Common Ownership in America: 1980 – 2017

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What is Common Ownership?

What is the Common Ownership Hypothesis?

- Economics starts from the premise that firms maximize profits.
  - Friedman (1953): natural selection of firms and billiards players.
  - Alternative interpretation: they answer to investors.
- So what do investors want?
  - Some (large) investors may hold stakes in you *and your competitor*, call them common owners.
  - Common owners may want to maximize industry profits, not firm profits.
- Perhaps then firms maximize shareholder portfolio value.

Common Ownership in the News

- The Atlantic: "Are Index Funds Evil?"
- The Economist: "Stealth Socialism"
- Bloomberg: "Index-Crazed Investors Turning S&P 500 Into One Gigantic Company"
- MoneyWeek: "Index Funds: Killing Capitalism?"
- Reuters: "When BlackRock Calls, CEOs Listen and do Deals"

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- Reuters: "When BlackRock Calls, CEOs Listen and do Deals"
  - "There is no CEO that doesn't return our call because typically we're up high on the shareholder register," Mark McCombe, global head of BlackRock's institutional client business, told Reuters reporters and editors attending the Reuters Global Wealth Management Summit on Friday.
    "We are everybody's largest shareholder."

Our Common Ownership Agenda

1. The Common Ownership Hypothesis: Theory and Evidence
   - Paper commissioned by the Brookings Institute
   - Main contribution is a lit review and a summary of why IO folks are "cranky"
2. Common Ownership in America 1980–2017 (today)
   - Macro-level view on the extent of and trends in common ownership
   - Focus on common ownership incentives
   - Decompose long-run trends, quantify effects.
3. Common Ownership and Competition in the Ready-to-Eat Cereal Industry (preview today)
   - We estimate a demand system for RTE cereal
   - Answers the question – how big would the effects of CO be?
   - Develops a test for conduct

Preview of Results

Findings to date:

1. The Common Ownership Hypothesis
   - Theory is sound but lacks foundation in corporate governance
   - Don't regress eq'm outcome on MHHI. We instead study the profit weights implied by the theory.
2. Descriptive Facts: S&P 500, 1980 – 2017.
   - Institutional ownership growing overall, impossible to ignore
   - Implied profit weights growing over time economy-wide, from $0.2 - 0.7$
   - Driven by overall trend toward diversification, not Vanguard/Blackrock.
   - Implications are very large: going from competition to common ownership pricing would massively increase markups.
   - The presence of even a single "maverick" firm in a market (say, a privately held firm) greatly disciplines the effect.

Old Theory, New Empirics

- Old theory: Rotemberg (1984), Reynolds and Snap (1986), Bresnahan and Salop (1986), O'Brien and Salop (2000)
- New empirics on price effects: Azar, Schmalz, and Tecu (2016), Azar Schmalz and Raina (2017).
- Remedies: Elhauge (2016) Posner, Scott-Morton, Weyl (2016)
- Replies, and more replies: Gramlich and Grundl (2017), Kennedy, O'Brien, Song, and Waehrer (2017), Rock and Rubinfeld (2017), Patel (2017)
- New directions: Lopez and Vives (2018), Banal-Estañol, Seldeslachts and Newham (2018)

Theory of Common Ownership

Common Ownership, Standard Version

From Rotemberg (1984)

- Investor s in firm f has profit rights β_{fs}.
- Investor payoffs depend on their portfolio, $\sum_g \beta_{gs}\pi_g$.
- The firm solves a social choice problem by placing Pareto weight γ_{fs} on the payoffs of investor s.
- Now, the firm maximizes

$$\begin{aligned} Q_f &= \sum_{s=1}^{S} \gamma_{fs} \sum_{g=1}^{G} \beta_{gs}\pi_g \\ &\propto \pi_f + \sum_{g \neq f} \underbrace{\frac{\sum_s \gamma_{fs}\beta_{gs}}{\sum_s \gamma_{fs}\beta_{fs}}}_{\equiv \kappa_{fg}} \pi_g = \pi_f + \sum_{g \neq f} \kappa_{fg}\pi_g. \end{aligned}$$

So what is β?

