RISK FACTORS AND INVESTMENT DECISION: AN EVIDENCE FROM MUTUAL FUND FLOWS FROM INDIA

Elizabeth Nedumparambil[a, £] and Anup Kumar Bhandari[a]

Abstract

*Asset pricing theories provide an understanding about the risk factors that determine the price of assets. The identification of risk factors assist the investors in seeking out profitable investment opportunities. The difficulty in observing how investors identify such opportunities and how they react to it has largely restricted the literature from determining the factors that matter to an investor. There is a paucity of empirical studies that gives insight into the investment decision making process of an investor. Some of the recent studies that seek to fill this gap have used mutual fund flows to infer which asset pricing model investors use (*Berk and Van Binsbergen, 2016; Barber et al., 2016). *The fund flows are used as a measure of investors' response to identification of a positive net present value investment opportunity. These studies suggest that the Capital Asset Pricing Model (CAPM) is closest to the asset pricing model used by the investors in the US market. Taking this literature forward, we enquire whether investors from Indian markets exhibit a similar pattern when making investment decisions. Using the fund flows to actively managed equity schemes, we have investigated into the risk factors that matter for mutual fund investors in India during April, 2006 to March, 2019. We use alternative asset pricing models to measure the performance of these schemes and then evaluate the sensitivity of fund flows to each of the performance measures. Our results suggest that investors account for the market factor alone when assessing fund performance.*

Keywords: Mutual Fund; Fund flows; Investor preference; Flow-performance relation

JEL: G11; G12; G23;

[a] Department of Humanities and Social Sciences, Indian Institute of Technology Madras, Chennai 600036, India.
[£] Address for Correspondence: Research Scholar, Department of Humanities and Social Sciences, Indian Institute of Technology Madras, Chennai 600036, India; Email: ashaelizabeth11@gmail.com

MUTUAL FUND INVESTORS : EVIDENCE FROM INDIA

1. Introduction

There is a wide array of asset pricing models that have been developed over the years to help gain insights into the pricing of assets traded in the financial market. These models identify the risk factors that are priced and thereby provides tools that guide investor in making optimal investment decisions. However, majority of the asset pricing tests have not examined the risk factors that the investors consider before making investment decisions. The question of how investors perceive risk in financial market has received very little attention. This is mainly because, for most of the assets, it is difficult to observe and measure investor's reaction to various investment opportunities.

In this context, Berk and Van Binsbergen (2016) and Barber et al. (2016) propose an approach to gauge investor response. They assert that mutual fund flows can be used as a measure of investor response to identification profitable investment opportunities. Though both the studies use different empirical technique the basic premise is that the investors, being rational, would evaluate the performance of alternative mutual fund schemes and reward the best performing fund with additional fund flows. They argue that by evaluating the sensitivity of flows to alternative risk factors or performance measures one can conjecture the asset pricing model used by the investors. Both of these studies suggest that the Capital Asset Pricing Model (CAPM) performs the best in predicting the fund flows to the actively managed US equity mutual funds.

