Impact of Mutual Fund Classification on Investors,Funds and Stock Market

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Categorization and Rationalization of mutual fund schemes

- SEBI issued a circular titled “Categorization and Rationalization of mutual fund schemes” on 6th October 2017. The new law states its aim as

  "It is desirable that different schemes launched by a mutual fund are clearly distinct in terms of asset allocation, investment strategy etc. Further, there is a need to bring in uniformity in the characteristics of similar type of schemes launched by different Mutual Funds. This would ensure that an investor of Mutual Funds is able to evaluate the different options available, before taking an informed decision to invest in a scheme."

  — SEBI (Circular - CIR/P/2017/114)

- The law classified open-ended mutual funds into 5 broad categories - Debt, Equity, Hybrid, Solution Oriented and Others; and 36 sub categories.
- Equity funds are classified into 10 sub categories - Multi Cap, Large Cap, Large & Mid Cap, Mid Cap, Small Cap, Dividend Yield, Value/Contra, Focused, Sectoral/Thematic and ELSS funds.

Impact of new law

This new law has consequences of investors, mutual funds, and stock market quality

- Investors - The new law standardizes fund categories improving comparability of funds which makes it easier for investors to identify good funds.
- Mutual Funds - As the comparability of fund performance increases, mutual funds will try to improve their performance to attract fund flow.
- Stock Market - Compliance with new law requires funds to trade in and out of stocks which can result in predictable price movements.

Data

- Lipper for Investment Management (LIM) is our primary source for Mutual fund data including fund returns, portfolio holdings and AUM.
- We get all our firm relevant data from Prowess-CMIE database including daily stock returns, industry classification, and market capitalization of the firms.
- Agarwalla, Jacob, and Varma (2013) provide us with Fama-French-Carhart risk factors and risk free rate for Indian markets.
- The circular notifying the new law was issued in October 2017. It required funds to submit a plan to comply with the new law within 2 months and can take another 3 months to comply with it.
- Therefore our "event window" is from October 2017 to February 2018. Our "post-event" window is from March 2018 to September 2019, and our "pre-event" window is from March 2016 to September 2017.
- Indian mutual funds typically offer 3 plans - Dividend, dividend reinvestment and Growth. They also offer two options for mode of investment - Direct and Standard. Since the underlying portfolio is same across classes we aggregate our data at fund level to avoid duplication.
- We remove funds with AUM less than 50 million rupees from our sample.
- Our final sample has 287 funds varying from 232 funds at start to 263 funds at end.

Impact on Investors - 1

- Given the new law reduces search costs for investors, following Sirri and Tufano (1998), we expect the flow-performance sensitivity to increase.
- We model the non-linear flow-performance relationship using piece wise linear regression as discussed below.
- Every month we rank funds within each category based on their last three months performance on a continuous scale from 0 (worst) to 1 (best).
- We break the fractional performance rank of the funds into three variables as follows:

$$\begin{aligned} Low_{i,t} &= min(0.2, Rank_{i,t}) \\ Mid_{i,t} &= min(0.6, Rank_{i,t} - Low_{i,t}) \\ High_{i,t} &= Rank_{i,t} - (Low_{i,t} + Mid_{i,t}) \end{aligned}$$

- For robustness we measure performance in four different ways - Raw returns, CAPM alpha, Fama-French alpha (FF), and Fama-French-Carhart four factor alpha (FFC).

Impact on Investors - 2

- We interact these three performance variables with a dummy variable, *Post*, which equals 1 for the "post-event" period and 0 otherwise in the following regression model:

$$\begin{aligned} \textit{Fund Flow}_{i,t} = \beta_0 &+ \beta_1 \textit{Low}_{i,t-1} + \beta_2 \textit{Low}_{i,t-1} \times \textit{Post}_t + \beta_3 \textit{Mid}_{i,t-1} \\ &+ \beta_4 \textit{Mid}_{i,t-1} \times \textit{Post}_t + \beta_5 \textit{High}_{i,t-1} + \beta_6 \textit{High}_{i,t-1} \times \textit{Post}_t \\ &+ \beta_7 \textit{Controls} + \epsilon_{i,t} \end{aligned}$$

- The coefficients of the piece wise decomposition of fractional ranks represent the marginal flow response to performance.
- *Controls* include natural log of Fund size in million rupees, natural log of Fund age in years, and natural log of fund family size in million rupees.