- β_{fs} is the right to profits that investor s has in firm f.
- $\beta_{fs} = \frac{\text{shares}_{fs}}{\text{shares outstanding}_f}$.
- SEC requires large investors ($> \$100M$ AUM) to submit quarterly 13f filings
- $\rightarrow \beta$ is (mostly) observable in data.

So what is γ?

This is the firm's Pareto weight on investor s. Something we need to make assumptions about. Some intuitive properties we want for $\gamma = f(\beta)$:

- γ_{fs} increasing in β_{fs}
- $\gamma_{fs} \to 0$ as $\beta_{fs} \to 0$

The literature often assumes proportional control: $\gamma = \beta$.

- Proportional Control: $\gamma = \beta$ has some clean math
- We will expand this to $\gamma = \beta^{\alpha}$ to allow for convex weights on investors: $\gamma(\beta) = [\sqrt{\beta}, \beta, \beta^2, \beta^3, \beta^4]$.
- Other alternatives $\gamma = f(\beta)$ (CLWY, GGL).

MHHI vs κ's

1. κ_{fg}'s are general to any strategic form. They characterize the objective of a firm.
2. MHHI varies at the market level. Yet it requires more data – misleading if you don't see product markets or foreign firms.
3. The usual problem of market definition.
4. MHHI throws away cross firm variation in κ_{fg} and instead create cross market variation where it didn't exist. (by interacting κ_{fg} with endogenous shares s_f, s_g).
5. MHHI is specific to Cournot – can get the sign of a price effect wrong.

MHHI in a Bertrand World

- Linear demand, static Bertrand-Nash

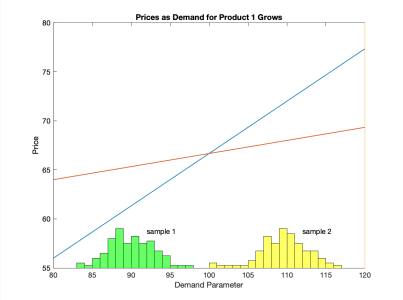
$$\begin{aligned} q_1 &= a_1 - \alpha_1 \cdot p_1 + \beta_1 \cdot p_2 \\ q_2 &= a_2 - \alpha_2 \cdot p_2 + \beta_2 \cdot p_1 \end{aligned}$$

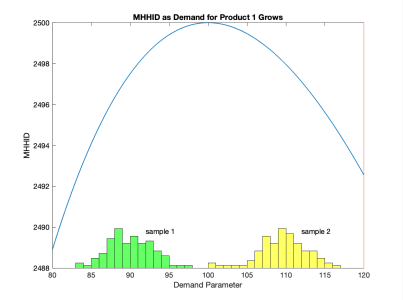
- Suppose
  - Firms ignore common ownership in pricing
  - There is variation in a_1 across markets.
- One institutional investor with equal shares, MHHI $= 1$.
  - Recall: MHHID = MHHI - HHI
  - So, variation in MHHID is being driven by *market shares*

Numeric Example

$$q_1 = a_1 - p_1 + \frac{1}{2} \cdot p_2 \quad \text{for } a_1 \in [80, 120]$$

$$q_2 = 100 - p_2 + \frac{1}{2} \cdot p_1$$



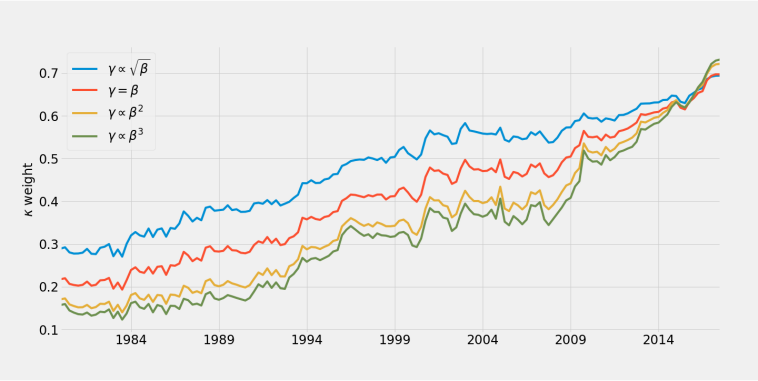


Common Ownership in America: 1980–2017

Common Ownership in the S&P 500

- We compute κ weights for the universe of S&P 500 firms, from 1980 to 2017.
- Consider *every* pairwise combination of S&P firms.
- Useful for painting a broad picture of trends and features of common ownership.
- Caveat: we make no claim on outcomes – are they even competing? Robustness in a few slides.

