Private Retirement Scheme Funds: Will the Asset Allocation Strategy Work for Retirees?

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Abstract

One of the principal-agent problems is the asymmetric information between fund managers and investors. To mitigate this issue, this study conducts the return-based style analysis on Private Retirement Scheme funds to their asset allocation strategy. Our results show: First, conservative funds have a strong focus on fixed income products rather than equity. Second, in terms of asset allocation to capital, on average, growth funds have a higher allocation to foreign equity of 16.28 percent, followed by moderate funds of 9.18 percent; Third, growth funds focus on large growth stocks, while moderate funds focus on large value stocks. However, three observations deserve our attention: First, a high degree of selection for the conservative fund will entail higher transaction costs; and second, in terms of the degree of style and selection, conservative funds do not vary much from growth funds. In other words, there is no distinct product differentiation between the two categories; Lastly, there is a wide disparity in asset allocation across the conservative funds. This implies some degree of risk-taking by some fund managers. These results suggest that the financial goals of retirees will be undermined if PRS funds do not focus on their mandate.

Keywords: Style analysis, Equity style management, Asset allocation, Performance, retirement fund.

JEL classifications: G11, G23, H55, J26, L51.

Introduction

A new private pension fund scheme known as Private Retirement Scheme (PRS) was launched on 12 July 2012 as part of the Capital Market Master Plan 2 (CMP2). The PRS scheme is a voluntary retirement savings scheme structured by private sector fund providers, which are licensed by the Securities Commission. To facilitate the management of PRS, a new body known as Private Pension Administrator (PPA) is established to oversee the operation of PRS. The first group of funds was made available to the public in September 2012 by eight asset management companies.

This new scheme aims to supplement the existing stated sponsored retirement scheme known as the Employees Provident Fund (EPF). Studies by Asian Development Bank (ADB) and EPF have shown that there is a need to have more retirement schemes for Malaysians. An economist from ADB, Park (2012) reported that in Malaysia, only 48 percent of the labor force and 32 percent of the working-age population 15 – 64 were covered by the pension system in 2007.

Besides, as per the report by EPF (2015), it is reported that in 2014, 68 percent of the EPF members at the age group of 54 have savings equal to RM50,000 or less in their retirement account. It is also found that 50 percent of retirees will spend their EPF retirement monies in 5 years or less.

From the perspective of demographics, these findings are alarming in view that the average life expectancy for Malaysians is 75 years old, and given the retirement age at 60, there is a 15-year gap. Hence, it is hoped that the Private Retirement Scheme (PRS) industry can complement and supplement the existing mandatory Employees Provident Fund (EPF). The schemes will be able to provide employees and self-employed people with an additional avenue to save for their retirement.

As a national project to uplift the country to a higher-income level society, the Private Retirement Scheme (PRS) is one of the entry point projects for the Financial Services National Key Economic Area (NKEA) under Malaysia's Economic Transformation Programme (ETP). It is hoped the PRS will further enhance the growth of the fund management industry and other ancillary business services, which will create new values and income for the society. As stated by The Prime Minister, during the launch of PRS on 12 July 2012:

"…A high-income nation must have a sound and sustainable social framework to ensure adequate retirement savings. Private retirement schemes form an integral a feature of the private pension industry to improve living standards for Malaysians at retirement through additional savings of funds…."

The newly PRS has shown some outstanding results, as per the statistics as of 31 December 2013; there are 72,990 accounts registered with a total net asset value (NAV) of RM299.2 million.[1]

The Benefits and Fund Type of PRS

The employees and employers can contribute without any fixed amount or interval. Employees and the self-employed have the option of specifying the type of fund they want to contribute to. To encourage savings, individuals are granted tax relief of up to RM3,000, and employees are provided tax deduction on contributions above the statutory rate of 19 percent.

As shown in Table 1, the PRS funds are divided into three types, namely the growth fund, moderate fund, and conservative fund. The asset allocation is matched with age group and risk tolerance level, in line with the concept of a life cycle of investing.

1. Refer to the website of Securities Commission at http://www.sc.com.my/list-of-schemes-approved-for-sale/ As accessed on 08 January 2015

Table 1 Private Retirement Scheme (PRS) Funds–Core Funds

Core Funds	Age of Target investors	Asset allocation
Growth Fund	Below 40 years of age	Maximum 70% equities Investment outside Malaysia is permitted
Moderate Fund	40-50 years of age	Maximum 70% equities Investment outside Malaysia is permitted
Conservative Fund	Above 50 years of age	80% in debentures / fixed income instruments of which 20% must be in money market instruments and a maximum of 20% in equity Investment outside Malaysia is not permitted

Source: https://www.ppa.my/prs-and-you/structure-of-prs/As accessed on 30 September 2019

Conservative fund, as the name implies, is more suitable to the risk profile of an older age group from 50 and above. They are not encouraged to hold risky assets as their time horizon for investment is shorter as compared to the younger age group. Hence, no foreign asset class is allowed in their portfolio. In contrast, investment outside is permitted for both growth and moderate funds.

Conceptual Framework of Pension System

As fertility rate drops and aging society develops over the years, under the auspices of the World Bank, Holzmann & Hinz (2005) have developed the World Bank's Pension Conceptual Framework or which is also known as the World Bank's Five Pillar System. To reform the global pension system, they have provided a scheme of the five-pillar model to classify the various ways to fund the retirement system.

Everybody needs to have an adequate retirement provision when one reaches old age. Pension provisions or retirement benefits consist of various building blocks. The PRS is expected to contribute towards the Third Pillar to supplement the mandatory Employment Provident Fund (EPF), which is under the First Pillar, to have a robust pension system for Malaysia.

