

MANAGERIAL ABILITIES AND FACTOR INVESTMENT STYLE PERFORMANCES OF MALAYSIAN MUTUAL FUND MANAGERS

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ABSTRACT

Background and Purpose: Studies focusing on mutual fund managerial abilities and investment style strategies are still scarce in the literature. Thus, this study aims to provide new evidence and insights into the managerial abilities and investment style performances of Malaysian fund managers.

Methodology: A total of 444 Malaysian equity mutual funds (EMFs) were evaluated using Carhart's model incorporated with Treynor-Mazuy (T-M) and Henriksson-Merton (H-M) market timing models for the study period, from January 1995 to December 2017.

Findings: Fund managers displayed superior stock selection skills with 32 percent and 43 percent of funds for T-M and H-M respectively, with perverse market timing ability which accounted for 39 percent and 42 percent of funds for T-M and H-M respectively. Perverse timing ability had reduced the superior stock-picking skills of fund managers. This suggests that the EMFs performance could further improve if respective fund managers perform better in market timing ability. The finding also indicates that size effect (SMB) and value effect (HML) play significant roles in investment style strategies, while results of momentum factor (WML) propose that Malaysian fund managers have followed the contrarian strategy.

Contributions: This study contributes in several ways especially in the literature of portfolio management as the evidence is obtained from the largest mutual funds sample size and the longest study period. Moreover, this study also used the highest frequency data to study the effects of market timing which were overlooked in previous studies.

Keywords: Adjusted carhart, Malaysian market, market timing, mutual fund, stock selection.

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1.0 INTRODUCTION

According to Securities Commission of Malaysia (SC), the total net asset value (NAV) of Malaysian unit trust funds have experienced a rapid surge of more than 640 percent from RM 73 billion in early 2004 to RM 540 billion at the end of 2019. The total asset under management (AUM) of the Malaysian mutual fund industry was reported to rose to a historical high of RM 823 billion which was parallel to the Malaysian stock market development where total market capitalisation of Bursa Malaysia was recorded at RM 1.7 trillion at the end of 2019 with a total of 900 listed companies. The percentage of unit trusts' total NAV over Bursa Malaysia's market capitalisation have also increased from 11 percent in 2004 to 28 percent at the end of 2019. The escalated percentage of the NAV over Bursa Malaysia's total market capitalisation indicates a significant development of mutual fund industry in Malaysia that could be attributed to growing investment in mutual funds by the public. Besides that, Abdullah and Abdullah (2009) stated that investing in Asian economy equity funds is a good strategy due to their exceptional performances and Malaysia has recorded the largest mutual funds' market share and AUM among the Asian countries. A unique characteristic of Malaysian equity market is its operation in dual financial systems, namely, generic and Islamic, which contain a special investment environment for investors (Ling, Abdul-Rahim, & Said, 2020). Hence, there is a need to study the managerial abilities and investment styles of Malaysian fund managers to encourage investment by local and foreign investors.

Despite the rapid growth of Malaysian equity market especially the mutual fund industry, the performance of this indirect investment asset scheme is of public concern. Recognised performance of a particular scheme can enhance the confidence of investors and encourage more investment in future. Numerous studies on mutual fund performance have been

carried out throughout the years. However, studies that focused on the fund managers' abilities coupled with their investment style strategies are still limited especially in recent years. Up to date, only two studies have examined the managerial abilities in the Malaysian context considering the possible anomaly effect of multifactor models (Abdul-Rahim, Othman, & Ling, 2017; Abdul-Rahim, Ling, & Mohd Rashid, 2019a). In both studies, the Henriksson-Merton's model was incorporated with the multifactor models but not the Treynor-Mazuy market timing model. Abdul-Rahim et al. (2017) found negative abilities for both managerial abilities studied with negative size (SMB) and momentum (WML) effect and positive value effect (HML). However, positive effect of all three additional premiums of Carhart's model with positive selectivity and negative timing abilities were found by Abdul-Rahim et al. (2019a).

As emphasised by Fama (1972), mutual fund performance is attributed to the selectivity and market timing ability of the fund managers. Abdul-Rahim et al. (2017) stated that both abilities are important to promote fund schemes and competitive advantages offered by the fund management companies (FMCs) and they can indirectly influence the total mutual fund performance. In addition to fund manager's ability, factor investment style strategies of mutual fund managers are crucial to the public as they have to be informed of the way fund managers manage their capital effectively.