Average κ: 1980–2017



$$\kappa_{fg} = \frac{\langle \gamma_f, \beta_g \rangle}{\langle \gamma_f, \beta_f \rangle}, \quad \gamma_{fs} = \beta_{fs}^{\alpha}, \quad \overline{\kappa} = \frac{1}{F \cdot (F-1)} \sum_f \sum_{g \neq f} \kappa_{fg}$$

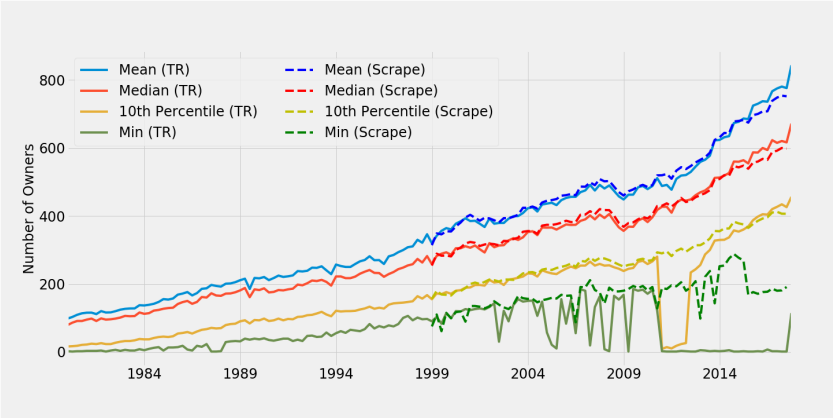
Data Sources and Issues

- Thomson Reuters universe of 13f filings from the SEC
  - All shares held by investors with 100m+ in AUM
  - On a broad list of "13f securities"
  - 13f data are self-reported, so many errors on price and shares outstanding
- We scraped our own 13f filings from the SEC database
  - Digitized (but irregular) since late 1999.
  - XML since 2013.
- Still some issues exist
  - Misreporting is common (shares or 1k shares) [SEC Inspector General's Report]
  - Short Interest is often double counted (sometimes correctly)
  - ADRs, Dual Class Shares should all be excluded.

Data Sources and Issues

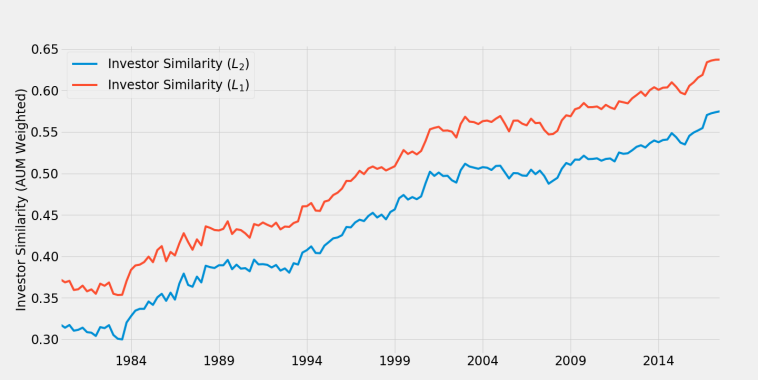
- CRSP data on index constituents, price, and shares outstanding
  - Don't use self-reported price or shares outstanding
- COMPUSTAT data on short interest and business segments
  - Short interest is double-counted in 13f positions
  - Business segment information (SIC code)

Investor Coverage



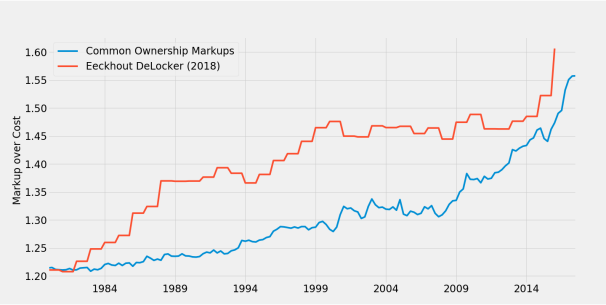
NB: *nominal* threshold for filing as a requirement of 100m in AUM.

