the market portfolio of risky assets

Assuming the asset pricing model is empirically valid; equation (6) can be expressed in terms of the realised rate of return as follows:

$$R_{jt} = RFR_t + \beta_j [R_{mt} - RFR_t] + \check{e}_{jt}$$

(7)

The realised rates of returns on any security or portfolio can be expressed as a linear function of its systematic risk, the realised returns on the market portfolio, the risk-free rate and a random error, $\check{e}_{jt}$, which has an expected value of zero. The term RFR_t can be subtracted from both sides of equation (7), and because its coefficient is unity, the result is the following equation:

$$R_{jt} - RFR_t = \beta_j [R_{mt} - RFR_t] + \check{e}_{jt}$$

(8)

The left-hand side of equation (8) is the risk premium earned on the j'th portfolio. As long as the asset-pricing model is valid this premium is equal to the product of β_j with the market risk premium plus the random error term ($\check{e}_{jt}$).

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An intercept for the regression is not expected if all assets and portfolios are in equilibrium. Superior portfolio managers have consistently positive random error terms because the actual returns for their portfolios consistently exceed the expected returns implied by this model. To detect and measure this superior performance, an intercept (a nonzero constant) that measures any positive or negative difference from the model must be allowed. Consistent positive differences cause a positive intercept, whereas consistent negative differences (inferior performance) cause a negative intercept (Reilly Brown, 2006). With an intercept or nonzero constant, the previous equation becomes as follows:

$$R_{jt} - RFR_t = \alpha_{j\,+}\ \beta_j\ [R_{mt} - RFR_t] + \check{e}_{jt} \tag{9}$$

The α_j value indicates whether the portfolio manager is superior or inferior in market timing and/or stock selection. If the portfolio manager has an ability to forecast security prices, the intercept α_j, in equation (9), will be positive. It represents the average incremental rate of return on the portfolio, which is due solely to the manager's ability to forecast future security prices. A naïve random-selection buy and hold policy can be expected to yield a zero intercept. If the manager is not doing as well as a random-selection buy and hold policy, α_j will be negative (Jensen, 1968).

After determining the performance of each fund, Wilcoxon Signed-Ranks Tests are executed to test H_0: The risk-adjusted performance of internationally diversified funds is not different from the performance of well-diversified domestic funds. It is a nonparametric version of the paired-samples t test. The Wilcoxon Signed-Ranks statistic is converted to a z-score and tested for its statistical significance. The z value may also be calculated by the following formula:

$$Z = \frac{T - N(N+1)/4}{\sqrt{N(N+1)(2n+1)/24}} \tag{10}$$

where:

T = test statistic
N = the number of pairs

ANALYSIS OF RESULTS

Table 3 presents the returns, risk and performance measures for the local. The funds are ranked in descending order according to their inception dates. The

average weekly returns for 16 of the 26 funds were higher than the domestic benchmark, the KLCI, during the period of study (June 2004 – May 2008).

Table 3
Weekly performance measures for twenty-six local unit trusts: June 2004–May 2008.