This study is expected to contribute to the current literature on portfolio performance, especially in fund managerial abilities and investment style strategies. In this study, both Treynor-Mazuy and Henriksson-Merton's models were incorporated with Carhart's model for a large sample size examination (444 equity mutual funds, EMFs) with the longest recorded study period (23 years, from 1995 to 2017) compared to previous studies conducted for similar market. To date, studies that reported performances of both models are available but limited. In most studies, only Henriksson-Merton with Carhart's model was used but not both market timing models. Moreover, this study highlights the significance of high-frequency data usage in examining the market timing ability as stated by Ahmad and Samajpati (2010), in contrast to previous studies which focused on the Malaysian market that used weekly or monthly frequency data for managerial abilities evaluation. Since monthly frequency data may be unable to capture the market exposure concerning the market timing activities (Goetzmann, Ingersoll, & Ivkovich, 2000), daily frequency data used in the present study is expected to produce more precise results on market timing ability compared to weekly or monthly data (Bollen & Busse, 2001). Therefore, this study aims to examine i) stock selection and market timing abilities, and ii) factor investing styles of Malaysian fund managers which are achieved

using the Carhart four-factor model adjusted with Treynor-Mazuy and Henriksson-Merton market timing variables.

2.0 LITERATURE REVIEW

To date, the performance of Malaysian mutual funds has been extensively researched but reports on Malaysian fund managers' abilities are still limited. Nassir, Mohamed, and Ngu (1997) found superior stock selection and significantly negative timing abilities in 31 unit trusts in Malaysia while an analysis of 36 unit trusts by Kok, Goh, and Wong (2004) revealed that Malaysian fund managers had a good selectivity in pre-crisis and post-crisis periods but had no market timing in pre-, during- and post-crisis periods. A year later, Low and Ghazali (2005) reported that fund managers portrayed poor stock selection and market timing abilities. Subsequently, Low (2007) examined the fund managers' abilities using different market indexes and found insignificant stock selection skills among fund managers when EMAS index was used while stock selection skill remained insignificantly negative with KLCI as the benchmark. However, there was no significant difference detected when EMAS or KLCI index was used to evaluate market timing ability as both indexes consistently indicated that the EMF managers possess perverse market timing ability. An evaluation on effects of a crisis on fund managers' abilities by Alam, Tang, and Rajjaque (2013) shows insignificantly negative market timing ability and selection performance of Islamic funds whereas significant negative timing ability and selectivity were noted for conventional funds during the sub-prime crisis period.

The performance of fund managers' abilities was further observed by assessing the Islamic and conventional unit trusts similar to a study conducted by Alam et al. (2013). Significantly negative stock-picking and insignificantly negative timing ability were found for Islamic unit trusts, but negative significance was observed for conventional unit trusts as documented by Abdullah, Hassan, and Mohamed (2007). However, insignificantly positive stock selection and inferior market timing abilities were recorded for 129 Malaysian Islamic mutual funds using single and multiple benchmarks together with the capital asset pricing model (CAPM) and the Treynor-Mazuy models (Mansor & Bhatti, 2014). In a recent study, Shaikh, Ismail, Ismail, Shahimi, and Mohd. Shafiai (2019) revealed that conventional funds have a slightly greater net selectivity than the Islamic funds, while positive and mixed timing abilities were recorded for Islamic and conventional funds, respectively. In contrast, Zouaoui (2019) reported better selectivity skills of fund managers for Islamic funds while good timing abilities for conventional funds were noted for investment schemes in the international market. Better stock selection skills for Islamic funds as exhibited by fund managers were also

confirmed by Abdul-Rahim, Abdul-Rahman, and Ling (2019b) based on the evidence of emerging markets. According to Abdul-Rahim et al. (2019b), fund managers demonstrated better stock selectivity skills when dealing with Shariah funds while for conventional funds, the managers have slightly better market timing abilities. Investigation of Japanese EMF managers' abilities by Pilbeam and Preston (2019) indicated that 33 Japanese EMF managers showed superior timing abilities while another 31 Japanese EMF managers showed inferior timing abilities. The study also suggested poor stock selection skills of the managers although they have significant timing abilities.

