

MEASURING UNIT TRUST FUND PERFORMANCE USING DIFFERENT BENCHMARKS

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ABSTRACT

This study examines the investment performance and ranking of unit trust funds in Malaysia using different market portfolio as benchmark portfolio to analyse how sensitive the benchmark affects the fund performance. Two different benchmarks used are the Kuala Lumpur Stock Exchange Composite Index (KLSE CI) and the Kuala Lumpur Stock Exchange EMAS Index (EMAS). The findings revealed that for the period from January 1984 to December 1996, the majority of the funds in the sample of 32 private unit trusts performed worse than both the KLSE CI and the EMAS market portfolios. It was also found that the funds were not as diversified as the market portfolios and few fund managers had the forecasting ability to outperform the "buy and hold" strategy. When EMAS was used as the benchmark portfolio, most funds performed better, most funds were more closely diversified, and more funds had forecasting ability to outperform the market. However, the choice of benchmark portfolio did not have much impact on the performance ranking of the funds.

1. INTRODUCTION

Several risk-adjusted performance measures have been employed to measure the performance of unit trusts. The Treynor Index and the Jensen's Alpha (adjusted or not) are based on the Capital Asset Pricing Model and require a benchmark portfolio to compare the returns of the unit trust portfolio to the returns of the benchmark portfolio. The most widely used measure, the Jensen measure, is the intercept from a regression of the risk premium of the managed portfolio on the risk premium of the benchmark portfolio. The Treynor measure is the ratio of the risk premium of the managed portfolio to its beta which measures the sensitivity of its return to changes in the returns of the benchmark portfolio. In the US studies, e.g. Jensen (1968), Lehman and Modest (1987) and Ippolito (1989), the S & P 500 and the CRSP equally weighted or value-weighted indices of NYSE stocks are used. In the Malaysian studies, Chua (1985) and Tan (1995), the Kuala Lumpur Stock Exchange Composite Index (KLSE CI) has been used. These performance measure have been subject to considerable criticism. For example Roll (1978) demonstrated that the Jensen measure can be

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sensitive to the benchmark portfolio. Lehman & Modest (1987) obtained different ranking of mutual funds from alternative CAPM benchmarks and also from different methods used to construct the APT (Arbitrage Pricing Theory) benchmark. Coggin, Fabozzi and Rahman (1993) found that the selectivity and market timing performance of equity pension fund managers were somewhat sensitive to the choice of a benchmark.

Tan (1995) investigated the investment performance and ranking of a sample of twenty one unit trust funds in Malaysia from three management companies for the period January 1984 to December 1993. The findings revealed that the funds as a whole performed worse than the market portfolio. They held quite well diversified portfolios. All the fund managers could not forecast security prices and failed to outperform the naive "buy and hold" strategy.

Tan (1995) used return of KLSE Composite Index as a benchmark for the market return. Normally unit trust funds also invest in stocks that are not included in the KLSE Composite Index and in other permitted securities. Hence, using return on KLSE Composite Index as market return may not be appropriate for comparing the performance of the unit trusts. In this study, both the KLSE Composite Index (KLSE CI) and the KLSE EMAS Index (EMAS) are used as benchmarks to compare the sensitivity of the unit trust performance to the choice of the benchmark portfolio. KLSE CI comprises only 100 blue chip stocks which have high market capitalisation on the Main Board. EMAS comprises all the stocks on the Main Board.

Furthermore, the sample of unit trusts of Tan (1995) includes both government unit trusts and private unit trusts. Share allocation privilege, such as part of the 30% bumiputra allocation from new share issue, is given to government unit trust. Thus it may not be appropriate to compare the performance of private unit trusts with that of the government unit trusts. In this study, the sample portfolio includes only private unit trust funds.

2. DATA AND METHODOLOGY

2.1 Sources of Data

As at 30th June 1996, there was a total of thirty management companies managing seventy three funds (comprising 26 government-sponsored funds and 47 private funds). The total net asset value of the unit trust funds as at this day stood at RM52.18 billion. Of the latter amount, RM45.83 billion

is accounted for by the government sponsored funds and the balance of RM6.35 billion is accounted for by the private funds. The Malaysian unit trust industry is still in its infancy and its total net stock asset value accounts for only 7.39% of the KLSE market capitalisation, compared to about 40% for US and UK.

This study takes a sample of 32 private unit trust funds from 9 management companies and covers