Table 2 The World Bank's Five-Pillar System

Pillar	Level	Type	Essential Characteristics
Pillar 0	State	Basic and social pension	Non-contributory minimal existence to the poor; typically means-tested
Pillar 1	Mandatory	Public pension plans or social security schemeto provide for basic needs	Contributory and redistributive and financed on a pay-as-you-go basis
Pillar 2	Mandatory	Private Occupational Pension Plans to supplement Pillar 1	Can be voluntary or compulsory; can be defined benefit (DB) or defined contribution (DC) plans
Pillar 3	Voluntary	Voluntary personal pension schemes	Individual savings or annuities in various forms
Pillar 4	Voluntary	Non-financial arrangement / financial support	A set of labour market policies to enable part-time work for the formally retired; Informal family support as an additional dimension

Source: http://www3.weforum.org/docs/WEF_FS_RetirementIncome_Report_2013.pdf As accessed on 30 Sep 2019

Under the Zero Pillar, there is no contributory social assistance from the State. Under Pillar One, there exists mandatory contribution, which is linked to earnings. Under the Second Pillar, there is a mandatory defined contribution plan with independent management. There are voluntary savings under the Third Pillar. Finally, retirees who have no formal pension scheme will have to rely on informal support or their assets for post-retirement lives.

In this respect, Malaysia's PRS aims to promote the welfare of the population at retirement through a robust multi-pillar pension framework. The Securities Commission is reviewing the existing retirement landscape to make recommendations within the context of developing the private pension industry, which will complement the mandatory contribution to our current Employees Provident Fund.

Issues and challenges in Malaysian Pension System

At the present moment, under Pillar 2, the existing Employment Provident Fund (EPF) is a successful model that provides comprehensive coverage for the employed sector with a constant dividend. The scheme has a high mandatory contribution rate and demonstrated resilience during both the 1997-98 Asian Financial Crisis and the 2008-09 Global Financial Crisis.

However, as identified by the Securities Commission and Private Pension Administrator (PPA), there exist four critical challenges to retirement planning in Malaysia. They are inadequate retirement savings, low retirement age, insufficient coverage, and increasing life expectancy. Hence, as long as the solution to the above issues, PRS is a voluntary long-term investment scheme designed to help individuals to accumulate savings for retirement under Pillar 3.

Like other funds managed by asset management companies or plan sponsors, *there is always asymmetric information between the fund managers and investors*. In our context, individuals or households who place their monies would like to know the asset allocation of their funds and the accompanying risk. As shown in the past studies using the US pension fund data, Brinson et al. (1986, 1991) show that asset allocation is the critical determinant of portfolio performance in the long run.

Secondly, there exists the issue of over-rewarding fund managers. Investors often could not tell whether the excess return to the fund (alpha) is contributed by the fund manager's selection or timing skills or only the random occurrence of luck. As shown by past studies, using the US data, the Nobel Laureate, William Sharpe (1988, 1992) shows that the decomposition of returns to underlying asset allocation is possible through the return-based style

analysis (RBSA). Besides, this technique enables one to examine the degree of styles and selection of a fund.

There are three research objectives for this study. Firstly, this study intends to attribute the performance of PRS funds to their respective underlying asset allocation. Hence, this study answers what the asset allocation strategy of PRS funds is; Second, this study intends to decompose the returns to their respective style and selection. In other words, does the fund managers add value per unit risk to the fund, and finally, the study will answer whether the asset allocation strategy works for pensioners?

The paper is organized as follows. The second section briefly reviews the literature on pension system, investment policy, asset allocation, and equity style classification. The third, four, and fifth sections are in data, methodology, and results, respectively. In the final part, this paper concludes with the application of return-based style analysis on the decomposing asset allocation of PRS funds and its contribution to add to the extant literature on PRS funds and pension funds in Malaysia.

Literature Review
Pension System and Social Security System

As discussed in section 1, numerous studies have touched on the need to reform the pension system in the world. Lee (1997) addressed the concern of the sustainability of Government pension schemes in Malaysia in view increasing number of sizes of civil servants, and hence increasing the cost of pension, which will undoubtedly add to the financial burden of the government.

There are also numerous studies on pension reform from Austria, Finland, Latin America, and Japan (Brunner, 1994; Barrientos, 1996; Horiba and Yoshida, 2001; Hakola and Uusitalo, 2005). It shows the awareness is high as there are worries as to the sustainability of the pension system in the respective countries. Interestingly, there is no study that focuses solely on a private retirement scheme.

Investment Policy, Asset Allocation and Fund Performance

A fiduciary relationship exists between investors, and their fund managers have underscored the importance of *investment policy*. In this respect, Gibson (1996) has enlisted a four-step approach in designing an investment portfolio for investing clients.[2] Of which, the first step being deciding which asset classes to be represented in the portfolio, and second, determining the long-term 'target' percentage of the collection to allocate to each of these asset classes. The third step is specifying the range within the allocation can be altered, and the fourth step is the selection of securities within each of these asset classes. Therefore, it is pertinent for a fund manager to follow his investment policy over a predetermined time horizon or until such time when the policy is altered.

Why is investment policy being emphasized in mutual fund investment? How does investment policy dictate asset allocation strategy and fund performance? In recent times, studies conducted in advanced financial markets notably the United States, have linked the performance of mutual funds to their respective asset allocation strategies [Brinson, Hood, and Beebower (1986], Brinson, Singer and Beebower (1991), Ibbotson and Kaplan (2000)]. Besides, the emergence of style analysis research on mutual funds has also answered some of the questions on the relationship between asset allocation and the styles as well as the performance of mutual funds [Sharpe (1992), Fama and French (1992 & 1993), Carhart (1997)].

