Ownership Diversification and Product Market Pricing Incentives

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June 2022

Common ownership is pervasive

Time Warner			Twenty-First Century Fox			Disney		
Investor	% held		Investor	% held		Investor	% held	
BlackRock	0,0505		BlackRock	0,0579		Fidelity Investments	0,0495	
Capital World Investors	0,0495		Vanguard Group	0,0491		BlackRock	0,0477	
Dodge & Cox	0,0438		State Street Global	0,0448		State Street Global	0,0374	
Vanguard Group	0,0425		Dodge & Cox	0,0423		Vanguard Group	0,0290	

Johnson & Johnson		Pfizer		Merck & Co	
Vanguard Group	6%	BlackRock	6%	Wellington Mgmt.	6%
BlackRock	6%	Vanguard Group	6%	BlackRock	6%
State Street Global	5%	State Street Global	5%	Vanguard Group	6%
Fidelity Investments	2%	Capital World	2%	Capital World	5%
Wellington Mgmt.	1%	T. Rowe Price	2%	State Street Global	4%

	BASF		Bayer		Linde	
2007	Alliancebernstein l.p.	7%	Capital Group	13%	Capital Group	11%
	Allianz Group	3%	Fidelity Investments	7%	Cominvest Asset Management	10%
	HarbourVest Partners	2%	Capital World Investors	3%	Deutsche Asset Management	6%
	BlackRock	2%	HarbourVest Partners	2%	Allianz Group	6%
	Union Investments	2%	BlackRock	2%	Fidelity Investments	6%
2015	BlackRock	9%	BlackRock	10%	BlackRock	7%
	NBIM	3%	Capital World Investors	5%	NBIM	7%
	Credit Suisse	2%	MFS investment management	3%	MFS investment management	5%
	UBS Asset Management	2%	Vanguard Group	2%	Dodge & Cox	3%
	Deutsche Asset Management	2%	Fidelity Investments	2%	Northern Cross	3%

Figure 1: Top 5 shareholders in selected companies and times

Common ownership incentives (lambdas) are up
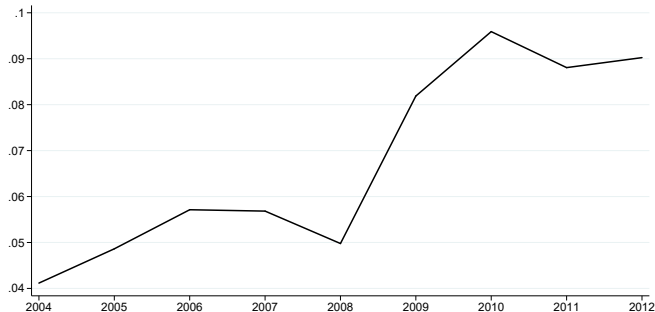
Median lambdas all US publicly listed firms.

▶ λ: "profit weights," i.e. loads firms should conceptually place on profits of *other firms of the industry* because of common ownership

Aims

▶ We aim to understand
  ▶ the evolution of the common ownership incentives,
  ▶ especially around the great financial crisis, and
  ▶ their relationship with the evolution of product market outcomes

▶ We analyze characteristics of the ownership holdings of
  ▶ active and passive investors, and how they
  ▶ differ in how their holdings are split within and across firm

Passive are more diversified
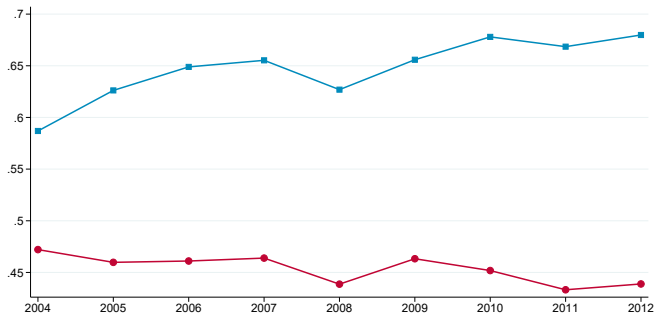
Median investor diversification levels across firms in the industry (DIV^{τ}).

(Passive investors in blue squares & Active investors in red dots).

