

## PERFORMANCE OF LOCAL VERSUS INTERNATIONAL FOCUS MALAYSIAN-BASED MUTUAL FUNDS

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### ABSTRACT

*In light of the liberalisation in Malaysia's mutual fund industry, this study examines the performance of 180 internationally-focused against 191 locally-focused Malaysian-based funds using augmented Henriksson-Merton market timing model on daily data starting from January 1995 until December 2015. The results show that the funds generally outperform the market, despite the persistently perverse market timing ability. Although geographically disadvantaged, locally-focused funds prove to be superior to the internationally-focused funds both in terms of returns and risks owing to the informational advantage to better select the stocks from their own market. The results also reveal that size effect is imminent regardless of geographical focus, value investing is significant only among locally-focused funds, while momentum is marginally effective.*

**Keywords:** mutual funds, augmented Henriksson-Merton model, stock selectivity, market timing ability, geographical diversification

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Publication date: 31 December 2019

To cite this article: Abdul Rahim, R., Ling, P. S., & Mohd Rashid, R. (2019). Performance of local versus international focus Malaysian-based mutual funds. *Asian Academy of Management Journal of Accounting and Finance*, 15(2), 53–75. <https://doi.org/10.21315/aamjaf2019.15.2.3>

To link to this article: <https://doi.org/10.21315/aamjaf2019.15.2.3>

## INTRODUCTION

Divakaran et al. (2015) reported for the World Bank that there are around 76,200 mutual funds worldwide with assets under management (AUM) worth about USD30 trillion. Of this value, the share of developing markets is only 10% and as for Malaysia, its net asset value (NAV) accounts for a mere 0.36% of the world’s NAV. Like other developing markets, Malaysia’s mutual fund industry is lagging behind the world’s major players. As illustrated in Figure 1, the fund industry in Malaysia has by 2015 a NAV that accounts for 30% of the country’s gross domestic product (GDP) when the world’s fund assets already settle at 15% of world’s GDP in 2015 after a less encouraging performance since 2010. However, the size of Malaysia’s fund industry is trivial compared to those in developed markets like the U.S., Switzerland, Germany, and French which report fund assets ranging from 58% to 99% of their respective GDPs. Meanwhile, the mutual fund industry in markets like Singapore and Hong Kong is completely at a different level since their assets account for more than 400% of their GDPs.

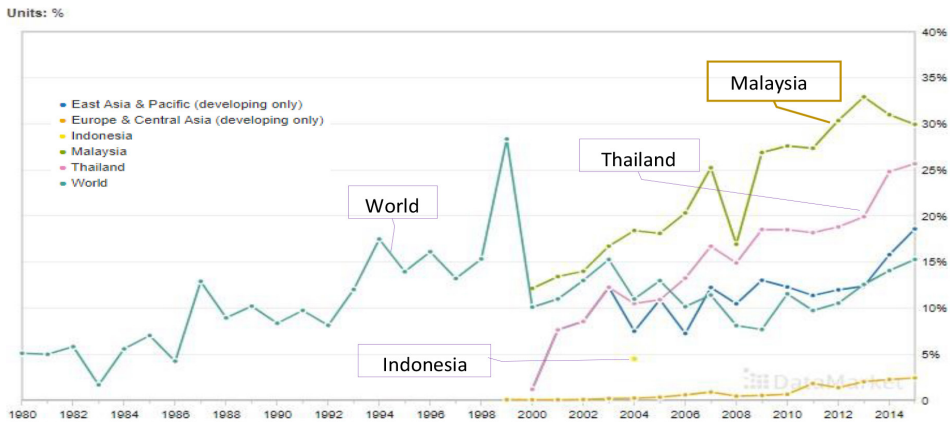


Figure 1. Mutual fund assets as a percentage of GDP

Source: World Bank

Despite being small at the global level, the fund industry in Malaysia has been growing tremendously. As reported by the Federation of Investment Managers Malaysia (FIMM), the funds’ NAV has increased remarkably by nearly 230% from MYR105.29 billion (USD24.54 billion) in mid-2004 to MYR346.58 billion (USD105.34 billion) at the end of 2015. Abdul-Rahim, Othman and Ling (2017) attributed the growth in Malaysian mutual funds industry to several factors including the policy that allows contributors of Employee Provident Fund (EPF) (the national retirement scheme that is made mandatory for all employees in the country) to invest a portion of their savings in selected mutual funds and

unit trusts. The government has also liberalised the industry by allowing fund management companies (FMCs) to diversify into international markets as a measure to improve the performance of the mutual funds. Specifically, in March 2005, conventional FMCs are allowed to invest up to 70% of their funds in foreign assets whereas in October 2007 Islamic FMCs are allowed to invest their funds totally in foreign assets.

By 2015, the funds' NAV reaches 20% relative to Bursa Malaysia market capitalisation, but the industry seems to be growing at a slower pace since the mid-2012. This trend is consistent with empirical evidence in this market that has not been particularly favourable of its performance. Several studies (e.g., Abdullah & Abdullah, 2009; Abdul-Rahim et al., 2017; Low & Ghazali, 2005) in general attribute the poor performance to the fund managers' weak stock selectivity and market timing skills. The poor performance does not justify the sales charges and management fees that investors have to incur in the expectation that the FMCs will effectively compensate them with above-average performance. In other words, the funds' performance as empirically documented does not portray that FMCs are optimising their expertise and other resources in managing their funds. This paradox motivates this study to revisit the issues pertaining to Malaysian fund performance from the perspective of timing-augmented Carhart model so that we can examine not only whether or not the performance is attributed to managerial skills but also to investment styles that are related to size, value, and momentum.

As the case in most previous studies, fund managers' skills, particularly in market timing, are most suitably examined in equity funds because they represent funds which invest a portion or all of the investors' capital in stocks of listed companies. Since market information on stocks is reported on a timely basis and most widely available, equity funds represent the best fund category that fund managers can leverage on market timing most effectively. It is also built on the argument of Kang, Lee and Lee (2014) who propose that evidence in the developed market may not represent the case of an emerging market because of differences in the regulatory framework and the relatively limited opportunities for capital investment.