Funds	MEAN(%)	SD(%)	Sharpe	Beta	Treynor	Jensen
CIMB-Principal KLCI-Linked	0.2685	1.9100	−0.0567	0.0561	−1.9305	−0.1008
Public SmallCap	0.3694	2.7300	−0.0027	0.0389	−0.1902	−0.0022
PRU SmallCap	0.1262	2.2900	−0.1094	0.0474	−5.2873	−0.2443
Public Equity	0.3342	2.6100	−0.0163	0.0859	−0.4959	−0.0311
Hwang DBS Select Opportunity	0.2392	2.9700	−0.0463	0.2060	−0.6680	−0.1100
MAAKL Growth	0.3006	2.1900	−0.0348	0.1456	−0.5234	−0.0567
MAAKL Progress	0.3264	1.9700	−0.0256	0.0522	−0.9655	−0.0434
PB Growth	0.4720	2.7600	0.0345	0.0601	1.5842	0.1032
CIMB-Principal Equity Growth	0.2530	2.1400	−0.0579	0.0927	−1.3355	−0.1114
Pacific Dividend	0.2718	2.0300	−0.0517	0.0820	−1.2805	−0.0940
TA SmallCap	0.0633	1.6500	−0.1900	0.0564	−5.5585	−0.3060
CIMB-Principal Equity 3	0.2136	2.0000	−0.0816	0.0297	−5.4949	−0.1592
Hwang DBS Asia Quantum	0.1372	2.5900	−0.0925	0.0336	−7.1304	−0.2351
CIMB-Principal Small Cap	0.5586	2.4700	0.0736	0.0410	4.4341	0.1873
ING Blue Chip	0.3037	2.1000	−0.0348	0.0648	−1.1281	−0.0644
ING Hwang DBS Growth Opportunity	0.1361	1.9800	−0.1215	0.0407	−5.9132	−0.2352
TA High Growth	0.2486	2.1400	−0.0599	0.0227	−5.6485	−0.1252
CIMB-Principal Equity Aggressive 1	0.3734	2.5600	−0.0013	0.0711	−0.0479	0.0061
MAAKL Equity 80	0.1707	1.9400	−0.1062	0.0422	−4.8843	−0.2005
PRUequity Income	0.1698	1.6200	−0.1278	0.0264	−7.8409	−0.2035
Public Focus Select	0.3485	3.6100	−0.0078	0.1802	−0.1570	−0.0042
Avenue Dividend EXTRA	0.1886	2.2300	−0.0844	−0.0054	34.8519	−0.1889
AmDividend Income	0.1379	1.6400	−0.1457	0.0527	−4.5332	−0.2318
Public Dividend Select	0.3377	2.4300	−0.0161	0.1263	−0.3096	−0.0222
Apex Dynamic	0.5185	4.0100	0.0353	0.6799	0.2084	0.2327
Pacific Focus 18	0.3080	2.5300	−0.0272	0.0737	−0.9335	−0.0589
Average	0.2760	2.3500	−0.0521	0.0924	−0.8145	−0.0885
KLCI	0.2430	2.2920	−0.0584	1.2000	−0.1115	0.0268
Malaysia 90-day T-Bills	0.3768	1.9618	NA	−0.1482	NA	−0.0198

Table 4

Weekly performance measures for fifteen international funds investing in Asia Pacific: June 2005–May 2008.

Funds	MEAN(%)	SD(%)	Sharpe	Beta	Treynor	Jensen
MAAKL Pacific	0.1817	2.5500	0.0565	0.7738	0.1861	–0.0131
PRU Asia Pacific Equity	0.1733	1.3800	0.0983	0.5429	0.2498	0.0254
Public Far-East Select	0.4906	3.1500	0.1438	0.5985	0.7567	0.3314
CIMB-Principal Emerging Asia	0.2906	2.5000	0.1012	0.8088	0.3127	0.0887
TA South East Asia Equity	0.2707	3.1400	0.0742	0.9134	0.2551	0.0476
OSK-UOB Asia Pacific	0.0050	2.8900	–0.0113	0.9121	–0.0358	–0.2178
Pacific Asia Brands	–0.0120	1.7600	–0.0282	0.5037	–0.0987	–0.1520
HLG Asia-Pacific Dividend	0.2189	2.6500	0.0684	0.4598	0.3941	0.0879
CIMB-Principal Asian Equity	0.0530	2.1200	0.0072	0.7118	0.0215	–0.1292
Public Regional Sector	0.3885	2.9600	0.1185	0.6032	0.5816	0.2284
AMB Dividend Trust	0.2600	1.6100	0.1381	0.4142	0.5367	0.1382
PB Asia Equity	0.4528	2.9600	0.1402	0.8557	0.4851	0.2414
AmAsia-Pacific Property Equities	0.0396	3.2100	0.0006	1.1047	0.0017	–0.2224
Hwang DBS Greater China Structured	0.1793	2.3600	0.0600	0.1777	0.7968	0.1055
Public Far-East Dividend	0.2518	3.3200	0.0645	0.8862	0.2416	0.0342
Average	0.2163	2.5707	0.0688	0.6844	0.3123	0.0396
KLCI	0.2430	2.2920	–0.0584	1.2000	–0.1115	–0.1487
MSCI AC Asia Pacific	0.2945	2.3108	–0.0356	1.0000	–0.0823	–0.0933
Malaysia 90-day T-Bills	0.3768	1.9618	NA	–0.1482	NA	–0.0198