Table 1 Names of Management Companies and Their Respective Funds in the Sample

Name of Management Company	Name of Fund
ASIA UNIT TRUST BERHAD	Malaysia Investment Fund Malaysia Progress Fund Tabung Amanah Bakti Fund Malaysia Berjaya Fund Malaysia Equity Fund Malaysia Commerce Fund
KL MUTUAL BERHAD	K. Lumpur Savings Fund K. Lumpur Growth Fund K. Lumpur Index Fund K. Lumpur Industry Fund K. Lumpur Regular Saving Fund K. Lumpur Aggressive Growth Fund K. Lumpur Balanced Fund K. Lumpur Bond Fund
BHLB PACIFIC TRUST MGT BHD	Double Growth Fund Emerging Company Growth Fund Savings Fund High Growth Fund
DCB-RHB UNIT TRUST MGT BHD	Dynamic Fund Capital Fund Mudarabah Fund
MAYBAN MANAGEMENT BHD	Unit Trust Fund Balanced Trust Fund
ARAB-MALAYSIA U.T. BHD.	First Fund Tabung Ittikal Fund Capital Growth Fund
BBMB UNIT TRUST MGT BHD	Unit Trust Fund Prime Fund Dana Putra Fund
SBB UNIT TRUST MGT BHD	SBB Premium Capital Fund
MBF UNIT TRUST MGTR BHD	First Fund Growth Fund

a period from January 1984 to December 1996. Table 1 shows the names of the 9 management companies and their respective funds in the sample. Funds were chosen on availability of data and new funds that do not have sufficiently long period of data were also dropped. The sample size is about 68% of the 47 private unit trust funds.

The monthly continuously compounded rates of return of the funds are used to measure the performance of the funds. In order to measure the monthly rates of return, the net asset values for the funds at the end of month are used. The net asset values are measured by the manager's bid price (repurchase price). If the funds pay dividend during the month, the dividend payment is included as part of the returns. These price records and dividend payments of the funds are obtained from annual reports of the funds, their management companies, local newspaper, the Edge, Smart Investor and/or Asia Wall Street Journal.

90-day treasury bill rates are used as a proxy for the risk free rate and they are obtained from Bank Negara Report. The two benchmarks, Kuala Lumpur Stock Exchange Composite Index and Kuala Lumpur Stock Exchange Emas Index, are obtained from the Kuala Lumpur Stock Exchange.

The data used are from January 1984 to December 1996.

2.2 Measurement Methods

2.2.1 Continuously compounded rate of return

The market returns and the unit trusts' returns are calculated as continuously compounded rates of returns using formulae adopted by Jensen (1968):

$$(a) R_{j,t} = \ln \frac{NA_{j,t} + D_{j,t}}{NA_{j,t-1}} \quad (E1)$$

$$(b) R_{m,t} = \ln \frac{I_t + DI_t}{I_{t-1}} \quad (E2)$$

$$(c) R_{f,t} = \ln (1 + r_{f,t}) \quad (E3)$$

where

$R_{j,t}$ = The monthly continuously compounded rate of return of the j unit trust during the month t ;
 $NA_{j,t}$ = The net asset value for unit trust j at the end of month measured by the manager's bid price (repurchase price);

- $D_{j,t}$ = Dividend per unit unit paid by unit trust during month t ;
 $R_{m,t}$ = The estimated monthly continuously compounded rate of return on the market portfolio m (benchmark portfolio) for month t ;
 I_t = Levels of the KLSE Composite Index (KLSE CI) and the KLSE EMAS Index (EMAS) at the end of month t ;
 D_{it} = Estimate of dividends received by the market portfolio m in month t ;
 $R_{f,t}$ = The monthly continuously compounded risk free rate of interest for month t ;
 $r_{f,t}$ = The yield to maturity rate of the 90 day Treasury Bill for month t as the proxy for the riskless rate of interest.

2.2.2 Risk Measurement

To measure the risk of a unit trust, beta coefficient (β_j) of the unit trust β_j is obtained from the slope of the characteristic line. This line can be obtained by regressing the monthly returns of the unit trust on the monthly returns of the market portfolio m .

$$R_{j,t} = \alpha_j + \beta_j R_{m,t} + e_{j,t} \quad (E4)$$

where

- α_j = Regression intercept;
 β_j = Slope of characteristic line;
 $e_{j,t}$ = Regression's unexplained residual return in month t , $E(e_{j,t}) = 0$;

2.2.3 Performance Measurement

The investment performance measurement to be used for evaluating and ranking the performance of the unit trust funds in this study are Treynor Index, Jensen's Alpha and the Adjusted Jensen's Alpha. These measurements incorporate both the rate of return and the risk.

(a) Treynor Index

$$TI = \frac{\bar{R}_j - R_f}{\beta_j} \quad (E5)$$

(b) Jensen's Alpha and Adjusted Jensen's Alpha

$$R_{j,t} - R_{f,t} = A_j + B_j (R_{m,t} - R_{f,t}) + U_{j,t} \quad (E6)$$

where

- A_j = Jensen's Alpha of unit trust j obtained from the regression intercept
 B_j = Regression slope coefficient
 $U_{j,t}$ = Residual risk premium for j unit trust at time t which is unexplained by the regression, $E(U_{j,t}) = 0$

$$\text{Adjusted Jensen's Alpha (AAj)} = \frac{A_j}{B_j} \quad (E7)$$

2.2.4 Degree of risk diversification of unit trusts

The benefit of investing in unit trusts is the reduction of portfolio risk through diversification by holding a large number of securities. The degree of risk diversification of a fund can be measured by the Coefficient of Determination, R^2 , of the regression equation (E4). The closer the R^2 value is to 1.0, the higher is the degree of diversification. This is because R^2 is theoretically the proportion of the total variance of the returns of a portfolio explained by the market portfolio. By the same notion, R^2 also indicates the appropriateness of using the market portfolio as the benchmark.