Equity Style Classification

It is inevitable for the problem of asymmetric information between fund managers and investors to exist as timely mutual fund holdings are not readily updated even in the developed market, as discussed by Lucas and Reipe (1996). Furthermore, they identified style analysis to be a useful tool for investors to comprehend a trust fund's investment policy and objective.

In a number of subsequent studies, in the course of identifying a system of classification for equity trust funds, the researchers have also presented

2   Refer Gibson (1996) pp. 9 – 12.

the evidence of misclassifications if self-reported investment objectives were to be compared to the estimated styles (di Bartolomeo and Witkowski, 1997; Brown and Goetzmann, 1997; Kim, Shukla and Tomas, 2000).

In one of the recent studies, Amenc Sfeir and Martellini (2002) have proposed an integrated framework for assessing the risk-adjusted performance of mutual fund managers. This methodology is designed to be consistent with modern portfolio theory and constraints imposed by practical implementation of investment management, where a variety of styles have to be accounted for. In another study, TerHorst, Nijman and DeRoon (2004) states that while the estimated portfolio may indeed differ from actual portfolio holdings, but "…if the aim is to predict future fund returns, factors exposures seem to be more relevant than actual portfolio holdings, and return-style based style analysis performs better than holding-based style-analysis"5.

Recent studies have focused on the concept of equity style management in mutual funds. Using return based style analysis, Lau (2002) states that in addition to market benchmark comparison, the performance of funds can also be compared to their respective peer groups. In a subsequent study, Lau (2005) finds that the risk-adjusted performance of growth style fund managers is more persistent than value style funds. The same effect was not found under mutual fund objective classification. Besides, Lau (2006) finds that under style classification based on MSCI style indices, investment style is found to communicate economic trends to investors. It is found that during the period of economic recovery, value style funds recover faster from the distressed economic environment than growth style funds. On the other hand, during the economic recovery, growth style funds exhibit recovery momentum better than value style funds.

In another study using an integrated framework of style analysis, Lau (2007) states that the inclusion of asset classes with negative correlation coefficient enhances the performance of funds and funds with relatively high degree of style (above 70 percent) that hold large-cap stocks together with top portion of liquid asset class (6 to 35 percent) tend to have higher alpha, translating into higher information ratio.

Data and Methodology

The sample ofPRS fund data from 30 April 2013 to 27 February 2015 is obtained from Thomson Reuters Datastream. The Net Asset Value (NAV) for the last trading of the month is used in the analysis. As discussed in section 1, there are three types of the fund under the PRS definition. The study only focuses on core categories, namely Conservative, Growth, and Moderate. Islamic funds are excluded as they are invested in asset classes different from conventional funds. Besides, REIT and feeder funds are also excluded as they constitute less than 1 percent of available funds.

Table 3 Sample of PRS Funds

No.	Fund name	Morningstar Category	Malaysia PRS Category
1	Affin Hwang PRS Conservative Fund	Cautious Allocation	Core (Conservative)
2	Affin Hwang PRS Growth Fund	Aggressive Allocation	Core (Growth)
3	Affin Hwang PRS Moderate Fund	Moderate Allocation	Core (Moderate)
4	AIA PAM-Conservative Fund	Cautious Allocation	Core (Conservative)
5	AIA PAM-Growth Fund	Aggressive Allocation	Core (Growth)
6	AIA PAM-Moderate Fund	Moderate Allocation	Core (Moderate)
7	AmPRS - Conservative Fund - Class D	Cautious Allocation	Core (Conservative)
8	AmPRS - Conservative Fund - Class I	Cautious Allocation	Core (Conservative)
9	AmPRS - Growth Fund - Class D	Aggressive Allocation	Core (Growth)
10	AmPRS - Growth Fund - Class I	Aggressive Allocation	Core (Growth)
11	AmPRS - Moderate Fund - Class D	Moderate Allocation	Core (Moderate)
12	AmPRS - Moderate Fund - Class I	Moderate Allocation	Core (Moderate)
13	CIMB-Principal PRS Plus Conservative - Class A	Cautious Allocation	Core (Conservative)
14	CIMB-Principal PRS Plus Conservative - Class C	Cautious Allocation	Core (Conservative)
15	CIMB-Principal PRS Plus Conservative - Class X	Cautious Allocation	Core (Conservative)
16	CIMB-Principal PRS Plus Growth - Class A	Aggressive Allocation	Core (Growth)
17	CIMB-Principal PRS Plus Growth - Class C	Aggressive Allocation	Core (Growth)
18	CIMB-Principal PRS Plus Growth - Class X	Aggressive Allocation	Core (Growth)
19	CIMB-Principal PRS Plus Moderate - Class A	Moderate Allocation	Core (Moderate)
20	CIMB-Principal PRS Plus Moderate - Class C	Moderate Allocation	Core (Moderate)
21	CIMB-Principal PRS Plus Moderate - Class X	Moderate Allocation	Core (Moderate)
22	Manulife PRS-Conservative Fund - Class A	Cautious Allocation	Core (Conservative)
23	Manulife PRS-Growth Fund - Class A	Aggressive Allocation	Core (Growth)
24	Manulife PRS-Moderate Fund - Class A	Moderate Allocation	Core (Moderate)
25	Public Mutual PRS Conservative Fund	Cautious Allocation	Core (Conservative)
26	Public Mutual PRS Growth Fund	Aggressive Allocation	Core (Growth)
27	Public Mutual PRS Moderate Fund	Moderate Allocation	Core (Moderate)
28	RHB Retirement Series - Conservative Fund	Cautious Allocation	Core (Conservative)
29	RHB Retirement Series - Growth Fund	Aggressive Allocation	Core (Growth)
30	RHB Retirement Series - Moderate Fund	Moderate Allocation	Core (Moderate)

Source: www.ppa.my

Referring to table 3, a total of 30 funds from growth, moderate, and conservative categories are chosen for this study.