# Passive got relatively bigger
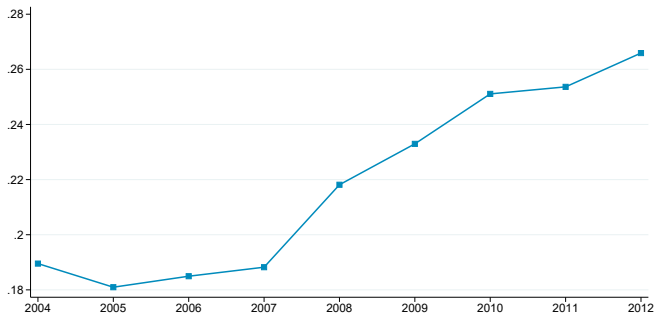
Median relative holdings for passive vs. active investors (RLH$^{P/A}$).

Summary of the paper

▶ We show, both theoretically and empirically, that:
  ▶ 1.- As the holdings of a more diversified group of investors, the passive, become relatively more important in size,
  ▶ then the firm's common ownership incentives increase

  ▶ 2.- Increase in common ownership incentives can in turn be associated with increase in product market markups

▶ Overall, firms' observed increased markups can be linked to increase observed relative holdings of passive investors
  ▶ through the firm's common ownership incentives
  ▶ especially since the 2007-08 financial crisis

Relationship with firm markups across US industries
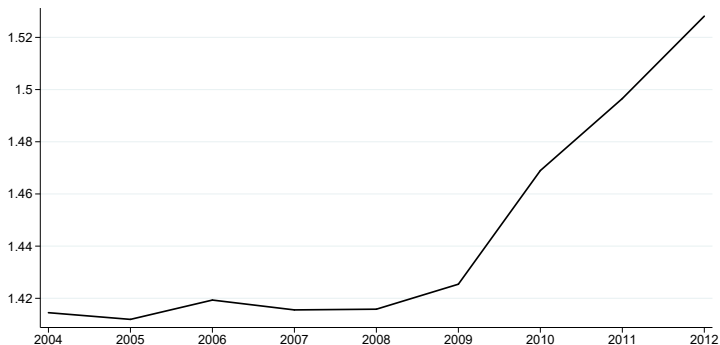
Mean markups US industries 2004 - 2012.

Contributions

▶ Common ownership has recently attracted **policy interest**:
  ▶ "Major new antitrust challenge of our time" (Posner et al., 2016)
  ▶ Included in merger decisions; OECD round table; FTC hearing

▶ First analysis on the role of active and passive investors incentives:
  ▶ Backus et al. (2021) show that rise among the S&P 500 firms driven by an increase in diversification of the investors' portfolios
  ▶ Here, increase of the more-diversified passive investor

▶ Effects of common ownership on product market outcomes:
  ▶ CO can have positive/negative effects (Lopez and Vives, 2019)
  ▶ Azar et al. (2018) and Azar et al. (2016) find positive effect of common ownership on prices in airlines and banking respectively
  ▶ Here, we link investors' holdings to structurally-estimated product market markups, through lambda weights

General framework

- ▶ Active versus passive investors:
    - ▶ Different investment strategies and thus how they split their ownership holdings across (and within) firms: passive more diversified
    - ▶ Passive investors have grown over the last decades, and even more so after the financial crisis (Bebchuk and Hirst, 2019)

- ▶ Denote:
    - ▶ Set of active and passive investors by $\tau = A$ and $\tau = P$, resp.
    - ▶ Set of firms in a given industry by S
    - ▶ Monetary ownership holdings of investor $i \in A \cup P$ in firm $j \in S$ by h_{ij} and her fraction in the firm by $\beta_{ij} (= h_{ij} / \sum_{l \in A \cup P} h_{lj})$

Investor variables

▶ Degree of **portfolio diversification** of investors in j across firms in S:

$$DIV_j^\tau \equiv \sum_{i\in\tau}(\frac{h_{ij}}{\sum_{i\in\tau}h_{ij}})DIV_{i,S} \quad \text{where} \quad DIV_{i,S} \equiv 1 - \sum_{j\in S}(\frac{h_{ij}}{\sum_{k\in S}h_{ik}})^2$$