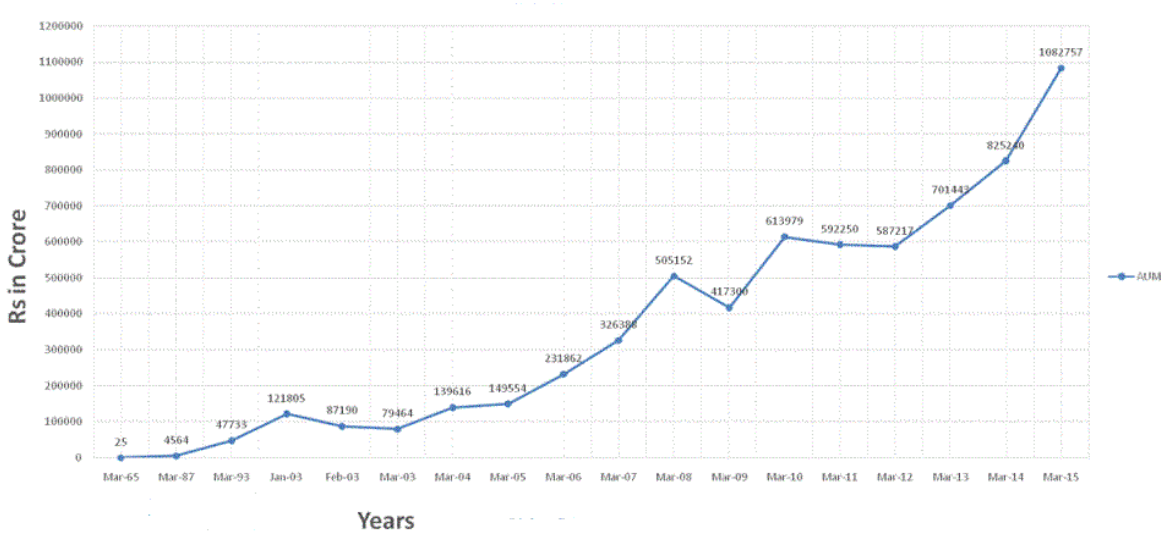
The finding that investors rely on the CAPM for evaluating mutual fund is intriguing mainly because it has been found to be incapable of explaining the cross-sectional variation in returns. Subsequent studies have made attempts to resolve this puzzle. Blocher and Molyboga (2017) and Agarwal et al. (2018), in their attempt, examined the risk factors considered by the sophisticated investors while investing in US hedge fund. Their findings confirm that the hedge fund investors also prefer CAPM to evaluate the performance of alternative hedge funds. Extending the analysis to bond mutual funds, Dang et al. (2019) observe the simple Sharpe ratio dominates all of the bond factor models in explaining the flows. However, Ben-David et al. (2019), in contradiction to the previous studies, concludes that investors do not use any of the asset pricing models while allocating capital to mutual funds. Rather, empirical evidence suggests that they have outsourced the risk adjustment to external entities like Morningstar (a fund rating agency).

The empirical literature that sheds light on the risk factors from the perspective of an investor is in a nascent stage. Moreover, most of the studies in the area are confined to US market. US financial market and mutual fund industry is well-developed with very little informational inefficiency. The case of underdeveloped economy may not be so. The capital market in most of the underdeveloped market are thin and underdeveloped (Rojas-Suarez, 2013). Though these markets exhibit significant growth opportunities, high political and economic risks makes emerging markets more volatile than mature markets (De Santis and İmrohoroğlu, 1997). The development of mutual funds in the emerging markets has provided the masses with a means to participate in capital markets and has contributed towards the securities and derivatives markets in these economies (Ong and Sy, 2004). Emerging markets, therefore, essentially provide alternative testing grounds for drawing inference about the asset pricing model preferred by investors. Given this backdrop, we enquire whether Indian mutual fund investors exhibit a pattern similar to their counterparts in the developed markets when allocating funds to different mutual fund schemes.

The history of mutual fund industry in India dates back to 1963, when the Unit Trust of India was established. The industry has been growing gradually over the years and the growth in the last decades have been tremendous. Mutual fund industry is identified as the fastest growing and the most competitive segment of India's financial sector, offering operational flexibility and attractive returns to investors (RBI, 2017). Figure 1 shows the growth in asset under management (AUM) in mutual funds over the period from March, 1965 to March, 2015. It can be observed that, though in the initial years the mutual fund industry grew at a negligible rate, there has been an exponential growth in the recent years. AUM of mutual funds in India registered a compound annual growth rate of 25 per cent over the period 2013 to 2018 and stood at Rs. 23,79,584 crores in March 2019. Even though the industry is growing at a fast pace, its penetration measured by the ratio of AUM to GDP is around 13 per cent, which is very low compared to the global average. This implies that the potential for growth in the mutual fund industry in India is very high and thus warrant studies on various aspects of mutual funds.

Further, the participation of individual investors in the Indian mutual fund industry has been showing an increasing trend. As of July, 2019 more than half (around 54 percent) of the industry assets are held by individual investors. It is largely the equity-oriented schemes that attracts the individual investors. According to the July, 2019 report on Industry Trends by Association of Mutual Funds in India (AMFI), the equity-oriented schemes generate 88 per cent of their assets from individual investors. This motivates us to examine the factors that influence the individual investors in equity-oriented schemes.

