International Journal of Modern Agriculture, Volume 10, No.2, 2021
ISSN: 2305-7246

EXPLAINING MUTUAL FUND EXPENSES & FUND PERFORMANCE DIFFERENCES BETWEEN DIRECT FUNDS AND REGULAR (BROKER SOLD) FUNDS IN INDIA THROUGH STRUCTURAL EQUATION MODELLING

Ramkrishna Dikkatwar[1], Rajkumar Pillay[2], Tanmoy De[3]

[1,3] Symbiosis Institute of Business Management, Hyderabad
[2]Symbiosis International (Deemed University), Pune, India
Email: [1]ramkrishna.dikkatwar@sibmhyd.edu.in

Abstract

It was observed that differences in fund performance cannot be fully explained by expense differential between direct plans and regular plans (broker sold) in Indian Mutual fund (MF) industry. This study attempts to explain fund performance differential between direct plans and regular plans (broker sold).

The data taken for study comprises of 528 Indian mutual funds launched on or before 31st March 2013.

Proposed model to explain fund performance differential between direct plans and regular plans was tested by administering structural equation modelling (SEM) on four panels formed on the basis of fund type (i.e. debt & equity) and family ownership (bank owned and non-bank owned).

The results of SEM supported hypothesized structural model for debt funds as well as equity funds offered by bank owned MF families but not for funds offered by non-bank owned MF families.

This paper shows that differential behaviors of bank owned and non-bank owned MF families in terms of portfolio management.

Contrary to past research study observes negative relationship between number of funds offered by the fund family on fund expenses difference.

Key words: Mutual Funds, Fund Performance, Fund Expenses, Fund Family, Ownership, Structural Equation Modelling

JEL Classification: G29, D22

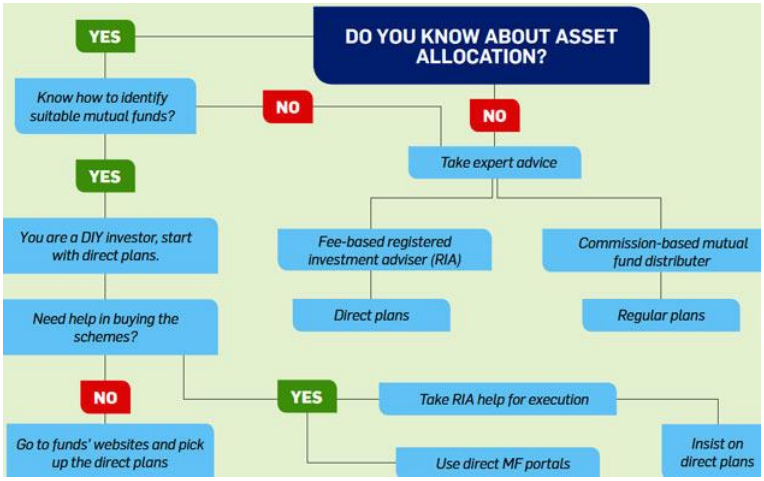
Introduction

A strong financial market with far-reaching participation is essential for any developed economy. The Mutual fund (MF) industry in India is established in 1963. Industry has seen tremendous growth in last eleven years. The total assets of MF Industry in India have increased from INR 3.26 trillion at the end of financial year 2006-07 to INR 23.05 trillion by the end of year 2017-18. The all-time highest Asset Under Management ever with seven-fold increase was achieved in a span of just 11 years!! One of the factor behind this meteoritic rise is regulatory interventions. One of the key initiatives was mandatory introduction of Direct & distributor or broker sold plans by Security Exchange Board of India (SEBI) in year April 2012. The same proposal banned practice of offering plans under label of retail, institutional and super institutional. The move was taken with an objective

"to increase diffusion of mutual fund products across the retail investors and to invigorate the distribution intermediaries while safeguarding the interest of buyers"

Lot of industry insiders often write about direct plan's preeminence in terms higher return and lower expense ratio in comparison to their broker sold or regular counterparts. Dhirendra [1] put forth that direct plans are inappropriate for new or unsophisticated investors. The Figure 1 shows the series of questions investors should ask himself before opting between regular plan and direct plan.

Figure 1 Whether to opt for direct plans or regular plans?



Source: [2]

Individual or Retail Investors typically does not have capabilities in terms of decisions such as asset allocation or Mutual fund selection. Add to this retail investor's unwillingness towards paying advisory fees drive them to choose regular plans over direct plans.