▶ **Relative level of overall holdings of passive** in j

$$RLH_j^{P/A} \equiv \frac{\sum_{i\in P}h_{ij}}{\sum_{i\in A\cup P}h_{ij}}$$

▶ Degree of **ownership concentration** within firm j

$$CONC_j^\tau \equiv \sum_{i\in\tau}(\frac{h_{ij}}{\sum_{i\in\tau}h_{ij}})^2$$

Lambda

▶ Firm j maximizes weighted sum of interests of its investors, where
  ▶ (i) interests of investor i depend on her share in each firm k in industry
  ▶ (ii) weights given by investor's degree of control in j, γ_{ij} ($= \beta_{ij}$ if *prop*)

$$\sum_i \gamma_{ij} \sum_k \beta_{ik} \pi_k$$

▶ Rearranging, this is equivalent to maximizing

$$\pi_j + \sum_{k \neq j} \lambda_{jk} \pi_k \quad \text{where} \quad \lambda_{jk} \equiv \frac{\sum_i \gamma_{ij} \beta_{ik}}{\sum_i \gamma_{ij} \beta_{ij}}$$

and thus "lambda" represents weights placed on other firms' profits

▶ The firm-level lambdas are defined as the bilateral average

$$\lambda_j \equiv \frac{1}{|k-1|} \sum_{k \neq j} \lambda_{jk}$$

Summary of the paper

- We show, both theoretically and empirically, that:
  - 1.- As the holdings of a more diversified group of investors, the passive, become relatively more important in size,
  - then the firm's common ownership incentives increase

  - 2.- Increase in common ownership incentives can in turn be associated with increase in product market markups

- Overall, firms' observed increased markups can be linked to increase observed relative holdings of passive investors
  - through the firm's common ownership incentives
  - especially since the 2007-08 financial crisis

Investor variables and common ownership incentives

Proposition

For any given degree of diversification and concentration of active and passive investors (DIV_j^A, DIV_j^P, $CONC_j^A$, $CONC_j^P$), an increase in relative level of overall holdings of passive ($RLH_j^{P/A}$) increases λ_j if $DIV_j^P > DIV_j^A$.

▶ Common ownership incentives increase if more diversified investors become relatively more powerful than less diversified investors.

Data: Investors - Thomson Reuters Global One

▶ Holdings by each investor in each firm at year end (2004-2012)
  ▶ "Money-manager view" to link the holdings to the actual firm that manages the investments (as opposed to "as-filed view" from WRDS)
  ▶ 13F, 13D, 13G filings and forms 3, 4, and 5

▶ Investors classified as active or passive types
  ▶ Active fund managers choose individual investments in order to try to beat the market (alpha strategy)
  ▶ Passive fund managers replicate existing stock indices by buying shares of all the member firms of the particular index (beta strategy)

Data: Firms and product markets - Compustat US

- ▶ All publicly listed firms in the US (excluding finance)
- ▶ Matching done on the base of (i) CUSIP and (ii) name
- ▶ Keep firms present throughout (balanced panel)
- ▶ Final sample of 2823 firms over 9 years (2004-2012)

- ▶ Investors' holdings are allocated across firms. Compute:
  - ▶ Investor and common ownership variables at firm/year level
  - ▶ Based on NAICS-4 industries
- ▶ Control:
  - ▶ Assume proportional control in the baseline
  - ▶ Robustness check to alternative degrees of control

Empirical specification

▶ We express yearly firm-level lambdas as:

$$\lambda_{j,t} = \alpha_0 + \alpha_1 RLH_{j,t}^{P/A} + \alpha_2 RLH_{j,t}^{P/A} \times \mathbb{1}\{DIV_{j,t}^P > DIV_{j,t}^A\} +$$
$$+ \alpha_3 DIV_{j,t}^A + \alpha_4 DIV_{j,t}^P + \alpha_5 CONC_{j,t}^A + \alpha_6 CONC_{j,t}^P +$$
$$+ \alpha_7 INV_{S,t}^A + \alpha_8 INV_{S,t}^P + \beta_X X_{j,t} + \delta_{S,t} + u_{j,t},$$

where j is firm in industry S, t the year, INV^τ number of investors of type τ in S, $X_{j,t}$ firm level controls, $\delta_{S,t}$ industry-year fixed effects, and $u_{j,t}$ the error term.