Figure 1. Growth in Asset under Management (AUM)



Source: Association of Mutual Funds in India

As a modest attempt in this direction we seek to identify the risk factors that investors tend to when making investment decision. Our empirical analysis is based on the methodology proposed by Berk and Van Binsbergen (2016). Firstly, we measure the abnormal returns generated by the mutual funds with respect to alternative asset pricing models us. To evaluate the performance of mutual funds we consider five alternative models, which includes three theoretical asset pricing models and two naïve models. The former includes, the capital asset pricing model (CAPM), the three factor model and the four factor model. The two naïve models measure performance using the market adjusted return (i.e., returns in excess of the market return) and excess return (i.e., return in excess of the risk-free return). Besides the performance measure, we also calculate the flow of funds for each of the mutual fund scheme. After

obtaining the performance measures and fund flow, we proceed to examine the sensitivity of these flows to lagged performance measure, considering each of these measures separately. We also measure the relative performance of each of these measure by comparing the performance of two measures at a time.

Our analysis is based on a sample of 1260 actively managed equity funds for the period that spans from the second quarter of 2006 to the first quarter of 2019. The analysis of flow-performance sensitivity suggests that the mutual fund flows are highly sensitive to the performance measure obtained using the excess return as a measure. This implies that the mutual fund investors do not tend to any of the risk factors and simply chase funds that generate high excess returns. Our finding of the naïve model outperforming the CAPM contradicts the finding of Berk and Van Binsbergen (2016) and Barber et al. (2016). However, examining the relative performance of alternative models in explaining flows we find that the CAPM based performance measure is the best predictor of fund flows. It is found to explain the fund flows better than all the other models considered in the study. The measure based on excess return performs poorly when evaluated on a relative basis. Our results indicate that the investors tend to only the market risk factor while evaluating alternative investment opportunities and overlook the size, value and momentum factors.

As is already noted the majority of the studies that identify CAPM as the model closest to the one that is used by investors are confined to the US market. By examining the relation between fund flow and performance measures based on alternative asset pricing models in the Indian context we validate that the findings of the previous studies are not peculiar to the US market. The investors in both the developed and the emerging market seem to adjust the risk using only the market factor. Our study also contributes to the growing literature on the performance of mutual funds and the flow-performance relation. Moreover it adds to the literature on mutual fund industry in India.

The paper is organized as follows. Section 2 discusses the methodology and database we have used for our empirical analyses. Section 3 devotes on the discussion of our findings and Section 5 concludes.

2. Data and Methodology

2.1 Data

We have collected the information required for the present study from the *Association of Mutual Funds in India* (AMFI) website and the *Fama French and Momentum Factors: Data Library for Indian Market.* AMFI was incorporated on August 22, 1995 and all of the 44 Asset Management Companies that are registered with SEBI, are its members. One of its objectives is to disseminate information on mutual fund industry. We have collected information on scheme-wise asset under management (AUM), net asset value (NAV) and scheme details from AMFI. Data on returns, i.e., market return, risk free return, and return on the risk factors specified by alternative asset pricing models (market, size, value and momentum factors) are collected from the *Fama French and Momentum Factors: Data Library for Indian Market*.

As is already noted, we draw inference about the asset pricing model that investors use while making investment decision by examining the relation between flow of funds and alternative performance measures of mutual funds. Since, our main interest is to identify the asset pricing model that is used by investors we limit our sample to actively managed equity mutual funds. To be specific, we include in our sample only those mutual funds that are categorized as *Equity Scheme*, *ELSS* and *Growth* funds by AMFI. Further, mutual funds often offers several share classes with different combinations of expense ratios, management fees and reinvestment options. These are designed to attract investors with different wealth levels

and investment horizons and are known to influence the investment and redemption decisions of investors. Thus, we follow Jiang and Yuksel (2017) and use individual fund share classes as our unit of observation.

2.1.1 Mutual Fund Flow

Our main variables of interest are mutual fund flows and performance. Fund flows are calculated using scheme-wise AUM, the data for which are available only from April 2006. Hence April 2006 is chosen as the beginning of our sample period and it spans till March 2019. However, monthly AUM data is available on the AMFI website upto September 2010. For the remaining part of the sample period AUM data is available only on a quarterly basis. In order not to lose information, we convert the monthly AUM to quarterly values by taking a simple average of the months that constitute the quarter. Consequently, our analysis is based on quarterly data and the sample period ranges from second quarter of 2006 to first quarter of 2019.

