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Impact of Competition on Mutual Fund Marketing Expenses

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Abstract: In this paper, I study the impact of market competition on mutual fund marketing expenses. In a sample of US domestic equity mutual funds, I find that marketing expenses decrease with the competition. This effect is stronger for top-performing funds. These results are counterintuitive, as one would ordinarily expect funds to incur more marketing expenses in response to pressure from competing funds. However, these results support the narrative that mutual funds employ marketing to draw attention to their performance in a tournament-like market, where the top-performing funds (the winners) are rewarded with disproportionately high new investments. Higher competition decreases the chances of each fund to outperform the others and adversely affect their ability to attract new investments, and the funds respond by decreasing marketing expenses. Thus, competition appears to have implications for investor search cost.

Keywords: mutual fund; competition; marketing expenses; 12b1 fee; investor search cost

JEL Classification: G23; G28

1. Introduction

Brown et al. (1996) show how the tournament-like competition in mutual fund markets affect managers' portfolio decisions. Capon et al. (1996) as well as Sirri and Tufano (1998) present evidence that investors put a lot of weight on the past performance of funds when making investment decisions. Sirri and Tufano (1998) find that investors base their fund purchase decisions on past performance asymmetrically, investing disproportionately more in funds that performed very well during the preceding period. They also provide evidence that investor search cost[1] is an important determinant of fund flows. They use various proxies for search cost and find that the performance-flow relationship is most pronounced among funds with higher marketing efforts. They infer that marketing efforts reduce the investor search costs and attract fund flows. Other recent papers provide further support for a positive relationship between marketing efforts and fund flows (Gallaher et al. 2006; Gualtieri and Petrella 2005; Korkeamaki et al. 2007).

It is reasonable to assume that fund managers take into account both the tournament nature of the fund market competition and the benefits of reducing search cost while deciding on a level of marketing expenses. They will spend on marketing as long as they expect to profit from it, in terms of receiving a share of the new investments. In this context, it will be interesting to study the impact of market competition on the level of fund marketing expenses, as it has implications for investors search

[1] They compare a household's fund purchase decision to buying a large durable good, such as an automobile. In both the cases, consumers must choose from a large number of alternatives, and as in the case of buying a car, brand name, advertising, and distribution ability, etc. will matter for investing in mutual funds, in addition to risk-adjusted return measures. Thus consumers' purchase decisions—whether for cars or funds—are complicated by the phenomenon of costly search.

cost as well as policymakers. What makes the markets for mutual funds interesting is the convex nature of new investments. In this tournament-like setup, it is intuitive that with more funds crowding the market, each fund's chance of making it to the top will diminish and this will adversely affect its expected new investment (as only the top-performing funds can attract significant new investments). Hence, funds operating in the higher competitive market segments will decrease their marketing expenses. Carlin et al. (2012) study a similar question—how competition affects market transparency in a multi-firm setting where relative performance matters (as is the case for mutual funds). In a theoretical model, they find that increased competition has adverse implications for market transparency and per capita welfare. However, their findings have not yet been empirically tested. No prior work has looked into the impact of competition on the marketing expenses of mutual funds. This is the gap in the literature that my paper is trying to fill.

I use a sample of USA domestic equity mutual funds. I take the annual 12b1 fees as a proxy for marketing expenses. This is the fee paid by the funds out of fund assets to cover distribution expenses such as paying for marketing, the printing and mailing of prospectuses to new investors, and the printing and mailing of sales literature. I find that 12b1 fees go down by about four basis points for the funds in the highest competitive sector, compared to the funds in the lowest competitive sector. Thus, I find evidence that competition adversely affects the marketing expenses of a mutual fund.

Next, I examine the top-performing funds. I would expect the impact of competition on the marketing expenses of these funds to be larger compared to other funds, as top-performing funds are those which have a realistic chance of receiving a part of the convex new investments. Hence, when competition is low, they will spend more on marketing to attract the attention of investors. With higher competition, each fund's chance to make it to the top and hence receive a share of the new investment will go down (only top-performing funds can attract new investments), and the funds will respond by decreasing marketing expenses. I find that marketing expenses for the top-performing funds decrease by a higher margin with competition, compared to other funds.

Overall, I find evidence that competition affects the marketing policies of mutual funds adversely. These results are interesting because they suggest that competition may hinder market transparency in financial markets, and may add to the investor search cost.

My study finds support for Carlin et al. (2012). In a related paper, Parida (2017) investigates the impact of competition on the frequency of portfolio disclosures by mutual funds and finds similar results. Using a sample of open-end US domestic equity funds, he finds that voluntary disclosures decrease with market competition.

The paper is structured as follows: Section 2 formulates the hypotheses, Section 3 describes the data and methodology, Section 4 provides the summary statistics, Section 5 presents the empirical analysis, Section 6 carries out the robustness analysis, and Section 7 concludes the study.