The continuous compounding return for the fund is used as the dependent variable. It is calculated as

$$R_{j,t} = \ln (P_{j,t} / P_{j,t-1})$$

$$R_{m,t} = \ln (l_{m,t} / I_{m,t-1})$$

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

Where:

$R_{j,t}$ = the continuously compounded return for j unit trust fund at time t

$R_{m,t}$ = the continuously compounded return for m benchmark portfolio for the month t

$R_{f,t}$ = the continuous compounding risk-free rate of interest for month t

$P_{j,t}$ = the net asset value for j unit trust fund at time t

$I_{m,t}$ = the asset class index at the end of month t

$r_{f,t}$ = the discount rate of the 90-day T-Bill for month t as the proxy for the risk-free rate of interest

Independent variables are return series of asset classes invested by fund managers. The asset classes that represent the investment universe are shown

in table 4. The continuous compounding return of independent variables is also calculated as per the formula above. However, the KLIBOR rate is transformed in the logarithmic form to avoid the problem heteroscedasticity. There is an effect of variance reduction for the overnight inter-bank rate, and this will assist in obtaining a more accurate and unbiased estimation.

Table 4 Asset class indices

Asset Class	Description
Growth Stocks	Represented by MSCI Malaysian Growth Index* quoted in local currency.
Value Stocks	Represented by MSCI Malaysian Value Index* quoted in local currency.
Cash	A proxy for short-term Ringgit money market instruments. Represented by Kuala Lumpur Interbank Offer Rate (KLIBOR). KLIBOR 1-month deposit rate is used.
Govt. Bonds	Represented by MGS-bond all tenure Index#, which account for MGS with a value above RM100 million on issues for maturity greater than one year.
Corporate Bonds	Represented by Corporate Bond Index#, which account for all bonds and loan stocks listed on KLSE a term to maturity of more than one year. A proxy for listed private debt securities.
Intl. Stocks	Represented by MSCI World Index*. A proxy for all international stocks index.

 # Source of data: Quant shop

* Available from http://www.msci.com

Style analysis in equation (2) attempts to capture the investment universe in the model; careful consideration has been taken to ensure that asset classes chosen are not correlated to one another. As stated by Sharpe (1992) "…while not strictly necessary, such asset classes should be 1) mutually exclusive, 2)exhaustive and 3) have returns that 'differ', and the asset classes returns should either have low correlations with one another or, in cases in which correlations are high, different level of standard deviations".

Source: MSCI
Figure 1 Large-cap value

Source: MSCI
Figure 2 Large-cap Growth

Table 5 Descriptive Statistics of Returns of Asset Classes

	MSCI LG	MSCI LV	MGS	CBI	KLIBOR	MSCI WORLD
Mean	0.001	0.001	0.002	0.003	1.162	0.008
Median	0.000	0.006	0.003	0.003	1.128	0.012
Maximum	0.039	0.033	0.017	0.010	1.264	0.055
Minimum	-0.033	-0.034	-0.015	-0.002	1.118	-0.038
Std. Dev.	0.019	0.019	0.008	0.003	0.049	0.028
Skewness	0.009	-0.411	-0.459	0.199	0.554	0.090
Kurtosis	2.279	2.224	3.036	2.196	1.799	1.948
Jarque-Bera	0.477	1.172	0.772	0.738	2.448	1.044
Probability	0.788	0.556	0.680	0.691	0.294	0.593
Sum	0.027	0.024	0.049	0.063	25.561	0.183
Sum Sq. Dev.	0.008	0.008	0.001	0.000	0.050	0.016
Observations	22	22	22	22	22	22

Table 6 Correlation Matrix of Asset Class Returns

	MSCI LG	MSCI LV	MGS	CBI	KLIBOR	MSCI World
MSCI LG	1.00					
MSCI LV	0.63	1.00				
MGS	0.54	0.08	1.00			
CBI	0.21	0.08	0.44	1.00		
KLIBOR	-0.03	-0.26	0.21	0.39	1.00	
MSCI World	0.50	0.69	0.05	-0.01	-0.19	1.00

As shown in table 5, KLIBOR and MSCI World Index have standard deviation as compared to equity indices like MSCI Large Growth (LG) and MSCI Large Value (LV). In table 6, there is no close correlation between the indices on the right-hand side. Hence, there is no issue of multicollinearity.