In addition to the remarkable development in its mutual fund industry, Malaysia presents a great setting to test market timing ability of equity mutual funds because this type of fund accounts for the largest fraction (48%) among all types of mutual funds in this market. There are a number of studies (see Table 1 of page 47 in Tuyon and Ahmad [2016] for a good summary of studies on Malaysian market efficiency) that are documenting evidence suggesting that this market is

still inefficient in the weak form, and therefore offers great opportunities for the fund managers to perform well by identifying mispriced stocks and timing the market. Picking up on the liberalisation in Malaysian mutual fund industry since 2005, this study pays its attention to the difference in performance between funds which investment is concentrated locally and those that venture into equities in international markets. This study builds on the argument by Bauer, Otten and Tourani-Rad (2006) that international markets offer a greater asset diversity for a greater diversification effect in proposing that international focus funds should generate higher risk-adjusted return than local focus funds.

To the existing literature on Malaysian mutual funds, in particular, this study contributes by offering additional evidence regarding the benefit of geographical diversification from a different perspective. Earlier, Abdullah and Abdullah (2009) compared 26 domestic versus 23 international funds, on their risk-adjusted performances that were estimated using the traditional performance evaluation models of Sharpe, Treynor, and Jensen. Then, using the Treynor-Mazuy and Henriksson-Merton models, Low (2013) was able to attribute the fund performance to their stock selection and market timing skills. However, focusing on only international funds prevented her to evaluate those funds' performance against their domestic counterparts. The present study is in a way an extension of that by Kusairi, Sanusi, Muhamad and Damayanti (2013) who also examined the geographical diversification benefit by employing Treynor-Mazuy model which was adjusted to incorporate the effect of monetary policy on fund performance. Using both local and global content Carhart models that incorporate Henriksson-Merton market timing factor, the present study offers evidence on the managerial skills and investment styles of the funds when they are investing in local versus foreign markets.

## **LITERATURE REVIEW**

Mutual funds win over other investment instruments by promising management of funds by professionals who are enabled with the kinds of resources that allow efficient diversification and constant market watch. Academia asserts that the performance of these professionals is distinguished into two distinct skills, namely stock selection and market timing. The former allows fund managers the ability to identify and select undervalued stocks that correlate with each other in manners that will result in an efficient portfolio. The later enables fund managers to predict the future market movement and proactively take the right position to enter or exit the market, in order to make sure the funds' value is protected from the adverse market condition and is enhanced when the market soars. In brief, stock selection

skill requires fund managers to be sensitive to the microeconomic factors while market timing skill demands sensitivity to the macroeconomic factors.

Empirical studies on mutual fund performance have recently shown a growing interest in both stock selectivity and market timing ability, in various countries including developing ones. In the U.S., recent evidence is, in general, indicating satisfactory stock selection skills while rather consistent in indicating perverse market timing ability. In a study on all actively managed funds from 2000 until 2007, Ekholm (2012) used a new model that leverages on the tracking error from the standard performance evaluation model as performance measurement. He found the performance of funds is associated positively with stock-picking skill but negatively to past market timing activities. Based on an efficient market assumption, he associated the findings with the greater difficulty in efficiently absorbing idiosyncratic information than systematic information. Similar poor market timing performance is documented in Frijns, Gilbert and Zwinkels (2013) who tested it in a sample of 400 U.S. equity mutual funds from 1998 until 2004. They employed a new model which builds on a heterogeneous agent (differ in expectation about the direction of future asset price) that dictates switching between cash and equity depending on expected market condition. The results from their “switching” model turn out to be similar to but clearer than the standard Treynor-Mazuy’s model, in that it shows only 3.25% of the funds have significantly positive while there is still 41% that shows significantly negative skills in the timing or switching according to market condition.

Similar evidence was documented in a sample of 238 socially responsible mutual funds in the U.S. for the period that spans from 2002 until 2012 (Das & Rao, 2013). The study used both Treynor and Mazuy (1966) (henceforth T-M) and Henriksson and Merton (1981) (henceforth H-M) models and found the results are compatible. Half of their sample of socially responsible mutual funds have positively significant stock selectivity skill but similar to evidence from mutual funds in general, their market timing also appears to be very poor (only around 5% of the sample funds show positive and significant coefficient). While they could not offer an explanation behind the perverse market timing ability, there is evidence of a trade-off between stock selectivity and market timing. This includes the case among aggressive, higher growth and riskier funds that are more likely to engage in market timing but seem to be poor in their stock selection. Also, in contrast to popular belief, funds with a higher expense ratio are found to be less active in market timing activities.

Evidence on the poor market timing ability among fund managers is not confined to the U.S. funds. In some cases, the evidence is even worse. For instance,

during the period from 2000 to 2010, Christensen (2013) found that the mutual funds in Denmark perform poorly, invariant to their geographical diversification. Employing T-M model, the study showed that not only none of the 71 studied funds report positively significant market timing ability, the majority of them also report negative stock selection skills. In Russia, Vassiljev and Dudcenko (2007) too found that fund managers do not have superior stock selectivity and market timing skills from a study that used 36 funds from 2003 until 2006. They concluded that the use of monthly data might hinder evidence of market timing because its actual execution occurs within a shorter time span. Philippas (2011) also found Greek mutual funds exhibit insignificant positive selectivity and negatively significant market timing abilities. He too used monthly data of the 19 Greek balanced and equity mutual funds for the study period from 1993 until 1997. Philippas (2011) concluded that the main reasons for the poor performance are the lack of experience among fund managers since Greek fund managers are young, relatively inexperienced and mobile across funds. Nonetheless, the explanations do not seem to justify similar results documented in other larger markets like Germany. Using monthly data of 555 equity funds in Germany in 1990 until 2009 period, Cuthbertson and Nitzsche (2013) also found limited evidence of selectivity skills and overall poor market timing abilities. They reported that the results are invariant to sample period, performance measurements and evaluation models.