Following the prior literature on fund flows, flows for fund *p* in quarter *t* is defined as the ratio of net flow into the fund to lagged AUM. Formally, flow is calculated as:

$$F_{pt} = \frac{AUM_{pt}}{AUM_{p,t-1}} - \left(1 + R_{pt}\right) \quad (1)$$

where, AUM_{pt} is the asset under management of fund *p* at the end of quarter *t*, R_{pt} is the return of fund *p* for the quarter *t*.

2.1.2 Mutual Fund Performance

The performance of mutual funds are evaluated by considering the popular asset pricing models and also two naïve model. To be specific, we consider three of the widely discussed asset pricing models i.e. Sharpe (1964)-Lintner (1965) Capital Asset Pricing Model (CAPM), Fama-French (1993) Three Factor Model (TFM) and Carhart (1997) Four Factor Model (FFM) to measure the abnormal return (*alpha*) for each fund. Quarterly returns, calculated from the NAVs, and the return to risk factors considered in alternative asset pricing models are used to estimate *alpha*. For instance, outperformance relative to the four factor model is measure after taking into consideration the market, size, value and momentum factors. For each fund in quarter *t*, the following time-series regression is estimated for the period *t-1* to *t-20*:

$$\left(R_{p\tau} - R_{f\tau}\right) = \alpha_{pt}^{FFM} + \beta_{pt}(R_{m\tau} - R_{f\tau}) + s_{pt}SMB_{\tau} + v_{pt}HML_{\tau} + m_{pt}WML_{\tau} + \varepsilon_{p\tau} \quad (2)$$

where, τ = *t-1* to *t-20*, $R_{p\tau}$ is the return on mutual fund for the quarter τ, $R_{f\tau}$ is the risk-free return, $R_{m\tau}$ is the market return, $SMB_{\tau}$is the return on size factor, HML_{τ} is the return on value factor, WML_{τ} is the return on momentum factor. The estimated parameters $\hat{\beta}_{pt}$, $\hat{s}_{pt}$, $\hat{v}_{pt}$ and $\hat{m}_{pt}$represent the market, size, value and momentum tilts of fund *p* respectively. The estimated regression intercept $\hat{\alpha}_{pt}^{FFM}$ is the mean return generated by the fund that is unrelated to the risk factors considered by the FFM. The four-factor *alpha* obtained is thus a measure of mutual funds' performance with respect to the FFM. This procedure is repeated so that we obtain a time-series of quarterly *alpha* for our sample. The three-factor alpha and the CAPM alpha is estimate following a similar procedure. To be specific, to obtain the three-factor alpha, we estimate the regression in equation (2) after dropping WML as an independent variable and for CAPM alpha SMB, HML, and WML are dropped.

The naïve models measure the performance of fund by comparing it with the market return and the risk-free return. The first naïve measure is market adjusted return (MAR), which

is estimated as the difference between the fund return and market return. The second naïve measure is the excess return (ER), which is the return generated by a fund over the risk-free rate. Thus we have a total of five performance measures.

The requirement of an estimation window of 20 quarters for arriving at our asset pricing models based performance measures, limits the period of our empirical analysis to begin from the second quarter of 2011. This requirement also ensures that the funds below the age of five are excluded from the sample and thus incubation flows do not influence our results. Our final sample consists of an unbalanced panel of 1260 mutual fund schemes.

Table 1 Panel A shows summary statistics mutual fund characteristics for the period of our empirical analysis (second quarter of 2011 to first quarter of 2019). Average fund flow is about 0.02 per cent. An average mutual funds scheme in our dataset is of age 12.03 years and generates a modest return of 0.02 per cent and manages Rs. 50061.88 lakhs. Panel B of Table 1 reports the average FFM alpha and factor exposure. Panel C provides the summary of the performance measures used in our study and Panel D the correlation between alternative measures. We observe that performance measure based on the asset pricing models are highly correlated. Two of the naïve models also have a high correlation. However, the correlation between the naïve measure and those based on asset pricing models and rather negligible.