Methodology
Style Analysis

As in Sharpe (1992), this study initially introduces the generic factor model in equation (1) before adapting it into style analysis in equation (2).

$$\tilde{R}_i = \left[b_{i1}\tilde{F}_1 + b_{i2}\tilde{F}_2 + b_{ik}\tilde{F}_k + \ldots + b_{in}\tilde{F}_n \right] + \tilde{e}_i \tag{1}$$

Where

$\tilde{R}_i$ = return of fund i

$\tilde{F}_k$ = return of factor k for fund i

b_{ik} = sensitivity of fund i to factor k

$\tilde{e}_i$ = non-factor return of asset i of mean zero with the assumption that the non-factor returns are uncorrelated $\sigma_{\tilde{e}i\tilde{e}j} = 0$

Style Analysis is the use of constrained quadratic programming for solving the asset allocation problem. This approach incorporates two specific constraints: first, the coefficients must sum to 100 percent, and second, coefficients must be positive. Negative coefficients can be interpreted as short positions in asset classes. This type of strategy is rarely used by the funds examined, and prohibiting these coefficients provides better, more usable results.[8]

The factor is rewritten as

$$\tilde{e}_i = \tilde{R}_i - [b_{i1}\tilde{F}_1 + b_{i2}\tilde{F}_2 + b_{ik}\tilde{F}_k + \ldots + b_{in}\tilde{F}_n] \tag{2}$$

Where

$\tilde{e}_i$ = selection

$\tilde{R}_i$ = return of fund i

$\tilde{F}_k$ = return of factor k for fund i

b_{ik} = sensitivity of fund i to factor k

To obtain the style, minimize variance of residual return

Subject to Constraints

$$\sum_{j=1}^{n} b_{ik} = 1$$

for any fund and asset class k
and $0 < b_{ik} < 1$

With the two specific constraints, the coefficients tabulated in equation(2) will resemble the weights within a portfolio and conveniently displayed as part of the portfolio. The asset class indices in table 2, which represent the factors in equation (1) and the sensitivity of each of the fund's return series to each of the asset class index factors, are used to construct a passive benchmark portfolio return series for performance measurement. In other words, the return of funds will be measured against the style-based, passive benchmark contained as second, bracketed terms on the right-hand side of equation (2).

Upon obtaining results from the quadratic programming in equation (2), the proportion of variance 'explained' by the selected asset classes, for the fund I can be obtained as below:

$$R^2 = 1 - \frac{Var(\tilde{e})}{Var(\tilde{R})} \tag{3}$$

The second term of the right-hand side of the above equation represents the proportion of variance 'unexplained" or due to active management

(selection). In other words, the return of the unit trust fund is decomposed into return on a set of asset classes and residual returns. The former is attributed to style and represented by the R-square, while the latter is attributed to selection.

To take into account the added (or subtracted) value provided by a fund, i.e., its benchmark and the added risk, the monthly mean selection returns are divided by the standard deviation of monthly selection returns. This calculation gives an information ratio, as stated in equation (4).

$$\text{Information Ratio} = \frac{E(\widetilde{e}_i)}{\sigma_{\widetilde{e}_i}} \qquad (4)$$

The monthly mean selection returns can be measured for its statistical significance using a t-statistic. The null hypothesis is stated as the selection return equals to zero.

$$t = \frac{(r_s - \mu)}{s/\sqrt{n}} \qquad (5)$$

Where

r_s = the monthly mean selection returns

μ = zero, the null hypothesis

s = the standard deviation of monthly selection return

n = the number of observations

Result and Discussion

As per the discussion in section 3, the result of estimation is listed as below:

Table 7 Degree of Styles, Selection and Asset Allocation of Different Fund Types

No	Fund	Style	Selection	Large Growth	Large Value	MGS	Corporate Bonds	Money Market	MSCI World	Total
1	Affin Hwang PRS Conservative Fund	37.61	62.39	20.03	0.00	41.66	38.31	0.00		100
2	AIA PAM Conservative Fund	71.65	28.35	1.23	13.66	16.95	68.16	0.00		100
3	AmPRS Conservative Fund Class D	66.08	33.92	3.90	12.52	28.52	54.00	1.06		100
4	AmPRS Conservative Fund Class I	55.51	44.49	0.87	12.98	31.77	53.43	0.95		100
5	CIMB-Principal PRS Plus Conservative - Class A	58.78	41.22	7.97	15.34	11.28	65.42	0.00		100
6	CIMB-Principal PRS Plus Conservative - Class C	59.00	41.00	6.18	15.55	12.82	65.45	0.00		100
7	CIMB-Principal PRS Plus Conservative - Class X	62.08	37.92	5.78	16.43	13.37	64.43	0.00		100
8	Manulife PRS-Conservative Fund Class A	40.14	59.86	0.00	0.69	56.82	42.48	0.00		100
9	Public Mutual PRS Conservative Fund	20.08	79.92	9.19	4.12	6.71	79.56	0.00		100
10	RHB Retirement Series - Conservative Fund	46.57	53.43	1.68	16.21	13.59	63.43	5.08		100
	Conservative Fund	**51.75**	**48.25**	**5.68**	**10.75**	**23.35**	**59.47**	**0.71**		**100**
1	Affin Hwang PRS Growth Fund	39.30	60.70	33.10	0.00	62.43	0.00	0.00	4.47	100
2	AIA PAM Growth Fund	52.39	47.61	25.54	31.57	33.03	0.00	3.42	6.44	100
3	AmPRS Growth Fund Class D	62.79	37.21	33.71	10.23	49.93	0.00	6.13	0.00	100
4	AmPRS Growth Fund Class I	61.90	38.10	3.81	11.80	30.26	0.00	2.56	51.57	100
5	CIMB-Principal PRS Plus Growth - Class A	51.65	48.35	36.41	29.47	14.18	0.00	3.20	16.74	100
6	CIMB-Principal PRS Plus Growth - Class C	52.55	47.45	34.64	31.91	15.65	0.00	3.39	14.40	100
7	CIMB-Principal PRS Plus Growth - Class X	52.35	47.65	35.96	31.13	14.09	0.00	3.41	15.42	100
8	Manulife PRS-Growth Fund Class A	32.58	67.42	17.68	34.06	48.25	0.00	0.00	0.00	100
9	Public Mutual PRS Growth Fund	67.01	32.99	28.11	18.06	0.00	0.00	0.06	53.77	100
10	RHB Retirement Series - Growth Fund	51.20	48.80	30.10	37.20	26.61	0.00	6.09	0.00	100
	Growth Fund	**52.37**	**47.63**	**27.91**	**23.54**	**29.44**	**0.00**	**2.83**	**16.28**	**100**
1	Affin Hwang PRS Moderate Fund	55.79	44.21	35.07	0.00	64.93	0.00	0.00	0.00	100
2	AIA PAM Moderate Fund	70.34	29.66	22.36	27.45	28.33	17.95	2.70	1.21	100
3	AmPRS Moderate Fund Class D	71.91	28.09	9.05	29.98	60.98	0.00	0.00	0.00	100
4	AmPRS Moderate Fund Class I	71.85	28.15	9.82	29.32	60.86	0.00	0.00	0.00	100
5	CIMB-Principal PRS Plus Moderate - Class A	59.27	40.73	29.34	35.60	21.93	0.00	1.76	11.36	100
6	CIMB-Principal PRS Plus Moderate - Class C	59.56	40.44	29.71	35.67	19.52	0.00	1.69	13.41	100
7	CIMB-Principal PRS Plus Moderate - Class X	58.80	41.20	28.32	36.64	22.40	0.00	1.76	10.88	100
8	Manulife PRS-Moderate Fund Class A	36.49	63.51	10.09	28.35	61.55	0.00	0.00	0.00	100
9	Public Mutual PRS Moderate Fund	77.62	22.38	30.42	14.69	0.00	0.00	0.00	54.89	100
10	RHB Retirement Series - Moderate Fund	51.51	48.49	17.52	36.24	38.97	0.00	7.27	0.00	100
	Moderate Fund	**61.31**	**38.69**	**13.41**	**27.39**	**37.95**	**1.79**	**1.52**	**9.18**	**100**