In less-developed markets, Abdel-Kader and Kuang (2007) found evidence from 30 mutual funds in Hong Kong which shows fund managers also have limited stock selectivity ability and perform poorly in market timing skill. In the study that spans the period from 1995 to 2005, they concluded that market timing and selectivity abilities that are expected from actively managed funds are not empirically supported. In a study period from 2004 to 2009, Goo, Chang, and Chiu (2015) found positive stock selectivity skills in 99% of the 144 Taiwan domestic-equity funds but they are insignificant. However, what is puzzling is the fact that 83% of the funds show negatively significant market timing performances. The results are generated using a stochastic beta model, Generalised Autoregressive Conditional Heteroskedasticity (GARCH) and nonlinear Generalised Least Squares (GLS). In India, Sharma (2016) found his sample 62 funds also display superior stock selection skill during a study period that spans from 2000 to 2014. The results are not much different across a sample that is segregated according to sponsorship institutions and investment objective. In Malaysia, Low and Ghazali (2005) found evidence from monthly data of 40 mutual funds that the perverse managers' market timing ability is the reason behind the funds' negative performance during the period of 1996 until 2000.

Evidence in favour of stock selectivity, as opposed to market timing, is more prevalent in general, because the reverse has been documented in some studies. For instance, in a more recent study which tested data of 191 equity unit trusts in South Africa using T-M and H-M models, Thobejane, Simo-Kengne, and Mwamba (2017) found evidence of no stock selection but strong evidence of market timing skills. Nonetheless, they asserted that market timing alone is not sufficient to generate the kind of performance which is apparently found weak during the study period from 2006 to 2016. They attributed the fund weak performance to macroeconomic conditions including the political uncertainty and falling prices of oil and commodities, as well as unfavourable foreign (U.S. and Europe) market conditions. Similar positive results on market timing are also documented in China by Rao, Tauni, Iqbal and Umar (2017). He used data of 520 mutual funds in a period that spans from 2004 until 2014 and tested them using capital asset pricing model (CAPM) and Carhart four factors model with T-M and H-M model. He found the alpha value (stock selection skill) is positive but for market timing, the coefficient is positive and significant. In other studies, both managerial abilities are weak. For instance, Elmesseyarya (2014) tested 35 Egyptian funds in a period from 2006 until 2012 and found the fund managers perform poorly in both stock selectivity and market timing regardless of the economic condition.

The consistently poor performance of fund managers in stock selection and more so in market timing ability is certainly not consistent with the continuing growth in the mutual fund industry. This study would then consider other possible advantages that mutual funds have over the other investment instruments. In the context of Malaysia, it is a glaring advantage that mutual fund has the resources necessary to diversify its capital to foreign markets. This geographical diversification is a key factor for the fund managers to access the wider range of asset classes offered in the foreign markets that are not subject to the same local market shocks, and thus allowing them a greater diversification effect. Examining if these benefits are manifested in fund performance, Fletcher and Marshall (2005) tested them on 282 UK unit trusts between 1985 and 2000. The results show that despite the advantages, international funds are not able to outperform their local counterparts. When segregated into the regional sector, only funds invested in Europe sector show positive performance. Note that Fletcher and Marshall (2005) did not separate market timing from the stock selectivity performance of their sample funds. Demaskey, Dellva and Heck (2003) discovered that international diversification provides U.S. funds with opportunities for both increasing returns and decreasing risk. However, it is possible that the benefits materialised in their study because their sample is funds that are hedged using selected foreign currency derivatives. This finding fits the theory correctly in that when the funds are invested in foreign markets, they are exposed to the currency risk. It is a well-



accepted fact that hedging is one of the most effective approaches to manage both foreign currency exposure as well as market risk.

However, like Fletcher and Marshall (2005), Bauer et al. (2006) also found that in their sub-sample of Australian ethical funds, the performance of domestic funds is significantly higher than that of their international counterparts. Badrinath and Gubellini (2010) also found the superior performance of domestic (mid-cap, balanced, all sectors and fixed income) equity funds to international (all) and global funds. Their sample is U.S. funds covering the period from 1970 to 2007 that are tested using alphas from CAPM and Carhart model. Another study by Rodríguez and Romero (2016) is on 699 U.S. funds that invest in foreign markets during the period from 1999 to 2010. They found additional evidence for market timing ability among funds that are geographically focused. Unlike Demaskey et al. (2003), Bauer et al. (2006) associated the superior performance of domestic to IFFs to home bias, wherein informational advantage about local financial market environment enables fund managers to perform their responsibilities better.

The effect of international exposure on fund performance has attracted some attention in Malaysia. Abdullah and Abdullah (2009) employed weekly returns of a sample of 26 local funds and 23 internationally invested funds. Using standard fund performance evaluation methods (Sharpe, Treynor and Jensenratio), they found no significant difference in the risk-adjusted performance of the two fund groups. Another study by Kusairi et al. (2013) addressed the similar issue on 420 mutual funds that are further categorised into geographical focused areas (i.e., domestic, Asia Pacific, international and global) in four a period from 2000 until 2012. The results seem to contradict to Abdullah and Abdullah (2009). Specifically, although Malaysia and the Asia Pacific focused funds report positive selectivity skills, only the former is positively significant. Also, except for Asia Pacific focused funds, the other geographical focused funds show poor market timing skills. Similar results are documented in a study by Low (2013) which examined 26 international equity funds in the period from 2008 to 2010. She found international focused funds display positive stock selectivity abilities but negative market timing skill.

Based on the theoretical and empirical arguments, the present study proposes that mutual funds that venture into international markets (international focused funds) are expected to generate a higher risk-adjusted performance than funds that are limited only to assets in their local market (LFFs). The findings would have an important policy implication in the context of Malaysia because it provides a justification about whether or not the policy which calls for the liberalisation of the mutual fund industry in this country has achieved its objective.



