Columbia
Law School

FLOWS, FINANCING DECISIONS, AND INSTITUTIONAL OWNERSHIP OF THE U.S. EQUITY MARKET

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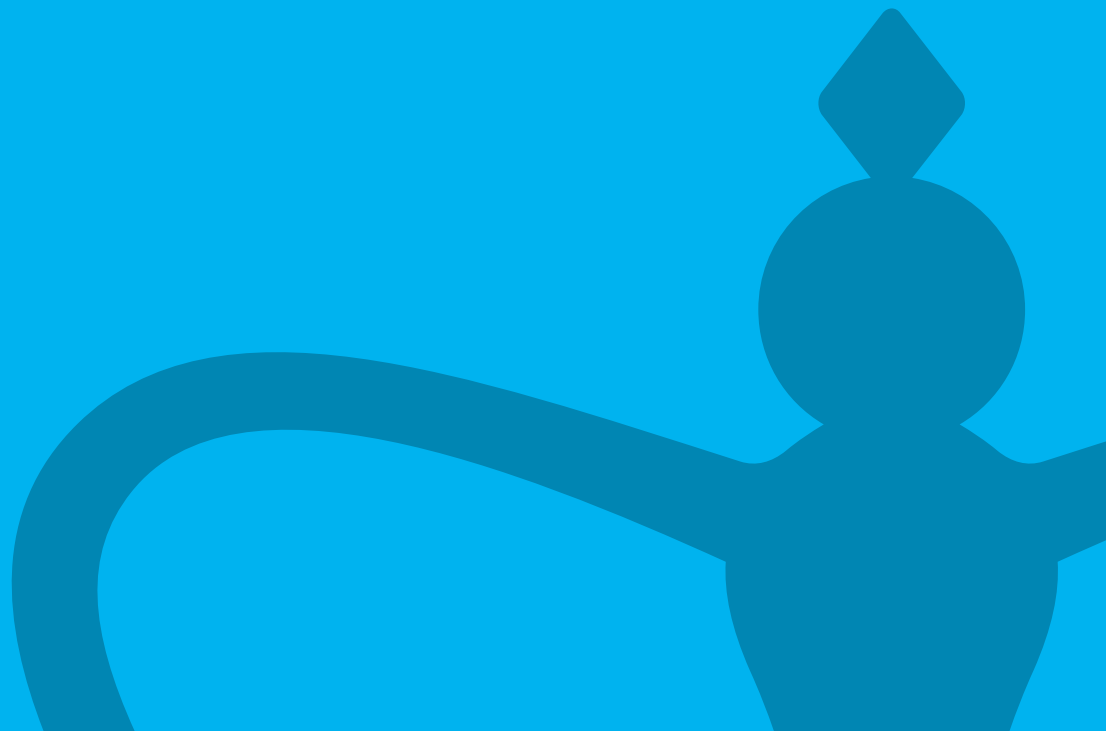


Motivation

- Significant change in the composition of ownership in the U.S. capital market. Shift away from retail to institutional investors
  - Institutional ownership of U.S. equity increased from 29% to 76% from 1980 to over 80% today.
  - Rise of institutional ownership attributed to changes in retirement law, success of modern portfolio theory and idea of low cost diversification, and investor preference for passive mutual funds
- Focus on the “Big Three” asset managers - Vanguard, BlackRock, and State Street - all of which specialize in passively managed mutual funds and ETFs and are predicted to control corporate elections in the near future
  - Antitrust concerns
  - Governance concerns
  - Democratic concerns

Goals

- What drives the evolution of institutional ownership?
  - Set up a framework to better understand the sources of flows allocated to investment managers
    - Role of: (i) Fund fees and returns, (2) Firms' payout policies, (iii) Investors' reinvestment of fund distributions, (iv) aggregate corporate distributions and equity issuances
  - Introduce equilibrium restrictions on flows, and how these are related to actions taken by corporations and funds themselves
- Reassess the evidence of rapid institutional growth