2.2.5 Consistency of performance ranking using different benchmarks

The unit trusts are ranked using the risk adjusted performance measures, the Treynor Index and the Adjusted Jensen's Alpha. To determine the consistency of performance ranking using different benchmark portfolios (KLSE CI and EMAS), Spearman Rank Correlation (R_s) as shown in equation (E8) is used. Since the sample size is larger than 10, equation (E9) is used as test for significance of R_s .

$$R_s = 1 - \frac{6 \sum d^2}{n(n^2 - 1)} \quad (E8)$$

$$t = R_s \sqrt{\frac{n - 2}{1 - R_s^2}} \quad \text{with } (n-2) \text{ degrees of freedom,} \quad (E9)$$

where

- d = Difference between rankings of Method 1 and Method 2
- n = Number of paired rankings in the data series

3. RESEARCH RESULTS

3.1 Appropriateness of Benchmark Portfolio and Risk Adjusted Performance Measures

3.1.1 Sample Portfolio

Table 2 and Table 3 show the mean monthly returns, beta values, coefficients of determination, Treynor Index and Adjusted Jensen's Alpha of the sample portfolio of unit trust funds using KLSE Composite Index and KLSE EMAS Index as benchmarks respectively. The corresponding measures for the market portfolio represented by KLSE Composite Index and KLSE EMAS Index are also shown. The sample

portfolio of unit trust funds has a higher beta of 0.5577 when using KLSE CI as the benchmark, compared to a beta of 0.5073 when using KLSE E1 as the benchmark. This indicates that the returns of the sample portfolio of unit trust funds are more sensitive to changes in the returns of KLSE CI. However, the EMAS benchmark produces a higher Coefficient of Determination (R^2) than the KLSE CI in the regression using equation (E4). As R^2 represents theoretically the proportion of the total variance of the returns of a portfolio explained by the market portfolio, the EMAS could be a more appropriate benchmark for measuring the performance of the sample of the unit trusts.

As can be seen from Table 2, the unit trust fund sample portfolio performed worse than the market portfolio (KLSE Composite Index) using both the mean monthly returns and the risk adjusted performance measures such as the Treynor Index and the Adjusted Jensen's Alpha. When KLSE EMAS Index is used as the benchmark, the result is different as shown in Table 3. Although the mean monthly return of the sample portfolio of 0.7963% is still less than the market portfolio's return of 1.603%, the performance of the sample portfolio of unit trust funds, based on the risk adjusted performance measures of Treynor Index and Adjusted Jensen's Alpha, is better than the performance of the market portfolio. Apparently, the higher performances of the Treynor Index and the Adjusted Jensen's Alpha are due to the lower beta of the sample portfolio of unit trust when using EMAS as the benchmark portfolio.

This result shows that the risk adjusted performance measures can be reversed using different benchmark portfolios. Thus choice of benchmark portfolio is crucial in measuring the performance of the unit trust funds.

Table 2 Unit Trust Fund Sample Portfolio Using KLSE Composite Index as Benchmark

Investment Type	Mean Monthly Return	Beta	Coefficient of Determination	Treynor Index	Adjusted Jensen's Alpha
Unit Trust Funds	0.00796	0.55770	0.51669	0.01175	-0.00340
Market Portfolio (KLSE CI)	0.02014	1.0	1.0	0.01532	0.0

Table 3 Unit Trust Fund Sample Portfolio Using KLSE EMAS Index as Benchmark

Investment Type	Mean Monthly Return	Beta	Coefficient of Determination	Treynor Index	Adjusted Jensen's Alpha
Unit Trust Funds	0.00796	0.50729	0.54610	0.09796	0.12568
Market Portfolio (EMAS)	0.01603	1.0	1.0	0.01116	0.0

3.1.2 Individual Unit Trust Fund

Table 4 and Table 5 show the mean monthly returns, beta values, coefficients of determination, Treynor Index and Adjusted Jensen's Alpha of each fund in the sample of unit trust funds using KLSE Composite Index and KLSE EMAS Index as benchmarks respectively. Based on mean monthly returns as the performance measure, the Kuala Lumpur Index Fund with a return of 1.786% is the best performer.

Based on Jensen's Alpha as the performance measure, SBB Premium Capital Fund is the best performer in Table 4 while Kuala Lumpur Regular Savings Fund is the best performer in Table 5.

Kuala Lumpur Balanced Fund is the best performer when either Treynor Index or Adjusted Jensen's Alpha is used as the performance measure. However, the Treynor Index value and Adjusted Jensen's Alpha value for the Kuala Lumpur Balanced Fund are many times higher in Table 5 when EMAS is used as the benchmark. The Treynor Index is 2.7107 in Table 5 compared to 0.0702 in Table 4. The Adjusted Jensen's Alpha is 4.2577 in Table 5 compared to 0.0539 in Table 4.