Narendra [2] indicates the mean three-year return spread between direct and regular funds ranges from 50 to 408 basis points depending on the Mutual fund category. The table 1 below summarizes average return differences between regular plans and direct plans.

Table 1 Fund category wise spread between average returns of the direct as against regular plans

Type of fund	Equity: Diversified	Equity: Thematic	ELSS	Hybrid: Equity Oriented	Hybrid: Debt Oriented (conservative)	Debt: Gilt	Debt: Income	Debt: Short Term	Debt: Liquid
Average Higher returns*	4.08	4.17	3.91	4.03	3.37	2.46	2.60	2.11	0.50

* "The spread in the mean returns of the direct and regular plans of each category has been to arrive at these numbers."

Only MF schemes with assets under management of Rs. 100 crores and more were considered.

Source: Value Research. Figures are as on October 2017.

Ideally the fund performance differences (FPD) should stem from fund expense difference (FED) between direct fund vis vis with regular funds. It was observed that few funds FPD is even lesser that FED while some mutual funds FPD is more than FED. The table 2 offers snapshot of the same.

Table 2 Comparing expense difference with performance difference between regular plans and direct plans

	FPD>FED					**FPD = FED**	**FPD<FED**		
Difference between FPD & FED*	100 -184	70-99	40-69	10-39	1-9	0	1-9	10-49	50-134
Number of funds	10	11	30	129	129	30	97	79	17
**in basis points. 100 bases points = 1 percentage.*									

This preliminary study shows that only 30 funds (less than 6 percent) out of 529 shows logical behavior i.e. FPDs can be fully explained by FEDs. This only shows that FPD cannot be fully explained thorough FED.

Literature Review

It was observed that Funds that are small do charge higher fees and expenses [3]. Bigger funds in terms of total assets have smaller expense ratios than smaller mutual funds, indicating the economies of scale [4]. This kind of size expense relationship was observed in [5]. Based on this one can deduce the same for fund expense as well as fund size differences. We therefore can design following research questions: -

Research question 1 - Does Absolute Fund size differences (FSD) between regular & direct plans negatively affect absolute fund expense difference (FED) between regular & direct plans?

Prior research was found where family size was considered while explaining fund performance and expenses [6]; [7]; [8]. But The findings from these literatures are contrasting. We want to deduce the effect of family size as ….

Research question 2 - Does family size (FS) affect absolute fund expense difference (FED) between regular & direct plans? If yes, positively or negatively?

Kempf & Ruenzi [9] while studying U.S. mutual fund industry found that MF managers working in one fund family compete with each other indicating presence of intra family competition. This intra family competition is referred as tournament effect by Brown, et al [10] and Goriaev, et al [11]. One way to measure intensity of Intra family competition or tournament effect is 'number of products sold by family'. More number of fund denotes more number of portfolio managers leading to more competition amongst them.

Research question 3 - Does tournament effect within the family (FSP) affect absolute fund expense difference (FED) between regular & direct plans? If yes, positively or negatively?

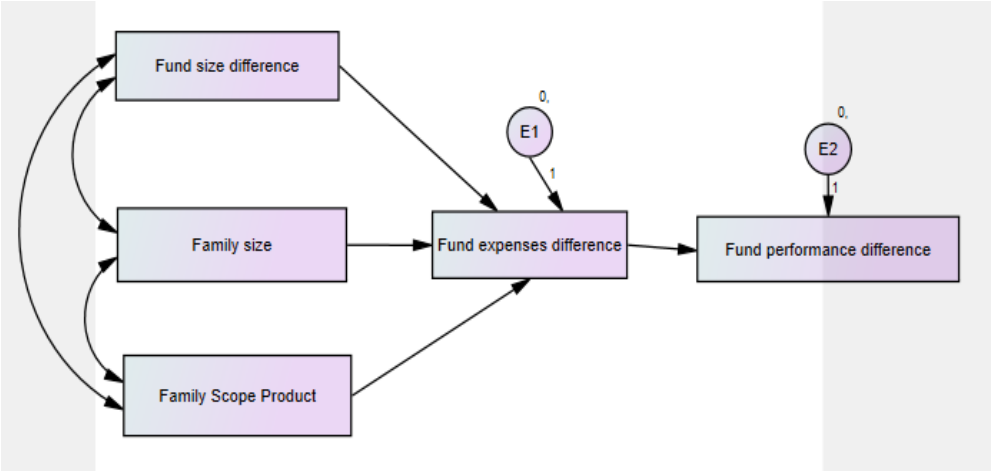
Prior research had shown that expenses have negative correlation with fund performance [12]. Most importantly Carhart [12] found "that persistent differences in mutual fund expenses and transaction costs describe almost all of the predictability in mutual fund returns". The similar relationship was established in numerous research studies such as [13] & [14].

