Why Do Index Funds Have Market Power? Quantifying Frictions in the Index Fund Market

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The Rise of Index Funds and Price Dispersion

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Figure

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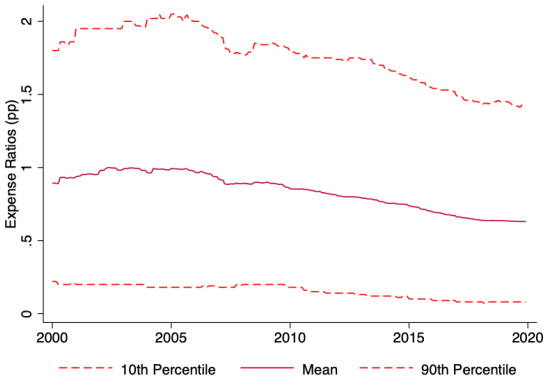
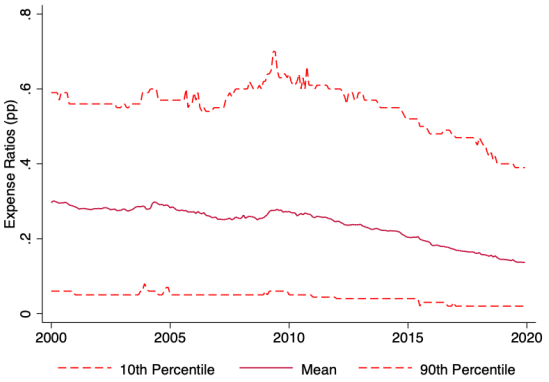
  Figure
- Yet, there still exists substantial price dispersion in this market → market power

Distribution of Fund Expense Ratios over Time

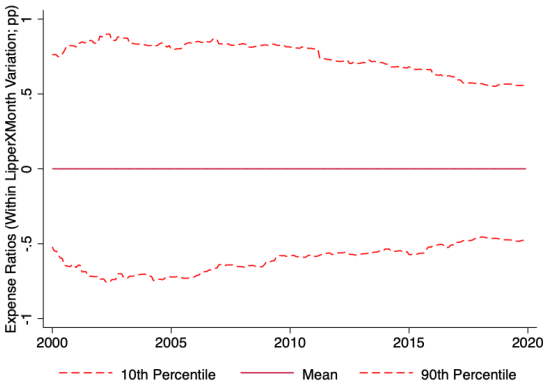


(a) Expense Ratios

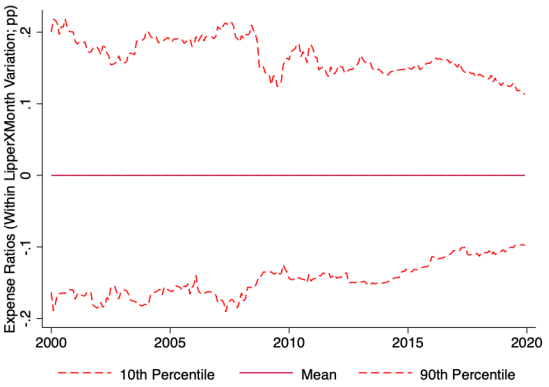


(b) Expense Ratios (AUM Weighted)

Distribution of Fund Expense Ratios within Investment Category



(a) Residualized Expense Ratios



(b) Residualized Expense Ratios (AUM Weighted)

Potential Sources and Implications of Price Dispersion

- Important for U.S. savings ($10tn industry)
- Potential sources of price dispersion and market power

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  - **Demand**: inertia, information frictions, heterogeneous preferences
  - Effects exacerbated by supply-side response such as price discrimination
- Frictions operate simultaneously but are often studied in isolation
- Disentangling these frictions has important policy implications
  - Information frictions: transparency rules, search tools (e.g. SEC's rule on fund names)
  - Inertia: investor nudges, tax treatment of capital gains

This Paper

- Develop a model of demand/supply for index funds with various frictions
- **Demand**: investors choose an index fund within an investment category (discrete choice)
  - Inertia: exogenous probability of choosing actively
  - Information frictions: gap in perceived and realized utilities
  - Heterogeneous preferences / horizontal differentiation
- **Supply**: a dynamic Nash Bertrand expense-ratio-setting game with multiple products

This Paper

- Estimate the model using fund-level data from CRSP between 2000-2020
- New strategy to separately identify frictions
  - Inertia: use variation in past returns as an exogenous shock to investors' past holdings
  - Heterogeneous preferences: based on active choices given inertia under logit shocks
  - Information frictions: leverage the 401(k) setting with a small & transparent menu

Preview of the Results

- Information frictions play an important role
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- Removing both results in a 78% decrease in the average retail expense ratio and a 50% decrease in the SD
- ETFs significantly lowered expense ratios through cost advantage and increased competition, but the demand frictions dampen its impact

Model Overview

- Demand
  - Model of index fund choice conditional on portfolio allocation (i.e., within Lipper Class)
  - Two types of investors: retail and institutional
    - Different preferences, information frictions, and inertia
    - Access to different products (e.g., institutional vs. retail funds)
  - Investors are either inert or active (e.g., Calvo shock)
  - Active investors select the fund that maximizes their perceived utility (i.e. discrete choice)
  - Assume investors are myopic, i.e. believe that preferences and product space don't change
- Supply
  - Play a dynamic Nash Bertrand expense-ratio-setting game
  - Multi-product issuers
- Study a steady-state equilibrium