Unlike previous studies, Ang, Gregoriou, and Lean (2014) adopted the Carhart four-factor model with Treynor-Mazuy and Henriksson-Merton market timing models to examine fund managers timing abilities of socially responsible investment (SRI) funds in North America and Europe. In another study, by Rodriguez and Romero (2016), multi-factor extension model coupled with the Treynor-Mazuy and Henriksson-Merton market timing models were employed to examine the market timing ability of the USA-based foreign open-end mutual funds. In Malaysia, this method was used by Abdul-Rahim et al. (2017) with adjusted Carhart's model and q-factor model together with the Henriksson-Merton market timing model. A negative alpha value was found when the Carhart's model was used whereas a positive alpha value was noted when the q-factor model was used and an insignificant positive market timing was also reported for both models (Abdul-Rahim et al., 2017). This finding indicates that Malaysian fund managers are weak in market timing skills. In a more recent study by Abdul-Rahim et al. (2019a), it was remarked that Malaysian local-focused EMF managers possess slightly better selectivity skills than Malaysian international-focused EMF managers and vice versa was found for market timing ability of the managers.

Previous studies on fund managers' abilities conducted over the years have proven that Malaysian EMF managers have indecisive managerial abilities, where some studies found greater stock selection skills but a lack of market timing ability in the managers (Nassir et al., 1997; Kok et al., 2004; Abdul-Rahim et al., 2019a). This further confirms that Malaysian fund managers are good in managing micro-level financial assets but not aggregate market movement (macro-level). Moreover, there are a few other studies that documented insignificant abilities of Malaysian fund managers (Low & Ghazali, 2005; Low, 2007; Abdul-Rahim et al., 2017). However, some findings contradict this as the managers' abilities and fund performances should outperform their benchmarks in an inefficient market. As found in previous studies, the stock market of Malaysia is still weak and inefficient. Therefore, the fund managers should have superior selectivity and market timing abilities (Ling & Abdul-Rahim,

2016, 2017; Lee, Jais, & Abdul-Karim, 2016; Chin, Jais, Balia, & Abidin, 2016; Chin, Jais, & Balia, 2018). An inconclusive evidence of additional factor investment style was also reported in a few studies (Ang et al., 2014; Abdul-Rahim et al., 2017; Abdul-Rahim et al., 2019a). Ang et al. (2014) revealed the existence of a negative size effect but with a positive value and momentum effect in North America funds while the reverse was reported for European funds. However, in the Malaysian context, Abdul-Rahim et al. (2017) suggested a negative size and momentum effect with a positive value effect in contrast to the recent findings by the same authors where Abdul-Rahim et al. (2019a) revealed a positive effect of all three additional premiums in the Carhart's model.

3.0 RESEARCH DESIGN

In this study, a total of 444 Malaysian EMFs were examined using daily returns for 23 years, starting from January 1995 until December 2017 with a range of 98 to 5,647 daily observations. To avoid the survivorship bias problem, all EMFs that were evaluated during the study period comprised of 394 active funds and 50 liquidated, acquired or inactive funds as of August 2017. The daily returns for all EMFs were downloaded from the Bloomberg database. The FBM Kuala Lumpur Composite Index (FBM KLCI) was employed as the proxy of market returns. The monthly data of Malaysian 3-month treasury bill rates were downloaded from the Thompson Reuter data stream and the rate was further adjusted on a daily basis. Aside from this, the daily stock returns for all listed stocks within the study period were acquired together with the annual data of market capitalisation, book-to-market value (BVMV) and momentum value to construct three variables in the Carhart's model, besides the market risk premium, $R_M - R_{FR}$. The additional three variables in Carhart's model (SMB, HML and WML) were the return difference between the top and bottom 30 percent stocks sorted based on each of the following factors: size, BVMV and momentum. After downloading all the listed stock data from the Bloomberg database, an average of 757 listed stocks over 23 years were included in constructing the style variables in the Carhart's model.

Several models were introduced to evaluate the performance of investment securities such as Sharpe ratio, Treynor ratio and Jensen's alpha (CAPM) which were further extended to include multi-factor models like Fama-French three-factor model, Carhart's four-factor model, q-factor model and Fama-French five-factor model. The main differences between these multi-factor models are the anomalies factors that were included to better evaluate the performance of the portfolio such as size and value effects in the Fama-French three-factor model, and size, value and momentum factors in the Carhart's model. Meanwhile, the q-factor

model consists of size, investment and profitability effects whereas the Fama-French five-factor model has an additional value effect. Amongst the aforementioned models, Carhart's four-factor model is considered the best in explaining the expected returns of an investment as reported by Rao, Tauni, Iqbal, and Umar (2017). Similarly, major anomalies may be better captured in the four-factor model than the Sharpe's single factor CAPM model (Akhtar & Ansari, 2016). However, Carhart's multi-factor model did not include the market timing variable.