Logically one can deduce that fund performance difference and fund expense difference should be of same magnitude if taken on absolute basis. As differences are taken on absolute basis, one can deduce that ….

Research question 4 - Does absolute fund expense difference between regular & direct plans (FED) positively affect absolute fund performance difference (FPD)between regular & direct plans?

These four research questions are shown as a model in fig 2.

Figure 2 Proposed model to explain expense and performance differential between direct and regular fund



Fund expenses and performance varies with fund types. "It was found that Thai funds investing in equity funds charge consistently higher fees and expenses than those that focus on fixed income securities [14]".

Equity fund and debt funds are inherently different from each other in terms of expenses, performance and risks. As a researcher we expect that hypothesized model perform differently to equity funds vis a vis with debt funds.

Research question 5 - Does this model (Fig. 2) work differently for equity funds and debt funds? If yes, what are the differences?

While studying Greek MF industry, it was found that the funds owned by one of the three dominant domestic banking groups achieve higher performance in comparison to their competitors [13]. A sample comprising data of French equity funds from January 1999 to April 2008 was analyzed by Tran Dieu, L [15] to conclude bank owned funds underperform compared to non-bank owned funds. Matallin-Saez, Soler-Dominguez, & Tortosa-Ausina, [16] found evidence non-bank owned funds outperform their banking counterparts even when the lower associated fees are considered.

The bank-managed and older funds charge higher expenses [17]. Contrary to this finding, Tran Dieu [15] found no significant variance in fees between bank and non-bank owned funds.

Funds owned by Bank owned families and non-bank owned families shows different behavior in terms of fund expenses as well as fund performance.

Research question 6 - Does this model (Fig. 2) work differently for fund offered by bank owned and non-bank Mutual fund families? If yes, what are the differences?

Data

As on May 2017, Indian MF industry comprises 4433 products. As discussed earlier, regulation related to compulsory introduction of direct plans April 2012 with dead line of January 2013. Considering this the products with an age of four or more years were only taken for the study. Only 1812 schemes were fulfilling this criterion. Further as the scope of this study is limited to equity, debt and hybrid fund categories, MF schemes categorized under Fixed Maturity Plans (FMP) were discarded. After FMP removal, 1075 schemes left for the study. After data cleansing, 1056 schemes (528 products offering both direct options as well as regular i.e. broker sold option) were taken for the study.

Methods

Study design

The relationship as shown in the model shown through figure 2 will be tested by administering structural equation modelling (SEM). To unfurl role of ownership & type of fund, researchers has decided to test model on four cohorts which are shown through fig 3.

Figure 3 Cohorts based on ownership and fund type

Cohort I **Bank - debt**	Cohort III **Non-bank - debt**	**Debt**	**Fund type**
Cohort II **Bank - equity**	**Cohort IV** Non-bank equity	equity	
bank	Non-bank		
Family ownership structure			

Structural Equation Modelling (SEM) as a tool was employed by using the software AMOS version 25.0. Comparison was studied between the proposed and tested model for four cohorts as shown in fig 3. The indices used for estimating goodness of fit of the model were Chi-square goodness of fit value should be insignificant (Low χ 2 at p >0.05), relative chi square (CMIN/df <3), Comparison of Fit Index (CFI > 0.95), Tucker Lewis Index (TLI>0.95), Normed Fit Index (NFI > 0.95) and Root Mean Square Error of Approximation (RMSEA < 0.08) [18]; [19].

Measures

Researchers has operationalized measures (study variables) for the research study. Researcher want to study fund expense differences and fund performance differences between direct and regular plans. For this purpose, the study measures in the hypothesized model has to be operationalized as shown in Table 3.

Table 3 Operationalization of study Variables

Variable	**Variable Name (Operationalization)**	**Level of Measurement**
Fund Expenses different (FED)	Absolute difference between 1 year Fund expense of direct plan and one year Fund expense of regular plan	Continuous & Numerical
Fund performance differences (FPD)	Absolute difference between 1 year Fund Performance of direct plan and one year Fund Performance of regular plan	Continuous & Numerical
Fund size differences (FSD)	Absolute difference between assets under direct plan and assets under regular plan for the same MF scheme.	Continuous & Numerical
Family size (FS)	MF family's total assets under management as on May 2018.	Continuous & Numerical
Family scope	Number of funds Managed by MF family as on	Continuous &

(FSD)	May 2018.	Numerical

Data Analysis

The 3 degrees of freedom represent the level of over identification of the model. The chi-square value with 3 degrees of freedom, returning a probability value of more than .05 then the null hypothesis that the model fits the data is accepted for cohort I & II.