2. Hypotheses

Investors base their fund purchase decisions on past performance asymmetrically, investing disproportionately more in funds that performed very well. Also, investor search costs significantly affect the fund flows. The performance flow relationship is most pronounced for funds with higher marketing efforts.

Mutual funds are mindful of these facts and spend more on marketing to reduce consumer search cost and attract new investments. The decision to increase marketing efforts is a trade-off between expected new investments during the next period and the cost of marketing. Rational funds will spend on marketing their superior performance as long as they can profit from it, in terms of receiving a higher share of new investments.

With higher competition in the market, each fund's chance of making it to the top diminishes, adversely affecting its expected new investments (due to the convex nature of new investments, only the top-performing funds can attract significant new investments), and hence, funds respond to this by decreasing marketing expenses. This is summarized by the following hypothesis:

Hypothesis 1. *Mutual funds operating in higher competitive market segments spend less on marketing related activities, compared to mutual funds operating in lower competitive segments.*

Given that superior fund performance is rewarded with convex new investments, it is primarily the top-performing funds that are expected to spend more on marketing to attract the attention of investors when the competition is low (and chances of receiving a part of the convex new investments are high). So when the competition goes up, it is again these top-performing funds that will respond by decreasing marketing related expenses. The following hypothesis captures this.

Hypothesis 2. *The effects of competition on marketing expenses mentioned in Hypothesis 1 will be amplified for top-performing funds.*

3. Data and Methodology

I source a sample of open-end US domestic equity mutual funds between 1999 and 2015 from the CRSP Mutual Fund Database. This database provides information on mutual fund returns, investment objectives, total net assets, fund fees, and other fund characteristics. I start from 1999 because the Lipper classifications for the mutual funds are available in the database only from 1999. My sample has 53,756 observations.

I focus on open-end US domestic equity mutual funds. To be specific, I select funds with the following Lipper classifications: EIEI, FS, H, LCCE, LCGE, LCVE, MCCE, MCGE, MCVE, MLCE, MLGE, MLVE, MTAA, MTAG, NR, SCCE, SCGE, SCVE, TK, UT.[2] I include an observation if there are more than 20 funds present in a market segment on that date. I exclude funds that, on average, hold less than 80% or more than 120% in stocks. I also exclude funds that managed less than $5 million in assets in the previous month.

I use Lipper classification for market segmentation and the Herfindahl index of these segments as a proxy for competition. The Herfindahl index is a measure of the size of firms in relation to the market and an indicator of the degree of market competition.

I recognize the fact that several funds from the same fund family can coexist within a Lipper class on any date; hence, I aggregate assets by family in the same segment to calculate this measure. Thus, the value of the Herfindahl index for each segment is the sum across families of the square of each family's assets as a proportion of a sector's total assets, i.e.,

$$h\_index_{jt} = \sum_{i=1}^{n} S_{it}^2$$

where h_index_{jt} is the Herfindahl index of Lipper Class j at time t. S_{it} is the total net asset share of fund family i in Lipper class j at time t, and n is the number of fund families in Lipper class j at time t.

To test Hypothesis 2, I divide the funds into 5, 10, and 20 performance categories according to their performance in the previous year and consider the top category as the top-performing funds.

I include the usual fund level control variables such as *Fund Performance* (calculated from CRSP: *mret*), natural logarithm of *Fund Age* (calculated from CRSP: *first_offer_dt* and *caldt*), natural logarithm of fund *Total Net Assets* (calculated from CRSP: *mtna*), fund *Return Volatility* (calculated from CRSP: *mret*), *Fund Flow* (calculated from CRSP: *mret* and *mtna*), and *Turnover Ratio* (CRSP: *turn_ratio*). I also include a family-level (CRSP: *mgmt_cd*) control variable—natural logarithm of *Family Net Assets*. Definitions of these variables are presented in Appendix A.

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[2] These Lipper classes cover the domestic equity mutual funds. There are two other investment style classifications available for the mutual funds: Wiesenberger Objective codes and Strategic Insight Objective codes. However, the Wiesenberger Objective codes are only available for 1962–1993 and the Strategic Insight Objective codes are available for 1993–1998. Lipper classification is the only style class available for the current data (from 1998 onwards). Also, it is more granular than the other two.

Fund Flow is the new money flow into the fund, calculated over the previous 12-month period by the following expression:

$$flow_{i,t} = \left(\frac{TNA_{i,t} - TNA_{i,t-1} \times (1 + ret_{i,t})}{TNA_{i,t-1}} \right)$$

where $TNA_{i,t}$ is total net asset of fund i on any date t, $TNA_{i,t-1}$ is the total net asset of the fund i twelve months earlier, and $ret_{i,t}$ is the fund return over the previous twelve-month period.