Demand: Investor Preferences

- Investor i's indirect utility from choosing fund j at time t:

$$u_{i,j,t} = -p_{j,t} + X'_{j,t}\beta_{T(i)} + \xi_{T(i),j,t} + \sigma_{\epsilon,T(i)}\epsilon_{i,j,t}$$

  - $T(i) \in \{R, I\}$: investor type
  - $p_{j,t}$: expense ratio or price.
  - $X_{j,t}$: other fund characteristics
  - $\xi_{T(i),j,t}$: unobserved product characteristics
  - $\epsilon_{i,j,t}$: preference heterogeneity scaled by $\sigma_{\epsilon,T(i)}$ capturing degree of product differentiation

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- Can be written as common (by type) + idiosyncratic component

$$u_{i,j,t} = \bar{u}_{T(i),j,t} + \sigma_{\epsilon,T(i)}\epsilon_{i,j,t}.$$

Demand: Information Frictions

- Perceived utility is a noisy signal of realized utility

$$\begin{aligned}\tilde{u}_{i,j,t} &= u_{i,j,t} + \nu_{i,j,t} \\ &= \bar{u}_{T(i),j,t} + \sigma_{\epsilon,T(i)}\epsilon_{i,j,t} + \nu_{i,j,t}.\end{aligned}$$

  - $\nu_{i,j,t}$: information frictions with variance $\frac{\pi^2}{6}\sigma_\nu^2$
  - σ_ν: degree of the frictions
  - Consistent with rational inattention (Matějka and McKay, 2015)
  - Assume a distribution (Cardell 1997) such that the composite error term $\eta_{i,j,t} = \sigma_{\epsilon,T(i)}\epsilon_{i,j,t} + \nu_{i,j,t}$ is T1EV with $\sigma_{\eta,T(i)} = \left(\sigma_\nu^2 + \sigma_{\epsilon,T(i)}^2\right)^{1/2}$

Demand: Investor Inertia

- Investors are inactive with prob ϕ_T: maintain investments from the previous period
- The total AUM of fund j held by type T investors at time t

$$AUM_{T,j,t} = \underbrace{\phi_T AUM_{T,j,t-1}(1 + r_{j,t-1})}_{\text{Inactive Demand}} + \underbrace{(1 - \phi_T) M_{T,m(j),t} s_{T,j,t}}_{\text{Active Demand}}$$

  - $r_{j,t}$: fund return
  - $M_{T,m(j),t}$: market size

Supply

- Index fund managers engage in a dynamic multiproduct Nash-Bertrand expense-ratio-setting game
- Managers choose the prices $\mathbf{p}_{k,t}$, $\mathbf{p}_{k,t+1}$,... conditional on competitors' prices to solve:

$$\max \sum_{\tau=t}^{\infty} \beta^{\tau-t} \sum_{j \in \mathcal{J}_{k,m}} (AUM_{R,j,\tau} + AUM_{I,j,\tau})(p_{j,\tau} - c_j).$$

Supply: First Order Conditions

Single-Product

- Study a steady-state equilibrium where $s_{j,t} = s_j$ and $p_{j,t} = p_j$

$$\frac{p_j - c_j}{p_j} = \frac{1 - \beta(1 + \tilde{r}_{m(j)})\phi_R}{1 - \phi_R} \times \frac{1}{-\varepsilon_j^D}$$

- Invest and harvest effects of inertia
- If $\phi_R = 0$, simplifies to a standard static FOC
- If $(1 + \tilde{r}_{m(j)})\beta = 1$ (i.e. a growth-adjusted discount factor of 1), the same markup as in the static setting even with $\phi_R > 0$
- If $(1 + \tilde{r}_{m(j)})\beta < 1$, a higher markup

Estimation

1. Inertia: Persistence in AUM

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3. Information frictions: 401(k) sample
   - Estimate demand using data on 401(k) plans
   - Idea: No information frictions
   - Elasticity of demand is 2.6x larger
   - Difference in elasticities identifies information frictions

Details

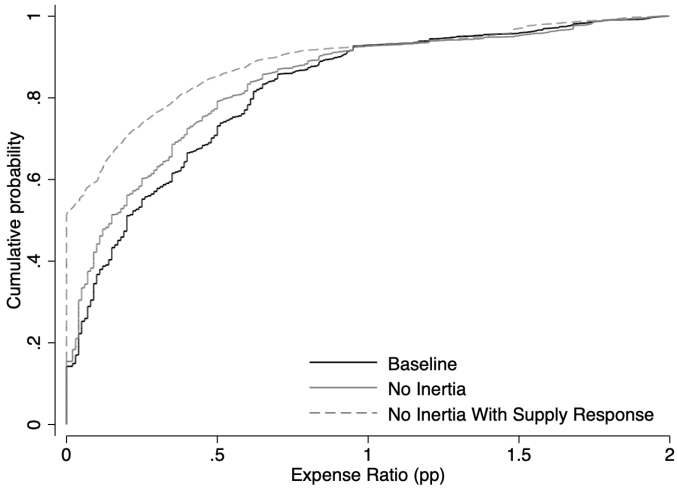
Counterfactuals: Overview

- **Quantifying Frictions:** Eliminate frictions separately and simultaneously
- **The Introduction of ETFs:** Expense ratios w/ and w/o ETFs

Counterfactuals: Overview

- **Quantifying Frictions:** Eliminate frictions separately and simultaneously
- **The Introduction of ETFs:** Expense ratios w/ and w/o ETFs
- For each counterfactual, consider
  - Partial equilibrium with expense ratios fixed
  - General equilibrium with supply side responses
- Focus on the results for retail investors (similar for institutions)