## RESEARCH METHODOLOGY

This study examines stock selectivity and market timing of mutual funds in Malaysia while giving consideration on the effect of the span of the funds' geographical diversification. To achieve its objective, this study uses daily returns of a sample of 371 equity funds that are offered in Malaysia over a period that spans from 2 January 1995 to 31 December 2015. The fund sample is further categorised into two sub-samples of: (i) 190 locally-focused fund (LFF) i.e., funds which equity components are stocks listed on Bursa Malaysia (the stock exchange of Malaysia), and (ii) 181 internationally-focused funds (IFF) which equity components are foreign stocks listed in foreign equity markets. The funds' geographical investment is based on the classification provided in Bloomberg Market and Fund Supermart Malaysia. In line with the argument forwarded by previous studies like Bollen and Busse (2001) and Frijns et al. (2013), this study uses daily data (the highest frequency possible from our sources) to better capture market timing activities of the fund managers. The sample provides a dataset that ranges from 220 (1-year trading days) to 5479 daily return observations. Daily returns of the sample funds ( $R_p$ ) are sourced directly from the Bloomberg database.

Another dataset required for this study would be those to construct the risk premiums in the Carhart model, namely  $R_M$ ,  $R_f$ ,  $SMB$ ,  $HML$ , and  $WML$  [defined later in Equation (2)]. We rely on Thompson's Datastream to retrieve these data which include the daily stock prices of all common stocks listed on Bursa Malaysia, Kuala Lumpur Composite Index (KLCI) as the proxy for the domestic market portfolio, and Malaysia's 3-month Treasury bill rates as the proxy for the domestic risk-free rate (supported with data from Bank Negara Malaysia, the Malaysia's central bank). The daily stock prices are transformed into the daily returns of the  $i$ th stock ( $R_i$ ), which is the difference between its price at time  $t$  and price at time  $t - 1$  divided by price at time  $t - 1$ .  $R_M$  is calculated in a similar manner with price index in place of the stock price.  $R_f$  which is provided as a per annum data of a 3-month maturity is adjusted with the appropriate  $m$  and  $n$  to obtain the equivalent daily rate.

Other data retrieved from the Thompson's Datastream are market capitalisation, book-to-market ratio and month-end returns for the past 12 months of all listed stocks with available data. Numerous studies have proven that these firm characteristics are associated with anomalous returns on stocks. These factors have been commonly accepted as among the foundation for factor investing or investment styles among investors, including fund managers. This is the argument for employing the Carhart model to explain fund performance, rather than relying totally on a single market factor through Jensen's alpha. These data are the bases

to construct portfolios to compute the premiums on risks related to size (*SMB*), value vs growth (*HML*), and momentum (*WML*). All stocks are segregated into 27 portfolios by triple-sorting them according to the three Carhart factors and once the portfolios are formed, we calculate the value-weighted average daily returns of each portfolio. Finally, we calculate the risk premium of size (*SMB*), value (*HML*) and momentum (*WML*) investment styles by taking the difference between two spectra of each investment criteria. This procedure is repeated every year to mimic the asset reallocation exercise of fund management companies.

Meanwhile, using the Carhart model that is built using local content to examine IFFs is expected to generate bias results. Given the scarcity of data and the geographical diversity of foreign stocks in those IFFs, we follow several past studies (e.g., Frijns et al., 2013; Brailsford, Gaunt, & O'brien, 2012) in adopting data from Professor Kenneth R. French's Tuck MBA School of Business online data library to form a reasonable representative of an international or a global content Carhart model. Traditional portfolio performance evaluation methods such as Sharpe's reward-to-variability and Treynor's reward-to-volatility are criticised because they do not differentiate management premium from the compensation of (total and systematic) risks (Gang & Qian, 2016). Jensen (1968) addressed this issue through *alpha* from the CAPM which he designated as a representation of the fund managers' skills:

$$E(R_{pt}) - R_{ft} = \alpha_p + \beta_p [E(R_{mt}) - R_{ft}] + \varepsilon_{pt} \quad (1)$$

where  $E(R_{pt})$  is the expected portfolio return at time  $t$ ,  $R_{ft}$  is the return on risk-free assets at time  $t$ ,  $\beta_p$  is the portfolio's systematic risk,  $E(R_{mt})$  is the expected return for the market portfolio at time  $t$ , and  $\varepsilon_{pt}$  is the random component of portfolio return. Solving alpha ( $\alpha_p$ ) from Equation (2) provides a positive (negative) value that represents over- (under-) performance of the funds relative to the market portfolio.

The single factor model is further refined to reflect active asset management such as the case for mutual funds, which would involve active stock selection and market timing. T-M and H-M introduced methods that capture fund managers' market timing ability. Of late, after Fama and French's (1993) three-factor model creates an overwhelming success in explaining various stock market anomalies, tremendous progress has been seen in the asset pricing literature. While the multifactor asset pricing models continue to evolve, we choose to adopt Carhart (1997) four-factor model because it has apparently established strong empirical supports including in its application as a performance evaluation method for mutual funds.

Specifically, this study incorporates H-M market timing factor into the standard Carhart model to segregate the fund performance due to managers' skills in selecting stocks from their market timing abilities while simultaneously controlling for the potential influences of investment styles. This augmented H-M model is represented as follows:

$$E(R_{p,t} - R_{f,t}) = \alpha_p + \beta_1 E(R_{m,t} - R_{f,t}) + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \beta_{WML} WML_t + \beta_{MT} Max[0, -E(R_{m,t} - R_{f,t})] + \varepsilon_p \quad (2)$$

where  $E(R_{p,t} - R_{f,t})$  is the excess return of the  $p$ th fund at time  $t$ ,  $E(R_{m,t} - R_{f,t})$  is the market risk premium at time  $t$ ,  $SMB$  represents the return premium associated with size factor at time  $t$ ,  $HML$  represents return premium associated with value factor at time  $t$ , and  $WML$  represents return premium associated with momentum factor at time  $t$ .  $\beta_{MT}$  is the parameter measuring the market timing performances that represent the fund manager's ability to readjusting the portfolio composition according to the anticipation in general market changes. This variable takes the absolute value of negative market risk premium  $-(R_{m,t} - R_{f,t})$  or otherwise zero, indicating fund managers' reaction to downward market movement. A positive and significant value of  $\beta_{MT}$  indicates the managers possess the skills to adjust the portfolio risk in both market conditions. Conversely, a significantly negative  $\beta_{MT}$  suggests the fund managers are perverse market timers because they are reacting to the market in the opposite manner from the direction of the actual price. Two variations of the augmented H-M model are employed in this study, one with local content for examining the 191 locally-focused funds and the other with Professor French's global content for examining the 180 internationally-focused funds.