4. Summary Statistics

Table 1 reports the mean, the median, the standard deviation, the 25th and the 75th percentile of the key statistics of the funds in the sample. These statistics are comparable to similar studies in the literature.

Table 1. Fund characteristics.

Variable	Obs.	Mean	Median	Stdev.	L Quartile	U Quartile
12b1 Fee (%)	40,671	0.611	0.501	0.363	0.250	1.000
h_index	53,756	0.129	0.105	0.078	0.071	0.167
Fund Performance	52,876	0.077	0.094	0.232	−0.033	0.201
Log (*Fund Age*)	53,746	4.557	4.644	0.881	4.060	5.124
Log (*Total Net Assets*)	53,219	4.525	4.312	1.801	3.086	5.734
Fund Flow	49,409	0.135	−0.075	1.351	−0.188	0.114
Turnover Ratio	52,647	0.889	0.630	1.371	0.340	1.080
Log (*Family Net Assets*)	53,749	8.875	9.213	2.283	7.685	10.306

Note: This table reports the mean, the median, the standard deviation, the 25th and the 75th percentile of the key variables in the sample. The variables are defined in the text (also see Appendix A).

Table 2 reports mean statistics of the sample by Lipper class. There is a large variation in the number of observations in each Lipper class; for example, MTAG has only 90 observations, whereas LCCE has more than 6386 observations. Variations were also observed in the mean size (total net assets), fees, and competition across the classes. The names and descriptions of these Lipper Classes are included in Appendix B.

Table 2. Fund characteristics and competition by Lipper class.

Lipper Class	No. of Obs.	*12b1 Fee* (%)	*Perf.* (%)	*Age*	*Total Net Asset*	*Flow* (%)	*Turnover Ratio* (%)	*h_index*
EIEI	2207	0.620	6.810	11.930	875.960	18.973	49.619	0.149
FS	864	0.653	7.004	11.224	177.720	4.654	145.514	0.248
H	1211	0.663	10.285	8.754	492.970	22.582	135.141	0.239
LCCE	6386	0.622	5.289	14.219	965.530	5.049	65.718	0.154
LCGE	5550	0.617	4.672	12.321	866.780	13.116	87.744	0.083
LCVE	3512	0.618	5.508	13.105	1245.980	9.018	58.302	0.168
MCCE	2222	0.578	10.535	10.108	512.430	16.283	84.857	0.111
MCGE	3684	0.597	8.400	11.294	415.520	16.068	114.856	0.068
MCVE	1794	0.608	9.886	8.892	538.150	26.723	74.041	0.162
MLCE	5287	0.615	7.742	10.652	556.790	12.405	76.332	0.230
MLGE	3897	0.616	7.680	12.137	1053.830	15.970	112.449	0.182
MLVE	3199	0.609	6.768	10.143	589.880	18.205	69.642	0.088
MTAA	117	0.626	1.793	11.595	285.580	1.957	23.889	0.096
MTAG	90	0.731	2.583	6.869	176.500	9.784	33.837	0.146
NR	708	0.629	16.291	10.533	316.240	22.470	196.037	0.191
SCCE	4274	0.573	10.219	9.897	303.930	12.277	76.504	0.066
SCGE	3829	0.579	9.756	10.258	256.220	8.413	111.870	0.056
SCVE	2188	0.588	10.306	8.905	222.070	19.045	61.735	0.069
TK	1931	0.665	6.992	9.494	342.220	18.883	175.531	0.099
UT	806	0.649	6.665	12.906	343.840	12.064	103.186	0.118

Note: This table reports the number of observation and mean statistics of other key variables in our sample. The variables are defined in the text (also see Appendix A) and Lipper classes are explained in Appendix B.

5. Empirical Analysis

In this section, I test both hypotheses.

5.1. Hypothesis 1: The Impact of Competition on Marketing Expenses

In this section, I test the impact of competition on the marketing expenses of mutual funds. The hypothesis is that fund marketing expense decreases with the competition.

I use annual fund 12b1 fees as a proxy for the marketing expenses. The Security and Exchange Commission (SEC) website defines '12b1 fees' as fees paid by the fund out of fund assets to cover distribution expenses and sometimes shareholder service expenses. It gets its name from the SEC rule that authorizes a fund to pay them. This rule permits a fund to pay distribution fees out of fund assets only if the fund has adopted a plan (12b-1 plan) authorizing their payment. "Distribution fees" include fees paid for marketing and selling fund shares, such as compensating brokers and others who sell fund shares, as well as paying for marketing, such as the printing and mailing of prospectuses to new investors and the printing and mailing of sales literature.