The two most common market timing models are Treynor-Mazuy (Treynor & Mazuy, 1966) and Henriksson-Merton (Henriksson & Merton, 1981) models since both can assess the abilities of fund managers especially in selectivity and market timing, which are simultaneously distinguished in these models. Therefore, in this study, the Carhart's model was adjusted into the Treynor- Mazuy and Henriksson-Merton market timing models and renamed as adjusted Carhart's models that are able to concurrently examine the fund managers' abilities and investment style strategies. Similar adjusted Carhart's models were adopted by Ang et al. (2014), Rodriguez and Romero (2016), and Abdul-Rahim et al. (2017, 2019a). Before the introduction of the adjusted models, Jensen's alpha of the CAPM was first employed to assess the overall performance of the Malaysian EMF managers. Jensen's alpha (CAPM) and both adjusted Carhart's models are presented below:

$$R_I - R_{FR} = \alpha + \beta_1(R_M - R_{FR}) + \varepsilon \quad (1)$$

$$R_I - R_{FR} = \alpha + \beta_1(R_M - R_{FR}) + \beta_2SMB + \beta_3HML + \beta_4WML + \gamma MAX(R_M - R_{FR})^2 + \varepsilon \quad (2)$$

$$R_I - R_{FR} = \alpha + \beta_1(R_M - R_{FR}) + \beta_2SMB + \beta_3HML + \beta_4WML + \gamma MAX(0, -R_M - R_{FR}) + \varepsilon \quad (3)$$

Equation (1) is the model of Jensen's alpha and Equation (2) and (3) are the adjusted models of Tryenor-Mazuy and Henriksson-Merton, respectively. $R_I - R_{FR}$ is the portfolio or funds excess returns, α is alpha which measures the stock selection, β_1 , β_2 , β_3 and β_4 is beta for the relative variables (market risk premium, SMB, HML, and WML, respectively) and ε represents an error. Although adjusted Carhart's models were employed for each mutual fund with a total of 444 regression results recorded, only the average parameter coefficient of each variable was reported in this study which was considered sufficient compared to reporting individual results for all funds (Christensen, 2013).

As introduced by Carhart's model, SMB, HML and WML represent the size, value and momentum of the firms, respectively. Meanwhile, the $MAX(R_M - R_{FR})^2$ and $MAX(0, -R_M - R_{FR})$ are the market timing variables introduced by Treynor and Mazuy (1966) and Henriksson and Merton (1981), respectively where the fund managers reallocate or readjust their investment portfolio across different financial assets according to their market movement forecast. The T-M timing factor assumes the quadratic term of the market risk premium ($R_M - R_{FR}$), while H-M market timing factor represents the maximum value of the market risk premium ($R_M - R_{FR}$) that will otherwise be indicated as zero, presenting the reaction of fund managers over the change of market movements. The significant and positive α and γ indicate strong stock selection and market timing ability respectively. Meanwhile, the β_2 , β_3 , and β_4 indicate the investment style strategies applied by the fund managers in managing their investment portfolios.

4.0 ANALYSIS AND DISCUSSION

Table 1 shows the descriptive statistics for all raw return series obtained in this study, including daily mutual fund return (R_I), daily market return (R_{MKLCI}) and daily return of risk-free securities (R_{FR}). The mean of daily market return (proxied by FBM KLCI) was 0.0320 percent or 7.84 percent per annum, which was higher than the daily mutual fund return of 0.0219 percent or 5.37 percent per annum. Meanwhile, the return of risk-free securities was recorded at 2.35 percent per annum throughout the period. The findings indicate lesser performance of funds compared to that of the market benchmark, FBM KLCI. The risk-return trade-off theory that is supported as the standard deviation showed that the higher return of the market benchmark (0.0320%) was associated with higher daily volatility 1.2827%). However, the Sharpe ratio provides clearer information on the return over risk as it suggests that the funds (0.0319%) outperformed the market value (0.0249%) even after considering the total risk.