Quantifying Frictions: Eliminating Inertia



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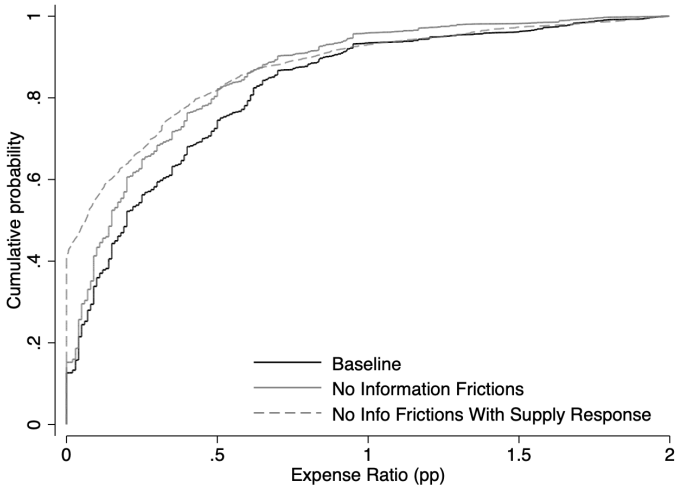
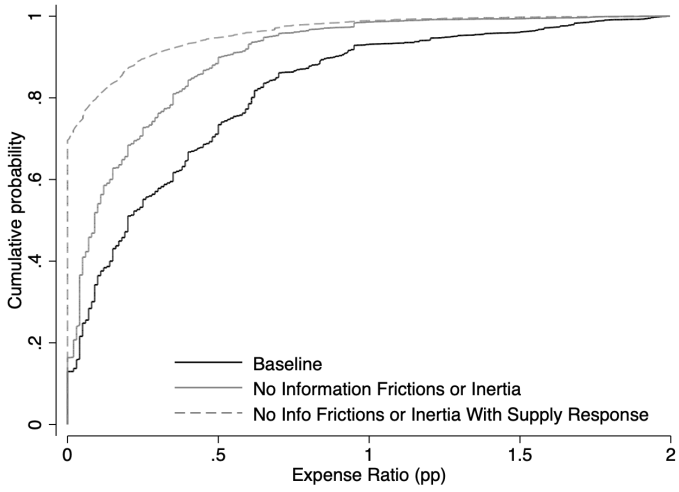


Quantifying Frictions: Eliminating Inertia and Information Frictions



Quantifying Frictions: Eliminating Inertia and Information Frictions

- Removing inertia $\rightarrow$ 8% (39%) decrease in retail expense ratios in partial (general) eqm

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Quantifying Frictions: Eliminating Inertia and Information Frictions

- Removing inertia $\rightarrow$ 8% (39%) decrease in retail expense ratios in partial (general) eqm
- Removing information frictions $\rightarrow$ 22% (28%) decrease in retail expense ratios

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Quantifying Frictions: Eliminating Inertia and Information Frictions

- Removing inertia $\rightarrow$ 8% (39%) decrease in retail expense ratios in partial (general) eqm
- Removing information frictions $\rightarrow$ 22% (28%) decrease in retail expense ratios
- Eliminating inertia has a much larger effect once information frictions are removed
- Allowing investors to shop more frequently is more effective when investors are good at shopping

Tables

The Introduction of ETFs

- The introduction of ETFs reduces retail expense ratio by 20% (9 bp)
- Mechanism
  - ETFs have typically have lower marginal costs
  - Increased competition
    - Cannot price discriminate across institutional and retail investors

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- Mechanism
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  - Increased competition
    - Cannot price discriminate across institutional and retail investors
- Introducing ETFs while eliminating both inertia and information frictions would have reduced expense ratio by almost 4x (34 bp)

Conclusion

- We develop a new tractable dynamic model of index fund supply and demand
  - Incorporate various frictions and study their interaction
  - Separately identify each friction using new identification strategies

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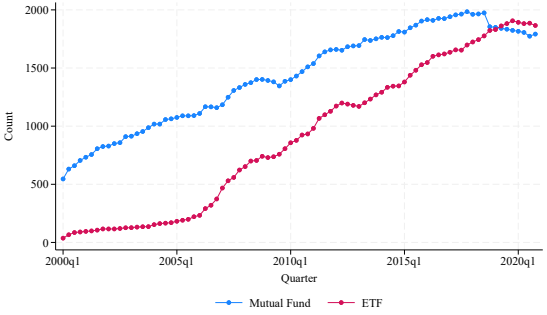
  - Large info frictions, particularly for retail
  - Institutional investors are 1.75x as price sensative as retail
- Main takeaways:
  - Even though inertia is high, it has a modest effect on demand
    - Removing inertia is more valuable with low information frictions.
  - ETFs lowered expense ratios but demand-side frictions likely dampen its impact

Data

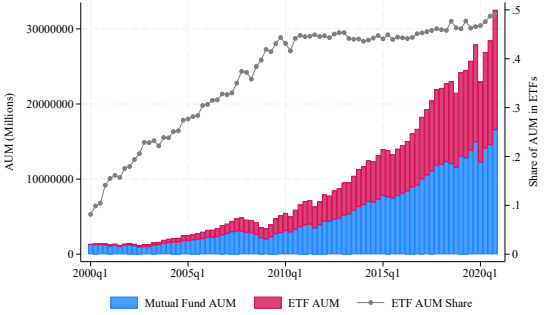
- Main dataset comes from CRSP Mutual Fund Database
  - Study the period 2000 - 2020
  - Index funds: mutual funds and ETFs (5266 funds in 150 Lipper Classes)
  - Observe monthly assets and returns, quarterly expense ratios, & other fund characteristics
  - Market is a Lipper Class (e.g. S&P 500, Small-Cap Value, etc)
- Supplemented with
  - Institutional holdings data for the share of institutional vs retail ETF assets
  - 401(k) plan data covering 85% of employer-sponsored investment accounts
    - Plan-level menus and allocations