Table 6 is derived from Table 4 and Table 5. It shows the differences for the various performance measures between using KLSE CI and EMAS as benchmarks (Difference = values using EMAS - values using KLSE CI). Thus positive values in Table 6 show that the performance measures are larger when EMAS is used as the benchmark. In Table 6, 23 out of the 32 funds (72% of the funds) have higher R^2 using EMAS as benchmark. In addition, more funds have also lower beta (66% of the funds) and higher performance in Treynor Index (72% of the funds) and adjusted Jensen's Alpha (91% of the funds) when EMAS is used as the benchmark portfolio. These results are consistent with what we have found in Table 2 and Table 3, indicating that EMAS is more appropriate as a benchmark portfolio for most of the funds and the risk adjusted performance of the funds are higher using EMAS as the benchmark.

3.2 Risk Diversification

The Coefficient of Determination (R^2) in regression equation (E4) also measures the degree of diversification of the fund compared to the benchmark portfolio. Funds that have portfolio as diversified as the benchmark portfolio which is said to represent the market will have R^2 equal to 1. In Table 2 and Table 3, the sample portfolio of unit trust funds is less diversified than the benchmark portfolios of KLSE CI and EMAS. The sample portfolio of unit trust funds has R^2 of 0.51669 and 0.54610 when using KLSE CI and EMAS respectively as the benchmark. Thus the diversification of the sample portfolio of unit trust funds is closer to that of EMAS than to that of KLSE CI. Table 6 shows that most of the funds (23 out of the 32 funds) in the sample have higher R^2 when using EMAS as the benchmark. This indicates again that the portfolio diversification of most funds are closer to that of EMAS.

This result is consistent with the fact that most funds invest also in stocks not included in the KLSE CI. Thus EMAS could be a better benchmark to use when we consider this fact.

3.3 Forecasting Ability of Fund Managers

In finance literature, Jensen's Alpha has been used to measure the forecasting ability of the fund managers. A positive Jensen's Alpha indicates that the fund manager outperforms the naive "buy and hold" strategy (the benchmark market portfolio has a Jensen's Alpha of 0.0). Table 3, using KLSE CI as the benchmark portfolio, shows that 10 funds have forecasting ability and they outperform the "buy and hold" strategy. Among the sample funds, SBB Premium Capital Fund's manager has the best forecasting ability. Table 5, using EMAS as the benchmark portfolio, shows that more funds (13 funds) have forecasting ability. Kuala Lumpur Regular Savings Fund has the best forecasting ability. This result indicates that the EMAS could be a better benchmark as the funds do invest in stocks not included in the KLSE CI.

For the sample used in this study, about one third of the funds in fact perform better than the naive "buy and hold" strategy (whether using KLSE Composite Index or KLSE EMAS Index as market portfolio). There is good correlation between Jensen's Alpha values and the performance measures (Treynor Index and Adjusted Jensen's Alpha). This means that if the fund managers have good forecasting ability, the fund performance is also good. This is the case with the SBB Premium Capital Fund and the Kuala Lumpur Regular Savings Fund which are the top funds in Jensen's Alpha measure in Table 4 and Table 5 respectively. They also rank among the top few funds when using the Treynor

Index and the Adjusted Jensen's Alpha as the performance measure.

As far as this sample of unit trust funds is concerned, the result seems to dispel the notion that unit trust managers have superior forecasting ability. For both Tables 4 & 5, about two thirds of the funds have negative Jensen's Alpha. Thus most of the funds could not perform as well as the "buy and hold" strategy. This could be due to their management cost which consumes part of the returns.

Table 4

Summary of Results for Each Unit Trust in the Sample Portfolio (Benchmark: KLSE CI)