Flows and Change in Institutional Ownership: Intuition

- *Fund A and P each hold 50% of Company X's public float. What drives growth of their ownership?*
  - Reallocational flows
  - Company X repurchases shares from one fund and not the other
  - IPO and SEOs in which one fund participates and not the other
  - Returns
  - Expense ratio
  - Firm payout policy

Measurement of Fund Flows

- There are I funds and J companies
- $V_{ijt} \geq 0$ is fund i's dollar holdings in firm j at time t. Fund's assets: $AUM_{it} = \sum_{j=1}^{J} V_{ijt}$
- ω_{ijt} is fund i portfolio weight invested in firm j: $\omega_{ijt} = {}^{V_{ijt}}/_{AUM_{it}}$
- r_{jt} is firm j capital gain return from $t-1$ to t
- Fund i's capital gains return, excluding dividends is: $r_{it} = \sum_{j=1}^{J} \omega_{ijt}(1 + r_{jt}) - 1$
- c_{it} is the fund's fee
  - Deducted at the end of the quarter, but as a fraction of beginning quarter AUM
- Distributions:
  - D_{it} is the dollar value of dividends received by the fund i in period t. The fund realized dividend yield is $y_{it}^{D} = {}^{D_{it}}/_{AUM_{i,t-1}}$
  - Assume all dividends distributed by the end of the period net of expenses
  - G_{it} is the fund's distribution of realized capital gains. $y_{it}^{G} = {}^{G_{it}}/_{AUM_{i,t-1}}$ is the fund's realized capital gains yield
  - For every dollar of distributions of dividends and capital gains by the fund to its shareholders the fund receives b_{it}^{d} and b_{it}^{g} cents as reinvestment

Measurement of Fund Flows

- Denote the fund's dollar flows by F_{it}
- Fund i change in assets under management:

$$AUM_{it} = \underbrace{AUM_{i,t-1}\left(1 + r_{it}\right)}_{\text{Capital gains return}} + \underbrace{AUM_{i,t-1}\left((b_{it}^{D})^{1(y_{it}^{D}-c\geq 0)}(y_{it}^{D} - c) + (b_{it}^{G} - 1)y_{it}^{G}\right)}_{\text{Reinvestment of distributions net of fees}} + F_{it}$$

- We can measure fund dollar flows as:

$$F_{it} = AUM_{it} - AUM_{i,t-1}\left(1 + r_{it} + \kappa_{it}\right)$$

where $\kappa_{it} = (b_{it}^{d})^{1(y_{it}^{D}-c\geq 0)}(y_{it}^{D} - c) + (b_{it}^{g} - 1)y_{it}^{G}$

- Growth in a fund's AUM is driven by (i) capital gains on its portfolio holdings, (ii) fees, (iii) the reinvestment of dividends and capital gains, and (iv) dollar flows

Change in Fund Ownership

- Decompose the change in an institution's stake in the market, $\psi_{it} = {AUM_{it}}/{M_t}$, into factors that capture differential fund flows, fees, and distributions

- Scale a fund's dollar flows by the fund's lagged AUM: $f_{it} = {F_{it}}/{AUM_{it-1}}$. With scaled fund flows the growth in a fund's AUM can be written as:

$$AUM_{it} = AUM_{i,t-1}(1 + r_{it} + \kappa_{it} + f_{it})$$

- Scale market dollar flows by lagged market value $f_{mt} = {F_{mt}}/{M_{t-1}}$. With scaled market flows the the evolution of the market can be written as:

$$M_t = M_{t-1}(1 + r_{mt} + f_{mt})$$

Change in Fund Ownership

- The cumulative change in ownership, ψ_{it}, from time 0 to T is given by:

$$\psi_{iT} = \psi_{i,0} \prod_{t=1}^{T} \left(\frac{1 + r_{it} + \kappa_{it} + f_{it}}{1 + r_{mt} + f_{mt}} \right)$$