Impact on investors - 3

Table: Impact of new fund categorization law on flow-performance relationship

	Raw		CAPM		Fama-French-Carhart	
	(1)	(2)	(3)	(4)	(5)	(6)
High × Post		0.060*		0.085**		0.065*
		(0.029)		(0.032)		(0.029)
Mid × Post		−0.009*		−0.008		−0.010*
		(0.005)		(0.005)		(0.004)
Low × Post		−0.019		−0.021		−0.015
		(0.017)		(0.019)		(0.020)
High	0.040***	0.009	0.031*	−0.012	0.021	−0.012
	(0.012)	(0.018)	(0.014)	(0.022)	(0.014)	(0.021)
Mid	0.008**	0.013***	0.008*	0.012**	0.008**	0.013***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.003)
Low	0.015	0.025*	0.016	0.026	0.011	0.019
	(0.008)	(0.011)	(0.009)	(0.014)	(0.007)	(0.012)
Post		0.005		0.001		0.001
		(0.007)		(0.007)		(0.006)
Constant	0.032	0.027	−0.034	−0.030	−0.031	−0.031
	(0.072)	(0.071)	(0.083)	(0.081)	(0.083)	(0.082)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Fund and Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Note:				*p<0.05; **p<0.01; ***p<0.001		

Impact on Investors - 4

- Our results indicate a statistically significant increase in flow-performance sensitivity at high performance levels.
- This is also economically significant. For example, in regression (2) of above table, a 10 percentile increase in raw performance rank in the top performance quintile, the fund will receive an additional flow of 7.2% per year. [0.06 $\times$ 10% $\times$ 12 months = 7.2%]
- From regressions 4 and 6 of above table we can see our results are robust to alternative measures of performance.
- We therefore conclude that the new law has reduced investor search costs by bringing uniformity in fund definition.

Impact on Funds - 1

- Given the increase in flow-performance sensitivity, we expect the fund managers to exert greater effort and improve fund performance in the "Post-event" window.
- We test our hypothesis by estimating the following regression model:

$$\begin{aligned} \textit{Fund Perf}_{i,t} = \beta_0 + \beta_1 \textit{Post}_t + \beta_2 \textit{Fund Age}_{i,t-1} + \beta_3 \textit{Fund Size}_{i,t-1} \\ + \beta_4 \textit{Fund Family Size}_{i,t-1} + \beta_5 \textit{Controls} + \epsilon_{i,t} \end{aligned}$$

- Our variable of interest in the above equation is β_1.
- We find that β_1 is positive and significant across specifications, indicating an increase in fund performance post the new regulation.
- We also find that coefficient of Post dummy for Net returns to be greater than that of Gross returns, indicating a reduction in fund management fees.

Table: Impact of investment constrains on fund performance

	Net Returns			Gross Returns		
	CAPM	FF	FFC	CAPM	FF	FFC
Post	1.198***	1.156***	1.305***	1.066***	1.094***	1.219***
	(0.010)	(0.007)	(0.008)	(0.011)	(0.008)	(0.009)
Fund Age	−0.134**	−0.141**	−0.066	−0.136**	−0.141**	−0.099
	(0.045)	(0.044)	(0.051)	(0.048)	(0.050)	(0.057)
Fund Size	−0.026***	−0.016***	−0.021***	−0.030***	−0.020***	−0.022***
	(0.005)	(0.004)	(0.006)	(0.005)	(0.004)	(0.006)
Fund Family Size	0.022**	0.018**	0.035***	0.009	0.012	0.037***
	(0.008)	(0.006)	(0.010)	(0.009)	(0.007)	(0.009)
Constant	0.400	0.322*	−0.272*	0.886***	0.742***	0.135
	(0.215)	(0.158)	(0.126)	(0.247)	(0.175)	(0.129)
Controls	Yes	Yes	Yes	Yes	Yes	Yes