Overall, Moderate funds have the highest degree of a style of 61.31 percent, followed by growth funds (52.37 percent) and conservative funds (51.75 percent). In other words, the fund managers of moderate funds practice more passive than active styles.

On the contrary, on average, conservative funds have the highest degree of selection (48.25 percent) and a lower degree of style. One would expect the opposite as conservative funds should act more like passive fund rather than an active fund. The degree of selection for conservative and growth funds are similar. It also implies that conservative funds do not vary much from growth funds. It also means a high degree of selection for the conservative fund will incur higher transaction costs.

Looking at each category, it is interesting to note that for conservative funds, on average, they have allocated 59.47 percent in corporate bonds, followed by 23.35 percent in MGS, with a total of 82 percent in debt instruments. In other words, conservative funds, as the name implies, have a strong focus on the fixed income products rather than equity. In terms of asset allocation to equity, on average, Growth funds have a higher allocation to foreign equity of 16.28, followed by moderate funds (9.18). In terms of asset allocation between growth and value stocks, Growth funds, as the name implies, focus on Large Growth stocks, while moderate funds focus on Large Value stocks.

However, within each respective category, it can be observed that the asset allocation does not follow a definite pattern, and at times, the disparity can be wide between one another. For example, for conservative funds, Affin Hwang PRS has a Large Growth allocation of 20 percent of which around four times above the average. For growth funds, it is observed that AmPRS Growth Fund Class D has near to 50 percent of asset allocation in MGS, while Affin Hwang PRS Growth Fund has 62.43 percent in MGS. This brings to the issue of misclassification of fund objective in PRS fund. Hence, the comparison among the funds is not accurate. In other words, there is no distinct product differentiation between the fund categories. This will undermine the goal of portfolio diversification if funds are not correctly classified.

Table 8 Cumulative Return Difference (Fund versus Style) and Selection Sharpe Ratio