- To provide intuition about the drivers of the growth in ownership from $t = 0$ to $t = T$ we approximate the cumulative change in log ownership:

$$\log(\psi_{iT}) - \log(\psi_{i,0}) \approx \sum_{t=1}^{T} \left(r_{it} - r_{mt} \right) + \sum_{t=1}^{T} \kappa_{it} + \sum_{t=1}^{T} \left(f_{it} - f_{mt} \right)$$

1. The first term gives the fund's cumulative "excess return" relative to the market
2. The second term gives the cumulative change in the fund's AUM due to fees and distributions of dividends and capital gains
3. The third term captures the effect of balance sheet effects on fund stake size. When $f_{mt} < 0$ ($f_{mt} > 0$), net corporate distributions (issuances) lead to an increase (decrease) in ownership unless these market flows are met with offsetting fund level flows

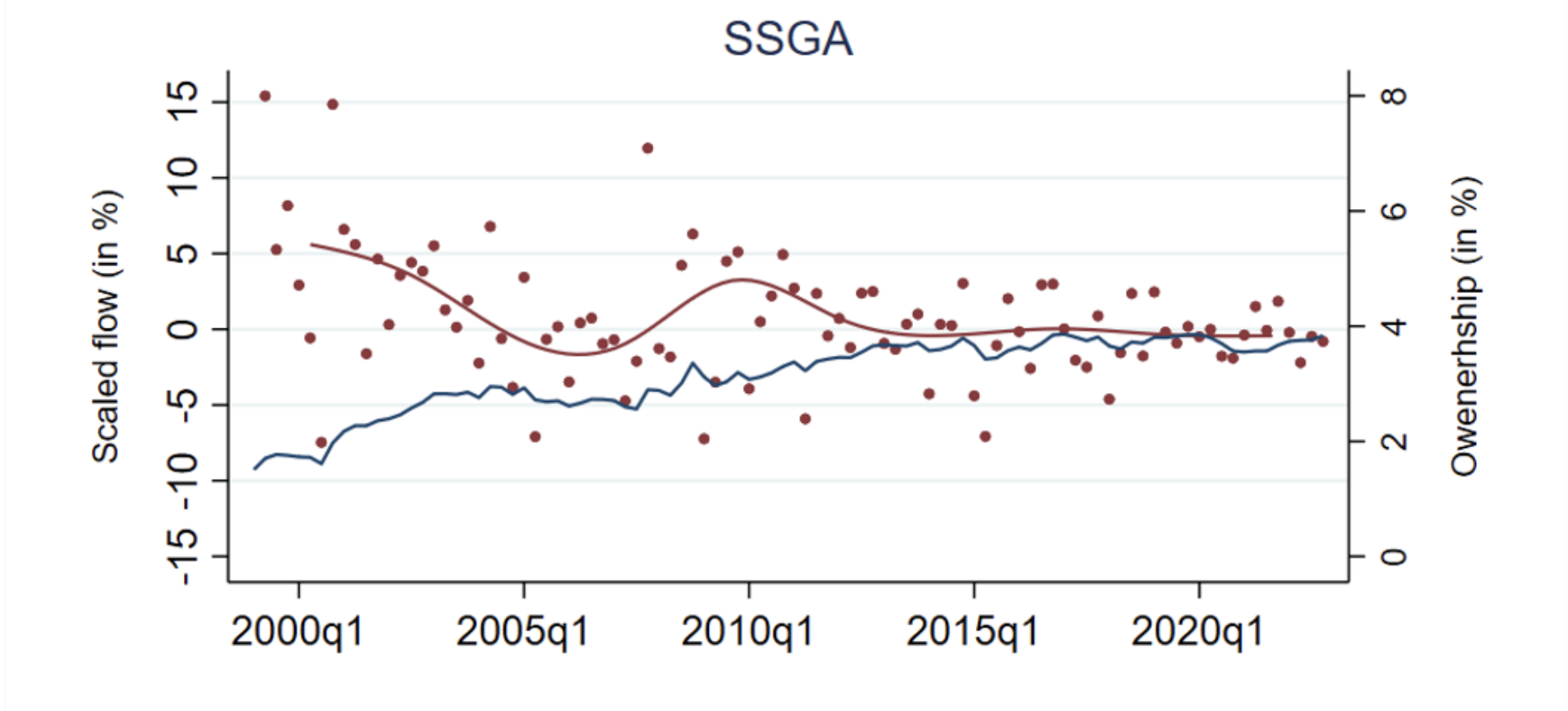
Data

- Ownership data:
  - Scrape 13F quarterly ownership filings
  - Data covers the period 2000 - 2022
  - Merge the 13F data with CRSP using CUSIPs to obtain information on share prices and shares outstanding
  - Keep firms with CRSP share code 10-12

- Data on expense ratios and distribution of dividends and capital gains from CRSP

- Reinvestment of dividends and capital gains comes from Form N-SAR filings
  - All registered investment companies were required to file Form N-SAR under the Investment Company Act of 1940 until mid-2018.
  - Since mid-2018, required to file Form N-CEN. The reinvestment data therefore covers the period 2000-2017
  - Information reported semi-annually on Form N-SAR/A, and annually on Form N-SAR/B
  - Scrape all Form N-SAR filings from EDGAR using CIKs