I run the following OLS regression for the five competition market segments.

$$\begin{aligned} 12b1\ Fee_{i,t} = \quad & \beta_{13}\ rank3\_h_{j,t-1} + \beta_{12}\ rank2\_h_{j,t-1} + \beta_{11}\ rank1\_h_{j,t-1} \\ & + \beta_{10}\ rank0\_h_{j,t-1} + \beta_2 Fund\ Performance_{i,t-1} \\ & + \beta_3 Log(Fund\ Age_{i,t-1}) + \beta_4 Log(Total\ Net\ Assets_{i,t-1}) \\ & + \beta_5 Return\ Volatility_{i,t-1} + \beta_6 Fund\ Flow_{i,t-1} \\ & + \beta_7 Turnover\ Ratio\ _{i,t-1} + \beta_8\ Log\ (Family\ Net\ Assets)_{i,t-1} \\ & + \beta_9 Year\ Dummy_t + \varepsilon_{i,t} \end{aligned} \tag{1}$$

where *rank*4_*h* is an indicator variable for the reference competition segment, which takes on the value of one if the fund is operating in the lowest quintile competitive sector and zero otherwise. *rank*3_*h* is an indicator variable which takes on the value of one if the fund is operating in the second lowest competitive sector and zero otherwise, and so on. *rank*0_*h* is an indicator variable which takes on the value of one if the fund is operating in the highest competitive sector and zero otherwise. *Fund Performance* is the past one-year fund holding period return. *Log* (*Fund Age*) is the natural logarithm of the *fund age*. *Log* (*Total Net Asset*) is the natural logarithm of fund total net assets. *Return Volatility* is the monthly standard deviation of the fund returns, calculated over the previous 12 months. *Fund Flow* is the new money flow into the fund, calculated over the previous 12-month period (see Section 3 for details). *Turnover Ratio* is the annual turnover ratio of the fund. *Log* (*Family Net Asset*) is the natural logarithm of total net assets of the fund family.

The results of this regression are reported in Table 3. It can be seen that the coefficient on the highest competitive sector (*rank*0_*h*) is negative and significant at the 5% level. That is, a fund operating in the highest competitive sector is likely to spend about four basis points less in marketing, compared to a fund operating in the lowest competitive sector. This is economically significant, given that the average *12b1 fees* in the whole sample is about 60 basis points. Thus, mutual funds operating in more competitive sectors seem to spend less on marketing related activities, compared to mutual funds operating in the less competitive sectors.[3]

The coefficient on past performance is negative and statistically significant at the 5% level. Marketing expenses seem to increase when past performance decreases. This may appear as efforts to minimize redemptions after adverse performance outcomes. The age of a fund, included as the natural logarithm of the age to address non-linearity, has an insignificant relation with marketing expenses. The coefficient on the natural logarithm of fund total net asset is negative and significant at the 1% level. This means that larger funds tend to spend less on marketing. This may be because

[3] I have repeated this regression for three competitive market segments and found similar results (not reported here).

larger funds are already visible in the market due to their size. The coefficient on return volatility is statistically insignificant. Fund flow has a negative and statistically significant (at the 1% level) coefficient, which is intuitive—the need for marketing decreases with higher flow. Turnover ratio has a negative and statistically significant (at the 1% level) effect on marketing expenses. It can also be seen that marketing expenses go up with fund family size. That is, funds in larger families have a higher budget for marketing and distribution.

Table 3. Impact of competition on marketing expenses.

Parameter	Estimate	Error	*t* Value
Intercept	0.594	0.037	15.930
rank3_h	−0.002	0.008	−0.260
rank2_h	−0.010	0.010	−1.040
rank1_h	−0.019	0.011	−1.770
rank0_h	−0.039	0.012	−3.120
Fund Performance	−0.060	0.016	−3.790
Log (*Fund Age*)	−0.004	0.008	−0.500
Log (*Total Net Assets*)	−0.089	0.003	−25.900
Return Volatility	−0.070	0.218	−0.320
Fund Flow	−0.007	0.002	−4.290
Turnover Ratio	−0.024	0.005	−5.230
Log (*Family Net Assets*)	0.061	0.003	23.590
No. of Obs	32764		
R-squared	0.196		

Note: This table reports the results of the OLS regression with annual fund *12b1 fees* as the dependent variable. The independent variables are defined in the text (also see Appendix A). Coefficient estimates are multiplied by 100. Year dummy variables are included, and standard deviations are clustered at the fund level.

There may be an alternate reason why fees decrease with the competition. One can think of mutual funds as firms providing various products for a fee. Then the lower fees in the higher competitive sectors could be explained by mark-downs by the funds due to competitive pressure from other funds in the market. This argument may be valid for the total fees charged by the funds. However, here the considered fees are charged for marketing and distribution.