The fund with the highest mean return is CIMB-Principal Small Cap, with an average weekly return of 0.5586%. In comparison, the average weekly return of the benchmark KLCI is 0.243%. The fund with the highest total risk (measured by the standard deviation of returns) is Apex Dynamic, with a weekly standard deviation of 4.01%. Standard deviations of the weekly returns for 11 of the 26 funds exceeded that of the domestic benchmark fund. In comparison, the standard deviation of the benchmark KLCI was 2.292%, while the funds' standard deviations ranged from 1.62% to 4.01%.

The results of the Sharpe measures indicate that 14 out of the 26 funds outperformed the market index, which shows -0.0584. The highest Sharpe measure obtained (0.0736) is by CIMB-Principal Small Cap. The fund betas in the study ranged from –0.01 to 0.68. The fund with the highest systematic risk (0.6799) was Apex Dynamic, while the benchmark KLCI's beta was 1.2.

As for the Treynor measure, the fund with the highest Treynor measure was Avenue Dividend Extra, with a Treynor measure of 34.8519 as compared to the Treynor measure of the market index, which was –0.1115. Only 5 out of the 26 funds outperformed the market index in terms of returns measured by the Treynor index. The Jensen's alphas for the funds ranged from –0.306 to 0.2327, where the fund with the highest alpha is Apex Dynamic. The Jensen's alpha for KLCI was 0.0268. Only 3 out of the 26 funds outperformed the KLCI when measured by the Jensen Index.

If we were to closely examine the performance of the Malaysian 90-day Treasury Bills (T-Bills), on average, it outperformed the market return as well as the funds' returns. Its standard deviation was also lower than the market and funds' standard deviations. Further analysis shows that the systematic risk, or β, for the Malaysia 90-day T-Bills was –0.1482, which was much lower than the market and funds' average beta.

The results shown in Tables 4 and 5 show that the returns of funds invested within the Asia Pacific region and funds invested globally varied considerably. The results also indicate that the returns on internationally diversified funds varied with the returns on domestic funds. The risk level of each fund varied widely, with some below the domestic benchmark and some above.

For the international funds invested in the Asia Pacific Region, in terms of mean return measurement, 7 out of 15 funds invested within the Asia Pacific Region outperformed the domestic benchmark index, KLCI, whereas only three funds outperformed the benchmark for the Asia Pacific funds, which is the MSCI AC Asia Pacific, whose mean return was at 0.2945%. All but four out of the 15 funds had standard deviations higher than the domestic benchmark and the international benchmark.

The Sharpe measure results indicate that all of the funds outperformed both the domestic and international indices. The figures ranged from –0.0113 to 0.1438 as compared to the KLCI Sharpe measure of –0.0584 and the MSCI AC Asia Pacific's Sharpe measure of –0.0356. All of the betas of the funds were lower than the domestic benchmark beta of 1.2 and the international beta of 1.0. However, one fund (Am-Asia-Pacific Property Equities) had a beta of 1.1047, which is higher than the international benchmark beta that was found.

Based on the Treynor measure, all funds except for Pacific Asia Brands, which had a Treynor measure of –0.0987 as compared to MSCI AC Asia Pacific's Treynor measure of –0.0823, outperformed the index. Three funds had Jensen's alphas that were below the domestic benchmark alpha, while four funds had alphas below the international benchmarks' alpha, whereas Public Far-East

Select had the highest alpha (0.3314) as compared to KLCI's –0.1487 and MSCI AC Asia Pacific's –0.0933.