## RESULTS AND DISCUSSION

Summary of the descriptive statistics in Table 1 is those of the whole sample of 371 funds and the two subsamples of 191 LFF and 180 IFF, along with the market return and the risk premium associated with Carhart's factors, based on local and global contents. On average, the whole sample funds produce a daily return of 0.0247% (equivalent to 8.89% per annum). This is an above-average performance since the market portfolio reports an average daily return of 0.0185% (6.66% per annum) during the same period. Clearly, the overall above-average performance is attributable to the performance of LFF which report nearly twice as high average daily returns (0.0288%, equivalent 10.25% per annum) relative to their international counterparts (0.0158%, equivalent to 5.69% per annum). Similar results are reported earlier by Abdullah and Abdullah (2009) over the 2000–2006 period. A possible explanation as suggested by Bauer et al. (2006) and Burlacu,

Fontaine and Jimenez-Garces (2006) is Lewis's (1999) home bias hypothesis, wherein informational advantage about local financial market environment enables fund managers to perform their responsibilities better because they are investing in assets that they have more information on. Note that the return of the global market portfolio is even higher during this period (0.0318%, equivalent to 11.45% per annum). The average daily risk-free rate of return for Malaysia and global markets is basically at par, that is, 0.0097% (3.45% per annum) and 0.0099% (3.56%), respectively.

Table 1 also presents the descriptive statistics of *SMB*, *HML* and *WML* which represent premiums related to investment styles that leverage on size effect, value versus growth and momentum, respectively. The results for the local content risk premiums indicate a moderate average daily size premium of 0.0043% (1.548% per annum) and a positive and economically large average daily momentum premium of 0.0205% (7.38% per annum). Meanwhile, *HML* reports a negative average daily return of -0.0004 (0.144% per annum), also consistent with the result found in an earlier study (Abdul-Rahim et al., 2017). For the global content risk premiums, the size effect is negative (0.648% per annum), but positive and economically meaningful for the value effect (5.04%) and more noticeably so for momentum (11.45%). In brief, there seems to be compatibility in terms of the momentum effect between local and global investment style.

We next plot the trend of returns for market portfolio ( $R_M$ ) and both subsamples in Figure 2. Consistent with the standard deviations reported in Table 1, returns on the market portfolio are most pronounced in their movement, relatively to the funds, particularly in times of economic crises. On the contrary, returns of LFF move least erratically indicating some level of diversification effect. Despite the expectation that international markets would create a better and wider range of securities for funds that invest internationally, the returns of these funds appear to be more volatile than their local counterparts. International funds are also more affected by the crises, in ways similar to the local market portfolio. This finding is consistent with the correlations reported in Table 2 which show that it is international funds that are more closely related with local market portfolio ( $r = 0.7315$ ). The correlation between LFF and local market portfolio is 0.6370. Note that the correlation between international funds and global market portfolio is only 0.2981, which suggests that Malaysia-based international funds are more closely associated with the local market than global market benchmarks.

Table 1  
*Descriptive statistics of returns and factor risk premiums*

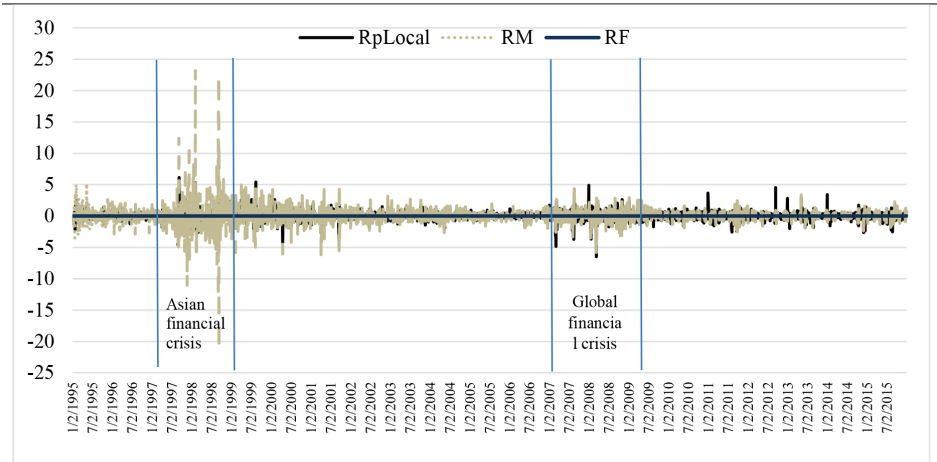
	Mean	S.D.	Minimum	Maximum	Skewness	Kurtosis
All funds $R_p$	0.0247	0.6461	-5.0670	6.1836	0.1252	12.6347
Local focus $R_p$	0.0288	0.6647	-6.4699	6.1443	0.1582	14.1373
Local $R_M$	0.0185	1.2979	-21.4578	23.1427	1.7117	67.1493
Local $R_{FR}$	0.0097	0.0040	0.0050	0.0273	1.6157	4.9677
Local $SMB$	0.0043	0.0842	-0.5856	1.0225	0.6947	13.8944
Local $HML$	-0.0004	0.0531	-0.2955	0.4980	0.4967	8.4295
Local $UMD$	0.0205	0.0794	-0.7602	0.6722	-0.8372	14.4846
Int'l focus $R_p$	0.0158	0.7923	-7.5610	8.9140	0.2288	18.0255
Global $R_M$	0.0318	0.9370	-6.6700	9.2000	-0.2382	10.3471
Global $R_{FR}$	0.0096	0.0090	0.0000	0.0300	0.1039	1.3136
Global $SMB$	-0.0018	0.4396	-4.2300	2.3200	-0.6775	9.2506
Global $HML$	0.0148	0.3783	-3.0200	2.8500	0.3536	9.7874
Global $UMD$	0.0318	0.6637	-5.4500	4.3200	-0.9433	11.3671

Notes: Max N = 5479 daily returns from 2 January 1995 to 31 December 2015. All funds  $R_p$  represents the average returns of all 371 sample funds, Local focus  $R_p$  represents the average returns of 191 LFF, IFF  $R_p$  represents the average returns of 180 IFF,  $R_M$  represents the market portfolio returns and  $R_{FR}$  referred as returns of risk-free security. All daily returns are stated in percentage. All factors denoted with global are retrieved directly from Professor's French's database at mba.tuck.dartmouth including the premium of  $WML$  which in the database is quoted as  $UMD$ .