Table 1. Summary Statistics

Variable	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Panel A: Fund Characteristics					
Flow	17681	0.016	0.238	−0.521	2.661
Size (Rs Lakhs)	17681	50061.88	127000	0.01	1700000
Returns	17681	0.016	0.084	− 1.04	0.415
Age	15868	12.034	5.231	5	30
Panel B: Fund Alpha and Factor Tilts					
Alpha	17681	−0.01	0.016	−0.093	0.062
Market Beta	17681	1.023	0.327	−0.742	2.378
Size Beta	17681	0.108	0.215	−0.958	1.536
Value Beta	17681	−0.004	0.187	− 1.93	1.016
Momentum Beta	17681	0.049	0.153	− 1.094	0.972
Panel C: Performance Measures					
MAR	17681	−0.008	0.049	−0.97	0.239
ER	17681	−0.001	0.083	− 1.055	0.395
CAPM Alpha	17681	−0.007	0.015	−0.094	0.046
TFM Alpha	17681	−0.007	0.015	−0.089	0.049
FFM Alpha	17681	−0.009	0.016	−0.092	0.062

Panel D: Correlation between Fund Alphas					
	MAR	ER	CAPM Alpha	TFM Alpha	FFM Alpha
MAR	1				
ER	0.608	1			
CAPM Alpha	0.097	0.097	1		
TFM Alpha	0.113	0.096	0.957	1	
FFM Alpha	0.118	0.091	0.853	0.905	1

2.2 Methodology

The primary interest of our study is to draw inference about the model that mutual fund investors use while making investment decisions. We first study the flow-performance relation for each model separately and then perform a model horse race, which allows us to compare the relative performance of different models. The flow-performance relation for each model is examined following the methodology proposed by Berk and van Binsbergen (2016). They argue that it is possible to deduce which asset pricing model investors are using by investigating how well the signs of *alphas* match the directions of flows. While Berk and van Binsbergen (2016) use contemporaneous regression of flow on the performance measure we have used the performance measure estimated from the previous 20 quarters observations to explain the flow in the current period. Thus, for each asset pricing model *i*, the following regression is estimated.

$$sign(F_{pt}) = \gamma_0^i + \gamma_1^i sign(\alpha_{pt}^i) + \epsilon_{pt} \quad (3)$$

Where, F_{pt} is the fund flow to the mutual fund *p* in the quarter t, α_{pt}^i denotes the estimated alpha from equation (2), *sign* is a function that returns the sign of a real number, say *x*, and takes the value 1 if $x > 0$, -1 if $x < 0$ and 0 if $x = 0$. *Lemma (2)* of Berk and van Binsbergen (2016) shows that a linear transformation of the regression slope helps in recovering the average probability that conditional on outperformance being positive (negative), the sign of fund flow will also be positive (negative). The linear transformation of γ_1^i takes the form:

$$\frac{\gamma_1^i + 1}{2} = \frac{Pr[sign(F_{pt}) = 1 | sign(\alpha_{pt}^i) = 1] + Pr[sign(F_{pt}) = -1 | sign(\alpha_{pt}^i) = -1]}{2} \quad (4)$$

The pairwise model horse race that allows us to compare between two alternative measures of performance is also conducted following the method proposed by Berk and van Binsbergen (2016). To empirically distinguish between two contesting models, say *i* and *j*, we estimate the following regression.

$$sign(F_{pt}) = \delta_0 + \delta_1 \left(\frac{sign(\alpha_{pt}^i)}{\widehat{var}(\alpha_{pt}^i)} - \frac{sign(\alpha_{pt}^j)}{\widehat{var}(\alpha_{pt}^j)} \right) + \omega_{pt} \quad (5)$$

Where $\widehat{var}(\alpha_{pt}^i)$ and $\widehat{var}(\alpha_{pt}^j)$ are sample variance of alpha measures obtained from model *i* and *j* respectively. The sign of the slope coefficient indicates the model that better explains investor behavior. If δ_1 is positive and significant, then we can conclude that model *i* is a relatively closer approximation of the model used by investors.