Since the probability value of the chi-square test is smaller than the .05 level (level of significance), you would reject the null hypothesis that the model fits the data for cohort III & IV.

Table 4 Tests of Absolute Fit

	Cohort I Bank - debt	**Cohort II** Bank - equity	**Cohort III** Non-bank - debt	**Cohort IV** Non-bank equity
Chi-square	4.185	4.728	13.027	20.951
Degrees of freedom	3	3	3	3
Probability level	.242	.193	.005	.000
Interpretation	H0 accepted	H0 accepted	Ha accepted	Ha accepted
H0 = Model fits data; Ha = Model does not fit data				

As shown in Table 4, cohort I & II chi square values suggests that 'model fits the data'.

In short a model that is parsimonious, and yet performs well in comparison to other models may be of substantive interest. One needs to interpret more fit measures. The table 5 summarizes all fit statistics for four cohorts.

Table 5 Model Fit summary

Fit Measure	**Cut off value**	**Cohort I Bank - debt**	**Cohort II Bank - equity**	**Cohort III Non-bank - debt**	**Cohort IV Non-bank equity**
Discrepancy / df	CMINDF $\leq$ 3	**1.395**	**1.576**	4.342	6.984
Normed Fit Index	NFI $\geq$ .95	**.986**	**.980**	.941	.877
Relative Fit Index	RFI $\geq$ .95	**.953**	**.933**	.802	.590
Incremental Fit Index	IFI $\geq$ .95	**.996**	**.993**	.954	.893
Tucker Lewis Fit Index	TLI $\geq$ .95	**.986**	**.974**	.840	.627
Comparative Fit Index	CFI $\geq$ .95	**.996**	**.992**	.952	.888
RMSEA	RMSEA < 0.08	**.063**	**.077**	.170	.211
Hoelter .01 index (Critical N)	Critical N > 200	**272**	**233**	102	73

Based on absolute as well as relative fit, researchers can safely conclude that bank & non-bank mutual fund firms' differential behavior towards explaining Fund Expense Difference & Fund Performance Difference between direct plans and regular plans.

"The Tucker-Lewis Index (TLI) and the Comparative Fit Index (CFI) compares the absolute fit of specified model to the absolute fit of the Independence model. The larger the difference between the overall fit between the two models, the larger the values of TLI and CFI [20]".

Next, researchers usually examine the statistically significant relationships within the model for funds offered by bank owned MF families i.e. for cohort I & II.

Ullman [20] observed that "unstandardized coefficients are hard to construe as variables often are measured on different scales; therefore, researchers often examine standardized coefficients". To aid interpretability, researchers considered standardized coefficients as variables under the current study are measured on different scales.

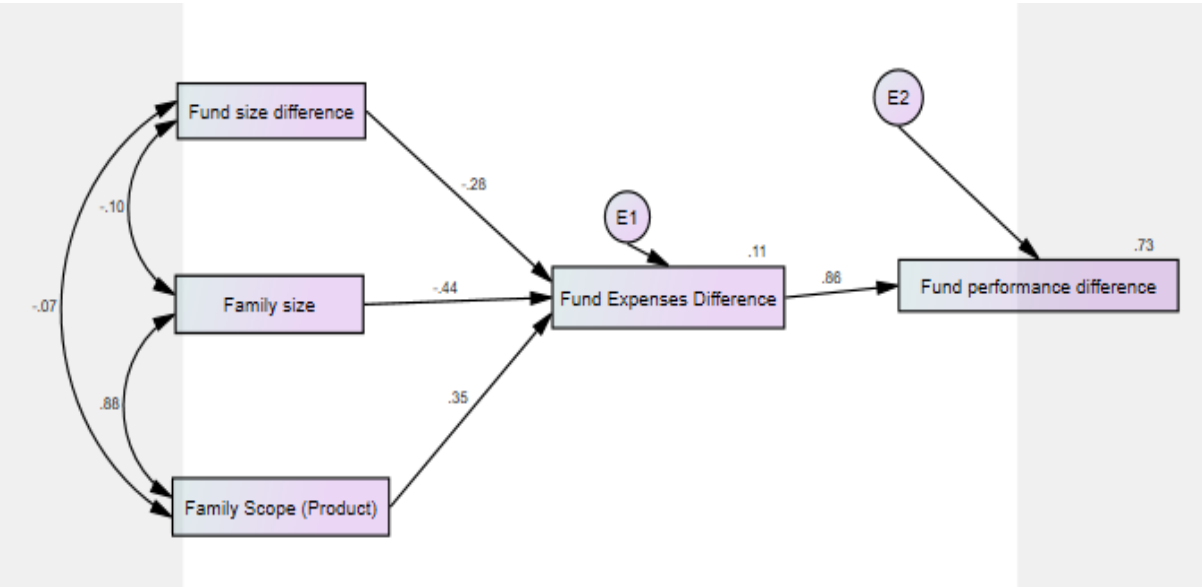
As shown Table 6 & Figure 4, the standardized coefficients show that there are statistically significant relationships in the model. As shown in the table 6, the analysis revealed that the Fund expense differences significantly co-vary with fund size differences ($\beta = -0.276$, $p = 0.004$), family size ($\beta = -0.437$, $p = 0.029$) and family scope ($\beta = 0.351$, $p = 0.08$) for debt funds. Further fund performance differences between regular and direct plans co-varies with fund expense differences ($\beta = 0.856$, $p < 0.01$).