Ownership and Flows



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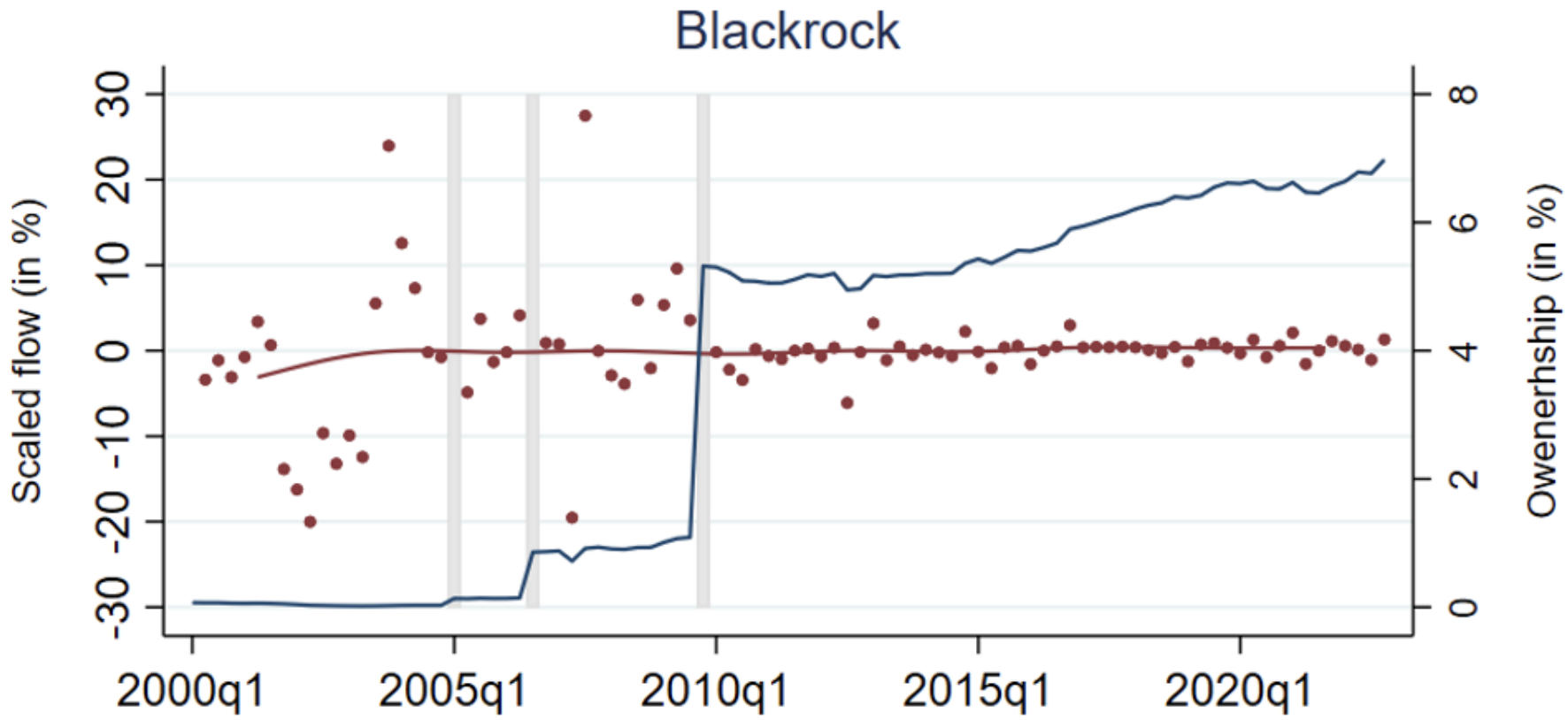