Table 5
Weekly performance measures for eight international funds investing globally: June 2005–May 2008.

Funds	MEAN(%)	SD(%)	Sharpe	Beta	Treynor	Jensen
CIMB-Principal Global Titans	0.0788	1.3800	–0.2159	0.7738	–0.3851	–0.1944
OSK-UOB Global Equity Yield	0.1864	2.0500	–0.0929	0.0462	–4.1212	–0.1842
Prudential Global Leaders	0.0595	2.2000	–0.1442	0.2316	–1.3700	–0.2863
HLG Global Healthcare	0.0051	1.4700	–0.2528	0.0609	–6.1030	–0.3635
Alliance Global Equities	0.2424	2.1700	–0.0619	0.2064	–0.6512	–0.1068
Hwang DBS Global Opportunity	0.2065	2.7000	–0.0631	0.2437	–0.6988	–0.1377
Pacific S&P Global Stars Fund	0.0494	1.3900	–0.2355	–0.0302	10.8411	–0.3314
Public Global Select	–0.0360	1.8800	–0.2196	0.0969	–4.2601	–0.3998
Average	0.0990	1.9050	–0.1607	0.2037	–0.8435	–0.2505
KLCI	0.2430	2.2920	–0.0584	1.2000	–0.1115	0.0268
MSCI World Free	0.1982	2.1000	–0.0850	1.0000	–0.1786	–0.0448
Malaysia 90-day T-Bills	0.3768	1.9618	NA	–0.1482	NA	–0.0198

Table 6
Z-score results for Wilcoxon signed ranks test.

	Z-score (2-tailed)	Asymptotic Sig.
Sharpe	–1.551[a]	0.121
Treynor	–2.068[a]	0.039**
Jensen	–0.365[a]	0.715

**Significant at α = 0.05; a: based on negative ranks

Table 5 presents international funds invested globally, where eight funds invested globally throughout Malaysia were included in the study to evaluate and compare the performances of the funds relative to local and international funds invested globally. The mean returns of all the funds were lower than the KLCI return, whereas two funds, Alliance Global Equities and Hwang DBS Global Opportunity, had returns higher than the MSCI World Free Index, which is the globally invested funds' benchmark.

The mean return of the MSCI World Free Index is 0.1982%, while the two funds' mean returns are at 0.2424% and 0.2065%, respectively. The fund with the highest total risk (as measured by standard deviation) is Hwang DBS

Global Opportunity (2.7%), as compared to KLCI's standard deviation of 2.292% and MSCI World's 2.1%. All of the funds underperformed the KLCI when measured by the Sharpe Index, while two funds (Alliance Global Equities and Hwang DBS Global Opportunity) outperformed the MSCI World Free Index which has a Sharpe measure of –0.085.

The study found the betas for all the funds to be lower than both benchmark indices, ranging from –0.0302 to 0.7738. Based on the Treynor measure, it indicates that only one fund (Pacific S&P Global Stars Fund) outperformed the market indices, where the KLCI had a Treynor measure of –0.1115 and MSCI World Free's Treynor measure was –0.1786. An examination of the Jensen measures shows that all the funds had negative intercepts and had lower alphas than both benchmark indices.

The Malaysian 90-day T-bill return for the period of the study shows that it outperforms the average returns of twelve Asia Pacific funds and the World funds. The standard deviation for the T-bills was lower than the average standard deviation of the Asia Pacific funds but was slightly higher than the standard deviation of the average World funds (1.9618 as compared to 1.9050). Its beta was also lower compared to the average betas of the Asia Pacific and World funds.