To explore this further, I study the *non-12b1 expenses* (i.e., the *total expense ratio—12b1 fees*) of the funds. I use this expense as the dependent variable (instead of *12b1 fees*) in Equation (1) and estimate the coefficients. Columns 1 and 2 in Table 4 report the results. I find that *non-12b1 expenses* actually increase with the competition. That is, a fund operating in the highest competitive sector is likely to charge 8 basis points more in *non-12b1 expenses* (statistically significant at the 1% level), compared to a fund operating in the lowest competitive sector.

Table 4. Impact of competition on other fees.

	Non-12b1 Expenses		*Total Expense Ratio*	
	(1)	**(2)**	**(3)**	**(4)**
Parameter	Estimate	*t* Value	Estimate	*t* Value
Intercept	1.400	43.350	1.850	43.950
rank3_h	−0.019	−3.050	−0.025	−2.650
rank2_h	0.032	4.000	0.012	1.080
rank1_h	0.039	4.680	0.027	2.240
rank0_h	0.077	8.350	0.040	2.930
Fund Performance	0.024	1.640	−0.036	−1.850
Log (*Fund Age*)	0.003	0.450	0.001	0.070
Log (*Total Net Assets*)	−0.046	−17.190	−0.152	−41.150
Return Volatility	3.744	16.890	3.608	12.870
Fund Flow	−0.004	−3.220	−0.007	−3.970
Turnover Ratio	0.052	5.650	0.010	1.680
Log (*Family Net Assets*)	−0.047	−18.640	0.027	8.950
No. of Obs	32762		42751	
R-squared	0.333		0.29	

Note: This table reports the results of the OLS regression with *non-12b1 expenses* fees as the dependent variable in the first two columns and *total expense ratio* in the last two columns. The independent variables are defined in the text (also see Appendix A). The coefficient estimates are multiplied by 100. Year dummy variables are included, and standard deviations are clustered at the fund level.

I estimate Equation (1) again with *total expense ratio* as the dependent variable. Columns 3 and 4 in Table 4 report the results. I find that the *total expense ratio* (which consists of both *12b1 fees* and *non-12b1 expenses*) also increases with the competition.

Thus, it can be seen that lower *12b1 fees* in the higher competitive sectors are not explained by mark-downs by the funds due to competitive pressure from other funds in the market.

To sum up, the evidence shows that competition has an adverse impact on marketing expenses. This is not because funds mark-down their fees with competition, but rather because with higher competition, each fund's chance of making it to the top diminishes, which adversely affects its expected new investments (due to the convex nature of the new investments, only the top-performing funds can attract significant new investments) and hence funds respond by decreasing marketing expenses.

5.2. Hypothesis 2: The Impact of Competition on Marketing Expenses of Top-Performing Funds

In this section, I test the impact of competition on the marketing expenses of top-performing funds. As discussed earlier, I expect the impact of competition to be stronger for the top-performing funds compared to the rest. That is, top-performing funds will decrease their marketing expenses more as a response to competition compared to other funds.

I divide the funds into 5, 10, and 20 performance categories according to their past performance and estimate Equation (1) separately for the top quintile, top decile, and top five percentile fund groups. The results are reported in columns 1 and 2, columns 3 and 4, and columns 5 and 6 of Table 5 respectively.

Table 5. The impact of competition on the marketing expenses of top-performing funds.

	Top Quintile		**Top Decile**		**Top Five Percentile**	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Parameter	Estimate	*t* Value	Estimate	*t* Value	Estimate	*t* Value
Intercept	0.647	9.160	0.665	6.020	0.796	4.740
*rank*3_*h*	−0.007	−0.440	−0.005	−0.240	−0.025	−0.790
*rank*2_*h*	−0.004	−0.250	−0.009	−0.360	−0.037	−1.020
*rank*1_*h*	−0.026	−1.520	−0.025	−1.050	−0.070	−1.930
*rank*0_*h*	−0.048	−2.610	−0.069	−2.810	−0.094	−2.850
Fund Performance	−0.008	−0.190	−0.017	−0.290	−0.040	−0.520
Log (*Fund Age*)	0.011	1.040	0.008	0.600	0.024	1.210
Log (*Total Net Assets*)	−0.103	−23.870	−0.106	−18.980	−0.116	−15.100
Return Volatility	0.355	0.850	0.556	1.050	0.515	0.720
Fund Flow	−0.004	−2.270	−0.004	−2.550	−0.002	−0.830
Turnover Ratio	−0.035	−5.430	−0.033	−4.820	−0.036	−3.710
Log (*Family Net Assets*)	0.059	18.600	0.060	14.750	0.056	11.040
No. of Obs	5983		2874		1374	
R-squared	0.223		0.235		0.257	

Note: This table reports the results of the OLS regression with annual fund *12b1 fees* as the dependent variable for top quintile funds in columns 1 and 2, top decile funds in columns 3 and 4, and top five percentile funds in columns 5 and 6, according to their past year performance. The independent variables are defined in the text (also see Appendix A). The coefficient estimates are multiplied by 100. Year dummy variables are included, and standard deviations are clustered at the fund level.