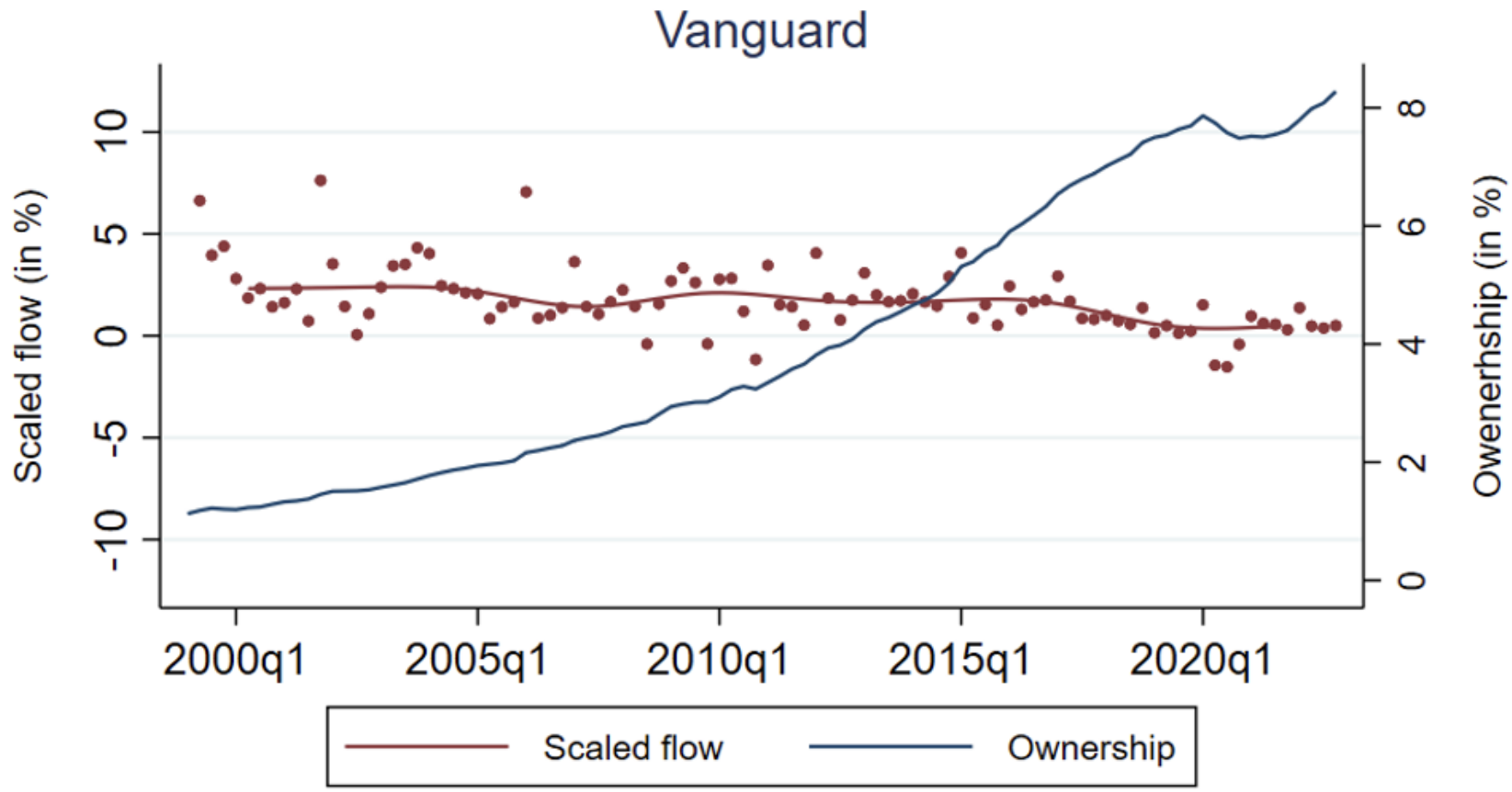
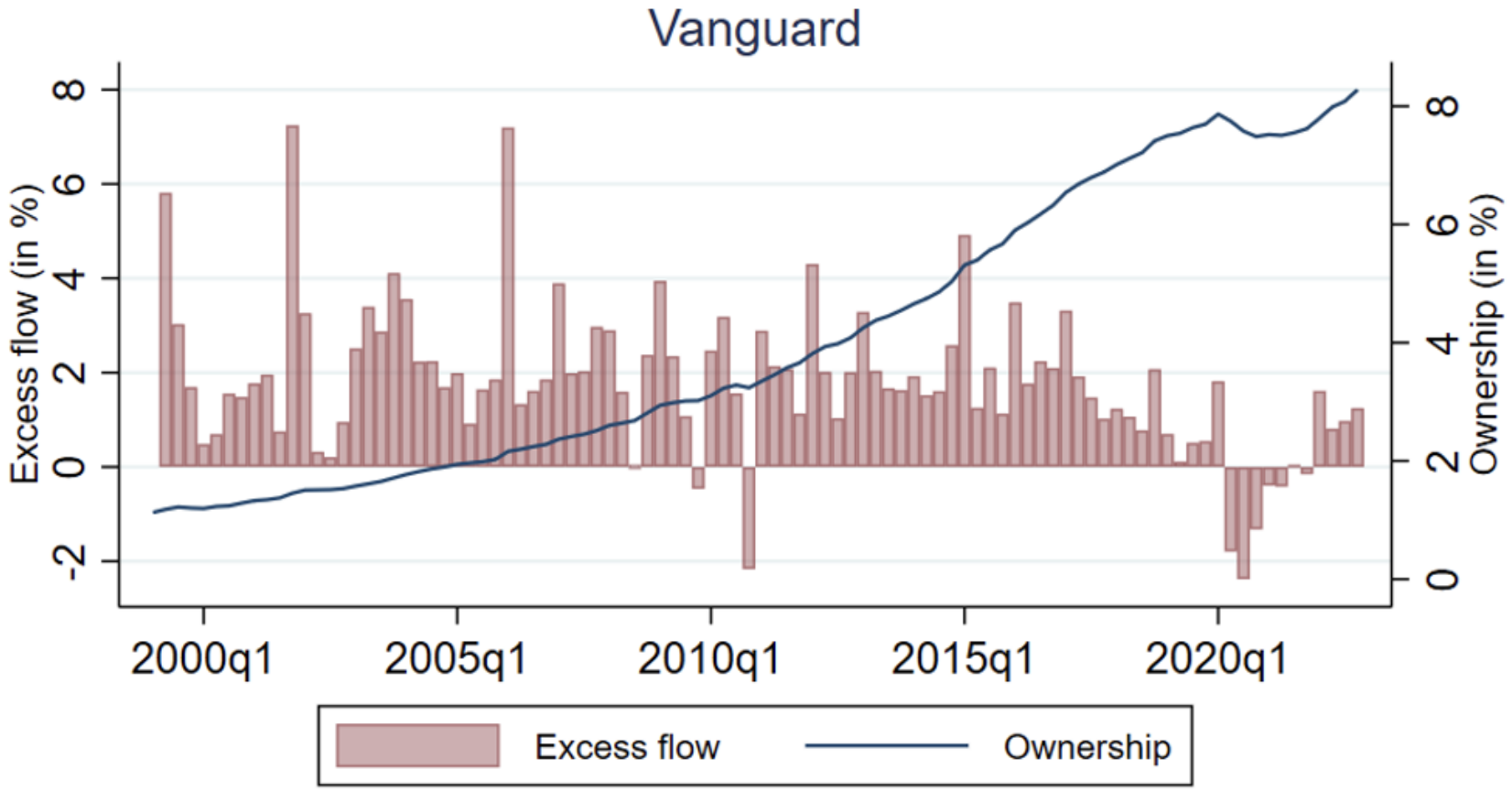