Table 6 Direct effects of standardized path coefficients of the model for Cohort I (debt funds offered by bank owned MF families)

	Hypotheses	Standardized Coefficient	C.R.	p	Hypothesis supported?
H1	FED <--- FSD	-.276	-2.911	.004[a]	Yes
H2	FED <--- FS	-.437	-2.180	.029[a]	Yes
H3	FED <--- FSP	.351	1.752	.080[b]	Yes
H4	FPD <--- FED	.856	16.590	***	Yes

i) *** signifies 1 percent level of significance
ii) [a] signifies 5 % level of significance
iii) [b] signifies 10 % level of significance
iv) C.R. = Critical Ratio

Figure 4 Standardized results for bank – debt funds (Cohort I)



As shown Table 7 & Figure 5, the standardized coefficients show that there are statistically significant relationships in the model for equity funds offered by bank owned MF families. The analysis further revealed that the Fund expense differences significantly co-vary with family size ($\beta = -0.755$, $p < 0.01$) and family scope ($\beta = 0.544$, $p < .01$) for debt funds. Further fund performance differences between regular and direct plans co-varies with fund expense differences ($\beta = 0.706$, $p < 0.01$).

Figure 5 Standardized results for bank – equity funds (Cohort II)

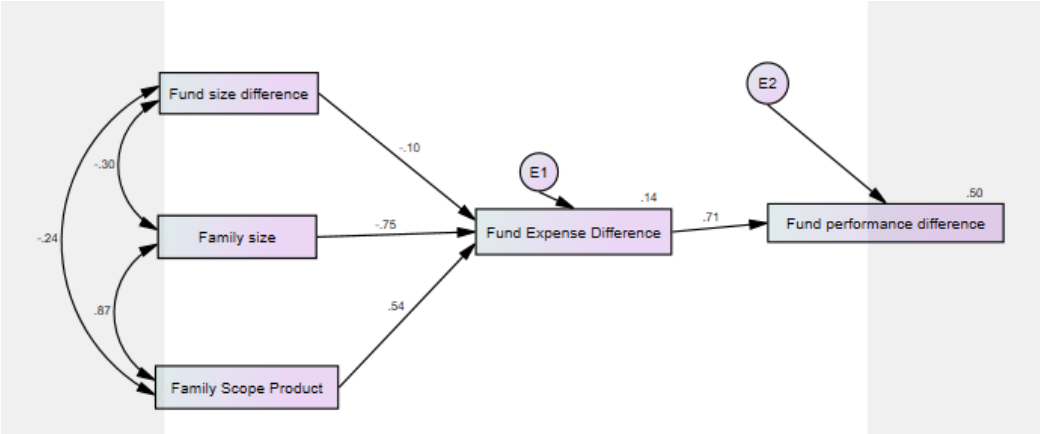


Table 7 Direct effects of standardized path coefficients of the model for Cohort II (equity funds offered by bank owned MF families)

	Hypotheses	**Standardized Coefficient**	**C.R.**	**P**	**Hypothesis supported?**
H1	FED <--- FSD	-.103	-1.046	.296	No
H2	FED <--- FS	-.755	-3.849	***	Yes
H3	FED <--- FSP	.544	2.826	.005[a]	Yes
H4	FPD <--- FED	.706	9.817	***	Yes

i) *** signifies 1 percent level of significance

ii) [a] signifies 5 % level of significance

iii) [b] signifies 10 % level of significance

iv) C.R. = Critical Ratio

Within funds offered by bank owned MF families, differences are found in terms of models ability to explain fund expense difference as well as fund performance differences between direct and regular plans. As squared multiple correlation for debt funds (SMC = .733) is higher than equity fund (SMC = .498). This only shows that model explains fund expense differences as well as fund performance differences for debt funds better than equity funds.