Before a comparison can be made on differences in the mean performances of the funds, an examination of the returns distribution is done. Normality assumption about the distribution of the Sharpe, Treynor and Jensen measures cannot be made. Figure 1 shows that other than the Sharpe Index for local funds, the distribution of the risk-adjusted returns is not evenly distributed for either the Treynor and Jensen performance measures, or the Sharpe Index for international funds. Therefore, it is most appropriate to test the null hypothesis using a nonparametric test.

Table 6 summarised the results coming from the Wilcoxon Signed-Ranks Test for the three performance measures. Based on the Sharpe Index, a *z*-score of –1.551 with a significance value of 0.121, shows that the performance of international funds is not significantly different from the performance of local funds. In this case, the null hypothesis that the risk-adjusted performance of internationally diversified funds is not significantly different from the performance of well-diversified domestic funds cannot be rejected at the 0.05 level of significance.

In contrast to the Sharpe Index, the Treynor Index shows a *z*-score of –2.068 with a significance of 0.039, indicating that the performance of international funds is significantly different than that of domestically well-

diversified funds. The null hypothesis that the risk-adjusted performance of internationally diversified funds does not differ significantly from that of domestic funds can be rejected.
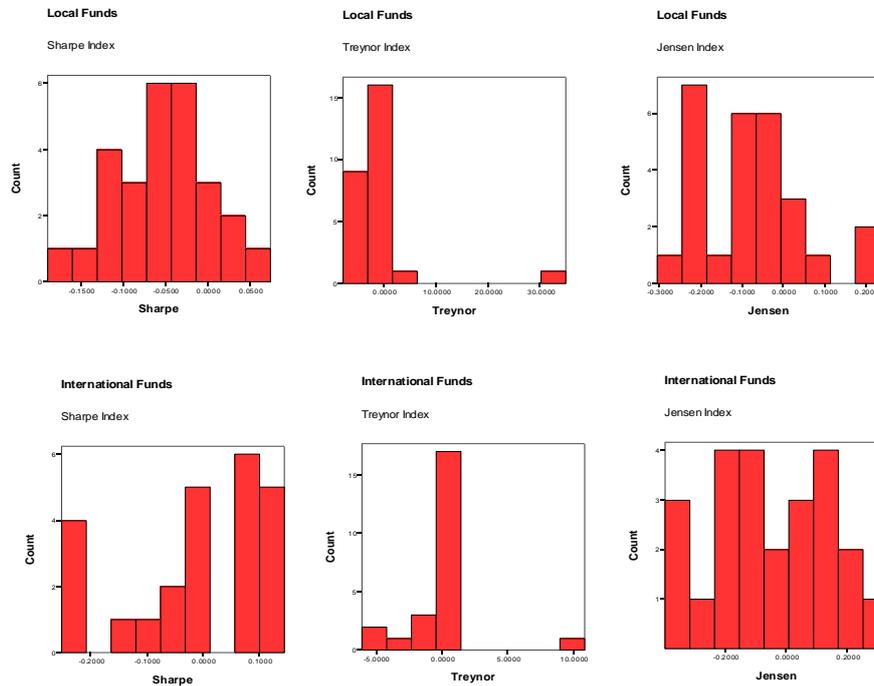

Figure 1. Distribution of Risk Adjusted Returns

As for the Jensen Index, a *z*-score of –0.365 with a significance of 0.715, shows that the performance of international fund managers is not significantly different from the performance of local international fund managers. Therefore, the null hypothesis can be accepted that the performance of international funds is not significantly different from the local funds.

The Wilcoxon Signed Ranks Test is applied in Lang and Niendorf's study (1993), where they found no significant difference between the risk-adjusted Sharpe and Treynor performance measures. However, in this study, the Wilcoxon Signed Ranks Test results showed no significant differences between the performances of local and international funds when Sharpe and Jensen measures were applied, but when the Treynor measure was applied, the test results showed that the performance of internationally diversified funds did differ significantly from the domestic funds.