It can be seen that the coefficient on the most competitive market dummy variable (*rank*0_*h*) is negative and statistically significant (at the 5% level) in all three regressions. In columns 1 and 2, I find that a top quintile fund operating in the most competitive segment spends about five basis points less compared to a top quintile fund operating in the lowest competitive sector. Similarly, in columns 3 and 4, I find that a top decile fund operating in the most competitive segment spends about seven basis points less compared to a top quintile fund operating in the lowest competitive sector. Lastly, from columns 5 and 6, I find that a top five percentile fund operating in the most competitive segment spends about 9.5 basis points less compared to a top quintile fund operating in the lowest competitive

sector. Thus, I find that the effect of competition on the marketing expense of top five percentile funds is almost double the magnitude of that on top quintile funds. This supports Hypothesis 2. Top-performing funds spend more money on marketing while operating in less competitive sectors to grab the attention of the investors (to gain a larger portion of the next period's investments). This effect is stronger for them compared to non-top-performing funds.

6. Robustness Analysis

In this section, I carry out a few robustness analyses, and my results stand all of these tests.

6.1. Continuous Competition Variable

In the main analysis, I used competition dummy variables. In this section, I instead use *h_index*, a continuous competition variable. I estimate the following model:

$$\begin{aligned} 12b1\ Fee_{i,t} = \quad & \beta_1\ h\_index_{j,t-1} + \beta_2 Fund\ Performance_{i,t-1} + \beta_3 Log(Fund\ Age_{i,t-1}) \\ & + \beta_4 Log(Total\ Net\ Assets_{i,t-1}) + \beta_5 Return\ Volatility_{i,t-1} \\ & + \beta_6 Fund\ Flow_{i,t-1} + \beta_7 Turnover\ Ratio\ _{i,t-1} \\ & + \beta_8\ Log\ (Family\ Net\ Assets)_{i,t-1} + \beta_9 Year\ Dummy_t + \varepsilon_{i,t} \end{aligned} \tag{2}$$

Columns 1 and 2 in Table 6 reports results of the regression with *12b1 fees* as the dependent variable, columns 3 and 4 with *non-12b1 fees* as the dependent variable, and columns 5 and 6 with *total expense ratio* as the dependent variable. I find that the coefficient on *h_index* is significant in all three regressions and their signs are similar to what I found in the main analysis—the higher the competition, the lower the marketing expenses and the higher the *non-12b1 fees* and *total expense ratio*. Thus, my findings are robust under different specifications of the competition proxy.

Table 6. The impact of competition on marketing expenses.

	12b1 Fees		***Non-12b1 Fees***		***Total Expense Ratio***	
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Parameter	Estimate	*t* value	Estimate	*t* value	Estimate	*t* value
Intercept	0.563	15.060	1.469	48.390	1.889	45.460
h_index	0.139	2.490	−0.350	−7.900	−0.241	−3.840
Fund Performance	−0.065	−3.960	0.035	2.400	−0.030	−1.520
Log (*Fund Age*)	−0.004	−0.470	0.002	0.280	0.000	0.000
Log (*Total Net Assets*)	−0.089	−25.780	−0.047	−17.370	−0.153	−41.110
Return Volatility	−0.101	−0.460	3.817	17.300	3.660	13.050
Fund Flow	−0.007	−4.270	−0.004	−3.280	−0.008	−3.990
Turnover Ratio	−0.024	−5.190	0.052	5.640	0.009	1.670
Log (*Family Net Assets*)	0.061	23.680	−0.048	−18.670	0.026	8.900
No. of Obs	32764		32762		42751	
R-squared	0.196		0.330		0.289	

Note: This table reports the results of the OLS regression with annual fund *12b1 fees* as the dependent variable in columns 1 and 2, *non-12b1 fees* in columns 3 and 4, and *total expense ratio* in columns 5 and 6. The independent variables are defined in the text (also see Appendix A). The coefficient estimates are multiplied by 100. Year dummy variables are included, and standard deviations are clustered at the fund level.