Next, we run the CAPM with local and global contents separately to obtain the Jensen's alphas of each of 371 individual funds in our sample. As shown at the bottom of Figure 3, the average adjusted- $R^2$  is 42.21% (14.13%) and its  $F$ -value is significant in 99% (96%) of the local (internationally) focused funds. This finding indicates that market condition has a significant role in predicting the fund's returns, although the role is much stronger among LFF than IFF. In a way, this finding explains the negative fund performance documented in Low and Ghazali (2005) in that their study period (1996–2000) runs through the 1997/98 Asian financial crisis. The difference in the strength of the market condition also explains the result of alphas. Although the average alpha for the locally-focused funds is only 0.0002%, the fact that it is significantly positive in 41.36% of the sample indicates that the above-average performance is more consistent among the LFF. On the contrary, although IFF report a higher average alpha (0.0097%), it is only significant in 10.56% of the sample. In other words, because the study period covers two major financial crises, most funds are adversely affected that only a quarter of them are capable of outperforming the market. The distribution of alphas in Figure 3 clearly illustrates the difference between the two fund groups. The lower alpha value among LFF could also be the result of a higher

level of diversification (based on higher  $R^2$  value) which results in lower risk and therefore, lower return.

**Panel A. Local Funds Performance**



**Panel B. International Funds Performance**

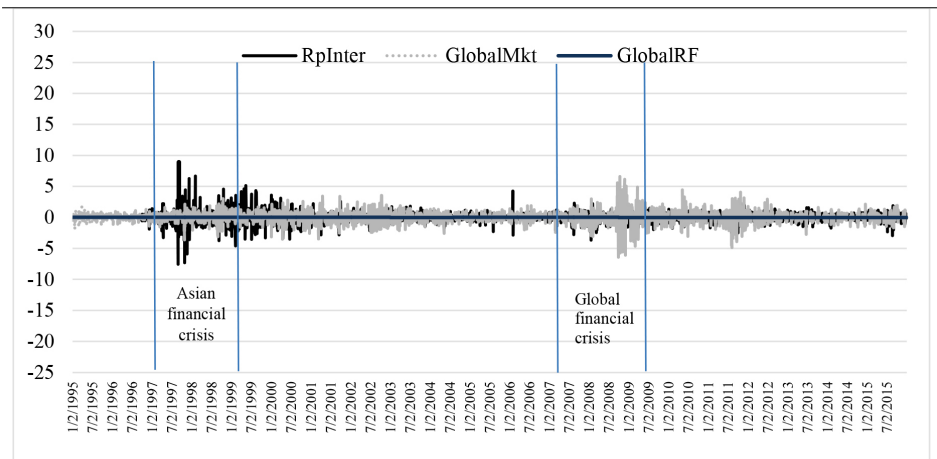


Figure 2. Trends of returns on local funds and international funds against the respective market benchmark

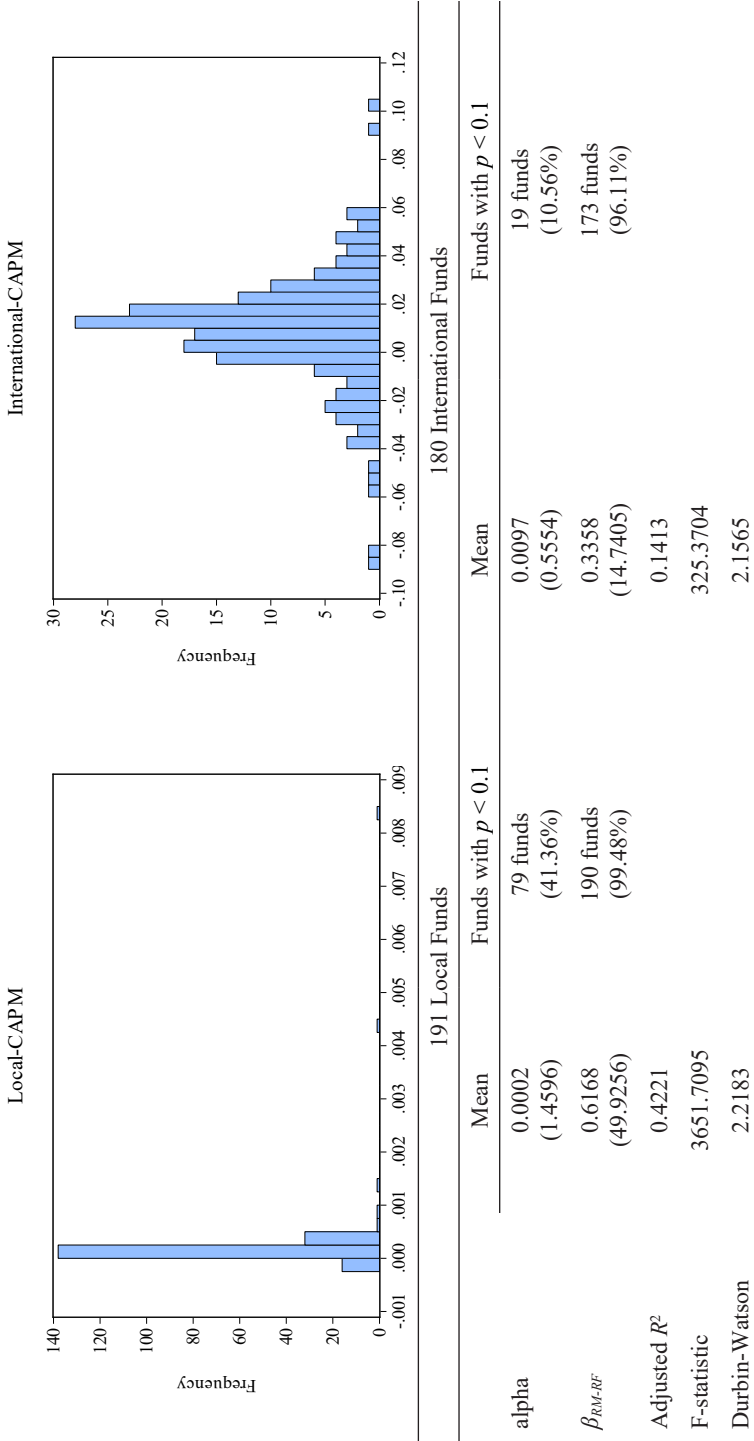
Table 2  
Correlation coefficient between return variables

