Evaluation of Gender Equality and Other Unique Mutual Funds

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Mutual fund managers use different investment styles and benchmarks in achieving the objectives of the funds. Evaluating varied styles of these managers requires custom-made benchmarks. Sharpe (1992) Style methodology is applied to the monthly returns of Gender Equality and other unique mutual funds, over the recent period of January 2015 through February 2019, to identify accurate customized benchmarks. Sharpe's model, with thirteen asset classes represented by thirteen ETFs, evaluates and ranks the performance of these mutual funds. An investor who selects mutual funds based on both style and volatility may retain better control over style mix of the total portfolio.

Keywords: sharpe style, mutual funds, performance, active and passive fund management

INTRODUCTION

Mutual fund managers use different investment styles to achieve the expected objectives of the funds. An issue is the managers do not always follow their stated style mandates (or some do not even have stated style mandates). Portfolio managers can choose whatever style benchmark they want, but that doesn't mean it is correct. To Evaluate such varied styles necessitates more exact customized benchmarks. When portfolio returns are regressed against style indices one cannot hide the sources of those returns. Gender Equality and other unique, unorthodox mutual funds (cannabis funds etc.) were analyzed with return-based combination of ETF-indexes that mimic the portfolio returns over a specific period of time. The paper is organized as follows. Section 1 reviews the literature, Section 2 describes data and methodology, Section 3 presents the empirical results and the final Section discusses the conclusions.

LITERATURE REVIEW

Today's generally accepted model for evaluation of portfolios is Fama-French (1993) three factors plus momentum factor (from Carhart 1997). Consensus of earlier academic research is to invest in passively managed index funds because the odds of generating statistically significant alpha in actively

managed funds are very poor. (Carhart 1997) shows minor persistence in relative performance across managers, largely due to expense/transaction costs (also see (Christopherson et al. 1998)). In recent literature, using a bootstrap technique, (Kosowski et al. 2006) researchers show evidence of stock picking skills and superior performance among fund managers. Another study by (Avramov and Wermers 2006) use Bayesian perspective and find that actively managed funds perform better. Wermers states that funds show positive gross alphas but negative net alphas after controlling for fees, and risk. Similarly, a study on UK equity funds by (Cuthbertson et al. 2008) produce evidence suggesting that top mutual fund performers have better stock selection skills. A good review of research on luck versus skill in mutual fund performance is presented by (Cornell 2009), (Fama and French 2010), (Fama and French 2014, 2015), (Pastor et al. 2015) and (Meyer-Brauns 2016). In view of the mixed results, it is important to evaluate performance of newer type of mutual funds such as the sample of funds used in this study.

DATA AND METHODOLOGY

Investorplace.com highlighted Gender Equality and four other very unique, unorthodox mutual funds (cannabis funds etc.), profiling five that specialize in this area of investor interest. Those five funds are ranked and listed below in table 1, based on one- year return, as of December 12, 2013. Vice Fund (VICEX), ING's Corporate Leaders Trust Fund Series B (LEXCX), Monetta Young Investor Fund (MYIFX), Pax World Global Women's Equality Fund (PXWEX) and Columbia Thermostat Fund (COTZX) are ranked one through five on performance.

TABLE 1
ONE-YEAR RETURN PERFORMANCE AND RANK OF SAMPLE FUNDS AS OF 12/12/2013

Name of the mutual fund	Ticker Symbol	Expense Ratio	(Rank) based on % 1 Year Total Return as of 12/12/2013
ING's Corporate Leaders Trust Fund Series B	LEXCX	0.52%	(2) with 23.7%
Monetta Young Investor Fund	MYIFX	1.1%	(3) with 22.9% annualized over past 5 year period
Vice Fund	VICEX	1.64%	(1) With 27.6%
Columbia Thermostat Fund	COTZX	0.25%	(5) with 8.8%
Pax World Global Women's Equality Fund	PXWEX	1.24%	(4) with 18.4%

These five mutual funds, without any direct knowledge of the portfolio holdings, are analyzed, in this study, using Sharpe's returns-based style analysis, for which the only data that is required-are the total returns for the mutual fund and that of a set of passive indexes. This method of analysis is quite feasible for most Investors with limited time and resources because the required data is readily available or can be downloaded from a variety of on-line services. Instead of analyzing equity funds by comparing to a single index such as the S&P 500, they can easily do a style analysis. Comparing to S&P 500 is valid only if a portfolio manager follows the same investment style as that of the passive index. As very few managers follow investment styles that exactly match the construction rules of any single passive index, it is necessary to create custom benchmarks. In this study, style analysis is used to create custom benchmarks in the form of fund-specific exposures to passive ETF indexes.

Data on these mutual funds is obtained from Yahoo Finance during period 1/2015 through 2/2019. All monthly returns take into account changes in net asset values and include any distributions. The returns are calculated net of management fees, transactions cost, and any other expenses charged by the fund. However, load charges (selling costs not charged to the fund but paid directly by the investor) are not taken into account.