6.2. Competition and Family-Level Marketing Expenses

Often, marketing strategy and level of marketing expenses in a particular market segment are decided at the fund family level. Therefore, in this section, I study the impact of competition on average fund family marketing expenses in a market segment. I estimate the following model:

$$\begin{aligned} Family\ 12b1\ Fee_{i,t} = \quad & \beta_{13}\ rank3\_h_{j,t-1} + \beta_{12}\ rank2\_h_{j,t-1} + \beta_{11}\ rank1\_h_{j,t-1} \\ & + \beta_{10}\ rank0\_h_{j,t-1} + \beta_2 Family\ Performance_{i,t-1} \\ & + \beta_3 Log(Family\ Age_{i,t-1}) + \beta_6\ Family\ Flow_{i,t-1} \\ & + \beta_7\ Family\ Turnover\ Ratio\ _{i,t-1} \\ & + \beta_8\ Log\ (Family\ Net\ Assets)_{i,t-1} + \beta_9 Year\ Dummy_t + \varepsilon_{i,t} \end{aligned} \tag{3}$$

where the new variables, *Family 12b1 Fee*, *Family Performance*, *Family Age*, *Family Flow*, and *Family Turnover Ratio* correspond to Average *12b1 Fee*, *Fund Performance*, *Fund Age*, *Fund Flow*, and *Turnover Ratio* among all of the funds in the same family in a market segment on a particular date.

I also repeat this analysis with the continuous *h_index* variable. Table 7 reports the results. It can be seen that a fund family operating in the highest competition sector charges around 4.5 basis point less in *12b1 fees* (significant at the 1% level), compared to a fund family operating in the lowest competition segment. Similarly, it is found that the coefficient on the *h_index* variable is positive and statistically significant at the 1% level. This implies that higher the competition (i.e., lower the *h_index* variable), the lower the *12b1 expenses*. Thus, I find results which are similar to my main analysis.

Table 7. Competition and family-level marketing expenses.

Parameter	Estimate	Std. Error	*t* Value	Estimate	Std. Error	*t* Value
Intercept	0.345	0.086	4.030	0.298	0.086	3.460
h_index				0.211	0.046	4.560
rank3_h	−0.011	0.007	−1.570			
rank2_h	−0.015	0.007	−2.020			
rank1_h	−0.030	0.009	−3.340			
rank0_h	−0.044	0.010	−4.520			
Family Performance	−0.042	0.018	−2.340	−0.042	0.018	−2.370
Log (*Family Age*)	−0.024	0.010	−2.280	−0.023	0.010	−2.240
Family Turn Over Ratio	−0.005	0.004	−1.220	−0.004	0.004	−1.180
Log (*Family Net Assets*)	0.042	0.009	4.800	0.042	0.009	4.810
Family Flow	−0.004	0.002	−2.390	−0.004	0.002	−2.360
No. of Obs	13732			13732		
R-squared	0.190			0.190		

Note: This table reports the results of the OLS regression with annual family fund *12b1 fees* as the dependent variable. The independent variables are defined in the text (also see Appendix A). The coefficient estimates are multiplied by 100. Year dummy variables are included, and standard deviations are clustered at the fund level.

6.3. Impact of Competition on Marketing Expenses, Fund Family Fixed Effect

In this section, I estimate Equations (1) and (2) with fund family fixed effects. Table 8 reports the results.

Table 8. Competition and marketing expenses, fund family fixed effect model.

Parameter	Estimate	*t* Value	Estimate	*t* Value
h_index			0.103	4.300
rank3_h	0.002	0.420		
rank2_h	−0.008	−1.440		
rank1_h	−0.012	−2.200		
rank0_h	−0.031	−5.430		
Fund Performance	−0.047	−3.230	−0.051	−3.550
Log (*Fund Age*)	−0.024	−7.790	−0.024	−7.720
Log (*Total Net Assets*)	−0.082	−62.220	−0.081	−62.040
Return Volatility	−0.139	−1.270	−0.169	−1.550
Fund Flow	−0.007	−6.000	−0.007	−5.930
Turnover Ratio	−0.030	−12.740	−0.029	−12.690
Log (*Family Net Assets*)	0.049	15.250	0.049	15.290
No. of Obs	46864		46864	
R-squared	0.337		0.337	

Note: This table reports the results of the OLS regression with annual *12b1 fees* as the dependent variable. The independent variables are defined in the text (also see Appendix A). The coefficient estimates are multiplied by 100. Year and fund family fixed effects are included. Standard deviations are clustered at the fund level.

I find that the coefficient on the highest competition dummy variable (*rank*0_*h*) and the *h_index* variable are statistically significant at the 1% level. Thus, these results support my hypothesis. The magnitude of the coefficients decreased slightly. This implies that the fee structures are somewhat persistent, either because there is inertia or there is a cost attached to switching between different fee structures by the fund families.

7. Conclusions

In this paper, I study the impact of competition in financial markets on the marketing expenses of mutual funds. The main hypothesis of the paper is that mutual funds rely on marketing to attract new investments in a market that often resembles a tournament (where superior relative performance and greater visibility are rewarded with convex new investments). With higher competition, the likelihood of receiving new investments decreases for each fund. Funds respond to this by decreasing marketing expenses. This is especially true for the top-performing funds, as they are the ones more likely to attract new investments by marketing their superior performance when the market competition is low.