Besides, descriptive statistics for the multi-factor of Carhart's variables are also displayed in Table 1. Carhart's multi-factor variables represented the premium effects on the size, value or growth, and momentum factors. Positive mean values of SMB and WML, and negative mean value of HML were noted (Table 1). These results provide a preliminary evidence on the effects of these factors on the fund performance. Although the positive mean value of SMB is consistent with Malaysian local-focused EMFs as stated by Abdul-Rahim et al. (2019a), the value contradicts with that reported by Abdul-Rahim et al. (2017) and the Malaysian international-focused EMFs in Abdul-Rahim et al. (2019a). This could be due to data frequency effect as Abdul-Rahim et al. (2017) used monthly data whereas the present study employed daily data which has the highest frequency in the mutual fund industry.

Nevertheless, the WML and HML values were close to the value reported by Abdul-Rahim et al. (2017).

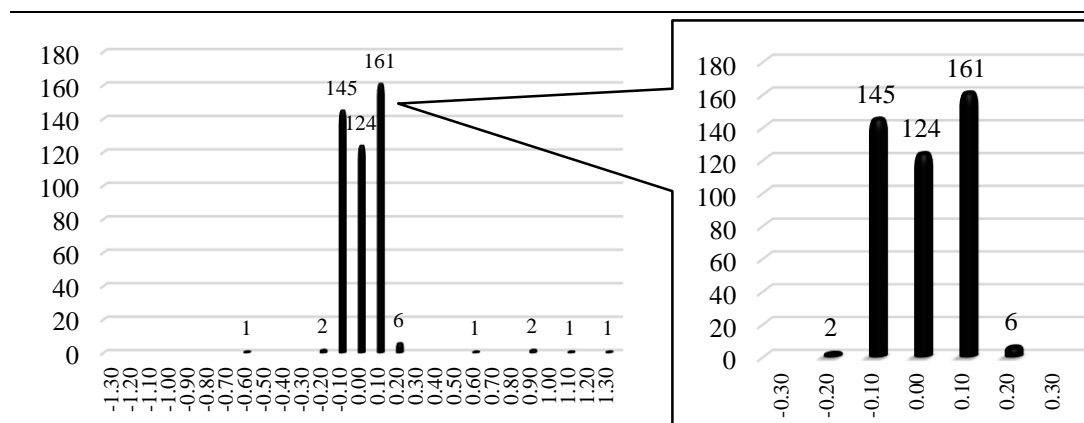
Table 1: Descriptive statistics of daily returns for the 444 funds (Jan 1995 - Dec 2017)

	R_I (%)	R_{MKLCI} (%)	R_{FR} (%)	SMB (%)	HML (%)	WML (%)
Mean	0.0219	0.0320	0.0096	0.0028	-0.0051	0.0195
Maximum	7.3430	23.1491	0.0273	0.7142	0.5215	0.8777
Minimum	-5.3864	-21.4578	0.0050	-0.9135	-0.3657	-0.6432
Standard Deviation	0.6864	1.2827	0.0039	0.0938	0.0538	0.0796
Sharpe ratio	0.0319	0.0249				

Note: N = daily observations with the minimum of 98 up to a maximum of 5,647 daily observations, R_I represents the average daily mutual fund return of all 444 equity mutual funds, R_{MKLCI} represents the average daily market return, proxied by FBM KLCI and R_{FR} is the average daily return of risk-free securities, proxied by Malaysian 3-month Treasury bill. Sharpe ratio was calculated using the formula: mean return/standard deviation. All the return data are expressed in percentage (%).

Table 2 shows Malaysian EMFs performance evaluated using Jensen's alpha model. Positive alphas obtained suggest that Malaysian EMFs exhibited greater performance than the market benchmark, which was not significant in line with that found by Abdul-Rahim et al. (2017) and Abdul-Rahim et al. (2019a). As presented in Table 2, the distribution of the Jensen's alpha coefficient shows that 296 sample funds produced a positive alpha coefficient that was only significant for 9.46 percent of the funds. However, 64 percent of sample funds have very low positive alpha (~ 0 to 0.1). It is worth mentioning that the Jensen's alpha did not distinguish between the managerial abilities of stock selection and market timing separately. A significantly positive market risk premium was also recorded for 94 percent of the Malaysian sample funds which implies that Malaysian sample funds are sensitive to positively influenced market condition. The diagnostic test of adjusted R-squared (nearly 30 percent) shows that the Jensen's alpha provided an insight into the performance of mutual funds while the Durbin-Watson test proves that the Jensen's alpha was free from autocorrelation problems as the Durbin-Watson test average value was close to 2.