Overall, the findings would encourage investors to invest in Asia Pacific funds, as they are indicated to have higher returns than funds invested locally. However, the results of the risk-adjusted performance of funds invested globally are not encouraging. As earlier studies in Malaysia lack this information, it is hoped that these findings would assist in investment decision-making for relevant parties involved in the unit trust industry. The finding of this study is somewhat similar to the findings of Cumby and Glen (1990) in their study on the same topic in the US Cumby and Glen conclude that the funds they had studied did not outperform the international equity index; however, evidence shows that the funds did outperform the local US index. Lang and Niendorf (1993) opine that a fund's total risk is likely to be a more appropriate risk-adjustment measure.

Sharpe's performance measure, which uses the fund's standard deviation, would consider total risk rather than just the market-risk component, thus making it appropriate to use when investment decisions need to be made.

The results were mixed, where domestic funds were found to underperform the local index when measured by the Treynor and Jensen Indexes but not when the Sharpe measure was applied. International funds invested in the Asia Pacific region outperformed both the local and international benchmarks. However, funds invested globally in countries other than the Asia Pacific region were found to fare poorly as compared to the Asia Pacific funds. Eun, Kolodny and Resnick (1991) find that the majority of international funds outperformed the US market. However, most failed to outperform the world index. Similar to this study, most funds do not outperform the world index. Both studies include Jensen and Sharpe measures, which were also used in this study. Droms and Walker (1994) find all the funds studied to underperform the US market and the international market by applying the Jensen, Sharpe and Treynor indices. This result is not consistent with either the earlier studies, or the present study.

When the Wilcoxon Signed Ranks Test was performed, the *z*-score converted from the test statistic indicated that the results were not statistically significant when using the Sharpe and Jensen performance measures. Therefore, it is accepted that there was no difference in the performance of international funds as compared to the local funds. However, the Wilcoxon Signed Rank Test produced a conflicting result for the Treynor measure. The *z*-score was statistically significant, indicating there were differences in the performance of international funds versus the local funds. The *z*-score based on negative ranks indicated that the international funds measured by the Treynor Index outperformed the domestic funds. The results show that when total risk, as measured by standard deviation according to the Sharpe Index, was utilised in the model, the performances of the funds were not significantly different. Nevertheless, when it came to systematic risk, as measured by beta in the Treynor

Index, the results were statistically significant, indicating that the performance of international funds varies significantly from the domestic funds. In this case, the results of the Sharpe measure should be applied, as they evaluate the portfolio manager on the basis of the rate of its net performance.

CONCLUSION

This study was conducted to investigate whether investors are able to derive more profits by investing overseas as compared to investing in the domestic market via unit trusts. A total of 26 funds incepted from the year 2000 to 2006 and invested locally were compared to 23 funds that invested internationally. The KLCI was used as the local benchmark, while the MSCI AC Asia Pacific and MSCI World Free were used as the international funds' benchmarks.

The mean returns of the local funds appear to exceed those of the international funds. Nevertheless, when the returns are risk-adjusted using the Sharpe measure, the internationally diversified funds performed equally well as the domestic funds. As recommended by Lang and Niendorf (1993), the Sharpe measure is more appropriate to be used when investment decisions are to be made. Therefore, based on the Sharpe measure, local funds are considered equal to global funds. As for the Asia Pacific funds, the Sharpe Index shows that all of the funds outperformed the domestic (KLCI) and international (MSCI AC Asia Pacific) indices. However, if we examine the differences in the performance of the unit trust funds investing domestically versus those investing internationally by using the Sharpe measure, it is shown that there were no significant differences in the performance of both groups.

This study is most probably the first to be conducted in Malaysia after the liberalisation of the foreign exchange rules in 2005, where unit trust management companies are finally permitted to invest overseas. It is hoped that the results from this study will assist investors and fund managers in deciding whether to invest domestically or internationally. As for the regulatory bodies, such as Bank Negara Malaysia (BNM), the Securities Commission (SC) and the Federation of Malaysian Unit Trust Managers (FMUTM), more effort is needed to improve the existing policies for the benefit of those involved in the unit trust industry.