▶ Functional form: (i) log-log and (ii) linear

▶ Standard errors: (i) robust and (ii) clustered industry x year / firm

	(1) log λ	(2) log λ
log RLH$^{P/A}$	3.935***	3.935***
	(0.348)	(0.375)
log RLH$^{P/A} \times \mathbb{1}\{DIV^P > DIV^A\}$	7.559***	7.559***
	(0.348)	(0.492)
log DIV^A	8.920***	8.920***
	(0.299)	(0.455)
log DIV^P	7.937***	7.937***
	(0.251)	(0.316)
log CON^A	-8.926***	-8.926***
	(0.287)	(0.305)
log CON^P	-10.23***	-10.23***
	(0.216)	(0.299)
log INV^A	-0.224***	-0.224**
	(0.0818)	(0.110)
log INV^P	0.167*	0.167
	(0.0964)	(0.113)
N	21151	21151
Fixed Effects	Ind. Yr.	Ind. Yr.
Std. Errors	Robust	Ind. Yr.
# of Groups	1392	1392
R^2	0.546	0.546
F-stat	2208.4	416.5
p-value F-stat	0.00	0.00

Standard errors in parentheses

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Novel decomposition of lambda

▶ Lambda as linear combination of type-specific lambdas

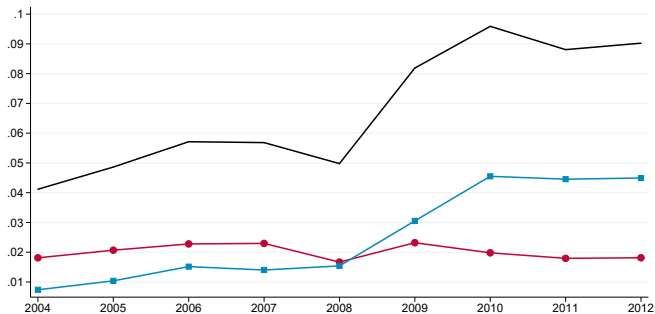$$\lambda_{jk} = (1 - \nu_j^{P/A})\lambda_{jk}^A + \nu_j^{P/A}\lambda_{jk}^P,$$

with

$$\lambda_{jk}^\tau \equiv \frac{\sum_{i \in \tau} \gamma_{ij}\beta_{ik}}{\sum_{i \in \tau} \gamma_{ij}\beta_{ij}} \text{ and } \nu_j^{P/A} \equiv \frac{\sum_{i \in P} \gamma_{ij}\beta_{ij}}{\sum_{i \in A \cup P} \gamma_{ij}\beta_{ij}}$$

▶ At the firm level

$$\lambda_j^\tau \equiv \frac{1}{|k-1|} \sum_{k \neq j} \lambda_{jk}^\tau,$$

Why are lambdas up? Weight of passive investors is up

Median weights (ν) x lambdas (λ) for both types of investors.

(Passive investors in blue squares & active investors in red dots).

Summary of the paper

- We show, both theoretically and empirically, that:
  - 1.- As the holdings of a more diversified group of investors, the passive, become relatively more important in size,
  - then the firm's common ownership incentives increase

  - 2.- Increase in common ownership incentives can in turn be associated with increase in product market markups

- Overall, firms' observed increased markups can be linked to increase observed relative holdings of passive investors
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Simple model of competition (2/2)

Proposition

In the context of the symmetric model of Bertrand competition, firm markups (μ_j) increase in the level of common ownership incentives (λ_j).

▶ Markups may increase because of higher prices and/or lower costs

▶ In both cases, firm profitability increases with common ownership

Data: Markup estimation - Production Function Approach

▶ Markup $\mu_{j,t}$ is equal to elasticity of output with respect to variable input over revenue share of variable input

▶ Elasticity obtained by estimating Cobb-Douglas production function per (NAICS-3) industry (De Loecker and Warzynski, 2012)

▶ Measure of variable input is "Cost of Goods Sold"(COGS) whereas measure for capital is "Net Capital"(PPENT).

▶ Allowing common ownership structures to influence (future) productivity: also estimate markups with λ in law of motion.