Ownership and Flows



Market Flows and Institutional Growth



Implications: Big Three Growth and Market Structure

Panel A: Institutional ownership

Year	Vanguard	Blackrock	SSGA	Capital Group	Fidelity	Geode	Morgan Stanley	T. Rowe	JP Morgan	Wellington
1999	1.21	--	1.76	0.25	3.35	--	0.93	0.51	0.16	0.69
2000	1.29	0.06	1.97	0.30	3.38	--	1.03	0.53	0.97	0.91
2001	1.45	0.05	2.36	0.39	3.36	--	0.92	0.56	1.11	1.16
2002	1.53	0.02	2.68	0.45	2.67	--	0.87	0.63	0.85	1.28
2003	1.71	0.02	2.85	0.50	2.67	0.24	0.84	0.73	0.67	1.40
2004	1.90	0.03	2.81	0.51	3.30	0.25	0.85	0.87	0.92	1.50
2005	2.02	0.14	2.70	0.51	3.18	0.27	0.97	0.99	0.91	1.52
2006	2.28	0.87	2.73	0.51	3.03	0.30	0.94	1.08	0.83	1.52
2007	2.52	0.94	2.90	3.43	3.03	0.36	0.95	1.23	0.80	1.45
2008	2.81	0.93	3.36	3.43	2.93	0.40	0.90	1.29	0.81	1.48
2009	3.02	5.32	3.19	3.33	3.00	0.39	0.91	1.46	0.80	1.47
2010	3.24	5.08	3.30	3.15	2.83	0.43	0.50	1.62	0.93	1.47
2011	3.66	5.18	3.43	2.90	2.76	0.51	0.58	1.66	0.97	1.49
2012	4.08	4.97	3.66	2.66	2.79	0.51	0.54	1.78	1.16	1.45
2013	4.55	5.18	3.72	2.63	2.81	0.60	0.59	1.77	1.17	1.41
2014	5.04	5.36	3.79	2.58	2.76	0.63	0.64	1.73	1.24	1.42
2015	5.67	5.56	3.57	2.72	2.79	0.70	0.67	1.86	1.22	1.52
2016	6.33	5.90	3.85	2.86	2.56	0.79	0.69	1.81	1.12	1.46
2017	6.89	6.13	3.81	2.73	2.48	0.92	0.71	1.87	1.10	1.39
2018	7.41	6.40	3.70	2.90	2.35	1.11	0.74	1.99	1.04	1.35
2019	7.70	6.62	3.85	2.88	2.29	1.29	0.76	2.05	0.98	1.27
2020	7.49	6.52	3.57	2.79	2.35	1.33	0.98	2.13	1.04	1.18
2021	7.62	6.57	3.67	2.72	2.28	1.47	0.99	1.93	1.07	1.09
2022	8.28	6.98	3.84	2.68	2.17	1.64	1.48	1.41	1.23	1.12

Implications: Big Three Growth and Market Structure

Panel B: Institutional scaled flows (in %)