Fund	Mean Monthly Return	Beta	Coefficient of Determination	Treynor Index	Jensen's Alpha	Adjusted Jensen's Alpha	Objective of Fund
ASIA UNIT TRUST BERHAD							
Malaysia Investment Fund	0.00352	0.66110	0.74699	-0.00130	-0.00796	-0.01205	Balance
Malaysia Progress Fund	0.00277	0.75100	0.62176	-0.00214	-0.00967	-0.01290	Growth
Tabung Amanah Bakti Fund	-0.00218	0.66586	0.58765	-0.00986	-0.01371	-0.02063	Growth
Malaysia Berjaya Fund	0.00313	0.91943	0.79408	-0.00136	-0.01113	-0.01211	Growth
Malaysia Equity Fund	0.00164	0.77477	0.59380	-0.00354	-0.01106	-0.01430	Growth
Malaysia Commerce Fund	-0.00319	0.75039	0.56011	-0.01009	-0.01610	-0.02148	Income
KL MUTUAL BERHAD							
K. Lumpur Savings Fund	0.00894	0.65729	0.80432	0.00694	-0.00250	-0.00380	Balance
K. Lumpur Growth Fund	0.00959	0.70914	0.00544	0.00732	-0.00339	-0.00478	Income
K. Lumpur Index Fund	0.01786	0.67393	0.77343	0.01933	0.00197	0.00293	Income
K. Lumpur Industry Fund	0.00467	0.30262	0.57039	0.00117	-0.00134	-0.00449	Growth
K. Lumpur Regular Saving Fund	0.01487	0.35790	0.51250	0.02877	0.00538	0.01500	Balance
K. Lumpur Aggressive Growth Fund	0.00537	0.39796	0.83167	0.00201	0.00019	0.00047	Growth
K. Lumpur Balanced Fund	0.01041	0.07510	0.02164	0.07023	0.00402	0.05392	Growth
K. Lumpur Bond Fund	0.00667	0.05191	0.16343	0.02532	0.00026	0.00495	Income
BHLB PACIFIC TRUST MGT BHD							
Double Growth Fund	0.00727	0.78528	0.81215	0.00279	-0.00977	-0.01244	Income
Emerging Company Growth Fund	0.00920	0.64819	0.57394	0.00715	-0.00425	-0.00656	Growth
Savings Fund	0.01513	0.41490	0.40745	0.02392	0.00214	0.00515	Growth
High Growth Fund	0.01368	0.12972	0.05979	0.06506	0.00578	0.04465	Growth
DCB-RHB UNIT TRUST MGT BHD							
Dynamic Fund	0.01169	0.57924	0.75491	0.01213	-0.00443	-0.00766	Balance
Capital Fund	0.00905	0.53642	0.61789	0.00742	-0.00650	-0.01212	Growth
Mudarabah Fund	0.01678	0.63932	0.43889	0.01789	0.00012	0.00019	Balance
MAYBAN MANAGEMENT BHD							
Income Trust Fund	0.01181	0.43974	0.53808	0.01579	-0.00116	-0.00263	Income
Balanced Trust Fund	0.00740	0.13634	0.06961	0.01927	0.00130	0.00986	Balance
ARAB-MALAYSIA U.T. BHD							
First Fund	0.00566	0.71533	0.69092	0.00087	-0.01102	-0.01542	Income
Tabung Itikal Fund	0.00568	0.75875	0.84977	0.00145	-0.01364	-0.01800	Balance
Capital Growth Fund	0.01026	0.47032	0.28761	0.01046	-0.01152	-0.02489	Growth
BBMB UNIT TRUST MGT BHD							
Unit Trust Fund	0.00953	0.83255	0.78557	0.00535	-0.00847	-0.01017	Income
Prime Fund	0.00429	0.86790	0.38847	-0.00091	-0.01395	-0.01614	Income
Dana Putra Fund	0.01036	0.44501	0.40172	0.01175	-0.00222	-0.00499	Balance
SBB UNIT TRUST MGT BHD							
SBB Premium Capital Fund	0.01529	0.21742	0.11951	0.04637	0.00602	0.02776	Growth
MBF UNIT TRUST MGT BHD							
First Fund	0.00239	0.69368	0.63969	-0.00385	-0.01353	-0.01956	Balance
Growth Fund	0.00530	0.78771	0.51094	0.00021	-0.01306	-0.01654	Growth
MARKET (KLSE Composite Index)	0.02014	1.00000	1.00000	0.01532	0.00000	0.00000	
RISK-FREE,RF	0.00482						

Table 5

Summary of Results for Each Unit Trust in the Sample Portfolio (Benchmark: KLSE EI)