The table presents results of panel regression examining the effect of new fund categorization law on fund performance. The dependent variable is Fund performance, *Fund Perf*. Both Net Returns and Gross Returns are used to a measure of fund performance. We measure fund performance as Jensen's alpha (CAPM), Fama-French three factor alpha (FF) and Fama French Carhart four factor alpha (FFC). The independent variables include: *Post* dummy which equals 1 for the post event window and 0 otherwise, *Fund Age* defines as natural log of fund age in years, *Fund Size* defined as natural log of fund size in million rupees, and *Fund Family Size* defined as natural log of fund family AUM in million rupees. We also include category fixed effects and time fixed effects as control variables. Panel adjusted Newey and West (1987) standard errors with maximum lag length are reported in parentheses.

Note: $^{*}p<0.05$; $^{**}p<0.01$; $^{***}p<0.001$

Impact on Funds - 3

- The other consequence of the new law is that, mutual funds with broader investment mandate would have to revise their portfolio and may have to give up on some investment opportunities in future to comply with the new law.
- We define a new variable "Average Divergence" (See appendix for full definition) to measure the extent of impact of the new law on funds.
- Higher is the average divergence of the fund in the "Pre-event" window, greater will be the impact of investment constraints of the new law on the fund performance in the "Post-event" period.
- We test the impact of investment constraints on fund performance in "Post-event" period by estimating the following regression model:

$$Fund\ Perf_{i,t} = \beta_0 + \beta_1 Avg.\ Div_i \times Post_t + \beta_2 Avg.\ Div_i + \beta_3 Post_t + \beta_4 Controls + \epsilon_{i,t}$$

- Our results show β_1 to be negative and statistically significant. We therefore conclude that the new law disproportionately effects funds with broad investment mandate.

Impact on Funds - 4

Table: Cross sectional Impact of investment constrains on fund performance

	Raw		CAPM		FFC	
Post × Avg. Div	−0.007***		−0.009***		−0.0003	
	(0.001)		(0.001)		(0.001)	
Avg. Div	0.003*		0.006***		0.0003	
	(0.002)		(0.001)		(0.003)	
Post × Avg. Div Dummy		−0.253***		−0.151***		0.051
		(0.046)		(0.048)		(0.051)
Avg. Div Dummy		0.239***		0.167***		0.031
		(0.040)		(0.031)		(0.054)
Post	−5.853***	−5.832***	1.361***	1.348***	1.477***	1.463***
	(0.017)	(0.015)	(0.013)	(0.014)	(0.009)	(0.012)
Constant	11.773***	11.729***	0.480**	0.468**	−0.246	−0.246
	(0.166)	(0.169)	(0.214)	(0.217)	(0.163)	(0.160)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Category fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

The dependent variable is fund performance, *Fund Perf*. The independent variables include: $Avg.Div_i$ defined as $\sum_{t=1}^{12} Div_{i,t}/12$. Here time, t, varies over a 12 month period from March 2015 to February 2016. *Post* equals 1 for the "post-event" window else zero. *Avg. Div Dummy* is a dummy variable that takes value 1 if the fund's *Avg.Div* is in the top quintile else zero. Other independent variables included as control are *Fund Age*, *Fund Size*, and *Fund Family Size*.Panel adjusted Newey and West (1987) standard errors with maximum lag length are reported in parentheses.

Impact on Stock Market - 1

- Compliance with the new law requires market cap based mutual funds to frequently trade in and out of stocks. This could result in predictability in stock returns. We test this using the equation below

$$\textit{Firm Perf}_{i,t} = \beta_0 + \beta_1 \,\%\textit{Diff}_{i,t-1} + \beta_2 \,\%\textit{Same}_{i,t-1} + \epsilon_{i,t}$$

- Here the *Firm Perf* refers to firm performance measured as CAPM alpha, Fama-French alpha and Fama-French-Carhart alpha.
- % *Diff* refers to percentage of firm held by all funds to which the firm does not constitute primary market. Similarly, % *Same* refers to percentage of firm held by all funds to which the firm is part of its primary market.
- For example, if 10% of the equity of a large market capitalization firm is held by Large Cap and Large & Mid Cap category funds and 5% by Mid Cap and Small Cap category funds then % *Same* $= 10\%$ and % *Diff* $= 5\%$.
- We hypothesize that funds have a greater urge to sell a firm's equity for regulatory compliance when it does not belong to its primary market. This implies we expect β_1 to be less than β_2.
- In table below we find β_1 and β_2 to be negative and statistically significant. Therefore we conclude that