Empirical specification

- We express markups as a function of λ

$$\mu_{j,t} = \delta_\lambda \lambda_{j,t-1} + \delta_X X_{j,t} + \delta_{S,t} + \varepsilon_{j,t},$$

  where we use same firm level controls, fixed effects, and treatment of errors as before

- We estimate the parameters of interest by 2SLS, using the investor variables on lambda regression as first stage

Second-stage regressions

	(1) $\log \mu$	(2) $\log \mu$	(3) $\log \mu$	(4) $\log \mu$	(5) $\log \mu_{CO}$	(6) $\log \mu_{CO}$	(7) $\log \mu_{CO}$	(8) $\log \mu_{CO}$
$\log \lambda$	0.175^{***}	0.175^{***}	0.286^{***}	0.286^{***}	0.159^{***}	0.159^{***}	0.204^{***}	0.204^{***}
	(0.0201)	(0.0265)	(0.0341)	(0.0562)	(0.0206)	(0.0261)	(0.0329)	(0.0444)
N	21464	21464	21151	21151	19229	19229	19210	19210
Regression	OLS	OLS	2SLS	2SLS	OLS	OLS	2SLS	2SLS
Fixed Effects	Ind. Yr.	Ind. Yr.	Ind. Yr.	Ind. Yr.	Ind. Yr.	Ind. Yr.	Ind. Yr.	Ind. Yr.
Std. Errors	Robust	Ind. Yr.	Robust	Ind. Yr.	Robust	Ind. Yr.	Robust	Ind. Yr.
# of Groups	1392	1392	1392	1392	1381	1381	1381	1381
R^2	0.475	0.475	0.480	0.480	0.488	0.488	0.488	0.488
F-stat	1543.4	330.0	1543.4	367.7	1437.2	334.6	1435.9	331.9
p-value F-stat	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
End. Stat.	-	-	15.1	9.3	-	-	4.2	4.4
p-value End.	-	-	0.00	0.00	-	-	0.04	0.04

Standard errors in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Size of the effects

- ▶ Second stage:
  - ▶ A 1% increase in λ leads to an increase in μ of 0.175% - 0.286%
  - ▶ (with λ in law of motion, to an increase in μ_{CO} of 0.159% - 0.204%)
  - ▶ Thus, the "pass through" from common ownership incentives to product market outcomes lies in between 15.9% and 28.6%

- ▶ Linking changes in $RLH^{P/A}$ to changes in μ and μ_{CO} in our 2SLS estimations (connecting the 1st and 2nd stages):
  - ▶ whenever $DIV^P > DIV^A$, then a 1% increase in $RLH^{P/A}$ leads to an increase in μ of 0.0227% - 0.0372%
  - ▶ (with λ in law of motion, to an increase in μ_{CO} of 0.0207% - 0.0265%)

Conclusion (1/2)

▶ We show, both theoretically and empirically, that:
  ▶ 1.- As the holdings of a more diversified group of investors, the passive, become relatively more important in size,
  ▶ then the firm's common ownership incentives increase

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Conclusion (2/2)

- ▶ We also show that
  - ▶ Standard measure of common ownership incentives, lambda, can be decomposed in "lambda active/passive"
  - ▶ Most of the increase in lambda is due to the "lambda passive"
- ▶ Results robust to alternative functional forms (linear), various levels of control of active versus passive investors
- ▶ Effects for narrower industry definition are stronger
- ▶ Including firm fixed-effects reduce variation and effects are weaker

Thank you for your attention.

Appendix

	DIV^A	DIV^P	Difference	P-value
2004	0.447	0.491	-0.0437	0.000
2005	0.446	0.518	-0.0719	0.000
2006	0.445	0.535	-0.0898	0.000
2007	0.450	0.535	-0.0854	0.000
2008	0.428	0.525	-0.0965	0.000
2009	0.444	0.551	-0.107	0.000
2010	0.437	0.559	-0.122	0.000
2011	0.430	0.549	-0.119	0.000
2012	0.430	0.553	-0.123	0.000

	RLH$^{P/A}$	DIV^A	DIV^P	CON^A	CON^P	INV^A	INV^P	COGS	PPENT
Obs.	24183	23823	23823	24183	24183	24183	24183	24183	24183
Mean	0.28	0.44	0.53	0.21	0.39	40.7	10.7	3573.4	2436.8
Std. Dev.	0.25	0.26	0.34	0.25	0.28	23.9	6.50	14849.9	9380.3
Min.	0	0	0	0	0	0	0	0.0010	0.0010
Median	0.22	0.45	0.65	0.10	0.27	52	12	324.2	117.3
Max.	1	0.96	0.97	1	1	92	40	408296.0	256834