Fund	Mean Monthly Return	Beta	Coefficient of Determination	Treynor Index	Jensen's Alpha	Adjusted Jensen's Alpha	Objective of Fund
ASIA UNIT TRUST BERHAD							
Malaysia Investment Fund	0.00352	0.67850	0.75648	-0.00127	-0.00441	-0.00650	Balance
Malaysia Progress Fund	0.00277	0.78224	0.64854	-0.00206	-0.00570	-0.00729	Growth
Tabung Amanah Bakti Fund	-0.00218	0.69965	0.62378	-0.00938	-0.01022	-0.01462	Growth
Malaysia Berjaya Fund	0.00313	0.93880	0.79597	-0.00133	-0.00616	-0.00656	Growth
Malaysia Equity Fund	0.00164	0.80370	0.61434	-0.00341	-0.00694	-0.00865	Growth
Malaysia Commerce Fund	-0.00319	0.73719	0.51958	-0.01027	-0.01187	-0.01612	Income
KL MUTUAL BERHAD							
K. Lumpur Savings Fund	0.00894	0.67752	0.82165	0.00674	0.00102	0.00151	Balance
K. Lumpur Growth Fund	0.00959	0.73168	0.61678	0.00710	-0.00208	-0.00303	Income
K. Lumpur Index Fund	0.01786	0.58596	0.83518	0.02223	0.00264	0.00451	Income
K. Lumpur Industry Fund	0.00467	0.25858	0.59505	0.00137	0.00041	0.00162	Growth
K. Lumpur Regular Saving Fund	0.01487	0.31076	0.52391	0.03314	0.00729	0.02344	Balance
K. Lumpur Aggressive Growth Fund	0.00537	0.32037	0.75606	0.00250	-0.00229	-0.00715	Growth
K. Lumpur Balanced Fund	0.01041	0.00195	0.00002	2.71073	0.00526	4.25772	Growth
K. Lumpur Bond Fund	0.00667	0.05908	0.20332	0.02225	0.00055	0.00938	Income
BHLB PACIFIC TRUST MGT BHD							
Double Growth Fund	0.00727	0.67740	0.84850	0.00324	-0.00640	-0.00899	Income
Emerging Company Growth Fund	0.00920	0.60272	0.67288	0.00769	-0.00118	-0.00196	Growth
Savings Fund	0.01513	0.32033	0.30814	0.03098	0.00565	0.01762	Growth
High Growth Fund	0.01368	0.13686	0.08269	0.06167	0.00628	0.04591	Growth
DCB-RHB UNIT TRUST MGT BHD							
Dynamic Fund	0.01169	0.48534	0.75856	0.01448	-0.00093	-0.00184	Balance
Capital Fund	0.00905	0.50154	0.57434	0.00794	-0.00363	-0.00724	Growth
Mudarabah Fund	0.01678	0.68611	0.47365	0.01667	0.00352	0.00514	Balance
MAYBAN MANAGEMENT BHD							
Income Trust Fund	0.01181	0.36281	0.52350	0.01914	0.00142	0.00376	Income
Balanced Trust Fund	0.00740	0.10111	0.05007	0.02599	0.00230	0.02366	Balance
ARAB-MALAYSIA U.T. BHD							
First Fund	0.00566	0.65494	0.70877	0.00095	-0.00808	-0.01201	Income
Tabung Ittikal Fund	0.00568	0.63502	0.85040	0.00173	-0.00896	-0.01338	Balance
Capital Growth Fund	0.01026	0.31832	0.16822	0.01545	0.00555	-0.23403	Growth
BBMB UNIT TRUST MGT BHD							
Unit Trust Fund	0.00953	0.77500	0.83683	0.00575	-0.00503	-0.00649	Income
Prime Fund	0.00429	0.70510	0.35999	-0.00111	-0.00958	-0.01314	Income
Dana Putra Fund	0.01036	0.04738	0.50212	0.11035	-0.00053	-0.00112	Balance
SBB UNIT TRUST MGT BHD							
SBB Premium Capital Fund	0.01529	0.25513	0.20879	0.03952	0.00669	0.02626	Growth
MBF UNIT TRUST MGT BHD							
First Fund	0.00239	0.61211	0.69902	-0.00436	-0.01066	-0.01665	Balance
Growth Fund	0.00530	0.76992	0.53809	0.00022	-0.00922	-0.01195	Growth
MARKET (KLSE Composite Index)	0.01603	1.00000	1.00000	0.01116	0.00000	0.00000	
RISK-FREE, RF	0.00482						

Table 6
Differences in Beta, R² and Risk Adjusted Performance Measures of Each Unit Trust
Arising from Use of Different Benchmarks
(Difference = value by KLSE EI - value by KLSE CI)

Fund	Difference In Beta	Difference in Coefficient of Determination	Difference in Treynor Index	Difference in Adjusted Jensen's Alpha
ASIA UNIT TRUST BERHAD				
Malaysia Investment Fund	0.01740	0.00949	0.00003	0.00555
Malaysia Progress Fund	0.03124	0.02678	0.00008	0.00561
Tabung Amanah Bakti Fund	0.03379	0.03613	0.00048	0.00601
Malaysia Berjaya Fund	0.01937	0.00189	0.00003	0.00555
Malaysia Equity Fund	0.02893	0.02054	0.00013	0.00565
Malaysia Commerce Fund	-0.01320	-0.04053	-0.00018	0.00536
KL MUTUAL BERHAD				
K. Lumpur Savings Fund	0.02023	0.01733	-0.00020	0.00531
K. Lumpur Growth Fund	0.02254	0.61134	-0.00022	0.00175
K. Lumpur Index Fund	-0.08797	0.06175	0.00290	0.00158
K. Lumpur Industry Fund	-0.04404	0.02466	0.00020	0.00611
K. Lumpur Regular Saving Fund	-0.04714	0.01141	0.00437	0.00844
K. Lumpur Aggressive Growth Fund	-0.07759	-0.07561	0.00049	-0.00762
K. Lumpur Balanced Fund	-0.07315	-0.02162	2.64050	4.20380
K. Lumpur Bond Fund	0.00717	0.03989	-0.00307	0.00443
BHLB PACIFIC TRUST MGT BHD				
Double Growth Fund	-0.10788	0.03635	0.00045	0.00345
Emerging Company Growth Fund	-0.04547	0.09894	0.00054	0.00460
Savings Fund	-0.09457	-0.09931	0.00706	0.01247
High Growth Fund	0.00714	0.02290	-0.00339	0.00126
DCB-RHB UNIT TRUST MGT BHD				
Dynamic Fund	-0.09390	0.00365	0.00235	0.00582
Capital Fund	-0.03488	-0.04355	0.00052	0.00488
Mudarabah Fund	0.04679	0.03476	-0.00122	0.00495
MAYBAN MANAGEMENT BHD				
Income Trust Fund	-0.07693	-0.01458	0.00335	0.00639
Balanced Trust Fund	-0.03523	-0.01954	0.00672	0.01380
ARAB-MALAYSIA U.T. BHD				
First Fund	-0.06039	0.01785	0.00008	0.00341
Tabung Ittikal Fund	-0.12373	0.00063	0.00028	0.00462
Capital Growth Fund	-0.15200	-0.11939	0.00499	-0.20914
BBMB UNIT TRUST MGT BHD				
Unit Trust Fund	-0.05755	0.05126	0.00040	0.00368
Prime Fund	-0.16280	-0.02848	-0.00020	0.00300
Dana Putra Fund	-0.39763	0.10040	0.09860	0.00387
SBB UNIT TRUST MGT BHD				
SBB Premium Capital Fund	0.03771	0.08928	-0.00685	-0.00150
MBF UNIT TRUST MGT BHD				
First Fund	-0.08157	0.05933	-0.00051	0.00291
Growth Fund	-0.01779	0.02715	0.00001	0.00459