Additional motivating evidence

Growth of Index Funds



(a) Number of Funds



(b) Fund Assets Under Management

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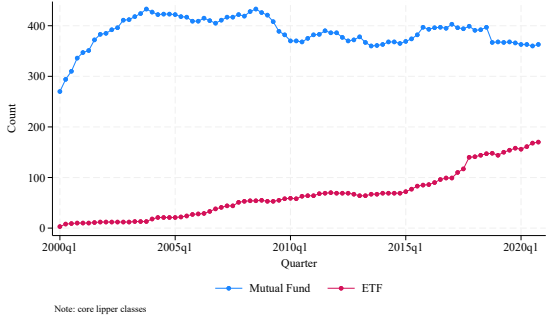
Growth of Index Funds

Core Funds



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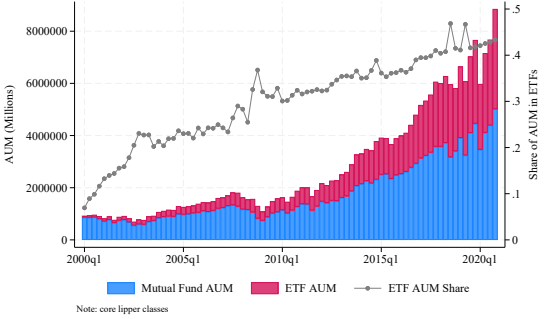

(b) Core Fund Assets Under Management

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Summary Statistics

	Count	Mean	Std. Dev.	Median
Total Net Assets ($mm)	564,272	1,371.95	7,886.88	61.60
Expense Ratio (bp)	564,272	96.27	91.72	63.00
Exp Ratio (Unadj. for Loads; bp)	564,272	76.53	64.63	60.00
Annual Returns (%)	507,135	5.54	23.05	6.13
Retail Mutual Fund	564,272	0.35	0.48	0.00
Institutional Mutual Fund	564,272	0.26	0.44	0.00
ETF	564,272	0.38	0.49	0.00
ln(# of Funds in Same Mgmt. Company)	564,272	4.04	1.41	4.34
12b-1 Fees (bp)	564,272	13.74	28.94	0.00
Has Front Load	564,272	0.07	0.26	0.00
Has Rear Load	564,272	0.13	0.34	0.00
Std. of Daily Returns (pp, annualized)	559,611	18.56	13.79	15.06
Number of Index Funds	5,266			
Number of Lipper Classes	150			

Motivating Evidence

Model Frictions

Demand

- Inertia: low-cost funds take time to gain market share
- Information frictions: price dispersion is smaller for more transparent markets, suggesting investors' higher sensitivity to prices

Supply

- Price discrimination: institutional funds charge lower expense ratio than retail funds for the same portfolio

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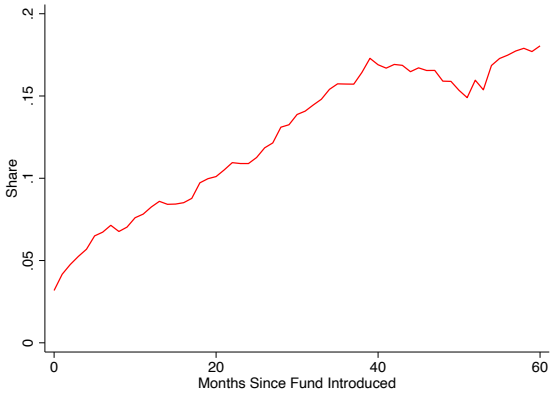
Motivating Evidence: Investor Inertia



- New low-cost funds (bottom quartile of price distribution)
- Takes time for these funds to gain market share, indicating inertia

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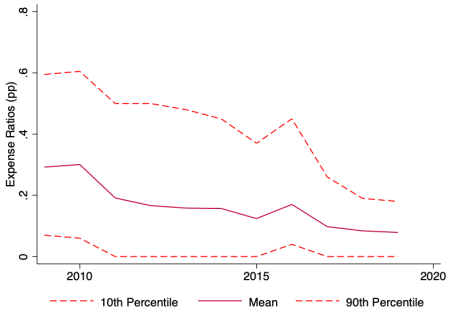
Motivating Evidence: Information Frictions



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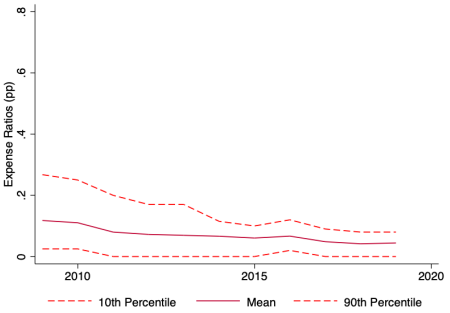

(b) Expense Ratio (Weighted)

- Information frictions are minimal in the 401(k) setting (Kronlund et al. 2021)
  - Small choice set with transparent menu (10-30 options)
- Comparing with broader market implies information frictions may be important
- Difference between equal and asset weighted implies investors are price sensitive