No	Fund	Cum Ret Diff(%) Fund vs Style	Ave Return (% per mth)	StdDev (% per mth)	T statisitcs (Ave Return)		Monthly Selection Sharpe Ratio	Selection Sharpe Ratio
	Conservative Fund							
1	Affin Hwang PRS Conservative Fund	-5.00	-0.09	0.77	-0.87		-0.32	-0.67
2	AIA PAM Conservative Fund	0.08	-0.06	1.26	-0.38		0.02	0.06
3	AmPRS Conservative Fund Class D	26.96	0.41	0.32	9.67	***	-3.95	-1.00
4	AmPRS Conservative Fund Class I	-21.24	-0.40	0.37	-8.47	***	-3.11	-1.00
5	CIMB-Principal PRS Plus Conservative - Class A	0.78	0.01	0.39	0.26		0.10	0.40
6	CIMB-Principal PRS Plus Conservative - Class C	0.96	0.02	0.35	0.35		0.13	0.56
7	CIMB-Principal PRS Plus Conservative - Class X	0.80	0.01	0.34	0.30		0.11	0.46
8	Manulife PRS-Conservative Fund Class A	-2.56	-0.04	0.52	-0.65		-0.24	-0.56
9	Public Mutual PRS Conservative Fund	-10.09	-0.18	0.42	-3.31	***	-1.21	-0.99
10	RHB Retirement Series - Conservative Fund	-71.54	-2.11	0.56	-28.67	***	-10.63	-1.00
	Mean	-8.08	-0.24	0.53	-3.18		-1.91	-0.37
	Growth Fund							
1	Affin Hwang PRS Growth Fund	-3.62	-0.06	0.77	-0.62		-0.14	-0.39
2	AIA PAM Growth Fund	-52.70	-1.26	1.08	-9.00	***	-3.33	-1.00
3	AmPRS Growth Fund Class D	-77.30	-2.48	0.90	-21.24	***	-7.90	-1.00
4	AmPRS Growth Fund Class I	-80.66	-2.75	0.89	-23.68	***	-8.82	-1.00
5	CIMB-Principal PRS Plus Growth - Class A	-51.58	-1.22	1.18	-7.97	***	-2.95	-1.00
6	CIMB-Principal PRS Plus Growth - Class C	-53.97	-1.31	1.17	-8.58	***	-3.18	-1.00
7	CIMB-Principal PRS Plus Growth - Class X	-54.08	-1.31	1.18	-8.54	***	-3.16	-1.00
8	Manulife PRS-Growth Fund Class A	-9.25	-0.16	2.20	-0.57		-0.21	-0.52
9	Public Mutual PRS Growth Fund	1.92	0.03	0.63	0.39		0.14	0.65
10	RHB Retirement Series - Growth Fund	-77.79	-2.52	1.42	-13.65	***	-5.09	-1.00
	Mean	-26.09	-0.75	0.82	-6.11		-2.65	-1.00
	Moderate Funds							
1	Affin Hwang PRS Moderate Fund	-2.00	-0.03	0.77	-0.34		-0.10	-0.29
2	AIA PAM Moderate Fund	-44.97	-1.01	0.65	-11.95	***	-4.41	-1.00
3	AmPRS Moderate Fund Class D	-4.48	-0.08	0.96	-0.62		-0.23	-0.55
4	AmPRS Moderate Fund Class I	-5.02	-0.09	0.62	-1.09		-0.40	-0.75
5	CIMB-Principal PRS Plus Moderate - Class A	-31.94	-0.65	1.01	-4.92	**	-1.82	-1.00
6	CIMB-Principal PRS Plus Moderate - Class C	-30.92	-0.62	1.01	-4.76	**	-1.76	-1.00
7	CIMB-Principal PRS Plus Moderate - Class X	-32.48	-0.66	1.03	-4.97	***	-1.83	-1.00
8	Manulife PRS-Moderate Fund Class A	-8.66	-0.15	1.69	-0.70		-0.26	-0.59
9	Public Mutual PRS Moderate Fund	1.11	0.02	0.50	0.28		-7.36	-1.00
10	RHB Retirement Series - Moderate Fund	-83.58	-3.02	1.18	-19.71	***	-0.15	-0.41
	Mean	-24.30	-0.63	0.94	-4.88		-1.83	-0.76

***, ** and * denote level of significance at 1, 5 and 10 percent level respectively.

Table 8 highlights the results of the cumulative return difference (fund versus style) and selection Sharpe ratio, which are useful as performance measurements. As both measurements are initially obtained from the cumulative selection return[3]. From the style analysis, they report the same results concerning the performance of funds intuitively.

Across the fund styles, from cumulative return difference, it could be observed that conservative funds are the best performers, followed by moderate funds and growth funds. From the selection Sharpe ratio point of view, it is found that conservative funds are the best performer as compared to the moderate and growth funds. Private funds that perform well in each category are CIMB-Principal PRS Conservative –Class C with selection Sharpe ratio of 0.56, Public Mutual PRS Growth Fund of 0.65, and RHB Retirement series – moderate fund of -0.41 respectively.

Conclusion

Through return-based style analysis, the study has managed to decompose the return to its asset allocation. This study contributes to a few aspects: first, using the return-based style analysis, the

3 Cumulative selection return is defined as the difference between the fund's return and that of a passive mix with the same style

returns of various PRF can be decomposed into asset allocation. Second, the PRF holders would be able to mitigate the asymmetric information between the fund sponsor and PRF holders. Third, there is a sign of misclassification of fund type, as shown by the analytical result.

However, three observations warrant our attention: First, a higher degree of selection for the conservative fund will incur higher transaction costs; and second, in terms of the degree of style and selection, conservative funds do not vary much from growth funds. In other words, there is no distinct product differentiation between the two categories; Lastly, there is a wide disparity in asset allocation across the conservative funds. This implies some degree of risk-taking by some fund managers. As a policy suggestion, asset management companies must look into the aspect of investor protection to ensure the retirees' financial goals can be achieved through PRS funds. The results imply that the purpose of portfolio diversification is undermined if funds are not correctly classified.

References

Alexander, G.J. and Baptista, A.M. "Portfolio Performance Evaluation Using Value at Risk." *Journal of Portfolio Management, Summer*, vol. 29, no. 4, 2003, pp. 93-102.

Amenc, N., Sfeir, D. and Martellini, L. *An Integrated Framework for Style Analysis and Performance Measurement*, EDHEC Risk and Asset Management Research Centre, France, 2002.

Bailey, J.V. "Are Manager Universes Acceptable Performance Benchmarks?." *Journal of Portfolio Management*, vol. 18, no. 3, 1992, pp. 9-13.

Bailey, J.V. and Tierney, D.E. "Gaming Manager Benchmark." *Journal of Portfolio Management*, vol. 19, no. 4, 1993, pp. 37-40.

Bali, T.G. and Cakici, N. "Value at Risk and Expected Stock Returns." *Financial Analysts Journal*, vol. 60, 2003, pp. 57-73.

Beim, D.O. and Calormiris, CW. *Emerging Financial Markets*, Tata McGraw-Hill, 2001.

Brinson, G.P., Hood, L.R. and Beebower, G.P. "Determinants of Portfolio Performance." *Financial Analysts Journal*, vol. 42, no. 4, 1986, pp. 39-48.