Unit Trust

Difference in
Adjusted
Jensen's Alpha

0.00555
0.00561
0.00601
0.00555
0.00565
0.00536

0.00531
0.00175
0.00158
0.00611
0.00844
-0.00762
4.20380
0.00443

0.00345
0.00460
0.01247
0.00126

0.00582
0.00488
0.00495

0.00639
0.01380

0.00341
0.00462
-0.20914

0.00368
0.00300
0.00387

-0.00150

0.00291
0.00459

3.4 Fund Performance Ranking

In Table 7, the funds are ranked based on the Treynor Index performance measure using KLSE CI and EMAS as benchmarks. For both the benchmarks, Kuala Lumpur Balanced Fund ranks the first while Malaysia Commerce Fund ranks the last. In Table 8, the funds are ranked based on the Adjusted Jensen's Alpha using KLSE CI and EMAS as benchmarks. Kuala Lumpur Balanced Fund still ranks the first while Capital Growth Fund ranks the last.

In both the Tables, Kuala Lumpur Balanced Fund appears to be the best performer based on the risk adjusted measures of Treynor Index and Adjusted Jensen's Alpha. This fund has a mean monthly return of 1.04%, which is not the highest in the sample. However, by virtue of its lowest beta, it became the best performer. It has the lowest beta of 0.0751 and 0.0019 respectively in the sample when KLSE and EMAS are used as benchmarks.

For both the Treynor Index and the adjusted Jensen's Alpha, the Spearman Rank Correlation Coefficients are calculated for the ranking of the funds using the KLSE CI and EMAS benchmarks. For both the performance measures, the Spearman Rank Correlation Coefficients exceed 0.9 and they are significant at the 0.05 level, showing that there is not much difference using both the benchmarks in ranking the fund performance. Dana Putra Fund in Table 7 for the Treynor Index ranking and Kuala Lumpur Aggressive Growth Fund in Table 8 for the adjusted Jensen's Alpha ranking have very large 'squared difference between ranks'. These two funds seem to be outliers. Without these two funds in the sample, the Spearman Rank Correlation Coefficient will be higher and more significant.

4. CONCLUSION

The evidence in this study indicates that the EMAS EI could be more appropriate as the benchmark portfolio, compared to the KLSE CI. EMAS provides a higher coefficient of determination which shows that the portfolio diversification of most of the unit trust funds are closer to that of the benchmark portfolio used. Using EMAS as the benchmark portfolio, more funds have lower beta and show higher performance using the risk adjusted performance measures. In addition, more funds also show to have forecasting ability to outperform the naive "buy and hold" strategy. These phenomena could be explained by the fact that most funds also invest in stocks not included in the KLSE CI but included in the EMAS.

Table 7
Performance Ranking For Treynor Index Using KLSE Composite Index And
KLSE EMAS Index As Benchmarks

Fund	KLSE CI		KLSE EI		Squared Differences Between Ranks
	Treynor Index	Rank of Fund	Treynor Index	Rank of Fund	
ASIA UNIT TRUST BERHAD					
Malaysia Investment Fund	-0.00130	26	-0.00127	26	0
Malaysia Progress Fund	-0.00214	28	-0.00206	28	0
Tabung Amanah Bakti Fund	-0.00986	31	-0.00938	31	0
Malaysia Berjaya Fund	-0.00136	27	-0.00133	27	0
Malaysia Equity Fund	-0.00354	29	-0.00341	29	0
Malaysia Commerce Fund	-0.01009	32	-0.01027	32	0
KL MUTUAL BERHAD					
K. Lumpur Savings Fund	0.00694	17	0.00674	17	0
K. Lumpur Growth Fund	0.00732	15	0.00710	16	1
K. Lumpur Index Fund	0.01933	7	0.02223	9	4
K. Lumpur Industry Fund	0.00117	22	0.00137	22	0
K. Lumpur Regular Saving Fund	0.02877	4	0.03314	5	1
K. Lumpur Aggressive Growth Fund	0.00201	20	0.00250	20	0
K. Lumpur Balanced Fund	0.07023	1	2.71073	1	0
K. Lumpur Bond Fund	0.02532	5	0.02225	8	9
BHLB PACIFIC TRUST MGT BHD					
Double Growth Fund	0.00279	19	0.00324	19	0
Emerging Company Growth Fund	0.00715	16	0.00769	15	1
Savings Fund	0.02392	6	0.03098	6	0
High Growth Fund	0.06506	2	0.06167	3	1
DCB-RHB UNIT TRUST MGT BHD					
Dynamic Fund	0.01213	11	0.01448	13	4
Capital Fund	0.00742	14	0.00794	14	0
Mudarabah Fund	0.01789	9	0.01667	11	4
MAYBAN MANAGEMENT BHD					
Income Trust Fund	0.01579	10	0.01914	10	0
Balanced Trust Fund	0.01927	8	0.02599	7	1
ARAB-MALAYSIA U.T. BHD					
First Fund	0.00087	23	0.00095	23	0
Tabung Ittikal Fund	0.00145	21	0.00173	21	0
Capital Growth Fund	0.01046	13	0.01545	12	1
BBMB UNIT TRUST MGT BHD					
Unit Trust Fund	0.00535	16	0.00575	18	0
Prime Fund	-0.00091	25	-0.00111	25	0
Dana Putra Fund	0.01175	12	0.11035	2	100
SBB UNIT TRUST MGT BHD					
SBB Premium Capital Fund	0.04637	3	0.03952	4	1
MBF UNIT TRUST MGT BHD					
First Fund	-0.00385	30	-0.00436	30	0
Growth Fund	0.00021	24	0.00022	24	0