3. Result and Discussion

3.1 Flow Performance Relation

In our attempt to gain an insight into the risk factors that the investors consider while making investment decisions, we implement the signed flow-performance analysis explained in Section 2.2. First we estimate the performance of each fund using a rolling regression considering each of the five alternative models. These performance measures are then used to estimate equation (3), using fixed effects model, for each of the five models. The coefficient estimates obtained from this estimation is reported in Table 2. Each row corresponds to one of the alternative models considered for evaluation of funds, with the best performing model being reported first. The table also reports $\frac{\gamma_1+1}{2}$ which is a measure of the average probability that

there is a direct relation between fund flow and outperformance. The results confirm that there exists a statistically significant relation between the performance of a fund and flows. We also observe that none of the models explain more than 62 per cent of fund flows, i.e., a portion of the flows remain unexplained. The results indicate that a naïve model, wherein the performance of a fund is evaluated solely on the basis of the excess returns generated over the risk free rate, is used by investors in India. It explains 62 per cent of the mutual fund flows which is considerably higher than the next best model, CAPM that explains 52 per cent of the flows. This is contrary to the findings of Berk and van Binsbergen (2016), Barber et al. (2016) and Blocher and Molyboga (2017) among others, where CAPM is identified as the model that is closest to the one that is used by investors while making investment decisions.

Table 2. Flow-Performance Relation

Model	Estimate of γ_1	Estimate of $\frac{\gamma_1+1}{2}$
ER	0.241***	0.621
CAPM	0.161***	0.581
MAR	0.149***	0.576
TFM	0.133***	0.567
FFM	0.093***	0.547

*Note: The table reports the fixed effect estimates of equation (3). Each row corresponds to the estimation based on a particular model that is used to measure the performance of mutual fund. The inferences are made on the basis of robust standard errors. *** indicate significance at 1%.*

3.2 Model Horse Race

The results of the previous analysis suggests that investors compare the excess return generated by funds in the preceding period while making investment decisions. In other words, Indian investors do not adjust for the known risk factors while evaluating alternative investment options. However, we conduct a model horse race to evaluate the relative performance of the alternative models considered in our study. This allows us to deduce whether the difference in the performance of alternative models is statistically significant. The fixed effects estimates of equation (5) is presented in Table 3. As is already noted, it is the sign of the coefficient that indicates the superior of the two models that are compared. In terms of equation (5) a positive and significant coefficient implies that model *i* outperforms model *j* in explaining the sensitivity of flows. In the table below models in the row are compared with those in the columns. Examining the results we observe that CAPM is the better predictor of the fund flows among all the alternative models considered in the model. The results of the horse race contradicts the findings of our previous analysis wherein the flow-performance sensitivity was estimated for each model separately. ER is found to be the worst performing model when relative performance measure is considered.

The finding that the CAPM outperforms the TFM and the FFM suggests that the investors discount only the returns associated with the market risk while evaluating alternative investment opportunities. This implies that investor reward the fund managers for the returns that is associated with the size, value and momentum factors even though it is not reflective of the skill of the fund manager.

Table 3. Model Horse Race

Model	CAPM	MAR	ER	TFM	FFM
CAPM	0	0.032***	0.036***	0.007*	0.020***
MAR		0	0.319***	− 0.026***	− 0.018***
ER			0	− 0.029***	− 0.022***
TFM				0	0.017***
FFM					0

*Note: The table reports the fixed effect estimates of equation (5). Coefficient values in the table are reported after multiplication by 1000. The coefficients measure the relative performance of the model in the row with respect to the model in the column. A positive and significant coefficient implies that the model in row outperforms the model in the column in explaining the fund flows. *** indicate significance at 1%.*

4. Conclusion

The asset pricing models aids an investor in making investment decisions by identifying the risk factors that determine the price of an asset. Studies over the years have empirically tested alternative asset pricing models. While some studies confirm that the models explain the cross section of returns adequately some find them to be inadequate. Given such equivocal evidences regarding the validity of the asset pricing models, it is intriguing to identify the risk factors that individual investors while making capital allocation. However, it is rather difficult to observe how investors identify profitable investment opportunities and how they respond to such opportunities. In this regard, Berk and van Binsbergen (2016) and Barber et al. (2016) suggest that the mutual fund flows can be used for measuring investor response to opportunities identified by them. Following different methodologies both the studies conclude that the Capital Asset Pricing Model (CAPM) is closest to the true model used by investors in the US to evaluate alternative investment options.