	$R_p$ (all funds)	$R_p$ (local)	$R_M$ (local)	$R_F$ (local)	$R_p$ (international)	$R_M$ (global)
$R_p$ (local)	0.9796 (346.2557)***	1.0000				
$R_M$ (local)	0.6412 (59.3057)***	0.6370 (58.6543)***	1.0000			
$R_F$	-0.0741 (-5.2751)***	-0.0733 (-5.2189)***	-0.0490 (-3.4810)***	1.0000		
$R_p$ (international)	0.7378 (77.5884)***	0.6580 (62.0195)***	0.7315 (76.1388)***	-0.0661 (-4.7040)***	1.0000	
$R_M$ (global)	0.2818 (20.8487)***	0.2303 (16.7978)***	0.1649 (11.8651)***	-0.0006 (-0.0431)	0.2981 (22.1635)***	1.0000
$R_M$ (global)	-0.0252 (-1.7893)*	-0.0274 (-1.9448)*	-0.0149 (-1.0589)	0.4961 (40.5518)***	-0.0201 (-1.4255)	-0.0038 (-0.2690)

Notes: Data on  $R_F$  (global) and  $R_M$  (global) are retrieved from Professor French's online database.

\*\*\*, \*\*, and \* indicate significance at 1%, 5% and 10%, respectively.





Notes: Value in the bracket is the t-stats. All values are average expect in columns “ $p < 0.1$ ”.

Figure 3. The plot of alphas and summary of other statistics from CAPM

Finally, we regress the local or global augmented H-M models on excess returns ( $R_p - R_f$ ) of each of 371 individual funds according to their geographical focus. The objective is to examine the fund managers' stock selectivity and market timing skills while testing whether or not the fund returns can be attributed to any of the three investment styles established in the model. Summary of the regression results, reported in Table 3, show a slight improvement in the adjusted  $R^2$  values (and percentage of significant  $F$ -value) than that generated through CAPM. This finding is also much higher than reported by Abdul-Rahim et al. (2017) in which they find Carhart's average adjusted  $R^2$  is only 4.45% and significant in only 47% of their sample funds. The clear difference between the two studies is in the frequency of data used, in that Abdul-Rahim et al. (2017) used monthly returns while this study uses daily returns. The Durbin-Watson statistics are around 2.0, indicating no potential threat from autocorrelation issue. Concerning the performance of the two subsamples, we find that the adjusted  $R^2$  of LFF are more than twice as high as that of IFF (44% versus 18%). In a nutshell, this finding suggests that LFF are deeply rooted in the local content, whereas the IFF are somewhat loosely linked to the global market factors.

Table 3  
*Summary of statistics from augmented H-M market timing models*

Fitness of models	Local funds	International funds
Sample size, N	191 funds	180 funds
Adjusted $R^2$	0.4394	0.1839
Funds with sig. $F$ -value	98.95%	98.33%
Mean of $p$ -value	0.0049	0.0079
Durbin-Watson	2.2444	2.1738

*Note:* All value are average.

Summary of results from both local and global augmented H-M models are reported in Table 4, specifying on those parameters that determine whether the performance of Malaysian funds is attributed to the managers' skills, the market and/or the fund investment styles. Several important findings emerge from this summary. First, similar to the previous studies (Kusairi et al., 2013; Low, 2013) on Malaysian funds, this study records positive alpha values in the majority (78%–88%) of the sample funds while at least 29% of the alphas are significant. Interestingly, comparing the alpha statistics in Panels A and B reveal that more of these above-average performers are among locally than internationally exposed funds. Such a high percentage of positive alpha values also indicate that Malaysian fund managers have performed well in selecting their component stocks.

On the contrary, the coefficients for market timing ( $\beta_{MT}$ ) are negative in most cases and the negative coefficients are significant in 71% (31%) among local (international) focus funds. This finding suggests that mutual funds in this market have continued to perform badly in forecasting market movement over the period (e.g., Abdullah & Abdullah, 2009; Kusairi et al., 2013; Low, 2013). The perverse market timing is conspicuous among the local funds, indicating managers' adversity in predicting the volatile Malaysian equity market (see Table 1 and Figure 2). This finding is not only consistent with evidence documented in Malaysia earlier (Low & Ghazali, 2005), but also in various other markets like the U.S. (Frijns et al., 2013), Denmark (Christensen, 2013), and Taiwan (Goo et al., 2015). In general, this finding suggests that the funds' ability to outperform the market is contributed by their ability in selecting the right stocks, but their performance could have been better had they possess the right market timing abilities.