Sum of squared differences 128

Spearman Rank Correlation 0.976539589

t- statistics* 24.83876045

* Significant at 0.05 level

Table 8
Performance Ranking For Adjusted Jensen's Alpha Using KLSE Composite Index And
KLSE EMAS Index As Benchmarks

d Differences ween Ranks	KLSE CI			KLSE EI		
	Fund	Adjusted Jensen's Alpha	Rank of Fund	Adjusted Jensen's Alpha	Rank of Fund	Squared Differences Between Ranks
0	ASIA UNIT TRUST BERHAD					
0	Malaysia Investment Fund	-0.01205	19	-0.00650	18	1
0	Malaysia Progress Fund	-0.01290	23	-0.00729	22	1
0	Tabung Amanah Bakti Fund	-0.02063	30	-0.01462	29	1
0	Malaysia Berjaya Fund	-0.01211	20	-0.00656	19	1
0	Malaysia Equity Fund	-0.01430	24	-0.00865	23	1
0	Malaysia Commerce Fund	-0.02148	31	-0.01612	30	1
0	KL MUTUAL BERHAD					
1	K. Lumpur Savings Fund	-0.00380	12	0.00151	12	0
4	K. Lumpur Growth Fund	-0.00478	14	-0.00303	16	4
0	K. Lumpur Index Fund	0.00293	8	0.00451	9	1
1	K. Lumpur Industry Fund	-0.00449	13	0.00162	11	4
0	K. Lumpur Regular Saving Fund	0.01500	4	0.02344	5	1
0	K. Lumpur Aggressive Growth Fund	0.00047	9	-0.00715	20	121
0	K. Lumpur Balanced Fund	0.05392	1	4.25772	1	0
9	K. Lumpur Bond Fund	0.00495	7	0.00938	7	0
0	BHLB PACIFIC TRUST MGT BHD					
1	Double Growth Fund	-0.01244	22	-0.00899	24	4
0	Emerging Company Growth Fund	-0.00656	16	-0.00196	15	1
1	Savings Fund	0.00515	6	0.01762	6	0
	High Growth Fund	0.04465	2	0.04591	2	0
4	DCB-RHB UNIT TRUST MGT BHD					
0	Dynamic Fund	-0.00766	17	-0.00184	14	9
4	Capital Fund	-0.01212	21	-0.00724	21	0
	Mudarabah Fund	0.00019	10	0.00514	8	4
0	MAYBAN MANAGEMENT BHD					
1	Income Trust Fund	-0.00263	11	0.00376	10	1
	Balanced Trust Fund	0.00986	5	0.02366	4	1
0	ARAB-MALAYSIA U.T. BHD					
0	First Fund	-0.01542	25	-0.01201	26	1
1	Tabung Ittikal Fund	-0.01800	28	-0.01338	28	0
	Capital Growth Fund	-0.02489	32	-0.23403	32	0
0	BBMB UNIT TRUST MGT BHD					
0	Unit Trust Fund	-0.01017	18	-0.00649	17	1
100	Prime Fund	-0.01614	26	-0.01314	27	1
	Dana Putra Fund	-0.00499	15	-0.00112	13	4
1	SBB UNIT TRUST MGT BHD					
	SBB Premium Capital Fund	0.02776	3	0.02626	3	0
0	MBF UNIT TRUST MGT BHD					
0	First Fund	-0.01956	29	-0.01665	31	4
	Growth Fund	-0.01654	27	-0.01195	25	4
128	Sum of squared differences					172
.976539589	Spearman Rank Correlation					0.968475073
4.83876045	t- statistics*					21.29399129
	* Significant at 0.05 level					

However, the result shows that most of the fund managers do not have forecasting ability and do not perform as well as the "buy and hold" strategy. It could be due to their management cost. The choice of benchmark portfolio also does not have much impact on the performance ranking of the funds.

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