In short, the results are summarized in table 8.

Table 8 Summarized Results

Research questions	**Debt Funds**	**Equity funds**
Research question 1 - Does Absolute Fund size differences (FSD) between regular & direct plans negatively affect absolute fund expense difference (FED) between regular & direct plans?	Yes[a]	Yes[#]

Research question 2 - Does family size (FS) affect absolute fund expense difference (FED) between regular & direct plans? If yes, positively or negatively?	Yes[a] (Negatively)	Yes*** (Negatively)
Research question 3 - Does tournament effect within the family (FSP) affect absolute fund expense difference (FED) between regular & direct plans? If yes, positively or negatively?	Yes[b] (Positively)	Yes[a] (Positively)
Research question 4 - Does absolute fund expense difference between regular & direct plans (FED) positively affect absolute fund performance difference (FPD)between regular & direct plans?	Yes***	Yes***
i) **** signifies 1 percent level of significance* *ii)* *[a] signifies 5 % level of significance* iii) *[b] signifies 10 % level of significance* iv) *[#] Statistically not significant*		

Results

The results of the SEM supported the hypothesized structural model for debt as well as equity funds offered by bank owned MF families. But poor fit is observed for debt as well as equity funds offered by non-bank owned MF families.

It has been observed that the model (See Fig. 3) work differently for funds offered by bank owned in comparison to non-bank Mutual fund families.

If we restrict ourselves to bank owned MF families, then our observations are as follows: -

a) Surprisingly, it was found that number of products offered by MF family (tournament effect) positively affects absolute fund expense difference between regular & direct plans. Smaller will be the number of funds within MF family then lower will be the fund expense difference & going further it results smaller fund performance difference between regular & direct plans.

b) It was observed that size differences between direct and regular plans negatively effects on fund expenses differences. But the results are statistically significant in debt funds only.

c) Family size is negatively associated with fund expenses difference between regular and direct plans for equity funds. To minimize differences in performances, investors should go for funds offered by larger (in terms of total assets managed) families.

d) The proposed model (See Fig. 3) work differently for equity funds and debt funds. Proposed model's ability to explain performance differential varied with type of fund. Debt category is explained better by the model as compared to equity fund.

Discussion and Conclusion

Contrary to Tran Dieu [15], this study found significant behavioral differences between bank owned and non-banked fund families. This result is in line with [17].

Most important finding of this research is positive relationship between intra family competition and fund expense difference. It indicates that more the intra firm competition amongst portfolio managers; more will be the differences between direct and regular plans. This finding is not in line with findings in US fund markets [9]. The probable reason behind divergence from Kempf & Ruenzi [9] is structural differences between US and

Indian MF industries. As Indian MF industry is comparatively small and in growth stage while US MF industry is very large in size and mature. Though this finding is an eye opener for those governing MF families.

Implications

Our study provides acceptable evidence that proposed model does not fit with funds offered by non-bank owned fund families. This finding imply that researcher should specifically attempt to study what characteristics explains behavior of funds offered by non-bank owned fund families.

The key and surprising finding of the study is the negative relationship between number of funds offered by the family on fund expenses difference. The managerial implication is to explore why internal competition within the family is not reducing expenses differences. It shows that internal competition within the family is not healthy from investors perspective. One probable reason is portfolio managers are creating tradeoffs between direct and regular plans while managing expenses to improve self-performance in comparison to peers. This is a serious concern for those bank owned MF families with larger number of funds.

Future scope of the study

This study is first attempt to explain expense and performance difference between direct sold (direct plan) and broker sold (regular plan). Further research may be undertaken for fund categories such as hybrid funds, passively managed funds. The major limitation of our study was only one-year expense as well as performance data was taken for the study.

Further research may be conducted by including variables such as fund age difference, family age. Similar research may be taken for hybrid funds. Even new ownership categorization such as public & private can be studied in near future.

This model can be further replicated for 3-year or 5-year performance as well as expense differentials between direct plans and regular plans.

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