Impact on Stock Market - 2

Table: Impact of new mutual fund classification law on stock prices

	CAPM (1)	Fama-French (2)	FFC (3)
% Diff	-0.242^{***}	-0.250^{***}	-0.190^{***}
	(0.045)	(0.045)	(0.047)
% Same	-0.180^{***}	-0.154^{***}	-0.164^{***}
	(0.028)	(0.028)	(0.030)
Constant	-0.396^{***}	0.696^{***}	0.675^{***}
	(0.113)	(0.113)	(0.119)
Sample Months	All	All	All
Observations	11,799	11,799	11,799
Adjusted R^2	0.007	0.006	0.004

The dependent variable is firm performance, *Firm Perf* We measure firm performance as CAPM alpha, Fama-French three factor alpha and Fama-French-Carhart (FFC) four factor alpha represented above the column numbers. The independent variables include % *Diff* and % *Same*. % *Diff* refers to percentage of firm held by all funds to which the firm does not constitute primary market. Similarly, % *Same* refers to percentage of firm held by all funds to which the firm is part of its primary market.

Conclusion

- We find the new law, as intended, has improved comparability across funds and reduced customer search costs.
- This has resulted in fund exerting greater effort and improving their performance, benefiting customers.
- However, the new law has two unintended consequences. First, it has negatively impacted the performance of funds, with broad investment mandate and which have been constrained by the new law.
- Second, the new law has increased predictability of stock returns and deteriorated the market quality.
- Overall our paper throws light on the benefits and unintended costs of regulation.

References

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Appendix I - Impact on Funds

- We propose a new variable "Divergence" to measure the extent of impact of the new law on funds. We define Divergence as:

$$Div_{i,t} = -min(Invest.\ in\ primary\ market_t - Minimum\ SEBI\ required\ invest.,\ 0)$$

  Here "*Invest. in primary market*" refers to the percentage of total assets of the fund invested in securities in which the fund is primarily tasked to invest in. "*Minimum SEBI required invest.*" is the minimum investment required by any fund in its primary market. This number varies from category to category (For examples see next slide).
- We measure the magnitude of investment constrains by the new law, on any given fund, as the average value of divergence (*Div*) of that fund over a one year period. Mathematically, We define the investment constrain variable, *Avg. Div*, as

$$Avg.\ Div_i = \sum_{t=1}^{12} Div_{i,t}/12 \tag{1}$$

- Higher is the average divergence of the fund in the "Pre-event" window greater will be the impact of investment constraints on the fund performance in the "Post-event" period.

Appendix I - Impact on Funds

Table: Equity fund categories and their characteristics

Categories	Fund Characteristics	Divergence[1]
Multi Cap Fund	Minimum investment in equity & equity related instruments - 65% of total assets.	$-min\{Total\ Eq. - 65, 0\}$
Large Cap Fund	Minimum investment in equity & equity related instruments of large cap companies - 80% of total assets.	$-min\{Large\ Cap - 80, 0\}$
Large & Mid Cap Fund	Minimum investment in equity & equity related instruments of large cap companies - 35% of total assets. Minimum investment in equity & equity related instruments of mid cap stocks - 35% of total assets.	$-min\{Large\ Cap + Mid\ Cap - 70, 0\}$
Mid Cap Fund	Minimum investment in equity & equity related instruments of mid cap companies - 65% of total assets.	$-min\{Mid\ Cap - 65, 0\}$
Small Cap Fund	Minimum investment in equity & equity related instruments of small cap companies - 65% of total assets.	$-min\{Small\ Cap - 65, 0\}$

[1] Total Eq., Large Cap, Mid Cap, Small Cap, and Sectoral Equity refers to percentage of total assets of the fund invested in all equity, equity of large market capitalization firms, equity of middle market capitalization firms, equity of small market capitalization firms, and equity of firms belonging to corresponding sector of the fund respectively.