Table 2: Summary of equity mutual funds' performance results by using Jensen's alpha (CAPM)



CAPM	α	MRP
Average	0.0172 (0.4615)	0.5629 (33.5973)***
Positive	Significant 42 (9.46%)	416 (93.69%)
	InSignificant 254 (57.21%)	20 (4.50%)
Negative	Significant 9 (2.03%)	1 (0.23%)
	InSignificant 139 (31.31%)	7 (1.58%)
Diagnostic	$A.R^2$ 0.2949	Durbin-Watson 2.0253

Note: Average value represents the average parameter coefficient of each variable for all 444 equity mutual funds and the value in the parentheses represents the average t-stat of each parameter for all 444 equity mutual funds. The numbers above are the number of funds that are significant or insignificant at 5% while the significant or insignificant percentage of the funds are stated below the numbers in parentheses. Pos. and Neg. indicate positive and negative coefficient, respectively; Sig. and InSig. indicate significant and insignificant at 5% level, respectively; α : stock selection; MRP: market risk premium; $A.R^2$: adjusted R-square value.

Other than the Jensen's alpha model, the adjusted Carhart's models which incorporated the Treynor-Mazuy and Henriksson-Merton market timing models were applied to examine the fund managers' abilities (stock-picking and market timing) and investment style strategies for 444 Malaysian fund managers. The summary results of the adjusted Carhart with Treynor-Mazuy model (T-M) and adjusted Carhart with Henriksson-Merton model (H-M) are presented in Table 3 and Table 4, respectively. From the diagnostics tests performed, the adjusted R-

squared ($A.R^2$) for both adjusted models were 31.25 percent (T-M) and 31.16 percent (H-M), which were higher than the adjusted R-squared reported by Abdul-Rahim et al. (2017) and approximately 95 percent or 420 funds were found significant at 5 percent of F-statistic alpha level. The Durbin-Watson values (2.0257 and 2.0388 for T-M and H-M, respectively) further indicate no autocorrelation problems in these adjusted models.

Table 3: Summary of fund managers' performance results by using adjusted Carhart with Treynor-Mazuy model

Carhart +T-M	α	γ MT	MRP	SMB	HML	WML	
Average	0.0327 (1.4958)	-0.0233 (-1.1929)	0.5705 (32.5329)***	0.0096 (4.7088)***	0.0089 (2.8380)***	-0.0063 (-2.6730)***	
Pos.	Sig.	143 (32.21%)	56 (12.62%)	424 (95.50%)	335 (75.45%)	240 (54.05%)	18 (4.05%)
	InSig.	221 (49.77%)	81 (18.24%)	11 (2.48%)	82 (18.47%)	117 (26.35%)	83 (18.69%)
Neg.	Sig.	5 (1.13%)	171 (38.51%)	0 (0.00%)	2 (0.45%)	9 (2.03%)	214 (48.20%)
	InSig.	75 (16.89%)	136 (30.63%)	9 (2.03%)	25 (5.63%)	78 (17.57%)	129 (29.05%)
Diagnostic	$A.R^2$ 0.3125		Durbin-Watson 2.0257				

Note: Average value represents the average parameter coefficient of each variable for all 444 equity mutual funds and the value in the parentheses represents the average t-stat of each parameter for all 444 equity mutual funds. The numbers above are the number of funds that are significant or insignificant at 5% while the significant or insignificant percentage of the funds are stated below the numbers in parentheses. Pos. and Neg. indicate positive and negative coefficient, respectively; Sig. and InSig. indicate significant and insignificant at 5% level, respectively; α : stock selection; γ MT: Treynor-Mazuy market timing; MRP: market risk premium; $A.R^2$: adjusted R-square value.

