

Mutual Fund Market Structure and Company Fee Competition: Theory and Evidence

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Individual mutual funds are offered by fund companies

BlackRock



P I M C O

Competition in the mutual fund industry

Fund companies

- ▶ Expend considerable resources on their brands (e.g. “Fidelity”, “Vanguard”), which attract investor demand (Sialm and Tham 2016)
- ▶ Compete through the menus of offered products (Massa 2003; Nanda, Wang, and Zheng 2004; Kostovetsky and Warner 2020)

Individual mutual funds

- ▶ Engage in price competition against close substitutes (Hortaçsu and Syverson 2004; Wahal and Wang 2011)

This paper

- ▶ We show fund companies compete against each other by constraining their offered funds' fees to match comparable peers
- ▶ We use a networked competition model + novel investor data to provide a testable prediction, and confirm its presence in fees

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Findings

Evidence of necessary ingredients for company fee competition

1. Individual fees contain a substantial company-specific component
 - ▶ The company-wide components explain a substantial fraction of variation in individual mutual fund fees
2. Investor consideration responds to company-level attributes
 - ▶ Similar fund companies are more likely to be co-considered
 - ▶ Individual investors' responses to company attributes differ from their known preferences for fund attributes

Relative company fees predicted by company competition

- ▶ Formulate oligopoly model of company fee competition for consideration-shaped demand
- ▶ Calibrate to investor consideration data from SEC EDGAR
- ▶ Model predicts the cross-sectional structure of company-wide fees

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Contributions to the literature (1/2)

Fund companies act to attract and retain investor demand

- ▶ Via menus of investment strategies offered (Nanda, Wang, and Zheng 2004; Kostovetsky and Warner 2020), switching costs (Massa 2003), advertising (Jain and Wu 2000; Gallaher, Kaniel, and Starks 2006; Aydogdu and Wellman 2011), branding (Sialm and Tham 2016)
- ▶ Competitive fee-setting is another margin to attract investment

Suggestive evidence that fund companies are involved in fund fee-setting

- ▶ Possibility of “loss-leader” pricing (Christoffersen 2001, pp. 1137-1138)
- ▶ Market share decreases in company-level fees (Khorana and Servaes 2012)
- ▶ We show company-wide fee-setting arises due to competition between fund companies, which act to constrain individual fund fees

Mutual fund fee dispersion

- ▶ Due to imperfect competition (Elton, Gruber, and Busse 2004; Hortaçsu and Syverson 2004; Gil-Bazo and Ruiz-Verdú 2009; Wahal and Wang 2011; Roussanov, Ruan, and Wei 2021; Cooper, Halling, and Yang 2021)
- ▶ We measure & explain fee dispersion at the fund company level
- ▶ We contribute a model of networked competition between financial intermediaries, that produces closed-form equilibrium fee predictions

Contributions to the literature (2/2)

Price dispersion in other financial settings

- ▶ Private equity (Begenau and Siriwardane, forthcoming), mortgages (Allen, Clark, and Houde 2013; Bhutta, Fuster, and Hizmo 2021), consumer credit (Stango and Zinman 2016), and insurance (Dahlby and West 1986)
- ▶ Our model is general and can be applied to other financial settings

Prospectus data

- ▶ Fund differentiation can be measured by investment strategy textual similarity (Kostovetsky and Warner 2020; Abis and Lines 2022; Bonelli, Buyalskaya, and Yao 2022)
- ▶ We use prospectus downloads to reveal the sets of fund companies that individual investors perceive to be competitors/substitutes

SEC EDGAR usage records

- ▶ Downloads of filings reveal investors' information acquisition (Lee, Ma, and Wang 2015; Chen, Cohen, Gurun, Lou, and Malloy 2020; Gibbons, Iliev, and Kalodimos 2021; Hollander and Litjens 2022)
- ▶ We are the first to focus on downloads of fund company filings

Overview

Company-level Fee-Setting and Demand

Model and Cross-Sectional Fee Predictions

Conclusion

Mutual fund fees contain a company-wide component

- ▶ **Fund Company FEs** alone explain a substantial fraction of fund-level fee variation, even in presence of fund-level controls:

Dependent Variable:	Total Fee	
	(1)	(2)
Size, Age, α , β^{MKT} , β^{HML} , β^{SMB} , $\beta^{HML} \times \beta^{SMB}$	▶ Coefficients	
Year FEs	✓	✓
Fund Company FEs	✓	
Fund FEs		✓
N	52,972	52,972
R ²	0.45350	0.98044
R ² by Company FEs	0.41169	
R ² by Fund FEs		0.97323

Clustered (Year & Fund) standard-errors in parentheses

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

- ▶ Also, Fund Company FEs explain 40-41% of Fund FE variation

Uncovering fund company-level competition

Do fund companies compete via fees for investor dollars?