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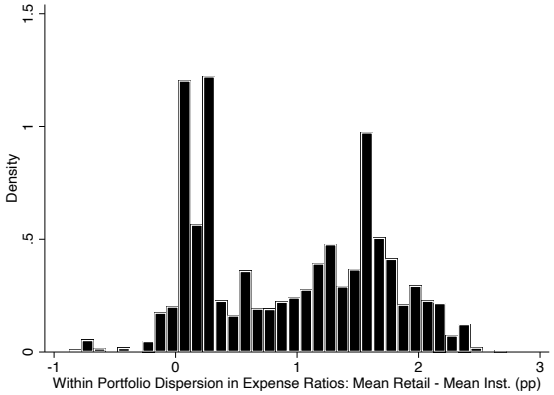
Motivating Evidence: Price Discrimination



- Institutional fund expense ratios are 94 bp lower than retail fund in the same portfolio
- Indicates market segmentation may allow firms to further exercise market power

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Estimation Overview

1. Estimate inertia using an IV strategy, which then pins down active demand
2. Estimate investor preference using active demand à la Berry (1994)
3. Use additional data on choices in 401(k) plans to estimate information frictions

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4. Invert fund managers' FOC to estimate marginal costs of operating index funds **Supply**

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Estimation: Inertia

First, we want to estimate ϕ_T

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Estimate the corresponding empirical specification:

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- $\ln AUM_{T,j,t-1}$ is potentially endogenous
- Past returns as potential IV, but previous studies show return chasing
- Use past 12 monthly returns as IV while controlling for 1,3,6,12 month & ytd returns

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Results: Inertia

	(1)	(2)	(3)	(4)
	Retail		Institutional	
Lag AUM	0.990***	0.988***	0.991***	0.946***
	(0.000)	(0.018)	(0.000)	(0.013)
Observations	331,040	327,866	324,144	320,364
R-squared	0.984	0.984	0.986	0.984
IV		X		X
Year-Month FE	X	X	X	X

- 98.8% (94.6%) retail (inst.) investors are inert each month
- 13% (49%) of retail (inst.) investors update their choice at least once a year
- Consistent with alternative estimates of inertia
  - Median New Sales/Total AUM = 2.1%, Median Redemptions/Total AUM = 1.8%

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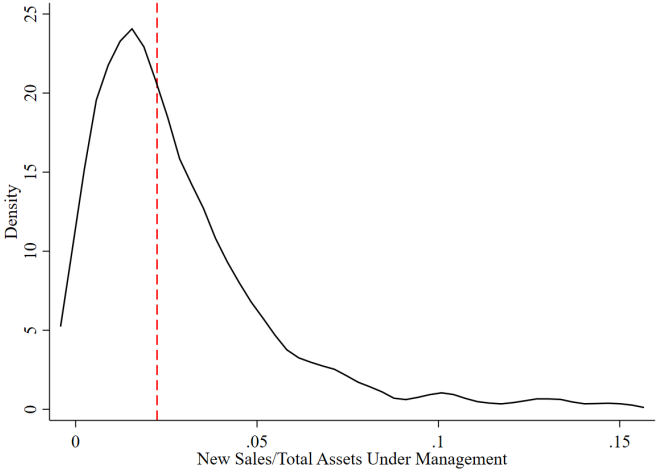
Results: Alternative Estimates of Inertia

Median New Sales/Total AUM = 2.1%



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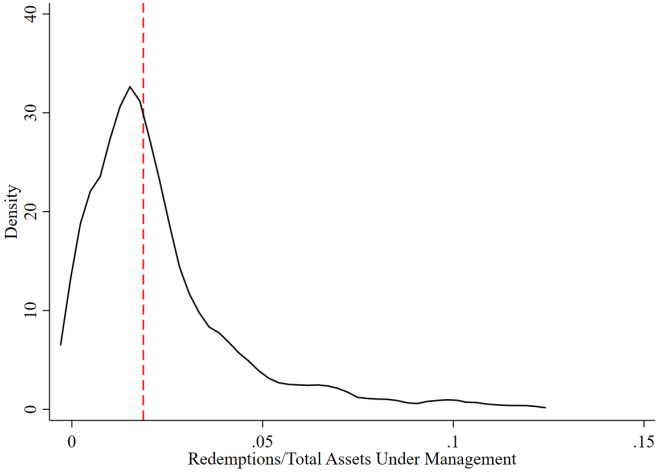
Results: Alternative Estimates Inertia

Median Redemptions/Total AUM = 1.8%



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Estimation: Inertia in Levels

	(1)	(2)	(3)	(4)
	Retail		Institutional	
Lag AUM	0.973***	0.980***	0.991***	0.988***
	(0.002)	(0.003)	(0.002)	(0.002)
Observations	371,710	357,178	324,158	313,471
R-squared	0.998	0.998	0.996	0.996
IV		X		X
Year-Month FE	X	X	X	X

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Estimation: Inertia Heterogeneity Over Time

Retail

VARIABLES	(1)	(2)	(3)	(4)
Lag AUM	0.649***	1.166***	0.947***	0.955***
	(0.097)	(0.053)	(0.018)	(0.020)
Observations	32,699	60,413	110,812	123,942
R-squared	0.871	0.958	0.982	0.984
IV	X	X	X	X
Year-Month FE	X	X	X	X
Period	2001-2005	2006-2010	2011-2015	2016-2020

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Estimation: Inertia Heterogeneity Over Time