As in other studies, there are limitations that need to be considered in applying the findings of this study. The risk-adjusted returns of the local and international funds were calculated without taking into consideration the costs included in investing in the funds, the risks to be borne and the diversification benefits of each type of fund. Exchange rate risk, which is an important factor to be considered when investing abroad, was not included, as studies done in other

countries on the same topic do not include it. The time period studied by the funds was also limited, as unit trust companies were only allowed to invest globally in the year 2005. Due to this, there were limited numbers of samples included in the study. Furthermore, different asset sizes of the funds might produce different results. Therefore, future studies could concentrate on the effects of load fees and the costs of the local and international funds when comparing the performance of both types of funds. In addition, diversification benefits, as computed by R^2, could be considered to guide investors on whether or not they are able to diversify effectively. Similarly, uniformed asset sizes and a longer study period could also be taken into consideration to produce more accurate and reliable results.

REFERENCES

Apap, A. & Collins, H. (1994) International mutual fund performance: A comparison. *Managerial Finance, 20*(4), 47.

Arugaslan, O., Edwards, E. & Samant, A. (2008). Risk-adjusted performance of International Mutual Funds. *Managerial Finance*, *34*(1), 5–22.

Bello, Z. Y., & Janjigan, V. (1997). A reexamination of the market-timing and security selection performance of mutual funds. *Financial Analysts Journal*, *53*(5), 24–30.

Bers, M. K. (1998). Causal relations among stock returns, inflation: Persistence of international mutual fund performance. *Global Finance Journal*, *9*(2), 225–240.

Bodie, Z., Kane, A. & Marcus, A. J. (2001). *Essentials of Investments,* (4th ed.). NY: McGraw-Hill.

Brown, K. C. & Brown, G. D. (1987). Does the composition of the market portfolio really matter? *Journal of Portfolio Management*, *13*(2), 26–32.

Chen, J., Hong, H., Huang,M. & Kubik, J. D. (2004). Does fund size erode mutual fund performance? The role of liquidity and organization. *The American Economic Review, 94(5)*, 1277–1301.

Choong, D. (2005) *Investor's guide to Malaysian unit trusts,* (3rd ed.). Malaysia: Sage Information Services.

Cumby, R. E., & Glen, J. D. (1990). Evaluating the performance of International Mutual Funds. *Journal of Finance*, *45*(June), 497–521.

Daniel, K., Grindblatt, M.,Titman, S. & Wermers, R. (1997). Measuring mutual fund performance with characteristic-based benchmarks. *Journal of Finance*, *52*(3), 1035–1057.

Demaskey, A. L., Dellva, W. L., & Heck, J. L. (2003). Benefits from Asia-Pacific mutual fund investments with currency hedging. *Review of Quantitative Finance and Accounting, 21*(3), 49–64.

Detzel, L. F. (2006). Determining a mutual fund's equity class. *Financial Services Review*, *15*(3), 199.

Dimson, E. & Marsh, P. (2001). UK Financial market returns 1955–2000. *Journal of Business, 74*(1), 1–30.

Droms, W. G., & Walker, D. A. (1994). Investment performance of international mutual funds. *Journal of Financial Research*, *17*(1) *Spring*, 1–14.

Eun, C. S., Kolodny, R. & Resnick B. G. (1991). US based international mutual funds: A performance evaluation. *Journal of Portfolio Management*, *17 (Spring)*, 88–94.

Elton, E. J., Gruber, M. J., Das, S. & Hlavka, M. (1993). Efficiency with costly information: A reinterpretation of evidence from managed portfolio. *Review of Financial Studies, 6*(1), 1–22.

Ewe, S. J. (unpublished). The performance of Malaysian unit trusts in the period 1988–1992. Penang, Malaysia: Universiti Sains Malaysia.