The results shown in Tables 3 and 4 can be categorised into three main components which are: (i) managerial abilities of selectivity and timing abilities, (ii) market risk premium and (iii) investment style strategies. The average coefficient of alpha (α) and gamma (γ) for the adjusted Carhart with Treynor-Mazuy model as stated in Table 3 implies that Malaysian EMF managers possess insignificant positive stock selection skills (0.0327) that were associated with weak market timing ability (-0.0233). Although the findings are similar to that found by Abdul-Rahim et al. (2019a) where similar adjusted Carhart's models were used, the presence of

negative alpha and market timing contradict with that reported by Ang et al. (2014) and Abdul-Rahim et al. (2017). Based on the number of funds at a significance level of 5 percent, Abdul-Rahim et al. (2017) concluded that only three funds showed significantly positive effect on stock selection with one fund that demonstrated significant positive effect on market timing. Out of the 444 EMFs, 82 percent showed positive stock selection skills with only 32 percent significant values. An insignificant negative gamma was recorded for market timing ability of fund managers while only 31 percent of fund managers possessed a positive timing ability with only 13 percent that was found significant.

Table 4: Summary of fund managers' performance results by using adjusted Carhart with Henriksson-Merton model

Carhart +H-M	α	γ MT	MRP	SMB	HML	WML
Average	0.0472 (2.1352)***	-0.0916 (-1.9329)**	0.5229 (17.9474)***	0.0096 (4.6738)***	0.0088 (2.8000)***	-0.0063 (-2.6763)***
Pos.	Sig. 193 (43.47%)	7 (1.58%)	393 (88.51%)	332 (74.78%)	238 (53.60%)	16 (3.60%)
	InSig. 196 (44.14%)	64 (14.41%)	35 (7.88%)	86 (19.37%)	119 (26.80%)	82 (18.47%)
Neg.	Sig. 5 (1.13%)	186 (41.89%)	2 (0.45%)	2 (0.45%)	10 (2.25%)	216 (48.65%)
	InSig. 50 (11.26%)	187 (42.12%)	14 (3.15%)	24 (5.41%)	77 (17.34%)	130 (29.28%)
Diagnostic	$A.R^2$ 0.3116			Durbin-Watson 2.0388		

Note: Average value represents the average parameter coefficient of each variable for all 444 equity mutual funds and the value in the parentheses represents the average t-stat of each parameter for all 444 equity mutual funds. The numbers above are the number of funds that are significant or insignificant at 5% while the significant or insignificant percentage of the funds are stated below the numbers in parentheses. Pos. and Neg. indicate positive and negative coefficient, respectively; Sig. and InSig. indicate significant and insignificant at 5% level, respectively; α : stock selection; γ MT: Henriksson-Merton market timing; MRP: market risk premium; $A.R^2$: adjusted R-square value.

Unlike the adjusted Carhart with Treynor-Mazuy model, significant superior selection skills and perverse market timing ability were noted for the adjusted Henriksson-Merton model. This is consistent with the study carried out by Nassir et al. (1997) and Kok et al. (2004) where the average coefficient of alpha and gamma for this adjusted model implies that Malaysian EMFs

managers have significant positive selectivity skills (0.0472) but inferior timing ability (-0.0916). This finding, however, contradicts to that stated by Abdul-Rahim et al. (2017) as negative alpha and market timing were found. It is worth noting, however, that Ang et al. (2014) reported a positive significant stock selection and market timing abilities in North American and European funds but negative significant selectivity skills were observed for European funds. The Henriksson-Merton model showed that 88 percent of fund managers had positive stock selection skills with only 43 percent of significant values, which was slightly higher than the results obtained when adjusted Treynor-Mazuy model was used. Contrastive results were found for market timing ability (γ MT) where the percentage of funds with positive market timing ability further decreased in this adjusted Henriksson-Merton model, whereas only 16 percent of the fund managers exhibited positive market timing ability with only 1.58 percent of funds possessed effective and successful timing ability. Out of 444 EMFs, 373 funds were found to have negative market timing and 42 percent of total funds (187 funds) were negative and significant.

The findings of positive security selection skills of fund managers in both models imply that Malaysian fund managers generally possess effective stock selectivity skills as they were able to select the “potential” or “right” stocks generating abnormal returns for their investment portfolios. Meanwhile, the negative market timing results show that Malaysian fund managers do not apply any market timing strategies in their portfolio management or they may time the market wrongly. This proves that the Malaysian fund managers are generally unsuccessful in forecasting future market movements, or even if they are able to predict the market accurately, they may overlook the best entry/exit market points and re-allocate their portfolios incorrectly at the end. Therefore, the fund managers end up with this negative market timing where more significant funds indicate their inferior market timing ability. This inferior result can be explained by the difficulty to predict the market trend consistently and accurately over a long period as the market timing is applicable for short investment horizons (Dhar & Mandal, 2014). Similar to that determined by Abdul-Rahim et al. (2019a), the alpha values of both adjusted market timing models were slightly higher than the obtained Jensen’s alpha (CAPM). This could be due to the offset of superior stock selection skills influenced by the weak market timing ability as reflected by the models which in turn can degrade the overall mutual fund performance of Jensen’s alpha. In addition, the results also prove that the market condition had a positive and significant influence on mutual fund return. This can be supported by the average coefficient and t-statistic of market risk premium ($R_M - R_{FR}$) and specifically a total of 424 funds