Institutional

VARIABLES	(1)	(2)	(3)	(4)
Lag AUM	0.999***	0.968***	0.928***	0.937***
	(0.014)	(0.023)	(0.022)	(0.020)
Observations	21,838	50,095	102,414	146,017
R-squared	0.994	0.987	0.981	0.983
IV	X	X	X	X
Year-Month FE	X	X	X	X
Period	2001-2005	2006-2010	2011-2015	2016-2020

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Estimation: Inertia Heterogeneity by Load Type

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
Lag AUM	0.987***	0.981***	1.045***	0.946***	0.945***	0.994***
	(0.018)	(0.019)	(0.017)	(0.013)	(0.013)	(0.008)
Lag AUM x Has Front Load	0.005			-0.049		
	(0.010)			(0.092)		
Lag AUM x Has Rear Load		0.017**			0.010	
		(0.008)			(0.009)	
Lag AUM x 1 Year Return			0.040***			0.008
			(0.015)			(0.010)
Observations	327,866	327,866	327,866	320,364	320,364	320,364
R-squared	0.984	0.984	0.981	0.984	0.984	0.986
Retail Sample	X	X	X			
Inst. Sample				X	X	X
IV	X	X	X	X	X	X
Year-Month FE	X	X	X	X	X	X

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Estimation: Active Investor Demand and Information Frictions

- Following Berry (1994), we estimate active investors' demand based on:

$$\ln s_{T,j,t} = \underbrace{-\frac{\alpha_T}{\frac{1}{\sigma_{\eta,T}}} p_{jt} - X'_{j,t} \underbrace{\frac{\Gamma_T}{\frac{\beta_{T(i)}}{\sigma_{\eta,T}}}}_{\frac{\beta_{T(i)}}{\sigma_{\eta,T}}}}_{\frac{\beta_{T(i)}}{\sigma_{\eta,T}}} + \underbrace{\mu_{T,m(j),t}}_{\mu_{T,m(j),t}} - \ln\left(\sum_{l \in \mathcal{J}_{T,m(j),t}} \exp\left(\frac{-p_{l,t} + X'_{l,t}\beta_T + \xi_{T,l,t}}{\sigma_{\eta,T}}\right)\right) + \underbrace{\zeta_{T,j,t}}_{\frac{\xi_{T,j,t}}{\sigma_{\eta,T}}}$$

  - $\mu_{T,m(j),t}$: absorbed by market-time FE

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Estimation: Active Investor Demand and Information Frictions

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  - $\mu_{T,m(j),t}$: absorbed by market-time FE
- Estimating this equation in the 401(k) setting identifies information frictions
  - Minimum information frictions: small choice set with transparent menu
  - Assume $\nu_{i,j,t} = 0$, so the price coefficient becomes $-\frac{1}{\sigma_{\epsilon,T}}$
  - Restrict to newly created 401(k) plans so there was no inertia

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Results: Elasticity, Information Frictions and Marginal Costs

Table: Elasticity of Demand

	OLS	IV
Retail Active	1.3	1.6
Institutional Active	1.7	2.8
401(k)	3.5	4.2

- Institutional investors are 75% more elastic.
- Information frictions are high, especially for retail.
- Robustness: new sales, cost shifter IV, control for top 3
- Mean marginal cost is 20 bps. Mean markup is 48 bps.

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Estimation: Active Investor Demand

$$\ln s_{T,j,t} = -\alpha_T p_{jt} + X'_{j,t}\Gamma_T + \mu_{T,m(j),t} + \zeta_{T,j,t}$$

- Given $\hat{\phi}_T$, we construct $s_{T,j,t}$ using total AUM held by active investors with type T

$$AUM^{Active}_{T,j,t} = \exp\left(\frac{\ln AUM_{T,j,t} - \hat{\phi}_T \ln(AUM_{T,j,t-1}(1 + r_{j,t-1}))}{1 - \hat{\phi}_T}\right)$$

- Instrument p_{jt} with avg expense ratios that the same provider charges on its funds in other markets (Hausman 1996)
- $X_{j,t}$: log # funds by the fund manager, front/rear load, ETF, returns
- Recover $\sigma_{\eta,T}$ along with other preference parameters

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Results: Active Investor Demand

	(1)	(2)	(3)	(4)
Expense Ratio	-233.977***	-283.468***	-296.658***	-490.951***
	(5.164)	(19.293)	(2.386)	(9.509)
Observations	332,165	122,593	322,146	133,535
R-squared	0.118	0.023	0.266	0.135
Year-Month-Mkt FE	X	X	X	X
IV		X		X
Retail Sample	X	X		
Inst. Sample			X	X
Elasticity of Demand	1.3	1.6	1.7	2.8

- Institutional investors are approx. 75% more elastic
- Robustness: new sales, cost shifter IV, control for top 3 Robustness

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Estimation: Investor Preferences With New Sales

VARIABLES	(1)	(2)	(3)	(4)
Expense Ratio	-255.330***	-460.981***	-433.080***	-1,007.447***
	(4.374)	(38.051)	(9.411)	(83.890)
Observations	8,141	3,841	8,317	6,253
R-squared	0.552	0.449	0.402	0.034
Year-Month-Mkt FE	X	X	X	X
IV		X		X
Retail Sample	X	X		
Inst. Sample			X	X
Elasticity of Demand	1.4	2.6	2.4	5.6

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Estimation: Investor Preferences With Bid-Ask Spread Instrument