In a sample of US domestic mutual funds, I find support for this hypothesis, i.e., marketing expenses indeed decrease with the competition, and this effect is pronounced for top-performing funds. To the best of my knowledge, this is the first paper that investigates the link between competition and fund marketing expenses. These findings are interesting because they suggest that competition may add to the investor search cost in a tournament-like market and policy intervention may be required to promote market transparency and help small investors make sound investment decisions.

The scope of the current paper is limited to establishing a negative link between competition and the fund marketing expenses. Future studies should investigate the implications of this effect for the welfare of the investors.

Conflicts of Interest: The author declares no conflict of interest.

Appendix A. Variable Definitions

Variables	Definitions
12b1 Fee	Annual marketing or distribution fee as a ratio of the total net assets
h_index	Herfindahl index of a Lipper class market segment
Total Expense Ratio	Annual expense ratio of a fund as a ratio of the total net assets
Family Net Assets	Total net assets of a fund family expressed in millions
Fund Age	Age of a fund in months
Fund Flow	A fund's annual new net investment as a percentage of previous total net assets
Fund Performance	Annual holding period return of the fund
Non-12b1 Expenses	The *total expense ratio—12b1 fees*
Return Volatility	Monthly return volatility of a fund
Total Net Assets	Total net assets of a fund in millions
Turnover Ratio	Annual turnover ratio of a fund
Family 12b1 Fee	Average *12b1 fee* across all of the funds in the same family in a market segment
Family Performance	Average fund performance across all of the funds in the same family in a market segment
Family Age	Average *fund age* across all of the funds in the same family in a market segment
Family Flow	Average fund flow across all of the funds in the same family in a market segment
Family Turn Over Ratio	Average fund turnover ratio across all of the funds in the same family in a market segment

Appendix B. Description of Lipper Classes[4]

Lipper Class	Class Name	Investment Focus
EIEI	Equity Income Funds	High current income and growth of income, dividend-paying equity securities.
FS	Financial Services Funds	Equity securities of companies engaged in providing financial services.
H	Health/Biotech Funds	Shares of companies engaged in health care, medicine, and biotechnology.
LCCE	Large-Cap Core Funds	Large-cap stocks with average P/E, P/B, and three-year sales-per-share growth compared to the S&P 500 Index.
LCGE	Large-Cap Growth Funds	Large-cap stocks with above-average P/E, P/B, and three-year sales-per-share growth compared to the S&P 500 Index.
LCVE	Large-Cap Value Funds	Large-cap stocks with below-average P/E, P/B, and three-year sales-per-share growth compared to the S&P 500 Index.
MCCE	Mid-Cap Core Funds	Mid-cap stocks with average P/E, P/B, and three-year sales-per-share growth compared to the S&P Midcap 400 Index.
MCGE	Mid-Cap Growth Funds	Mid-cap stocks with above-average P/E, P/B, and three-year sales-per-share growth compared to the S&P Midcap 400 Index.
MCVE	Mid-Cap Value Funds	Mid-cap stocks with below-average P/E, P/B, and three-year sales-per-share growth compared to the S&P Midcap 400 Index.
MLCE	Multi-Cap Core Funds	A variety of market cap ranges; stocks with average P/E, P/B, and three-year sales-per-share growth compared to the S&P Super Composite 1500 Index.
MLGE	Multi-Cap Growth Funds	A variety of market cap ranges; stocks with above-average P/E, P/B, and three-year sales-per-share growth compared to the S&P Super Composite 1500 Index.
MLVE	Multi-Cap Value	A variety of market cap ranges; stocks with below-average P/E, P/B, and three-year sales-per-share growth compared to the S&P Super Composite 1500 Index.
MTAA	Mixed-Asset Target Allocation Aggressive Growth Funds	At least 80% of assets in equity securities, with the remainder invested in bonds, cash, and cash equivalents.
MTAG	Mixed-Asset Target Allocation Growth Funds	A mix of between 60–80% equity securities, with the remainder invested in bonds, cash, and cash equivalents.
NR	Natural Resources Funds	Natural resources stocks.
SCCE	Small-Cap Core Funds	Small-cap stocks with average P/E, P/B, and three-year sales-per-share growth compared to the S&P Small Cap 600 Index.
SCGE	Small-Cap Growth Funds	Small-cap stocks with above-average P/E, P/B, and three-year sales-per-share growth compared to the S&P Small Cap 600 Index.
SCVE	Small-Cap Value Funds	Small-cap stocks with below-average P/E, P/B, and three-year sales-per-share growth compared to the S&P Small Cap 600 Index.
TK	Science & Technology Funds	Science and technology stocks.
UT	Utility Funds	Utility shares.

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