Brinson, G.P., Singer, B.D. and Beebower, G.P. "Determinants of Portfolio Performance II: An Update." *Financial Analysts Journal*, vol. 47, no. 3, 1991, pp. 40-48.

Brown, S.J. and Goetzmann, W.N. "Mutual Fund Styles." *Journal of Financial Economics*, vol. 43, no. 3, 1997, pp. 373-399.

Chua, C.P. "The Investment Performance of Unit Trusts In Malaysia." University of Malaya, Kuala Lumpur, 1985.

Ch'ng, T.L. and Kok, K.L. "Performance of Unit Trusts in an Emerging Market: A Case Study of Malaysia." *Capital Market Review*, vol. 6, no. 1 & 2, 1998, pp. 1-17.

Coggin, T.D. "Long-Term Memory in Equity Style Indexes." *Journal of Portfolio Management*, vol. 24, no. 2, 1998, pp. 37-46.

Coggin, T.D. and Fabozzi, F.J. *The Handbook of Equity Style Management*, John Wiley & Sons, New York, 2003.

Di Bartolomeo, D. and Witkowski, E. "Mutual Fund Mis-Classification: Evidence-Based on Style Analysis." *Financial Analysts Journal*, vol. 53, no. 5, 1997, pp. 32-43.

Dowd, K. "A Value at Risk Approach to Risk-Return Analysis." *Journal of Portfolio Management*, vol. 25, no. 4, 1999, pp. 60-67.

Ewe, S.J. "The Performance of Malayan Unit Trusts in the Period 1988-1992." University Sains Malaysia, Penang, 1994.

Fant, L.F. and Edward S O'Neal. "Do You Need More than One Manager for a Given Style? Evidence from Mutual Funds." *Journal of Portfolio Management*, vol. 25, no. 4, 1999, pp. 68-75.

Fong, H.G. and Kai-Ching Lin. "A New Analytical Approach to Value at Risk." *Journal of Portfolio Management*, vol. 25, no. 3, 1999, pp. 88-97.

Gibson, R.C. *Asset Allocation: Balancing Financial Risk,* McGraw-Hill, 1996.

Goodwin, T.H. "The Information Ratio." *Financial Analysts Journal*, vol. 54, no. 4, 1998, pp. 34-43.

Gordon, J.N. and Wai, E.K.T. "VaR: A Tool to Measure Leverage Risk." *Journal of Portfolio Management*, Special Issue, 2003, pp. 62-65.

Gremillion, L. *A Purely American Invention: The U.S. Open-End Mutual Fund Industry*, The National Investment Company Service Association, USA, 2001.

Holzmann, R and Hinz, R. *Old-Age Income Support in the 21st Century: An International Perspective on Pension Systems and Reform*, World Bank, 2005.

Ibbotson, R.G. and Kaplan, P.D. "Does Asset Allocation Policy explain 40, 90 or 100 Percent of Performance." *Financial Analysts Journal*, vol. 56, no. 1, 2000, pp. 26-33.

Kim, M, Shukla, R. and Tomas, M. "Mutual Fund Objective Misclassification." *Journal of Economics and Business*, vol. 52, no. 4, 2000, pp. 309-323.

Lau, W.Y. "Does Asset Allocation Explain the Styles and Performance of Unit Trust Funds: A Style Analysis with Evidence from Malaysia." *Journal of Malaysian Studies*, vol. XX, no. 2, 2002, pp. 1-32.

Lau, W.Y. "How Persistent is Equity Style Performance Among Malaysian Fund Managers?." *Osaka Economic Papers*, vol. 55, no. 3, 2005, pp. 64-82.

Lau, W.Y. "Investment Style of Mutual Funds: How is it Useful In Communicating Economic Trends to Investors?." *Osaka Economic Papers*, vol. 55, no. 4, 2006, pp. 139-156.

Lau, W.Y. "An Integrated Framework for Style Analysis: How is it Useful to Malaysian Equity Trust Investors." *Managerial Finance*, vol. 33, no. 2, 2007, pp. 122-141.

Leong, KH and Aw, MW. "Measuring Unit Trust Fund Performance Using Different Benchmarks." *Capital Markets Review*, vol. 5, no. 2, 1997, pp. 27-44.

Lucas, L. and Riepe, M.W. *The Role of Return-Based Style Analysis: Understanding, Implementing, and Interpreting the Techniques*, Ibbotson Associates., Inc, 1996.

Park, D. *Pension Systems and Old-Age Income Support in East and Southeast Asia: Overview and Reform Direction,* Asian Development Bank, Routledge, 2011.

Shamsher, M. and Annuar, M.N. "The Performance of Unit Trusts In Malaysia: Some Evidence." *Capital Markets Review*, vol. 3, no. 2, 1995, pp. 51-69.

Shamsher, M and Annuar, M.N. *Investment in Unit Trusts: Choosing Active or Passive Funds, The Company Secretary*, MAICSA, Kuala Lumpur, 2001, pp. 16-17.

Sharpe, WF. "Determining a Fund's Effective Asset Mix." *Investment Management Review*, vol. 2, no. 6, 1988, pp. 59-69.

Sharpe, WF. "Asset Allocation: Management Style and Performance Measurement." *Journal of Portfolio Management*, vol. 18, no. 2, 1992, pp. 7-19.

Tierney, D and Winston, K. "Using Generic Benchmarks to Present Manager Styles." *Journal of Portfolio Management*, vol. 17, no. 4, 1991, pp. 33-36.

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