Investor Similarity/Indexing



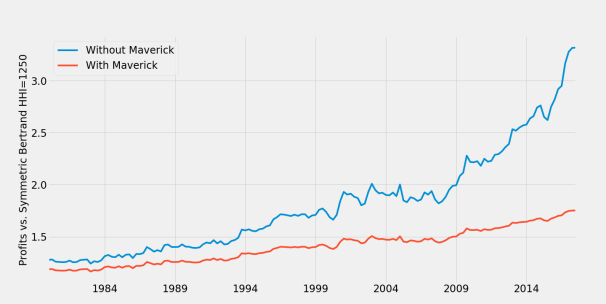
AUM weighted similarity to market portfolio.

How much can we explain?



- Eight symmetric firms (HHI = 1250 Grullon et. al), logit demand
- Calibrate to markup of 1.21 from Jan & Jan yields price elasticity of -7 (Eaton and Kortum say -8)

And profits?



- Blue line depicts ratio of profits under common ownership to standard Bertrand
- "Maverick" is an entirely private firm

Robustness

- This was all motivated with a story about price competition, but pairs of S&P 500 Index firms may or may not be in direct competition
  - We compute within and across SIC, similar results
  - Explicitly show banks and airlines
- Values of κ are higher for firms with higher retail share, higher market cap.

Background on Tunneling

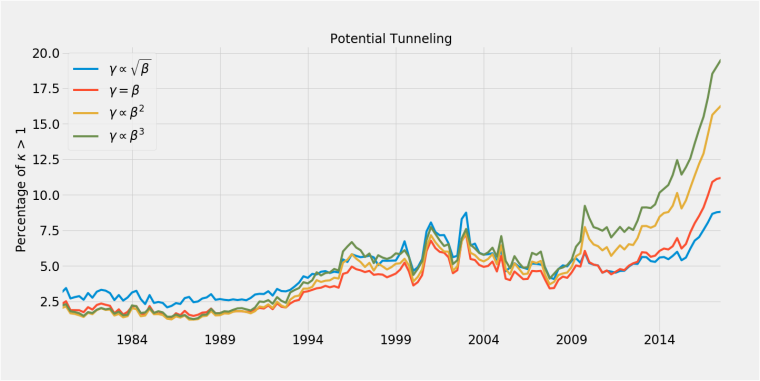
From Johnson et al. (2000):

- Suppose an investor has *control rights* in two firms, but different levels of *cash flow* rights
- Then the investor has an incentive to use their control rights to transfer assets from the low cash flow rights firm to the high cash flow rights firm
  - Lucrative procurement contracts offered to the latter?
  - Is this why Tesla bought SolarCity? SpaceX built Boring Co tunnel?

In our case, it is possible to have $\kappa > 1$:

- Implies tunneling could be a concern in the US.

κ and Tunneling



Wrapping Up: Macro Results

Several Conclusions:

1. The growth of common ownership incentives, if we take the model seriously, is of economic and historic significance.
   - From 0.2 to 0.7: potentially large enough to explain Eeckhout and De Loecker (2018)
   - However, many caveats: e.g., agency problems.
2. Common ownership is a greater concern (if ever) when when retail share and market cap are high.
   - A "maverick" can discipline pricing
3. Common ownership incentives raise red flags for tunneling
   - $\kappa > 1$ increasingly frequent, despite widely-held firms

Digging in: Ready-to-Eat Cereal

Why Cereal?

- If common ownership hypothesis is true – its effects should be widespread throughout economy.
- Long history in IO of conduct papers on RTE Cereal:
  - FTC Case and Schmalensee (1978) on product proliferation to deter entry.
  - Documented price wars in 1996 (Michel Weiergraeber 2018) and 2010.
  - Nevo (2000): static Bertrand is reasonable for 1988-1992.
  - Posner, Scott-Morton, Weyl (2017) list cereal as a suspect in their Appendix.
- ($C_4 = 85\%$) with a privately-held fringe
- Lots going on in ownership that gives us (plausibly exogenous) variation in κ.
- Demanding exclusion restrictions might actually work.