- ▶ Company fee competition requires investors selecting between companies before choosing funds
- ▶ Test for this selection in the sets of companies individual investors **consider** before investing

Empirical approach

- ▶ We measure individual investors' consideration (or not) of fund companies by their **prospectus acquisition decisions**
- ▶ Novel data: prospectus downloads from the SEC EDGAR website
 - ▶ EDGAR is the only free & comprehensive source of prospectuses
 - ▶ Website is heavily-used, and indexed by search engines
 - ▶ Unique users are geographically distributed similarly to the US population ⇒ not simply institutions

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Investors value fund company attributes (1/2)

- ▶ We estimate a mixed logit model of the likelihood of consideration, allowing for heterogeneity and correlation in coefficient estimates
- ▶ Investors attach a value to company-level attributes (vs. fund-level)
 - ▶ Case in point: investors prefer **younger** fund **companies** ...
 - ▶ ... vs. **older individual** funds (Hortaçsu and Syverson 2004; Roussanov, Ruan, and Wei 2021)

Variable	Marginal Effect	Gaussian Mean Est.	Gaussian Var. Est.
Size	-0.0223	-0.2911*** (0.0125)	0.0016*** (1.07e-06)
Age	-0.0187	-0.0056*** (0.0008)	0.0000*** (2.19e-11)
Fund Count	0.0114	0.0230*** (0.0053)	0.0010*** (2.15e-08)
Return Diversity	0.0050	0.0027*** (0.0009)	0.0000*** (9.85e-12)
Frac. Passive	-0.0070	-0.0166*** (0.0050)	0.0001*** (5.37e-09)
Total Fee	-0.0090	-77.5149*** (14.0892)	9362.4379 (1.48e+06)
Offers S&P 500		0.2954** (0.1327)	0.1624*** (2.46e-03)
Pure Equity		-0.6035*** (0.0636)	0.0004 (1.08e-03)

Robust standard-errors in parentheses. Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

Investors value fund company attributes (2/2)

- Furthermore, similar fund companies are more likely to be co-considered:

Model: Dependent Variable:	Poisson Pairwise co-considerations $_{i,j,t}$		
	(1)	(2)	(3)
Total Fee Distance $_{i,j,t}$	-0.0757*** (0.0262)	-0.0600*** (0.0184)	-0.0398*** (0.0144)
Age Distance $_{i,j,t}$	-0.2667*** (0.0390)	-0.1639*** (0.0179)	-0.1577*** (0.0177)
Size Distance $_{i,j,t}$	-0.3146*** (0.0559)	-0.2124*** (0.0306)	-0.2154*** (0.0266)
Fund Count Distance $_{i,j,t}$	-0.5880*** (0.0550)	-0.5505*** (0.0408)	-0.3932*** (0.0387)
Equity Share Distance $_{i,j,t}$	-0.1182*** (0.0444)	-0.0202 (0.0360)	-0.0051 (0.0121)
Fixed Income Share Distance $_{i,j,t}$	0.0560 (0.0431)	0.0180 (0.0325)	-0.0173 (0.0189)
Mixed Assets Share Distance $_{i,j,t}$	-0.0849 (0.0596)	-0.1246** (0.0551)	-0.0832** (0.0353)
Retail Share Distance $_{i,j,t}$	-0.1071*** (0.0212)	-0.0733*** (0.0198)	-0.1040*** (0.0128)
Passive Share Distance $_{i,j,t}$	-0.4766*** (0.1434)	-0.6622*** (0.1140)	-0.6762*** (0.1070)
Company $i + j$ FEs	✓	✓	
Year t FEs		✓	
$(i \times t) + (j \times t)$ FEs			✓
N	4,457,283	4,457,283	4,457,283
R ²	0.36001	0.40127	0.71341

Clustered (Company i & Company j & Year t) standard-errors in parentheses

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Testing for company-level fee competition

Found the necessary conditions for company competition

1. Companies influence the fees set across their offered individual funds
2. Investors compare mutual fund companies

Does company fee-setting respond to the competition?