Year	Vanguard	Blackrock	SSGA	Capital Group	Fidelity	Geode	Morgan Stanley	T. Rowe	JP Morgan	Wellington	Market
2000	8.70	--	8.87	15.37	1.64	--	15.59	1.64	471.18	15.16	4.28
2001	10.75	-7.47	14.39	12.55	2.07	--	-1.39	1.92	12.86	18.72	0.43
2002	5.91	-42.58	11.07	17.36	-15.94	--	-0.66	13.80	-15.94	9.25	1.36
2003	15.40	8.60	9.34	2.55	-1.95	--	-5.45	19.35	-20.75	10.77	0.87
2004	11.54	19.95	-0.17	6.84	24.43	10.39	2.41	18.04	40.14	8.16	1.21
2005	6.14	341.08	-4.23	1.22	-6.73	8.28	10.67	11.78	0.71	-1.69	-0.45
2006	10.78	568.04	-3.31	-0.45	-3.61	8.98	-3.91	9.70	-12.79	-0.86	-1.73
2007	8.27	5.17	4.51	585.22	-7.22	20.89	0.38	10.14	-4.19	-10.37	-3.25
2008	4.53	-2.83	5.85	-0.94	-0.13	4.45	-5.98	2.59	-1.27	-0.42	-1.77
2009	8.15	603.25	-0.27	-3.84	-3.54	2.55	0.80	7.10	1.45	-2.90	1.31
2010	5.73	-5.45	3.66	-4.92	-8.52	11.70	-44.69	8.30	16.82	-0.90	0.63
2011	7.24	-1.44	-1.69	-12.39	-3.43	14.01	13.36	-1.22	1.91	-1.56	-1.29
2012	9.27	-7.04	4.85	-13.67	-2.71	-0.67	-9.33	3.45	18.93	-5.81	-1.00
2013	9.61	1.87	-0.82	-4.97	-3.48	18.92	9.66	-6.72	-2.93	-7.51	-0.13
2014	8.66	1.55	-0.56	-4.74	-3.64	4.79	9.51	-3.36	4.38	-2.49	0.48
2015	7.16	-1.30	-10.52	-2.07	-4.83	5.71	1.56	-2.14	-5.90	0.50	-2.35
2016	7.56	2.13	3.43	1.79	-8.13	11.52	4.21	-2.29	-11.23	-4.28	-2.46
2017	6.73	1.80	-3.82	-9.07	-9.85	16.37	2.00	-2.69	-4.31	-6.42	-1.50
2018	3.88	0.68	-5.67	0.65	-8.16	17.55	0.16	-0.42	-7.44	-6.65	-1.53
2019	1.16	1.00	1.36	-1.51	-7.87	17.68	1.55	0.31	-8.97	-9.76	-0.92
2020	-1.55	0.55	-4.11	-3.18	-3.24	5.93	24.59	-0.50	5.38	-2.34	1.76
2021	2.64	1.73	3.29	-0.93	-1.59	13.99	12.84	-3.49	5.91	-5.85	3.62
2022	2.53	0.81	-3.29	-3.94	-2.60	6.37	40.43	-15.97	6.39	-7.12	-1.55

Implications: Big Three Growth and Market Structure

Panel C: Number of institutional shareholders, by firm						
Period	Avg	Median	Stdev	25th pct	75th pct	N
2000-2004	83	38	131	10	103	5,845
2005-2009	122	72	163	22	152	4,879
2010-2014	154	97	200	36	183	4,133
2015-2019	203	121	278	47	231	3,997
2020-2022	219	107	357	45	233	4,720

Legal Implications

- Big Three might not be growing as quickly as some have predicted
  - Proposals designed to avert harm (due to common ownership and governance risks) are likely premature
- M&A is a potent source of growth in ownership
- Interconnectedness between stock buyback regulation and investment manager growth worth exploring further

Conclusion

- Reassess the evidence of rapid growth of the Big Three asset managers
  - Evidence based on equity capital flows into the Big Three inconsistent with the conventional narrative of rapid and accelerating growth
- Propose a framework to better understand the sources of flows allocated to asset managers and what drives the evolution of institutions' stake size
  - Introduce equilibrium restrictions on flows, and how these are related to actions taken by corporations and funds themselves
- Provide insight into the origin of fund flows and why certain institutions win and lose in the competition for flows