VARIABLES	(1)	(2)	(3)	(4)
Expense Ratio	-360.688***	-294.593***	-571.920***	-508.283***
	(34.617)	(43.793)	(15.740)	(18.636)
Observations	50,818	50,818	62,583	62,583
R-squared	0.029	0.030	0.111	0.137
Year-Month-Mkt FE	X	X	X	X
Other Firm Assets		X		X
IV	X	X	X	X
Retail Sample	X	X		
Inst. Sample			X	X
Elasticity of Demand	2.0	1.7	3.2	2.8

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Estimation: Investor Preferences Controlling for Top 3

VARIABLES	(1)	(2)	(3)	(4)
Expense Ratio	-216.803***	-217.663***	-278.464***	-497.866***
	(5.321)	(24.234)	(2.462)	(10.774)
Top 3 Firm	1.016***	1.334***	0.535***	-0.126***
	(0.085)	(0.165)	(0.018)	(0.038)
Observations	332,165	122,593	322,146	133,535
R-squared	0.118	0.023	0.268	0.133
Year-Month-Mkt FE	X	X	X	X
IV		X		X
Retail Sample	X	X		
Inst. Sample			X	X
Elasticity of Demand	1.2	1.2	1.6	2.8

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Estimation: Investor Preferences With 401(k) Sample Restriction

VARIABLES	(1)	(2)	(3)	(4)
Expense Ratio	-450.093***	284.683	-449.961***	-208.229*
	(79.726)	(365.189)	(27.426)	(124.891)
Observations	3,906	2,658	2,624	1,697
R-squared	0.301	0.005	0.596	0.367
Year-Month-Mkt FE	X	X	X	X
IV		X		X
Retail Sample	X	X		
Inst. Sample			X	X
Elasticity of Demand	2.5	-1.6	2.5	1.2

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Estimation: Information Frictions

Challenge: Separately identify information frictions from preference heterogeneity

- Need to separately identify σ_ϵ from σ_ν
- Price coefficient we estimate is $-\frac{1}{\sigma_\eta}$
- Observe $\sigma_\eta = (\sigma_\epsilon^2 + \sigma_\nu^2)^{1/2}$ in our main demand estimates

Estimation: Information Frictions

Challenge: Separately identify information frictions from preference heterogeneity

- Need to separately identify σ_ϵ from σ_ν
- Price coefficient we estimate is $-\frac{1}{\sigma_\eta}$
- Observe $\sigma_\eta = (\sigma_\epsilon^2 + \sigma_\nu^2)^{1/2}$ in our main demand estimates

Solution: Leverage the 401(k) setting

- Minimum information frictions
- Assume $\nu_{i,j,t} = 0$, so the price coefficient becomes $-\frac{1}{\sigma_\epsilon}$
- Restrict to newly created 401(k) plans so there was no inertia
- Re-estimate Berry (1994) demand using 401(k) data

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Results: Information Frictions

Table: Demand for Index Funds In 401(k) Plans

	(1)	(2)
Expense Ratio	-616.101***	-743.290***
	(52.096)	(110.898)
Observations	2,020	2,016
R-squared	0.552	0.545
PlanxMarketxYear FE	X	X
IV		X
Elasticity of Demand	3.5	4.2

- We recover the elasticity of 4.2 (vs. 1.6 for retail; 2.8 for institutional in main sample)
  $\rightarrow$ Information frictions are high, especially for retail.

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Estimation: Marginal Costs of Providing Index Funds

Estimate marginal costs of operating funds based on the first order condition

- Single-product:

$$\frac{p_j - c_j}{p_j} = \frac{1 - \beta(1 + \tilde{r}_{m(j)})\phi_R}{1 - \phi_R} \times \frac{1}{-\varepsilon_j^D}$$

where

- Observe p_j
- Estimated demand param. ϕ and ε_j^D,
- Assume the growth-adjusted discount rate $\beta(1 + \tilde{r}_m(j))$ is 5%
- Solve for c_{jt}

Estimation: Marginal Costs of Providing Index Funds

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  where
  - Observe p_j
  - Estimated demand param. ϕ and ε_j^D,
  - Assume the growth-adjusted discount rate $\beta(1 + \tilde{r}_m(j))$ is 5%
  - Solve for c_{jt}

- Multi-product

$$M_{R,t}\mathbf{s}_{R,t} + M_{I,t}\mathbf{s}_{I,t} = (M_{R,t}\Omega_{R,t} + M_{I,t}\Omega_{I,t}) \times (\mathbf{p}_t - \mathbf{c}_t)$$

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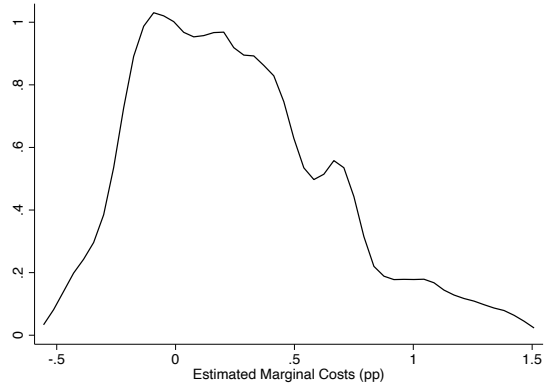
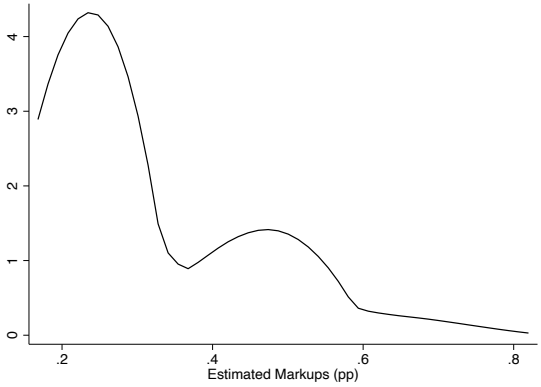
Results: Marginal Costs of Providing Index Funds