	λ	λ^A	λ^P	ν^A	ν^P	λ_{Top20}	λ_{EW}	μ	μ_{CO}
Obs.	24183	23262	22497	24183	24183	22285	24183	24183	21626
Mean	0.094	0.11	0.61	0.48	0.23	0.32	0.078	1.56	1.60
Std. Dev.	0.098	0.36	1.90	0.32	0.28	0.20	0.075	0.87	0.92
Min.	0	0	0	0	0	0	0	0.25	0.34
Median	0.065	0.063	0.37	0.52	0.13	0.32	0.056	1.41	1.42
Max.	0.82	29.4	108.0	1	1	1.21	0.32	40.7	40.2

	λ^A	λ^P	Difference	P-value
2004	0.111	0.455	-0.344	0.000
2005	0.109	0.545	-0.436	0.000
2006	0.108	0.498	-0.390	0.000
2007	0.0929	0.568	-0.475	0.000
2008	0.103	0.653	-0.550	0.000
2009	0.104	0.665	-0.561	0.000
2010	0.111	0.703	-0.591	0.000
2011	0.105	0.738	-0.633	0.000
2012	0.104	0.699	-0.595	0.000
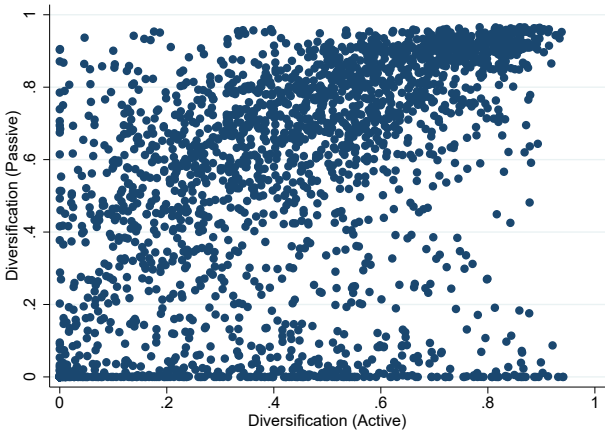
Diversification passive (vertical axis) vs. diversification active (horizontal axis).

Passive are also less concentrated
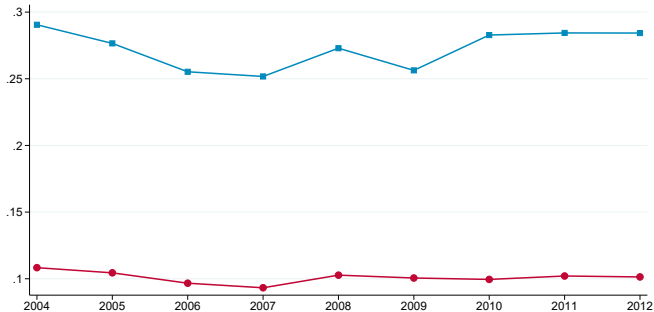
Median investor concentration 2004 - 2012 ($CONC^\tau$).

(Passive investors in blue squares & Active investors in red dots).

Passive investors are...

Large

▶ BlackRock has \$6 trillion in assets under management

Growing

▶ Growth in index and exchange traded funds (ETFs)

Influential

▶ In 88% of S&P 500 firms, BlackRock, Vanguard, State Street together constitute the largest shareholder (Fichtner, 2016)

▶ BlackRock's chairman and chief executive Larry Fink: *"We are an active voice, we work with companies."*

▶ "Passive investors, not passive owners" Vanguard, 22nd April 2013

Influence

BlackRock CEO Tells Companies To Contribute To Society. Here's Where To Start

Peter Horst Former Contributor ⓘ
CMO Network
I write and consult on CMO leadership challenges in modern marketing

...

In his letter, which I received from BlackRock today, Fink lays out a number of requests which one might find surprising from a $6 trillion asset manager. He cites the pre-occupation with short-term, reactive measures to drive quarterly profits and asks CEOs to focus on "investments in employee development, innovation and capital expenditures that are necessary for longer-term growth."

Bloomberg | Quint   Markets   Business   Law And Policy   Politics   GST   >

Mutual Fund Industry to Drugmakers: Stand Up and Defend Yourself

by Caroline Chen

Updated on May 11, 2016, 4:37 pm
Published on May 9, 2016, 11:04 pm

In a sign of how U.S. political pressure to rein in drug pricing is weighing on pharmaceutical companies and their investors, a group of major funds called an unusual meeting with top biotech and pharma lobbyists, urging them to do a better job defending their industry.