The second crucial finding from the augmented H-M models model is regarding the sensitivity of these funds' returns to changes in the market condition. Consistent with results from CAPM before, the local augmented H-M model also generates results which confirm that around 99% LFF track the market closely. This finding reflects the management of funds that are lenient towards a passive (index tracking) rather than active strategy. This result coincides with the managers' weak performance in market timing. The percentage of funds reporting effective market timing is about the same between the two groups, but the percentage of perverse market timers are twice as high among LFFs. Since most of the time, they end up making the wrong asset reallocation given the anticipated market condition, tracking the market is the alternative solution to remain "safe" although theoretically, that is not the way (actively) mutual funds should be managed. The IFFs are also behaving in a similar manner towards anticipated movement in the market, only slightly less obvious (93% positive and significant with  $t(\beta_{RM} - R_F)$  8.9885) than LFF [ $t(\beta_{RM} - R_F)$  27.6197].

Another important result obtained from the augmented H-M model concerns the contribution of three-factor investing or investment styles on fund performance. This result (reported in the last three columns of Table 4) is as important because these investment styles have become the ways managers group their equity funds (Kang et al., 2014). Evidently, size (*SMB*) and value (*HML*) investing are particularly eminent on the performance of LFFs. Among IFFs, only size investing appears to contribute significantly to performance while the value is weakest and only positively significant in 19% of the sample funds. Momentum (*WML*) investing contributes marginally to fund performance, more significant positive effect on the performance of local than IFFs. These results are different

from those in Rao et al. (2017) found in China and Kang et al. (2014) in Korea. The previous studies found funds' performance is significantly and negatively associated with size factor while significantly and positively with momentum factor. However, while Rao et al. (2017) found a significantly negative effect of value, Kang et al. (2014) found this factor rarely has any effect on their sample funds' performance.

Table 4  
Summary of augmented H-M market timing models

Coefficients	Managerial skills		Market		Investment styles	
	Alpha	$\beta_{MT}$	$\beta_{R_M-R_F}$	$\beta_{SMB}$	$\beta_{HML}$	$\beta_{WML}$
Panel A. Local funds, N = 191						
Mean	0.0003	-0.0695	0.5984	0.0081	0.0085	0.0028
(mean of <i>t</i> -stats)	(2.1389)	(-2.9524)	(27.6197)	(4.7012)	(3.7020)	(1.8659)
Positive	87.96%	13.09%	99.48%	90.05%	79.06%	70.68%
Negative	12.04%	86.91%	0.52%	9.95%	20.94%	29.32%
Positive & significant	53.93%	3.14%	98.95%	76.44%	69.63%	48.69%
Negative & significant	2.09%	70.68%	0.00%	3.14%	9.42%	10.47%
Panel B. International funds, N = 180						
Mean	0.0228	-0.0506	0.3995	0.4214	0.0514	0.0614
(mean of <i>t</i> -stats)	(0.9818)	(-0.9757)	(8.9885)	(6.5480)	(0.2930)	(0.4154)
Positive	78.89%	24.44%	96.67%	88.89%	56.67%	55.00%
Negative	21.11%	75.56%	3.33%	11.11%	43.33%	45.00%
Positive & significant	28.89%	3.89%	93.33%	86.11%	18.89%	35.00%
Negative & significant	2.78%	30.56%	1.67%	6.67%	13.33%	25.00%

Notes: Subscripts *SMB* = premiums on small minus big firms, *HML* = premiums on high minus low growth (book-to-market) firms, *WML* = premiums on stocks of winner minus loser firms, and *MT* = market timing. Value in bracket is the *t*-stats of the alpha. The average value for the whole sample is the weighted average of subsample values.

## **CONCLUSION AND IMPLICATION**

To re-emphasise, this study examines the performance of 191 LFF and 180 IFF Malaysian-based funds for a period of 21 years that span from 2 January 1995 to 31 December 2015. Using daily data, this study obtains results which indicate that in general, these mutual funds perform better than the market. Segregating these samples into LFF and IFF however reveal that it is the local funds that generate higher returns than the market whereas, the international funds generate lower than market performance.

By employing augmented H-M model (i.e., Carhart model which is adjusted for H-M market timing variable), we find three interesting results. First, similar to most previous studies, we find Malaysian fund managers perform well in selecting stocks, particularly from their local market as opposed to those stocks in foreign markets. Working within their own market gives the local fund managers an informational advantage to better select the stocks and consequently generate higher returns. Second and puzzlingly, these managers perform poorly in timing the market, in particular, their own local equity market due possibly to (1) difficulty in predicting the highly volatile local market and/or (2) the tendency to favour passive strategy by tracking the market. The later should not have been acceptable in the case of mutual funds because it would have exposed the funds' value to two extreme financial crises during this study period. In a nutshell, the finding of this study suggests that the fund managers have not been effective in predicting the market movement and actively reallocating their funds accordingly. Third, the results on factor investing suggest that local and international funds benefited differently to the three investment styles. While the LFFs are particularly exposed to size and value effects and slightly less to momentum effect, only size investing matters for IFFs.

Overall, the results of this study have several implications on players of the mutual fund industry. Investors, in general, need to be more selective in choosing funds for their indirect investment. They have a greater chance of better performance in funds that invest their assets in the local securities market, and funds that adopt investment styles based on size and value. To the market regulator, the results of this study could be a useful indicator concerning the effectiveness of their policy in liberalising the mutual fund industry with an objective to improve their performance for the benefit of the investors. Since this policy has a direct influence on the retirement plan of the people (through their EPF accounts), some measures may need to be taken to ensure their retirees' funds are better protected.

This study acknowledges several limitations that are worth mentioning and addressed in future studies. Firstly, the global factor premiums of Professor

French's study that we adopted to assess our Malaysia-based IFFs are formed on developed markets. These global factors blur the geographical distinction among funds by treating all international funds in one category. As a result, this study neglects the influence of different economic and market conditions on the respective fund's performance. Finally, future studies should also address the thematic element of the Malaysian fund market by separating Islamic from conventional funds since the former is subject to a different set of rules.

## **ACKNOWLEDGEMENTS**

This research has been funded by the Distinguished Chair of Yayasan Tun Ismail Ali (YTI) Research Grant at Universiti Kebangsaan Malaysia (EP-2015-047).

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