in T-M and 428 funds in H-M models had a positive coefficient while 95 percent in T-M and 89 percent in H-M total funds were significant at five percent significance level.

Furthermore, the results of both models suggest that SMB and HML play a significant role in portfolio investment style strategies as both SMB and HML had positive average coefficient premiums and more significant funds, approximately 75 percent and 54 percent of funds, respectively. The positive SMB found in this study was inconsistent with that reported for North American funds by Ang et al. (2014) and Abdul-Rahim et al. (2017), however, the SMB is consistent with that reported for European funds by Ang et al. (2014), Lai and Lau (2010) and Abdul-Rahim et al. (2019a). These previous studies suggest that the fund managers might have generated higher returns in their portfolios by investing more in small market capitalisation stocks. On the other hand, the HML found in this study was consistent with the funds in North America as reported by Ang et al. (2014), Lai and Lau (2010), Abdul-Rahim et al. (2017), and Abdul-Rahim et al. (2019a) but contrastive to that reported for European funds by Ang et al. (2014). This further reaffirms that Malaysian fund managers would have higher performance when investing in value stocks rather than growth stocks (low book-to-market value). However, the negative WML results suggest that the fund managers tend to apply contrarian strategies rather than momentum as 78 percent of funds had negative WML coefficients while nearly half of the total funds (214 and 216 funds in T-M and H-M, respectively) were significant. Moreover, this finding indicates that Malaysian fund managers tend to avoid overpriced stocks and are likely to invest in undervalued stocks, perhaps for higher returns. Similar results were noted for European funds studied by Ang et al. (2014) and Abdul-Rahim et al. (2017), but inconsistent with North American fund researched by Ang et al. (2014), Lai and Lau (2010), and Abdul-Rahim et al. (2019a).

5.0 CONCLUSION

Fund managerial abilities concerning market timing, stock picking and investment styles based on the Carhart model was examined. Data from daily returns of 444 Malaysian EMFs over a study period of 23 years from January 1995 to December 2017 were used. This study first employed the Jensen's alpha to evaluate the overall performance of the EMFs followed by application of the Carhart model, which was adjusted to incorporate market timing ability using Tryenor-Mazuy and Henriksson-Merton models. These models produced results on the fund managers' abilities (stock selection and market timing) together with three-factor investing styles, namely SMB, HML and WML. The overall results indicate that Malaysian EMFs showcased superior performances than their market benchmarks, but only significantly

outperformed for 42 funds. Moreover, Malaysian fund managers had overall strong positive stock selection skills, but weak (or negative) market timing abilities throughout the study period. It was found that Malaysian fund managers are superior in forecasting particular financial assets, but lack the ability to forecast the aggregate market outlook. This implies that Malaysian fund managers are not equipped with sophisticated skills especially in market timing and tools to outsmart the markets via technical analysis. The results show that the market capitalisation (SMB) and value (HML) play a significant role in portfolio management and it was noted that the managers did not apply momentum (WML) strategies in their portfolio management. This proves that Malaysian fund managers could generate higher returns by investing in small market capitalisation and value stocks following contrarian strategies. The findings from this present study are expected to provide clear and robust evidence on Malaysian fund managers' abilities and their factor investment style strategies which will be beneficial to investors, professional fund managers, fund management companies, market regulatory bodies and authorities such as Securities Commission of Malaysia, Federation of Investment Managers Malaysia and Securities Industry Development Corporation. These parties could set up better policies and steps for better investment performance and establish more sustainable investment environments. Moreover, international stakeholders such as institutional investors may have a better understanding of the managerial abilities and investment style performances of Malaysian fund managers as these are important for their investment plan in the Malaysian financial market which serves as the world's Islamic financial hub.

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