The conclave occurred in March in a conference room at a Boston hotel. There, fund representatives, including those from Fidelity Investments, T. Rowe Price Group Inc. and Wellington Management Co. exhorted drug industry executives and lobbyists to do a better job defending their pricing by educating the public about the value of their

Influence

- ▶ Horizontal shareholders use power to influence firms (Elhauge, 2019)
  - ▶ Discussions with management, public statements, voting on compensation/board composition, reducing pressure to compete - direct communication not necessary
- ▶ Mutual funds use voting blocs to exert influence (Appel et al., 2016)
- ▶ Behind-the-scenes discussions with management, about strategy or corporate governance, are most common (McCahery et al., 2016)

Active vs passive

- ▶ Investors can be classified according to broad investment orientation:
  - ▶ Active investment:
    - ▶ manage assets using a hands-on approach
    - ▶ objective is to earn alpha or excess returns over and above a benchmark
  - ▶ Passive investment:
    - ▶ benchmark assets against indices (e.g. S&P 500)
    - ▶ attempt to earn the market return or beta
    - ▶ fees are typically much lower than for active

- ▶ They split their ownership holdings differently within and across firms
  - ▶ Passive investors are more diversified across firms
  - ▶ Passive investors got relatively more overall holdings

- ▶ Passive investors may also exert less control than active ones

Variables in the simple model

▶ Substituting into β_{ij} and into in the financial variables, we have that

$$RLH_j^{P/A} = \sigma_P,$$

$$DIV_j^\tau = (n-1)\alpha_\tau(2 - n\alpha_\tau) \text{ for } \tau = A, P.$$

$$CON_j^\tau = \frac{(1 - (n-1)\alpha_\tau)^2 + (n-1)\alpha_\tau{}^2}{m_\tau} \text{ for } \tau = A, P,$$

▶ Substituting into $\lambda_j = (1 - \nu_j^{P/A})\lambda_j^A + \nu_j^{P/A}\lambda_j^P$ with

$$\lambda_j^\tau = \frac{g(\alpha_\tau)}{h(\alpha_\tau)} \text{ and } \nu_j^{P/A} = \frac{h(\alpha_P)}{h(\alpha_A)\frac{1-\sigma_P}{\sigma_P}\frac{\kappa_A}{\kappa_P}\frac{m_P}{m_A} + h(\alpha_P)}$$

Data: Investors - Data cleaning

▶ Ultimate owner (investor) identified on the basis of public sources
  ▶ Supplement with data from the National Information Center (NIC) from Federal Reserve System.
▶ Investor acquisitions coded on the base of public sources
▶ Exclude ADRs, all special share classes, plus those investors that have at most 2 firms in their portfolios

Markup estimation

- ▶ Cobb-Douglas production functions by industry, with variable input and fixed capital as production factors (Ackerberg et al., 2015)
  - ▶ For industry s, production function

$$y_{it} = \theta_s^V v_{it} + \theta_s^K k_{it} + \omega_{it} + \epsilon_{it}$$

  - ▶ y_{it} is firm-level output at time t, and v_{it}, k_{it} firm-level variable input and capital (all in logs), ω_{it} is firm-level (unobserved) productivity and ϵ_{it} unobserved shock to output
- ▶ Control function

$$\omega_{it} = h_{st}(v_{it}, k_{it}, z_{it})$$

  - ▶ z_{it} set of instruments: current investment –because determined one period ahead– and lagged labour
- ▶ Apply industry-level deflators for three main variables: y_{it} (sales), v_{it} (COGS) and k_{it} (PPENT)

Markup estimation - law of motion

▶ Law of motion of productivity first-order Markov process
   1. Base line specification

$$\omega_{it} = g(\omega_{it-1}) + \xi_{it} \qquad (1)$$

   2. Allow for common ownership incentives to affect future productivity

$$\omega_{it} = g(\omega_{it-1}, \lambda_{it-1}) + \xi_{it} \qquad (2)$$

Our data (outdated)

- ▶ Significant investor holdings in US publicly listed firms (Thomson)
    - ▶ 3,301,896 investor-firm-time observations
    - ▶ 115,681 unique investors (classified into active/passive orientation)
    - ▶ 11,648 unique firms
    - ▶ Yearly from 2004 until 2012