We have investigated into the risk factors that Indian investors consider while making investment decisions. Majority of the previous studies are confined to US markets and our study on an emerging market provides a fresh outlook into the investor behavior since Indian market is very distinct for that of US. We have used fund flows as a measure of investor reaction and have taken into consideration four alternative measure of performance. Our sample consists of actively managed equity schemes for the period from April, 2006 to March, 2019.

Following the methodology proposed by Berk and van Binsbergen (2016) we analyze the relation between quarterly performance measures and fund flows. Our results considering each of the performance measure separately suggests that the investors use excess returns over the risk free rate to compare alternative investment opportunities. This implies that the investors simple chase after excess returns without adjusting for the risk factors. This result is contradicts that of previous studies that examine the case of mutual fund investors (Berk and van Binsbergen, 2016; Barber et al., 2016) and hedge fund investors (Blocher and Molyboga, 2017; Agarwal et al., 2018).

However, analyzing the relative performance of alternative models we observe that the CAPM outperforms all the other performance measures in explaining fund flows. Our results on comparison of relative performance corroborates that of the previous studies. Investors tend to only the market factor. Adjustments for size, value and momentum factors are not made

when evaluating the performance of a mutual fund. Thus the returns to these factors are also considered as the returns generated due to fund managers ability.

Reference

Agarwal, V., Green, T. C. and Ren, H. (2018). Alpha or beta in the eye of the beholder: What drives hedge fund flows?. *Journal of Financial Economics*, *127*(3), 417-434.

Barber, B. M., Huang, X. and Odean, T. (2016). Which factors matter to investors? Evidence from mutual fund flows. *Review of Financial Studies*, *29*(10), 2600-2642.

Ben-David, I., Li, J., Rossi, A. and Song, Y. (2019). *What do mutual fund investors really care about?*. (Fisher College of Business, Charles A. Dice Center Working Paper No. 2019-5)

Berk, J. B. and Van Binsbergen, J. H. (2016). Assessing asset pricing models using revealed preference. *Journal of Financial Economics*, *119*, 1-23.

Blocher, J. and Molyboga, M. (2017). The revealed preference of sophisticated investors. *European Financial Management*, *23*(5), 839-872.

Carhart, M. M. (1997). On persistence in mutual fund performance. *Journal of Finance*, *52*(1), 57-82.

Dang, T. D., Hollstein, F. and Prokopczuk, M. (2019). *How Do Bond Investors Measure Performance? Evidence from Mutual Fund Flows*. Paper presented at Mutual Funds, Hedge Funds and Factor Investing, Lancaster, 2019. Lancaster, UK

De Santis, G. and İmrohoroğlu, S. (1997). Stock returns and volatility in emerging financial markets. *Journal of International Money and finance*, *16*(4), 561-579.

Fama, E. F. and French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics*, *33*(1), 3-56.

Jiang, G. J. and Yuksel, H. Z. (2017). What drives the "smart-money" effect? Evidence from investors' money flow to mutual fund classes. *Journal of Empirical Finance*, *40*, 39-58.

Lintner, J. (1965). Security prices, risk, and maximal gains from diversification. *Journal of Finance*, *20*(4), 587-615.

Ong, L. L. and Sy, A. (2004). *The role of mature market mutual funds in emerging markets: myth or mayhem?* (IMF Working Paper No. 4-133). International Monetary Fund.

Reserve Bank of India. (2017). *Financial Stability Report*. (Issue No. 15). Retrieved from https://rbidocs.rbi.org.in/rdocs/PublicationReport/Pdfs/0FSR_30061794092D8D036447928A4B45880863B33E.PDF

Rojas-Suarez, L. (2013). *Towards strong and stable capital markets in emerging market economies*. In BIS Papers No. 75 Long-term finance: Can emerging capital markets help? Proceedings of the Bank of Russia – Bank for International Settlements high level seminar (pp. 13-20). Basel, Switzerland: Bank for International Settlements.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk. *Journal of Finance*, *19*(3), 425-442.