Fama, E. F. & Macbeth J. D. (2001). Risk, return and equilibrium: Empirical tests. *Journal of Political Economy*, *81*(3), 607–636.

Fletcher, J. & Marshall, A. (2005). The performance of UK international unit trusts. *European Financial Management, 11*(3), 365–386.

Gallo, J. G. & Swanson, P. E. (1996). Comparative measures of performance for US based international equity mutual funds. *Journal of Banking & Finance*, *20*(10), 1635–1650.

Goetzmann, W. N. & Ibbotson, R. (1994). Do winners repeat? Patterns in mutual fund behaviour. *Journal of Portfolio Management*, *20*(2) *Winter*, 9–18.

Grindblatt, M. & Titman, S. (1989). A comparison of measures of mutual fund performance on a sample of monthly mutual fund returns. *Journal of Business*, *62*, 383–416.

Grindblatt, M. & Titman, S. (1994). A study of monthly mutual fund returns and performance evaluation techniques. *Journal of Financial and Quantitative Analysis*, *29*(3), 419–444

Hendricks, D., Patel, J. & Zeckhauser, R. (1993). Hot hands in mutual funds: Short-run persistence of relative performance, 1974–1988. *Journal of Finance*, *48*(1), 93–130.

Jensen, M. C. (1968). The performance of mutual funds in the period 1945–1964. *Journal of Finance*, *48*(1), 389–416.

Lang, L. R. & Niendorf, R. M. (1993). Performance and risk exposure of International Mutual Funds. *Financial Services Review*, *2*(2), 97–110.

Lehmann, B. N. & Modest, D. M. (1987). Mutual fund performance evaluation: A comparison of benchmarks and benchmark comparisons. *The Journal of Finance*, *42*(2), 27–44.

Leong, K. H. & Aw, M. W. (1997). Measuring unit trust fund performance using different benchmarks. *Capital Market Review*, *5*(2), 27–44.

Low, S. W. (2007). Malaysian unit trust funds' performance during up and down market conditions: A comparison of market benchmark. *Managerial Finance*, *33*(2), 154–166.

Malkiel, B.G. (1995). Returns from investing in equity mutual funds 1971 to 1991. *The Journal of Finance*, *50*(2), 549–572.

Markowitz, H. (1952). Portfolio Selection. *The Journal of Finance*, *7*(1), 77–91.

Perold, A. & Salomon, R. S. (1991). The right amount of assets under management. *Financial Analysts Journal*, *47*(3), 31–39.

Redman, A. L., Gullett, N. S. & Manakyan H. (2000). The performance of global and international mutual funds. *Journal of Financial and Strategic Decisions, 13*(1) *Spring,* 75–85.

Reilly, F. K. & Brown K. C. (2006). I*nvestment analysis and portfolio management,* (8th ed.)*.* Australia: Thomson-South Western.

Rozali, M. B. & Abdullah, F. (2006). The performance of Malaysian equity funds. *The Business Review, 5*(2) *Summer,* 301.

Shamsher, M. & Annuar, M. N. (1995). The performance of unit trusts in Malaysia: Some evidence. *Capital Market Review*, *3*, 51–69.

Sharpe, W. F. (1966). Mutual fund performance. *Journal of Business*, 39 *(January),* 119–138.

Soosung, H. & Satchell, S. E. (1998). Evaluation of mutual fund performance in emerging markets. *Emerging Markets Quarterly*, *2*(3), 39–50.

Tan, H. C. (1995). The investment performance of unit trust funds in Malaysia. *Capital Market Review*, *3*, 21–50.

Taib, M. F. & Isa, M. (2007). Malaysian unit trust aggregate performance, *Managerial Finance*, *33*(2), 102–121.

Treynor, J. L. (1965). How to rate management of investment funds. *Harvard Business Review, 44*(3), 63–75.

Zimmermann, H. & Wetter, Z. (1992). On detecting selection and timing ability: The Case of Stock Market Indexes. *Financial Analysts Journal*, *48*(1), 80–83.