Methodology – Sharpe's Returns Based Style Analysis

Sharpe (1992) states that only a limited number of major asset classes are required to successfully replicate the performance of an extensive universe of US mutual funds. Consequently, stylistic differences between fund managers are primarily due to the assets in their portfolios, and these differences are readily captured in ''style regressions''. This decomposition of a fund performance into style (i.e. asset class mix) and skill (i.e. security selection) serves two purposes. First, an investor can verify the source of the manager's performance and distinguish between performances based on security selection versus asset class mix. Second, an investor can allocate investments across different managers to achieve desired style (i.e. asset class) diversification. The style analysis described mathematically is an equation of fund's return as a linear combination of different indices representing various asset classes. The multi-factor Sharpe's model (1992) is shown in Equation (1) which is a generic representation:

$$R_i = [b_{i1}F_1 + b_{i2}F_2 + \cdots b_{in}F_n] + e_i \quad (1)$$

$$R_i = [STYLE\ RETURN] + [SELECTION\ RETURN]$$

R_i represents the return on asset i, F_{i1}represents the value of factor 1, F_{i2} the value of factor 2, F_{in} the value of the n'th (last) factor and e_i the "non-factor" component of the return on i. All these values are not known before-the-fact. The remaining values (b_{i1} through b_{in}) represent the sensitivities of R_i to factors F_{i1} through F_{in}. R_i, the return on asset i is comprised of the return attributable to style and the residual component (e_i) the return due to selection. Sharpe's model used in this study has thirteen asset classes represented by thirteen indices. These assets and passive Indices used for style Analysis are listed in the **table 2** below. A multiple regression analysis is done with two constraints, with fund returns as the dependent variable, and asset class returns as the independent variables. Each beta coefficient is constrained to lie between 0 and 100% and the sum is again constrained to be 100%. The resulting slope coefficients are then interpreted as the fund's historic exposures to the asset class returns.

TABLE 2
ASSETS AND PASSIVE INDICES USED FOR STYLE ANALYSIS

Asset Category	Passive Index	Expense Ratio
Short term treasury ETF	VGSH	0.05%
Intermediate term Treasury ETF	VGIT	0.05%
Long term Treasury ETF	VGLT	0.05%
Long term corp bond ETF	VCLT	0.05%
Mortgage backed securities ETF	VMBS	0.05%
Stock large cap value Value ETF	VTV	0.04%
Vanguard S&P 500 Growth Index Fund ETF Shares	VOOG	0.1%
Mid cap ETF	VO	0.04%
Small cap ETF	VB	0.05%
Total International Bond ETF	BNDX	0.08%
FTSE Europe EFF	VGK	0.08%
FTSE Pacific ETF	VPL	0.08%
FTSE Emerging markets ETF	VWO	0.1%

RESULTS

Table 3 reports the style estimates (or its implicit allocation to the indexes representing thirteen asset classes) of mutual fund parameters.

TABLE 3
STYLES OF GENDER EQUALITY AND OTHER UNIQUE MUTUAL FUNDS

	LEXCX	MYIFX	VICEX	COTZX	PXWEX
VWO	0.275	0.357	0.276	0.087	0.372
VTV	0.000	0.000	0.000	0.000	0.000
VOOG	0.000	0.000	0.000	0.000	0.000
VO	0.000	0.000	0.000	0.000	0.000
VGSH	0.000	0.643	0.000	0.000	0.000
VMBS	0.000	0.000	0.000	0.000	0.000
VGLT	0.000	0.000	0.175	0.558	0.000
VGIT	0.000	0.000	0.000	0.000	0.000
VCLT	0.000	0.000	0.000	0.000	0.000
VB	.725	0.000	0.549	0.355	0.628
BNDX	0.000	0.000	0.000	0.000	0.000
VPL	0.000	0.000	0.000	0.000	0.000
VGK	0.000	0.000	0.000	0.000	0.000

Table 4, panels A through E, show the annualized values of mean return and standard deviation for each mutual fund, style of the fund, and selection results of the fund. Style represents that combination of asset classes that tracked the fund's returns most closely or in other words had the lowest selection standard deviation. The selection return for each month is the difference between the fund return and the style return for that month.

TABLE 4
ANNUALIZED VALUES AND OTHER STATISTICS

PANEL A:

Annualized Values	LEXCX		
	Fund	Style	Selection
Mean	0.076	0.084	-0.007
Std. Dev	0.134	0.138	0.065
STATISTICS:			
	Value		
Pct Active	23.29		
Sel. Sharpe Ratio	-0.11		
T-statistic	-0.23		
Percentile	40.87		

PANEL B:

Annualized Values	MYIFX		
	Fund	Style	Selection
Mean	0.105	0.023	0.082
Std. Dev	0.157	0.059	0.152
STATISTICS:			
	Value		
Pct Active	93.85		
Sel. Sharpe Ratio	0.54		
T-statistic	1.1		
Percentile	86.42		

PANEL C:

Annualized Values	VICEX		
	Fund	Style	Selection
Mean	0.07	0.070	0.000
Std. Dev	0.131	0.111	0.081
STATISTICS:			
	Value		
Pct Active	38.09		
Sel. Sharpe Ratio	0		
T-statistic	-0.01		
Percentile	75.95		

PANEL D:

Annualized Values	COTZX		
	Fund	Style	Selection
Mean	0.045	0.050	-0.005
Std. Dev	0.069	0.076	0.064
STATISTICS:			
	Value		
Pct Active	85.15		
Sel. Sharpe Ratio	-0.07		
T-statistic	-0.15		
Percentile	44.04		

PANEL E:

Annualized Values	PXWEX		
	Fund	Style	Selection
Mean	0.106	0.079	0.027
Std. Dev	0.135	0.136	0.078
STATISTICS:			
	Value		
Pct Active	33.44		
Sel. Sharpe Ratio	0.35		
T-statistic	0.72		
Percentile	76.31		

R^2 shows the proportion of variance in a fund explained by the selected asset classes. The higher the percentage value of the R^2, more consistently the style analysis portfolio is able to explain the long-term return behavior of the fund. Percent active column of the table shows how much of fund variance is due to active management. It should be noted that % Active is equal to (100 - R^2) %. Now, selection Sharpe Ratio provides a measure of value added through active management per unit of added risk and the T-statistic provides a measure of the statistical significance of the value added through active management. The Percentile result, for example, a percentile of say 70, shows that in a group of managers with zero skill, approximately 70% would have poorer performance due to luck and 30% would have better performance due to luck.

For LEXCX, MYIFX, VICEX, COTZX, PXWEX funds, R^2 values are over 76, 6, 61, 14, and 66% respectively. For LEXCX, VICEX, PXWEX it is over 61% and for other two funds MYIFX and COTZX, it is way lower between 6% to 14%. R^2 values from the individual funds would suggest that the style regressions do a reasonably good job of describing the return patterns-although not necessarily the actual style exposures-of funds. This study finds that active management of mutual funds is an important determinant of their performance only in case of two funds MYIFX (nearly 94% active), PXWEX (a mutual fund purported to be actively managed stays two-thirds fully invested and is only a little over one-third active). This study also finds almost the same performance as style for VICEX funds and that underperformances of LEXCX and COTZX are more pronounced. A lower level of 23% active management of LEXCX did not help its poor performance. Active equity performance depends on the stock-picking skill and market conditions. Higher 85% active management for COTZX also led to poor performance; no value was added through active management per unit of added risk.

TABLE 5
PERFORMANCE OF THE UNIQUE FUNDS BASED ON STYLE ANALYSIS - 01/2015 – 02/2019

Name of the mutual fund	Ticker Symbol	(Rank) based on % 1 Year Total Return as of 12/12/2013	Rank based on Percentile of Style Analysis for period 01/2015 – 02/2019
ING's Corporate Leaders Trust Fund Series B	LEXCX	(2) with 23.7%	(5) with percentile 40.87
Monetta Young Investor Fund	MYIFX	(3) with 22.9% annualized over past 5 year period	(1) with percentile 86.42
Vice Fund	VICEX	(1) With 27.6%	(3) With percentile 75.95
Columbia Thermostat Fund	COTZX	(5) with 8.8%	(4) With percentile 44.04
Pax World Global Women's Equality Fund	PXWEX	(4) with 18.4%	(2) With percentile 76.31

By using the fund style as a benchmark, the unique mutual funds are ranked for the period- 01/2015 – 02/2019 and Table 5 lists the performance of these funds. MYIFX with R^2 value of 6% (i.e., an active component of 94%) outperforms the customized benchmark of 0.357 VWO and 0.643 VGSH. This fund with an expense ratio of 1.1% delivered an annualized return 8.2% higher than the style return with a std. deviation of 15.2% over a period of nearly four years. This fund manager did generate better returns than the benchmark, this fund was worth paying a higher fee. PXWEX that stays two-thirds fully invested and is only a little over one-third active, also fared well with a selection return of 2.7% with a standard deviation of 7.8% outperformed the customized benchmark. This fund shows that in a group of managers with zero skill, approximately 76% would have poorer performance due to luck and approximately 24% would have better performance due to luck. LEXCX, VICEX, and COTZX did not outperform their customized benchmarks.

CONCLUSION

The main conclusion investors is not to focus on one or two fund managers that have recently outperformed the bench mark portfolio but to accept market returns by investing passively in the factors to which they desire exposure. Several mutual funds (LEXCX, VICEX, and PXWEX) that claim to be actively managed, take greater risks, and charge higher fees than passively-managed funds. The best strategy is to stay fully invested regardless of market conditions, and execute only minor allocation adjustments over time. Style analysis assistances investors to verify whether portfolio managers are remaining true to their intended style. Academic research shows that Ex-ante, investors should not expect consistency of outperformance from portfolio managers. Only superior performance relative to the performance benchmark which provides a static mix of the exposure to ETF asset classes would justify the higher fees usually paid to active as opposed to passive managers.

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