- ▶ Firms' costs and revenues in each industry (Compustat)
    - ▶ 61,238 firm-time observations
    - ▶ 10,439 unique firms
    - ▶ 182 unique industries
    - ▶ Yearly from 2004 until 2012

HESS CORP

	Investor	Orient.	Fraction
2004	Dodge & Cox	A	18.78
	Putnam Investments	A	17.79
	T. Rowe Price	A	13.07
	BlackRock	P	7.10
	Invesco	A	6.42
2012	T. Rowe Price	A	13.14
	Vanguard Group	P	11.83
	State Street Global	P	11.69
	BlackRock	P	10.19
	Fidelity Investments	A	9.70

MARATHON OIL CORP

	Investor	Orient.	Fraction
2004	Capital Group	A	30.93
	BlackRock	P	23.06
	State Street Global	P	7.56
	Putnam Investments	A	6.53
	alliancebernstein l.p.	A	4.86
2012	BlackRock	A	12.25
	State Street Global	P	10.20
	Vanguard Group	P	10.14
	BlackRock	P	9.26
	Franklin Templeton	A	7.86

CONOCOPHILLIPS

	Investor	Orient.	Fraction
2004	alliancebernstein l.p.	A	13.78
	BlackRock	P	11.88
	Capital Group	A	7.55
	State Street Global	P	7.02
	Wellington Mgmt.	A	6.98
2012	Vanguard Group	P	13.53
	BlackRock	P	13.02
	State Street Global	P	12.59
	capital world investors	A	6.15
	Berkshire Hathaway	A	5.98

Table 1: Oil and gas extraction industry (2111)

	(1) μ	(2) λ
λ	0.400** (0.167)	
RLH^P		0.0655*** (0.0160)
RLH$^{P/A} \times \mathbb{1}\{\text{DIV}^P > \text{DIV}^A\}$		0.0224* (0.0128)
DIV^A		0.191*** (0.0208)
DIV^P		0.112*** (0.0254)
CONC^A		-0.165*** (0.0157)
CONC^P		-0.124*** (0.0217)
INV^A		0.00124*** (0.000364)
INV^P		-0.00221*** (0.000749)
#Firms		0.000479** (0.000236)

AIR PRODUCTS & CHEMICALS INC

	Investor	Orient.	Fraction
	Capital Group	A	14.75
	State Street Global	P	13.30
2004	Wellington Mgmt.	A	8.49
	BlackRock	P	7.65
	alliancebernstein l.p.	A	5.68
	State Street Global	P	9.87
	Vanguard Group	P	9.86
2012	Royal Bank of Canada	A	9.07
	BlackRock	P	7.39
	Wellington Mgmt.	A	5.86

AIR LIQUIDE SA

	Investor	Orient.	Fraction
	AXA Group	A	53.03
	NBIM	A	26.54
2004	BlackRock	P	10.19
	State Street Global	P	6.88
	Alliancebernstein l.p.	A	1.98
	NBIM	A	29.20
	BlackRock	P	22.60
2012	Vanguard Group	P	17.43
	Mfs investment management	A	14.35
	State Street Global	P	3.66

PRAXAIR INC

	Investor	Orient.	Fraction
	Fidelity Investments	A	15.83
	J.P. Morgan Chase	A	11.00
2004	Lord, Abbett	A	9.88
	BlackRock	P	8.47
	State Street Global	P	7.33
	T. Rowe Price	A	13.87
	Vanguard Group	P	10.62
2012	capital world investors	A	8.46
	State Street Global	P	8.37
	Capital Group	A	7.82

Table 2: Basic chemicals industry (3251)

	(1) μ	(2) λ
λ	0.0100 (0.0258)	
RLH^P		0.0215 (0.0492)
$\text{RLH}^{P/A} \times \mathbb{1}\{\text{DIV}^P > \text{DIV}^A\}$		0.0543 (0.0393)
DIV^A		0.248*** (0.0703)
DIV^P		0.218** (0.106)
CONC^A		-0.254*** (0.0329)
CONC^P		-0.132* (0.0683)
INV^A		0.00187** (0.000829)
INV^P		0.00188 (0.00134)
#Firms		0.0379*** (0.00741)