Our Firms



$24B



$29B

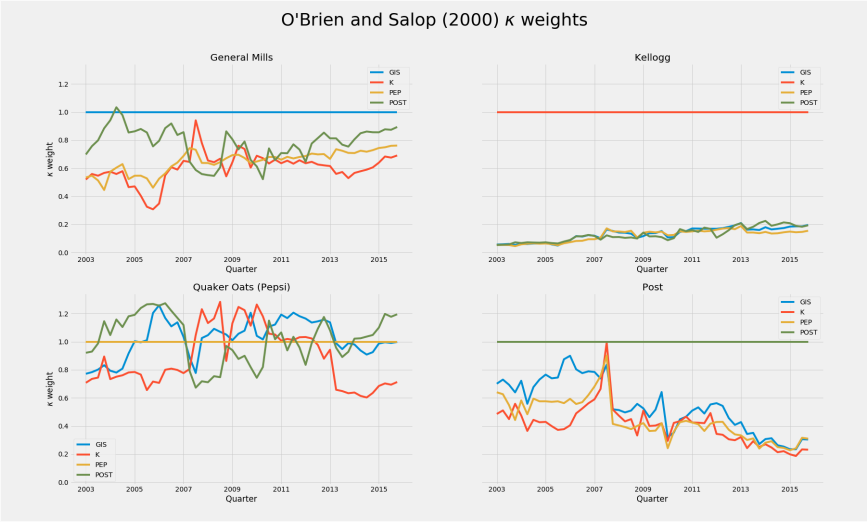


$160B



$5.7B

Profit Weights (κ) for RTE Cereal



Data

Kilts Nielsen Scanner Data

- Use data from 6 DMAs for 2007-2015.
- Use only (F)ood, aggregate to DMA-chain level.

Nutritionix API

- Paid $300/month to access UPC level nutritional label information
- Coverage is good 99.8% of branded products
- Matched Private-Label Products to most similar branded.

13F Filing Data

- Data cleaning: duplication, short holdings, etc

Formal Testing: Results

$\kappa =$	NL	RC
0	1603	1423
1	1686	1451
κ	1688	1452
κ^{CLWY}	1641	1447

- Both NL and RC select $\kappa = 0$ specification.
- $\chi^2(0)$ critical value is 3.84.
- No moments involve the level of costs.
- Regressors: product FE, own-cost-shifters (cubic)
- Excluded: other cost-shifters (cubic), κ_f.

Counterfactual Equilibrium Price Changes (%)

	GIS-K	GIS-PEP	GIS-POST	K-PEP	K-POST	PEP-POST	$\kappa = 1$	κ	κ^{CLWY}	p-obs
K	16.69	0.37	0.64	0.45	0.79	0.13	41.70	19.49	10.95	25.72
GIS	2.44	0.58	1.04	0.41	0.71	0.16	45.58	14.85	10.31	23.21
PEP	0.55	18.73	0.25	17.26	0.22	0.24	63.07	24.31	16.38	19.91
POST	0.68	0.17	17.18	0.16	15.92	3.67	54.63	27.20	12.19	22.79
Market	6.95	1.73	2.94	1.57	2.68	0.57	43.20	17.40	10.25	22.55

- These are sales-weighted averages across all markets in 2015.
- Only Quaker Oats (PEP)-Post merger would have any chance at approval.
- Common ownership effects are larger than any pairwise merger!
- CO gets us 42% of way to full collusion/monopoly profits.

Wrapping Up

We've shown

1. Common ownership..
   - is widespread, increasing
   - implied profit weights are increasing, although may depend on your model of corporate governance
2. If you take the theory seriously, then the economic magnitudes can be very large
   - κ from 0.2 to 0.7
   - In RTE cereal, common ownership implies larger price effects than the largest merger. "Big if true"
3. But is there evidence in the historical data for price effects in RTE cereal? (in progress)
   - No. Many caveats: could manifest in other ways

Thanks!