- ▶ We formulate a model of company fee competition, in which companies constrain average fees to be comparable to competitors
- ▶ \Rightarrow Testable prediction for the structure of company fee dispersion
- ▶ Calibrated model successfully predicts the cross-sectional structure of company-wide fees

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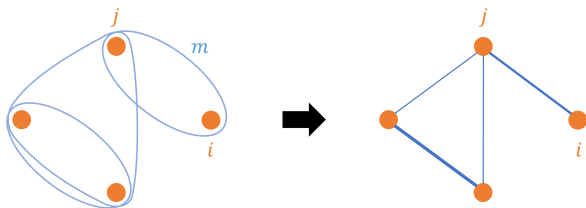
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Model of fund company fee competition (1/2)

Demand-side comprises individual investors

- ▶ Consideration defines the companies investors might switch between
 - ▶ Measures **which companies investors think are substitutes** for their investment
 - ▶ Induces an **inter-company competition network** when investors' overlapping consideration sets are aggregated up



- ▶ Intensive margin of substitution (given fees & returns) characterised by a portfolio allocation model, as in Merton (1987)

Model of fund company fee competition (2/2)

Supply-side comprises fund companies

- ▶ Companies set fees given (mandate-determined) expected returns to compete for this consideration-shaped demand

Equilibrium fees

- ▶ Companies play a quadratic game over the competition network (Jackson and Zenou 2015; Bramoullé and Kranton 2016)
- ▶ \Rightarrow Unique closed-form solution for (all) equilibrium fees

Calibrated model results in testable predictions

- ▶ Model maps from observed consideration sets and returns to the fees companies should set if they are competing in fees
- ▶ We test where these calibrated fees explain any of the observed cross-sectional structure (i.e. relative levels) of company fees

Observed f_{it} vs. calibration-predicted \hat{f}_{it} company-level fees

- ▶ Significant and positive association
- ▶ Including for their offerings of easily-comparable S&P 500 trackers

Dep. Var.:	f_{it}			
	Entire Company		S&P 500 Tracker	
Unit:	(1)	(2)	(3)	(4)
\hat{f}_{it}	0.2142*** (0.0566)	0.3483*** (0.0433)	0.4530*** (0.1082)	1.252*** (0.3341)
(Intercept)	0.0078*** (0.0004)		0.0044*** (0.0005)	
Year FEs		✓		✓
N	4,750	4,750	775	775
R ²	0.03941	0.09616	0.01522	0.08556
Within R ²		0.07618		0.03594

Clustered (Company & Year) standard-errors in parentheses

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Inspecting the mechanism

- ▶ Constraint is mainly imposed on overall expense ratios, which:
 - ▶ are salient
 - ▶ both retain existing clients & attract new ones

Dep. Variables:	Total fee (1)	Expense ratio (2)	Front load (3)	Management fee (4)	12b-1 fee (5)
\hat{f}_{it}	0.3483*** (0.0433)	0.3146*** (0.0341)	0.0337 (0.0231)	-0.0726*** (0.0204)	0.0438** (0.0194)
Year FEs	✓	✓	✓	✓	✓
N	4,750	4,750	4,750	4,750	4,750
R ²	0.09616	0.11119	0.01216	0.01329	0.02352
Within R ²	0.07618	0.09651	0.00278	0.01049	0.00819

*Clustered (Company & Year) std. errs. in parentheses: ***: 0.01, **: 0.05, *: 0.1*

- ▶ Similar results for S&P 500 trackers
 - ▶ Potentially reference funds by which investors compare companies
 - ▶ Like “loss leaders” (Christoffersen 2001, pp. 1137-1138)

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- ▶ We uncover a **fee dimension** of mutual fund company competition
- ▶ We measure investor behavior using a novel data source, and highlight the value of investor **consideration**
- ▶ We introduce a new & tractable **framework for modelling strategic price competition (incorporating differentiation)** in financial settings

Thank you!

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Details of fund-level total fee panel regressions

Summary

Dependent Variable:	Total Fee			
	(1)	(2)	(3)	(4)
Size	-0.0353*** (0.0033)	0.0136*** (0.0032)	-0.0192*** (0.0020)	-0.0192*** (0.0022)
Age	0.1070*** (0.0121)	0.0733*** (0.0128)	0.0252*** (0.0045)	0.0265*** (0.0048)
α	0.0057 (0.0076)	0.0067 (0.0050)	0.0026** (0.0011)	0.0022* (0.0011)
β^{MKT}	-0.0080 (0.0108)	0.0010 (0.0071)	-0.0022 (0.0047)	-0.0022 (0.0039)
β^{HML}	-0.0097 (0.0147)	-0.0008 (0.0094)	-0.0024 (0.0018)	-0.0036** (0.0016)
β^{SMB}	0.0520** (0.0193)	0.0266* (0.0130)	-0.0019 (0.0020)	-0.0014 (0.0016)
$\beta^{HML} \times \beta^{SMB}$	0.0019 (0.0037)	0.0019 (0.0022)	2.13×10^{-6} (0.0001)	-0.0001 (9.89×10^{-5})
Year FEs	✓	✓	✓	
Company FEs		✓		
Fund FEs			✓	✓
Company \times Year FEs				✓
N	52,972	52,972	52,972	52,972
R ²	0.05807	0.45350	0.98044	0.98347

Clustered (Year & Fund) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1