(a) Distribution of Marginal Costs



(b) Distribution of Markups

- Estimate a mean marginal cost of 14 bps and a mean markup of 55 bps

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Quantifying Frictions: Eliminating Inertia and Information Frictions

	Mean	Std Dev.	Mean	Std Dev.
Baseline	0.36	0.42		
Counterfactuals	Without Supply Response		With Supply Response	
No Inertia	0.33	0.42	0.22	0.41
No Info Frictions	0.28	0.34	0.26	0.41
No Inertia or Info Frictions	0.20	0.26	0.08	0.21

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Quantifying Frictions: Eliminating Inertia and Information Frictions

	Mean	Std Dev.	Mean	Std Dev.
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Quantifying Frictions: Eliminating Inertia and Information Frictions

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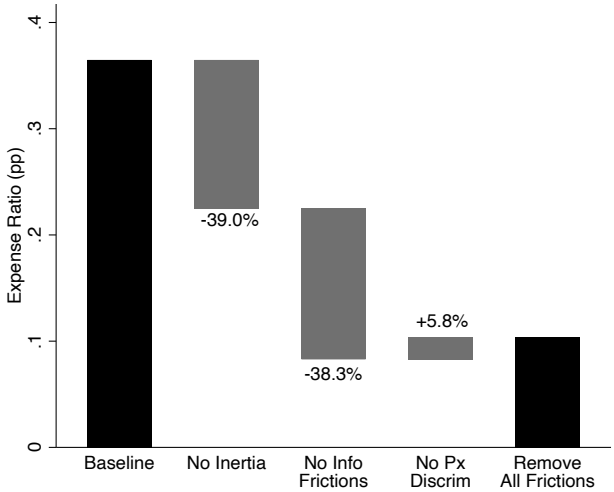
Counterfactual: Quantifying Frictions



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Quantifying Frictions: Institutional Investors

	Mean	Std. Dev.	Mean	Std Dev.
Baseline	0.28	0.30		
Counterfactuals	Without Supply Response		With Supply Response	
No Inertia	0.25	0.27	0.23	0.28
No Info Frictions	0.22	0.24	0.18	0.28
No Inertia or Info Frictions	0.19	0.21	0.10	0.17
No Px Discrimination			0.23	0.33
No Inertia, Info Frictions, or Px Discrimination			0.09	0.18

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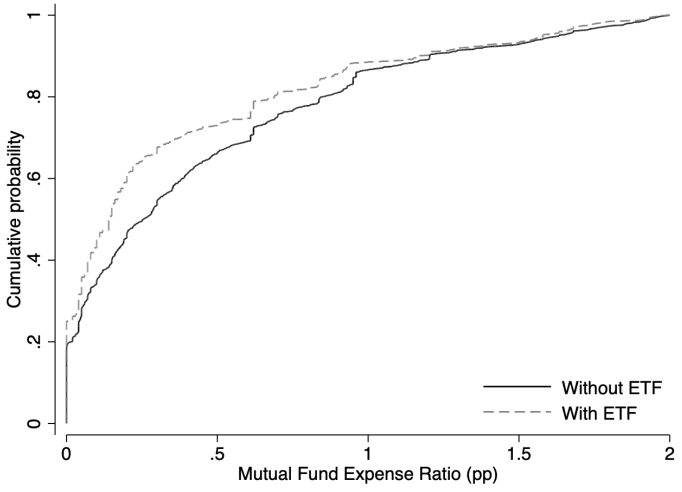
The Introduction of ETFs



Extensions: Role of Financial Advisors

- Financial advisor chooses a fund based on payoff as a weighted average of the advisor's and client's incentives (Robles-Garcia 2019; Egan et al. 2022):

$$\pi_{i,j,t} = \omega_{T(i)} f_{j,t} + (1 - \omega_{T(i)}) \tilde{u}_{i,j,t}.$$

  - $f_{j,t}$: commissions earned from selling fund j
  - $\omega_{T(i)}$: weight on own financial incentives
  - Assuming that advisors observe $\epsilon_{i,j,t}$ and are subject to the same info frictions as investors
- Measure broker incentives using 12b-1 fees (92% going to brokers) adjusted by 1/3 of loads
- Instrument the fees using the lagged maximum contractual 12b-1 fee

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The Role of Financial Advisors: Results

	(1)	(2)	(3)	(4)
Year-Month-Mkt FE	X	X	X	X
Exp Ratio IV	X	X	X	X
12b-1 IV		X		X
Retail Sample	X	X		
Inst. Sample			X	X
Elasticity of Demand	1.8	1.6	2.9	2.9
ω	0.25	0.09	0.40	0.31

- Estimated elasticity in line with baseline estimates (1.6 for retail; 2.8 for institutional)
- Advisers willing to trade off a 1 pp $\uparrow$ in 12b-1 fees with a 0.33 pp $\uparrow$ in expense ratios
  - Smaller conflicts of interest than in other settings with less transparency
- Eliminating 12-b fees lowers expense ratios by 5%
  - Consistent with the high share (75%) of funds not paying 12b-1 fees

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